

Level Transmitter for Multiple Applications and Customization

MPM489W



Applications

- Pharmaceutical industry
- Metallurgical industry
- Power plant
- Mining
- Water and wastewater
- Hydrological exploration

Features

- Integrated structure, no extra adjustment required
- Intrinsic safety type, Ex ia IIC T6 Ga
- Explosion-proof type, Ex d IIC T6 Gb
- CE, RoHS and CCS approved

Introduction

MPM489W level transmitter is a fully sealed submersible level instrument designed for general industrial applications. It contains a piezoresistive sensing element of excellent stability and reliability and a dedicated circuit that are housed in a high-strength stainless steel housing. Featured with integrated structure, standard outputs, the product is an ideal solution for field service and automation control. The tightly sealed connection between the cable and housing allows long term service of the sensor in the liquids that are compatible with the material.

Specifications

Range	0mH ₂ O ~ 1mH ₂ O...200mH ₂ O
Overpressure	2 times FS
Pressure Type	gauge, absolute
Accuracy	see Accuracy on page 2
Long-term Stability	range > 10mH ₂ O, ≤ ±0.2% FS/ year
	range ≤ 10mH ₂ O, ≤ 20mmH ₂ O/ year
Application Temperature	-10°C ~ 60°C (intrinsic safe type)
	-20°C ~ 70°C (cable material: PE, PVC)
	-20°C ~ 80°C (cable material: PUR)
Storage Temperature	-20°C ~ 85°C
Vibration	10g, 55Hz ~ 2000Hz
Shock	100g, 11ms
Protection Rating	IP68
Weight	≤220g

Accuracy

Pressure Type	Range	Accuracy
Gauge (G)	$0 \text{ mH}_2\text{O} \sim 1\text{mH}_2\text{O} \leq X < 2\text{mH}_2\text{O}$	$\pm 1\% \text{FS}$
	$2\text{mH}_2\text{O} \leq X \leq 10\text{mH}_2\text{O}$	$\pm 0.5\% \text{FS}$
	$10\text{mH}_2\text{O} \leq X \leq 200\text{mH}_2\text{O}$	$\pm 0.25\% \text{FS}$
		$\pm 0.5\% \text{FS}$
Absolute (A)	$0\text{mH}_2\text{O} \sim 7\text{mH}_2\text{O} < X \leq 10\text{mH}_2\text{O}$	$\pm 1\% \text{FS}$
	$10\text{mH}_2\text{O} < X < 200\text{mH}_2\text{O}$	$\pm 0.5\% \text{FS}$

Test standard: GB/T 17614.1-2015/IEC60770-1:2010;

Environment temperature: $20^\circ\text{C} \pm 5^\circ\text{C}$;

Relative humidity: 45%~75%

Thermal Drift

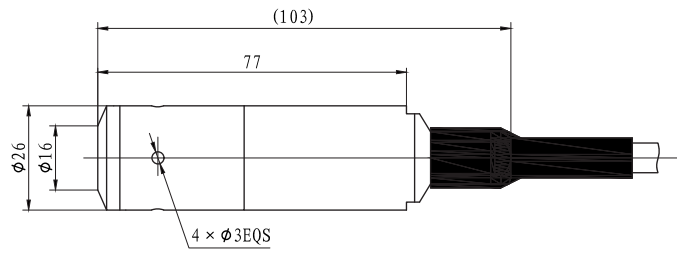
Zero Thermal Drift	$\leq \pm 0.05\% \text{ FS}/^\circ\text{C} (\leq 10\text{mH}_2\text{O})$
	$\leq \pm 0.02\% \text{ FS}/^\circ\text{C} (>10\text{mH}_2\text{O})$
Span Thermal Drift	$\leq \pm 0.05\% \text{ FS}/^\circ\text{C} (\leq 10\text{mH}_2\text{O})$
	$\leq \pm 0.05\% \text{ FS}/^\circ\text{C} (>10\text{mH}_2\text{O})$

Output Signals

Output Signal	Power Supply	Output Format	Load Resistance
4mA~20mA DC(E)	11V~28V DC	2-wire	$\leq (U-11)/0.02 (\Omega)$
1V~5V DC(F)			
0V~5V DC(J)			
0.5V~4.5V DC (K2)			
0V~10V DC(V)	15V~28V DC	3-wire	$\geq 10\text{k}\Omega$
0.5V~4.5V DC(K1)	5V \pm 0.1V DC		
0.5V~2.5V DC(W1)			
0.5V~2.5V DC(W2)	3.3V \pm 0.1V DC		

Outline Dimensions

unit: mm



Electrical Connection

Wire Color	2-wire	3-wire
Red	+V	+V
White	null	+OUT
Black	0V/+OUT	GND

Sensor Sealing



Materials

Isolated Diaphragm: SS 316L/Tantalum

Housing: SS 304/SS 316L

Cable: PE/PUR/PVC

Ordering Guide

MPM489W	Level Transmitter										
	Range	Measurement Range 0~1mH ₂ O...200mH ₂ O									
	[0 ~ XmH ₂ O]L	X: actual measured range, L: cable length, recommended cable length L=X+(1~2)m									
		Code	Power Supply								
		V1	11V~28V DC								
		V6	5V±0.1V DC								
		V7	3.3V±0.1V DC								
		Code	Output Signal								
		E	4mA~20mA DC								
		F	1V~5V DC								
		J	0V~5V DC								
		V	0V~10V DC								
		K	0.5V~4.5V DC								
		W	0.5V~2.5V DC								
		Code	Material								
			Isolated Diaphragm				Housing				
		22	SS 316L				SS 304				
		24	SS 316L				SS 316L				
		25	Tantalum				SS 304				
		Code	Junction Box								
		null	no junction box								
		Yb	Aluminum junction box without display								
		Yc	MS200 waterproof junction box								
		Yd	PD140 lightning-proof junction box								
		Ye	junction box (with or without display)								
		Code	Display Indicator ^① (with Ye junction box only)								
		null	no display indicator								
		M1	0% ~ 100% linear indicator								
		M6	4 digits LED digital indicator								
		M7	4 digits LCD digital indicator								
		Code	Certification Requirement ^②								
		null	no certification requirement								
		i	intrinsic safe Ex ia IIC T6 Ga								
		T	ship-use								
		y	ATEX								
		Code	Process Connection								
		null	no special process connection								
		C1	M20×1.5 male, end face seal								
		C3	G1/2 male, end face seal								
		F1	fixed flange								
MPM489W	[0 ~ 5mH ₂ O]6	V1	E	22	Ye	M6	i	F1	Complete Type Specification		

Ordering Notes

1. " ① ", digital display is available for Ye junction box , but can only used along with products support 4mA~20mA signal.
2. " ② " refers to certification requirements. For the intrinsically safety type, current output is available only. The product can be intrinsically safe and suitable for ship-use simultaneously or can be flameproof and suitable for ship-use simultaneously.
3. When ordering the transmitter with M6 or M7 indicator, power supply should $\geq 16V$ DC.
4. Environmental temperature should be $-20^{\circ}C \sim 70^{\circ}C$ when ordering the transmitter with M6 indicator, environmental temperature should be $-10^{\circ}C \sim 60^{\circ}C$ when ordering the transmitter with M7 indicator, indicator setting can refer to our indicator lectotype, which can be found on our company's website.
5. Cable material is available for 3 types: PE cable is provided as default; if other material is needed, please specify in the order.
6. When ordering 5V DC/3.3V DC power products with cable connection, the cable length should be less than 10m.
7. The protection rating of junction boxes are IP65.
8. The measured media should be compatible with the wetted material and the measured media density needs to be specified (except water) on contract.
9. If the product is installed in a thunderstorm area, a lightning protection device is required and be sure that the product and the power are reliably earthed, which can efficiently prevent the level sensor from lightning damage.
10. If metrology verification certificate is needed or there are other requirements, please contact us and specify it in the order.

MPM489WZ1 Level Transmitter



Introduction

MPM489WZ1 is a $\Phi 19$ mm diameter fully sealed submersible level transmitter based on diffused-silicone principle. It consists of a high stable and reliable piezoresistive pressure sensing element and the special PCB component as well as the stainless steel housing. Its integrated construction and standardized signal output greatly facilitate the operation and automation control at work sites. The special vented cable being hermetically connected with the transmitter housing allows the transmitter for long term use in the liquids that are compatible with the transmitter construction material.

MPM489WZ1 Level Transmitter is with compact size, light weight and good long term stability. It is suitable for liquid level measurement and control for fields of medicine, metallurgy, power plants, mining, urban water supply and drainage, hydrology exploration etc.

Features

- Integrated structure and adjustment free;
- IP68 Protection (sensor housing), and IP65 for connection box casing;
- Cost-effective, reliable and high long-term stability;
- Compact size: $\Phi 19$ diameter.

Specification

Pressure Range	10m, 20m, 50m, 100m, 200m H ₂ O	
Overpressure	1.5 times FS	
Accuracy	$\pm 0.5\%$ FS	
Stability error	Range>20mH ₂ O, $\pm 0.2\%$ FS/year; Range ≤ 20 mH ₂ O, 20mmH ₂ O	
Temperature error	$\pm 0.02\%$ FS/ $^{\circ}$ C (Zero) $\pm 0.05\%$ FS/ $^{\circ}$ C (Span)	
Operation temp.	-10 $^{\circ}$ C ~70 $^{\circ}$ C	
Storage Temp.	-20 $^{\circ}$ C ~85 $^{\circ}$ C	
Power Supply	11V~28V DC	
Output Signal	4mA~20mA DC (2-wire)	
Load (Ω)	< (U-11)/0.02	
Protection	IP68 (sensor part) IP65 (connection box)	
Wetted material	Housing: 1Cr18Ni9Ti	Sealing O-ring: Viton
	Diaphragm: SS 316L	Cable: $\Phi 7.5$ mm PE cable with vented tube
	Cap: Black nylon	Rubber casing: Chloroprene Rubber

Electrical Connection

Wire Color	Electrical definition
Black	+V
Red	0V/+OUT

Outline Construction (Unit: mm)



Order Guide

MPM489WZ1		Level Transmitter			
	Range	0m~10m...200m H ₂ O			
	[0~XmH ₂ O]L	X: actual measured range L: cable length; suggested L-X=(1~2)m			
	Code	Output Signal			
	E	4mA~20mA DC			
	Code	Construction Material			
		Diaphragm	Pressure port	Housing	
	22	SS 316L	SS	SS	
	24	SS 316L	SS 316L	SS 316L	
	25	Tantalum	SS	SS	
	Code	Others			
	M ₁	0%~100% hand pointer indicator			
	Y _b	Aluminum connection box without display			
	Y _c	MS200 water-proof connection box (Recommended options)			
	Y _d	PD140 lightning-proof protection device			
	Y _e	Connection box(with display or without display)			
	F ₁	Fixed flange			
MPM489WZ1	[0~10mH ₂ O]12	E	22	Yc	the whole spec

Notes

1. Please be sure the measured media is compatible with contacting material; please note the media density in the measurement (except water);
2. If the product is installed in the thunderstorm area, we suggest to install the lightning-proof protection device to protect the transmitter. Please be sure good grounding as well;
3. If the user has special requirement, please feel free to contact our company.

φ22mm Small Size Submersible Level Transmitter MPM489WZ3



Applications

- Petroleum industry
- Chemical industry
- Power plant
- Urban water supply and drainage
- Hydrological exploration

Features

- The top shell cap is removable to prevent accidental damage to the diaphragm and facilitate regular cleaning
- φ22mm small size

Introduction

MPM489WZ3 uses high performance pressure sensor as sensing element, It could measure liquid static pressure that is positive proportional to level depth precisely, and transform pressure signal into standard current/voltage signal output by amplifier circuit to measure accurate level depth. The product has high accuracy, compact size, easy installation, can be submersible into the liquid directly to measure level and media temperature from transmitter bottom to the liquid surface.

Specifications

Range	0mH ₂ O ~ 1mH ₂ O...7mH ₂ O
Overpressure	≤ 2 times FS
Accuracy	±1%FS
Long-tem Stability	±0.5% FS/year
Compensated Temperature	0°C ~ 50°C
Application Temperature	-20°C ~ 70°C (cable material: PE, PVC)
	-20°C ~ 80°C (cable material: PUR)
Storage Temperature	-20°C ~ 85°C
Protection Rating	IP68
Weight	≤150g

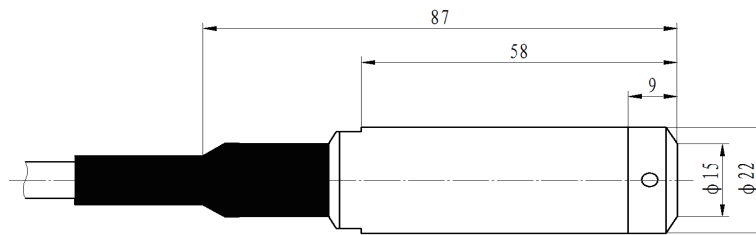
Output Signals

Output Signal	Power Supply	Output Format	Load Resistance
4mA~20mA DC(E)	11V~28V DC	2-wire	$\leq(U-11)/0.02(\Omega)$
0.5V~4.5V DC(K2)		3-wire	$\geq 10k\Omega$

Note: a temperature output can be attached when voltage output.

Outline Dimensions

unit: mm



Electrical Connection

Color	2-wire	3-wire
Red	+V	+V
White	null	+OUT
Black	0V/+OUT	GND
Blue (for temperature output only)	null	Tout (+)
Brown (for temperature output only)	null	Tout (-)
Green (for temperature output only)	null	EARTH

Material

Isolated Diaphragm: SS 316L

Housing: SS 304/SS 316L

Cable: PE/PUR/PVC

Ordering Guide

MPM489WZ3	Small Size Level Transmitter						
	Range	Measurement Range 0mH ₂ O ~ 1mH ₂ O...7m H ₂ O					
	[0 ~ XmH ₂ O]L	X: actual measured range, L: cable length, recommended cable length L=X+(1~2)m					
		Code	Output Signal				
		E	4mA~20mA DC				
		K	0.5V~4.5V DC				
		Code	Material				
			Isolated Diaphragm Housing				
		22	SS 316L SS 304				
		24	SS 316L SS 316L				
		25	Tantalum SS 304				
		Code	Junction Box				
		null	no junction box				
		Yb	Aluminum junction box without display				
		Yc	MS200 waterproof junction box				
		Yd	PD140 lightning-proof junction box				
		Ye	junction box (with or without display)				
		Code	Display Indicator ^① (for Ye junction box only)				
		null	no display indicator				
		M1	0% ~ 100% linear indicator				
		M6	4 digits LED digital indicator				
		M7	4 digits LCD digital indicator				
		Code	Process Connection				
		null	no special process connection				
		F1	fixed flange				
MPM489WZ3	[0 ~ 5mH ₂ O]6	E	22	Ye	M6	F1	Complete Type Specification

Ordering Notes

- "①", only 4mA~20mA output product is available when Ye junction box with digital indicator.
- When ordering the transmitter with M6 or M7 indicator, power supply should $\geq 16V$ DC.
- Environmental temperature should be $-20^{\circ}C \sim 70^{\circ}C$ when ordering the transmitter with M6 indicator, environmental temperature should be $-10^{\circ}C \sim 60^{\circ}C$ when ordering the transmitter with M7 indicator, indicator setting can refer to our indicator lectotype, which can be found on our company's website.
- Cable material is available for 3 types: PE cable is provided as default; if other material is needed, please specify in the order.
- The protection rating of junction boxes are IP65.
- The measured media should be compatible with the wetted material and the measured media density except water needs to be specified on contract.
- If the product is installed in a thunderstorm area, a lightning protection device is required and be sure that the product and the power are reliably earthed, which can efficiently prevent the level sensor from lightning damage.
- If metrology verification certificate is needed or there are other requirements, please contact us and specify it in the order.

φ17mm Small Size Submersible Level Transmitter MPM489WZ4



Applications

- Medicine
- Metallurgical industry
- Power plant
- Urban water supply and drainage
- Hydrological exploration

Features

- All-in-one structure, no external adjustment required
- Outer diameter φ17mm small volume products

Introduction

MPM489WZ4 is a Φ17mm diameter fully sealed submersible level transmitter based on diffused-silicone principle. It consists of a high stable and reliable piezoresistive pressure sensing element and the special PCB component as well as the stainless steel housing. Its integrated construction and standardized signal output greatly facilitate the operation and automation control at work sites. The special vented cable being hermetically connected with the transmitter housing allows the transmitter for long term use in the liquids that are compatible with the transmitter construction material.

Specifications

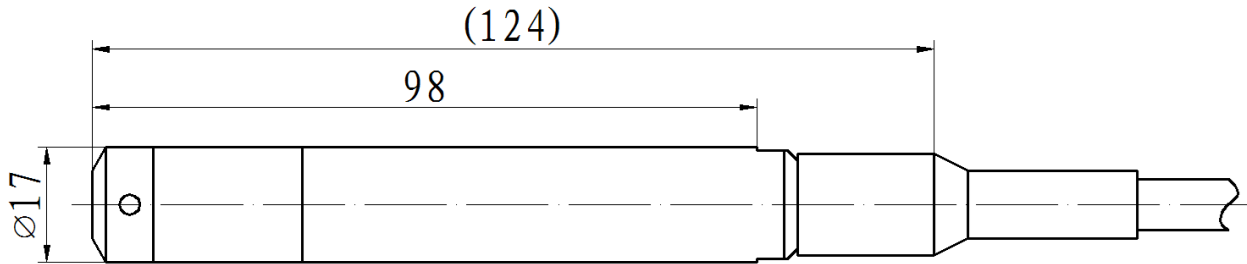
Range	0mH ₂ O ~ 10mH ₂ O...200mH ₂ O
Overpressure	≤ 2 times FS
Accuracy	±0.5%FS
Zero Thermal Drift	±0.02% FS/°C
Span Thermal Drift	±0.05% FS/°C
Long-tem Stability	Range> 20mH ₂ O, ±0.2% FS/ year
	Range≤ 20mH ₂ O, 20mmH ₂ O/ year
Application Temperature	-10°C ~ 70°C
Storage Temperature	-20°C ~ 85°C
Protection Rating	IP68
Weight	≤110g

Output Signals

Output Signal	Power Supply	Output Format	Load Resistance
4mA~20mA DC(E)	11V~28V DC	2-wire	$\leq(U-11)/0.02(\Omega)$

Outline Dimensions

unit: mm



Electrical Connection

Color	2-wire
Red	+V
Black	0V/+OUT

Material

Isolated Diaphragm: SS 316L/Tantalum

Housing: SS 304/SS 316L

Cable: PE/PUR/PVC

Ordering Guide

MPM489WZ4	Small Size Level Transmitter						
	Range	Measurement Rang 0mH ₂ O ~ 10mH ₂ O...200m H ₂ O					
	[0 ~ XmH ₂ O]L	X: actual measured range, L: cable length, recommended cable length L=X+(1~2)m					
	Code	Output Signal					
	E	4mA~20mA DC					
	Code	Material					
		Isolated Diaphragm			Housing		
	22	SS 316L			SS 304		
	24	SS 316L			SS 316L		
	25	Tantalum			SS 304		
	Code	Junction Box					
	null	no junction box					
	Yb	Aluminum junction box without display					
	Yc	MS200 waterproof junction box					
	Yd	PD140 lightning-proof junction box					
	Ye	junction box (with or without display)					
	Code	Display Indicator ^① (for Ye junction box only)					
	null	no display indicator					
	M1	0% ~ 100% linear indicator					
	M6	4 digits LED digital indicator					
	M7	4 digits LCD digital indicator					
	Code	Process Connection					
	F1	fixed flange					
MPM489WZ4	[0 ~ 5mH ₂ O]6	E	22	Ye	M6	F1	Complete Type Specification

Ordering Notes

- "①" digital display is available for Ye junction box , it only supports 4mA~20mA DC current output.
- When ordering the transmitter with M6 or M7 indicator, power supply should $\geq 16V$ DC.
- Environmental temperature should be $-20^{\circ}C \sim 70^{\circ}C$ when ordering the transmitter with M6 indicator, environmental temperature should be $-10^{\circ}C \sim 60^{\circ}C$ when ordering the transmitter with M7 indicator, indicator setting can refer to our indicator lectotype, which can be found on our company's website.
- Cable material is available for 3 types: PE cable is provided as default; if other material is needed, please specify in the order.
- The protection rating of junction boxes are IP65.
- The measured media should be compatible with the wetted material and the measured media density except water needs to be specified on contract.
- If the product is installed in a thunderstorm area, a lightning protection device is required and be sure that the product and the power are reliably earthed, which can efficiently prevent the level sensor from lightning damage.
- If metrology verification certificate is needed or there are other requirements, please contact us and specify it in the order.

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