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Интеллектуальный датчик избыточного давления MDM7000-GP/AP. Технические характеристики.



Range

Model	Nominal range	Minimum range	Lower (LRL)	Upper (URL)	Overload
GP	0.4bar	20mbar	-0.4bar	0.4bar	10bar
	2.5bar	125mbar	-1bar	2.5bar	40bar
	10bar	0.5bar	-1bar	10bar	60bar
	30bar	1.5bar	-1bar	30bar	150bar
	100bar	5bar	-1bar	100bar	200bar
	400bar	50bar	-1bar	400bar	800bar
AP	0.4bar	0.2bar	0bar	0.4bar	10bar
	2.5bar	0.5bar	0bar	2.5bar	40bar
	10bar	2bar	0bar	10bar	60bar
	100bar	10bar	0bar	100bar	200bar

LRV/URV setting: the lower limit value (LRV) and upper limit value (URV) are achieved between the upper and lower limits. If $|URV| \geq |LRV|$, $|URV|$ must be larger than the minimum pressure; if $|URV| \leq |LRV|$, $|LRV|$ must be larger than the minimum pressure. It is recommended to choose a range ratio with the minimum possible value.

Accuracy

Stated reference accuracy include best fit straight line(BFSL), hysteresis, and repeatability as per the standard and reference test conditions. Calibration temperature: 20°C ±5°C , based on Zero value.

Linear output accuracy	GP	TD≤5	±0.1%	0.4bar, 2.5bar
			±0.075%	10bar, 30bar, 100bar, 400bar
		TD>5	±(0.025+0.015TD) %	0.4bar, 2.5bar
			±(0.0025+0.0145TD) %	10bar, 30bar, 100bar, 400bar
	AP	TD≤5	±0.2%	0.4bar, 2.5bar
			±0.1%	10bar, 100bar
		TD>5	±(0.025+0.035TD) %	0.4bar, 2.5bar
			±(0.025+0.015TD) %	10bar, 100bar

Note:TD(Turn down) represents the range ratio, TD= Maximum range / Current range. [Maximum range = URL (range starts with 0, same as factory-calibrated range); Current range = SPAN (equivalent to |URV-LRV|)]
[Maximum range = URL (range starts with 0, same as factory-calibrated range); Current range = SPAN (equivalent to |URV-LRV|)].

Specifications

GP Accuracy	±0.075%, ±0.1%, ±0.2% URL, see the specifications for details
AP Accuracy	±0.1%, ±0.2% URL, see the specifications for details
GP Range	0.4bar~400bar, see the specifications for details
AP Range	0.4bar~100bar, see the specifications for details
Long-term stability	±0.1% Span/5 years
Ambient temperature effects	See the specifications for details
Voltage effects	When the power supply voltage changes within 10.5V/16.5V ^① ~55V DC, its zero point and range change should not exceed ±0.005% SPAN/V
Mounting position effects	Less than 4mbar at any position, which can be corrected by PV(primary value)=0 reset
Vibration effects	< 0.1% SPAN as per GB/T18271.3/IEC61298-3
Output signal	4mA~20mA DC, HART
IP rating	IP67
Weight	About : 1.56kg (without mounting bracket and process connection accessories)

Note: ^① The voltage of 16.5V is the voltage required for adding a 250 Ω resistor to the HART carrier.

Ambient Temperature Effects

Product Model	Effect	Range
GP	$\pm(0.075+0.0375TD) \% 10^{\circ}\text{C}$ of SPAN	0.4bar, 2.5bar, 10bar, 30bar, 100bar, 400bar
AP	$\pm(0.125+0.075TD) \% 10^{\circ}\text{C}$ of SPAN	0.4bar
	$\pm(0.115+0.065TD) \% 10^{\circ}\text{C}$ of SPAN	2.5bar, 10bar, 100bar

EMC Effects

SN	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference (case)	GB/T 9254.1/CISPR 32	30MHz~1000MHz	Qualified
2	Conducted interference (DC power port)	GB/T 9254.1/CISPR 32	0.15MHz~30MHz	Qualified
3	Electrostatic discharge (ESD) immunity test	GB/T 17626.2/IEC61000-4-2	8kV(Contact), 8kV(Air)	A
4	Radiated, radio-frequency, electromagnetic field immunity test	GB/T 17626.3/IEC61000-4-3	10V/m (80MHz~1GHz)	A
5	Power frequency magnetic field immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A
6	Electrical fast transient / burst immunity test	GB/T 17626.4/IEC61000-4-4	4kV(5/50ns, 100kHz)	A
7	Surge immunity test	GB/T 17626.5/IEC61000-4-5	1kV(line to line) 2kV (line to ground) (1.2/50μs)	A
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz~80MHz)	A

Note: At performance level A, the performance is normal within the limits of the technical specifications.

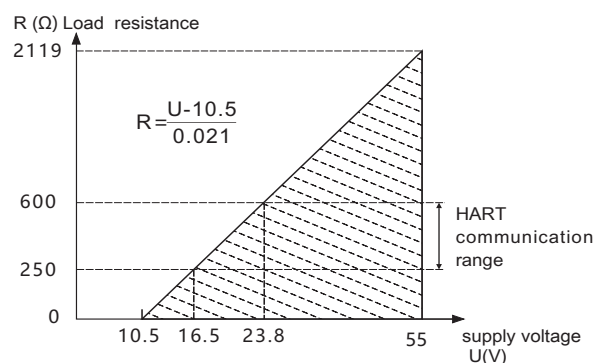
Environmental Conditions

Items	Conditions
Operating temperature	Without LCD display: $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$; with LCD display: $-20^{\circ}\text{C} \sim 70^{\circ}\text{C}$; with low temperature LCD display: $-40^{\circ}\text{C} \sim 60^{\circ}\text{C}$
Storage temperature	Without LCD display: $-40^{\circ}\text{C} \sim 100^{\circ}\text{C}$; with LCD display: $-40^{\circ}\text{C} \sim 85^{\circ}\text{C}$
Medium temperature ^①	Silicone oil filled: $-40^{\circ}\text{C} \sim 105^{\circ}\text{C}$
	Inert oil filled: $-45^{\circ}\text{C} \sim 160^{\circ}\text{C}$
Operating humidity	5%RH~100%RH@40°C

Note:^① This is related to the type of silicone oil filled and o- ring. The temperature range for non-silicone oil is limited by the lowest material temperature range in the system.

Power Supply and Load Requirements

Items	Conditions
Power supply voltage	HART communication protocol: 16.5V~55V DC ^①
	Intrinsically safe HART communication protocol: 18.5V~28V DC
Load resistance	0Ω~2119Ω ^② for operation mode; 250Ω~600Ω for HART communication
Transmission distance	<1000m
Power consumption	
4mA~20mA	≤500mW@24V DC, 20.8mA



Note:^① Non intrinsically safe power supply voltage can be selected as 10.5V. Please consult engineers for details.

^② $2119\Omega = (55V - 10.5V) / 21mA$

|| Time Index ||

Damping time constant: equals to the combined damping time of electronic components and sendor module
Electronic components damping time: 0s~100s configurable
Sensor module damping time(sensor isolated diaphragm and filled silicone oil):≤ 0.2s (Note: This item is related to the sensor type and whether there is a diaphragm component.)
Turn-on time: ≤6s
Factory reset time: ≤31s

|| Hazardous Area ||

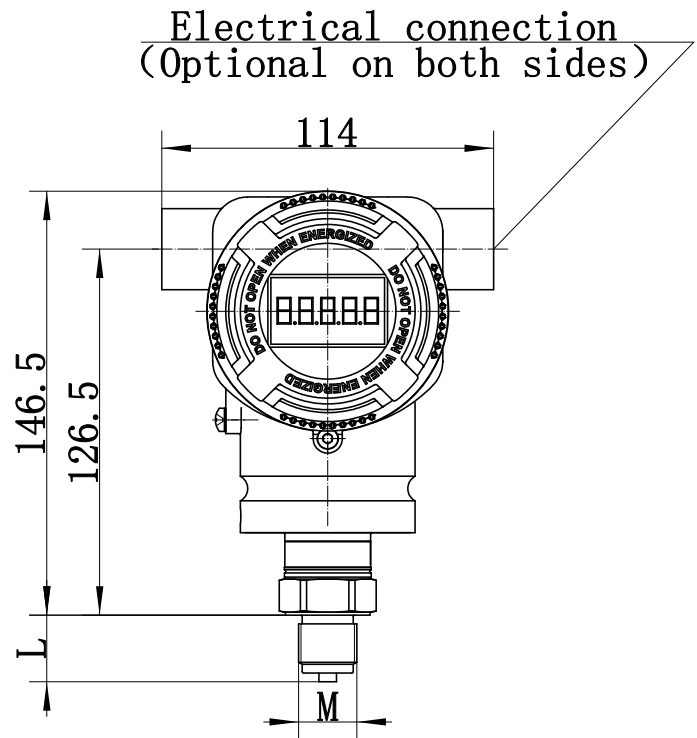
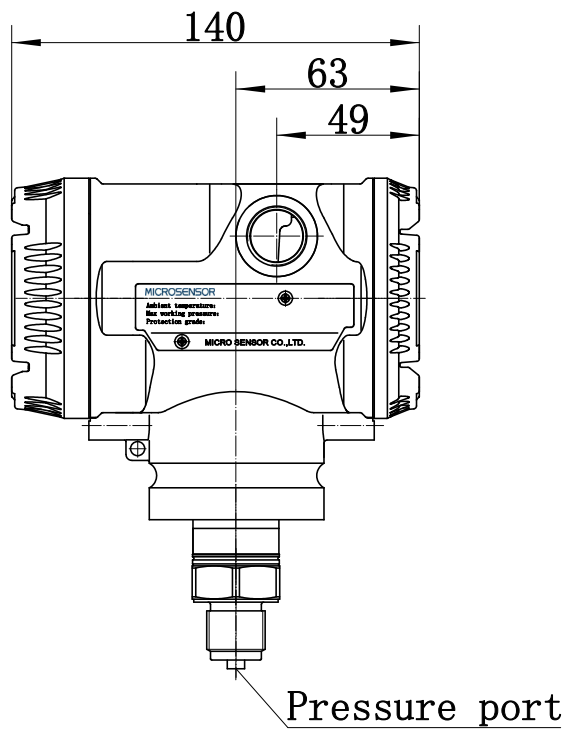
Hazardous area ^①	PCEC	Ex db IIC T6 Gb Ex ia IIC T4 Ga
	NEPSI	Ex tb III C T85°C Db
	ATEX	Ex ia IIC T4 Ga II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T80°C Db
	IECEX	Ex ia IIC T4 Ga Ex db IIC T6 Gb Ex tb IIIC T80°C Db
	CSA	Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C Class III Ex db IIC T6 Gb Class I, Zone 1, AEx db IIC T6 Gb Ex tb IIIC T80°C Db Zone 21, AEx tb IIIC T80°C Db
Note: ^① Please consult engineers for details.		

|| Dimensions ||

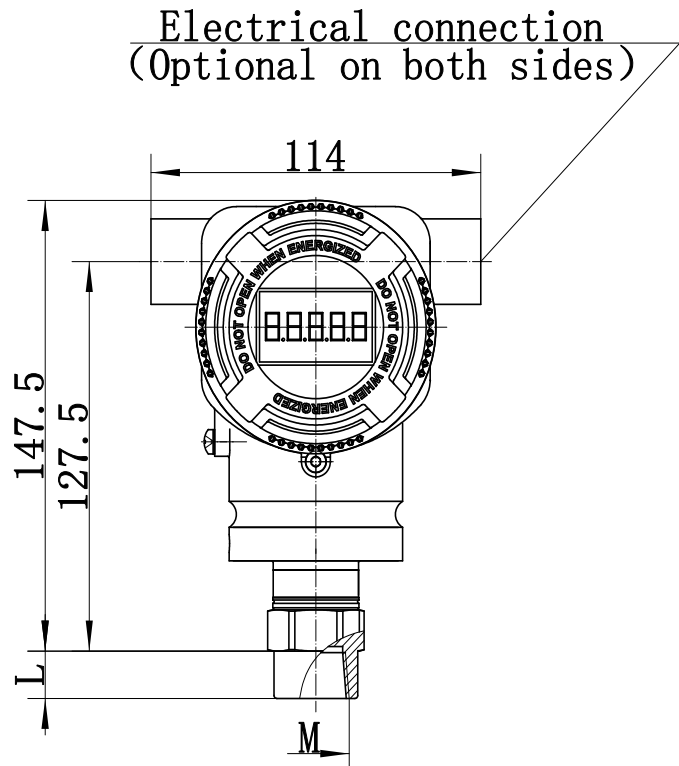
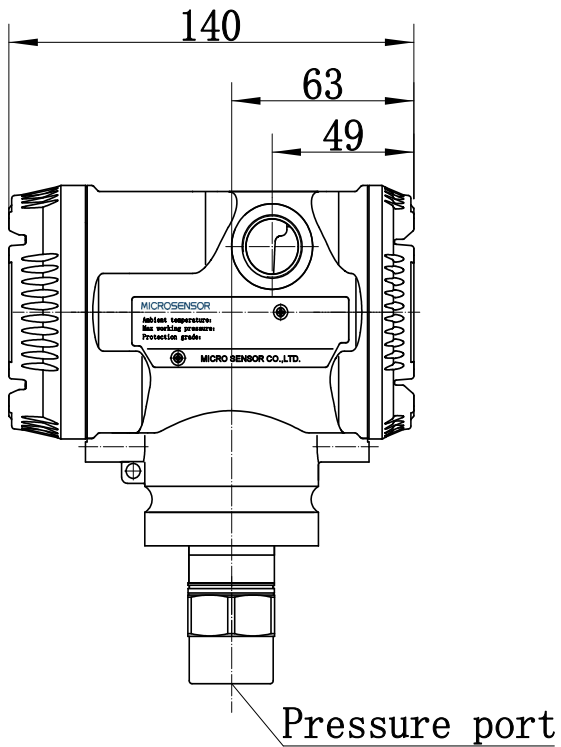
Unit: mm

Note: The gland head is sent as an accessory with the product when it leaves the factory, and it is to be installed by the user.

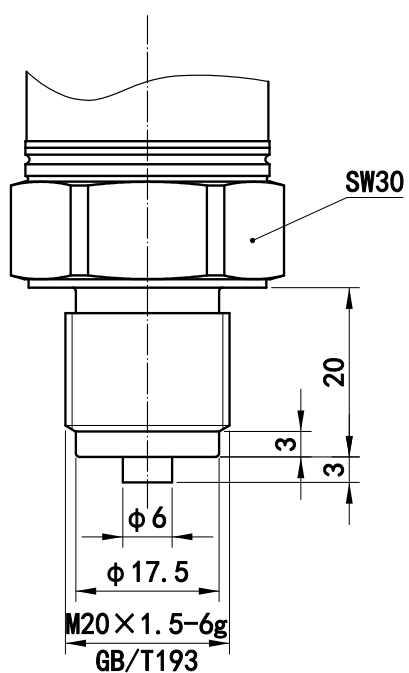
MDM7000 Transmitter With Display -Female (Same as Without Display)



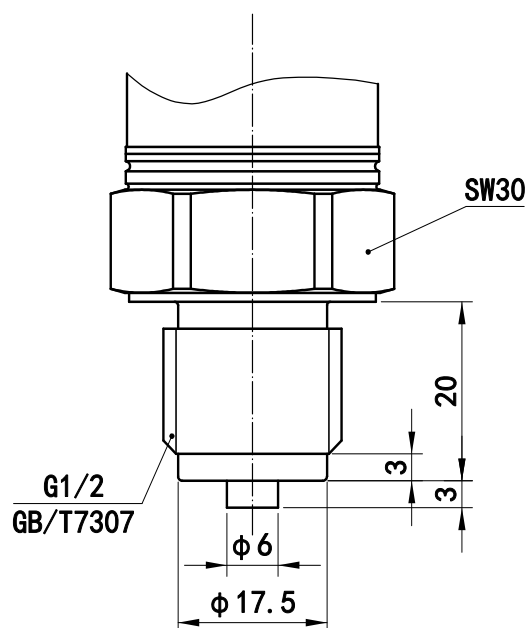
MDM7000 Transmitter With Display-male (Same as Without Display)



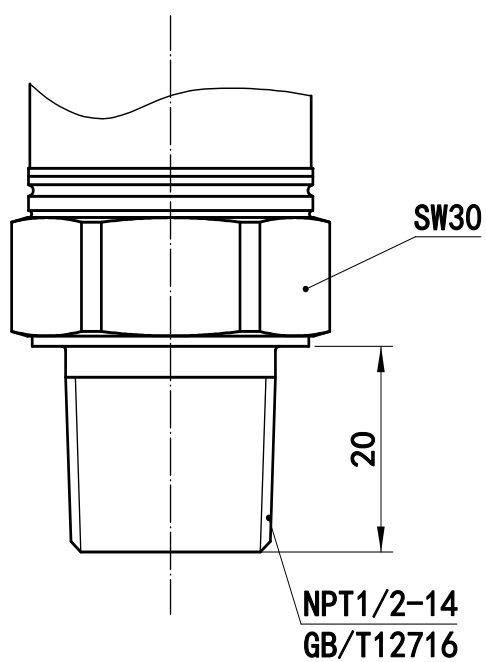
Process Connection (M)



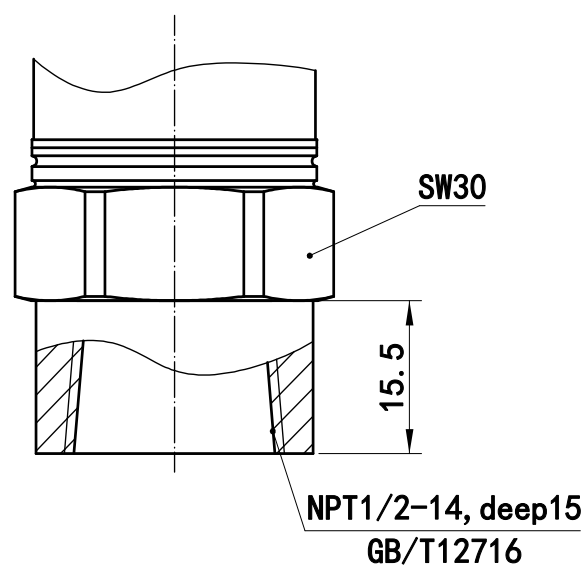
Process Connection (G)



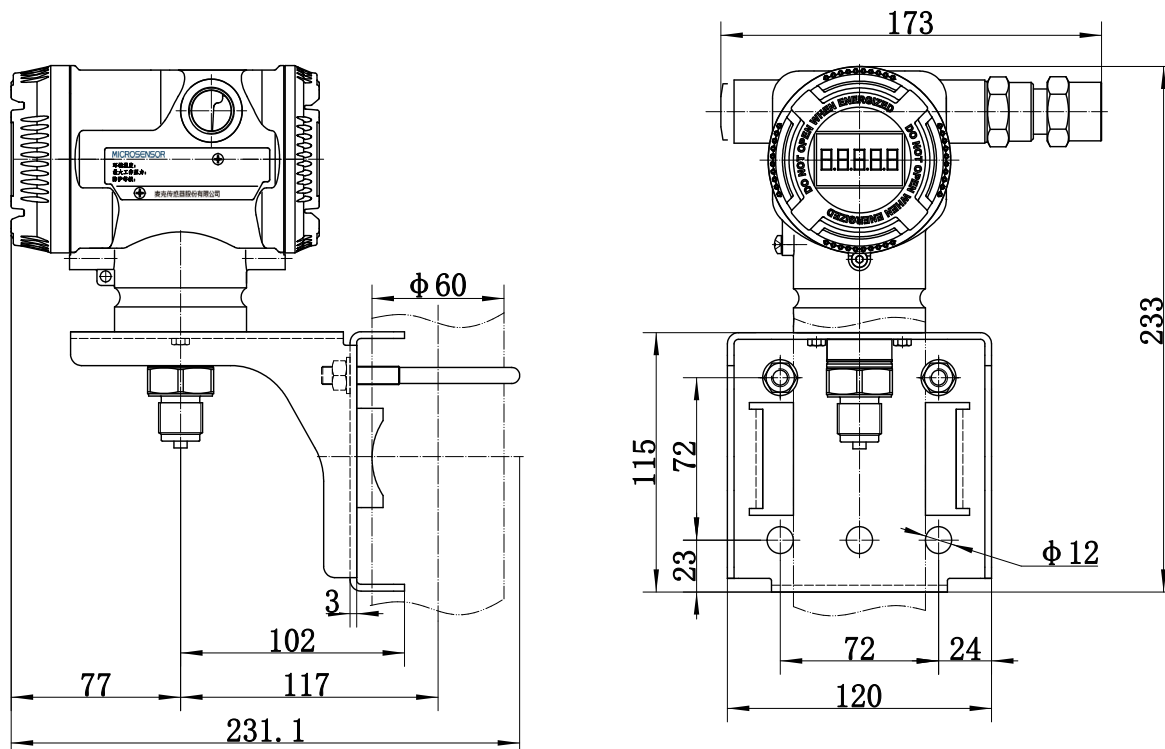
Process Connection (A)



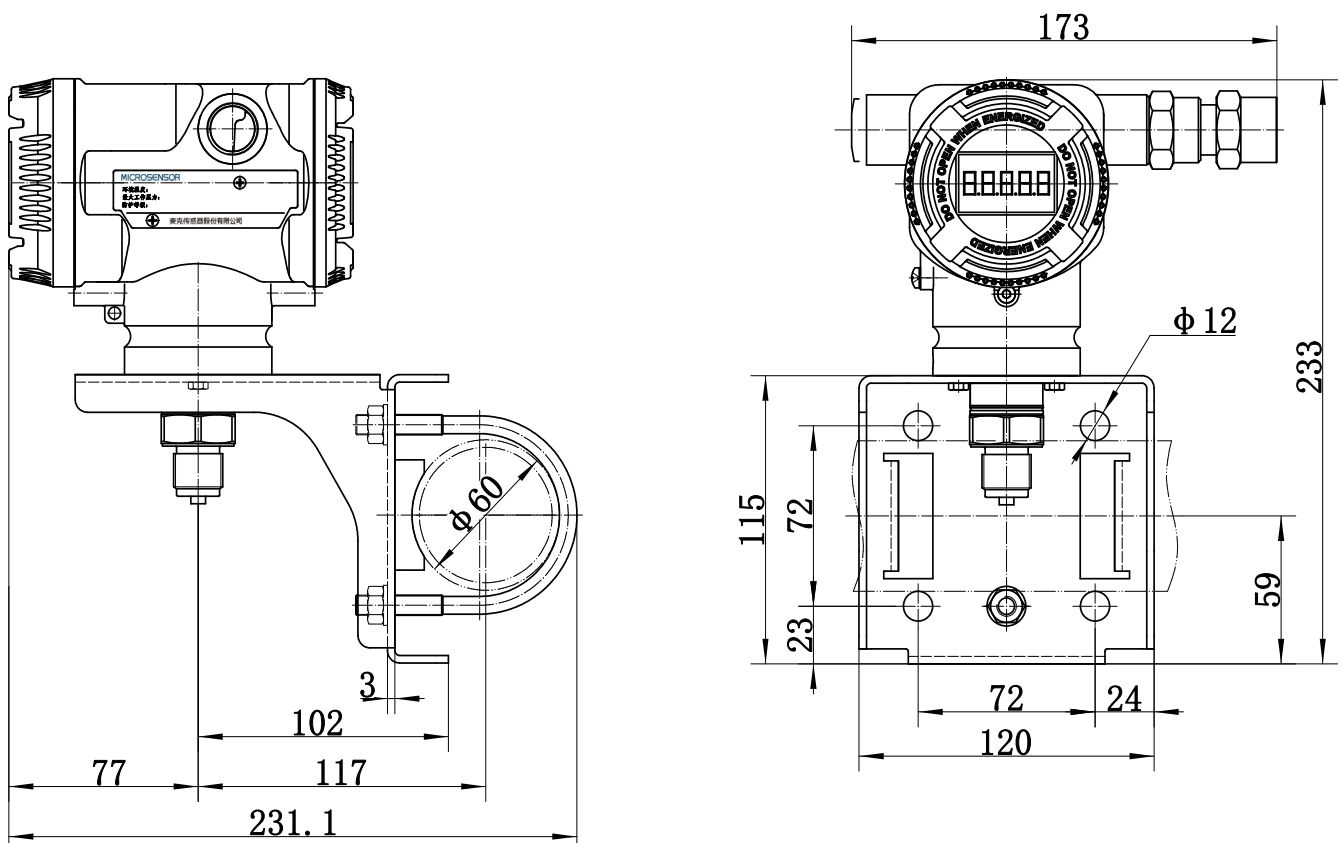
Process Connection (N)



G1 Mounting Bracket Accessories - Vertical Installation



G1 Mounting Bracket Accessories - Horizontal Installation



Order Guide

MDM7000-GP/AP Smart Pressure Transmitter

Items	Code	Description
MDM7000-GP	—	Smart Gauge Pressure Transmitter
MDM7000-AP	—	Smart Absolute Pressure Transmitter
—		
Application of hazardous area		
	1	China, Flameproof certificate, No.CE23.6650 Ex db IIC T6 Gb, GB/T3836.1-2021, GB/T3836.2-2021
	2	China, Intrinsically safe certificate, No.CE23.7688X Ex ia IIC T4 Ga, GB/T3836.1-2021, GB/T3836.4-2021
	3	China, Dust explosion-proof certificate, GYB24.1215X Ex tb III C T85°C Db, GB/T3836.1-2021, GB/T 3836.31-2021
	4	China, Flameproof, Intrinsically safe certificate
	A	CSA, Flameproof certificate
	B	CSA, Intrinsically safe certificate
	C	CSA, Flameproof, Intrinsically safe certificate
	E	ATEX, Flameproof certificate
	F	ATEX, Intrinsically safe certificate
	G	ATEX, Flameproof, Intrinsically safe certificate
	J	IECEx, Flameproof certificate
	K	IECEx, Intrinsically safe certificate
	L	IECEx, Flameproof, Intrinsically safe certificate
	0	Non-hazardous area
	T	Other certificate
Output signal	H	4mA~20mA DC, HART
Case	S	Stainless steel case with two outlet ports (F) M20×1.5
	U	Stainless steel case with two outlet ports (F) 1/2NPT
	P	Aluminum alloy case with two outlet ports (F) M20×1.5
	N	Aluminum alloy case with two outlet ports (F) 1/2NPT
Note: Please pay attention to the item of lithium battery (Code: LD)		
Waterproof/explosion-proof connector		
		Specification
		Material
		Applicable wire diameter
		IP rating
	1	M20×1.5 waterproof connector, with plug
	2	Non-flameproof adapter (F) M20×1.5, with plug
	3	Flameproof adapter (F) 1/2NPT, with plug
	4	Flameproof adapter (F) M20×1.5, with plug
	5	Flameproof adapter (F) G1/2, with plug
Note: Flameproof configuration is applicable to PCEC/ATEX/IECEx standards. Please contact the engineer if double sealing is required.		
Display	N	Without LCD display
	L	Display module, -20°C ~70°C
—		
Range		Nominal range
		Minimum range
		Lower (LRL)
		Upper(URL)
		Overload
GP	2	0.4bar
	3	2.5bar
	4	10bar
	5	30bar
	6	100bar
	7	400bar
AP	2	0.4bar
	3	2.5bar
	4	10bar
	6	100bar

Sensor structure	T	Direct mounted	
	H	Double flange diaphragm seals (Only for GP. Please consult engineers for details.)	
Wetted parts material			
		Diaphragm	Process connection thread
	A	316L	316L
	B	HC-276	316L
	C	Tantalum	316L
Note: The material for the case connection is 304			
Process connection			
	M	M20×1.5 Male, Φ3 vent hole, GB/T 193-2003	
	G	G1/2 Male, Φ3 vent hole, GB/T 7307-2001	
	A	1/2-14NPT Male, Φ6 vent hole, GB/T 12716-2011	
	N	1/2-14NPT Female, Φ6 vent hole, GB/T 12716-2011	
Fill oil	S	Silicone oil: -40℃ ~105℃	
	D	Inert oil:-45℃ ~120℃	
Factory calibration range	CAL	Provide Micro Sensor standard verification report based on the range, default linear output. Contract specifies: LRL - URL, display unit*	
Options		Description (Detailed specifications as following, multiple options or null)	
Mounting bracket accessories	/G1	Bending Bracket,316 SS	
Calibration report	/Q1	Provide the Micro Sensor verification data according to user requirements Contract specifies: LRL - URL, display unit and other requirements*	
Note: Standard format follows the Micro Sensor's specifications. Select this option and provide the template if the customer specifies a format.			
Damping time setting	/ST	Adjustable range 0s~100s, default 0s Contract specifies: Damping time*	
Fault alarm setting	/WH	High alarm current value, 20.8mA	
	/WL	Low alarm current value, 3.8mA, default	
	/WS	Other saturation current values, specified within the range of 3.6mA~3.8mA or 20mA~22mA Contract specifies: Saturation current value*	
Product certificate	/QE	Standard format follows the Micro Sensor's specifications. Select this option and provide the template if the customer specifies a format.	
Identification plate	/PT	Product is shipped with a identification plate Contract specifies: Identification number, not exceeding 16 characters*	
Integrated valve manifold	/VT	Differential pressure transmitter is factory assembled with Micro Sensor valve manifold. See attachment for order guide of valve manifold. Contract specifies: Complete model of Micro Sensor valve manifold*	
Leakage test report	/QS1	Nitrogen (N2) or air, 60mbar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
	/QS2	Nitrogen (N2) or air, 0.4bar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
	/QS3	Nitrogen (N2) or air, 2.5bar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
	/QS4	Nitrogen (N2) or air, 10bar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
	/QS5	Nitrogen (N2) or air, 30bar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
	/QS6	Nitrogen (N2) or air, 100bar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
	/QS7	Nitrogen (N2) or air, 400bar, pressure holding for 1 minute, provide Micro Sensor standard leakage test report	
Note: Test pressure is equal to the sensor range			
HART configuration	/H5	HART5 configuration	
Diaphragm with gold plated	/J1	Single diaphragm with gold plated (5μ)	



Oil-free treatment	/CL1	Degreasing and cleaning treatment of the wetted parts
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Note: Please check the fill oil. Determine whether the inert filling oil is required (code: D).

Certificates	/CS1	CCS, China Classification Society, TJ23PTB00014
	/CS2	DNV, Det Norske Veritas
	/CS3	BV, Bureau Veritas
	/CS4	ABS, American Bureau of Shipping
	/CS5	LR, Lloyd's Register of Shipping
	/CS6	KR, Korean Register of Shipping
	/CS7	NK, Nippon Kaiji Kyokai
	/CS8	RS, Russian Maritime Register of Shipping



Note: Except for the CCS certificate, please consult the engineer for others.

Lithium battery	/LD	General requirements for low copper and zinc in the lithium battery industry
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High-accuracy	/HAC	High-accuracy calibration according to the user's specified range Contract specifies: Range of use (within sensor's limit), LRL - URL, display unit, accuracy*
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Language	/LE	English nameplate, operation manual, product certificate, etc.
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Delivery service	/XM	Provide customer requested content according to project delivery standards
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Extended warranty period	/Y3	3-year warranty
	/Y5	5-year warranty

***Note:** The specifications required for these options should be specified in the contract.

Example: MDM7000-GP-0HS1L-2TAMS/G1- 【CAL: 0-0.4bar】

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