bar MDM7000-GP/AP

MICROSENSOR

AUTHORIZED DISTRIBUTOR

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 |≥ | LRV|, | URV | must be larger than the minimum pressure; if | URV |≤ | LRV |, | LRV | must be larger than the minimum pressure. It is recommended to choose a range ratio with the minimum possible value.

05.2024 | version 0001

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	±(0.075+0.0375TD) % 10°C of SPAN	0.4bar, 2.5bar, 10bar, 30bar, 100bar, 400bar
AP	±(0.125+0.075TD) % 10°C of SPAN	0.4bar
	±(0.115+0.065TD) % 10°C of SPAN	2.5bar,10bar,100bar

05.2024 | version 0001

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 : Performance level A: The performance is within the limits of normal technical specifications.

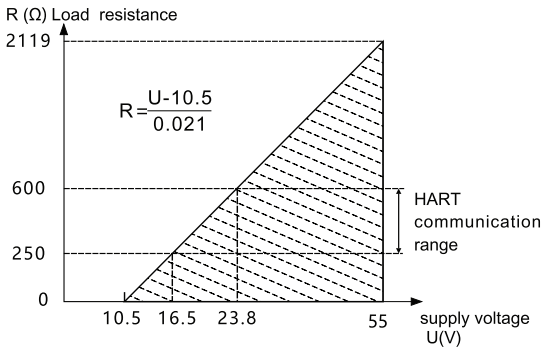
ENVIRONMENTAL CONDITIONS

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

Note: ① This item is related to the type of silicone oil used and the O- ring used; the non-silicone oil temperature range 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 2119Ω=(55V-10.5V)/21mA

05.2024 | version 0001

TIME INDEX

Damping time constant: equals to the combined damping time of electronic components and sensor 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

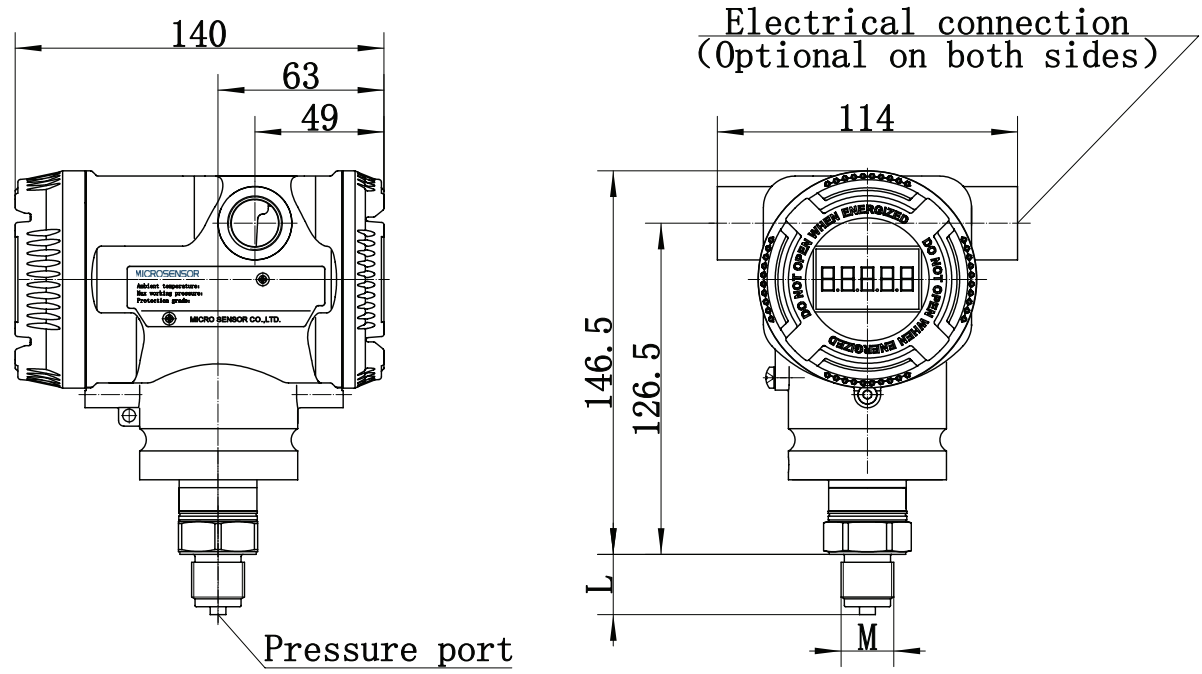
Hazardous area ①	PCEC	Ex db IIC T6 Gb Ex ia IIC T4 Ga
	NEPSI	Ex tb III C T85°C Db
	ATEX	Ex ia IIC T4 Ga II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T80°C Db
	IECEX	Ex ia IIC T4 Ga Ex db IIC T6 Gb Ex tb IIIC T80°C Db
	CSA	Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C 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.		

05.2024 | version 0001

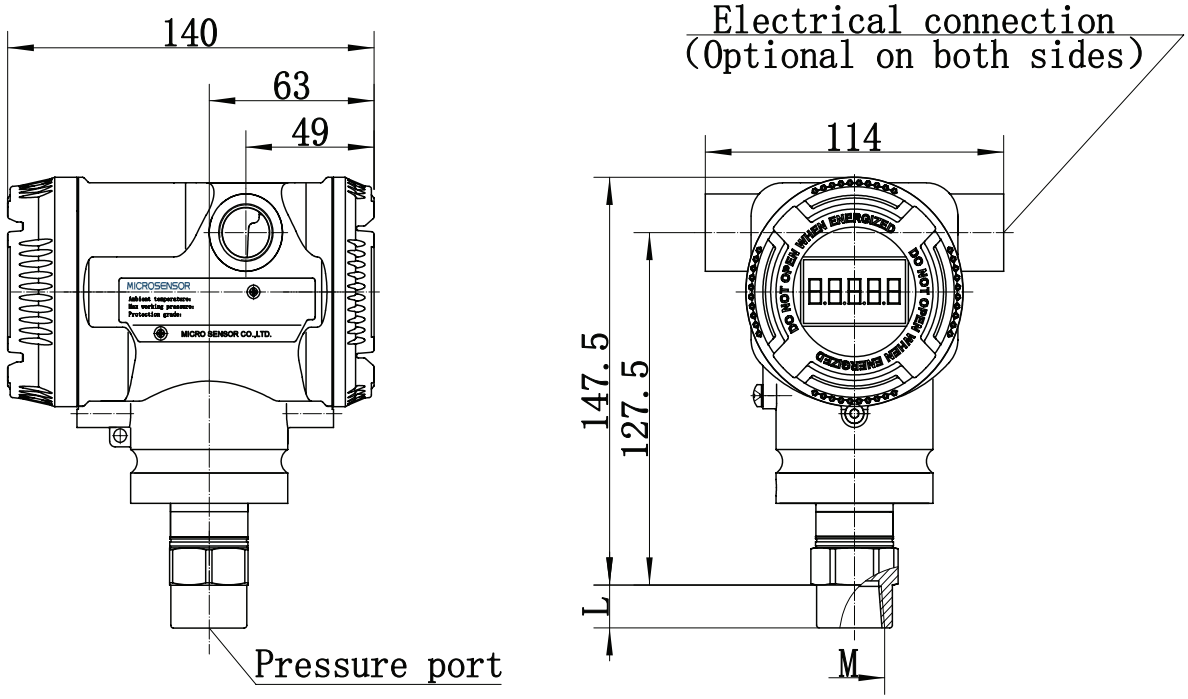
OUTLINE DIMENSIONS (UNIT:mm)

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)

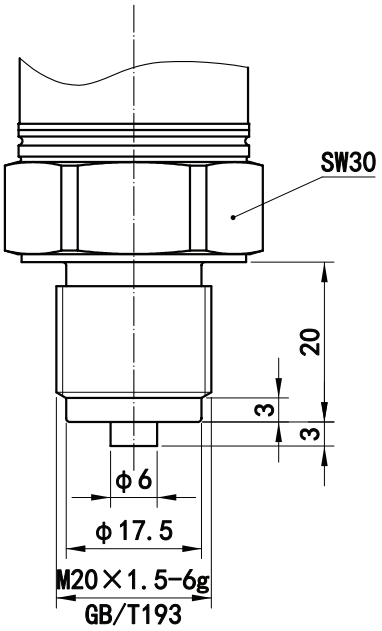


MDM7000 Transmitter With Display-male (Same as Without Display)

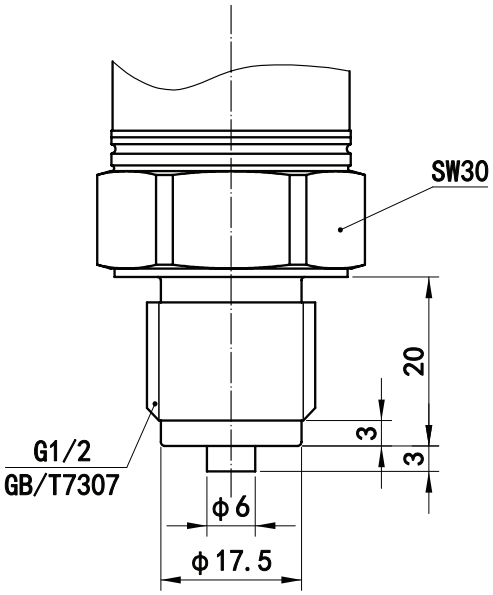


05.2024 | version 0001

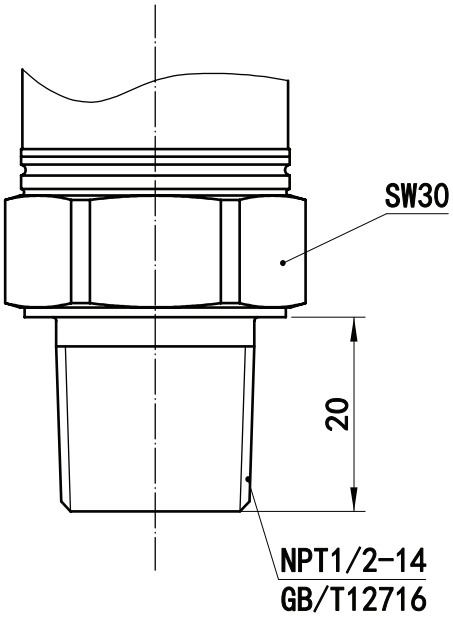
Process Connection (M)



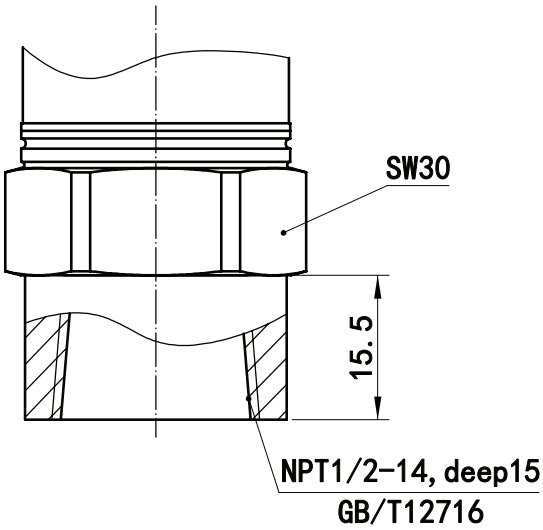
Process Connection (G)



Process Connection (A)

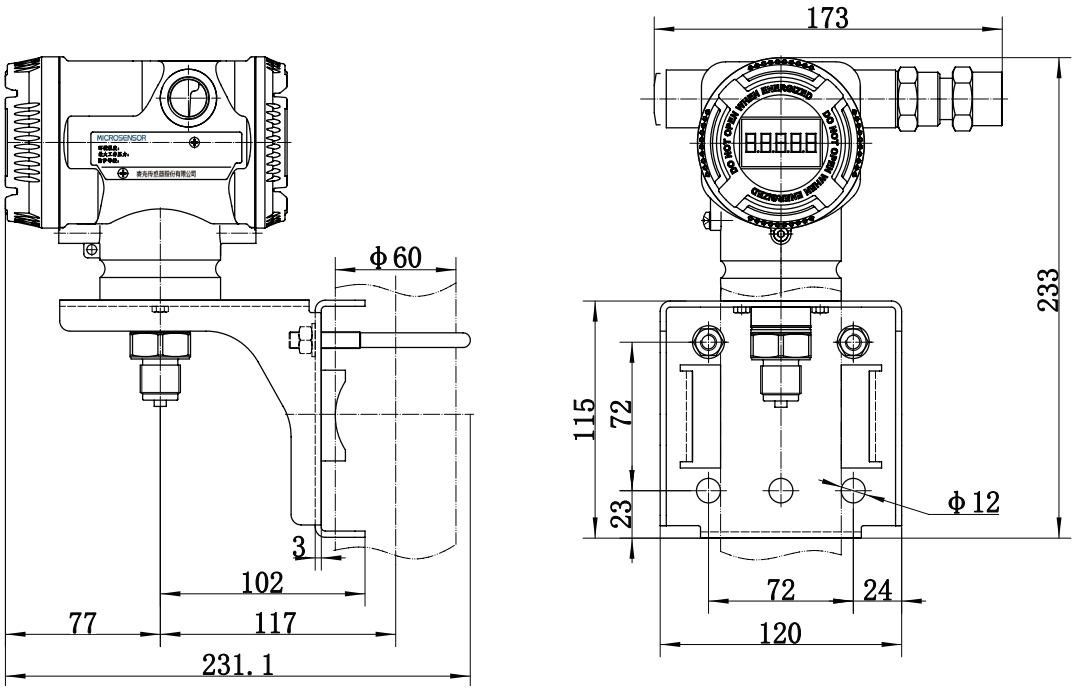


Process Connection (N)

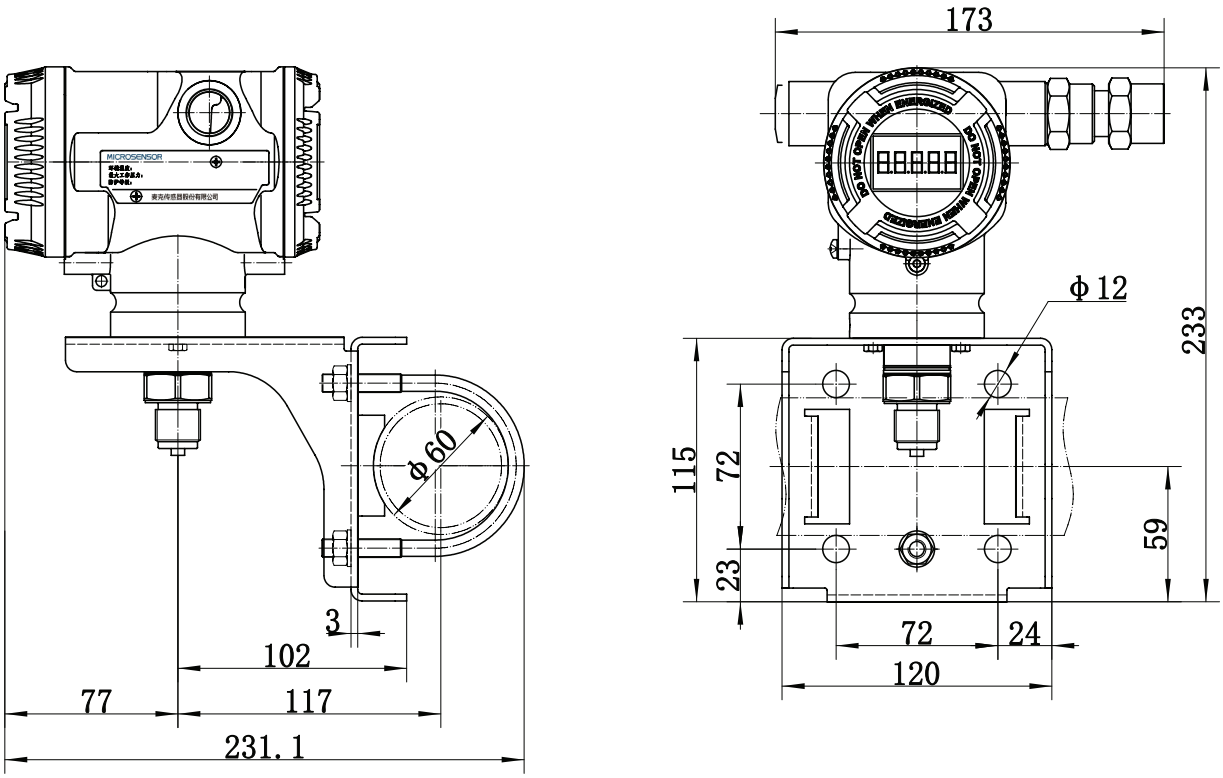


05.2024 | version 0001

G1 Mounting Bracket Accessories - Vertical Installation

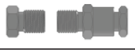
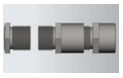


G1 Mounting Bracket Accessories - Horizontal Installation



05.2024 | version 0001

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 certificate, Intrinsically safe certificate	
	A	CSA, Flameproof certificate	
	B	CSA, Intrinsically safe certificate	
	C	CSA, Flameproof certificate, Intrinsically safe certificate	
	E	ATEX, Flameproof certificate	
	F	ATEX, Intrinsically safe certificate	
	G	ATEX, Flameproof certificate, Intrinsically safe certificate	
	J	IECEx, Flameproof certificate	
	K	IECEx, Intrinsically safe certificate	
	L	IECEx, Flameproof certificate, 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	PVC	6mm~8mm	IP67	
	2	Non-flameproof adapter (F) M20×1.5, with plug	316 SS	6mm~8mm	IP67	
	3	Flameproof adapter (F) 1/2NPT, with plug	316 SS	6mm~8mm	IP67	
	4	Flameproof adapter (F) M20×1.5, with plug	316 SS	6mm~8mm	IP67	
	5	Flameproof adapter (F) G1/2, with plug	316 SS	6mm~8mm	IP67	
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				
	—					

05.2024 | version 0001

Range						
		Nominal range	**Minimum range**	**Lower (LRL)**	**Upper (URL)**	**Overload**
GP	2	0.4bar	20mbar	-0.4bar	0.4bar	10bar
	3	2.5bar	125mbar	-1bar	2.5bar	40bar
	4	10bar	0.5bar	-1bar	10bar	60bar
	5	30bar	1.5bar	-1bar	30bar	150bar
	6	100bar	5bar	-1bar	100bar	200bar
	7	400bar	50bar	-1bar	400bar	800bar
AP	2	0.4bar	0.2bar	0bar	0.4bar	10bar
	3	2.5bar	0.5bar	0bar	2.5bar	40bar
	4	10bar	2bar	0bar	10bar	60bar
	6	100bar	10bar	0bar	100bar	200bar
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°C ~105°C
	D	Inert oil: -45°C ~120°C
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:** Fixed 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 value 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*

05.2024 | version 0001

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	
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	
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*	
Language	/LE	English nameplate, operation manual, product certificate, etc.	
Delivery service	/XM	Provide customer requested content according to project delivery standards	
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]			

The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

Althen is the innovative sensor expert that creates integrated sensor and measurement solutions for the creators of tomorrow | althensensors.com

We create integrated sensor and measurement solutions. In addition we offer services such as calibration, repairs, design & engineering, training and renting of measurement equipment.

Benelux sales@althen.nl
Germany/Austria/Switzerland info@althen.de
France info@althensensors.fr
Sweden info@althensensors.se
USA/Canada info@althensensors.com
Other countries info@althensensors.com