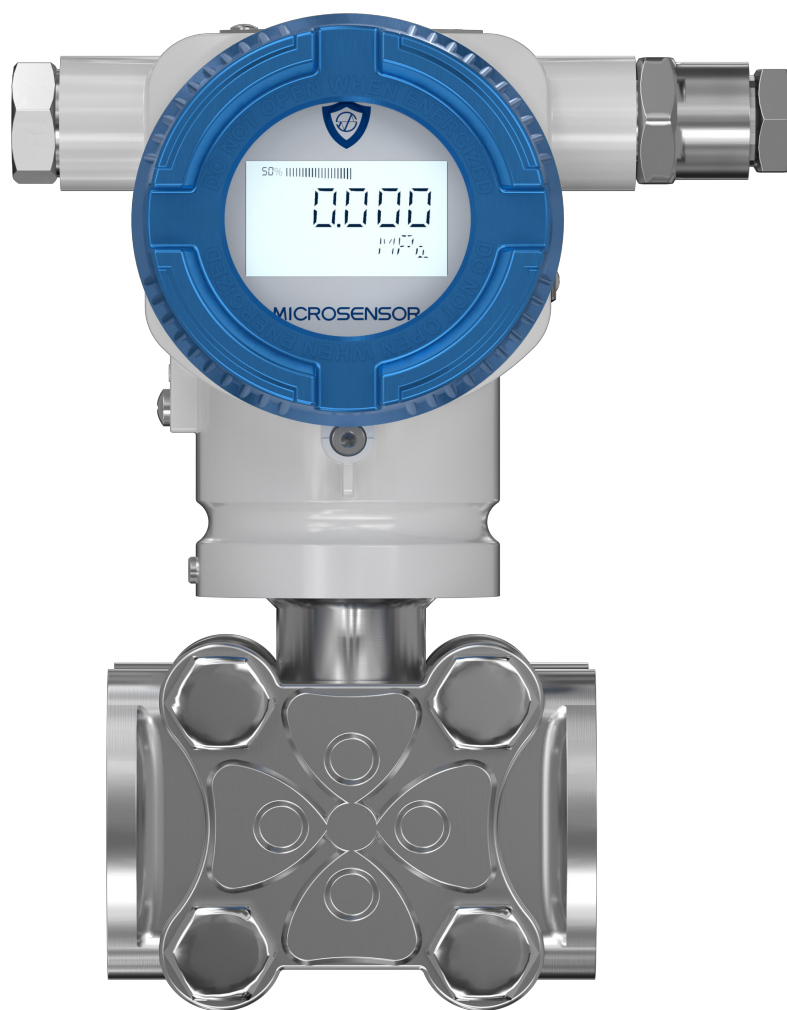


MDM7000-DP

Smart Differential Pressure Transmitter



Note: Some certificates are still pending.

Range

Normal Range	Minimum range	Lower (LRL)	Upper (URL)	Static pressure range	High-side overpressure	Low-side overpressure
20mbar	1mbar	-20mbar	20mbar	420bar	160bar	160bar
60mbar	10mbar	-60mbar	60mbar	420bar	250bar	250bar
0.4bar	20mbar	-0.4bar	0.4bar	420bar	250bar	250bar
2.5bar	25mbar	-2.5bar	2.5bar	420bar	250bar	250bar
10bar	0.1bar	-10bar	10bar	420bar	250bar	250bar
30bar	0.3bar	-30bar	30bar	420bar	250bar	250bar
100bar	1bar	-30bar	100bar	420bar	200bar	200bar

LRV/URV setting: The lower range value (LRV) and upper range value (URV) shall be set within the measurement range limits. When $|URV| \geq |LRV|$, $|URV|$ shall be greater than or equal to the minimum range; when $|URV| \leq |LRV|$, $|LRV|$ shall be greater than or equal to the minimum range. It is recommended to select a low range ratio.

Accuracy

1 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.

2 Total performance is based on combined errors of indoor temperature accuracy, ambient temperature effects and static pressure effects, calculated by the following formula: $\text{Total performance} = \pm \sqrt{(E1)^2 + (E2)^2 + (E3)^2}$;

E1=Indoor temperature accuracy E2=Ambient temperature effects E3=Static pressure effects

Linear output accuracy	TD ^① ≤5	±0.075%	20mbar, 60mbar ^②
		±0.05% ^③ , ±0.075%	0.4bar, 2.5bar, 10bar, 30bar, 100bar
	TD>5	±(0.001+0.0148TD) %	20mbar, 60mbar ^②
		±(0.0275+0.0095TD) %	0.4bar, 2.5bar, 10bar, 30bar, 100bar

Square root output accuracy is 1.5 times linear output accuracy.

Note: ^① TD (Turn down) refers to the range ratio, $TD = \text{Max. Range} / \text{Current Range}$. [Where: Max. Range = URL (Range starting from zero, identical to Factory Calibration Range); Current Range = SPAN (Equivalent to $|URV - LRV|$)]

^② 60mbar output accuracy of ±0.075% SPAN is only available for TD≤2.

^③ Optional linear output accuracy is 0.05%. Please consult MICROSENSOR for details.

Specifications

Accuracy	±0.05% ^① , ±0.075%URL
Range	20mbar~100bar, see the specifications for details
Turn down ratio	100:1
Long-term stability	±0.1% Span/10 years
Ambient temperature effects	At 60mbar, the total effect per 10°C is (0.1+0.05TD)% SPAN; For other ranges: total effect per 10°C : (0.075+0.0375TD)% SPAN
Voltage effects	Zero and span shifts shall not exceed ±0.005% URL/V for power supply variations within 18.3V~44V DC
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, IP66
Weight	Approx. 4kg (Excluding mounting bracket and process connection accessories)

Note: ^① Accuracy depends on the measuring range. Please consult MICROSENSOR for details.

Environmental Conditions

Items	Conditions
Ambient temperature ^①	Without LCD display: -50°C ~85°C ; with LCD display: -40°C ~70°C
Storage temperature	Without LCD display: -50°C ~100°C ; with LCD display: -40°C ~85°C
Sensor operating temperature ^②	-40°C ~105°C
Medium temperature ^③	Standard silicone oil (Medium temperature: -40°C ~105°C)
	Low temperature silicone oil (Medium temperature: -55°C ~85°C)
	Fluorinated oil (Medium temperature: -20°C ~85°C)

Ambient humidity	5%RH~100%RH@40°C
Note: ① For short-neck explosion-proof models, ensure that the enclosure surface temperature $\leq 80^{\circ}\text{C}$. If uncertain, the medium temperature shall not exceed the T6 (80°C) temperature class. ② For higher medium temperatures, heat dissipation accessories are available. Please consult MICROSENSOR for details. ③ The medium temperature at the diaphragm shall remain within the limits of the selected fill oil, sensor sealing, and sensor operating temperature range.	

Power Supply and Load Requirements

Items	Conditions	
Supply voltage	HART communication protocol/RS 485: 18.3V~44V DC ①	
	Intrinsically safe HART communication protocol: 18.3V~30V DC	
Load resistance	0Ω~1476Ω ② for operation mode; 250Ω~800Ω for HART communication	
Transmission distance	<1000m	
Power consumption		
4mA~20mA	≤500mW@24V DC, 20.8mA	
Note: ① When HART communication is not used, the minimum supply voltage can be 13V. Please consult engineers for details. ② 1476Ω= (44V-13V) /21mA		

EMC Effects

SN	Test items	Standards	Test Conditions	Performance Level
1	Radiated interference (Housing)	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 immunity test	GB/T 17626.2/IEC61000-4-2	8kV (contact), 15kV (air)	B
4	Radiated, radio-frequency, electro-magnetic 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	B
6	Electrical fast transient / burst immunity test	GB/T 17626.4/IEC61000-4-4	4kV (5/50ns, 100kHz)	B
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	2kV (line to line) 4kV (line to ground) (1.2/50μs)	B
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V/m (150kHz~80MHz)	A

Note: Performance level A: Normal operation within specified limits

Performance level B: Temporary performance degradation permitted, with automatic recovery and no data loss

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
Response time: ≤100ms

|| Static Pressure Effects ||

Range	Effects
Range ≤ 0.1bar	δ≤±0.5%F.S./100bar
0.1bar < Range ≤ 0.4bar	δ≤±0.1%F.S./100bar
0.4bar < Range ≤ 2.5bar	δ≤±0.075%F.S./100bar
2.5bar < Range ≤ 10bar	δ≤±0.075%F.S./100bar
10bar < Range ≤ 30bar	δ≤±0.15%F.S./100bar
30bar < Range ≤ 100bar	δ≤±0.03%F.S./100bar

|| Hazardous Area ||

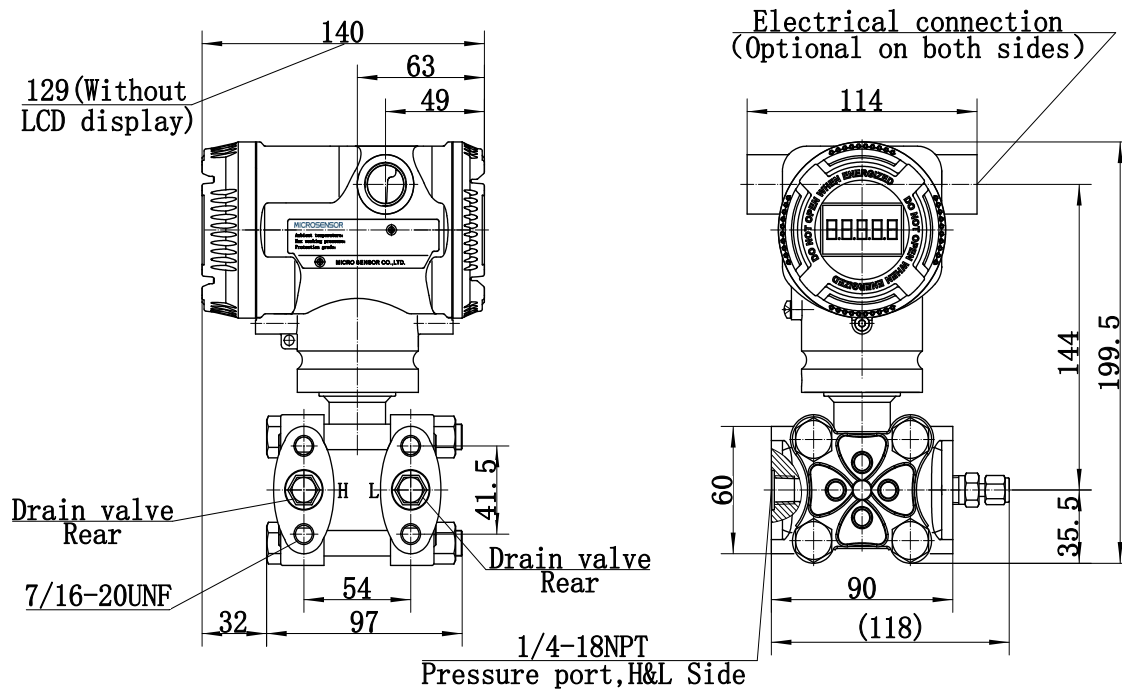
Hazardous area	Ex Standards (association)	Mark	Standard
	Ex Intrinsically safe (PCEC)	Ex ia IIC T4 Ga	GB/T 3836.1-2021 GB/T 3836.4-2021
	Ex Flameproof (PCEC)	Ex db IIC T6 Gb	GB/T 3836.1-2021 GB/T 3836.2-2021
	Ex Dust explosion-proof (NEPSI)	Ex tb IIC T85°C Db	GB/T 3836.1-2021 GB/T 3836.31-2021
	ATEX Intrinsically safe (CSA)	II 1G Ex ia IIC T4 Ga	EN IEC 60079-0:2018 EN 60079-11:2012
	ATEX Flameproof (CSA)	II 2G Ex db IIC T6 Gb	EN IEC 60079-0:2018 EN 60079-1: 2014
	ATEX Dust explosion-proof (CSA)	II 2D Ex tb IIIC T80°C Db	EN IEC 60079-0:2018 EN 60079-31: 2014
	IECEx Intrinsically safe (CSA)	Ex ia IIC T4 Ga	IEC 60079-0: 2017 IEC 60079-11: 2011
	IECEx Flameproof (CSA)	Ex db IIC T6 Gb	IEC 60079-0: 2017 IEC 60079-1: 2014
	IECEx Dust explosion-proof (CSA)	Ex tb IIIC T80°C Db	IEC 60079-0: 2017 IEC 60079-31: 2022
	NA Intrinsically safe (CSA)	Class I, Division 1, Groups A, B, C and D T4 Ex ia IIC T4 Ga Class I, Zone 0, AEx ia IIC T4 Ga	CSA C22.2 No. 60079-0:19 CAN/CSA C22.2 No. 60079-11:14(R2023) CAN/CSA C22.2 No. 61010-1-12, UPD1:2015, UPD2:2016, AMD1:2018 ANSI/UL 60079-0-2020 Seventh Edition ANSI/UL 60079-11-2018 (R2023)Sixth Edition ANSI/UL 913-2022 Eighth Edition UL 61010-1, 3rd Edition (2012), AMD1: 2018
	NA Flameproof (CSA) ①	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	CAN/CSA C22.2 No.61010-1-12. UPD1:2015. UPD2:2016.AMD1:2018 CSA C22.2 No.25-17 (R2022) CAN/CSA C22.2 No. 30:20 + UPD1 2023 (R2025) CAN/CSA C22.2 No. 60079-0:19 (R2024) CAN/CSA-C22.2 No.60079-1:16 (R2021) CAN/CSA-C22.2 No.60079-31:25 CAN/CSA C22.2 No. 94.2:20 UL 61010-1. 3rd Edition (2012). AMD1:2018 FM 3600:2022 FM 3615:2022 FM 3616:2022 ANSI/UL 60079-0-2020 Seventh Edition ANSI/UL 60079-1-2020 Seventh Edition ANSI/UL 60079-31-2015 Second Edition ANSI/UL 50E-2020 Third Edition
	EAC Explosion-proof	1Ex db IIC T6 Gb 0Ex ia IIC T4 Ga	TP TC012/2011 GOST 31610.0-2019 GOST 31610.11-2014 GOST IEC 60079-1-2013
Note: Please consult MICROSENSOR for details.			

Dimensions

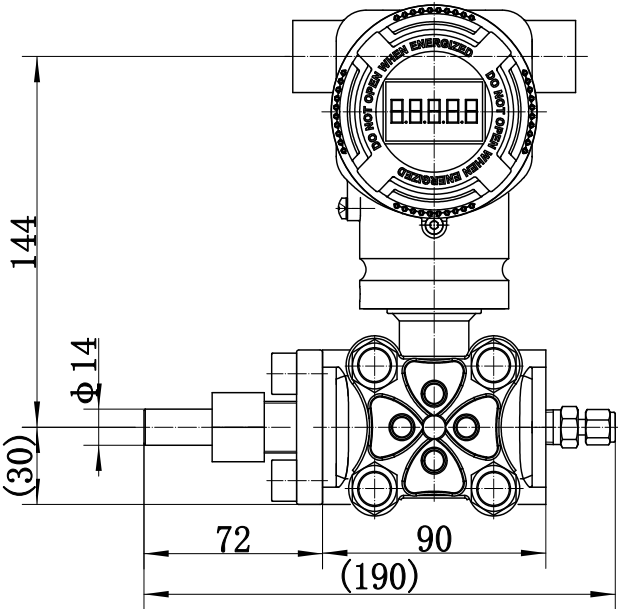
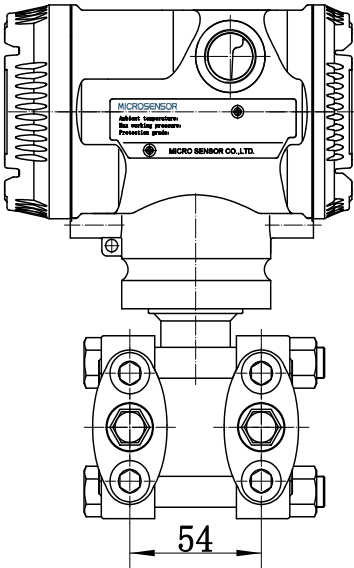
Unit: mm

Note: The cable gland is supplied as an accessory and is to be installed by the user.

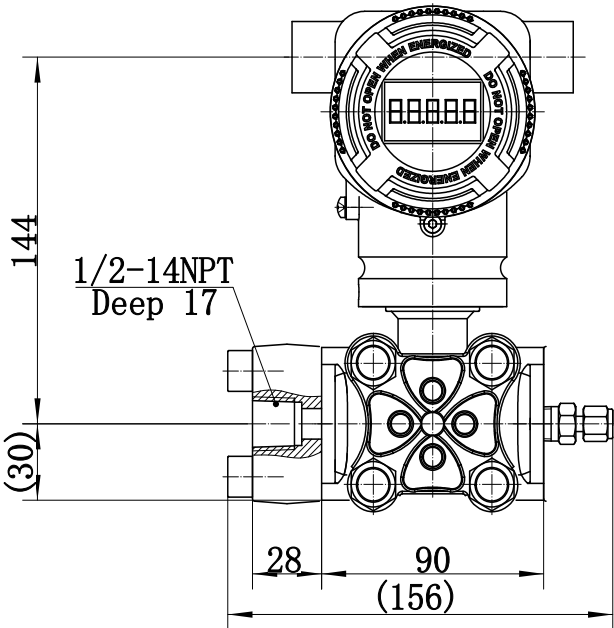
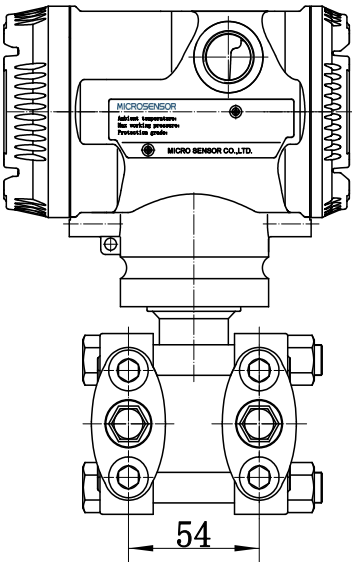
MDM7000 Transmitter With Display



Process Adapter D3 (Code: D3)



Process Adapter D4 (Code: D4)



|| Mounting Bracket Illustration ||

Pipe Mounting (Codes: G10, G11, G12)

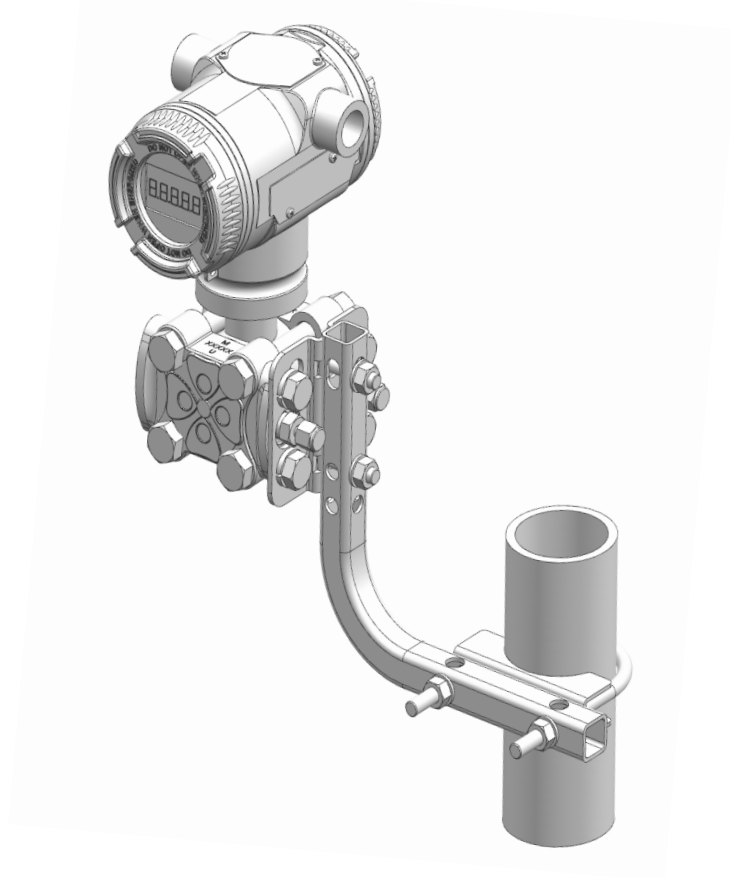
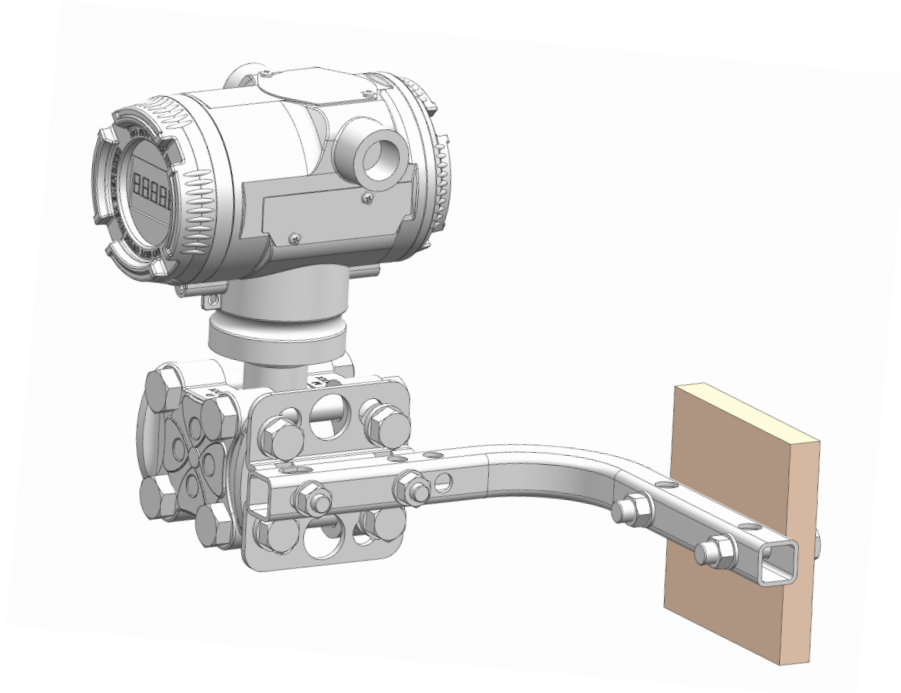


Plate Mounting (Codes: G10, G11, G12)





Order Guide

MDM7000-DP Smart Differential Pressure Transmitter

Items	Code	Description
MDM7000-DP	—	Smart Differential Pressure Transmitter

Basic options

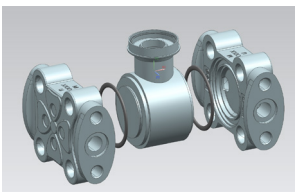
Application of hazardous area	1	China, Flameproof, CE23.6650 Ex db IIC T6 Gb, GB/T3836.1-2021, GB/T3836.2-2021		
	2	China, Intrinsically safe, CE23.7688X Ex ia IIC T4 Ga, GB/T3836.1-2021, GB/T3836.4-2021		
	3	China, Dust ignition protection, GYB24.1215X Ex tb III C T85°C Db, GB/T3836.1-2021, GB/T 3836.31-2021		
	4	China, Flameproof, Intrinsically safe		
	5	China, Flameproof, Dust ignition protection, Intrinsically safe		
	A	CSA, Flameproof, Dust ignition protection, CSA26CA80192884X 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		※
	B	CSA, Intrinsically safe, CSA24CA80156531X Class I, Division 1, Groups A, B, C and D T4 Ex ia IIC T4 Ga Class I, Zone 0, AEx ia IIC T4 Ga		
	C	CSA, Flameproof, Intrinsically safe		※
	E	ATEX, Flameproof, Dust ignition protection, CSANe 25ATEX1107X II 2G Ex db IIC T6 Gb, II 2D Ex tb IIIC T80°C Db		
	F	ATEX, Intrinsically safe, CSANe 24ATEX1178X II 1G Ex ia IIC T4 Ga		
	G	ATEX, Flameproof, Intrinsically safe		
	J	IECEX, Flameproof, Dust ignition protection, IECEX CSA 25.0059X Ex db IIC T6 Gb, Ex tb IIIC T80°C Db		
	K	IECEX, Intrinsically safe, IECEX CSA 24.0045X Ex ia IIC T4 Ga		
	L	IECEX, Flameproof, Intrinsically safe		
	M	EAC, Explosion-proof, RU C-CN.AK58.B.05884/24 1Ex db IIC T6 Gb, 0Ex ia IIC T4 Ga		
	0	Non-hazardous area		
Output signal	H	4mA~20mA DC, HART		
	V	1V~5V DC low power (0.1%FS accuracy)		
	R	Modbus-RS485		
Housing	S	Cast 316L SS housing, 2 × M20×1.5 female entries		
	U	Cast 316L SS housing, 2 × 1/2 NPT female entries (no glands)		
	P	Aluminum alloy housing (polyester resin coated), 2 × M20×1.5 female entries		
	N	Aluminum alloy housing (polyester resin coated), 2 × 1/2 NPT female entries (no glands)		
Note: 1/2 NPT female entries (without glands) for direct connection with explosion-proof conduits. 304 SS nameplate as standard; consult MICROSENSOR for other materials				
Glands & adapters	Specification	Material	Applicable wire diameter	IP rating
	0	None (No cable glands)		
	A	Single-ended flameproof plug, M20×1.5	316 SS	
	B	Single-ended flameproof plug, 1/2NPT	316 SS	
	1	M20×1.5 Cable gland (watertight) with plug	PVC	6mm~12mm IP67
	2	Non-flameproof adapter M20x1.5 (M) to M20x1.5 (F) , with plug	316 SS	6mm~8mm IP67

3	Flameproof adapter M20x1.5 (M) to 1/2 NPT (F) , with plug	316 SS	6mm~12mm	IP67
4	Flameproof adapter M20x1.5 (M) to M20x1.5 (F) , with plug	316 SS	6mm~12mm	IP67
5	Flameproof adapter M20x1.5 (M) to G1/2 (F) , with plug	316 SS	6mm~12mm	IP67

Note: Flameproof configurations are compliant with PCEC, ATEX, and IECEx standards. Flameproof adapters are CCC Ex certified. Please consult MICROSENSOR for double-seal requirements.

Display	N	Without LCD display, explosion proof type -40°C ~70°C , non-explosion proof type -50°C ~85°C
	L	With LCD display, explosion proof type/non-explosion proof -40°C ~70°C
	—	

Range	Nominal range	Minimum range	Lower (LRL)	Upper (URL)	Static pressure range	One-sided overpressure (high/low side)
0	20mbar	1mbar	-20mabr	20mbar	420bar	160bar
1	60mbar	10mbar	-60mbar	60mbar	420bar	250bar
2	0.4bar	20mbar	-0.4bar	0.4bar	420bar	250bar
3	2.5bar	25mbar	-2.5bar	2.5bar	420bar	250bar
4	10bar	0.1bar	-10bar	10bar	420bar	250bar
5	30bar	0.3bar	-30bar	30bar	420bar	250bar
6	100bar	1bar	-30bar	100bar	420bar	200bar

Wetted parts material	Diaphragm	Process flange	Drain/vent valve & plug	Sealing	
A	316L	316L	316L	FKM	
B	316L	316L	316L	PTFE with stainless steel insert	
E	316L	316L	316L	Modified FKM	
C	HC-276	316L	316L	FKM	
D	HC-276	316L	316L	PTFE with stainless steel insert	
F	HC-276	316L	316L	Modified FKM	
G	Tantalum	316L	316L	FKM	
H	Tantalum	316L	316L	PTFE with stainless steel insert	
I	Tantalum	316L	316L	Modified FKM	

Note: FKM (-20°C ≤ Medium temperature ≤ 120°C), PTFE (-60°C ≤ Medium temperature ≤ 120°C), Modified FKM (-40°C ≤ Medium temperature ≤ 180°C), Tantalum diaphragm is not available when the range is below 0.4 bar.

Process connection	Specifications	Drain/vent valve position	Fixed thread	Mounting method	
1	Female 1/4-18NPT	Back of flange	7/16-20UNF(F)	Horizontal	
2	Female 1/4-18NPT	Upper side of flange	7/16-20UNF(F)	Horizontal	
3	Female 1/4-18NPT	Lower side of flange	7/16-20UNF(F)	Horizontal	
4	Female 1/4-18NPT	Side drain/vent valve*	7/16-20UNF(F)	Vertical	

Note: The side drain/vent valve is not specified as left or right when it leaves the factory.

Oil filled	S	Standard silicone oil (Oil: -40°C ~200°C ; Medium: -40°C ~105°C)	
	L	Low-temperature silicone oil (Oil: -55°C ~120°C ; Medium: -55°C ~85°C)	※
	E	Fluorinated oil (Oil: -55°C ~85°C ; Medium: -20°C ~85°C)	※

Note: Actual medium temperature shall be within the limits of: ① Fill fluid, ② Sensor, and ③ Sealing

Process flange bolting	1	Bolts, nuts, and other components, 35CrMo Alloy steel
	6	Bolts, nuts, and other components, 316 SS (Static pressure < 250bar)
Process flange mounting	H	Horizontal mounting
	E	Vertical mounting
Factory calibration range	CAL	Provide MICROSENSOR standard verification report based on the range, default linear output Contract specifies: LRL - URL, display unit*

Options-Certificates		Description (Detailed specifications as following, multiple options or null)	
Approvals	/CS1	CCS, China Classification Society, XA25PTB00010	
	/CS2	DNV, Det Norske Veritas, TAA00000Y1	
	/CS3	BV, Bureau Veritas, 77759/A0 BV	
	/CS4	ABS, American Bureau of Shipping, 24-2536413-PDA	
	/CS5	LR, Lloyd's Register, LR2520052TA	
	/CS6	KR, Korean Register, NAJ50160-AE001	
	/CS7	NK, Nippon Kaiji Kyokai, TA24376M	
	/CS8	RS, Russian Maritime Register of Shipping, 24.44.01.01398.266	
Metrological certification (Russia & CIS)	/PAC	Pattern Approval Certificate of Measuring Instruments, Russian, 94159-24	
	/PBY	Pattern Approval Certificate of Measuring Instruments, Belarus, 18634	

Options-specifications		Description (Detailed specifications as following, multiple options or null)	
Mounting bracket accessories	/G10	Standard L-bracket, 316 SS	
	/G11	Standard L-bracket, Q235 carbon steel	
	/G12	Standard L-bracket, 316L SS	
Process connection accessories	/D3	T-shaped adapter(M) M20×1.5 and vent tube Φ14mm×2mm×30mm, 316 SS, ×2	
	/D4	Oval adapter, 1/2-14NPT (F), 316 SS, ×2	
Output signal mode	/SQ	Both the output signal and display are in "square root" format, with the LRL set to zero	
Verification report	/Q1	Provide data according to the customer's template requirements. Contract specifics: LRL - URL, display unit and other requirements*	※
Note: Standard Micro Sensor format. For custom formats, please select this option and provide a template			
Damping time setting	/ST	Adjustable range 0s~100s, default 0s Contract specifics: Damping time*	
Fault alarm setting	/WH	High alarm current value, 21mA	
	/WL	Low alarm current value, 3.7mA, default	
Tag plate	/PT	Supplied with 316L SS hanging tag plate. Contract specifics: Tag content (max. 16 characters)	
Integrated valve manifold	/VT	Pressure transmitter is factory assembled with MICROSENSOR valve manifold. See attachment for order guide of valve manifold. Contract specifics: Complete model of MICROSENSOR valve manifold*	
Leakage test report	/QD1	N ₂ or air, 200bar, 1 min hold. Standard Micro Sensor leak test report (Applicable to nominal range 100bar)	※
	/QD2	N ₂ or air, 250bar, 1 min hold. Standard Micro Sensor leak test report (Applicable to nominal range 60mbar~30bar)	※
	/QD3	N ₂ or air, 160bar, 1 min hold. Standard Micro Sensor leak test report (Applicable to nominal range 20mbar)	※
Bluetooth	/B	Integrated Bluetooth communication	
Diaphragm with gold plated	/J2	High and low pressure side diaphragm with gold plated (5μ)	 ※
Oil-free treatment	/CL1	Degreasing and cleaning treatment of the wetted parts	※
Note: Fluorinated oil (Code: E) shall be selected for oxygen condition.			
Lithium battery	/LD	General requirements for low copper and zinc in the lithium battery industry (Cu <0.1%, Zn <0.15%)	

Painting	/P1	PUR coating	※
Wetted parts material certificate	/LE	Material Traceability Certificate per EN 10204 3.1	
	/NA	Wetted parts (diaphragm and process flange) material certificate per NACE MR0175/ISO 15156	
Language	/LE	English nameplate, operation manual, certificate of conformity, factory verification report.	
	/LR	Russian nameplate, operation manual, certificate of conformity, factory verification report.	
Delivery service	/XM	In addition to standard documents (certificate of conformity, operation manual, and factory verification report), any documentation required for project acceptance shall be specified with a detailed list upon ordering	
Accuracy	/AL3	±0.05%	※
	/AL4	±0.075%	
	/AL5	±0.1%	
	/AL6	±0.2%	
Warranty period	/Y2	2-year warranty	
	/Y3	3-year warranty	
	/Y5	5-year warranty	

***Note:** Specifications for options shall be specified in the contract. Products marked with (※) have extended lead times.

Example: MDM7000-DP-0HS1L-1A1S6H/G1- 【CAL: 0mbar~50mbar】