bar MDM7000-DGP/DAP

MICROSENSOR

AUTHORIZED DISTRIBUTOR

RANGE

Model	Nominal Range	Min. Range	Lower(LRL)	Upper(URL)	Overload
DGP Gauge	60mbar	2mbar	-60mbar	60mbar	160bar
	0.4bar	4mbar	-0.4bar	0.4bar	160bar
	2.5bar	25mbar	-1bar	2.5bar	160bar
	10bar	0.1bar	-1bar	10bar	160bar
	30bar	0.3bar	-1bar	30bar	160bar
	100bar	1bar	-1bar	100bar	200bar
	400bar	4bar	-1bar	400bar	800bar
DAP Absolute	0.4bar	0.2bar	0bar	0.4bar	160bar
	2.5bar	0.5bar	0bar	2.5bar	160bar
	10bar	2bar	0bar	10bar	160bar
	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 IURV I ≥ ILRV I, IURVI must be larger than the minimum pressure; if IURVI ≤ ILRV I, ILRV I must be larger than the minimum pressure.

05.2024 | version 0001

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:Total performance=±√ ($(E1)^2$ + $(E2)^2$ + $(E3)^2$) ;

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

DGP	TD≤5	0.075%SPAN	60mbar*,100bar, 400bar
		0.05%SPAN	0.4bar,2.5bar,10bar, 30bar
	TD>5	±(0.001+0.0148TD) %SPAN	60mbar*,100bar, 400bar
		±(0.0025+0.0035TD) %SPAN	0.4bar,2.5bar,10bar, 30bar
DAP	TD≤5	0.2%SPAN	100bar
		0.1%SPAN	0.4bar,2.5bar,10bar
	TD>5	±(0.0025+0.035TD) %SPAN	100bar
		±(0.0025+0.0195TD) %SPAN	2.5bar,10bar,100bar

Note: ① 60mbar output accuracy of ±0.075% SPAN is only available for TD≤2.
② TD represents the turn down ratio, TD= Maximum range / Current range, [Maximum range = URL (range starts with 0, same as factory calibration range); Current range = SPAN (equivalent to |URV-LRV|)].

SPECIFICATIONS

DGP Accuracy	±0.05%, 0.075%URL
DAP Accuracy	±0.1%, ±0.2%URL
DGP Range	60mbar~400bar, see the specifications for details
DAP Range	0.4bar ~ 100bar, see the specifications for details
Long-term stability	±0.1% Span/5 years
DGP Ambient temperature effects	± (0.075+0.0375TD) %10°C of Span
DAP Ambient temperature effects	±(0.085+0.0625TD)%10°C of Span
Voltage effects	When the power supply voltage changes within 10.5V/16.5V ② ~55V DC, its zero point and range change should not exceed ±0.005% URL/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 : 4kg (without mounting bracket and process connection accessories)

05.2024 | version 0001

EMC EFFECTS

SN	Test items	Basic Standards	Test Conditions	Performance Level
1	Radiated interference (Casing)	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), 8kV (Air)	A
4	Immunity to radio frequency EM-fields	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,50kHz and 100kHz)	A
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV (line to line) 2kV (line to ground) (1.2us/50us)	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.

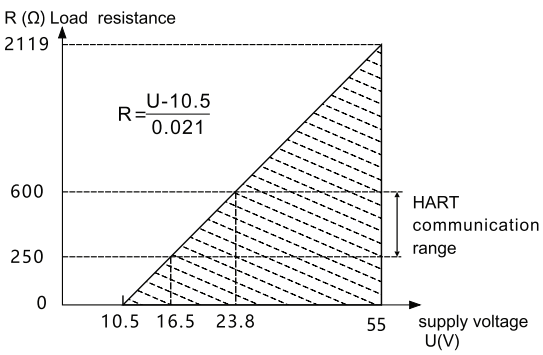
ENVIRONMENTAL CONDITIONS

Items	Conditions
Operating temperature	Without LCD display: -40°C ~85°C ; with LCD display: -20°C ~70°C
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. Short pipe explosion-proof product: Users must ensure that the surface temperature of the case does not exceed 80°C . In cases of uncertainty, the medium temperature must not exceed the temperature group of T6/T80°C .

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

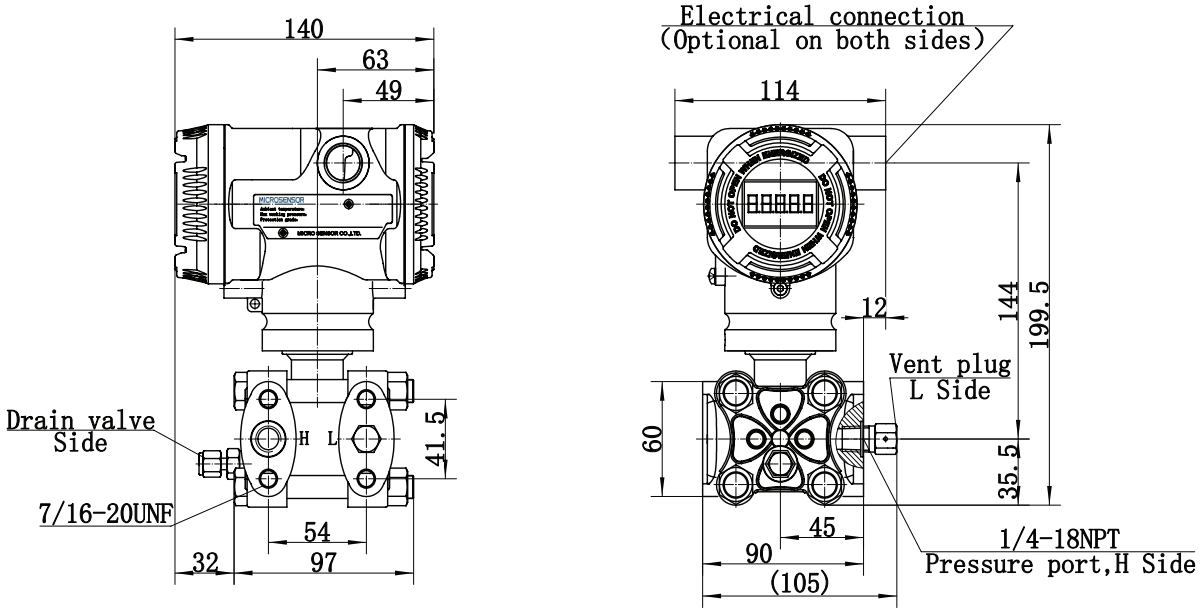
Hazardous area ①	PCEC	Ex db IIC T6 Gb Ex ia IIC T4 Ga
	NEPSI	Ex tb □ C T85°C Db
	ATEX	Ex ia IIC T4 Ga II 2G Ex db IIC T6 Gb II 2D Ex tb IIIC T80°C Db
	IECEX	Ex ia IIC T4 Ga Ex db IIC T6 Gb Ex tb IIIC T80°C Db
	CSA	Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C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

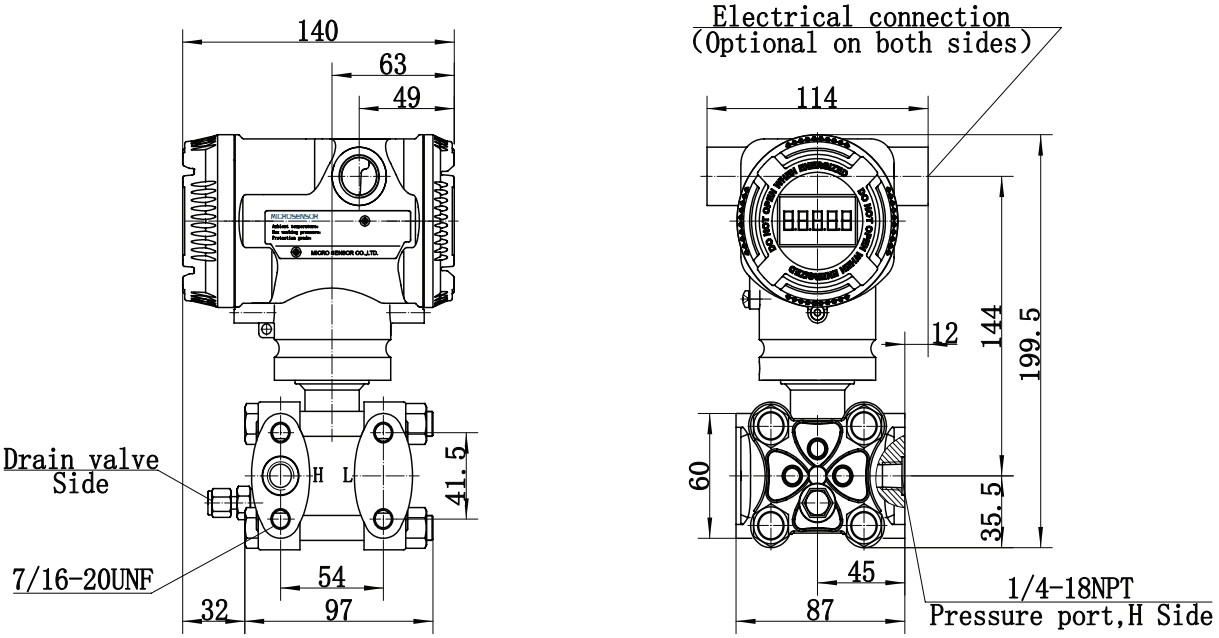
OUTLINE DIMENSIONS (UNIT:mm)

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-DGP Transmitter With Display (Same as Without Display)



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



05.2024 | version 0001

ORDER GUIDE

MDM7000-DGP/DAP Smart Pressure Transmitter			
Items	**Code**	**Description**	
MDM7000-DGP	—	Smart Pressure Transmitter	
MDM7000-DAP	—	Smart Pressure Transmitter	
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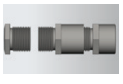
Application of hazardous area			
	1	China, Flameproof certificate, No.CE23.6650 Ex db IIC T6 Gb, GB/T3836.1-2021, GB/T3836.2-2021	
	2	China, Intrinsically safe certificate, No.CE23.7688X Ex ia IIC T4 Ga, GB/T3836.1-2021, GB/T3836.4-2021	
	3	China, Dust explosion-proof certificate, GYB24.1215X Ex tb III 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

DGP Sensor module range

	Nominal range	Minimum range	Lower (LRL)	Upper (URL)	Overload
1	60mbar	2mbar	-60mbar	60mbar	160bar
2	0.4bar	4mbar	-0.4bar	0.4bar	160bar
3	2.5bar	25mbar	-1bar	2.5bar	160bar
4	10bar	0.1bar	-1bar	10bar	160bar
5	30bar	0.3bar	-1bar	30bar	160bar
6	100bar	1bar	-1bar	100bar	200bar

DAP Sensor module range

	Nominal range	Minimum range	Lower (LRL)	Upper (URL)	Overload
2	0.4bar	4mbar	-0.4bar	0.4bar	160bar
3	2.5bar	25mbar	-1bar	2.5bar	160bar
4	10bar	0.1bar	-1bar	10bar	160bar
6	100bar	1bar	-1bar	100bar	200bar

Note: When the nominal range is 100bar or 400bar, no vent plug is required.

High pressure side wetted parts material

	Diaphragm	Flange block	Discharge valve/ plug	Sealings
A	316L	316	316	FKM
B	316L	316	316	Glass-filled PTFE
C	HC-276	316	316	FKM
D	HC-276	316	316	Glass-filled PTFE

High voltage side process connection

	Specifications	Drain/vent valve position	Thread	Mounting method
1	Female 1/4-18NPT	Rear end of flange	7/16-20UNF(F)	Horizontal
2	Female 1/4-18NPT	Above the side of flange	7/16-20UNF(F)	Horizontal
3	Female 1/4-18NPT	Under the 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.

Fill oil	S	Silicone oil: -40°C ~105°C
	D	Inert oil: -45°C ~120°C
Flange block fastener	1	Bolts, nuts, and other components, alloy*, high static pressure applications
	6	Bolts, nuts, and other components, 316 SS

Note: Please consult the engineer for specific material details.

Flange block mounting	H	Horizontal mounting
	E	Vertical mounting
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 
Process connection accessories	/D1	T-shaped adapter(M) M20×1.5 and vent tube Φ14mm×2mm×30mm, 316 SS
	/D2	Waist-shaped adapter, 1/2-14NPT (F), 316 SS
Verification 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.

05.2024 | version 0001

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*	
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—DGP—0HS1L—1A1S6H/G1—		**[CAL: 0-50mbar]**	

05.2024 | version 0001