bar

M20

Pressure Transmitter for General Industry

M20 Pressure Transmitter features a precise design with integrated electrical architecture, digital temperature compensation, and calibration technologies. It is constructed with high-quality materials and offers excellent EMC compatibility, ensuring reliable performance and costeffectiveness.

Certified to international standards, the M20 Pressure Transmitter offers flexible options for various industrial pressure monitoring and measurement applications.

FEATURES

- Pressure type:
  Gauge G, Absolute A, Positive/Negative N
- Range: 0~25kPa to 0~25MPa
- Electrical connection:
  4-pin connector DIN 175301-803A
  Circular aviation connector M12×1 (4 pin) IEC 61076-2-101 Cable Φ5.0mm 5× 0.12mm² PUR
- Accuracy:
  Refer to“Measuring Range & Accuracy Table“
- Process connection:

M20×1.5	ISO 9974-2/EN 837
G1/4A	ISO 1179-2
NPT1/4	ANSI/ASME B1.20.1
R1/4	ISO 7

  Other threads are available on request
- Output signal: 4mA ~ 20mA DC
  0V ~ 5V DC
  1V ~ 5V DC
  0V ~ 10V DC
  0.5V ~ 4.5V DC
- Structural features: Fully welded with a molecular sieve
- Measuring medium: Fluids compatible with 316L stainless steel, such as air, water, and mixed oil

APPLICATIONS

- Water treatment
- Pump & compressor
- Hydraulic & pneumatic system
- Mechanical equipment
- Refrigeration system
- Measurement & control
- Vessels

CERTIFICATES

CE · MICRO SENSOR RoHS COMPLIANT · REACH SVHC · UL LISTED

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MEASURING RANGE & ACCURACY TABLE

Gauge Pressure G

Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	0 - 25	±0.5%FS	50	K025
	0 - 40		100	K040
	0 - 50		100	K050
	0 - 60		100	K060
	0 - 70		100	K070
	0 - 80		200	K080
	0 - 90		200	K090
	0 - 100	±0.25%FS /±0.5%FS	200	K100
	0 - 160		300	K160
	0 - 200		400	K200
	0 - 250		500	K250
	0 - 300		600	K300
	0 - 400		1000	K400
	0 - 500		1000	K500
	0 - 600		1000	K600
	0 - 700		1400	K700
	0 - 800		1600	K800
	0 - 900		1800	K900
MPa	0 - 1	±0.25%FS /±0.5%FS	2	M1D0
	0 - 1.6		3	M1D6
	0 - 2		4	M2D0
	0 - 2.5		5	M2D5
	0 - 3		6	M3D0
	0 - 3.5		6	M3D5
	0 - 4		10	M4D0
	0 - 5		10	M5D0
	0 - 6		10	M6D0
	0 - 7		10	M7D0
	0 - 8		15	M8D0
	0 - 9		15	M9D0
	0 - 10		15	M010
	0 - 16		30	M016
	0 - 20		30	M020
	0 - 25		37.5	M025
psi	0 - 3	±0.5%FS	6	P003
	0 - 5		10	P005
	0 - 10		15	P010
	0 - 15		20	P015
	0 - 30	±0.25%FS /±0.5%FS	45	P030
	0 - 60		150	P060
	0 - 100		150	P100
	0 - 160		300	P160
	0 - 200		300	P200
	0 - 300		450	P300
	0 - 500		750	P500
	0 - 600		1500	P600
	0 - 700		1500	P700
	0 - 800		1500	P800
	0 - 900		1500	P900
	0 - 1000		1500	P01K
	0 - 2000		3000	P02K
	0 - 3000		4500	P03K
	0 - 4000		6000	P04K

Unit	Measuring Range	Accuracy	Overpressure	Code
mbar	0 - 250	±0.5%FS	500	m250
	0 - 400		1000	m400
	0 - 500		1000	m500
	0 - 600		1200	m600
	0 - 700		1400	m700
	0 - 800		1600	m800
	0 - 900		1800	m900
bar	0 - 1	±0.25%FS /±0.5%FS	2	B001
	0 - 1.6		3	B1D6
	0 - 2		4	B002
	0 - 2.5		5	B2D5
	0 - 3		6	B003
	0 - 4		10	B004
	0 - 5		10	B005
	0 - 6		10	B006
	0 - 7		14	B007
	0 - 8		16	B008
	0 - 9		18	B009
	0 - 10		20	B010
	0 - 16		30	B016
	0 - 20		40	B020
	0 - 25		50	B025
	0 - 30		60	B030
	0 - 35		60	B035
	0 - 40		100	B040
	0 - 50		100	B050
	0 - 60		100	B060
	0 - 70		100	B070
	0 - 80		150	B080
	0 - 90		150	B090
	0 - 100		150	B100
	0 - 160		300	B160
	0 - 200		300	B200
	0 - 250		450	B250

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MEASURING RANGE & ACCURACY TABLE

Absolute Pressure A

Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	0 - 25	±0.5%FS	50	K025
	0 - 40		100	K040
	0 - 50		100	K050
	0 - 60		100	K060
	0 - 70		100	K070
	0 - 80		200	K080
	0 - 90		200	K090
	0 - 100		200	K100
	0 - 160		300	K160
	0 - 200		400	K200
	0 - 250	±0.25%FS /±0.5%FS	500	K250
	0 - 300		600	K300
	0 - 400		1000	K400
	0 - 500		1000	K500
	0 - 600		1000	K600
	0 - 700		1400	K700
	0 - 800		1600	K800
	0 - 900		1800	K900
MPa	0 - 1	±0.25%FS	2	M1D0
	0 - 1.6		3	M1D6
	0 - 2		4	M2D0
	0 - 2.5		5	M2D5
psi	0 - 3	±0.5%FS	6	P003
	0 - 5		10	P005
	0 - 10		15	P010
	0 - 15		20	P015
	0 - 30		45	P030
	0 - 60	±0.25%FS /±0.5%FS	150	P060
	0 - 100		150	P100
	0 - 160		300	P160
	0 - 200		300	P200
	0 - 300		450	P300

Unit	Measuring Range	Accuracy	Overpressure	Code
mbar	0 - 250	±0.5%FS	500	m250
	0 - 400		1000	m400
	0 - 500		1000	m500
	0 - 600		1200	m600
	0 - 700		1400	m700
	0 - 800		1600	m800
	0 - 900		1800	m900
bar	0 - 1	±0.5%FS	2	B001
	0 - 1.6		3	B1D6
	0 - 2		4	B002
	0 - 2.5	±0.25%FS /±0.5%FS	5	B2D5
	0 - 3		6	B003
	0 - 4		10	B004
	0 - 5		10	B005
	0 - 6		10	B006
	0 - 7		14	B007
	0 - 8		16	B008
	0 - 9		18	B009
	0 - 10		20	B010
	0 - 16		30	B016
	0 - 20		40	B020
	0 - 25		50	B025

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MEASURING RANGE & ACCURACY TABLE

Positive/Negative Pressure N

Unit	Measuring Range	Accuracy	Overpressure	Code
kPa	- 25 - 0	±0.5%FS	50	V025
	- 40 - 0		100	V040
	- 60 - 0		100	V060
	- 100 - 0		150	V100
	- 3 - +3		10	C033
	- 5 - +20		30	C520
	- 5 - +25		30	C525
	- 15 - +15		30	C015
	- 20 - +20		30	C020
	- 25 - +25		50	C025
	- 30 - +30		50	C030
	- 50 - +50		100	C050
	- 100 - +60		150	C16B
	- 100 - +100	±0.25%FS /±0.5%FS	300	C11B
	- 100 - +150		300	C1B5
	- 100 - +300		500	C13B
	- 100 - +500		1000	C15B
	- 100 - +900		2000	C19B
	- 100 - +1000		2500	C11K
	- 100 - +1500		3000	C1K5
	- 100 - +1600		3000	C1K6
	- 100 - +2000		3000	C12K
	- 100 - +2400		5000	C24K
psi	-15 - 0	±0.5%FS	20	PF00
	-15 - +10		20	PF10
	-15- +15	±0.25%FS /±0.5%FS	45	PF15
	-15- +30		150	PF30
	-15 - +50		150	PF50
	-15 - +80		300	PF80
	-15- +100		300	PF1B
	-15 - +150		450	P1B5

Unit	Measuring Range	Accuracy	Overpressure	Code
bar	- 0.25 - 0	±0.5%FS	0.5	VD25
	- 0.4 - 0		1	V0D4
	- 0.6 - 0		1	V0D6
	- 1 - 0		1.5	V1D0
	- 0.03 - +0.03		0.1	C0D3
	- 0.05 - +0.2		0.3	C052
	- 0.05 - +0.25		0.3	C5D5
	- 0.15 - +0.15		0.3	CD15
	- 0.2 - +0.2		0.3	C0D2
	- 0.25 - +0.25		0.5	CD25
	- 0.3 - +0.3		0.5	C003
	- 0.5 - +0.5		1	C005
	- 1 - +0.6		1.5	C0D6
	- 1 - +1	±0.25%FS /±0.5%FS	2	C101
	- 1 - +1.5		3	C1D5
	- 1 - +3		5	C103
	- 1 - +5		10	C105
	- 1 - +9		20	C109
	- 1 - +10		25	C110
	- 1 - +15		30	C115
	- 1 - +16		30	C116
	- 1 - +20		30	C120
	- 1 - +24		50	C124

Test standard: GB/T 17614.1-2015/IEC60770-1:2010;
Ambient temperature: 20℃± 5℃ ;
Relative humidity: 45% ℃ 75%

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PRESSURE UNIT CONVERSION TABLE ISO 31-3

Standard Unit	Pa(N/m^2)	kPa	MPa	bar	mbar
1 Pa(N/m^2)	1	0.001	0.000001	0.00001	0.01
1 kPa	1000	1	0.001	0.01	10
1 MPa	1000000	1000	1	10	10000
1 bar	100000	100	0.1	1	1000
1 mbar	100	0.1	0.0001	0.001	1
1 mmH_2O	9.807	0.009807	0.000009807	0.00009807	0.09807
1 kg/cm^2	98070	98.07	0.0981	0.9807	980.7
1 atm	101300	101.3	0.1013	1.013	1013
1 mmHg	133.3	0.1333	0.0001333	0.001333	1.333
1 psi	6895	6.895	0.006895	0.0689	68.948
Standard Unit	mmH_2O	kg/cm^2	atm	mmHg	psi
1 Pa(N/m^2)	0.102	0.0000102	0.000009869	0.007501	0.000145
1 kPa	101.9716	0.0102	0.009869	7.501	0.145
1 MPa	101972	10.2	9.869	7501	145.038
1 bar	10197	1.02	0.9869	750.1	14.5038
1 mbar	10.1972	0.00102	0.0009869	0.7501	0.0145
1 mmH_2O	1	0.0001	0.00009678	0.0734	0.001422
1 kg/cm^2	10000	1	0.9678	734.2	14.224
1 atm	10330	1.033	1	760.1	14.68
1 mmHg	13.62	0.001362	0.001316	1	0.0193
1 psi	704.3	0.0703	0.068	51.71	1

Output Signal

Type	Output Signal	Code
Current (2-wire)	4 mA ～ 20mA DC	1
Voltage (3-wire)	0V ～ 5V DC	2
	1V ～ 5V DC	3
	0V ～ 10V DC	4
	0.5V ～ 4.5V DC	5
Proportional voltage (3-wire)	0.5V ～ 4.5V DC	6

Supply Voltage

Output Signal	Supply Voltage	Output Ripple	Voltage Effect
4mA ～ 20mA DC	8V ～ 30V DC	≤1%	≤±0.1%FS
0V ～ 5V DC	8V ～ 30V DC		
1V ～ 5V DC	8V ～ 30V DC		
0V ～ 10V DC	14V ～ 30V DC		
0.5V ～ 4.5V DC	8V ～ 30V DC		
(10% ～ 90%)V DC	(5±0.1) V DC Proportional	≤20 mV	

Load (Ω)

Current (2-wire)：≤（Supply voltage - 8 V）/0.02 A

Voltage (3-wire)：＞ 10 k

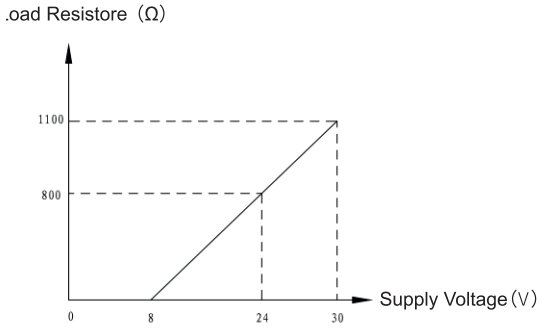
The power supply of the pressure transmitter should comply with the electrical connection standards specified in section 9.3 of UL/EN/IEC 61010-1, UL/EN/IEC 60950-1 LPS, or UL 1310/UL 1585 (NEC or CEC) Class 2 requirements.

If the pressure transmitter is used at an altitude higher than 2000m, the power supply should function normally at this altitude.

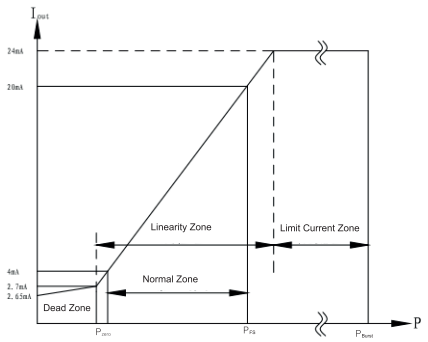
Total Current Consumption

Current (2-wire)：Signal current, 23mA (max.)

Voltage (3-wire)：＜ 8 mA



Current Output Mode（Load Resistor Range）



Output Current VS Pressure

ACCURACY

Conforms to IEC 61298-2		
Accuracy	≤±0.25%FS	≤±0.5%FS
Nonlinearity（BFSL）	≤±0.2%FS	≤±0.25%FS
Code	3	4
Conforms to JJG 882 (Chinese National Regulation for Verification)		
Accuracy class	0.25	0.5
Max.error	≤±0.25%FS	≤±0.5%FS
Code	7	8

Note: Accuracy class 0.25 range:≥100kPa（G）,≥250kPa（A）,≥200kPa（N）

Total error band: 0℃～ 50℃ ±0.75%FS（max.）
≤±0.2%FS/year（max.）

Note: Total error band includes nonlinearity, hysteresis, repeatability, temperature effect, zero and span thermal error.

Specifications

Hysteresis:≤0.1%FS

Repeatability: ≤0.1%FS

Overpressure: See Table "Pressure Range"

Long-term stability: ≤±0.1%FS/year（typ.）
≤±0.2%FS/year（max.）

Response time

Liquid viscosity（＜ 100 cSt）：＜ 4 ms

Gas：＜ 35 ms

ENVIRONMENTAL CONDITIONS

Item	Temp. Range
Medium temp.	-30℃ - 85℃
Ambient temp.	-30℃ - 85℃
Storage temp.	-40℃ - 100℃

For normal operation of the pressure transmitter, the measured medium must not solidify or partially solidify. The selected process connection sealing may limit the temperature range (refer to "Sealing" for details).

IP rating

IP65、IP67 IEC 60529

Atmospheric pressure

86kPa - 106kPa

Vibration environment

10g（@10Hz - 2000Hz）IEC 60068-2-6

Impact Resistance

100g/11ms IEC 60068-2-27

Service life

Within measuring range: >10 million times load cycle

Position effect

≤±0.1%FS

REFERENCE CONDITIONS IEC 61298-1

Temperature

15℃～25℃

Relative humidity

45% ～ 75%

Supply voltage

（24±0.24）V DC；（5±0.05）V DC

Installation direction

The pressure port should be vertically downward

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EMC

SN	Test Item	Standard	Test Condition	Performance Level
1	Electrostatic discharge immunity test	GB/T 17626.2/IEC 61000-4-2	±6kV（Contact），±8kV（Air）	B
2	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC 61000-4-3	10V/m; 80MHz - 6GH; 80%AM（1kHz）	A
3	Power frequency magnetic field immunity test	GB/T 17626.8/IEC 61000-4-8	Stable sustained magnetic field strength 50Hz，60Hz，100A/m	A
4	Electrical fast transient/burst immunity test (power port)	GB/T 17626.4/IEC 61000-4-4	±2kV; 5/50 Tr/Tk ns 5kHz	B
5	Surge immunity test (power port)	GB/T 17626.5/IEC 61000-4-5	±2kV; 1.2/50（8/20）Tr/Th us	B
6	Immunity to conducted disturbances, induced by radio-frequency fields (power port)	GB/T 17626.6/IEC 61000-4-6	10V（150kHz- 80MHz）; 80%AM（1kHz）	A

Note: At performance level A, the performance is normal within the limits of the technical specifications;
At performance level B, functions or performance are temporarily reduced or lost, but can be restored by themselves, and the actual operating status, storage and data remain unchanged.

CERTIFICATES

Mark	Description	Country or Region
CE	EU Declaration of Conformity EMC Directive, Electromagnetic Emission and Immunity Standards. Pressure Equipment Directive.	EU
MICRO SENSOR RoHS COMPLIANT	RoHS Conformity	EU
REACH SVHC	Chemical Prevention Compliance	EU
UL LISTED	UL Safety certificate (such as electrical safety, overpressure ...)	USA Canada

MANUFACTURER INFORMATION AND CERTIFICATE

Mark	Description
	Chinese RoHS Conformity SJ/T 11364

MATERIALS

- Wetted parts - 316L stainless steel
- Sealing - NBR/FKM/Copper
- Non-wetted parts - 316L stainless steel, nylon
- Pressure transmission medium - Silicone oil

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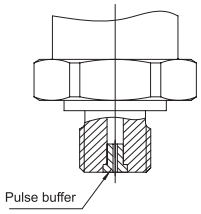
PROCESS CONNECTION

Standard	Pressure port	Code
EN 837	G1/8 B	01
	G1/4 B	02
	G3/8 B	03
	G1/2 B	04
	M20×1.5	05
	G1/8 Female	06
	G1/4 Female	07
ISO 7	R1/4	10
	R3/8	11
	R1/2	12
ISO 1179-1	G1/4 Female	20
ISO 1179-2	G1/4 A	30
	G3/8 A	31
	G1/2 A	32
	G1/4 A +Pulse buffer *	33
	G3/8 A +Pulse buffer *	34
	G1/2 A +Pulse buffer *	35
ISO 9974-2	M12×1.5	40
	M14×1.5	41
	M20×1.5	42
	M20×1.5 +Pulse buffer	43
ANSI/ASME B1.20.1	NPT1/8	50
	NPT1/4	51
	NPT1/2	52
	NPT1/8 Female	53
	NPT1/4 Female	54
	NPT1/2 Female	55
SAE J514 E	7/16-20UNF-74°Taper	60

Defaulted pressure port is Φ4 mm;
*Note: With φ0.8mm pulse buffer.

Torque
The max. torque to be applied during the installation and removal of the transmitter



VERSION

Version Code	Description
S	Fixed code, internal controls

ELECTRICAL CONNECTION

Item	IP Rating	Cable Model	Length	Code
4-pin connector DIN 175301-803A	IP65			
• With assorted connector				1
Circular aviation connector M12×1 (4pin) IEC 61076-2-101	IP65/IP67*			
• Without assorted connector				3
• Straight connector wire harness		MS903	2m	4
• Right-angle connector wire harness		MS904	2m	5
Cable	IP67	PUR		6

Note: Circular aviation connector M12×1 ≤ 25bar IP65
> 25bar IP67

Reverse power protection (except for proportional) V+ vs. GND

CABLE LENGTH

Length (Unit: m)	Code
01	L001
1.5	L1D5
2	L002
3	L003
4	L004
5	L005
6	L006
7	L007
8	L008
9	L009
10	L010
No cable required	N

SEALING (PROCESS CONNECTION)

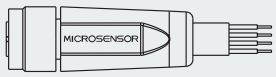
Standard	Configuration	Temp.	Code
ISO 7/ANSI/SAE J514 E /ASMEB1.20.1	PTFE tape		0
ISO 1179 / ISO 9974-2	NBR	-30℃～85℃	1
ISO 1179 / ISO 9974-2	FKM	-10℃～85℃	2
EN 837	Copper		4

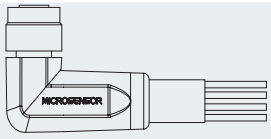
Note: When the code is "0", the recommended sealing material is PTFE tape. The other material for each code is as above.

ELECTRICAL DEFINITION

DIN 175301-803 A 4-pin connector				
	Definition	Code	2-wire	3-wire
	Positive	V+	1	1
	Negeative	GND	2	2
	Output	VOUT	-	3
	Grouding			

M12×1(4 pin) Circular aviation connector				
	Definition	Code	2-wire	3-wire
	Positive	V+	4	4
	Negeative	GND	2	2
	Output	VOUT	-	1
	Grouding		3	3

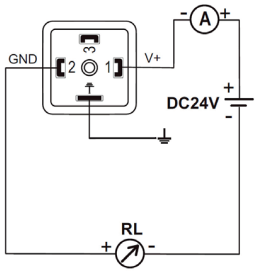
M12×1 Straight connector wire harness (MS903)			
	Definition	Code	Color
	Positive	V+	Brown
	Negeative	GND	Blue
	Output	VOUT	Black
	Grouding		Yellow Green

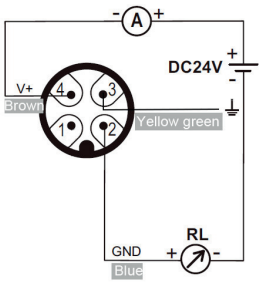
M12 × 1 Right-angle connector wire harness (MS904)			
	Definition	Code	Color
	Positive	V+	Black
	Negeative	GND	White
	Output	VOUT	Brown
	Grouding		Blue

Cable			
	Definition	Code	Color
	Positive	V+	Red
	Negeative	GND	Black
	Output	VOUT	White
	Grouding		Green

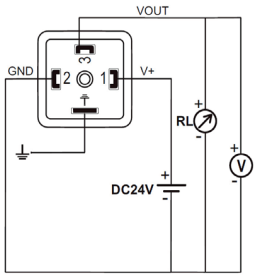
WIRING

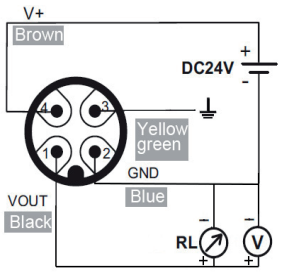
2-wire 4mA - 20mA output





3-wire voltage output

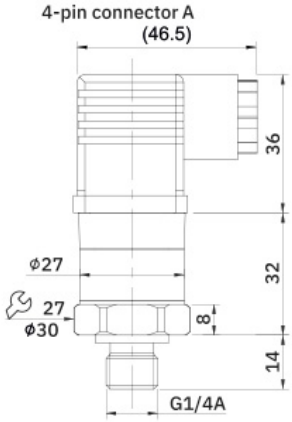




DIMENSIONS

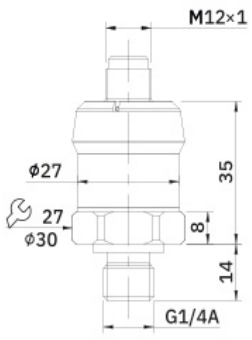
Overall Dimensions (Take G1/4A pressure port as an example. Unit: mm)

4-pin connector A



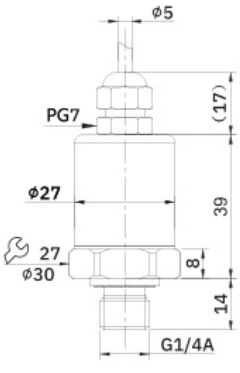
Weight: ≤135g

M12×1 (4pin) connector



Weight: ≤95g

Cable



Weight: ≤160g

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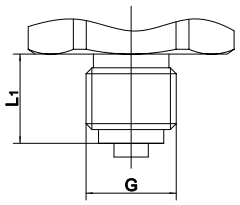
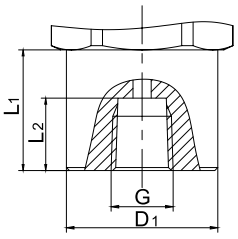
DIMENSIONS

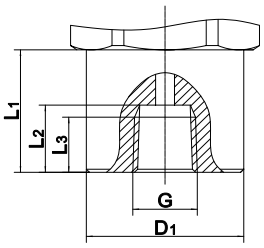
Process Connection (unit: mm)



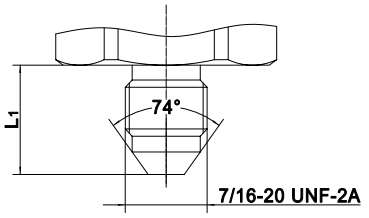
G	L_1	Standard
G1/4 B	13	EN 837
G3/8 B	16	
G1/2 B	20	
M20×1.5	20	



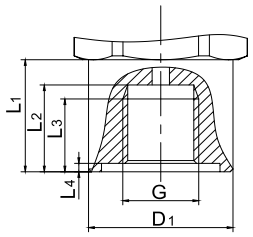
G	D_1	L_1	L_2	Standard
NPT1/8	Φ25	20	12	ANSI/ASME B1.20.1
NPT1/4	Φ25	20	14	
NPT1/2	Φ25	25	19	



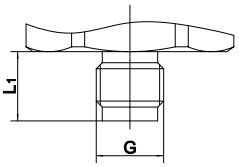
G	D_1	L_1	L_2	L_3	Standard
G1/8	Φ25	20	10	7.5	EN 837
G1/4	Φ25	20	13	10	



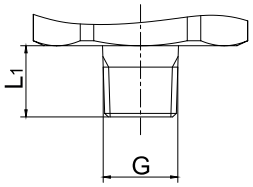
G	L_1	Standard
7/16-20 UNF-74°cone	14	SAE J514 E



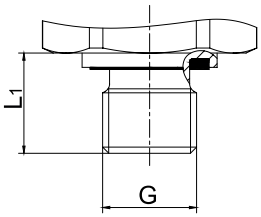
G	D_1	L_1	L_2	L_3	L_4	Standard
G1/4	Φ25	20	15.5	13	1.5	ISO 1179-1



G	L_1	Standard
G1/8 B	10	EN 837



G	L_1	Standard
NPT1/8	10	ANSI/ASME B1.20.1
NPT1/4	13	
NPT1/2	19	
R1/4	13	ISO 7
R3/8	15	
R1/2	19	



G	L_1	Standard
G1/4 A	14	ISO 1179-2
G3/8 A	14.5	
G1/2 A	17	
M12×1.5	14	ISO 9974-2
M14×1.5	14	
M20×1.5	16.5	

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DIMENSIONS

Model	Pressure Type	Code	Output	Accuracy	Process Connection	Sealing	Elecrtrical Connection	Length	Version Code

Example:

M20	Gauge pressure	0 - 5 psi	4mA～20mA	±0.5%FS	G1/4A	FKM	Cable connection	1.5	S

Code Example:

M20	G	P005	1	8	30	2	6	L1D5	S

OPTIONAL ACCESSORIES

Cable Model	Specification	Conductor Cross-sectional Area	Material	Weight	Color
MS903	M12×1 - Straight connector - 4 pin - Length 2 m	4×0.3mm^2	TPUR	≤90g	Black
MS904	M12×1 - Angled connector - 4 pin - Length 2m	4×0.3mm^2	TPUR	≤95g	Black

If a metrology verification certificate (calibration certificate) is required, or there are any other special requirements, please consult with the MICROSENSOR.