

# CATALOGO GENERAL







TRANSMISORES ESPECIALES

Vol. 4



# TRANSMISORES ESPECIALES

**COMPACTOS** 

## MSLCD 11

### Intelligent display unit

#### **Description & Features:**

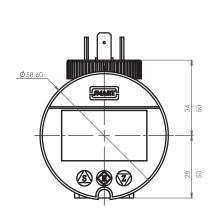
- Big screen, highlight backlight display
- Multiple display units, flexible 3 buttons setting
- 5 digit high accuracy display, super protection against lightning surge
- Optional on-off alarm output, display and control integration
- Suitable for 4-20mA transmitters site display and on-off alarm output

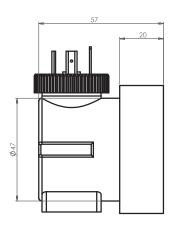


Analogue signal		
Standard	2wire: 4-20mA	
Power supply		
2-wire-system	Supplied by current loop, (series connection); voltage drop \( \subseteq \text{Vdrop}; \text{Vs=(Vtmax-Vtmin)+Vdrop}, \text{VT} is the power voltage of the transmitter; Vdrop is the circuit voltage drop: without backlight is 6V,with backlight is 8V.	
Contact (optional)		
Number,types	Max.2 independent PMOS output	
Switching performance	V <sub>switch</sub> =Vs-2V; contact rating max.120mA,short-circuit protection	
Repeatability	≤±0.1%FSO	
Switching frequency	Highest 10Hz	
Switching cycles	> 100×10 <sup>6</sup>	
Delay time	0-255ms	
Miscellaneous		
Electrical protection	Reverse polarity protection(No damage, but also no function), electromagnetic compatibility (emission and immunity according to EN61326), short-circuit protection; ingress protection IP65; lightning surge level 4 (2KA,4KV).	
Display	Double raw 5-digit/8-digit, 7-segment/16-segment LCD display; range of indication: -19999+99999; accuracy: 0.1%±1 digit	
Permissible temperatures	Electronics/environment: -25-80 °C	
Material of display housing	PA6.6, Polycarbonate	
Mechanical stability	Anti-vibration: 5gRMS (20-200Hz) Anti-shock: 100g/11ms	

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#### Dimensions( mm)





Picture 21 Intelligent display unit series selection

0 =Provide - =Not provide

MSLCD11	Code	Code description	10	11	12
	10	Standard terminal box installation	0	-	-
Types	11	DIN installation	-	0	-
	12	M12×1(5-pin) installation	-	-	0
Separator	- Detailed specifications as following				
	N	Without on-off alarm output	0	0	0
On-off alarm function	Α	With 1 way on-off alarm output	0	0	0
	В	With 2 ways on-off alarm output	0	0	0
Special requirement	Y Special explain Discussed Discussed		Discussed		
Example	MSLCD10-A				



#### **Product introduction**

#### Description



#### High performance pressure transmitter

MSSMP131 compact pressure transmitter combined with all the latest available technologies of the modern electronic pressure measurement fields. It's the most cost-effective products after 10 year's research and development. The sensor adopts full-automatic linear and temperature compensation technology to ensure the efficiency and quality of mass production. Fully-sealed and isolated air cavity design to ensure the long term reliability. Signal transmitting module adopts original calibration technology to realize parameters setting easily without any tools. MSSMP131 compact pressure transmitter has unique technological advantage which is different from other ordinary products with the same price and its' capabilities are equivalent to the most of the high-end products, which is the first selection of the most cost-effective products.

#### Main parameters

Pressure types	Differential pressure
Measuring range	10kPa-3.5MPa, please refer to the ordering information chapter
Output signal	4-20mA,4-20mA+HART, 0.5- 4.5VDC, Modbus-RTU/RS485, others
Reference accuracy	±0.2% URL, ±0.5% URL, optional ±0.1% URL

#### Measuring medium

The fluid which compatible with wetted parts

#### Field of application

Pressure, differential pressure and level measurement

#### **Approvals**



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#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit(LRL)	Upper range limit (URL)	High pressure side overload limit	Low pressure side overload limit
35kPa	10kPa	-35kPa	35kPa	70kPa	35kPa
70kPa	35kPa	-70kPa	70kPa	150kPa	70kPa
100kPa	50kPa	-100kPa	100kPa	200kPa	100kPa
200kPa	100kPa	-200kPa	200kPa	400kPa	200kPa
350kPa	200kPa	-350kPa	350kPa	700kPa	350kPa
700kPa	350kPa	-500kPa	700kPa	1400kPa	700kPa
1MPa	500kPa	-0.5MPa	1MPa	2MPa	1MPa
2MPa	1MPa	-0.5MPa	2MPa	4MPa	1MPa
3.5MPa	1.7MPa	-0.5MPa	3.5MPa	7MPa	1MPa

Above measurement range can be replaced by kg/cm2, MPa and kPa units . Which can provide other measurement range according to the requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span $\leq$  | URV-LRV |  $\leq$  upper range limit

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20℃ ± 5℃			
Linear output accuracy	Typical	URL)	Nominal value: 35kPa, 70kPa, 100kPa, 200kPa, 350kPa, 700kPa, 1MPa, 2MPa, 3.5MPa
	Max/Voltage output		3.5WFa

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero basedcalibration span, Linear output, Silicon oil filling, 316L stainless steel isolation diaphragm.

#### Performance specifications

The overall performance including but not limited to 【reference accuracy 】, 【environment temperature effects】 and other comprehensive error

Typical accuracy: ±0.2URL (HART output accuracy: ±0.1URL)

Stability: ±0.1% URL/ year

#### Ambient temperature effects(Typical)

Within the range - 20-80℃ total impact |±0.2%URL/10k

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V

#### Loading effects

Zero and span change should not be more than ± 0.05% URL/k $\Omega$ 

#### Vibration effects

1	According to IEC60068-2-6 , 10g RMS (25- 2000Hz)
Impact resistence	According to IEC60068-2-27, 500g/1ms

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#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire
0.5-4.5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

#### Working life

> 10 million max pressure circulation

#### Insulation resistance

≥20MΩ@, 100VDC

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Damping time of amplifer: 0-100S adjustable(with HART protocol

Startup after power off: ≤3S (HART output time: ≤6S)

Normal services after data recovery: ≤4S (HART output time: ≤31S)

#### **Environment condition**

Items	Operational condition
Media temperature	-40-85℃
Storage temperature	-40-100°C
Isolated filling fluid temperature	-30-80°C
Working environment humidity	0-95%RH
Protection class	IP 65
Dangerous condition	ExialICT4(GYB16.1964X)*
*Only for 4-20mA output	

#### **Technical Specifications**

Signal output	4-20mA	4-20mA+HART*	0-5VDC	0.5-4.5VDC(ratiometric output)	RS485
Power supply voltage	10-30VDC	10.5/16.5-55VDC	6-30VDC	5VDC	5VDC/9-30VDC
Electric current	≤20.8mA		≤3.5mA		≤7mA
Load resistance( $\Omega$ )	<(U-10)/0.0208	<(U-10.5)/0.0208**	≥5k, recomn	nend 100k	/
Transmission distance <1000m		<5m		<1200m	
Power consumption	≤500mW(20.8mA output@24VDC)		≤42mW(0.5-	4.5VDCoutput, @5VDC)	≤168mW(RS485 output@24VDC)

<sup>\*</sup>For this output type, the load resistance value in communication is  $250\Omega$ 

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<sup>\*\*</sup>The load resistance value 0-2119 $\Omega$  is in nominal working condition, 250-600 $\Omega$  is HART communication



#### EMC environment(not RS485 signal output)

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ОК
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description
L353D	35kPa	Range -35kPa-35kPa, smallest calibratable span 10kPa
L703D	70kPa	Range -70kPa-70kPa, smallest calibratable span 35kPa
L104D	100kPa	Range -100kPa-100kPa, smallest calibratable span 50kPa
L204D	200kPa	Range -200kPa-200kPa, smallest calibratable span 100kPa
L354D	350kPa	Range -350kPa-350kPa, smallest calibratable span 200kPa
L704D	700kPa	Range -500kPa-700kPa, smallest calibratable span 350kPa
L105D	1MPa	Range -0.5MPa-1MPa, smallest calibratable span 500kPa
L205D	2MPa	Range -0.5MPa-2MPa, smallest calibratable span 1MPa
L355D	3.5MPa	Range -0.5MPa-35MPa, smallest calibratable span 1.7MPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span ≤| URV - LRV |≤ upper range limit

Code	Parts	Description
S	Isolation diaphragm material	SUS316L
S	Isolation fluid filling	Silicon oil
S	Sensor seal	O-ring, FKM, process temperature: -20-200°C)

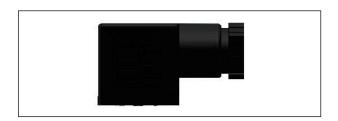
#### Seal(S)



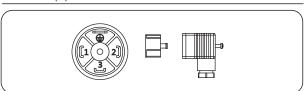
#### Electrical connection select instruction

Code	Description
D1	DIN43650, IP65

#### DIN43650(D1)



#### DIN43650(1)



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2	Power-	Power-	Power-	Power-
3	Key-z	Signal+	Signal+	A+
<b>(4)</b>			Signal-	B-

Note: Key-z is modified zero pressure

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#### Product selection instruction

#### Output signal select instruction

Code	Description
F	4-20mA two wire, power supply: 10-30VDC
Н	4-20mA+ HART two wire ,power supply: 16.5- 55VDC
R	Modbus-RTU/RS485 5V/9-30VDC
5	1-5V DC three wire, power supply: 16-30VDC
6	0.5-4.5VDC three wire, ratiometric output, power supply: 5VDC
А	4-20mA two wire, Intrinisic safety, power supply: 10-30VDC

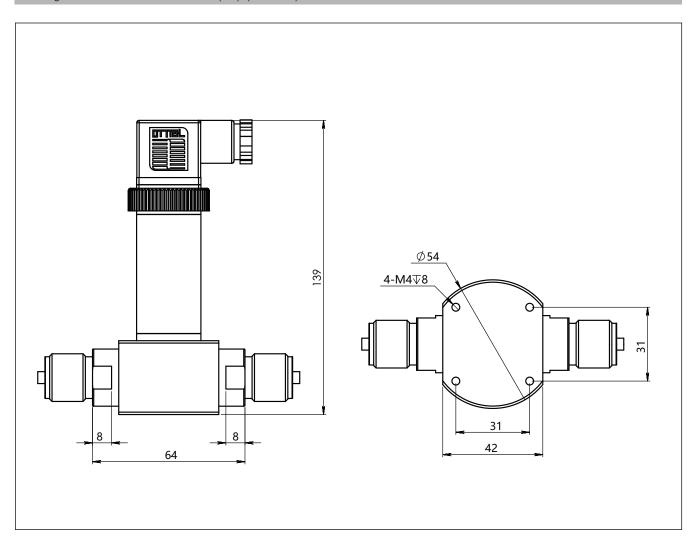
#### Process connection select instruction

Code	Туре	Description
4	Material	SS304
6		SS316
M01	Specification	M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261
G01		G1/2(M), Φ3 pressure lead hole, EN837
G02		G1/4(M), Φ3 pressure lead hole, EN837
G09		G1/4(F), EN837
R02		1/4NPT(M), ANSI/ASME B1.20.1
R04		1/4NPT(F), ANSI/ASME B1.20.1

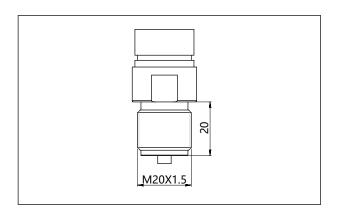
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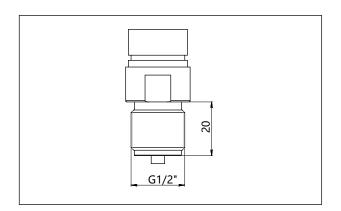
#### Drawing and dimension with DIN43650(D1) (unit: mm)



#### Process connection(M01) (unit: mm)



#### Process connection(G01) (unit: mm)

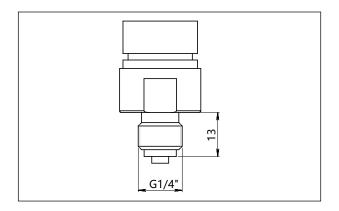


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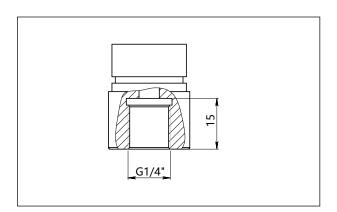
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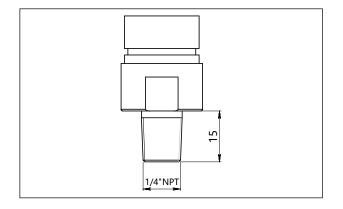
#### Process connection(G02) (unit: mm)



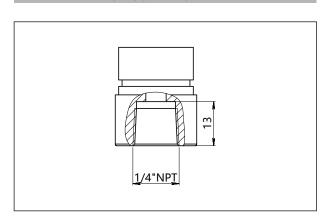
#### Process connection(G09) (unit: mm)



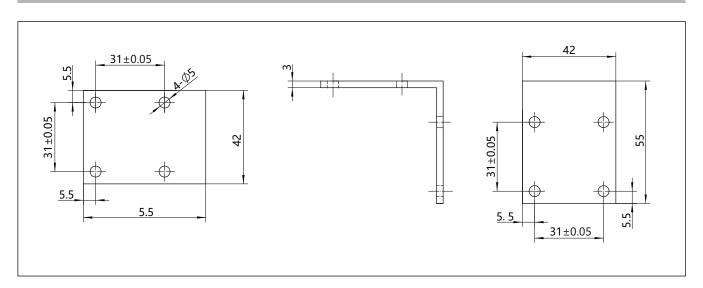
#### Process connection(R02) (unit: mm)



#### Process connection(R04) (unit: mm)



#### Fixed mounting accessory(G1) (unit: mm)



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#### Ordering information chapter

Item	Parameters	Code	Instruction	(*) fast delivery available
	Model	MSSMP131-DLD	Piezoresistive silicon differential pressure sensor	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	L353D	Nominal value(URL): 35kPa	
	range code	L703D	Nominal value(URL): 70kPa	
		L104D	Nominal value(URL): 100kPa	*
		L204D	Nominal value(URL): 200kPa	*
		L354D	Nominal value(URL): 350kPa	*
		L704D	Nominal value(URL): 700kPa	*
		L105D	Nominal value(URL): 1MPa	*
		L205D	Nominal value(URL): 2MPa	*
		L355D	Nominal value(URL): 3.5MPa	*
	Isolated diaphragm material	S	SUS316L	*
	Isolation fluid filling	S	Silicon oil	*
	Sensor seal	S	O-ring, FKM process temperature: -20-200°C)	*
Electrical connetion	Separator	-	Detailed specifications as following	
	Electrical connetion	D1	DIN43650, IP65	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output	F	4-20mA two wire, power supply: 10-30VDC	*
	signal	Н	4-20mA+HART two wire, power supply: 16.5-55VDC	
		R	Modbus-RTU/RS485 four wire, power supply:5vdc/9-30VDC	
		5	0.5-4.5VDC three wire, power supply: 6-15VDC	
		6	0-5VDC three wire, ratiometric output, power supply: 5VDC	
		A	4-20mA two wire, intrinsic safety, power supply: 10- 30VDC	
Process connection	Separator		Detailed specifications as following	
	Material	4	SUS304	*
		6	SUS316	
	Specification	M01	M20*1.5 (M), Φ3 pressure lead hole, GB/T193-2003, ISO261	*
		G01	G1/2 (M), Φ3 pressure lead hole, EN837	*
		G02	G1/4(M), Φ3 pressure lead hole, EN837	
		G09	G1/4(F), EN837	
	1	1		
		R02	1/4NPT(M), ANSI/ASME B1.20.1	

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#### Ordering information chapter

Additional options	Separator	-	Detailed specifications as following	
	Fixed mounting accessory	l'	Fixed mounting braket on base, matched mounting accessory, SUS304	*
Approvals	/11	Intrinsic safety certificate, ExiaIICT4, NEPSI		
	(multiple)	/F3	CE certificate	
	Wetted parts	/G1	Ungrease treatment	
	treatment	/G2	Electropolishing treatment	

#### Approvals

#### Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2008
Scope of certification	Design and production of pressure transmitter
Registration number	110804039

#### CE

Certificate organization	ISET
License scope	MSSMP131 series pressure transmitter
Mark	EU
EMC instruction	2014/30/EU
Standard	AC/0100708
Registration number	IT031353LG161207

#### Intrinsic safety certificate

Certification organization name	NEPSI	
Licenses range	MSSMP131 series pressure transmitter	
Explosion-proof mark	ExiaIICT4	
Ambient temperature	-40-+60°C	
Medium maximum temperature	+120°C	
Registration number	GYB16.1964X	
Intrinsically safe	Maximum input voltage:28VDC	
parameter	Maximum input current:100mA	
description	Maximum input power:0.7w	
	Maximum internal equivalent parametersCi(nF):0	
	Maximum internal equivalent parametersLi(mH):0	



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#### **Product introduction**

#### Description



#### Compact pressure transmitter

MSSMP131 compact pressure transmitter combined with all the latest available technologies of the modern electronic pressure measurement fields. It's the most cost-effective products after 10 year's research and development. The sensor adopts full-automatic linear and temperature compensation technology to ensure the efficiency and quality of mass production. Fully-sealed and isolated air cavity design to ensure the long term reliability. Signal transmitting module adopts original calibration technology to realize parameters setting easily without any tools. MSSMP131 compact pressure transmitter has unique technological advantage which is different from other ordinary products with the same price and its' capabilities are equivalent to the most of the high-end products, which is the first selection of the most cost-effective products.

#### Main parameters

Pressure types	Gauge pressure
Measuring range	2kPa-40MPa, please refer to the ordering information chapter
Output signal	4-20mA,4-20mA+HART, 0-5VDC, Modbus-RTU/RS485, others
Reference accuracy	±0.1% URL, optional ±0.075% URL

#### Measuring medium

The fluids which compatible with wetted parts

#### Field of application

Pressure, Level

#### Approvals





**RoHS** 

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#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit(LRL)*	Upper range limit (URL)	Over load limit
40kPa	2kPa	-40kPa	40kPa	1MPa
250kPa	12.5kPa	-100kPa	250kPa	4MPa
1MPa	50kPa	-100kPa	1MPa	6МРа
3МРа	150kPa	-0.1MPa	3MPa	15MPa
10MPa	500kPa	-0.1MPa	10MPa	20MPa
40MPa	5MPa	-0.1MPa	40MPa	80MPa

The unit of the measuring range above can be converted into kg/cm²、MPa and kPa. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range.

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero basedcalibration span, Linear output, Silicone oil filling, 316L stainless steel isolated diaphragm.

#### Performance specifications

The overall performance including but not limited to [reference accuracy], [environment temperature effects] and other comprehensive error

Typical accuracy: ±0.1URL

Stability: ±0.1% URL/ year

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20℃ ± 5 ℃							
	TD≤10 (note1)	±0.1%URL	Nominal value: 40kPa , 250kPa				
accuracy	10 <td≤20< td=""><td>±0.01TD%URL</td><td>1MPa, 3MPa 10MPa, 40MPa</td></td≤20<>	±0.01TD%URL	1MPa, 3MPa 10MPa, 40MPa				
Note: TD (Turn Down) TD=URL/   URV-LRV							

#### Ambient temperature effects(Typical)

Within the range -20-80 °C total impact | ±0.2%URL/10k

#### Power supply effects

Zero and span change should not be more than  $\pm~0.005\%$  URL/V

#### Loading effects

Zero and span change should not be more than  $\pm~0.05\%$  URL/k $\Omega$ 

#### Vibration effects

	According to IEC60068-2-6 , 10g RMS (25- 2000Hz)
Impact resistence	According to IEC60068-2-27, 500g/1ms

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire
0-5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

#### Working life

10 million max pressure circulation

#### Insulation resistance

≥20MΩ@ reference, 100VDC

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<sup>\*</sup>The actual lower range limit(LRL) is only approximately zero but can not reach absolute zero. Zero value can be calculated.



#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Damping time of amplifer: 0-100S adjustable(with HART protocol

Startup after power off:≤3S (HART output time: ≤6S)

Normal services after data recovery:≤4S (HART output time:≤31S)

#### **Environment condition**

Items	Operational condition		
Working temperature	-40-85°C		
Storage temperature	-40-100°C		
Media temperature	-30-80℃		
Working humidity	0-95%RH		
Protection class	Ip65, IP67		
Dangerous condition	ExiaIICT4(GYB21.4033X)*		
*Only for 4-20mA output			

#### **Technical Specifications**

Signal output	4-20mA	4-20mA+HART*	0-5VDC	RS485
Power supply voltage	12-30VDC 10.5/16.5-55VDC		6-30VDC	5VDC/9-30VDC
Electric current	≤20.8mA		≤3.5mA	≤7mA
Load resistance( $\Omega$ )	<(U-12)/0.0208	<(U-10.5)/0.0208**	≥5k, recommend 100k	/
Transmission distance	<1000m		<5m	<1200m
Power consumption	≤500mW(20.8mA output@24VDC)		≤84mW(0-5VDC output, @24VDC)	≤168mW(RS485 output@24VDC)

<sup>\*</sup>For this output type, the load resistance value in communication is  $250\Omega$ 

#### EMC environment(not RS485 signal output)

Test items	Basic standards	Test conditions	Performance level
Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
Power frequency magnetic field immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
Electrical fast transient / Burst immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)
	Radiated interference Conducted interference (DC power port) Electrostatic discharge immunity test (ESD) Immunity to radio frequency EM-fields Power frequency magnetic field immunity test Electrical fast transient / Burst immunity test Surge immunity requirements Immunity to conducted disturbances induced	Radiated interference  GB/T 9254/CISPR22  Conducted interference (DC power port)  GB/T 9254/CISPR22  Electrostatic discharge immunity test (ESD)  GB/T 17626.2/IEC61000-4-2  Immunity to radio frequency EM-fields  GB/T 17626.3/IEC61000-4-3  Power frequency magnetic field immunity test  GB/T 17626.8/IEC61000-4-8  Electrical fast transient / Burst immunity test  GB/T 17626.4/IEC61000-4-4  Surge immunity requirements  GB/T 17626.5/IEC61000-4-5  Immunity to conducted disturbances induced  GB/T 17626.6/IEC61000-4-6	Radiated interference  GB/T 9254/CISPR22  30MHz-1000MHz  Conducted interference (DC power port)  GB/T 9254/CISPR22  0.15MHz-30MHz  Electrostatic discharge immunity test (ESD)  GB/T 17626.2/IEC61000-4-2  4kV(Contact),8kV(Air)  Immunity to radio frequency EM-fields  GB/T 17626.3/IEC61000-4-3  Power frequency magnetic field immunity test  GB/T 17626.8/IEC61000-4-8  Electrical fast transient / Burst immunity test  GB/T 17626.4/IEC61000-4-4  2kV(5/50ns,100kHz)  Surge immunity requirements  GB/T 17626.5/IEC61000-4-5  1kV(Line to ground)  (1.2us/50us)  Immunity to conducted disturbances induced  GB/T 17626.6/IEC61000-4-6  3V(150kHz-80MHz)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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<sup>\*\*</sup>The load resistance value 0-2119 $\Omega$  is in nominal working condition, 250-600 $\Omega$  is HART communication



#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description	
S403G	40kPa	Range -40kPa-40kPa, smallest calibratable span 2kPa	
S254G	250kPa	Range -100kPa-250kPa, smallest calibratable span 12.5kPa	
S105G	1MPa	Range -100kPa-1MPa, smallest calibratable span 50kPa	
S305G	3МРа	Range -100kPa-3MPa, smallest calibratable span 150kPa	
S106G	10MPa	Range -100kPa-10MPa, smallest calibratable span 500kPa	
S406G	40MPa	Range -100kPa-40MPa, smallest calibratable span 5MPa	

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range.

Code	Item	Description	
S	Isolated	SUS316L	
Н	diaphragm material	Hastelloy C	
S	Isolated filling fluid	Silicon oil filling, process temperature: -45-205°C	
D		Fluorocarbon oil filling, process temperature: -45-160°C	
S	Sensor seal	O-ring, FKM	
F		Stainless steel welding	

#### Diaphragm (S/H)



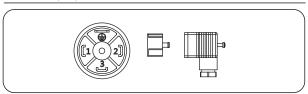
#### Electrical connection select instruction

Code	Description
D1	DIN43650, IP65
H1	Air plug, M12*1, 4 pin, IP67

# DIN43650(D1)



#### DIN43650(D1)



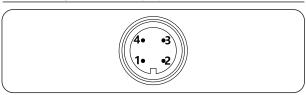
Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2	Power-	Power-	Power-	Power-
3	Key-z	Signal+	Signal+	A+
<b>(4)</b>			Signal-	B-

Note: Key-z is modified zero pressure

#### Aviation plug, M12\*1(4 pin)(H1)



#### Aviation plug, M12\*1, 4 pin(H1)



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2			Signal-	B-
3	Key-z	Signal+	Signal+	A+
4	Power-	Power-	Power-	Power-

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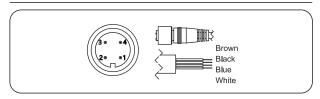
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#### Product selection instruction

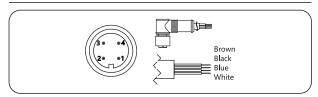
#### Electrical connection accessory

#### Aviation plug straighter(J1)



label	Two wires	Three wires	Four wires	Modbus-TRU/RS485
1/Brown	Powe+	Power+	Power+	Power+
2/White			Power-	B-
3/Blue	Key-z	Signal+	Signal+	A+
4/Black	Power-	Power-	Power-	Power-

#### Aviation plug elbow (J2)



label	Two wires	Three wires	Four wires	Modbus-TRU/RS485
1/Brown	Power+	Power+	Power+	Power+
2/White			Signal-	B-
3/Blue	Key-z	Signal+	Signal+	A+
4/Black	Power-	Power-	Power-	Power-

#### Output signal select instruction

Code	Description
F	4-20mA two wire, power supply: 10-30VDC
Н	4-20mA+ Hart two wire ,power supply: 16.5-55VDC
R	Modbus-RTU/RS485 5V/9-30VDC
5	0.5-4.5V DC three wire, power supply: 6-30VDC
6	0.5-4.5V DC three wire, ratiometric output, power supply: 5VDC
А	4-20mA two wire, Intrinisic safety, power supply: 10-30VDC

#### Process connection select instruction

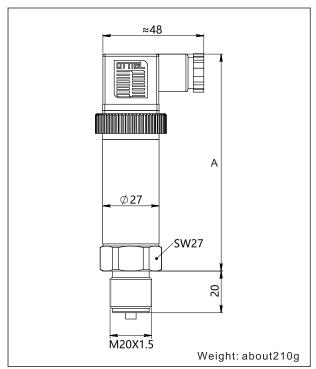
Code	Туре	Description
4	Material	SUS304
6		SUS316
M01	Specification	M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261
G01		G1/2(M), Φ3 pressure lead hole, EN837
G02		G1/4(M), Φ3 pressure lead hole, EN837
G08		G1/4(M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal reference DIN3852- E(back-end seal) Max measuring range 60MPa
R01		1/2-14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R02		1/4-18NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R03		1/2-14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R04		1/4-18NPT(F), Φ3 pressure lead hole GB/T12716, ANSI/ASME B1.20.1

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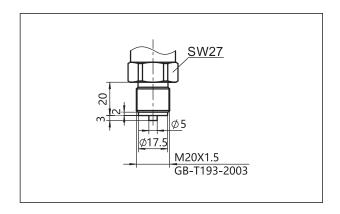
#### Drawing and dimension with DIN43650(D1) (unit: mm)



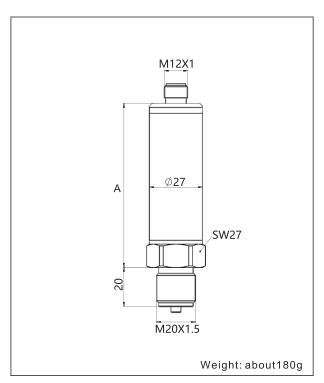
Value of A in different output signal types(DIN43650 adaptor)

Output signal code	(Accuracy≤0.1% URL)	Other accuracy
F, H, A	123	108
5, 6	-	108
R	123	123

#### Process connection(M01) (unit: mm)



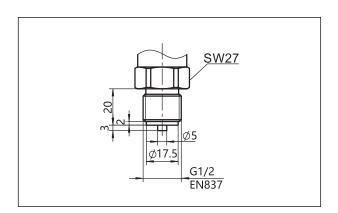
#### Drawing and dimension with Aviation plug(H1) (unit: mm)



Value of A in different output signal types(Aviation plug)

Output signal code	(Accuracy≤0.1% URL)	Other accuracy
F、H、A	83	68
5, 6	-	68
R	83	83

#### Process connection(G01) (unit: mm)

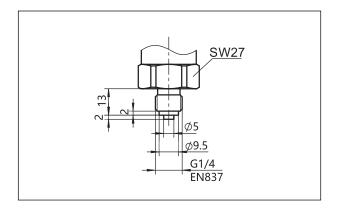


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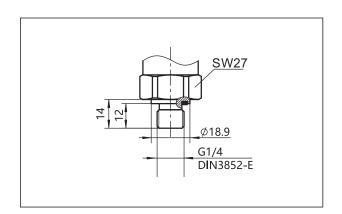
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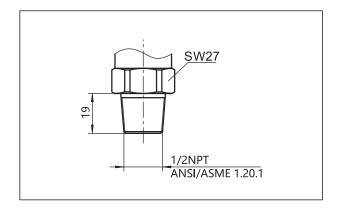
#### Process connection(G02) (unit: mm)



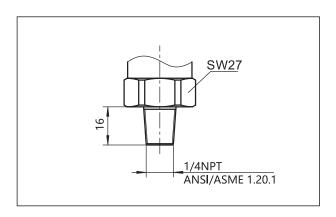
#### Process connection(G08) (unit: mm)



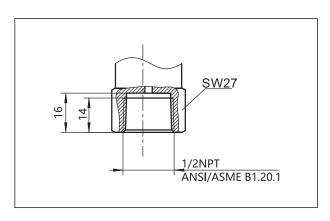
#### Process connection(R01) (unit: mm)



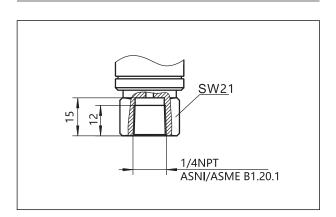
#### Process connection(R02) (unit: mm)



#### Process connection(R03) (unit: mm)



#### Process connection(R04) (unit: mm)

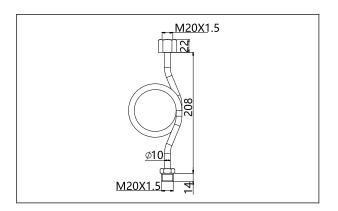


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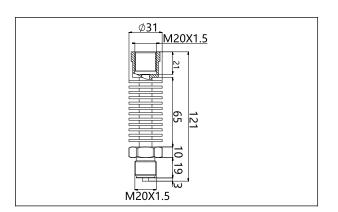
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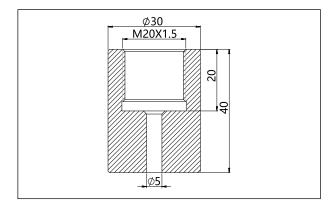
#### Heat exchange connector(N1) (unit: mm)



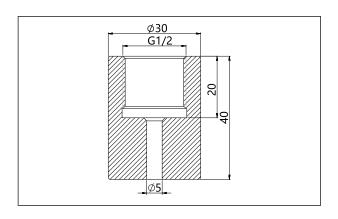
#### Heat exchange connector(N2)(unit: mm)



#### Welding adaptor(Z1) (unit: mm)



#### Welding adaptor(Z2) (unit: mm)



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#### Ordering information chapter

Item	Parameters	Code	Instruction	(*) fast delivery available
	Model MSSMP TSD		Monosilicon gauge pressure sensor (The first letter of electrical connection tpye is D)	*
		MSSMP131- TSH	Monosilicon gauge pressure sensor (The first letter of electrical connection tpye is H)	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	S403G	Nominal value(URL): 40kPa	*
	range code	S254G	Nominal value(URL): 250kPa	*
		S105G	Nominal value(URL): 1MPa	*
		S305G	Nominal value(URL): 3MPa	*
		S106G	Nominal value(URL): 10MPa	*
		S406G	Nominal value(URL): 40MPa	*
	Isolated	S	SUS316L	*
	diaphragm material	Н	Hastelloy C	
	Isolated	S	Silicon oil filling, process temperature: -45-205°C	*
	filling fluid	D	Fluorocarbon oil filling, process temperature: -45-160°C	*
	Sensor seal	S	O-ring, FKM	
		F	Stainless steel welding	
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical	D1	DIN43650 connector, IP65	
	connection	H1	Air plug, M12*1, 4 pin, IP67	
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output	F	4-20mA two wire, power supply: 12-30VDC	*
	signal	Н	4-20mA+HART two wire, power supply: 16.5-55VDC	
		R	Modbus-RTU/RS485 four wire, power supply:5VDC/9-30VDC	
		1	1-5VDC three wire, power supply: 12-30VDC	
		2	0-5VDC three wire, power supply: 6-30VDC	
		5	0.5-4.5VDC three wire, power supply:6-15VDC	
		Α	4-20mA two wire, intrinsic safety, power supply: 12-30VDC	
Tube type	Separator	-	Detailed specifications as following	
	Tube	53	Stainless steel tube length: 53mm (HART, Modbus-RTU/RS485 is not available)	
		37	Stainless steel tube length: 37mm (HART, Modbus- RTU/RS485 is not available)	
		65	Stainless steel tube length: 65mm (with HART、Modbus-TRU/RS487), accuracy≤0.1%	*
		85	Stainless steel tube length: 85mm (with HART、Modbus-TRU/RS487), accuracy≤0.1%	

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#### Ordering information chapter

Process connection	Separator	-	Detailed specifications as following	
	Material	6	SUS316	
	Specification	M01	M20*1.5 (M), Φ3 pressure lead hole, GB/T193-2003, ISO261	*
		G01	G1/2 (M), Φ3 pressure lead hole, EN837	*
		G02	G1/4(M), Φ3 pressure lead hole, EN837	
		G08	G1/4(M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal refers to DIN3852-E (back-end seal), maximum measuring range: 60 MPa	
		R01	1/2 -14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
		R02	1/4 -18NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
		R03	1/2 -14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
		R04	1/4 -18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
Additional options	Separator	-	Detailed specifications as following	
	Process connection	/N1	Heat exchange connector, M20*1.5 (F) change to M20*1.5(M), SUS304 (Condenser pipe)	*
	mounting accessory	/N2	Heat exchange connector, M20*1.5 (F) change to M20*1.5(M), SUS304 (Cooling fin)	*
	Process	/Z1	Welding adaptor, M20*1.5(F), SUS304	*
acce Appr	connection accessory	/Z2	Welding adaptor, G1/2(F), SUS304	*
	Approvals (multiple)	/I1	Intrinsic safety certificate, ExiaIICT4, NEPSI (Please consult engineers for details)	
		/F3	CE certificate	
		/G1	Ungrease treatment	
	treatment	/G2	Electropolishing treatment	

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#### **Approvals**

#### Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2008
•	Design and production of pressure transmitter
Registration number	110804039

#### CE

Certificate organization	ISET
License scope	SMP131 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registration number	IT031353LG161207

#### Intrinsic safety certificate

Certification organization name	NEPSI	
License scope	MSSMP131 series pressure transmitter	
Explosion-proof mark	ExialICT4	
Ambient temperature	-40-+60°C	
Medium maximum temperature	+120℃	
Registration number	GYB21.4033X	
Intrinsically safe	Maximum input voltage:28VDC	
parameter	Maximum input current:100mA	
description	Maximum input power:0.7w	
	Maximum internal equivalent parametersCi(nF):0	
	Maximum internal equivalent parametersLi(mH): =0.01	



#### SIN JIA ENTERPRISE COMPANY LIMITED

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# TRANSMISORES ESPECIALES

HIGIÉNICOS



#### Product introduction

#### Description



#### Hygienic pressure transmitter

Hygienic pressure transmitter, designed for food and pharmaceutical industry, is suitable for CIP/SIP cleaning and sterilization. Smart compact design, the welded process diaphragm medium parts is made of high quality stainless steel 316L, roughness≤0.4um, filling fluid with hygiene standard in line with FDA certification, variety of international standard process connections are available.

#### Main parameters

Pressure types	Gauge pressure	
Measuring range	10kPa-3MPa, please refer to the ordering information chapter	
Output signal	4-20mA,4-20mA+HART,0.5-4.5VDC, Modbus-RTU/RS485,customer	
Reference accuracy	±0.2% URL, ±0.5% URL, customer	

#### Field of application

Pressure, level

#### Approvals



#### Measuring medium

Viscous, paste-like, adhesive, crystallising, particulatescontaining and contaminated media

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#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit ( LRL )	Upper range limit (URL)	Over pressure limit
40kPa	10kPa	-40kPa	40kPa	1MPa
250kPa	40kPa	-100kPa	250kPa	4MPa
1MPa	250kPa	-100kPa	1MPa	6MPa
3МРа	1MPa	-100kPa	3МРа	15MPa

The unit of the measuring range above can be converted into kg/cm²、 MPa and kPa. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range.

Limit value of overpressure: depends on the pressure value of the parts with lowest pressure capacity

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero basedcalibration span, Linear output, Silicone oil filling, 316L stainless steel isolation diaphragm.

#### Performance specifications

The overall performance including but not limited to 【reference accuracy】, 【environment temperature effects】 and other comprehensive error

Typical accuracy: ±0.2URL Stability: ±0.2% URL/ year

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20°C±5°C			
1			Nominal value:
output accuracy	Max value/ voltage output	±0.5%URL	40kPa, 250kPa 1MPa, 3MPa

#### Ambient temperature effects(Typical)

Within the range - 20-80°C total impact |±0.2%URL/10k

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

#### Loading effects

Zero and span change should not be more than ± 0.05% URL/k $\Omega$ 

#### Vibration effects

Vibration resistence	According to IEC60068-2-6 , 10g RMS (25- 2000HZ)
Impact resistence	According to IEC60068-2-27, 500g/1ms

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire
0.5-4.5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

#### Insulation resistance

≥20MΩ@, 100VDC

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#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule
Damping time of amplifer : 0-100S adjustable
Diaphragm capsule (isolation diaphragm and silicon oil filling) damping time: ≤0.2S
Startup after power off : ≤3S (with HART communication: ≤0.2S)
Normal services after data recovery: ≤4S (with HART communication: ≤31S)

#### **Environment condition**

Items	Operational condition
Media temperature	-40-85°C
Storage temperature	-40-100°C
isolated filling fluid temperature	Sanitary fluid filling :-10-125°C; with heat exchange connector: - 10-250°C*
	Silicon oil filling: -40-120°C, with heat exchange connector: -40-300°C*
Working humidity	0-95%RH
Protection class	IP67
Dangerous condition	ExialICT4(GYB16.1965X)**
*11: 1 ( )	

<sup>\*</sup>Using heat exchange connector may lead to zero offset and temperature drift. The degree depends on mounting position and filling fluid

#### **Technical Specifications**

Signal output	4-20mA	4-20mA+HART*	0.5-4.5VDC	0.5-4.5VDC(ratiometric output)	RS485
Power supply voltage	10-30VDC	10.5/16.5-55VDC	6-15VDC	5VDC	5VDC/9-30VDC
Electric current	≤20.8mA		≤3.5mA		≤7mA
Load resistance( $\Omega$ )	<(U-10)/0.0208	<(U-10.5)/0.0208**	≥5k, recommend 100k		/
Transmission distance	<1000m		<5m		<1200m
Power consumption	≤500mW(20.8mA output@24VDC)		1 ' ' '		≤168mW(RS485 output@24VDC)

<sup>\*</sup>For this output type, the load resistance value in communication is  $250\Omega$ 

#### EMC environment(not RS485 signal output)

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ОК
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ОК
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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<sup>\*\*</sup>Please contact the engineer for further information

<sup>\*\*</sup>The load resistance value 0-2119 $\Omega$  is in nominal working condition, 250-600 $\Omega$  is HART communication



#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description
L403G	40kPa	Range 0kPa-35kPa, smallest calibratable span 10kPa
L254G	250kPa	Range 0kPa-200kPa, smallest calibratable span 25kPa
L105G	1MPa	Range 0kPa-1MPa, smallest calibratable span 100kPa
L305G	3МРа	Range 0kPa-3.5MPa, smallest calibratable span 300kPa

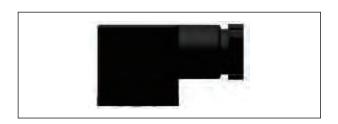
Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

#### Electrical connection

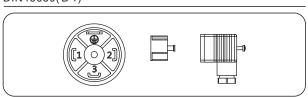
Code	Description
D1	DIN43650 connector, IP65

#### DIN43650(D1)



#### Electrical connection

#### DIN43650(D1)



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2	Power+	Power-	Power-	Power-
3	Key-z	Signal+	Signal+	A+
<b>(4)</b>			Signal-	B-

Note: Key-z is modified zero pressure

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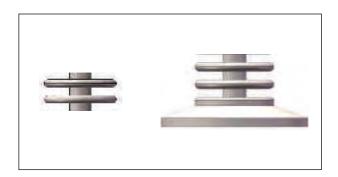


#### Product selection instruction

#### Transmission module

Code	Description
F	4-20mA two wire, power supply: 10-30VDC
Н	4-20mA+HART two wire, power supply: 16.5- 55VDC
R	Modbus-RTU/RS485 5V/9-30VDC
5	0.5-4.5VDC three wire, power supply: 6-15VDC
6	0.5-4.5VDC three wire, proportional output power supply: 5VDC
А	4-20mA two wire, intrinsic safety, power supply: 10-30VDC

#### Cooling element connector (HT)



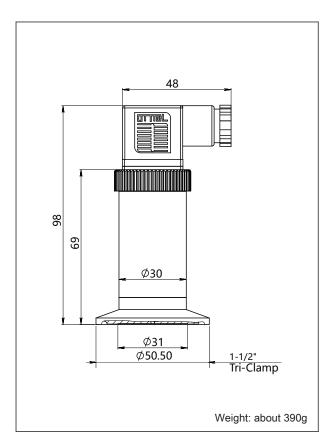
#### Process connection select instruction

Code	Items	Description
4	Process connector material	Stainless steel, SUS304
6		Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -25-85°C
НТ		Cooling element connector, medium temperature: -40-150°C
F	Isolation fluid filling	Sanitary fluid filling, Neobee M-20
S		Silicon oil filling
s	Isolation diaphragm material	SUS316L
Н		Hastelloy C
K01	Process connection specifications	Tri-Clamp 1-1/2"
K02		Tri-Clamp 2"
K03		DIN32676 DN32
K04		DIN32676 DN40
K05		DIN32676 DN50
K06		ISO2852 DN38
K07		ISO2852 DN40
K08		ISO2852 DN51
K09		DIN11851 DN25
K10		DIN11851 DN40
K11		DIN11851 DN50
K12		SMS DN1-1/2"
K13		SMS DN2"
K14		IDF DN1-1/2"
K15		IDF DN2"
K18		DRD
K20		Plug in tube flush sanitary clamp

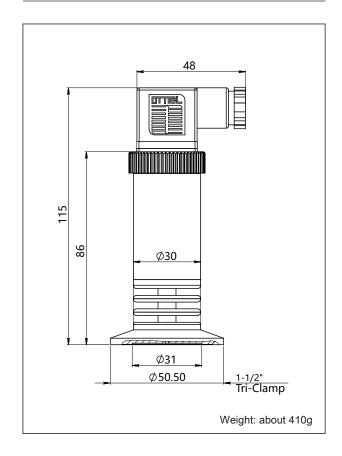
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# Standard drawing and dimension with DIN43650 (D1) ( unit:mm)



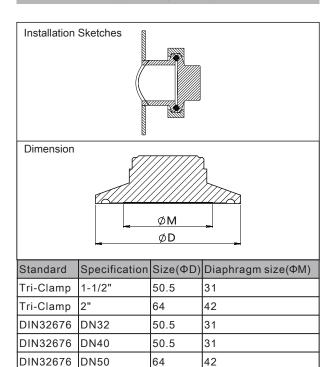
## $\label{eq:high-temperature} \begin{tabular}{ll} High-temperature drawing and dimension with DIN43650 (D1) (unit:mm) \end{tabular}$



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#### Process connection (K01-K08)(unit: mm)



50.5

64

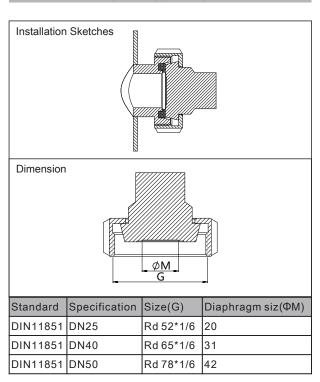
64

31

42

42

#### Process connection (K09-K11)(unit: mm)



#### Process connection (K12-K13)(unit: mm)

**DN38** 

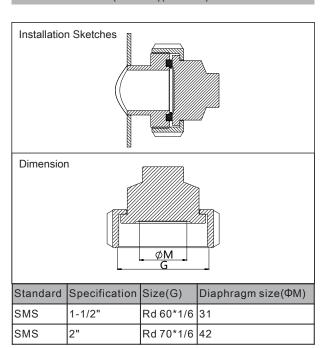
DN40

DN51

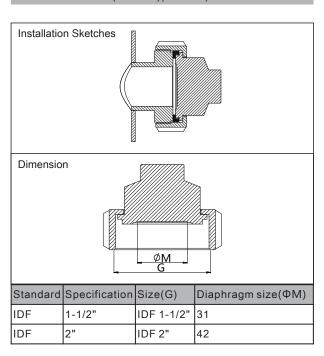
ISO2852

ISO2852

ISO2852



#### Process connection (K14-K15)(unit: mm)

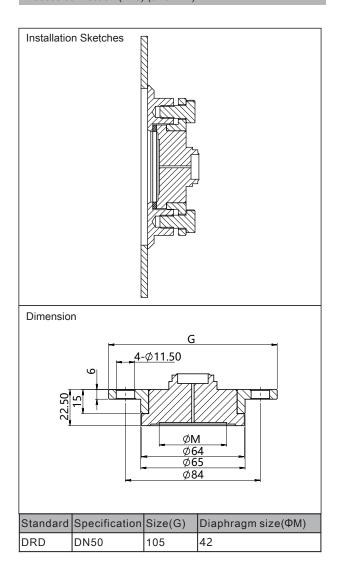


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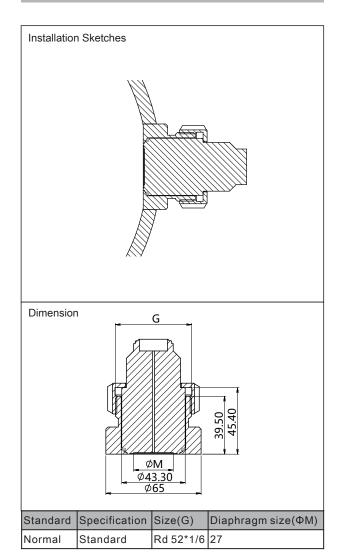
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#### Process connection (K18) (unit: mm)



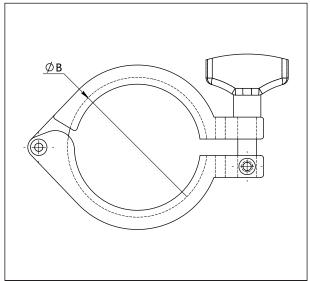
#### Process connection (K20) (unit: mm)



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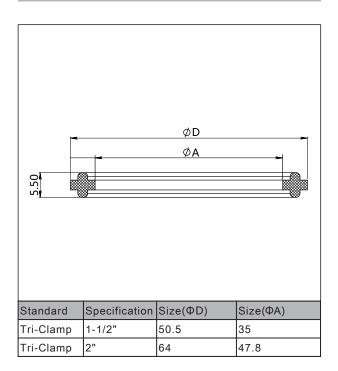


#### Tri-Clamp ( G1-G2 ) (unit: mm )

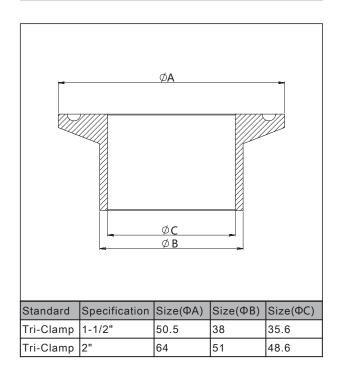


# Standard Specification Size(ΦB) Tri-Clamp 1-1/2" 53.9 Tri-Clamp 2" 67.4

#### Seal ring (M1-M2) (unit: mm)



#### Welding adaptor(Z1-Z1)(unit:mm)



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# Ordering information chapter

Item	Parameters	Code	Instruction	(*) Fast delivery available
	Model	MSSMP858-TSD	Monosilicon gauge pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure S403G Nominal value(URL): 40kPa			
	range code	S254G	Nominal value(URL): 250kPa	
		S105G	Nominal value(URL): 1MPa	*
		S305G	Nominal value(URL): 3MPa	
	Sensor seal	F	Stainless steel welding seal	
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	D1	DIN43650 connector, IP65	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output signal	F	4-20mA two wire, power supply: 10-30VDC	*
		Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
		R	Modbus-RTU/RS485 5V/9-30VDC	
		5	0.5-4.5VDC three wire, power supply: 6-15VDC	
		6	0.5-4.5VDC three wire, ratiometric output, power supply: 5VDC	
		A	4-20mA two wire, intrinsic safety, power supply: 10- 30VDC	
Body tube	Separator	-	Detailed specifications as following	
	Tube	53	Stainless steel tube length: 53mm (HART, Modbus-TRU/RS485 is not available )	*
		65	Stainless steel tube length: 65mm (HART, Modbus-TRU/RS485 is not available)	*
		85	Stainless steel tube length: 85mm (with HART、Modbus-TRU/RS485)	
Process connection	Separator	-	Detailed specifications as following	
	Process	4	Stainless steel, SUS304	*
	connector material	6	Stainless steel, SUS316	
	Connection	NT	Standard connection, medium temperature: -25-85°C	
	type	НТ	Cooling element connector, medium temperature: -40-150°C	*
	Isolation fluid filling	F	Sanitary fluid filling, Neobee M-20	*
		S	Silicon oil filling, process temperature: -45-205°C	*

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# Ordering information chapter

	Isolation diaphragm material	S	SUS316L	
		Н	Hastelloy C	
	Process	K01	Tri-Clamp 1-1/2", max measuring range 2MPa	*
	connection specifications	K02	Tri-Clamp 2", max measuring range 2MPa	*
		K03	DIN32676 DN32, max measuring range 1.6MPa	
		K04	DIN32676 DN40, max measuring range 1.6MPa	
		K05	DIN32676 DN50, max measuring range 1.6MPa	
		K06	ISO2852 DN38, max measuring range 4MPa	
		K07	ISO2852 DN40, max measuring range 4MPa	
		K08	ISO2852 DN51, max measuring range 2.5MPa	
		K09	DIN11851 DN25, max measuring range 2.5MPa	
		K10	DIN11851 DN40, max measuring range 2.5MPa	
		K11	DIN11851 DN50, max measuring range 2.5MPa	
		K12	SMS DN1-1/2", max measuring range 2.5MPa	
		K13	SMS DN2", max measuring range 2.5MPa	
		K14	IDF DN1-1/2", max measuring range 2MPa	
		K15	IDF DN2", max measuring range 2MPa	
		K18	DRD, max measuring range 2.5MPa	
		K20	Plug in tube flush sanitary clamp, max measuring range 2MPa	
Additional options	Separator	-	Detailed specifications as following	
	Process	/G1	1.5" Tri-clamp	*
	connection accessory	/G2	2" Tri-clamp	*
		/M1	1.5" sealing gasket, material: silicon rubber, process temperature range: -60-200°C	*
		/M2	2" sealing gasket, material: silicon rubber, process temperature range: -60-200°C	*
		/Z1	Welding adaptor, Tri-Clamp1-1/2"	
		/Z2	Welding adaptor, Tri-Clamp2"	*
	Calibration report	/Q1	Calibration report provided by our company	*
	Approvals	/I1	Intrinsic safety certificate, ExiaIICT4, NEPSI	*
	(multiple)	/F3	CE certificate	
I	Wetted parts treatment	/G1	Ungrease treatment	
		/G2	Electropolishing treatment	

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#### **Approvals**

#### Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2015
IS cond of cortification	Design and production of pressure transmitter
Registration number	110804039

#### CE

Certificate organization	ISET
License scope	MSSMP858 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registered number	IT051353LG161207

#### Intrinsic safety certificate

Certification organization name	NEPSI	
Licenses range	MSSMP858 series pressure transmitter	
Explosion-proof mark	ExiaIICT4	
Ambient temperature	-40-+60°C	
Medium maximum temperature	+120°C	
Registration number	GYB16.1965X	
Intrinsically safe	Maximum input voltage:28VDC	
parameter description	Maximum input current:100mA	
	Maximum input power:0.7w	
	Maximum internal equivalent parametersCi(nF):0	
	Maximum internal equivalent parametersLi(mH):0	



#### SIN JIA ENTERPRISE COMPANY LIMITED

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#### Description



### Hygienic pressure transmitter

Hygienic pressure transmitter, designed for food and pharmaceutical industry, is suitable for CIP/SIP cleaning and sterilization. Smart compact design, the welded process diaphragm medium parts is made of high quality stainless steel 316L, roughnesss0.4um, filling filuid with hygiene standard in line with FDA certification, variety of international standard process connections are available.

#### Main parameters

Pressure types	Gauge pressure	
Measuring range	10kPa-3MPa, please refer to the ordering information chapter	
Output signal	4-20mA, 4-20mA+HART, customer	
Reference accuracy	±0.2% URL, ±0.5% URL, customer	

#### Measuring medium

viscous, paste-like, adhesive, crystallising, particulatescontaining and contaminated media

#### Field of application

Pressure, level

#### Approvals







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Nominal value	Smallest calibratable span	Lower range limit (LRL)	Upper range limit (URL)	Over pressure limit*
40kPa	10kPa	-40kPa	40kPa	1MPa
250kPa	25kPa	-100kPa	250kPa	4MPa
1MPa	100kPa	-100kPa	1MPa	6MPa
3MPa	300kPa	-100kPa	3MPa	15MPa

The unit of the measuring range above can be converted into kg/cm², MPa and kPa. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range.

Limit value of over pressure: depends on the pressure value of the parts with lowest pressure capacity!

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; zero basedcalibration span, linear output, silicone oil filling, 316L stainless steel isolation diaphragm.

#### Performance specifications

The overall performance including but not limited to 【Reference accuracy】, 【Environment temperature effects】, 【Static pressure effects】 and other comprehensive error

Typical accuracy: ±0.2% URL Stability: ±0.2% URL/year

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20°C±5°C				
	Typical		Nominal value	
output accuracy	Max value	1+11 5% HRI	40kPa, 250kPa 1MPa, 3MPa	
,				

The accuracy of square root output is 1.5 times of above linear reference output accuracy.

#### Ambient temperature effects

Within the range -20-80°C total impact	±0.2% URL/10K
--	---------------

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

#### Loading effects

Zero and span change should not be more than  $\pm~0.05\%$  URL/k $\Omega$ 

#### Vibration effects

1	According to IEC60068-2-6 , 10g RMS (25- 2000HZ)
Impact resistence	According to IEC60068-2-27, 500g/1ms

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+AHRT	Linearity	Two wire

#### Insulation resistance

≥20MΩ@ reference, 100VDC

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#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule
Damping time of amplifer : 0-100S adjustable
Damping time of sensor capsule (isolation sensor diaphragm and silicon filling oil)≤0.2S
Startup after power off: ≤6S
Normal services after data recovery: ≤31S

#### Weight

Net weight: about 0.6kg ( without mounting bracket and process connection adaptor )

#### **Environment condition**

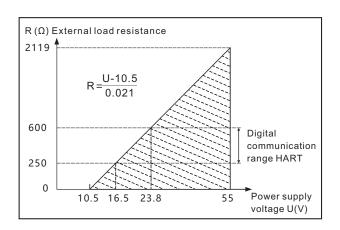
Items	Operational condition
Media temperature	-40-85℃, integrated LCD display: -20-70℃
Storage temperature	-40-110°C, integrated LCD display: -40-85°C
Isolated filling fluid	connection:-25-80°C
temperature	Cooling element connector:-40- 150°C
Working humidity	0-95%RH
Proction class	IP67
Dangerous condition	ExiaIICT4(GYB16.1965X)**
***	

<sup>\*</sup>Using heat exchange connector may lead to zero offset and temperature drift. The degree depends on mounting position and filling fluid

#### Power supply

Item	Operating conditions
Standard	10.5-55VDC
HART protocol	16.5-55VDC,communication load resistance 250Ω
Load resistance	0-2119Ω for operation, 250-600Ω for HART protocol
Transmission distance	<1000 meters
Power consumption	≤500mW@24VDC, 20.8mA

#### Power supply and load requirements



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<sup>\*\*</sup>Please contact the engineer for details



#### EMC environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ОК
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

<sup>(</sup>Note 1)Performance level A: The preformance within the limits of normal technical specifications.

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<sup>(</sup>Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.



#### Menu function

#### Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

#### LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

#### Unit

Unit	Definition	
kPa	Kilopascal	
MPa	Megapascals	
bar	Bar	
psi	Pounds per square inch	
mmHg	Millimetre(s) of mercury@0°C	
mmH2O	Millimeter of water@4°C	
mH2O	Meter of water@4°C	
inH2O	Inches of water@4°C	
ftH2O	Feet of water@4°C	
inHg	Inches of mercury@0°C	
mHg	Meter mercury column@0°C	
TORR	Torr	
mbar	Millibar	
g/cm2	Gram per square centimeter	
kg/cm2	Kilogram per square centimeter	
Pa	PA	
ATM	Standard atmospheric pressure	
mm	Millimeter(Note1)	
m	Meter(Note1)	
Note1: len	Note1: length unit need mark medium density	

#### Measuring menu set

Mark	State
URV	Upper range value
LRV	Lower range value

#### Damping time

Units	Setting range
S	0-100

#### Analog output type

Parameters	Output type
mA LINER	Linearity
mA √	Square root

#### Alarm signal

Parameters	Alarm signal
ALARM NO	None
ALARM H	20.8mA
ALARM L	3.8mA

#### Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8000mA
4.0000	4.0000mA
8.0000	8.0000mA
12.000	12.000mA
16.000	16.000mA
20.000	20.000mA
20.800	20.800mA

#### Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, used to correct the error cased by static pressure and installation.
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description
S403G	40kPa	Range -40kPa-40kPa, smallest calibratable span 10kPa
S254G	250kPa	Range -100kPa-250kPa, smallest calibratable span 25kPa
S105G	1MPa	Range -100kPa-1MPa, smallest calibratable span 100kPa
S305G	3МРа	Range -100kPa-3MPa, smallest calibratable span 300kPa

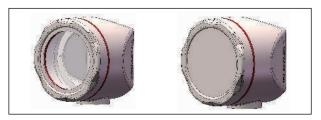
Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range \( \) URV - LRV |\( \) maximum measuring range

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

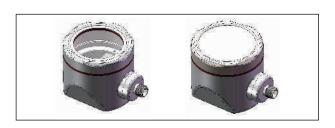
#### Electrical connection

Code	Item	Description
1		Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,vertical mounting
F2		Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,horizontal mounting

#### Housing(F1)



#### Housing(F2)

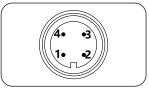


#### Aviation plug, M12\*1, 4 pin(H2)



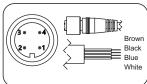
#### Aviation plug, M12\*1, 4 pin(H2)

#### Aviation plug, M12\*1, 4 pin(H2)



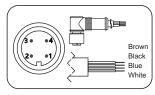
label	Two wires
1	Power+
2	
3	
4	Power-

#### Aviation plug straighter(J1)



)	Label	Two wires
	1/Brown	Power+
	2/White	
	3/Blue	
	4/Black	Power -

#### Aviation plug elbow(J2)



Label	Two wires
1/Brown	Power+
2/White	
3/Blue	Key-z
4/Black	Power -

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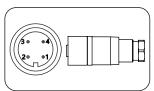
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#### Product selection instruction

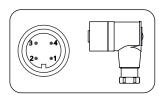
### Electrical connetion accessories

#### Aviation plug straighter(J4)



Label	Two wires
1	Power+
2	
3	
4	Power -

#### Aviation plug elbow(J5)

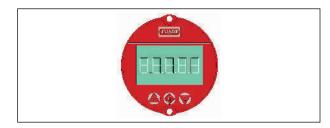


Label	Two wires
1	Power+
2	
3	
4	Power -

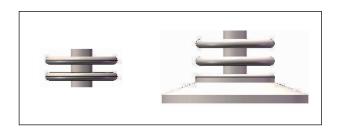
#### Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10.5-55VDC
Н		4-20mA+HART two wire, power supply: 16.5-55VDC
А	Display	Without display
С		With LCD display

### Display module(C)



#### Cooling element connector (HT)



#### Process connection select instruction

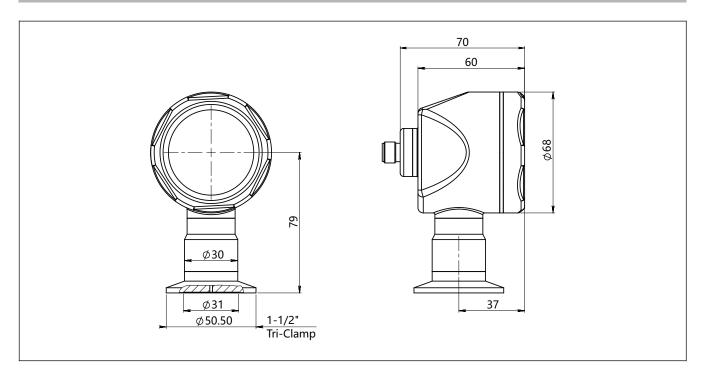
Code	Items	Description		
4	Process	Stainless steel, SUS304		
6	connector material	Stainless steel, SUS316		
NT	Connection type	Standard connection, medium temperature: -25-85°C		
HT		Cooling element connector, medium temperature: -40-150℃		
F	Isolation fluid filling	Sanitary fluid filling, Neobee M-20		
S		Silicon oil filling, suitable medium temperature: -45-205℃		
S	Isolation	Stainless steel, SUS316L		
Н	diaphragm material	Hastelloy alloy		
K01	Process	Tri-Clamp 1-1/2"		
K02	connection	Tri-Clamp 2"		
K03	specifications	DIN32676 DN32		
K04		DIN32676 DN40		
K05		DIN32676 DN50		
K06	]	ISO2852 Dn38		
K07		ISO2852 DN40		
K08	]	ISO2852 DN51		
K09	]	DIN11851 DN25		
K10		DIN11851 DN40		
K11		DIN11851 DN50		
K12		SMS DN1-1/2"		
K13		SMS DN2"		
K14		IDF DN1-1/2"		
K15		IDF DN2"		
K18		DRD		
K20		Plug in tule flush sanitary-clamp		

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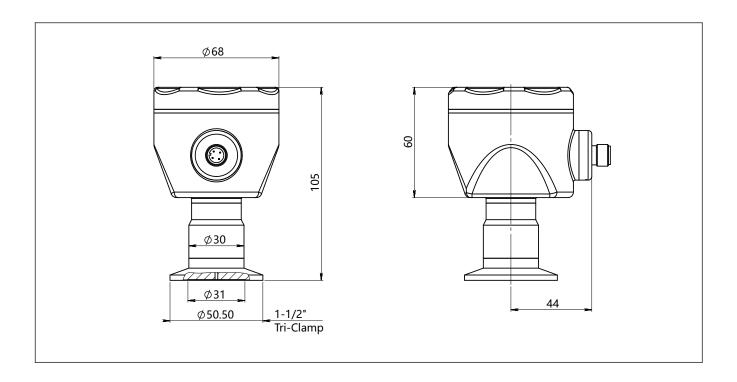
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#### $Standard\ drawing\ and\ dimension\ with\ display(C)/\ without\ display\ (A) vertical\ installation(F1)(unit:mm)$



#### $Standard\ drawing\ and\ dimension\ with\ display@/\ without\ display(A) horizontal\ installation(F2) (unit:mm)$

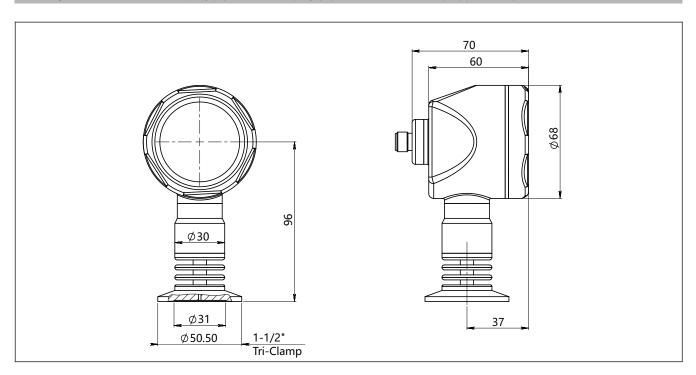


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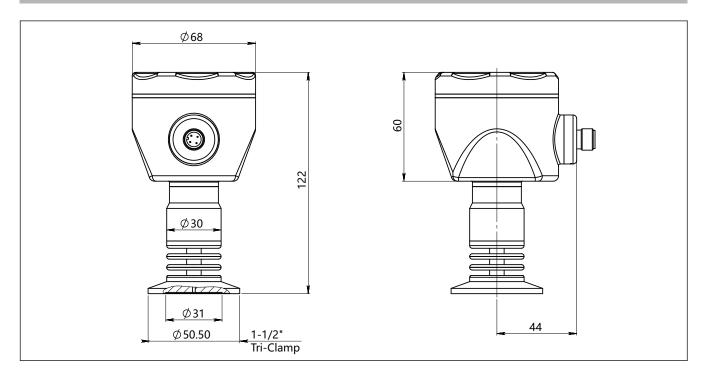
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#### $Drawing \ and \ dimension \ with \ display(C)/\ without \ display \ (A)\ vertical \ installation(F1)(unit:mm)$



#### $High-temperature\ drawing\ and\ dimension\ with\ display(C)/\ without\ display\ (A\ )\ horizontal\ installation(F2)(unit:mm)$

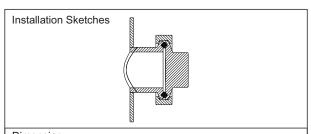


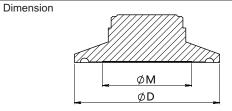
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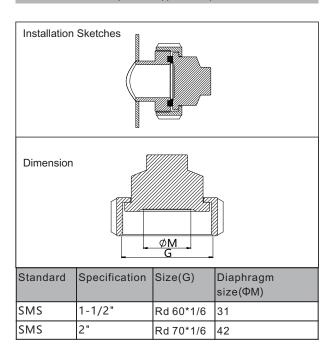
#### Process connection (K01-K08)(unit: mm)



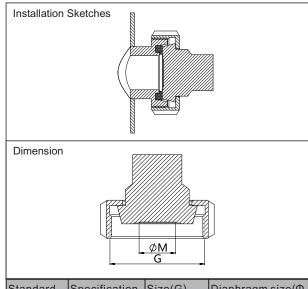


Standard	Specification	Size(ΦD)	Diaphragm size (ФМ)
Tri-Clamp	1-1/2"	50.5	31
Tri-Clamp	2"	64	42
DIN32676	DN32	50.5	31
DIN32676	DN40	50.5	31
DIN32676	DN50	64	42
ISO2852	DN38	50.5	31
ISO2852	DN40	64	42
ISO2852	DN51	64	42

#### Process connection (K12-K13)(unit: mm)

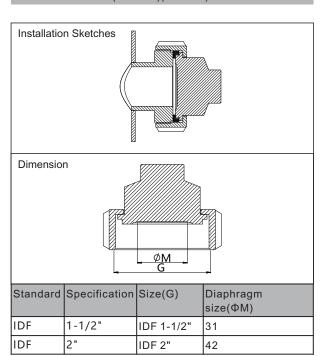


#### Process connection (K09-K11)(unit: mm)



Standard	Specification	Size(G)	Diaphragm size(Φ M)	
DIN11851	DN25	Rd 52*1/6	20	
DIN11851	DN40	Rd 65*1/6	31	
DIN11851	DN50	Rd 78*1/6	42	

#### Process connection (K14-K15)(unit: mm)

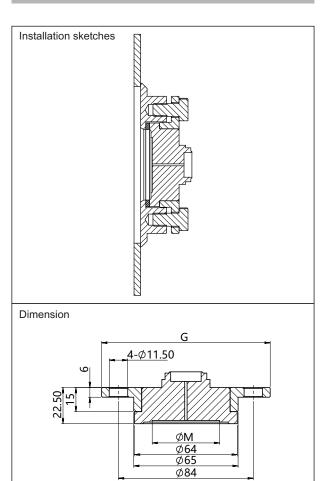


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#### Process connection (K18) (unit: mm)

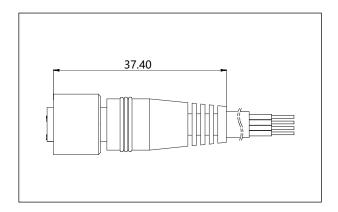


#### Aviation female plug straighter(J1) (unit: mm)

Standard Specification Size(G)

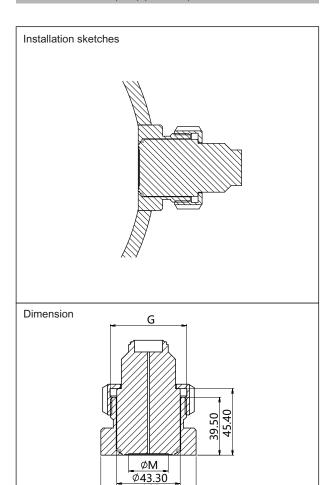
**DN50** 

DRD



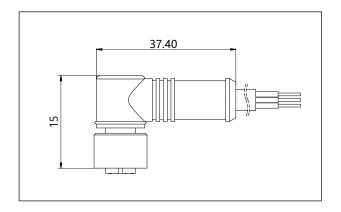
Diaphragm size(ΦM)

#### Process connection (K20) (unit: mm)



# Standard Specification Size(G) Diaphragm size(ΦM) Normal Standard Rd 52\*1/6 27

#### Aviation female plug elbow(J2) (unit: mm)

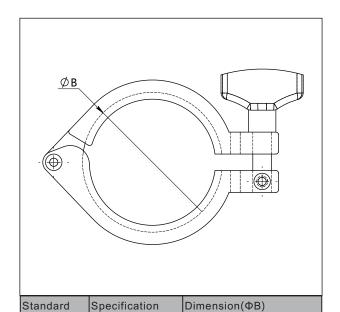


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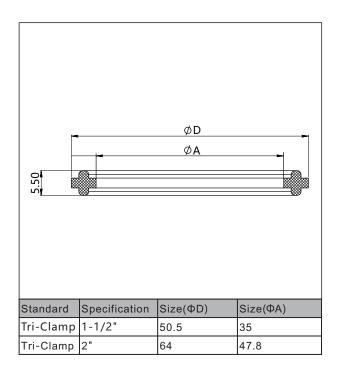
#### Clamp(G1-G2)(unit: mm)



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#### O-ring (M1-M2) (unit: mm)

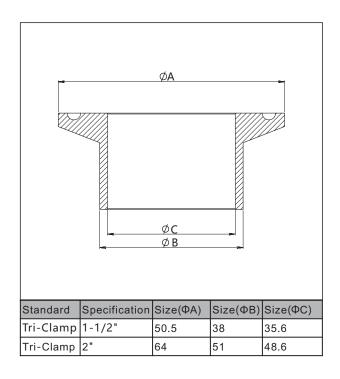


#### Welding adaptor(Z1-Z1)(unit: mm)

1-1/2"

Tri-Clamp

Tri-Clamp



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## Ordering information chapter

Item	Parameters	Code	Instruction	(*)fast delivery available
	Model	MSSMP858-TSF	Monosilicon gauge pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	S403G	Nominal value(URL): 40kPa	*
	range code	S254G	Nominal value(URL): 250kPa	*
		S105G	Nominal value(URL): 1MPa	*
		S305G	Nominal value(URL): 3MPa	*
	Sensor seal	F	Stainless steel welding seal	
Electrical connetion	Separator	-	Detailed specifications as following	
	Electrical connetion	F1	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,vertical mounting	*
		F2	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,horizontal mounting	*
Output	Separator	-	Detailed specifications as following	
	Output signal	Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
		F	4-20mA two wire, power supply: 10.5-55VDC	*
	Display	С	LCD display	*
		A	Without LCD display	
Process connection	Separator	-	Detailed specifications as following	
	Process connector material	4	Stainless steel SUS304	*
		6	Stainless steel SUS316	
	Connection type	NT	Standard connection, suitable medium temperature -25-85°C	*
		НТ	With Cooling Element, suitable medium temperature -40- 150℃	*
	Isolation fluid filling	F	Sanitary Filling Fluid, Neobee M-20	*
		S	Sillicon oil, suitable medium temperature: -45-205°C	*
	Isolation diaphragm material	S	SUS316L	*
		Н	Hastelloy C	
	Process connection specifications	K01	Tri-Clamp 1-1/2", max measuring range: 2MPa	*
		K02	Tri-Clamp 2", max measuring range: 2MPa	*
		K03	DIN32676 DN32, max measuring range: 1.6MPa	
		K04	DIN32676 DN40, max measuring range: 1.6MPa	
		K05	DIN32676 DN50, max measuring range: 1.6MPa	
		K06	ISO2852 DN38, max measuring range: 4MPa	
		K07	ISO2852 DN40, max measuring range: 4MPa	
		K08	ISO2852 DN51, max measuring range: 2.5MPa	

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#### Ordering information chapter

		KUU	DINI11951 DN25 may magazing range: 2 5MDs	
		K09	DIN11851 DN25, max measuring range: 2.5MPa	
		K10	DIN11851 DN40, max measuring range: 2.5MPa	
		K11	DIN11851 DN50, max measuring range: 2.5MPa	
		K12	SMS DN1-1/2", max measuring range: 2.5MPa	
		K13	SMS DN2", max measuring range: 2.5MPa	
		K14	IDF DN1-1/2", max measuring range: 2MPa	
		K15	IDF DN2", max measuring range: 2.MPa	
		K18	DRD, max measuring range: 2.5MPa	
		K20	Plug in tube flush sanitary-clamp, max mesuring range: 2MPa	
Additional option	Separator	-	Detailed specifications as following	
	Electrical	/J1	Aviation female plug (straighter) with 2m cable, 4 pin, M12*1, IP67	
	connection	/J2	Aviation female plug (elbow) with 2m cable, 4 pin, M12*1, IP67	
	accessory	/J4	Aviation female plug (straighter) without cable, 4 pin, M12*1, IP67	
		/J5	Aviation female plug (elbow) without cable, 4 pin, M12*1, IP67	
	Process	/G1	1.5" Tri-clamp	
	connection accessory	/G2	2" Tri-clamp	
		/M1	1.5" sealing gasket, material: silicon rubber, process temperature range: -60-200°C (Approved by FDA)	
		/M2	2" sealing gasket, material: silicon rubber, process temperature range: -60-200°C (Approved by FDA)	
		/Z1	Welding adapter for 1-1/2" tri-clamp (Accord with regulation 74-06 of 3A certificate)	
		/Z2	Welding adapter for 2" tri-clamp (Accord with regulation 74-06 of 3A certificate)	
	Calibration report	/Q1	Calibration report provided by our company	
	Approvals (multiple)	/11	Intrinsic safety certificate, ExiaIICT4, NEPSI (Please consult engineers for details)	
		/F3	CE certificate (Please consult engineers for details)	
		/H1	3-A certificate (Please consult engineers for details)	
	Wetted parts	/G1	Ungrease treatment	
	treatment	/G2	Electropolishing treatment	

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#### Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	0(No specific settings)
Analog output type	mA	Liner
Display mode	DISP	PV
Alarm signal	ALARM	No

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

#### **Approvals**

#### Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2015
IScane of certification	Design and production of pressure transmitter
Registration number	110804039

#### CE

Certificate organization	ISET
License scope	MSSMP858 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registered number	IT051353LG161207

#### Intrinsic safety certificate

Certification organization name	NEPSI
License scope	MSSMP858 series pressure transmitter
Explosion-proof mark	ExialICT4
Ambient temperature	−40-+60°C
Medium maximum temperature	+120℃
Registration number	GYB16.1965X
Intrinsically safe	Maximum input voltage: 28VDC
parameter	Maximum input current: 100mA
description	Maximum input power: 0.7w
	Maximum internal equivalent parameters Ci(uF): 0
	Maximum internal equivalent parameters Li(mH): 0



#### SIN JIA ENTERPRISE COMPANY LIMITED

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# TRANSMISORES ESPECIALES

**INDUSTRIALES** 



#### **Product introduction**

#### Description



#### Industrial pressure transmitter

MSDMP305X-TST pressure transmitter with monosilicon sensor is typically used in process or environmental applications for continuous measurement of pressure differences in liquids, vapors and gases.

With reliable ex-proof construction and electronics, suitable in EX areas.

#### Main parameters

Pressure types	Gauge pressure
Measuring range	2kPa-40MPa, please refer to the ordering information chapter
Output signal	4-20mA, 4-20mA+HART, 1-5VDC low power consumption, Modbus- RTU/RS485 customer
Reference accuracy	±0.1%URL, optional ±0.075%URL

#### Measuring medium

Liquid, gas, or steam level, density and pressure

#### Approvals



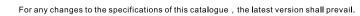












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#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit(LRL)	Upper range limit(URL)	Overload limit
40kPa	2kPa	-40kPa	40kPa	1MPa
250kPa	12.5kPa	-100kPa	250kPa	4MPa
1MPa	50kPa	-100kPa	1MPa	6MPa
3МРа	150kPa	-0.1MPa	3МРа	15MPa
10MPa	500kPa	-0.1MPa	10MPa	20MPa
40MPa	5MPa	-0.1MPa	40MPa	80MPa

Above measurement range can be replaced by kg/cm2, MPa and kPa units . Which can provide other measurement range according to the requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤ | URV-LRV | ≤ upper range limit

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero basedcalibration span, Silicon oil filling, 316L stainless steel isolated diaphragm, 4-20mA analog output.

#### Ambient temperature effects

40kPa, 250kPa, 1MPa, 3MPa, 10MPa,40MPa	± (0.0375TD+0.075) %/10℃ of span
---	----------------------------------

#### Performance specifications

The overall performance including but not limited to 【 reference accuracy 】, 【environment temperature effects ] and other comprehensive error

Typical accuracy: ±0.1%URL Stability: ±0.2% URL/5 years

#### Mounting position effects

Apply to any position. Max value lower than 400Pa can be corrected by zero clearing function.

#### Reference accuracy

Standard and reference conditions, including linearity (BFSL), hysteresis and repeatability. calibration temperature: 20°C ± 5°C				
Linear	TD≤5	±0.1 SPAN	40kPa,250kPa	
output		±0.075 SPAN	1MPa,3MPa,10MPa,40MPa	
accuracy TD>5		±(0.025+0.035TD)% SPAN	40kPa,250kPa	
		±(0.0025+0.0145TD)% SPAN	1MPa,3MPa,10MPa,40MPa	
Note 1: TD is Turn down, TD=URL/  URV-LRV				

Note 2: SPAN=| URV-LRV |

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

#### Vibration effects

According to GB/T 1827.3/IEC61298-3 tests, <0.1%URL

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#### Output signal

4-20mA two wire. Customers can choose linear output or square root output. Digital process variables superimpose on 4-20mA signal and apply to any hosts

#### Insulation resistance

≥20MΩ@, 100VDC

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Damping time of amplifer: 0-100S adjustable

Diaphragm capsule (isolated diaphragm and silicon oil filling) damping time: ≤0.2s

Startup after power off: ≤6S

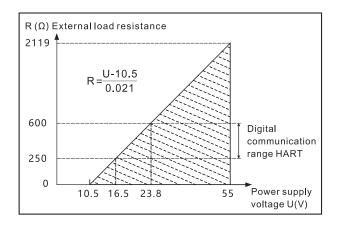
Normal services after data recovery: ≤31S

Response time: ≤150ms

#### Weight

Net weight: about 1.56kg (without mounting brackets and process connection accessory)

#### Power supply and load requirements



#### Power supply

Item	Operating conditions
4-20mA	10.5-55VDC
HART protocol	16.5-55VDC, communication load resistance 250Ω
Modbus-RTU/RS485	5-32VDC
1-5VDC low power consumption	9-55VDC (Current consumption:5mA Max)
Load resistance	0-2119 $\Omega$ for working condition, 250-600 $\Omega$ for HART protocol
Transmission distance	<1000m
Power consumption	
4-20mA/HART	≤500mW@24VDC, 20.8mA
Modbus-RTU/RS485	≤240mW@24VDC, 10mA
1-5VDC low power consumption	≤100mW@24VDC,5mA

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#### **Environment condition**

Items	Operational	Operational condition	
Working temperature	-20-85℃, int	-20-85℃, integrated LCD display :-20-70℃	
Storage temperature	-40-85℃, int	-40-85°C, integrated LCD display :-20-70°C	
Media temperature	Silicone oil filling: -45-205℃		
	Inert oil filling: -45-160℃		
	Hygienic flui	Hygienic fluid filling:-10-180°C	
Working humidity	5-100%RH@	5-100%RH@40℃	
Protection class	IP66/IP67		
Dangerous condition	NEPSI	ExiaIICT4(GYB21.1692X)* ExdIICT6(GYB21.4030X)*	
	ATEX	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db(CML 19ATEX1078X)* Ex ia IIC T4 Ga(CML 19ATEX1078)*	
	IECEx	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db(IECEx NEP 18.0008X)* Ex ia IIC T4 Ga(IECEx NEP 18.0008X)*	
	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 (No.: 80020805)*	
*Please consult enginee	s for details		

#### EMC environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/ <b>I</b> EC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements		1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
1	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Menu function

#### Specific menu

#### Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

#### LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

#### Unit

Unit	Definition	
kPa	Kilopascal	
МРа	Megapascals	
bar	Bar	
psi	Pounds per square inch	
mmHg	Millimetre(s) of mercury@0°C	
mmH2O	Millimeter of water@4°C	
mH2O	Meter of water@4℃	
inH2O	Inches of water@4°C	
ftH2O	Feet of water@4°C	
inHg	Inches of mercury@0°C	
mHg	Meter mercury column@0°C	
TORR	Torr	
mbar	Millibar	
g/cm2	Gram per square centimeter	
kg/cm2	Kilogram per square centimeter	
Pa	PA	
ATM	Standard atmospheric pressure	
mm	Millimeter(Note1)	
m	Meter(Note1)	
Note1: length unit need mark medium density		

#### Measuring menu set

Mark	State
URV	Upper range value, 20mA
LRV	Lower range value, 4mA

#### Damping time

Units	Setting range
S	0-100

#### Analog output type

Parameters	Output type	
mA LINER	Linearity	
mA √	Square root	

#### Alarm signal

Parameters	Alarm signal	
ALARM NO	None	
ALARM H	20.8mA	
ALARM L	3.8mA	

#### Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8000mA
4.0000	4.0000mA
8.0000	8.0000mA
12.000	12.000mA
16.000	16.000mA
20.000	20.000mA
20.800	20.800mA

#### Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, (gauge pressure, differential pressure)
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description
S403G	40kPa	Range -40kPa-40kPa, smallest calibratable span 2kPa
S254G	250kPa	Range -100kPa-250kPa, smallest calibratable span 12.5kPa
S105G	1MPa	Range -0.1MPa-1MPa, smallest calibratable span 50kPa
S305G	3МРа	Range -0.1MPa-3MPa, smallest calibratable span 150kPa
S106G	10kPa	Range -0.1MPa-10MPa, smallest calibratable span 500kPa
S406S	40MPa	Range -0.1MPa-40MPa, smallest calibratable span 5MPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤| URV - LRV |≤URL

Code	Position	Instruction
S	Diaphragm	SUS316L
Н	material	Hastelloy C
S	Fluid filling	Silicon oil, oil temperature resistance
D		Inert oil, oil temperature resistance
F	Sensor seal	Stainless steel welding seal
S		FKM

#### Diaphragm(S/H)



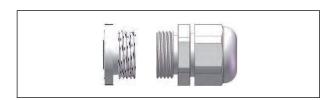
#### Electrical connection

Code	Item	Description
T1	Electrical connection	Aluminum-alloy terminal, 2 cable entry M20*1.5(F), red body, white cover
R1	Cable entry protector	Waterproof connector M20*1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP66/IP67
R2		Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,
R3		Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,

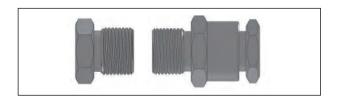
#### Housing(T1)



#### Standard cable entry protective adaptor(R1)



#### Flame proof cable entry protective adaptor(R2/R3)



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#### Product selection instruction

#### Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10.5- 55VDC
Н		4-20mA+HART two wire, power supply: 16.5-55VDC
1D		1-5VDC low power consumption, four wire, power supply: 9-55VDC
1H		1-5VDC+HART low power consumption, four wire, power supply: 9-55VDC
R		Modbus-RTU/RS485, power supply: 5- 32VDC
А	Display	Without display
С		With LCD display

#### Display module(C)



#### Terminals



#### Brackets

Code	Items	Instruction	
1		U-shaped bracket, 2" pipe, apply to T-	
	mounting	structure	

#### Process connection select instruction

Code	Items	Description	
4	Material	Stainless steel, SUS304	
6		Stainless steel, SUS316	
M01	Specifications	M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261	
G01		G1/2(M), Φ3 pressure lead hole, EN837	
G02		G1/4(M), Φ3 pressure lead hole, EN837	
G08		G1/4(M), Ф3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal reference DIN3852- E(back-end seal)	
R01		1/2-14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
R02		1/4-18NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
R03		1/2-14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
R04		1/4-18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	

#### Fixed mounting bracket (B4)(DMP305X-TST-S)

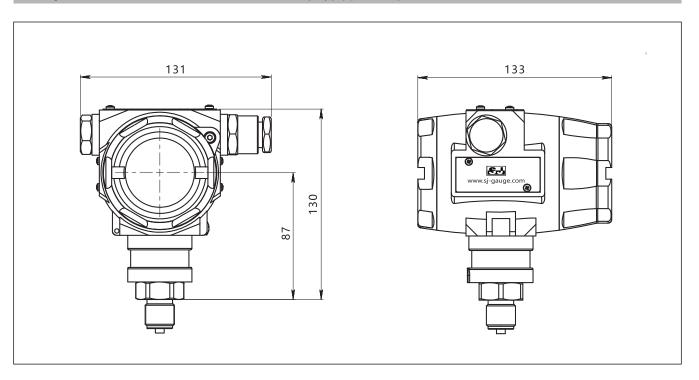


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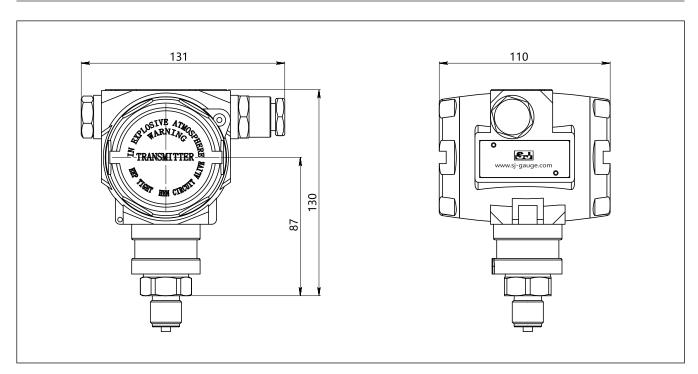
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#### Drawing and dimension of MSDMP305X-TST-S with display(C) (unit: mm)



#### Drawing and dimension of MSDMP305X-TST-S without display(A) ( unit: mm)

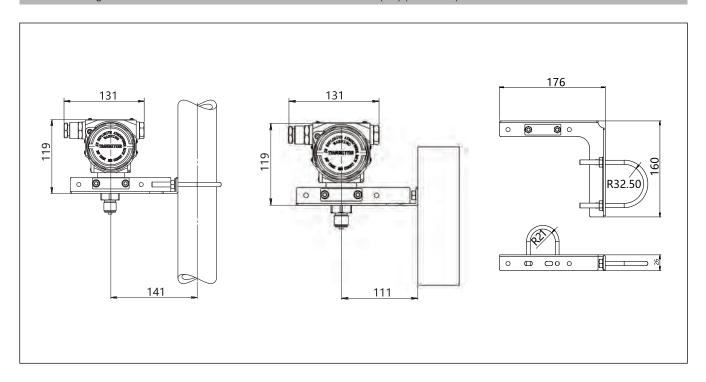


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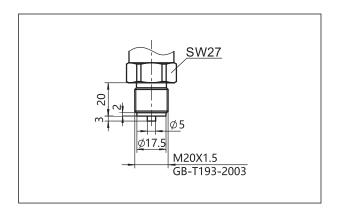
### Fixed mounting braket installation dimension of MSDMP305X-TST-S (B4) (unit: mm)



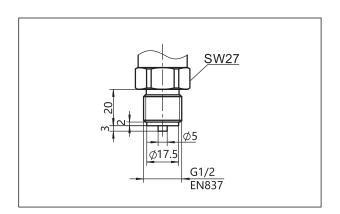
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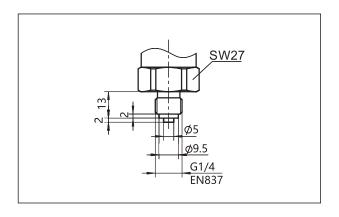
#### Process connection(M01) (unit: mm)



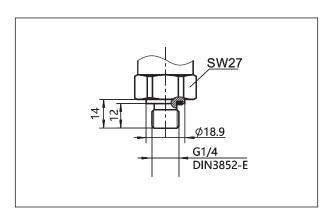
#### Process connection(G01) (unit: mm)



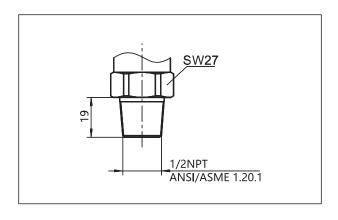
#### Process connection(G02) (unit: mm)



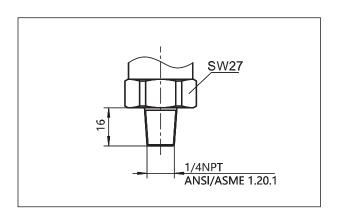
#### Process connection(G08) (unit: mm)



#### Process connection(R01) (unit: mm)



#### Process connection(R02) (unit: mm)

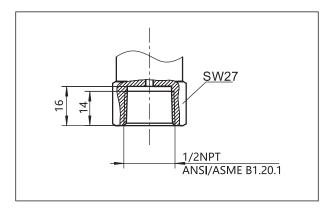


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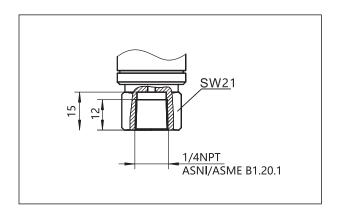
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#### Process connection(R03) (unit: mm)



#### Process connection(R04) (unit: mm)



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# Ordering information chapter

Item	Parameters	Code	Instruction	(*)fast delivery available
	Model	MSDMP305X-TST	Monosilicon gauge pressure transmitter	
Sensor	Sensor Separator - Detailed specifications as following		Detailed specifications as following	
	Pressure	S403G	Nominal value(URL): 40kPa	
	range code	S254G	Nominal value(URL): 250kPa	*
		S105G	Nominal value(URL): 1MPa	*
		S305G	Nominal value(URL): 3MPa	*
		S106G	Nominal value(URL): 10MPa	*
		S406S	Nominal value(URL): 40MPa	
	Diaphragm	s	SUS316L	
	material	Н	Hastelloy C	
	Isolated	s	Silicon oil	
	filling fluid	D	Inert oi	
	Sensor seal	F	Stainless steel welding seal	
		S	FKM	
Electrical connection	Separator	_	Detailed specifications as following	
	Electrical connection	T1	Aluminum-alloy terminal, 2 cable entry M20*1.5(F), red body, white cover	*
	Cable entry protector	R1	Waterproof connector M20*1.5 one side , blind plug another side, PVC material, 6-8mm diameter cable only, IP66/IP67	*
		R2	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP66/IP67	
		R3	Flame proof, M20*1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP66/IP67	
Output	Separator	-	Detailed specifications as following	
	Output	F	4-20mA two wire, power supply: 10.5-55VDC	
	signal	Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
		1D	1-5VDC low power consumption four wire, power supply: 9-55VDC	
		1H	1-5VDC+HART low power consumption four wire, power supply: 9-55VDC	
		R	Modbus-RTU/RS485, power supply: 5-32VDC	
	Display	A	Without LCD display	*
		С	LCD display	
Process connection			Detailed specifications as following	
	Material	4	SUS304	
		6	SUS316	*
	Specification	M01	M20*1.5 (M), Φ3 pressure lead hole, GB/T193-2003, ISO261	*
		G01	G1/2 (M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779	*

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	1	Ico2		
		G02	G1/4(M), Φ3 pressure lead hole, EN837	
	R01 R02		G1/4(M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal refers to DIN3852-E (back-end seal)	
			1/2 -14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	*
			1/4 -18NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
		R03	1/2 -14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
		R04	1/4 -18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
Additional options	Separator	-	Detailed specifications as following	
	Fixed mounting /B4 U-shaped bracket, 2" pipe, apply to T-structure mounting Display /D1 According to your requirements mode Calibration /Q1 Calibration report provided by our company report		U-shaped bracket, 2" pipe, apply to T-structure	*
			According to your requirements	
			Calibration report provided by our company	
Approvals (multiple)		/E1	Flame proof certificate NEPSI, ExdbIICT6 IECEx or ATEX,Ex db IIC T6 Gb Ex tb IIIC T80°C CDb	1
		/11	Intrinsic safety certificate IECEx or ATEX,ExiaIICT4Ga NEPSI, ExiaIICT4	2
		/E2	Flame proof certificate, 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	
		/F3	CE certificate	*
	Wetted parts	/G1	Ungrease treatment	
	treatment	/G2	Electropolishing treatment	
	1		<u> </u>	1

#### Note:

1 Please indicate ATEX or IECEx or NEPSI when ordering 2 Please indicate ATEX or IECEx or NEPSI when ordering

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## Factory settings and parameters

Item	Menu mark	Factory setting value	
Tag position None		0(No specific settings)	
Analog output type	mA	Liner(No specific settings)	
Display mode	DISP	PV(No specific settings)	
Alarm signal	ALARM	No(No specific settings)	

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

# Approvals

#### Factory certificate

Certification organization	Intertek	
Quality management system	ISO9001-2015	
ISCOND OF CARTIFICATION	Design and production of pressure transmitter	
Registration number	110804039	

### CE

Certificate organization	ISET
License scope	MSDMP305X series pressure/ differential pressure transmitter
Mark	EU
EMC instruction	2014/30/EU
Standard	AC/0100708
Registration number	IT41353LG161207

### Flame proof certificate

Certificate organizzation	NEPSI	ATEX IECEx		CSA		
License scope	MSDMP305X pr	MSDMP305X pressure/differential pressure transmitter				
Explosion-proof mark	ExdIICT6	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db		Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C Class III		
Working temperature	-20℃ to +55℃	-20°C to +60°C		-40-60°C		
Maximum medium temperature	+80°C					
Registration number	GYB21.4030X	CML 19ATEX1078X   IECEx NEP 18.0008X		80020805		

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#### Approvals

#### Intrinsic safety certifite

Certificate organization	NEPSI	ATEX	IECEx
License range	MSDMP305X series pressure/ differential pressure transmitter		
Explosion-proof mark	ExiaIICT4 Ex ia IIC T4 Ga		
Ambient temperature	-40°C to +60°C	-20°C to +60°C	
Medium maximum temperature	+120°C		
Registration number	GYB21.1692X	CML 19ATEX1078X	IECEx NEP 18.0008X
Intrinsically safe parameter description	Maximum input voltage:20VDC	Maximum input voltage:28VDC	•
	Maximum input current:100mA	Maximum input current:93mA	
	Maximum input power:0.7w	Maximum input power:0.65w	
	Maximum internal equivalent parameters Ci(uF):0		
	Maximum internal equivalent parameters Li(mH):0.01	Maximum internal equivalent parameters Li(mH):0	

#### RoHS

Certificate organizzation	ECM
License scope	MSDMP305X pressure/differential pressure transmitter
Mark	RoSH
Instruction	2015/86/EU
Certification criteria	IEC62321-1:2013 IEC62321-5:2014 IEC62321-2:2013 IEC62321-6:2015 IEC62321-4:2014 IEC62321-7-1:2015
Registration number	0H180504.SLIUQ03



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#### Description



#### Monosilicon pressure transmitter

MSMSDMP305X-DST differential pressure transmitter with monosilicon sensor is typically used in process or environmental applications for continuous measurement of pressure differences in liquids, vapors and gases. With reliable ex-proof construction and electronics, suitable in EX areas.

## Main parameters

Pressure types	Differential pressure
Measuring range	6kPa-10MPa, Please refer to the ordering information chapter
Output signal	4-20mA,4-20mA+HART, Modbus- RTU/RS485 customer
Reference accuracy	±0.075%URL, optional ±0.05%URL

## Measuring medium

Liquid, gas, or steam flow as well as liquid level, density and pressure

## Approvals













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#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit (LRL)	Upper range limit (URL)		High pressure side overload limit	Low pressure side overload limit
6kPa	200Pa	-6kPa	6kPa	25MPa	25MPa	16MPa
40kPa	400Pa	-40kPa	40kPa	40MPa	25MPa	16MPa
250kPa	2.5kPa	-250kPa	250kPa	40MPa	25MPa	16MPa
1MPa	10kPa	-500kPa	1MPa	40MPa	25MPa	16MPa
3МРа	30kPa	-500kPa	3МРа	40MPa	25MPa	16MPa
10MPa	100kPa	-500kPa	10MPa	40MPa	25MPa	16MPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, when | URV | ≥ | LRV |, needs | URV | ≥ smallest calibratable span when | URV | ≤ | LRV |, needs | LRV | ≥ smallest calibratable span

#### Performance specifications

Test standard: GB/T284 74 / IEC60770; reference conditions: measure from zero, silicone oil filling,316L stainless steel isolation diaphragm, 4-20mA anloge output,

#### Performance specifications

The overall performance including but not limited to 【Reference accuracy】,【Environment temperature effects】,【Static pressure effects】 and other comprehensive error Stability:±0.2% URL/5 years

#### Ambient temperature effects

6kPa	± (0.05TD+0.1) %/10℃ of span
OMP 40MP	± (0.0375TD+0.075) %/10℃ of span

#### Static pressure effects

Effect on zero	±0.15TD %/10MPa
Effect on full scale	±0.2% TD/10MPa

#### Reference accuracy

Note: SPAN= |URV-LRV|

- 1.Standard and reference conditions, include linear (BFSL), linearity,h ysteresis and repeatability. Calibration temperature: 20°C±5°C, Calibrated based on zero.
- 2. The total performance of the product includes reference accuracy and ambient temperature effects, calculated according to the formula. Total amount of influence= $\pm\sqrt{[(E1)^2+(E2)^2+(E3)^2]}$

Square root output accuracy is 1.5 times linear output accuracy

Note 1: TD is Turn down, TD=URL/SPAN, URL: Range starting from 0, same as factory calibration range; SPAN:|URV-LRV|

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#### Technical specifications

#### Power supply effects

When power supply voltage is within 10.5/16.5-55VDC, zero and span change should not more than ±0.005% URL/V

#### Mounting position effects

Install error less than 400Pa, which can be corrected by PV=0 reset.

#### Vibration effects

According to IEC61298-3,<0.1% URL

#### Output signal

Output	Туре	Wires
4-20mA	Linear	Tow wire
4-20mA+HART	Linear	Tow wire
1-5VDC	Linear	Three wire
Modbus-RTU/RS485	Linear	Four wire
Modbus-RTU/RS485+4-20A	Linear	Four wire

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Damping time of amplifer: 0-100S adjustable

Damping time of sensor capsule (isolation sensor diaphragm and silicon filling oil)≤0.2S

Startup after power off: ≤6S

Normal services after data recovery: ≤31S

Response time: ≤150ms

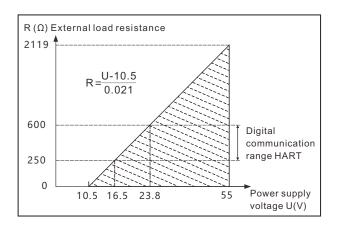
#### Weight

Net weight: about 4 kg ( without mounting bracket and process connection adaptor )

#### Power supply

Item	Operating conditions
Standard/flame proof	10.5-55VDC
HART protocol	16.5-55VDC,communication load resistance 250Ω
Modbus-RTU/RS485	5-32VDC
Load resistance	0-2119Ω for operation, 250-600Ω for HART protocol
Transmission distance	<1000 meters
Power consumption	≤500mW@24VDC,20.8mA

#### Power supply and load requirements



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#### Technical specifications

# **Environment condition**

Items	Operational	Operational condition	
Working temperature	-20-85°C, int	-20-85°C, integrated LCD display :-20-70°C	
Storage temperature	-40-85℃, int	egrated LCD display :-20-70℃	
Media temperature	Silicone oil fi	Silicone oil filling:-45-205°C	
	Inert oil filling	Inert oil filling:-45-160℃	
	Hygienic flui	d filling:-10-180℃	
Working humidity	5-100%RH@	5-100%RH@40℃	
Protection class	IP66/IP67	IP66/IP67	
Dangerous condition	NEPSI	ExialICT4(GYB21.1692X)* ExdIICT6(GYB21.4030X)*	
	ATEX	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db(CML 19ATEX1078X)* Ex ia IIC T4 Ga(CML 19ATEX1078)*	
	IECEx	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db(IECEx NEP 18.0008X)* Ex ia IIC T4 Ga(IECEx NEP 18.0008X)*	
	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 (No.: 80020805)*	
*Please consult engineer	rs for details	1	

### **EMC** environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity Test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements		1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The performance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Menu function

# Specific menu

# Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

# LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

# Unit

Unit	Definition	
kPa	Kilopascal	
MPa	Megapascals	
bar	Bar	
psi	Pounds per square inch	
mmHg	Millimetre(s) of mercury@0°C	
mmH2O	Millimeter of water@4°C	
mH2O	Meter of water@4°C	
inH2O	Inches of water@4°C	
ftH2O	Feet of water@4°C	
inHg	Inches of mercury@0°C	
mHg	Meter mercury column@0°C	
TORR	Torr	
mbar	Millibar	
g/cm2	Gram per square centimeter	
kg/cm2	Kilogram per square centimeter	
Pa	PA	
ATM	Standard atmospheric pressure	
mm	Millimeter(Note1)	
m	Meter(Note1)	
Note1: len	Note1: length unit need mark medium density	

# Measuring menu set

Mark	State
URV	Upper range value, 20mA
LRV	Lower range value, 4mA

# Damping time

Units	Setting range
S	0-100

# Analog output type

Parameters	Output type
mA LINER	Linearity
mA √	Square root

#### Alarm signal

Parameters	Alarm signal
NO	Saturated output to 20.8mA
Н	20.8mA
L	3.8mA

# Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8mA
4.0000	4mA
8.0000	8mA
12.000	12mA
16.000	16mA
20.000	20mA
20.800	20mA

# Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, used to correct the error cased by static pressure and installation.
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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# Sensor select instruction

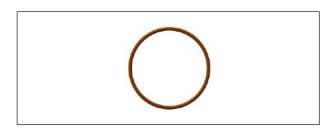
Code	Nominal value	Description	
S602D	6kPa	Range -6-6kPa, smallest calibratable span 200Pa	
S403D	40kPa	Range -40-40kPa, smallest calibratable span 400Pa	
S254D	250kPa	Range -250-250kPa, smallest calibratable span 2.5kPa	
S105D	1MPa	Range -0.1-1MPa, smallest calibratable span 1MPa	
S305D	3МРа	Range -0.5-3MPa, smallest calibratable span 3MPa	
S106D	10MPa	Range -0.5-10MPa, smallest calibratable span 1MPa	

Code	Position	Instruction	
S	Diaphragm	SUS316L	
Н	material	Hastelloy C	
J		SUS316+Gold plating(range >250kPa)	
Т		Tantalum(range > 250kPa)	
S	Fluid filling	Silicon oil, oil temperature resistance: -45-205°C	
D		Inert oil, oil temperature resistance: - 45-160°C	
F		Hygienic fluid filling, Neobee M-20, temperature resistance: -10-180°C	
S	Sensor seal	O-ring. PTFE, temperature resisitance: -20-85°C	

#### Diaphragm (S/H)



# Seal(S)



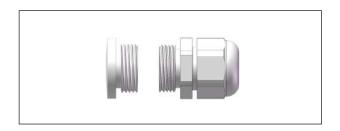
#### Electrical connection select instruction

Code	Item Description	
T1	Electrical connection	Aluminum-alloy terminal,2 cable entry M20*1.5 (F), red body, white cover
R1		Waterproof connector M20X1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP67
R2	Cable entry protector	Flame proof, 1/2 NPT (F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67
R3		Flame proof, M20X1.5 (F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67

# Housing (T1)



# Standard cable entry protective adaptor (R1)

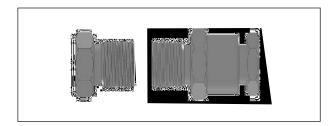


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# Flame proof cable entry protective adaptor (R2/R3)



# Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10.5-55VDC
Н		4-20mA+HART two wire, power supply:16.5-55VDC
1		1-5VDC three wire, power supply:10.5-55VDC
R		Modbus-RTU/RS485, power supply: 5-32VDC
С		Modbus-RTU/RS485+4-20mA
A	Dianlay	Without display
С	Display	With LCD display

# Display module ©



# Terminals (N1)



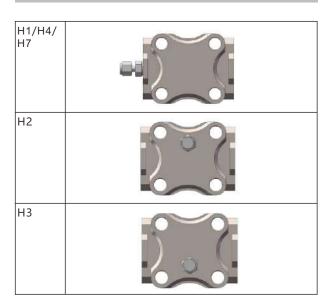
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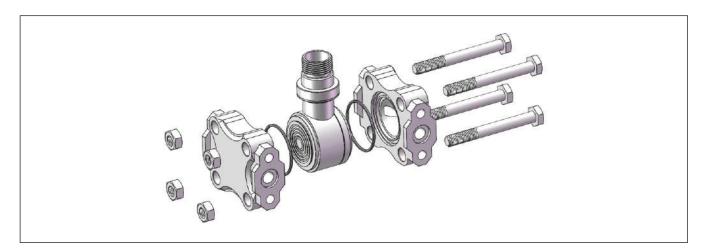
# Process connection selection

Code	Item	Description
H1	Flange/ Drain Valve	H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the rear end of flange, material SS 316
H2		H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the up part of flange, material SS 316
Н3		H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the down part of flange, material SS 316
H4		H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the rear end of flange, material SS 304, thread size M10*1.5
H7		H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the rear end of flange, material SS 316, thread size 7/16-20UNF

# Flange



# Wetted parts



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#### Process connection adaptor

Code	Item	Description
A1	Process	Adaptor, M20*1.5 (M) with pressure- guided pipe Φ14*2*30,SS304, apply to H-structure
A2		Adaptor, 1/2-14NPT(F), SS 304, apply to H-structure

# Adaptor, M20\*1.5 (M) with pressure-guided pipe (A1)



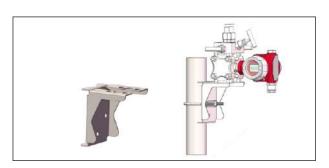
# Adaptor, 1/2-14NPT (F) (A2)



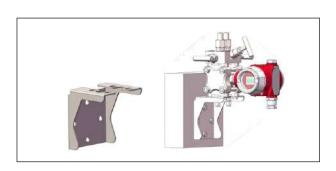
#### Brackets

Code	Items	Details
B1		Pipe mounting bent bracket,2" pipe, carbon steel, apply to H-structure
B2	Fixed mounting	Plate mounting bent bracket, carbon steel, apply to H-structure
В3		Pipe mounting flat bracket,2" pipe, carbon steel, apply to H-structure

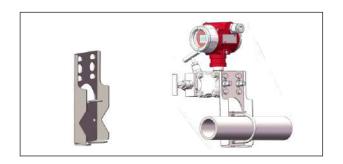
#### Pipe mounting bent bracket (B1)



# Plate mounting bent bracket (B2)



#### Pipe mounting flat bracket (B3)

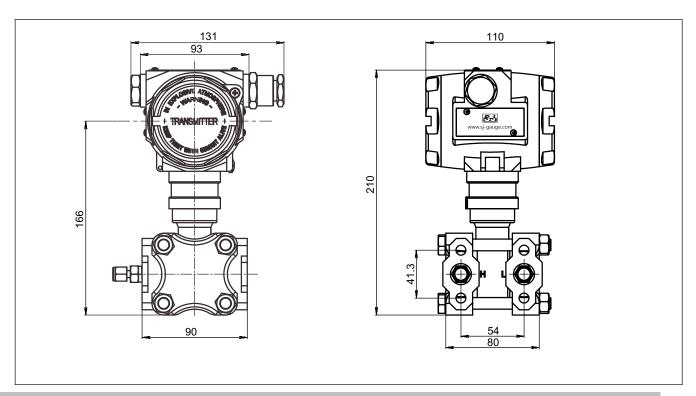


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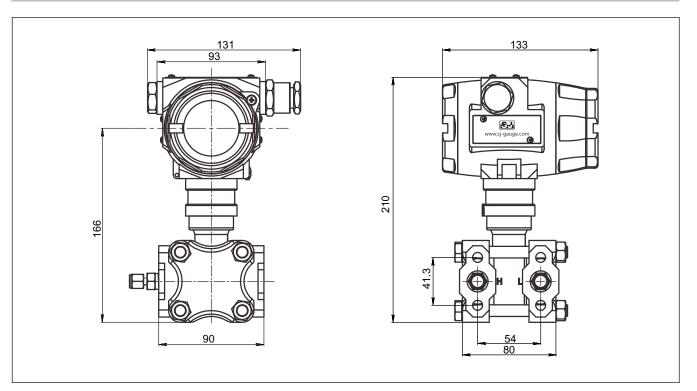
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# Drawing and dimension with display (C)(unit: mm)



# Drawing and dimension without display (A) (unit: mm)

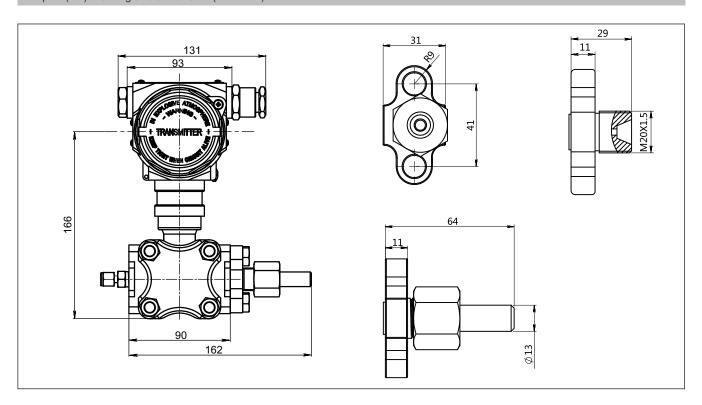


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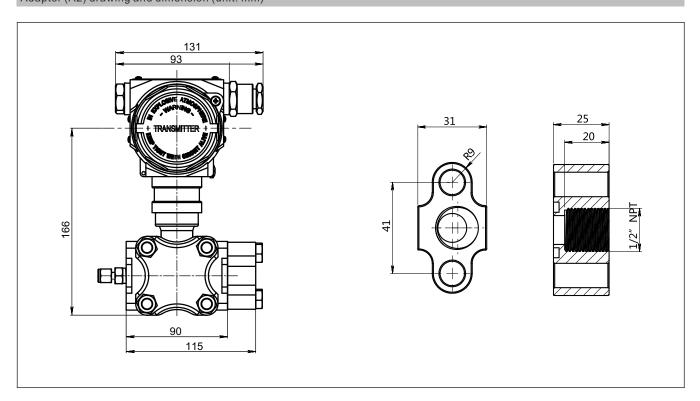
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# Adaptor (A1) drawing and dimension (unit: mm)



# Adaptor (A2) drawing and dimension (unit: mm)



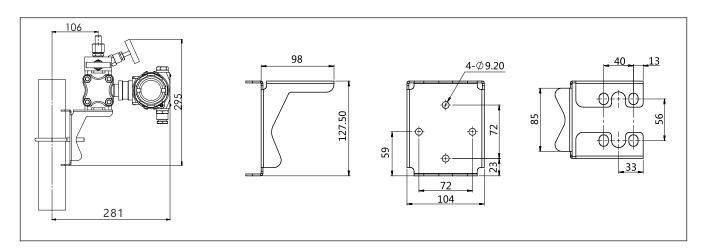
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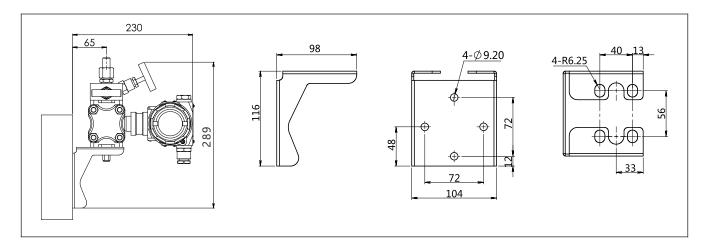


#### Installation drawing and dimension

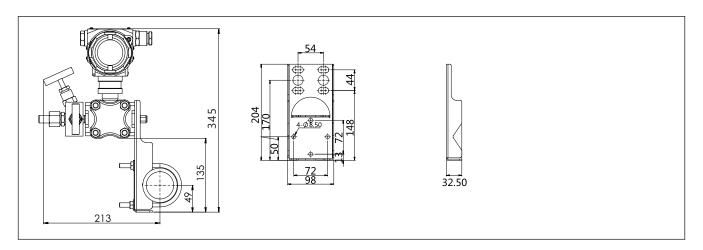
#### Pipe mounting bent bracket (B1) drawing and dimension (unit: mm)



#### Plate mounting bent bracket (B2) drawing and dimension (unit: mm)



#### Pipe mounting flat bracket (B3) drawing and dimension (unit: mm)



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# Ordering information chapter

Item	Parameters	Code	Instruction	(*)fast delivery available
	Model	MSDMP305X-DST	Monosilicon differential pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
		S602D	Nominal value(URL): 6kPa	*
		S403D	Nominal value(URL): 40kPa	*
	Pressure	S254D	Nominal value(URL): 250kPa	*
	range code	S105D	Nominal value(URL): 1MPa	
		S305D	Nominal value(URL): 3MPa	
		S106D	Nominal value(URL): 10MPa	
	Diaphragm	S	SS316L	*
	material	Н	Hastelloy C	
		J	SUS316+Gold plating(range >250kPa)	
		Т	Tantalum(range >250kPa)	
	Isolated	S	Silicone oil, oil temperature resistance: -45-205℃	*
	filling fluid	D	Inert oil, oil temperature resistance: -45-160℃	
		F	Hygienic fluid filling, Neobee M-20, temperature resistance: -10-180℃	
	Sensor seal	S	O-ring, PTFE, temperature resistance:-100-280°C	
Electrical Separator		-	Detailed specifications as following	
	Electrical connection	T1	Aluminum-alloy terminal,2 cable entry M20*1.5(F), red body, white cover	*
		R1	Waterproof connector M20X1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP66/IP67	*
	Cable entry protector	R2	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP66/IP67	
		R3	Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP66/IP67	*
Output	Separator	-	Detailed specifications as following	
	Output signal	Н	4-20mA+HART two wire, power supply:16.5-55VDC	*
		F	4-20mA two wire, power supply: 10.5-55VDC	
		R	Modbus-RTU/RS485, power supply: 5-32VDC	
		С	LCD display	*
	Display	A	Without LCD display	
Process connection	Separator	-	Detailed specifications as following	
	Process	H1	H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the rear end of flange, material SS 316	*
connection		H2	H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the up part of flange, material SS 316	

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		Н3	H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the down part of flange, material SS 316	*
		H4	H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the rear end of flange, material SS 304, thread size M10*1.5	
		H7	H structure, double flanges, process connection 1/4-18NPT(F), drain valve on the rear end of flange, material SS 316, thread size 7/16-20UNF	
Additional options	Separator	-	Detailed specifications as following	( )fast delivery available
	Process connection	/A1	Adaptor, M20*1.5 (M) with pressure-guided pipe Φ 14*2*30,SS304, apply to H-structure	*
	accessory	/A2	Adaptor, 1/2-14NPT(F), SS 304, apply to H-structure	
		/B1	Pipe mounting bent bracket, 2" pipe, carbon steel, apply to H-structure	
	Fix mounting accessory	/B2	Plate mounting bent bracket, carbon steel, apply to H-structure	
		/B3	Pipe mounting flat bracket, 2" pipe, carbon steel, apply to H-structure	*
	Calibration	/Q1	Calibration report provide by our company	
report		/Q2	Calibration report provide by chinese authorised third party	
		/Q3	Static pressure report ( Differential pressure only)	
	Approvals	/E1	Flame proof certificate NEPSI, ExdbIICT6 IECEx or ATEX,Ex db IIC T6 Gb Ex tb IIIC T80°C CDb	1
		/11	Intrinsic safety certificate IECEx or ATEX,ExiaIICT4Ga NEPSI, ExiaIICT4	2
		/E2	Flame proof certificate, 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	
		/F3	CE certificate	
	Wetted parts	/G1	Ungrease treatment	
	treatment	/G2	Electropolishing treatment	

- Please indicate ATEX or IECEx or NEPSI when ordering
   Please indicate ATEX or IECEx or NEPSI when ordering

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#### Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	0(No specific settings)
Analog output type	mA	Liner(No specific settings)
Display mode	DISP	PV(No specific settings)
Alarm signal	ALARM	No(No specific settings)

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

# Factory certificate

Certification organization	Intertek	
Quality management system	ISO9001-2015	
	Design and production of pressure transmitter	
Registration number	110804039	

# CE

Certificate organization	ISET
II :	MSDMP305X series pressure/ differential pressure transmitter
Mark	EU
EMC instruction	2014/30/EU
Standard	AC/0100708
Registration number	IT41353LG161207

# Flame proof certificate

Certificate organizzation	NEPSI	ATEX	IECEx	CSA
License scope	MSDMP305X pressure/differential pressure transmitter			
Explosion-proof mark	ExdIICT6	Ex db IIC T6 Gb, Ex tb IIIC T80℃ Db		Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C Class III
Working temperature	-20℃ to +55℃	-20°C to +60°C		-40-60°C
Maximum medium temperature	+80℃			
Registration number	GYB21.4030X	CML 19ATEX1078X	IECEx NEP 18.0008X	80020805

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#### Approvals

# Intrinsic safety certifite

Certificate organization	NEPSI	ATEX	IECEx	
License range	MSDMP305X series pressure/ differential pressure transmitter			
Explosion-proof mark	ExialICT4 Ex ia IIC T4 Ga			
Ambient temperature	-40°C to +60°C	-20°C to +60°C	-20°C to +60°C	
Medium maximum temperature	+120°C			
Registration number	GYB21.1692X	CML 19ATEX1078X	IECEx NEP 18.0008X	
Intrinsically safe	Maximum input voltage:20VDC	Maximum input voltage:28VDC		
parameter description	Maximum input current:100mA	Maximum input current:93mA		
	Maximum input power:0.7w	Maximum input power:0.65w		
	Maximum internal equivalent parameters Ci(uF):0			
	Maximum internal equivalent parameters Li(mH):0.01	Maximum internal equivalent parameters Li(mH):0		

#### RoHS

Certificate organizzation	ECM
License scope	MSDMP305X pressure/differential pressure transmitter
Mark	RoSH
Instruction	2011/65/EU
Certification criteria	IEC62321-1:2013 IEC62321-5:2014 IEC62321-2:2013 IEC62321-6:2015 IEC62321-4:2014 IEC62321-7-1:2015
Registration number	0H180504.SLIUQ03



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#### **Brief introduction**







Standard extended diaphragm

MSSMP858 monosilicon pressure transmitter is a high performance pressure transmitter with international leading technology meticulously designed by SJ Gauge, using the world's most advanced monosilicon pressure sensor technology and patent encapsulation technology. Monosilicon pressure sensor locates on the top of the metal body and stay away from the medium interface to realizes mechanical isolation and thermal isolation. Glass sintering sensor wire realizes high strength electrical insulation of metal base and improves the capability of flexibility of electronic circuit and transient voltage resistance protection. All these original encapsulation technologies enable MSSMP858 to easily cope with extreme chemical occasion and mechanical load, and own strong resistance to EMI, sufficient to respond to the most rigorous industrial environment applications, which are the genuine invisible instruments.

#### Main parameters

Pressure types	Differential pressure
Measuring range	10kPa-1MPa, please refer to the ordering information chapter
Output signal	4-20mA, 4-20mA+HART, Modbus- RTU/RS485 others
Reference accuracy	±0.2% URL, ±0.5% URL

#### Measuring medium

The fluid which compatible with wetted parts

#### Field of application

Pressure, level, differential pressure, density, interface, flow

#### Approvals











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#### Technical specifications

#### Measuring range and limit

Nominal value	Smallest calibratable span		''	l . '	High pressure side overload limit*	Low pressure side overload limit*
40kPa	10kPa	-40kPa	40kPa	40MPa	25MPa	16MPa
250kPa	25kPa	-250kPa	250kPa	40MPa	25MPa	500kPa
1MPa	100 kPa	-500kPa	1MPa	40MPa	25MPa	500kPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, when  $|URV| \ge |LRV|$ , needs  $|URV| \ge smallest$  calibratable span; when  $|URV| \le |LRV|$ , needs  $|LRV| \ge smallest$  calibratable span

\*Limit value of overpressure: depends on the pressure value of the parts with lowest pressure capacity

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero based-calibration span, silicon oil filling, 316L stainless steel isolation diaphragm, 4-20mA analog output.

#### Performance specifications

The overall performance including but not limited to 【Reference accuracy】, 【Environment temperature effects】, 【Static pressure effects】 and other comprehensive error

Typical accuracy: ±0.1%URL Stability: ±0.2% URL/ 5year

#### Reference accuracy

	linearity(BFSL), n temperature: 20		d repeatability.
Linear output	TD≤10(note 1)		Nominal value: 40kPa、250kPa
accuracy	Maximum	LO ETDO	1MPa

Square root output accuracy is 1.5 times linear output accuracy

Note 1: TD is Turn down

when  $|URV| \ge |LRV|$ , TD=URL/|URV|when  $|URV| \le |LRV|$ , TD=URL/|LRV|

#### Ambient temperature effects

Within the range - 20-80℃ total impact	±(0.1+0.015TD)% URL

#### Static pressure effects

Effect on zero	±0.15TD % URL/4MPa
Effect on full scale	±0.2% URL/4MPa

#### Power supply effects

When power supply voltage is within 10.5/16.5-55VDC, zero and span change should not more than ±0.005%URL/V

#### Mounting position effects

Install error less than 400Pa, which can be corrected by PV=0 reset.

#### Vibration effects

According to GB/T1827.3/IEC61298-3,<0.1% URL

#### Output signal

Two wire 4-20 mA output with digital communications, linear or square root output programmable, HART protocol is superimposed on the 4-20mA signal.

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#### Technical specifications

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule	
Damping time of amplifer: 0-100S adjustable	
Damping time of sensor capsule (isolation sensor	
diaphragm and silicon oil filling )≤0.2S	
Startup after power off: ≤6S	
Normal services after data recovery: ≤31S	

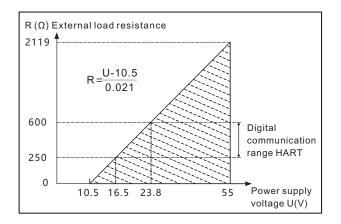
#### **Environment condition**

Items	Operational condition
Media temperature	-40-85°C, LCD display unit: -20-70°C
Storage temperature	-40-110°C, LCD display unit: -40-85°C
Isolated filling fluid	With silicon oil
temperature	With Neobee M-20
Working humidity	5-100%RH@40℃
Protection class	IP67
Dangerous condition	ExdIICT6(GYB16.1253X)* ExiaIICT4(GYB16.1965X)*
*Please consult engin	eers for details

#### Power supply

Item	Operating conditions
Standard/flame proof	10.5-55VDC
HART protocol	16.5-55VDC,communication load resistance 250Ω
Modbus-RTU/RS485	12-32VDC
Load resistance	0-2119 $\Omega$ for operation, 250-600 $\Omega$ for HART protocol
Transmission distance	<1000 meters
Power consumption	≤500mW@24VDC,20.8mA

#### Power supply and load requirements



### EMC environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	OK
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ОК
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Menu function

# Specific menu

# Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

# LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

# Unit

Unit	Definition	
kPa	Kilopascal	
MPa	Megapascals	
bar	Bar	
psi	Pounds per square inch	
mmHg	Millimetre(s) of mercury@0°C	
mmH2O	Millimeter of water@4°C	
mH2O	Meter of water@4°C	
inH2O	Inches of water@4°C	
ftH2O	Feet of water@4°C	
inHg	Inches of mercury@0°C	
mHg	Meter mercury column@0°C	
TORR	Torr	
mbar	Millibar	
g/cm2	Gram per square centimeter	
kg/cm2	Kilogram per square centimeter	
Pa	PA	
ATM	Standard atmospheric pressure	
mm	Millimeter(Note1)	
m	Meter(Note1)	
Note1: length unit need mark medium density		

# Measuring menu set

Mark	State
URV	Upper range value
LRV	Lower range value

# Damping time

Units	Setting range
S	0-100

#### Analog output type

Parameters	Output type
mA LINER	Linearity
mA 🦨	Square root

#### Alarm signal

Parameters	Alarm signal
ALARM NO	None
ALARM H	20.8mA
ALARM L	3.8mA

# Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8000mA
4.0000	4.0000mA
8.0000	8.0000mA
12.000	12.000mA
16.000	16.000mA
20.000	20.000mA
20.800	20.800mA

# Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, used to correct the error cased by static pressure and installation.
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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# Sensor type

Code	Nominal value	Description
S403D	40kPa	Range -40kPa-40kPa, smallest calibratable span 10kPa
S254D	250kPa	Range -250kPa-250kPa, smallest calibratable span 25kPa
S105D	1MPa	Range -500-1000kPa, smallest calibratable span 100kPa

# Seal(S)

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

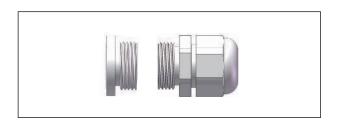
#### Electrical connection select instruction

Code	Item	Description
T1	l	Aluminum-alloy terminal,2 cable entry M20*1.5(F), red body, white cover
R1		Waterproof connector M20X1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP67
R2	Cable entry protector	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67
R3		Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67

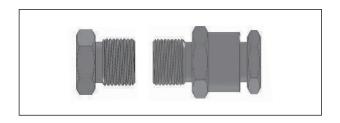
# Housing (T1)



# Standard cable entry protective adaptor(R1)



#### Flame proof cable entry protective adaptor(R2/R3)



#### Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10.5-55VDC
Н		4-20mA+HART two wire, power supply: 16.5-55VDC
R		Modbus-RTU/RS485 four wire, power supply:12-32VDC
А	Display	Without display
С		With LCD display

# Display module(C)



#### Terminals



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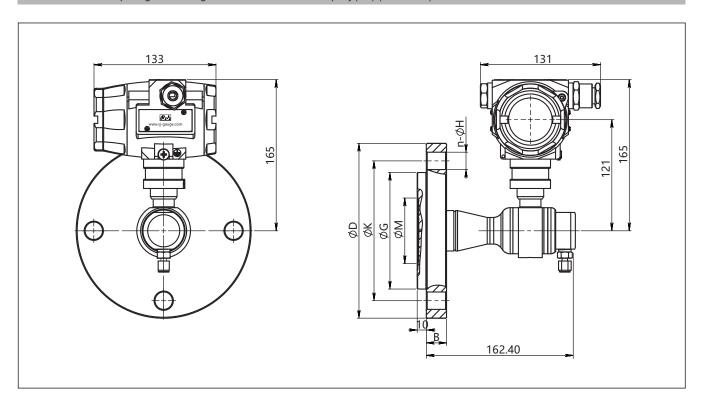
# Process connection select instruction

Connection position	ш	High proceurs side connection	
Connection position	<del> </del>	High-pressure side connection	
Connection type	G	Fixed mounting	
Isolation fluid filling	s	Silicon oil	
	Н	Silicon oil	
	F	Neobee M-20	
Wetted parts	4	SUS304	
material	6	SUS316	
Diaphragm material	s	SUS316L	
	Н	Hastelloy C	
Flange	H01	HG/T 20592-2009, DN50PN10-PN40 raised face flange(max measuring range 4MPa)	
specifications	H05	HG/T 20592-2009, DN80PN10 raised face flange(max measuring range 1MPa)	
	H06	HG/T 20592-2009, DN100PN10 raised face flange(max measuring range 1MPa)	
Insert tube diameter	D00	None	
	D01	Diameter:66mm, length:50mm	
	D02	Diameter:66mm, length:100mm	
	D03	Diameter:66mm, length:150mm	

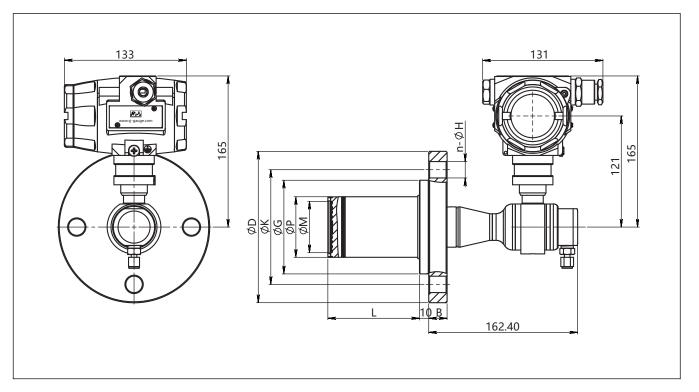
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# Standard flush diaphragm drawing and dimension with display( ${\tt C}$ ) ( ${\tt unit:mm})$



# Standard extended diaphragm with display(C) (unit: mm)

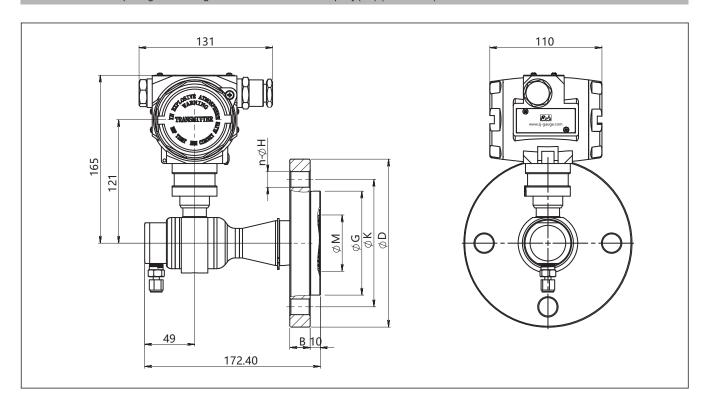


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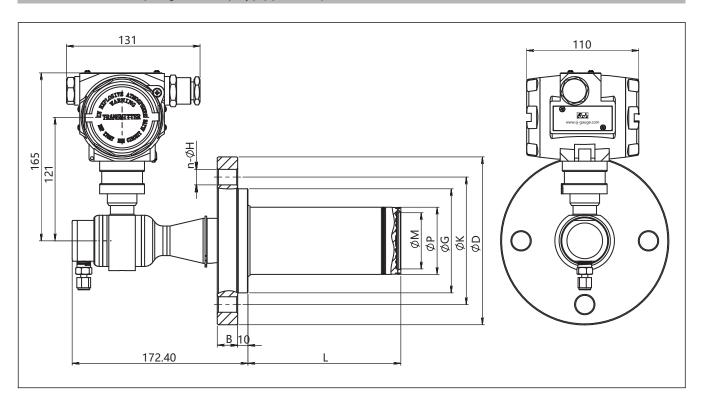
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# Standard flush diaphragm drawing and dimension with display( A ) ( unit: mm) $\,$



# Standard extended diaphragm with display(A) (unit: mm)

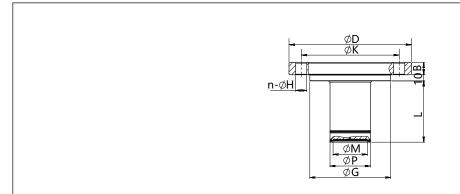


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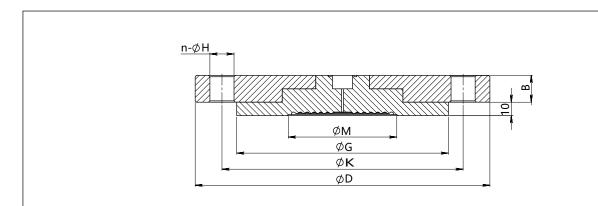


# Process connection (D01-D03)(unit: mm)



Standard	Specification	Outer diameter(ΦD)	Thickness(B)	Raised face diameter	r(ΦG)
HG/T20592-2009	DN80PN10	200	20	138	
HG/T20592-2009	DN80PN10	200	20	138	
HG/T20592-2009	DN80PN10	200	20	138	
Hole circumference(ΦK)	Number(n)	Hole diameter(ΦH)	Insert tube diameter(ΦP)	Insert tube length(L)	Corrugation size(ФМ)
160	8	18	66	50	42
160	8	18	66	100	42
160	8	18	66	150	42

# Process connection (H01、H05、H06) (unit: mm)



Standard	Specification	Outer diameter(ΦD)	Thickness(B)	Hole circumference(ΦK)
HG/T20592-2009	DN50PN10	165	19	125
HG/T20592-2009	DN80PN10	200	20	160
HG/T20592-2009	DN100PN10	200	20	160
Raised face diameter(ΦG)	Hole diameter(ΦH)	Number(n)	Corrugation size(ΦM)	
102	18	4	56	
138	18	8	71	
158	18	8	71	

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# Ordering information chapter

Item	Parameters	Code	Instruction	(*) Fast delivery available
	Model	MSSMP858-NST	Monosilicon differential pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	S403D	Nominal value(URL): 40kPa	*
	range code	S254D	Nominal value(URL): 250kPa	*
		S105D	Nominal value(URL): 1MPa	*
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	T1	Aluminum-alloy terminal,2 cable entry M20*1.5(F), red body, white cover	*
	Cable entry protector	R1	Waterproof connector M20X1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only,IP67	*
		R2	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67	
		R3	Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,IP67	*
Output	Separator	-	Detailed specifications as following	
	Output signal	F	4-20mA two wire, power supply: 10.5-55VDC	*
		Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
	Display	А	Without LCD display	
		С	LCD display	*
Process connection	Separator	-	Detailed specifications as following	
	Connection position	HL	High-pressure side connection	*
	Connection type	G	Fixed mounting	*
	Isolation fluid	S	Silicon Oil	*
	filling	Н	Silicon Oil	
Drassa		F	Neobee M-20	*
Process connection	Wetted parts	4	SUS304	*
(High-	material	6	SUS316	
pressure side)	Diaphragm	S	SUS316L	*
	material	Н	Hastelloy C	
	Flange specifications	H01	HG/T 20592-2009, DN50PN10-PN40 raised face flange(max measuring range 4MPa)	*
		H05	HG/T 20592-2009, DN80PN10 raised face flange(max measuring range 1MPa)	*
		H06	HG/T 20592-2009, DN100PN10 raised face flange(max measuring range 1MPa)	*

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# Ordering information chapter

	Insert tube	D00	None	
	diameter	D01	Diameter:66mm, length:50mm	*
		D02	Diameter:66mm, length:100mm	
		D03	Diameter:66mm, length:150mm	
Additional options	Separator	-	Detailed specifications as following	
	Display mode	/D1	According to your requirement	
	Calibration report	/Q1	Calibration report provided by our company	*
		/Q2	Calibration report provided by Taiwan authorised third party	
			Static pressure report ( Differential pressure only)	
	Approvals	/E1	Flame proof certificate, ExdIICT6, NEPSI	*
	(multiple)	/12	Intrinsic safety certificate, ExiaIICT4, NEPSI	*
		/L3	CE certificate	*
	Wetted parts	/G1	Ungrease treatment	
	treatment	/G2	Electropolishing treatment	

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#### Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	0(No specific settings)
Analog output type	mA	Liner(No specific settings)
Display mode	DISP	PV(No specific settings)
Alarm signal	ALARM	No(No specific settings)

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

# Approvals

# Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2015
	Design and production of pressure transmitter
Registration number	110804039

# Flame proof certificate

Certificate organizzation	NEPSI
License scope	MSSMP858 series pressure transmitter
Explosion-proof mark	ExdIICT6Gb
Working environmental temperature	-25-+55°C
Maximum medium temperature	-20-+80°C
Registration number	GYB16.1253X

#### RoHS

Certificate organizzation	ECM
License scope	MSDMP305X pressure/differential pressure transmitter
Mark	RoSH
Instruction	2011/65/EU
Certification criteria	IEC62321-1:2013 IEC62321-5:2014 IEC62321-2:2013 IEC62321-6:2015 IEC62321-4:2014 IEC62321-7-1:2015
Registration number	0H180504.SLIUQ05

# CE

Certificate organization	ISET
License scope	MSSMP858 series pressure transmitter
Mark	EU
EMC instruction	2014/30/EU
Standard	EN61326-1:2013
Registration number	IT41353LG161207

# Intrinsic safety certifite

Certificate organization	NEPSI
License range	MSSMP858 series pressure transmitter
Explosion-proof mark	ExialICT4
Ambient temperature	-40-+60°C
Medium maximum temperature	+120℃
Registration number	GYB16.1965X
Intrinsically safe	Maximum input voltage:20VDC
parameter description	Maximum input current:100mA
	Maximum input power:0.7w
	Maximum internal equivalent parameters Ci(uF):0
	Maximum internal equivalent parameters Li(mH):0.01

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#### Description



#### Industrial pressure transmitter

The new microprocessor and surface mount technology transmission module which collect and process the signal of pressure sensor and amend the measurement error through built-in temperature sensor, fully improved the performance of pressure transmitter.

The new external three-button menufunction designs make it easier to operate the parameter settings and safer to operate in dangerous situations. The HART manual controller or the HART software can realize measurement information configuration remotely.

#### Main parameters

Pressure types	Gauge pressure
	5kPa-100MPa, please refer to the ordering information chapter
Output signal	4-20mA,4-20mA+HART,customer
Reference accuracy	±0.2% URL, ±0.5% URL

#### Measuring medium

Liquid, gas, or steam

#### Field of application

Pressure, level

#### Approvals





# RoHS

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#### **Technical Specifications**

#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit (LRL)	Upper range limit (URL)	Overload limit
7kPa	5kPa	-7kPa	7kPa	10.5kPa
20kPa	10kPa	-20kPa	20kPa	30kPa
35kPa	20kPa	-35kPa	35kPa	52.5kPa
100kPa	35kPa	-100kPa	100kPa	150kPa
200kPa	100kPa	-100kPa	200kPa	300kPa
700kPa	200kPa	-100kPa	700kPa	1050kPa
1MPa	500kPa	-0.1MPa	1MPa	1.5MPa
1.7MPa	1MPa	-0.1MPa	1.7MPa	2.55MPa
3.5MPa	1.7MPa	-0.1MPa	3.5MPa	5.25MPa
7MPa	3.5MPa	-0.1MPa	7MPa	10.5MPa
17MPa	7МРа	-0.1MPa	17MPa	25.5MPa
35MPa	17MPa	-0.1MPa	35MPa	52.5MPa
40MPa	20MPa	-0.1MPa	40MPa	60MPa
60MPa	30МРа	-0.1MPa	60MPa	90MPa
70MPa	35МРа	-0.1MPa	70MPa	105MPa
100MPa	50MPa	-0.1MPa	100MPa	150MPa

The unit of the measuring range above can be converted into kg/cm²、MPa and kPa, etc. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤| URV - LRV |≤URL

#### Reference accuracy

Standard and reference conditions, including linearity(BFSL), hysteresis and repeatability. calibration temperature: 20 °C ± 5 °C			
Linear	Typical		Nominal value: 7kPa 、20kPa、35kPa、100kPa、200kPa、700kPa、1MPa、 1.7MPa、3.5MPa、7MPa、17MPa、35MPa、40MPa、60MPa、70MPa、100MPa
accuracy	Max	±0.5% URL	1.7MFa, 3.5MFa, 7MFa, 17MFa, 35MFa, 40MFa, 00MFa, 70MFa, 100MFa
The accuracy of square root output is 1.5 times of above linear reference output accuracy			

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero based-calibration span, Silicon oil filling, 316L stainless steel isolation diaphragm, 4-20mA analog output.

#### Performance specifications

The overall performance including but not limited to reference accuracy ], [environment temperature effects] and other comprehensive error	
Typical accuracy: ±0.2%URL	
Stability: ±0.1% URL/ year	

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

### Mounting position effects

Apply to any position. Install error less than 400Pa can be corrected by PV=0 reset.

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#### **Technical Specifications**

#### Vibration effects

According to GB/T 1827.3/IEC61298-3 tests, < 0.1% URL

#### Output signal

4-20mA two wire. Customers can choose linear output or square root output. Digital process variables superimpose on 4-20mA signal and apply to any hosts with HART protocol.

#### Ambient temperature effects(Typical)

Within the range of - 20-80℃ total	±(0.1+0.1TD)% URL
impact	

#### Insulation resistance

≥20MΩ@, 100VDC

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Damping time of amplifer: 0-100S adjustable

Diaphragm capsule (isolation diaphragm and silicon oil filling) damping time: ≤0.2s

Startup after power off : ≤6S

Normal services after data recovery: ≤31S

#### Weight

Net weight: about 0.52 kg ( without mounting bracket and process connection adaptor )

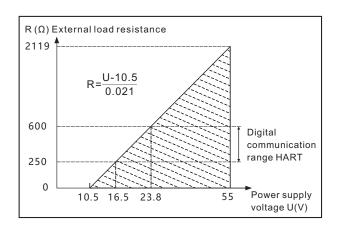
#### **Environment condition**

Items	Operational condition	
Media temperature	-40-85°C, integrated LCD display: -20- 70°C	
Storage temperature	-40-110℃, integrated LCD display: - 40-85℃	
isolated filling fluid temperature	Silicon oil filling: -40-120°C	
Working humidity	5-100% RH	
Protection class	IP67	
Dangerous conditon	ExialICT4(gyb16.1962X)*	
*Please consult engineers for details		

#### Power supply

Item	Operating conditions
Standard/flame proof	10.5-55VDC
HART protocol	16.5-55VDC, communication load resistance 250Ω
Load resistance	0-2119 $\Omega$ for working condition, 250-600 $\Omega$ for HART protocol
Transmission distance	<1000m
Power consumption	≤500mW@24VDC , 20.8mA

#### Power supply and load requirements



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#### **Technical Specifications**

# EMC environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ОК
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ОК
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity Test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Menu function

# Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

# LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

#### Unit

	1
Unit	Definition
kPa	Kilopascal
MPa	Megapascals
bar	Bar
psi	Pounds per square inch
mmHg	Millimetre(s) of mercury@0°C
mmH2O	Millimeter of water@4°C
mH2O	Meter of water@4°C
inH2O	Inches of water@4°C
ftH2O	Feet of water@4°C
inHg	Inches of mercury@0°C
mHg	Meter mercury column@0°C
TORR	Torr
mbar	Millibar
g/cm2	Gram per square centimeter
kg/cm2	Kilogram per square centimeter
Ра	PA
ATM	Standard atmospheric pressure
mm	Millimeter(Note1)
m	Meter(Note1)
Note1: ler	ngth unit need mark medium density

# Measuring menu set

Mark	State
URV	Upper range value, 20mA
LRV	Lower range value, 4mA

# Damping time

Units	Setting range
S	0-100

# Analog output type

Parameters	Output type
mA LINER	Linearity
mA √	Square root

# Alarm signal

Parameters	Alarm signal
ALARM NO	None
ALARM H	20.8mA
ALARM L	3.8mA

# Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8000mA
4.0000	4.0000mA
8.0000	8.0000mA
12.000	12.000mA
16.000	16.000mA
20.000	20.000mA
20.800	20.800mA

# Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, used to correct the error cased by static pressure and installation.
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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# Sensor select instruction

Code	Nominal value	Deacription
L702G	7kPa	Range -7-7kPa, smallest calibratable span 5kPa
L203G	20kPa	Range -20-20kPa, smallest calibratable span 10kPa
L353G	35kPa	Range -35-35kPa, smallest calibratable span 20kPa
L104G	100kPa	Range -100-100kPa, smallest calibratable span 35kPa
L204G	200kPa	Range -100-200kPa, smallest calibratable span 100kPa
L704G	700kPa	Range -100-700kPa, smallest calibratable span 200kPa
L105G	1MPa	Range -0.1-1MPa, smallest calibratable span 500kPa
L175G	1.7MPa	Range -0.1-1.7MPa, smallest calibratable span 1MPa
L355G	3.5MPa	Range -0.1-3.5MPa, smallest calibratable span 1.7MPa
L705S	7MPa	Range -0.1-7MPa, smallest calibratable span 3.5MPa
L176S	17MPa	Range -0.1-17MPa, smallest calibratable span 7MPa
L356S	35MPa	Range -0.1-35MPa, smallest calibratable span 17MPa
L406S	40MPa	Range -0.1-40MPa, smallest calibratable span 20MPa
L606S	60MPa	Range -0.1-60MPa, smallest calibratable span30MPa
L706S	70MPa	Range -0.1-70MPa, smallest calibratable span 35MPa
L107S	100MPa	Range -0.1-100MPa, smallest calibratable span 50MPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span | URV - LRV | SURL

Code	Position	Description
S	Isolated diaphragm material	SUS316L
S	Isolated filling fluid	Silicon oil
S		O-ring, FKM, process temperature:-20-200°C

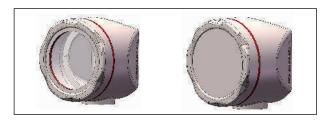
# Seal (S/C)



#### Electrical connection

Code	Item	Description
1	l	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67, vertical mounting
F2		Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting

# Housing(F1)



#### Housing(F2)



# Aviation plug, M12\*1, 4 pin(H2)

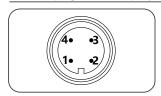


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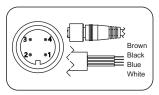
#### Aviation plug, M12\*1, 4 pin(H2)



label	Two wires
1	Power+
2	
3	
4	Power-

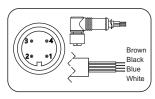
# Electrical connetion accessories

#### Aviation plug straighter(J1)



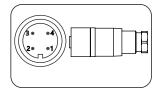
Label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

#### Aviation plug elbow (J2)



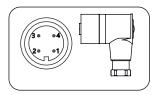
Label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

#### Aviation plug straighter(J4)



label	Two wires
1	power+
2	
3	
4	Power-

### Aviation plug elbow(J5)



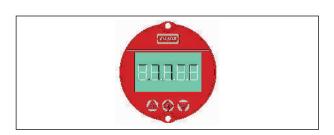
label	Two wires
1	power+
2	
3	
4	Power-

#### Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire,power supply: 10.5-55VDC
Н		4-20mA+HART two wire,power supply: 16.5-55VDC
А	Display	Without display
С		With LCD display

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#### Display module (C)



# Wetted parts



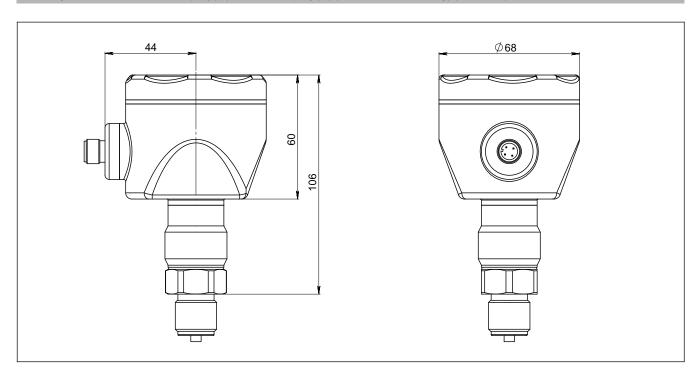
# Process connection select instruction

Code	Items	Description
4	Material	Stainless steel, SUS304
6		Stainless steel, SUS316
M01	Specifications	M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261
G01		G1/2(M), Ф3 pressure lead hole, EN837
G02		G1/4(M), Φ3 pressure lead hole, EN837
G08		G1/4(M). Ф3 pressure lead hole, GB/T7307, ISO228 , DIN16288, BS2779, seal reference DIN3852- E(back-end seal) Max measuring 60MPa
R01		1/2-14NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R02		1/4-18NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R03		1/2-14NPT(F), GB/T12716, ANSI/ASME B1.20.1
R04		1/4-18NPT(F), GB/T12716, ANSI/ASME B1.20.1

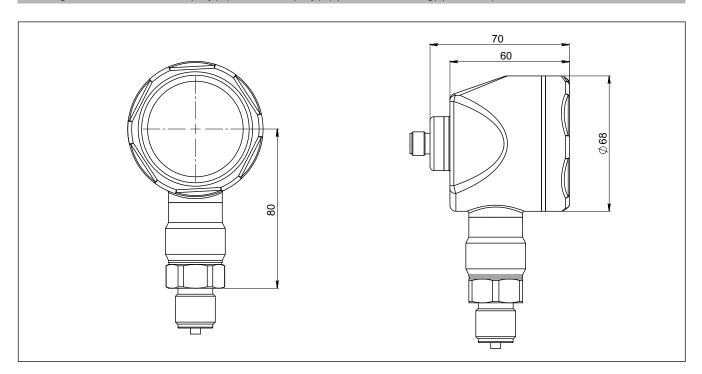
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# $Drawing \ and \ dimension \ with \ display(C)/without \ display(A) \ (horizontal \ mounting) \ (unit:mm)$



#### $Drawing \ and \ dimension \ with \ display(C)/without \ display(A) \ (vertical \ mounting) \ (unit:mm)$

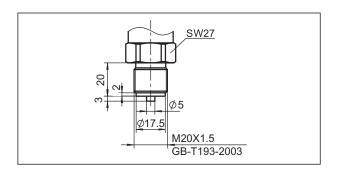


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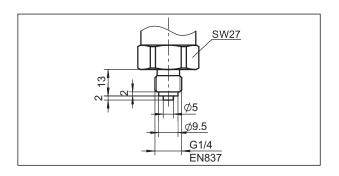
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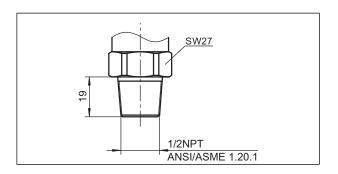
#### Process connection(M01) (unit: mm)



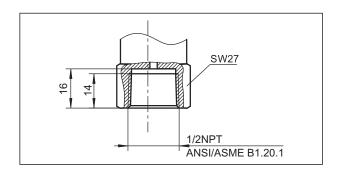
# Process connection(G02) (unit: mm)



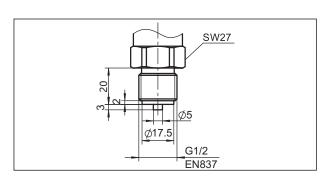
#### Process connection(R01) (unit: mm)



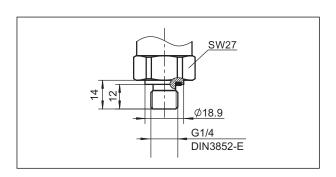
# Process connection(R03) (unit: mm)



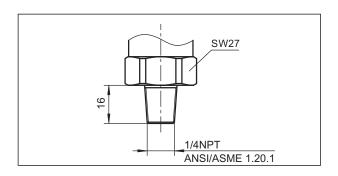
#### Process connection(G01) (unit: mm)



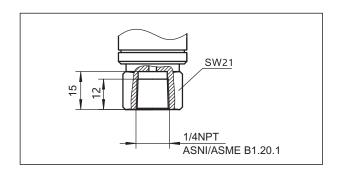
#### Process connection(G08) (unit: mm)



#### Process connection(R02) (unit: mm)



#### Process connection(R04) (unit: mm)

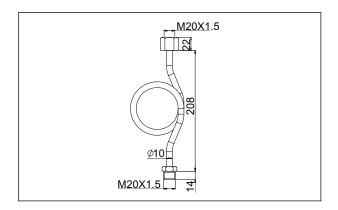


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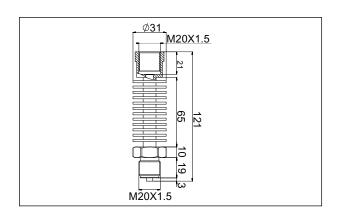
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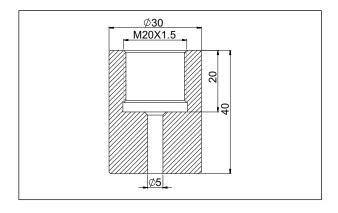
#### Heat exchange connector(N1) (unit: mm)



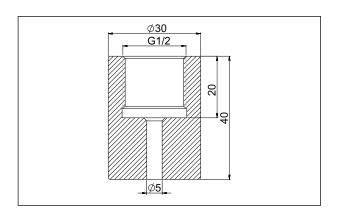
#### Heat exchange connector(N2)(unit: mm)



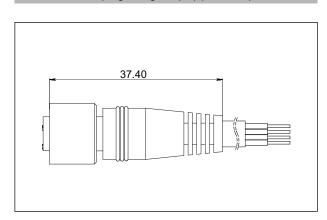
#### Welding adaptor(Z1) (unit: mm)



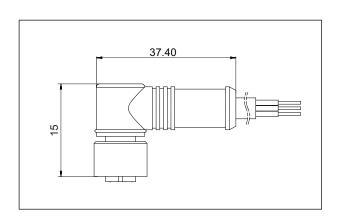
# Welding adaptor(Z2) (unit: mm)



### Aviation female plug straighter(J1) (unit: mm)



### Aviation female plug elbow(J2) (unit: mm)



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## Ordering information chapter

Item	Parameters	Code	Instruction	(*)fast delivery available
	Model	MSDMP305X-TLF	Piezoresistive silicon gauge pressure sensor	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	L702G	Nominal value(URL): 7kPa	
	range code	L203G	Nominal value(URL): 20kPa	
		L353G	Nominal value(URL): 35kPa	*
		L104G	Nominal value(URL): 100kPa	*
		L204G	Nominal value(URL): 200kPa	*
		L704G	Nominal value(URL): 700kPa	*
		L105G	Nominal value(URL): 1000kPa	*
		L175G	Nominal value(URL): 1700kPa	*
		L355G	Nominal value(URL): 3.5MPa	*
		L705S	Nominal value(URL): 7MPa	*
		L176S	Nominal value(URL): 17MPa	
		L356S	Nominal value(URL): 35MPa	
		L406S	Nominal value(URL): 40MPa	
		L606S	Nominal value(URL): 60MPa	
		L706S	Nominal value(URL): 70MPa	
		L107S	Nominal value(URL): 100MPa	
	Isolated diaphragm material	S	SUS316L	
	Isolated filling fluid	S	Silicon oil	
	Sensor seal	S	O-ring, FKM, process temperature:-20-200°C	
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	F1	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,vertical mounting	*
		F2	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,horizontal mounting	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output	F	4-20mA two wire, power supply: 10.5-55VDC	
	signal	Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
	Display	А	Without LCD display	
		С	LCD display	*

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#### Ordering information chapter

ISO261   G01   G1/2 (M), Φ3 pressure lea	* lead hole, GB/T193-2003, *
Specification M01 M20*1.5 (M), Ф3 pressure ISO261 G01 G1/2 (M), Ф3 pressure lea	e lead hole, GB/T193-2003, *
ISO261 G01 G1/2 (M), Φ3 pressure lea	lead hole, GB/T193-2003, *
DIN16288, BS2779	d hole, GB/T7307, ISO228, *
G02 G1/4(M), Ф3 pressure lead	d hole, EN837
	d hole, GB/T7307, ISO228, refers to DIN3852-E (back-end grange:60 MPa
R01 1/2 -14NPT(M), Φ3 pressu ANSI/ASME B1.20.1	ure lead hole, GB/T12716, *
R02 1/4 -18NPT(M), Φ3 pressu ANSI/ASME B1.20.1	ure lead hole, GB/T12716,
R03 1/2 -14NPT(F), GB/T1271	6, ANSI/ASME B1.20.1
R04 1/4 -18NPT(F), GB/T1271	6, ANSI/ASME B1.20.1
Additional Separator - Detailed specifications as options	following
Process /N1 Heat exchange connector m20*1.5(M), SUS304(Con	
mounting accessory /N2 Heat exchange connector M20*1.5(M), SUS304(Coo	
Process /Z1 Welding connector, M20*1	1.5(F), SUS304
connection accessory /Z2 Welding connector, G1/2(	F), SUS304
Electrical /J1 Aviation female plug (strai	ighter) with 2m cable, 4 pin,
accessory /J2 Aviation female plug (elbo	ow) with 2m cable, 4 pin, M12*1,
/J4 Aviation female plug (elbo M12*1, IP67	ow) with 2m cable, 4 pin,
/J5 Aviation female plug (strai M12*1, IP67	ighter) without cable, 4 pin,
Display mode /D1 According to your requirer	ments
Calibration /Q1 Calibration report provided report	d by our company
Approvals /I1 Intrinsic safety certificate,	, ExialICT4, NEPSI *
(multiple) /F3 CE certificate	*
Wetted parts /G1 Ungrease treatment	
treatment /G2 Electropolishing treatmen	nt .

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#### Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	0(No specific settings)
Analog output type	mA	Liner(No specific settings)
Display mode	DISP	PV(No specific settings)
Alarm signal	ALARM	No(No specific settings)

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

#### **Approvals**

#### Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2008
ISCORE OF CERTIFICATION	Design and production of pressure transmitter
Registration number	110804039

#### CE

Certificate organization	ISET
Licence scope	SMDMP305X series pressure/ differential pressure transmitter
Mark	EU
EMC intruction	2014/30/EU
Standard	AC/011708
Registered number	IT041353LG161207

#### Intrinsic safety certificate

Certification organization name	NEPSI
License range	SMDMP305X series pressure/ differential pressure transmitter
Explosion-proof mark	ExialICT4
Ambient temperature	-40-+60°C
Medium maximum temperature	+120°C
Registration number	GYB16.1962X
Intrinsically safe	Maximum input voltage:28VDC
parameter description	Maximum input current:100mA
	Maximum input power:0.7w
	Maximum internal equivalent parameters Ci(uF):0
	Maximum internal equivalent parametersLi(mH):0.01



#### SIN JIA ENTERPRISE COMPANY LIMITED

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#### Description



#### Industrial pressure transmitter

MSDMP305X-TST pressure transmitter with monosilicon sensor is typically used in process or environmental applications for continuous measurement of pressure differences in liquids, vapors and gases.
With reliable ex-proof construction and electronics, suitable in EX areas.

#### Main parameters

Pressure types	absolute pressure
Measuring range	20kPa-10MPa, please refer to the ordering information chapter
Output signal	4-20mA, 4-20mA+HART, 1-5VDC low power consumption, Modbus- RTU/RS485 customer
Reference accuracy	±0.2%URL, optional ±0.075%URL

#### Measuring medium

Liquid, gas, or steam level, density and pressure

#### Approvals













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#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit(LRL)	Upper range limit(URL)	Overload limit
40kPa	20kPa	0kPa	40kPa	1MPa
250kPa	50kPa	0kPa	250kPa	4MPa
1MPa	200kPa	0kPa	1MPa	6МРа
10MPa	1MPa	0kPa	10MPa	20MPa

Above measurement range can be replaced by kg/cm2, MPa and kPa units . Which can provide other measurement range according to the requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤ | URV-LRV | ≤ upper range limit

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero basedcalibration span, Silicon oil filling, 316L stainless steel isolated diaphragm, 4-20mA analog output.

#### Ambient temperature effects

40kPa	± (0.115+0.065TD) %/10℃ of span
250kPa, 1MPa, 10MPa	± (0.0025+0.0145TD) %/10℃ of span

#### Performance specifications

The overall performance including but not limited to 【 reference accuracy ], [environment temperature effects] and other comprehensive error

Typical accuracy: ±0.2%URL Stability: ±0.2% URL/5 years

#### Mounting position effects

Apply to any position. Max value lower than 400Pa can be corrected by zero clearing function.

#### Reference accuracy

Standard and reference conditions, including linearity (BFSL), hysteresis and repeatability. calibration temperature: 20°C ± 5°C				
Linear output	TD≤5	±0.2 SPAN	40kPa,250kPa	
		±0.075 SPAN	1MPa,10MPa	
accuracy	TD>5	±(0.025+0.035TD)% SPAN	40kPa,250kPa	
		±(0.0025+0.0145TD)% SPAN	1MPa,10MPa	
Note 1: TD is Turn down, TD=URL/  URV-LRV				

Note 2: SPAN=| URV-LRV |

## Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

#### Vibration effects

According to GB/T 1827.3/IEC61298-3 tests, <0.1%URL

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#### **Technical Specifications**

#### Output signal

4-20mA two wire. Customers can choose linear output or square root output. Digital process variables superimpose on 4-20mA signal and apply to any hosts

#### Insulation resistance

≥20MΩ@, 100VDC

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Damping time of amplifer: 0-100S adjustable

Diaphragm capsule (isolated diaphragm and silicon oil filling) damping time: ≤0.2s

Startup after power off: ≤6S

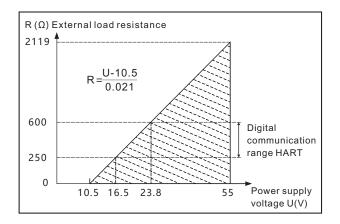
Normal services after data recovery: ≤31S

Response time: ≤150ms

#### Weight

Net weight: about 1.56kg (without mounting brackets and process connection accessory)

#### Power supply and load requirements



#### Power supply

Item	Operating conditions
4-20mA	10.5-55VDC
HART protocol	16.5-55VDC, communication
	load resistance 250Ω
Modbus-RTU/RS485	5-32VDC
1-5VDC low power	9-55VDC
consumption	(Current consumption:5mA Max)
Load resistance	0-2119 Ω for working condition,
	250-600Ω for HART protocol
Transmission distance	<1000m
Power consumption	
4-20mA/HART	≤500mW@24VDC, 20.8mA
Modbus-RTU/RS485	≤240mW@24VDC, 10mA
1-5VDC low power consumption	≤100mW@24VDC, 5mA

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#### **Technical Specifications**

#### **Environment condition**

Operational	Operational condition	
-20-85°C, int	-20-85℃, integrated LCD display :-20-70℃	
-40-85℃, int	-40-85°C, integrated LCD display :-20-70°C	
5-100%RH@	5-100%RH@40℃	
IP66/IP67	IP66/IP67	
NEPSI	ExialICT4(GYB21.1692X)* ExdIICT6(GYB21.4030X)*	
ATEX	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db(CML 19ATEX1078X)* Ex ia IIC T4 Ga(CML 19ATEX1078)*	
IECEx	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db(IECEx NEP 18.0008X)* Ex ia IIC T4 Ga(IECEx NEP 18.0008X)*	
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 (No.: 80020805)*	
	-20-85°C, int -40-85°C, int 5-100%RH@ IP66/IP67 NEPSI ATEX	

#### EMC environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	1	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
1	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Menu function

#### Specific menu

#### Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

#### LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

#### Unit

	1	
Unit	Definition	
kPa	Kilopascal	
MPa	Megapascals	
bar	Bar	
psi	Pounds per square inch	
mmHg	Millimetre(s) of mercury@0°C	
mmH2O	Millimeter of water@4°C	
mH2O	Meter of water@4°C	
inH2O	Inches of water@4°C	
ftH2O	Feet of water@4°C	
inHg	Inches of mercury@0°C	
mHg	Meter mercury column@0°C	
TORR	Torr	
mbar	Millibar	
g/cm2	Gram per square centimeter	
kg/cm2	Kilogram per square centimeter	
Pa	PA	
ATM	Standard atmospheric pressure	
mm	Millimeter(Note1)	
m	Meter(Note1)	
Note1: len	Note1: length unit need mark medium density	

#### Measuring menu set

Mark	State
URV	Upper range value, 20mA
LRV	Lower range value, 4mA

#### Damping time

Units	Setting range
S	0-100

#### Analog output type

Parameters	Output type
mA LINER	Linearity
mA √	Square root

#### Alarm signal

Parameters	Alarm signal
ALARM NO	None
ALARM H	20.8mA
ALARM L	3.8mA

#### Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8000mA
4.0000	4.0000mA
8.0000	8.0000mA
12.000	12.000mA
16.000	16.000mA
20.000	20.000mA
20.800	20.800mA

#### Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, (gauge pressure, differential pressure)
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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#### Product selection instruction

#### Sensor select instruction

		<del> </del>
Code	Nominal value	Description
S403A	40kPa	Range 0-40kPa, smallest calibratable span 20kPa
S254A	250kPa	Range 0-250kPa, smallest calibratable span 50kPa
S105A	1MPa	Range 0-1MPa, smallest calibratable span 200kPa
S106A	10kPa	Range 0-10MPa, smallest calibratable span 1MPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤| URV - LRV |≤URL

Code	Position	Instruction	
S	Diaphragm	SUS316L	
Н	material	Hastelloy C	
S	Fluid filling	Silicon oil, oil temperature resistance:-45-205℃	
D		Inert oil, oil temperature resistance: -45-160°C	
F	Sensor seal	Stainless steel welding seal	
S		FKM	

#### Diaphragm(S/H)



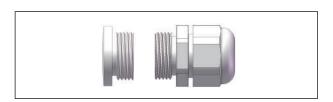
#### Electrical connection

Code	Item	Description
T1	Electrical connection	Aluminum-alloy terminal, 2 cable entry M20*1.5(F), red body, white cover
R1	Cable entry protector	Waterproof connector M20*1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP66/IP67
R2		Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,
R3		Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,

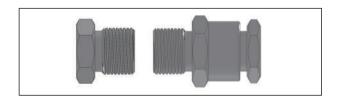
#### Housing(T1)



#### Standard cable entry protective adaptor(R1)



#### Flame proof cable entry protective adaptor(R2/R3)



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#### Product selection instruction

#### Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10.5- 55VDC
Н		4-20mA+HART two wire, power supply: 16.5-55VDC
1D		1-5VDC low power consumption, four wire, power supply: 9-55VDC
1H		1-5VDC+HART low power consumption, four wire, power supply: 9-55VDC
R		Modbus-RTU/RS485, power supply: 5-32VDC
А	Display	Without display
С	1	With LCD display

#### Display module(C)



#### Terminals



#### Brackets

Code	Items	Instruction
1	Fixed mounting	U-shaped bracket, 2" pipe, apply to T-structure

#### Process connection select instruction

		-
Code	Items	Description
4	Material	Stainless steel, SUS304
6		Stainless steel, SUS316
M01	Specifications	M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261
G01		G1/2(M), Φ3 pressure lead hole, EN837
G02		G1/4(M), Φ3 pressure lead hole, EN837
G08		G1/4(M), Ф3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal reference DIN3852- E(back-end seal)
R01		1/2-14NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R02		1/4-18NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R03		1/2-14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1
R04		1/4-18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1

#### Fixed mounting bracket (B4)(MSDMP305X-TST-S)

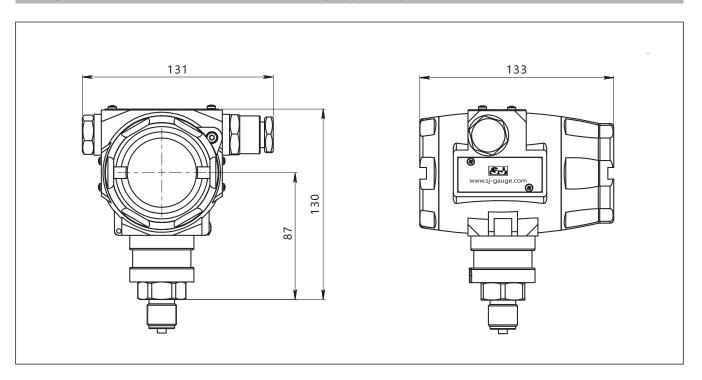


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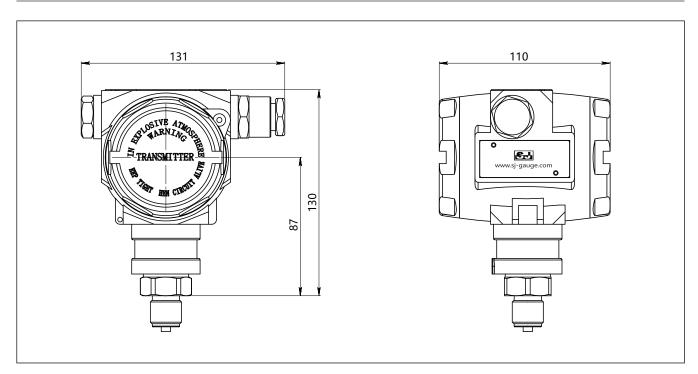
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#### Drawing and dimension of MSDMP305X-TST-S with display(C) (unit: mm)



#### Drawing and dimension of MSDMP305X-TST-S without display(A) (unit: mm)

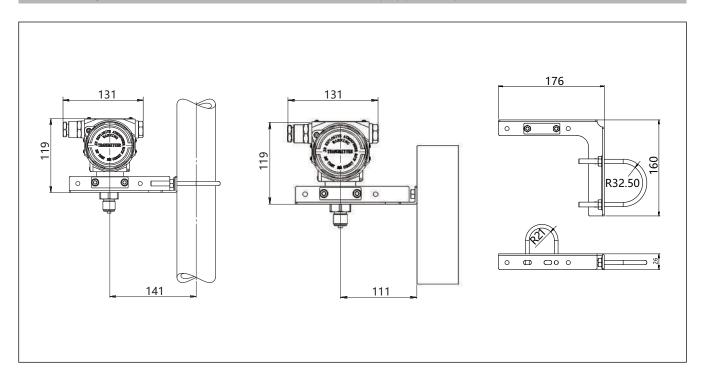


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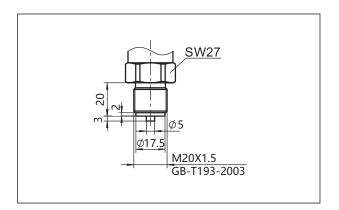
#### Fixed mounting braket installation dimension of MSDMP305X-TST-S (B4) (unit: mm)



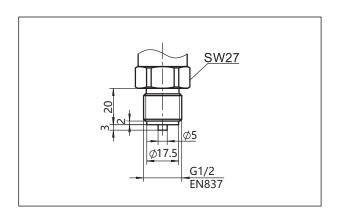
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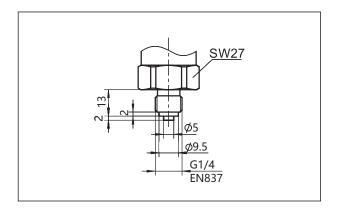
#### Process connection(M01) (unit: mm)



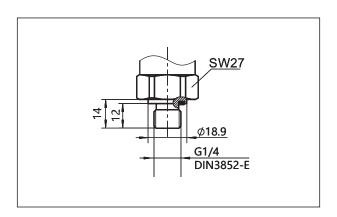
#### Process connection(G01) (unit: mm)



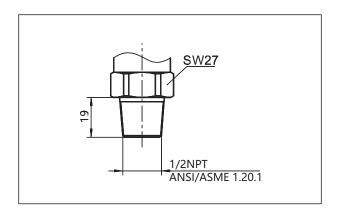
#### Process connection(G02) (unit: mm)



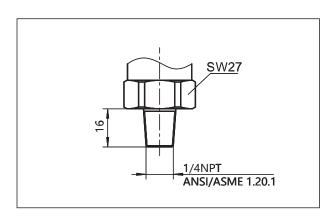
#### Process connection(G08) (unit: mm)



#### Process connection(R01) (unit: mm)



#### Process connection(R02) (unit: mm)

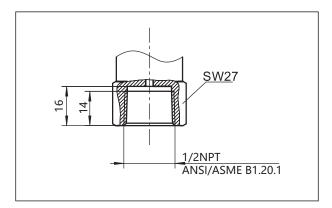


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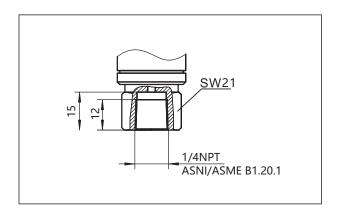
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#### Process connection(R03) (unit: mm)



#### Process connection(R04) (unit: mm)



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# Ordering information chapter

Item	Parameters	Code	Instruction	(*)fast delivery available
	Model	MSDMP305X-TST	Monosilicon absolute pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	S403A	Nominal value(URL): 40kPa	
range code		S254A	Nominal value(URL): 250kPa	*
		S105A	Nominal value(URL): 1MPa	*
		S106A	Nominal value(URL): 10MPa	*
	Diaphragm	S	SUS316L	
	material	Н	Hastelloy C	
	Isolated	s	Silicon oil, oil temperature resistance:-45-205℃	
	filling fluid	D	Inert oil, oil temperature resistance: -45-160°C	
	Sensor seal	F	Stainless steel welding seal	
		s	FKM	
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	T1	Aluminum-alloy terminal, 2 cable entry M20*1.5(F), red body, white cover	*
	Cable entry protector	R1	Waterproof connector M20*1.5 one side , blind plug another side, PVC material, 6-8mm diameter cable only, IP66/IP67	*
		R2	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP66/IP67	
		R3	Flame proof, M20*1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP66/IP67	
Output	utput Separator - Detailed specifications as following		Detailed specifications as following	
Output signal		F	4-20mA two wire, power supply: 10.5-55VDC	
		Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
		1D	1-5VDC low power consumption four wire, power supply: 9-55VDC	
		1H	1-5VDC+HART low power consumption four wire, power supply: 9-55VDC	
		R	Modbus-RTU/RS485, power supply: 5-32VDC	
	Display	A	Without LCD display	*
	' '	С	LCD display	
Drosses	Canaratar		. ,	
Process connection	Separator		Detailed specifications as following	
	Material	4	SUS304	
		6	SUS316	*
	Specification	M01	M20*1.5 (M), Φ3 pressure lead hole, GB/T193-2003, ISO261	*
		G01	G1/2 (M), Φ3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779	*

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	G02	G1/4(M), Ф3 pressure lead hole, EN837	
G08		G1/4(M), Ф3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal refers to DIN3852-E (back-end seal)	
	R01	1/2 -14NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	*
	R02	1/4 -18NPT(M), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
	R03	1/2 -14NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
	R04	1/4 -18NPT(F), Φ3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1	
Fixed /B4 mounting  Display /D1 mode  Calibration /Q1 report  Approvals /E1 (multiple)		Detailed specifications as following	
		U-shaped bracket, 2" pipe, apply to T-structure	*
		According to your requirements	
		Calibration report provided by our company	
		Flame proof certificate NEPSI, ExdbIICT6 IECEx or ATEX,Ex db IIC T6 Gb Ex tb IIIC T80°C CDb	1
	/11	Intrinsic safety certificate IECEx or ATEX,ExiaIICT4Ga NEPSI, ExiaIICT4	2
/E2  Flame proof certificate, 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  /F3  CE certificate		Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C	
		CE cortificato	*
	/F3	CE certificate	
Wetted parts treatment	ļ · · ·	Ungrease treatment	
	Fixed mounting  Display mode  Calibration report  Approvals	G08  R01  R02  R03  R04  Separator -  Fixed mounting /B4 mounting  Display mode  Calibration /Q1 report  Approvals (multiple) /E1  //11  //E2	G08 G1/4(M), Ф3 pressure lead hole, GB/T7307, ISO228, DIN16288, BS2779, seal refers to DIN3852-E (back-end seal)  R01 1/2 -14NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1  R02 1/4 -18NPT(M), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1  R03 1/2 -14NPT(F), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1  R04 1/4 -18NPT(F), Ф3 pressure lead hole, GB/T12716, ANSI/ASME B1.20.1  Separator - Detailed specifications as following  Fixed mounting /B4 U-shaped bracket, 2" pipe, apply to T-structure mounting /Display mode  Calibration report According to your requirements  Approvals (multiple) /E1 Flame proof certificate NEPSI, ExdbIICT6 IECEx or ATEX, Ex db IIC T6 Gb Ex tb IIIC T80°C CDb  //I1 Intrinsic safety certificate IECEx or ATEX, Ex iallCT4Ga NEPSI, ExialICT4  //E2 Flame proof certificate, CSA Class I, Division 1, Group A, B, C and D T6 Class III, Division 1 Group E, F and G T80°C Class III

#### Note:

1 Please indicate ATEX or IECEx or NEPSI when ordering 2 Please indicate ATEX or IECEx or NEPSI when ordering

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#### Factory settings and parameters

Item	Menu mark	Factory setting value	
Tag position	None	0(No specific settings)	
Analog output type	mA	Liner(No specific settings)	
Display mode	DISP	PV(No specific settings)	
Alarm signal	ALARM	No(No specific settings)	

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

# Approvals

## Factory certificate

Certification organization	Intertek	
Quality management system	ISO9001-2015	
IScope of certification	Design and production of pressure transmitter	
Registration number	110804039	

## CE

Certificate organization	ISET
Il iconoc coope	MSDMP305X series pressure/ differential pressure transmitter
Mark	EU
EMC instruction	2014/30/EU
Standard	AC/0100708
Registration number	IT41353LG161207

## Flame proof certificate

Certificate organizzation	NEPSI	ATEX	IECEx	CSA	
License scope	MSDMP305X pr	MSDMP305X pressure/differential pressure transmitter			
Explosion-proof mark	ExdIICT6	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db		Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C Class III	
Working temperature	-20℃ to +55℃	-20°C to +60°C		-40-60°C	
Maximum medium temperature	+80°C				
Registration number	gistration number GYB21.4030X CML 19ATEX1078X IECEx NEP 18.0008X		80020805		

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#### Approvals

#### Intrinsic safety certifite

Certificate organization	NEPSI	ATEX	IECEx	
License range	MSDMP305X series pressure/ differential pressure transmitter			
Explosion-proof mark	Ex ia IIC T4 Ga	Ex ia IIC T4 Ga		
Ambient temperature	40°C to +60°C -20°C to +60°C			
Medium maximum temperature	+120°C			
Registration number	GYB21.1692X	CML 19ATEX1078X IECEx NEP 18.00		
Intrinsically safe	Maximum input voltage:20VDC Maximum input voltage:28VDC			
parameter description	Maximum input current: 100mA	Maximum input current:93mA		
	Maximum input power:0.7w Maximum input power:0.65w			
	Maximum internal equivalent parameters Ci(uF):0			
	Maximum internal equivalent parameters Li(mH):0.01	Maximum internal equivalent parameters Li(mH):0		

#### RoHS

Certificate organizzation	ECM
License scope	MSDMP305X pressure/differential pressure transmitter
Mark	RoSH
Instruction	2015/86/EU
Certification criteria	IEC62321-1:2013 IEC62321-5:2014 IEC62321-2:2013 IEC62321-6:2015 IEC62321-4:2014 IEC62321-7-1:2015
Registration number	0H180504.SLIUQ03



SIN JIA ENTERPRISE COMPANY LIMITED

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#### Product introduction

#### Description



## Hygienic pressure transmitter

Hygienic pressure transmitter, designed for food and pharmaceutical industry, is suitable for CIP/SIP cleaning and sterilization. Smart compact design, the welded process diaphragm medium parts is made of high quality stainless steel 316L, roughness≤0.4um, filling fluid with hygiene standard in line with FDA certification, variety of international standard process connections are available.

#### Main parameters

Pressure types	Gauge pressure
Measuring range	10kPa-3MPa, please refer to the ordering information chapter
Output signal	4-20mA,4-20mA+HART,0.5-4.5VDC, Modbus-RTU/RS485,customer
Reference accuracy	±0.2% URL, ±0.5% URL, customer

## Field of application

Pressure, level

#### Approvals



#### Measuring medium

Viscous, paste-like, adhesive, crystallising, particulatescontaining and contaminated media

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#### Technical specifications

#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit ( LRL )	Upper range limit (URL)	Over pressure limit
40kPa	10kPa	-40kPa	40kPa	1MPa
250kPa	40kPa	-100kPa	250kPa	4MPa
1MPa	250kPa	-100kPa	1MPa	6MPa
3МРа	1MPa	-100kPa	3МРа	15MPa

The unit of the measuring range above can be converted into kg/cm²、 MPa and kPa. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range.

Limit value of overpressure: depends on the pressure value of the parts with lowest pressure capacity

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero basedcalibration span, Linear output, Silicone oil filling, 316L stainless steel isolation diaphragm.

#### Performance specifications

The overall performance including but not limited to 【reference accuracy】, 【environment temperature effects】 and other comprehensive error

Typical accuracy: ±0.2URL Stability: ±0.2% URL/ year

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20°C±5°C			
1			Nominal value:
output accuracy	Max value/ voltage output	±0.5%URL	40kPa, 250kPa 1MPa, 3MPa

#### Ambient temperature effects(Typical)

Within the range - 20-80°C total impact |±0.2%URL/10k

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

#### Loading effects

Zero and span change should not be more than ± 0.05% URL/k $\Omega$ 

#### Vibration effects

Vibration resistence	According to IEC60068-2-6 , 10g RMS (25- 2000HZ)
Impact resistence	According to IEC60068-2-27, 500g/1ms

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire
0.5-4.5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

#### Insulation resistance

≥20MΩ@, 100VDC

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#### Technical specifications

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule
Damping time of amplifer : 0-100S adjustable
Diaphragm capsule (isolation diaphragm and silicon oil filling) damping time: ≤0.2S
Startup after power off : ≤3S (with HART communication: ≤0.2S)
Normal services after data recovery: ≤4S (with HART communication: ≤31S)

#### **Environment condition**

Items	Operational condition
Media temperature	-40-85°C
Storage temperature	-40-100°C
isolated filling fluid temperature	Sanitary fluid filling :-10-125°C; with heat exchange connector: - 10-250°C*
	Silicon oil filling: -40-120°C, with heat exchange connector: -40-300°C*
Working humidity	0-95%RH
Protection class	IP67
Dangerous condition	ExialICT4(GYB16.1965X)**
*11: 1 ( )	

<sup>\*</sup>Using heat exchange connector may lead to zero offset and temperature drift. The degree depends on mounting position and filling fluid

#### **Technical Specifications**

Signal output	4-20mA	4-20mA+HART*	0.5-4.5VDC	0.5-4.5VDC(ratiometric output)	RS485
Power supply voltage	10-30VDC	10.5/16.5-55VDC	6-15VDC	5VDC	5VDC/9-30VDC
Electric current	≤20.8mA		≤3.5mA		≤7mA
Load resistance( $\Omega$ )	<(U-10)/0.0208	<(U-10.5)/0.0208**	≥5k, recomm	end 100k	/
Transmission distance	<1000m		<5m		<1200m
Power consumption	≤500mW(20.8mA output@24VDC)		1 ' ' '		≤168mW(RS485 output@24VDC)

<sup>\*</sup>For this output type, the load resistance value in communication is  $250\Omega$ 

#### EMC environment(not RS485 signal output)

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ОК
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ОК
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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<sup>\*\*</sup>Please contact the engineer for further information

<sup>\*\*</sup>The load resistance value 0-2119 $\Omega$  is in nominal working condition, 250-600 $\Omega$  is HART communication



#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description
L403G	40kPa	Range 0kPa-35kPa, smallest calibratable span 10kPa
L254G	250kPa	Range 0kPa-200kPa, smallest calibratable span 25kPa
L105G	1MPa	Range 0kPa-1MPa, smallest calibratable span 100kPa
L305G	3МРа	Range 0kPa-3.5MPa, smallest calibratable span 300kPa

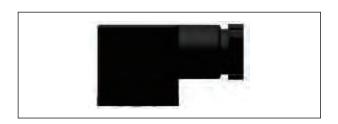
Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

#### Electrical connection

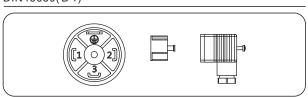
Code	Description
D1	DIN43650 connector, IP65

#### DIN43650(D1)



#### Electrical connection

#### DIN43650(D1)



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2	Power+	Power-	Power-	Power-
3	Key-z	Signal+	Signal+	A+
<b>(4)</b>			Signal-	B-

Note: Key-z is modified zero pressure

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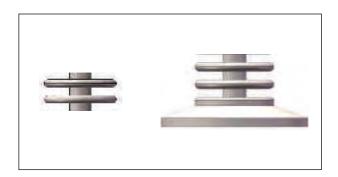


#### Product selection instruction

#### Transmission module

Code	Description
F	4-20mA two wire, power supply: 10-30VDC
Н	4-20mA+HART two wire, power supply: 16.5- 55VDC
R	Modbus-RTU/RS485 5V/9-30VDC
5	0.5-4.5VDC three wire, power supply: 6-15VDC
6	0.5-4.5VDC three wire, proportional output power supply: 5VDC
А	4-20mA two wire, intrinsic safety, power supply: 10-30VDC

#### Cooling element connector (HT)



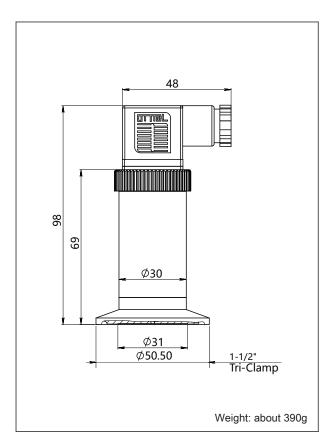
#### Process connection select instruction

Code	Items	Description
4	Process connector material	Stainless steel, SUS304
6		Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -25-85°C
НТ		Cooling element connector, medium temperature: -40-150°C
F	Isolation fluid filling	Sanitary fluid filling, Neobee M-20
S		Silicon oil filling
s	Isolation	SUS316L
Н	diaphragm material	Hastelloy C
K01	Process	Tri-Clamp 1-1/2"
K02	connection	Tri-Clamp 2"
K03	specifications	DIN32676 DN32
K04	1	DIN32676 DN40
K05	1	DIN32676 DN50
K06	1	ISO2852 DN38
K07	1	ISO2852 DN40
K08	1	ISO2852 DN51
K09	1	DIN11851 DN25
K10	]	DIN11851 DN40
K11		DIN11851 DN50
K12		SMS DN1-1/2"
K13		SMS DN2"
K14	]	IDF DN1-1/2"
K15		IDF DN2"
K18		DRD
K20		Plug in tube flush sanitary clamp

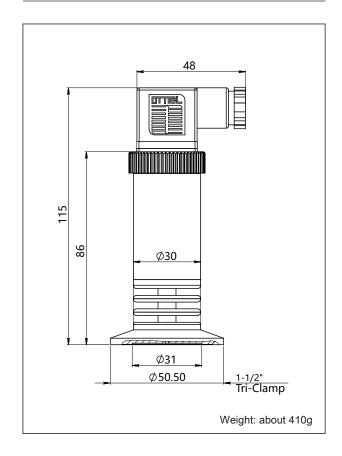
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# Standard drawing and dimension with DIN43650 (D1) ( unit:mm)



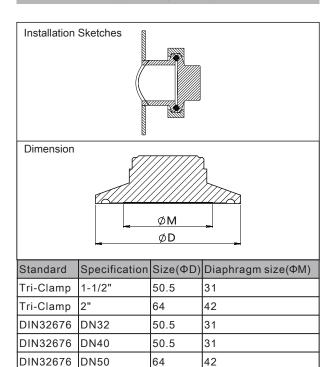
# $\label{eq:high-temperature} \begin{tabular}{ll} High-temperature drawing and dimension with DIN43650 (D1) (unit:mm) \end{tabular}$



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#### Process connection (K01-K08)(unit: mm)



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64

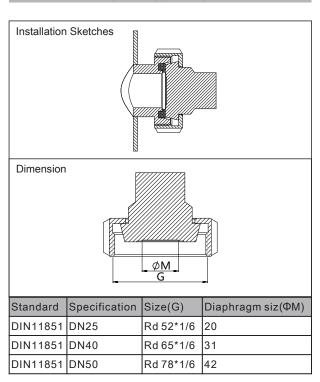
64

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42

#### Process connection (K09-K11)(unit: mm)



#### Process connection (K12-K13)(unit: mm)

**DN38** 

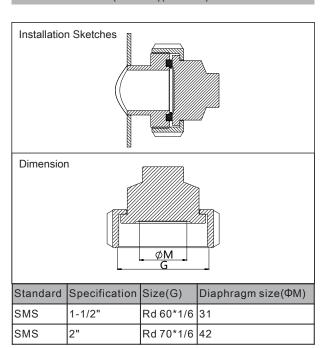
DN40

DN51

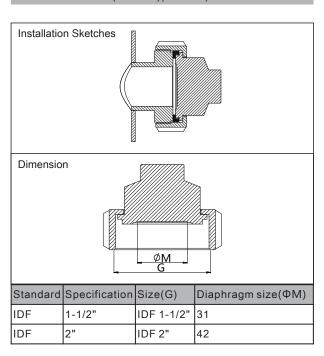
ISO2852

ISO2852

ISO2852



#### Process connection (K14-K15)(unit: mm)

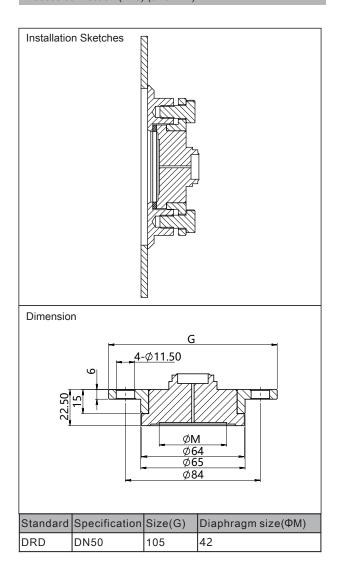


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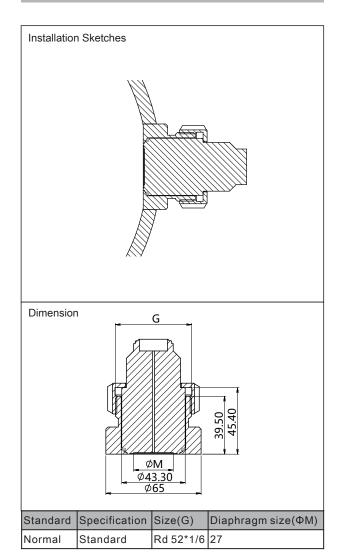
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#### Process connection (K18) (unit: mm)



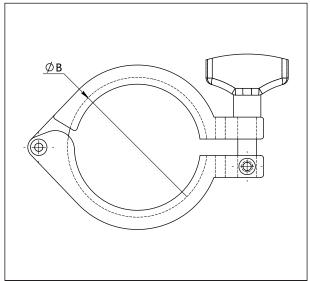
#### Process connection (K20) (unit: mm)



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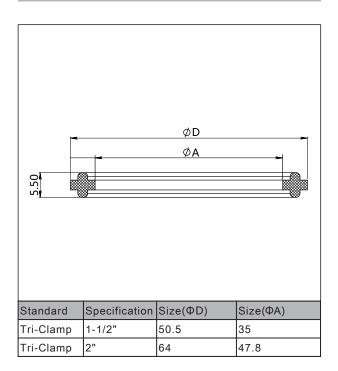


#### Tri-Clamp ( G1-G2 ) (unit: mm )

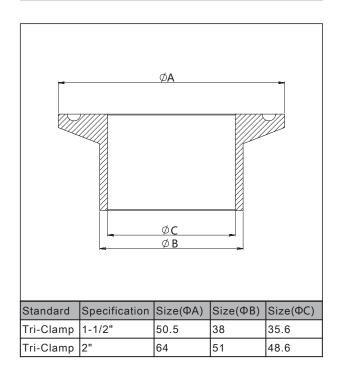


# Standard Specification Size(ΦB) Tri-Clamp 1-1/2" 53.9 Tri-Clamp 2" 67.4

#### Seal ring (M1-M2) (unit: mm)



#### Welding adaptor(Z1-Z1)(unit:mm)



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# Ordering information chapter

Item	Parameters	Code	Instruction	(*) Fast delivery available
	Model	MSSMP858-TSD	Monosilicon gauge pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	S403G	Nominal value(URL): 40kPa	
	range code	S254G	Nominal value(URL): 250kPa	
		S105G	Nominal value(URL): 1MPa	*
		S305G	Nominal value(URL): 3MPa	
	Sensor seal	F	Stainless steel welding seal	
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	D1	DIN43650 connector, IP65	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output signal	F	4-20mA two wire, power supply: 10-30VDC	*
		Н	4-20mA+HART two wire, power supply: 16.5-55VDC	*
		R	Modbus-RTU/RS485 5V/9-30VDC	
		5	0.5-4.5VDC three wire, power supply: 6-15VDC	
		6	0.5-4.5VDC three wire, ratiometric output, power supply: 5VDC	
		A	4-20mA two wire, intrinsic safety, power supply: 10- 30VDC	
Body tube	Separator	-	Detailed specifications as following	
	Tube	53	Stainless steel tube length: 53mm (HART, Modbus-TRU/RS485 is not available )	*
		65	Stainless steel tube length: 65mm (HART, Modbus-TRU/RS485 is not available)	*
		85	Stainless steel tube length: 85mm (with HART、Modbus-TRU/RS485)	
Process connection	Separator	-	Detailed specifications as following	
	Process	4	Stainless steel, SUS304	*
m	connector material	6	Stainless steel, SUS316	
	Connection	NT	Standard connection, medium temperature: -25-85°C	
	type	НТ	Cooling element connector, medium temperature: -40-150°C	*
	Isolation fluid filling	F	Sanitary fluid filling, Neobee M-20	*
		S	Silicon oil filling, process temperature: -45-205°C	*

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# Ordering information chapter

Isolation diaphragm	S	SUS316L		
	material Process	Н	Hastelloy C	
		K01	Tri-Clamp 1-1/2", max measuring range 2MPa	*
	connection specifications	K02	Tri-Clamp 2", max measuring range 2MPa	*
	'	K03	DIN32676 DN32, max measuring range 1.6MPa	
		K04	DIN32676 DN40, max measuring range 1.6MPa	
		K05	DIN32676 DN50, max measuring range 1.6MPa	
		K06	ISO2852 DN38, max measuring range 4MPa	
		K07	ISO2852 DN40, max measuring range 4MPa	
		K08	ISO2852 DN51, max measuring range 2.5MPa	
		K09	DIN11851 DN25, max measuring range 2.5MPa	
		K10	DIN11851 DN40, max measuring range 2.5MPa	
		K11	DIN11851 DN50, max measuring range 2.5MPa	
		K12	SMS DN1-1/2", max measuring range 2.5MPa	
		K13	SMS DN2", max measuring range 2.5MPa	
		K14	IDF DN1-1/2", max measuring range 2MPa	
		K15	IDF DN2", max measuring range 2MPa	
	K18	DRD, max measuring range 2.5MPa		
		K20	Plug in tube flush sanitary clamp, max measuring range 2MPa	
Additional options	Separator	-	Detailed specifications as following	
	Process	/G1	1.5" Tri-clamp	*
	connection accessory	/G2	2" Tri-clamp	*
		/M1	1.5" sealing gasket, material: silicon rubber, process temperature range: -60-200°C	*
		/M2	2" sealing gasket, material: silicon rubber, process temperature range: -60-200°C	*
		/Z1	Welding adaptor, Tri-Clamp1-1/2"	
		/Z2	Welding adaptor, Tri-Clamp2"	*
Calibratio report	Calibration report	/Q1	Calibration report provided by our company	*
	Approvals	/I1	Intrinsic safety certificate, ExiaIICT4, NEPSI	*
	(multiple)	/F3	CE certificate	
	Wetted parts	/G1	Ungrease treatment	
treatment		/G2	Electropolishing treatment	

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#### **Approvals**

#### Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2015
IS cond of cortification	Design and production of pressure transmitter
Registration number	110804039

#### CE

Certificate organization	ISET
License scope	MSSMP858 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registered number	IT051353LG161207

#### Intrinsic safety certificate

Certification organization name	NEPSI
Licenses range	MSSMP858 series pressure transmitter
Explosion-proof mark	ExialICT4
Ambient temperature	-40-+60°C
Medium maximum temperature	+120°C
Registration number	GYB16.1965X
Intrinsically safe	Maximum input voltage:28VDC
parameter description	Maximum input current:100mA
	Maximum input power:0.7w
	Maximum internal equivalent parametersCi(nF):0
	Maximum internal equivalent parametersLi(mH):0



#### SIN JIA ENTERPRISE COMPANY LIMITED

TEL:+886-2-2550-4512 FAX:+886-2-2550-4510 info@sinjiagauge.com www.sj-gauge.com

No.3, Ln. 71, Chifeng St., Datong Dist., Taipei City 103, Taiwan

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#### Description



Monosilicon pressure transmitter

Safety is the primary concern of food and pharmaceutical production. Sanitary pressure transmitter specifically designed for the food and pharmaceutical industry, adopts stainless steel external structure. And the wetted parts with superb stainless steel 316L diaphragm and complete welding technology, the polished finish ≤0.4 v. Hygienic filling liquids in line with FDA standard. Suitable for CIP and SIP cleaning. Richen international standard process connection for optional.

Independent research and development of the core sensor and transmission technology, tens of millions of industrial field application test, hundreds of continuous improvement of design and manufacturing, fully automated equipment for factory inspection and records. Transmitter performance meet the national standard.

#### Main parameters

Pressure types	Gauge & Absolute pressure
Measuring range	10kPa -3MPa
Output signal	4-20mA,4-20mA+HART,customer
Reference accuracy	±0.5% F.S. optional ±0.2% F.S.

#### Measuring medium

Normal medium	Gas, Steam, Liquid
1 '	The fluids which compatible with wetted parts

#### Field of application

Process Industry	Petrochemical, Chemical, Power,
	Steel, Cement, Papermaking

#### Approvals











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#### Performance Parameter

#### Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit(LRL)	Upper range limit(URL)	Overload limit
40kPa	10kPa	-40kPa	40kPa	1MPa
250kPa	25kPa	-100kPa	250kPa	4MPa
1MPa	100kPa	-100kPa	1MPa	6МРа
3МРа	300kPa	-100kPa	3МРа	15MPa

Above measurement range can be replaced by kg/cm2, MPa and kPa units .Which can provide other measurement range according to the requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤ | URV-LRV | ≤ upper range limit.

#### Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; zero basedcalibration span, linear output, silicone oil filling, 316L stainless steel isolation diaphragm.

#### Performance specifications

The overall performance including but not limited to 【Reference accuracy】,【Environment temperature effects】,【Static pressure effects】and other comprehensive error

Typical accuracy: ±0.2% URL Stability: ±0.2% URL/year

#### Reference accuracy

Including linearity, hysteresis and repeatability.
calibration temperature: 20℃±5℃

Linear	Typical		Nominal value
output accuracy	Max value	I+0 5% HRI	40kPa, 250kPa 1MPa, 3MPa

The accuracy of square root output is 1.5 times of above linear reference output accuracy.

#### Ambient temperature effects

Within the range -20-80°C total impact ±0.2% URL/10K

#### Power supply effects

Zero and span change should not be more than ± 0.005% URL/V when power supply changes in 10.5/16.5-55VDC

#### Loading effects

Zero and span change should not be more than  $\pm~0.05\%$  URL/k $\Omega$ 

#### Vibration effects

Vibration resistence	According to IEC60068-2-6 , 10g RMS (25- 2000HZ)
Impact resistence	According to IEC60068-2-27 , 500g/1ms

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+AHRT	Linearity	Two wire

#### Insulation resistance

≥20MΩ@ reference, 100VDC

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#### Performance Parameter

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule
Damping time of amplifer : 0-100S adjustable
Damping time of sensor capsule (isolation sensor diaphragm and silicon filling oil)≤0.2S
Startup after power off: ≤6S
Normal services after data recovery: ≤31S

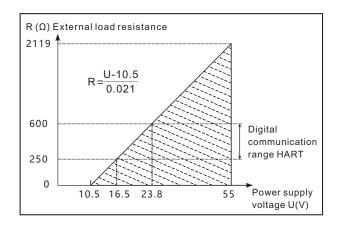
#### Weight

Net weight: about 0.6kg ( without mounting bracket and process connection adaptor )

#### Power supply

Item	Operating conditions
Standard	10.5-55VDC
HART protocol	16.5-55VDC,communication load resistance 250Ω
Load resistance	0-2119Ω for operation, 250-600Ω for HART protocol
Transmission distance	<1000 meters
Power consumption	≤500mW@24VDC, 20.8mA

#### Power supply and load requirements



#### **Environment condition**

Items		Operational condition	
Media temperature		-40-85°C, integrated LCD display:-20-70°C	
Storage temperature		-40-110℃, integrated LCD display:-40-85℃	
Isolated filling fluid temperature		Hygienic fluid filling s:-10-125°C; with heat exchange connector: -10-250°C*	
		Silicon oil filling: -40-120°C, with heat exchange connector:-40-300°C*	
Working humidity		0-95%RH	
Proction class		IP67	
Dangerous condition	NEPSI	ExdIICT6(GYB16.1253X)**	
		ExialICT4(GYB16.1965X)**	
	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 (No.: 80020805)*	
	IECEx	Ex db IIC T6 Gb, Ex tb IIIC T80 Db (IECEx NEP 19.0042X)* Ex ia IIC T4 Ga (IECEx NEP 19.0042X)*	

<sup>\*</sup>Using heat exchange connector may lead to zero offset and temperature drift. The degree depends on mounting position and filling fluid

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<sup>\*\*</sup>Please contact the engineer for details



#### Technical specifications

#### EMC environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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#### Menu function

#### Transmission module type

Output signal	Local control	Remote control
4-20mA+HART	LCD/3 buttons on body	HART
4-20mA	LCD/3 buttons on body	-

#### LCD display unit

Display mode	Details
PV	Process variable shows on main screen, percentage and progress bar shows on secondary screen
mA	Current shows on main screen, percentage and progress bar shows on secondary screen
%	Percentage shows on main screen, percentage and progress bar shows on secondary screen

#### Unit

	<del></del>	
Unit	Definition	
kPa	Kilopascal	
MPa	Megapascals	
bar	Bar	
psi	Pounds per square inch	
mmHg	Millimetre(s) of mercury@0°C	
mmH2O	Millimeter of water@4°C	
mH2O	Meter of water@4°C	
inH2O	Inches of water@4°C	
ftH2O	Feet of water@4°C	
inHg	Inches of mercury@0°C	
mHg	Meter mercury column@0°C	
TORR	Torr	
mbar	Millibar	
g/cm2	Gram per square centimeter	
kg/cm2	Kilogram per square centimeter	
Pa	PA	
ATM	Standard atmospheric pressure	
mm	Millimeter(Note1)	
m	Meter(Note1)	
Note1: length unit need mark medium density		

#### Measuring menu set

Mark	State	
URV	Upper range value	
LRV	Lower range value	

## Damping time

Units	Setting range	
S	0-100	

#### Analog output type

Parameters	Output type	
mA LINER	Linearity	
mA 🦨	Square root	

#### Alarm signal

Parameters	Alarm signal	
ALARM NO	None	
ALARM H	20.8mA	
ALARM L	3.8mA	

#### Fix output

Parameters	Fix output value
FIX/C NO	None
3.8000	3.8000mA
4.0000	4.0000mA
8.0000	8.0000mA
12.000	12.000mA
16.000	16.000mA
20.000	20.000mA
20.800	20.800mA

#### Quick menu

Parameter	Instruction
PV=0	Set current output to zero value, used to correct the error cased by static pressure and installation.
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

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#### Product selection instruction

#### Sensor select instruction

Code	Nominal value	Description
S403G	40kPa	Range -40kPa-40kPa, smallest calibratable span 10kPa
S254G	250kPa	Range -100kPa-250kPa, smallest calibratable span 25kPa
S105G	1MPa	Range -100kPa-1MPa, smallest calibratable span 100kPa
S305G	3МРа	Range -100kPa-3MPa, smallest calibratable span 300kPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

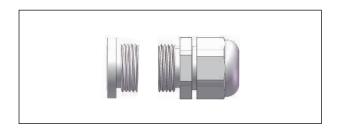
#### Electrical connection

Code	Item	Description
T1	Electrical connection	Aluminum-alloy terminal,2 cable entry M20*1.5(F), red body, white cover
T2		Aluminum-alloy termimal,2 cable entry M20*1.6(F), blue body, white cover
R1	Cable entry protector	Waterproof connector M20X1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP67
R2		Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,IP67
R3		Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only,IP67

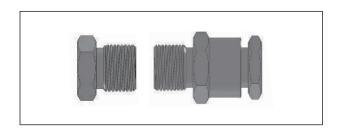
#### Housing(T1)



#### Standard cable entry protective adaptor(R1)



#### Flame proof cable entry protective adaptor(R2/R3)



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## Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10.5-55VDC
Н		4-20mA+HART two wire, power supply: 16.5-55VDC
А	Display	Without display
С		With LCD display

## Display module (C)



## Terminals



## Isolation diaphragm



## Process connection select instruction

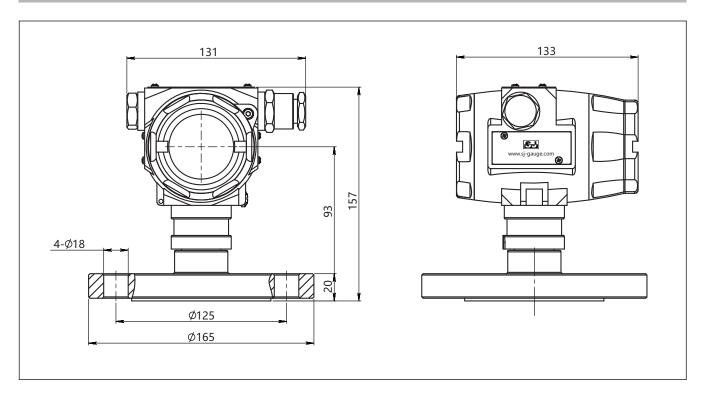
Code	Items	Description
4	Process	Stainless steel, SUS304
6	connector material	Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -25-85°C
HT		With Cooling Element, suitable for medium temperature -40-150℃
UT		With capillary element, suitable for medium temperature -40-300℃
S	Isolation fluid filling	Silicon oil
Н		High-temperature silicon oil
s	Isolation	Stainless steel, SUS316L
Т	diaphragm material	Tantalum
Р		SUS316 + PTFE cover
М		Monel
Н		Hastelloy alloy C
8		Tantalum + PTFE cover
9		Hastelloy C + PTFE cover

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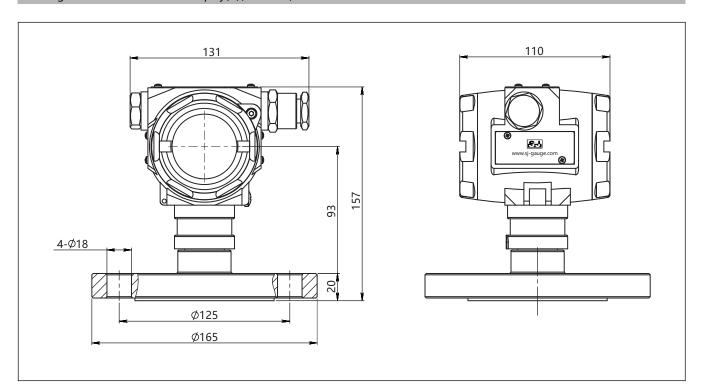
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## Drawing and dimension with display(C)(unit:mm)



## Drawing and dimension without display(A)(unit: mm)

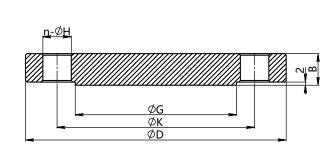


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## Process connection (H01, H05, H06) (unit: mm)



Standard	Specification	Outer diameter(ΦD)	Thickness(B)	Hole circumference(ΦK)
HG/T20592-2009	DN50PN10	165	19	125
HG/T20592-2009	DN80PN10	200	20	160
HG/T20592-2009	DN100PN10	200	20	160
Raised face diameter(ΦG)	Hole diameter(ΦH)	Number(n)	Corrugation size(ФМ)	
102	18	4	56	
138	18	8	71	
158	18	8	71	

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## Ordering information chapter

Item	Parameters	Code	Instruction	(*)fast delivery available
	Model	MSSMP858-TST	Monosilicon diaphgram pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure	S403G	Nominal value: 40kPa	*
	range code	S254G	Nominal value: 250kPa	*
		S105G	Nominal value: 1000kPa	*
		S305G	Nominal value: 3000kPa	
	Pressure type	G	Gauge pressure type	*
	Sensor seal	F	Stainless steel welding seal	*
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	T1	Aluminum-alloy terminal,2 cable entry M20*1.5(F), red body, white cover	*
		T2	Aluminum-alloy termimal,2 cable entry M20*1.6(F), blue body, white cover	
Cable entry protector	Cable entry protector	R1	Waterproof connector M20X1.5 one side , blind plug another side, PVC material,6-8mm diameter cable only, IP67	*
		R2	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67	*
		R3	Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67	*
Output	Separator	-	Detailed specifications as following	
	Output	F	4-20mA two wire, power supply: 10.5~55VDC	*
	signal	Н	4-20mA+HART two wire, power supply: 16.5~55VDC	*
	Display	С	LCD display	*
		A	Without LCD display	*
Process connection	Separator	-	Detailed specifications as following	
	Process	4	Stainless Steel SUS304	*
	connector material	6	Stainless steel SUS316	*
- 1	Connection type	NT	Standard connection, suitable for medium temperature - 25-85℃	*
		нт	With cooling element, suitable for medium temperature - 40-150°C	*
		UT	With capillary element, suitable for medium temperature - 40-300°C	*
	Isolation	s	Silicon oil	
fluid f	fluid filling	Н	High-temperature silicon oil	*

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#### Ordering information chapter

	Isolation	S	SUS316L	*
	diaphragm material	Т	Tantalum	
		Р	SUS316 + PTFE cover	
		Н	Hastelloy C	*
		8	Tantalum + PTFE cover	
		9	Hastelloy C + PTFE cover	
	Process	H01	HG/T 20592-2009 DN50PN10 Flange	*
	Connection	H05	HG/T 20592-2009 DN80PN10 Flange	*
Additional options	Separator	-	Detailed specifications as following	
	Calillary length	LXX	Length rangefrom 0-10m	
	Display mode		According to your requirement	*
	Calibration	/Q1	Calibration report provide by our company	*
	report		Calibration report provide by Taiwan authorised third party	*
	Approvals	/E1	Flame proof certificate, ExdbIICT6Gb, ExtbIIICT80 Cdb, IECEx or NEPSI	*
		/11	Intrinsic safety certificate, ExiaIICT4Ga, IECEx or NEPSI	*
		/E2	Flame proof certificate, 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	
		/F3	CE certificate	*
	Wetted parts	/G1	Ungrease treatment	*
	treatment	/G2	Electropolishing treatment	*

## Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	0(No specific settings)
Analog output type	mA	Liner
Display mode	DISP	PV
Alarm signal	ALARM	No

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

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#### **Approvals**

## Factory certificate

Certification organization	Intertek
Quality management system	ISO9001-2015
	Design and production of pressure transmitter
Registration number	110804039

## CE

Certificate organization	ISET
License scope	MSSMP858 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registration number	IT051353LG161207

## Flame proof certificate

Certificate organizzation	NEPSI	IECEx	CSA
License scope	MSSMP858 press	ure/differential pressure transmitter	
Explosion-proof mark	ExdIICT6	Ex db IIC T6 Gb, Ex tb IIIC T80°C Db	Class I, Division 1, Group A, B, C and D T6 Class II, Division 1 Group E, F and G T80°C Class III
Working temperature	-20°C to +55°C	-20°C to +60°C	-40-60°C
Maximum medium temperature	+80°C		
Registration number	GYB16.1253X	IECEx NEP 19.0042X	80020805

## Intrinsic safety certifite

Certificate organization	NEPSI	IECEx	
License range	MSSMP858 series pressure/ differe	ential pressure transmitter	
Explosion-proof mark	ExialICT4	Ex ia IIC T4 Ga	
Ambient temperature	-40°C to +60°C	-20°C to +60°C	
Medium maximum temperature	+120°C		
Registration number	GYB16.1965X	IECEx NEP 18.0008X	
Intrinsically safe	Maximum input voltage:20VDC	Maximum input voltage:28VDC	
parameter description	Maximum input current:100mA	Maximum input current:93mA	
	Maximum input power:0.7w	Maximum input power:0.65w	
	Maximum internal equivalent parameters Ci(uF):0		
	Maximum internal equivalent parameters Li(mH):0.01	Maximum internal equivalent parameters Li(mH):0	

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# TRANSMISORES ESPECIALES

**TEMPERATURA** 



#### Product introduction

#### Description



MSLG200 integrated temperature transmitter adopts ASIC&SMT signal transmitting module, optional built-in backlight and button operation LCD display module. The integrated transient voltage terminal satisfy 4 grade standard (difference-mode voltage 2000V, common-mode voltage 4000V), suitable for bad surge voltage occasions. MSLG200 integrated temperature transmitter provides a flexible and reliable solution for any temperature measurement applications.

#### Main parameters

Measuring range	-50 - 400°C
Output signal	4-20mA, sensor signal output
Reference accuracy	±0.5% URL

## Measuring medium

The fluid which compatible with wetted parts

#### Field of application

Temperature measurement

#### Approvals



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#### Measuring range and limit

## -50-400°C, min measuring range 100°C

Above measurement range can be replaced by °F or K units. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤ | URV-LRV | ≤ upper range limit

## Standard specifications and reference conditions

Test standard: GB/T30121 / IEC60751; Zero basedcalibration span, 4-20mA analog output

#### Performance specifications

The overall performance including but not limited to reference accuracy ], [environment temperature effects] and other comprehensive error

Typical accuracy: ±0.5%URL

Stability: superior to ±0.05% URL or 0.1°C/year, whichever is greater@ under the checking condition

#### Reference accuracy

	Including linearity, hysteresis and repeatability. calibration temperature: 20℃ ± 5℃		
Linear output accuracy	Typical	±0.5% URL	Full scale

#### Ambient temperature effects(reference accuracy: 22°C)

≤±0.005% URL/°C, temperature 22°C

## Power supply effects

≤±0.01% URL/V, power supply 24V(refer to full scale output 20mA)

#### Loading effects

 $\leq \pm 0.02\%$  URL/100 $\Omega$ (refer to full scale output 20mA)

#### Vibration effects

According to IEC60068-2-6, 4g/2...100HZ

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
Sensor output	Linearity	Two wire, there wire, four wire

#### Insulation resistance

≥20MΩ@ reference, 100VDC

#### Power supply

Items	Operating conditions
Standard	10-30VDC
Power consumption	≤500mW@24VDC, 20.8mA

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#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Reaction time: ≤10s@ water flow 0.4m/s, outer diameter: 6mm

#### **Environment condition**

Items	Operational condition
Media temperature	-40-85℃
Storage temperature	-40-100℃
Working humidity	0-95%RH
Proction class	IP67

#### Reaction time(Test standard: IEC60751, ≤10s@ water flow 0.4m/s)

Thermal protection tube				
Outer diameter Reaction time Reducing pipe 5.3mm Cone shaped tube 6.6mm or 9mm Straight tube				Straight tube
10mm(wall thickness 1 mm)	t50 t90	7.5s 21s	11s 37s	18s 55s
12mm(wall thickness 1 mm)	t50 t90	7.5s 21s	-	18s 55s
16mm(wall thickness 1 mm)	t50 t90	-	11s 37s	38s 125s

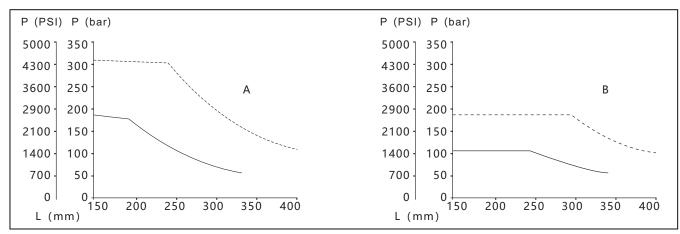
Note: The reaction time above does not include the reaction time of temperature transmitter

#### Mounting requirements

Mounting direction	None
Mounting position	Pipe, tube or others
imsertion tenation	The smallest insertion length should 8 times outer diameter of thermal protection tube, and the end of the probe should reach or surpass the pivot of the tube.

Please consider technique datas and process connection parameters(such as medium flow rate, process pressure and so on) before confirm the insertion length of the transmitter.

#### Process pressure (The process pressure beared by thermal protection tube changes along with medium temperature, see chart below)



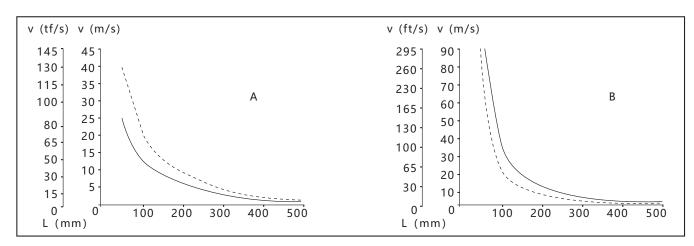
	Tube diameter 10mm Tube wall thickness 1mm	A:water, T=50°C	L: Immersion depth
Γ.	 Tube diameter 12mm Tube wall thickness 2mm	B:superheated steam, T=400°C	P: process pressure

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Maximun medium flow rate (The maximun medium flow rate beared by thermal protection tube reduces with increases of insertion length, see chart below)



 Tube diameter 10mm	Tube wall thickness 1mm	A:water, T=50°C	L: immersion depth
 Tube diameter 12mm	Tube wall thickness 2mm	B:superheated steam, T=400°C	V: flow rate

#### **EMC** environment

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

For any changes to the specifications of this catalogue, the latest version shall prevail.

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#### Pressure sensor types

Code	Nominal value	Deacription
R1	Sensor types	PT100RTD

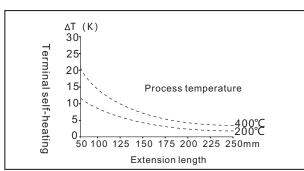
## Transmission module

Code	Items	Description
1		4-20mA, power supply: 10-30VDC
X	signal	Sensor signal output, two wire
Υ		Sensor signal output, there wire
Z		Sensor signal output, four wire

#### Extension tube selection

Code	Items	Description
Q1		None
Q2	ations	Material: SUS304, length: 50mm, outer diameterΦ12
Q3		Material: SUS304, length: 100mm, outer diameterФ12
Q4		Material: SUS304, length: 150mm, outer diameterФ12
Q5		Material: SUS304, length: 200mm, outer diameter 412

#### Extension tube length



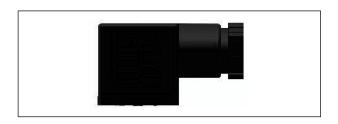
The relation chart of thermal resistance terminal self-heating and process temperature

Terminal temperature= environment temperature+ terminal self-healting

## Electrical connection select instruction

Code	Description
D1	DIN43650, IP65
H1	Aviation plug, 4 pin, M12*1, IP67

#### DIN43650(D1)

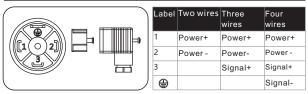


#### M12\*1, 4 pins, aviation plug(H1)

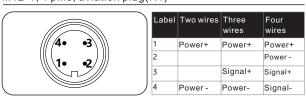


#### Electrical connection(voltage and current signal output)

## DIN43650(D1)



## M12\*1, 4 pins, aviation plug(H1)



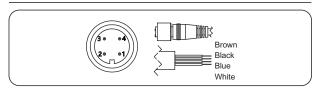
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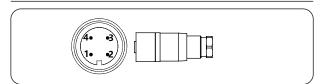
## Electrical connection accessory (voltage and current signal output)

#### Aviation plug straighter(J1)



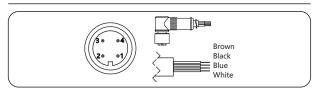
label	Two wires	Three wires	Four wires
1/Brown	Power+	Power+	Power+
2/White			Signal-
3/Blue		Signal+	Signal+
4/Black	Power-	Power-	Power-

#### Aviation plug straighter(J4)



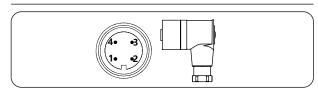
1	2	3	4
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power+	*Signal+	Power-	Transistor output 1

#### Aviation plug elbow (J2)



label	Two wires	Three wires	Four wires
1/Brown	Power+	Power+	Power+
2/White			Signal-
3/Blue		Signal+	Signal+
4/Black	Power-	Power-	Power-

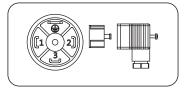
#### Aviation plug elbow(J5)



1	2	3	4
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power+	*Signal+	Power-	Transistor output 1

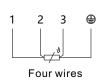
#### Electrical connetion(sensor signal output)

## DIN43650(D1)

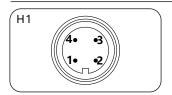


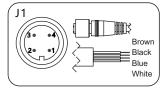


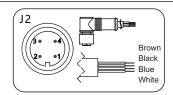


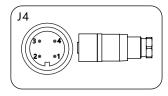


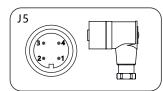
## M12\*1, 4-pins, aviation plug(H1), aviation plug straighter(J1,J4), aviation plug elbow (J2,J5)





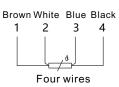












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#### Process connection select instruction

Code	Items	Description
G	Mounting type	Fixed process connection mounting
Н		Movable process connection mounting
4	Material	SUS304
6		SUS316
M01	Process connection	M20*1.5, GB/T192-2003
G01	specifications	G1/2(M), EN837
R01		1/2-14NPT(M), ANSI/ASME B1.20.1
K01		Tri-Clamp 1-1/2"
K02		Tri-Clamp 2"
H01		Flange HG/T20592-2009 DN50PN10-PN40
H02		Flange HG/T20592-2009 DN50PN10-PN40

## Insertion probe select instruction

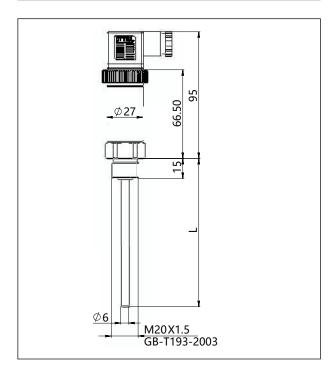
Code	Items	Description	
D1	Outer diameter	Diameter: 6mm, probe material is same as process connection material	
D2		Diameter: 8mm, probe material is same as process connection material	
D3		Diameter: 10mm, probe material is same as process connection material	
D4		Diameter: 12mm, probe material is same as process connection material	
D5		Diameter: 16mm, probe material is same as process connection material	
LXXXX	Insertion length	Customized insertion length: 0 < LXXXX< 3000mm, samples: 80mm=L0080, the minimum gap is 50mm of customized insertion length. Default insertion length includes thread specifications	

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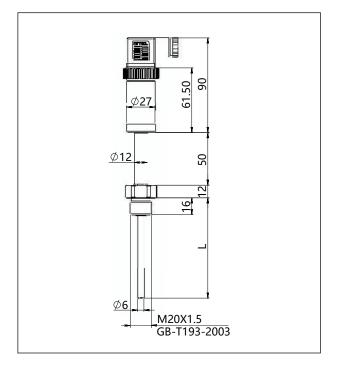
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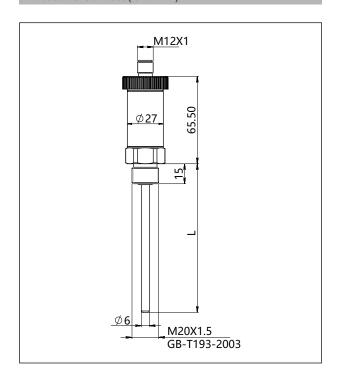
Drawing and dimension (thread) with DIN43650 (D1) and without extension tube(unit: mm)



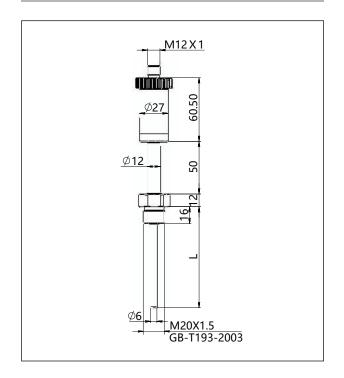
Drawing and dimension (thread) with DIN43650 (D1) and extension tube(unit: mm)



Drawing and dimension (thread) with aviation plug (H1) and without extension tube( unit: mm)



Drawing and dimension (thread) with aviation plug (H1) and extension tube(unit: mm)

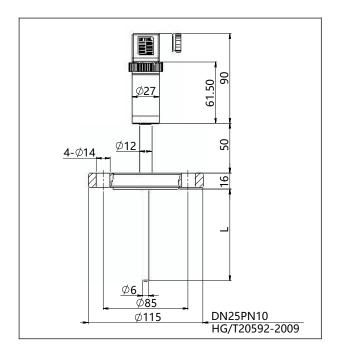


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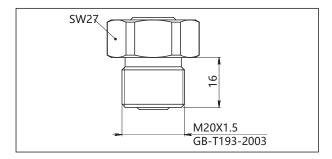
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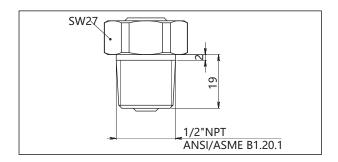
## Drawing and dimension (flange) with DIN43650 (D1) and extension tube (unit:mm)



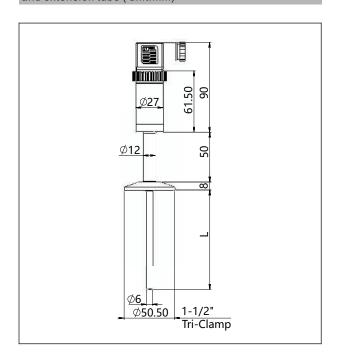
## Process connection(M01) (unit: mm)



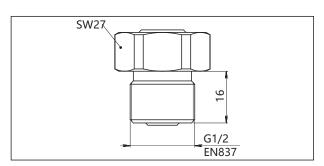
## Process connection(R01) (unit: mm



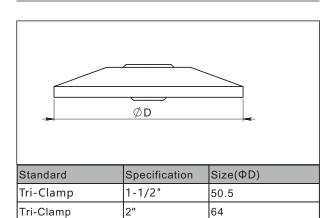
## Drawing and dimension (tri-Clamp) with DIN43650 (D1) and extension tube ( unit:mm)



## Process connection(G01) (unit: mm)



## Process connection(K01-K02) (unit: mm)

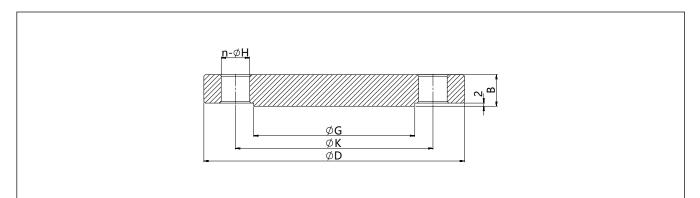


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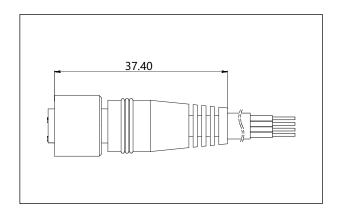


## Process connection(H01-H02) (unit: mm)

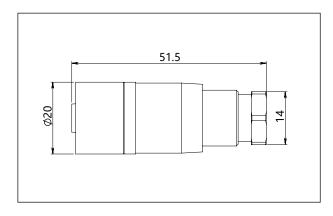


Standard	Specification	Outer diameter(ΦD)	Thickness(B)
HG/T20592-2009	DN50PN10-PN40	165	20
HG/T20592-2009	DN25PN10-PN40	115	16
Hole circle(ΦK)	Raised-face diameter(ΦG)	Hole diameter(ΦH)	Number(n)
(114)	rtaiced face diameter (+ e)		14diliber(II)
125	102	18	4

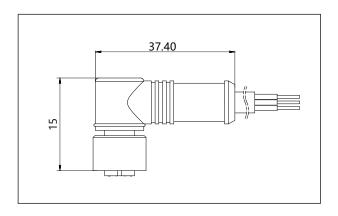
#### Aviation plug straighter(J1)(unit: mm)



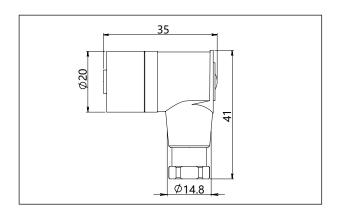
## Aviation female plug straighter (4 pins) (J4) (unit: mm)



#### Aviation plug elbow(J2)(unit:mm)



## Aviation female plug elbow (4 pins) (J5) (unit: mm)



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#### Ordering information chapter

Item	Parameters	Code	Instruction	(*) fast delivery available
	Model	MSLG200-DRD	Integrated thermal resistance temperature transmitter	*
		MSLG200-DRH	Integrated thermal resistance temperature transmitter	*
Sensor	Separator	-	Detailed specifications as following	
	Pressure range code	R1	PT100RTD	*
Electrical connetion	Separator	-	Detailed specifications as following	
	Electrical	D1	DIN43650, IP65	*
	connetion	H1	Aviation plug, M12*1, 4-pins, IP67	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output	F	4-20mA, power supply: 10-30VDC	*
	signal	Х	Sensor signal output, two wire	
		Υ	Sensor signal output, three wire	*
		Z	Sensor signal output, four wire	
Tube	Separator	-	Detailed specifications as following	
	Tube	53	The length of stainless steel tube:53mm	
		30	The length of stainless steel tube:30mm (only available for sensor signal output)	
Extension tube	Separator	-	Detailed specifications as following	
Extension		Q1	None(suitable temperature: -40°C-85°C)	
	tube length	Q2	Material: SUS304, length: 50mm, outer diameter:Φ12	*
			Material: SUS304, length: 100mm, outer diameterΦ12	
		Q4	Material: SUS304, length: 150mm, outer diameterΦ12	
		Q5	Material: SUS304, length: 200mm, outer diameterΦ12	
Process connection	Separator	-	Detailed specifications as following	
	Mounting	G	Fixed process connection mounting	*
	type	Н	Movable process connection mounting	
	Material	4	SUS304	*
		6	SUS316	
	Specification	M01	M20*1.5(M),GB/T192-2003	*
		G01	G1/2(M), EN837	*
		R01	1/2-14NPT(M), ANSI/ASME B1.20.1	*
		K01	Tri-Clamp 1-1/2"	*
		K02	Tri-Clamp 2"	*
		H01	Flange HG/T20592-2009 DN50PN10	
		H02	Flange HG/20592-2009DN25PN10	
	<u> </u>	L	<u> </u>	

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#### **Product introduction**

## Description



#### Main parameters

Measuring range	-50 - 400°C
Output signal	4-20mA
Reference accuracy	±0.5% URL

## Measuring medium

The fluid which compatible with wetted parts

#### Field of application

Temperature measurement

## Approvals



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#### Measuring range and limit

## -50-400°C, min measuring range 100°C

The unit of the measuring range above can be converted into °F or K. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range≤| URV - LRV |≤maximum measuring range

## Standard specifications and reference conditions

Test standard: GB/T30121 / IEC60751; Zero basedcalibration span, 4-20mA analog output

#### Performance specifications

The overall performance including but not limited to reference accuracy ], [environment temperature effects] and other comprehensive error

Typical accuracy: ±0.5%URL

Stability: superior to ±0.05% URL or 0.1°C/year, whichever is greater@ under the checking condition

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20°C ± 5°C			
Linear output accuracy	Typical	±0.5% URL	Full scale

## Ambient temperature effects(reference accuracy: 22°C)

≤ ±0.005% URL/°C, temperature 22°C

#### Power supply effects

≤±0.01% URL/V, power supply 24V(refer to full scale output 20mA)

#### Loading effects

≤±0.02% URL/100Ω(refer to full scale output 20mA)

#### Vibration effects

According to IEC60068-2-6, 4g/2...100HZ

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire

#### Insulation resistance

≥20MΩ@ reference, 100VDC

#### Power supply

Items	Operating conditions
Power consumption	≤500mW@24VDC, 20.8mA

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Reaction time: ≤10s@ water flow 0.4m/s, outer diameter: 6mm

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#### **Environment condition**

Items	Operational condition
Media temperature	-40-85°C, integrated LCD display: -20-70°C
Storage temperature	-40-100°C, integrated LCD display: -20-70°C
Working humidity	0-95%RH
Proction class	Stainless steel housing with aviation plug, IP67

#### Reaction time(Test standard: IEC60751, ≤10s@ water flow 0.4m/s)

Thermal protection tube				
Outer diameter	Reaction time	Reducing pipe 5.3mm	Cone-shaped tube 6.6mm or 9mm	Straight tube
10mm(wall thickness 1 mm)	t50 t90	7.5s 21s	11s 37s	18s 55s
12mm(wall thickness 1 mm)	t50 t90	7.5s 21s	-	18s 55s
16mm(wall thickness 1 mm)	t50 t90	-	11s 37s	38s 125s

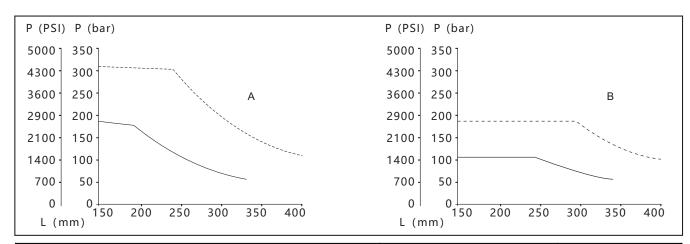
Note: The reaction time above don't include the reaction time of temperature transmitter.

#### Mounting requirements

Mounting direction	None	
Mounting position	Pipe、tube or others	
Insertion length  The smallest insertion length should 8 times outer diameter of thermal protection tube, and the end of the probe should reach or surpass the pivot of the tube.		
Please consider technique datas and process connection parameters(such as medium flow rate, process pressure and so on)		

Please consider technique datas and process connection parameters(such as medium flow rate、process pressure and so on) before confirm the insertion length of the transmitter.

 $Process\ pressure (The\ process\ pressure\ beared\ by\ thermal\ protection\ tube\ changes\ along\ with\ \ medium\ temperature,$  see chart below )



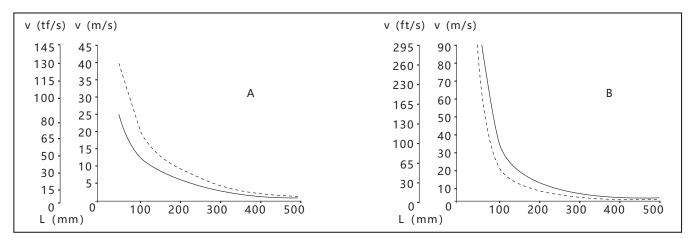
 Tube diameter 10mm	tube wall thickness 1mm	A: water, T=50°C	L: immersion depth
 Tube diameter 12mm	tube wall thickness 2mm	B: superheated steam, T=400°C	P: process pressure

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Maximun medium flow rate (The maximun medium flow rate beared by thermal protection tube reduces with insertion length increases, see chart below)



 Tube diameter 10mm	tube wall thickness 1mm	A: water, T=50°C	L: immersion depth
 Tube diameter 12mm	tube wall thickness 2mm	B: superheated steam, T=400°C	V: flow rate

## EMC environment(not RS485 signal output)

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity Test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
I	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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## Pressure sensor types

Code	Nominal value	Deacription
R1	Sensor types	PT100RTD

#### Transmission module

Code	Items	Description
F		4-20mA two wire, power supply: 10-
	Display	30VDC
С		With LCD display
А		Without display

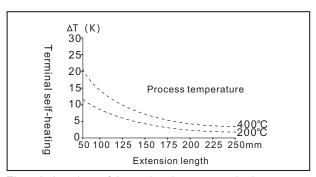
## Display module(C)



#### Extension tube selection

Code	Items	Description
Q1	Specifications	None
Q2		Material: SUS304, length: 50mm, outer diameter
Q3		Material: SUS304, length: 100mm, outer diameter
Q4		Material: SUS304, length: 150mm, outer diameter
Q5		Material: SUS304, length: 200mm, outer diameter

#### Extension tube length



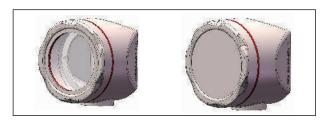
The relation chart of thermal resistance terminal self-heating and process temperature

Terminal temperature= environment temperature+ terminal self-healting

#### Electrical connection

Code	Item	Description
F1	l	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,vertical mounting
F2	l	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,horizontal mounting

#### Housing(F1)



## Housing(F2)



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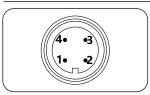


## Aviation plug, M12\*1, 4 pin(H2)



#### Electrical connection

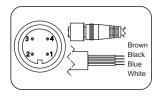
#### Air plug, M12\*1, 4 pin(H2)



Label	Two wires
1	Power+
2	
3	
4	Power-

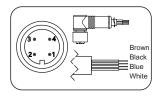
## Electrical connection accessory

#### Aviation plug straighter(J1)



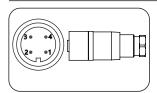
label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

## Aviation plug elbow(J2)



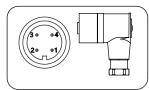
label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

#### Aviation plug straighter(J4)



label	Two wires
1	Power+
2	
3	
4	Power-

#### Aviation plug elbow(J5)



label	Two wires
1	Power+
2	
3	
4	Power-

#### Process connection select instruction

Code	Items	Description
G	Mounting type	Fixed process connection mounting
Н		Movable process connection mounting
4	Material	SUS304
6		SUS316
M01	Process	M20*1.5(M),GB/T192-2003
G01	connection	G1/2(M), EN837
R01	specifications	1/2-14NPT, ANSI/ASME B1.20.1
K01	]	Tri-Clamp 1-1/2"
K02	]	Tri-Clamp 2"

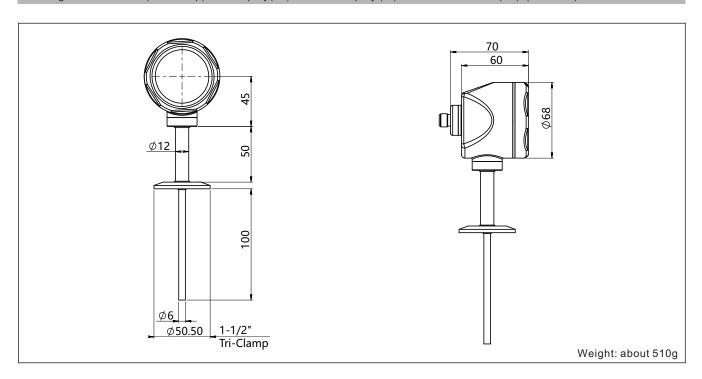
## Insertion probe select instruction

Code	Items	Description
D1	Outer diameter	Diameter: 6mm, probe material is same as process connection material
D2		Diameter: 8mm, probe material is same as process connection material
D3		Diameter: 10mm, probe material is same as process connection material
D4		Diameter: 12mm, probe material is same as process connection material
D5		Diameter: 16mm, probe material is same as process connection material
LXXXX	Insertion length	Customized insertion length: 0 < LXXXX< 3000mm, samples: 200mm=L0200, the minimum gap is 50mm of customized insertion length. Default insertion length includes thread specifications

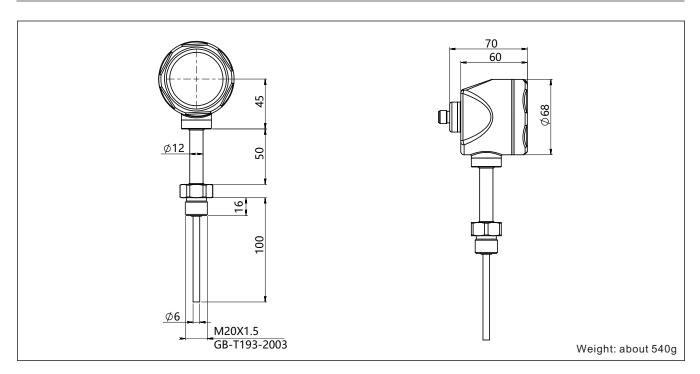
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## Drawing and dimension (Tri-Clamp) with display(C)/without display(A) vertical installation(F1) (unit:mm)



## Drawing and dimension (Thread) with display( C ) / without display (A ) vertical installation(F1) (unit:mm)

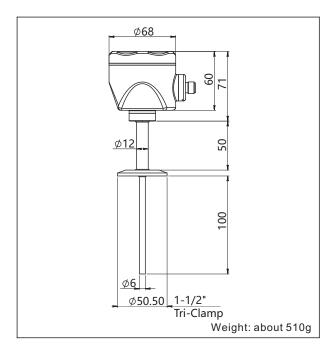


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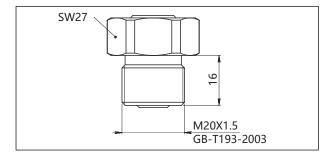
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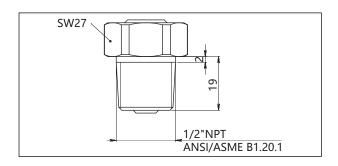
Drawing and dimension (Tri-Clamp) with display( C ) / without display (A) horizontal installation(F2) (unit:mm)



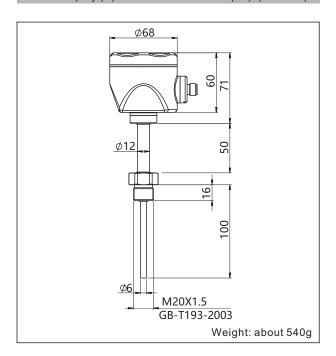
## Process connection(M01) (unit: mm)



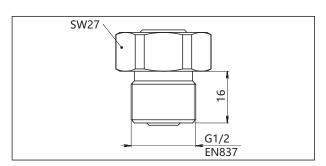
#### Process connection(R01) (unit: mm)



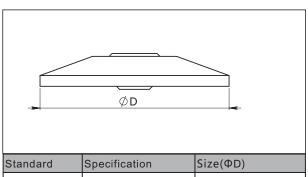
Drawing and dimension (Tri-Clamp) with display(C)/without display(A) horizontal installation(F2) (unit:mm)



## Process connection(G02) (unit: mm)



#### Process connection(K01-K02) (unit: mm)



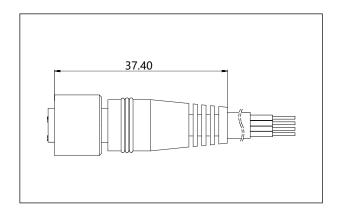
Standard	Specification	Size(ΦD)
Tri-Clamp	1-1/2"	50.5
Tri-Clamp	2"	64

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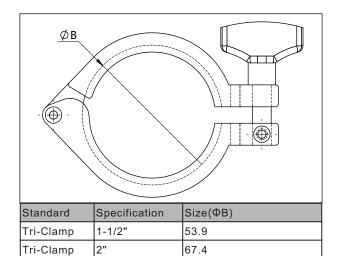
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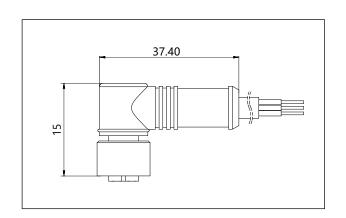
## Aviationfemale plug straighter(J1) (unit: mm)



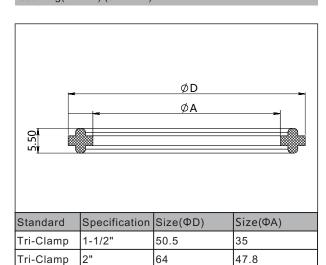
#### Tri-Clamp(G1-G2) (unit: mm)



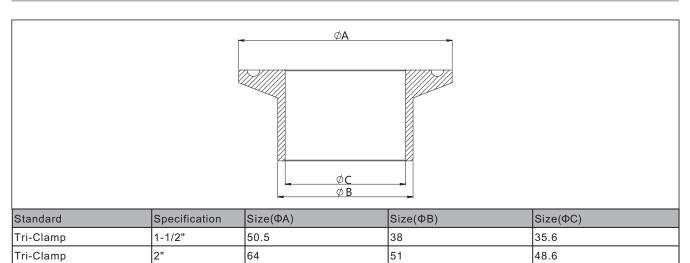
## Aiviation female plug elbow(J2) (unit: mm)



#### Seal ring(M1-M2) (unit: mm)



## Welding adaptor (Z1-Z2)(unit: mm)



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#### Ordering information chapter

Item	Parameters	Code	Instruction	(*)Fast delivery available
	Model	MSLG200-FRF	Integrated thermal resistance tepmperature transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure range code	R1	PT100RTD	*
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	F1	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67,vertical mounting	*
		F2	Stainless steel termimal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output signal	F	4-20mA two wire, power supply: 10-30VDC	*
	Display	С	With LCD display	*
		A	Without display	
Extension Separator		-	Detailed specifications as following	
	Extension	Q1	None(suitable temperature: -40°C-85°C)	
	pipe length	Q2	Material: SUS304, length: 50mm, outer diameter:Φ12	*
		Q3	Material: SUS304, length: 100mm, outer diameteΦ12	
		Q4	Material: SUS304, length: 150mm, outer diameterΦ12	
		Q5	Material: SUS304, length: 200mm, outer diameterΦ12	
Process connection	Separator	-	Detailed specifications as following	
	Mounting	G	Fixed process connection mounting	*
	type	Н	Movable process connection mounting	
	Material	4	SUS304	*
		6	SUS316	
	Specification	M01	M20*1.5(M),GB/T192-2003	*
		G01	G1/2(M), EN837	*
		R01	1/2-14NPT, ANSI/ASME B1.20.1	*
		K01	Tri-Clamp 1-1/2"	*
		K02	Tri-Clamp 2"	*
Insertion probe	Separator	-	Detailed specifications as following	
	Outer diameter	D1	Diameter: 6mm, probe material is same as process connection material	*
		D2	Diameter: 8mm, probe material is same as process connection material	*
		D3	Diameter: 10mm, probe material is same as process connection material	*

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#### **Product introduction**

## Description



MSLG200 integrated temperature transmitter adopts ASIC&SMT signal transmitting module, optional built-in backlight and button operation LCD display module. The integrated transient voltage terminal satisfy 4 grade standard (difference-mode voltage 2000V, common-mode voltage 4000V), suitable for bad surge voltage occasions. MSLG200 integrated temperature transmitter provides a flexible and reliable solution for any temperature measurement applications.

#### Main parameters

Measuring range	-50 - 400°C
1 ' "	4-20mA, 4-20mA+HART, 1-5VDC, Modbus-RTU/RS485
Reference accuracy	±0.5% URL

#### Measuring medium

The fluid which compatible with wetted parts

## Field of application

Temperature measurement

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#### Measuring range and limit

-50-400°C, min measuring range 100°C

Above measurement range can be replaced by °F or K units. Provide other measuring range according to requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span≤ | URV-LRV | ≤ upper range limit.

## Standard specifications and reference conditions

Test standard: GB/T30121 / IEC60751; Zero basedcalibration span, 4-20mA analog output

#### Performance specifications

The overall performance including but not limited to reference accuracy ], [environment temperature effects] and other comprehensive error

Typical accuracy: ±0.5%URL

Stability: superior to ±0.05% URL or 0.1°C/year, whichever is greater@ under the checking condition

#### Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20°C ± 5°C				
Linear output accuracy	Linear output Typical ±0.5% URL Full scale accuracy			

#### Ambient temperature effects (reference accuracy: 22°C)

≤±0.005% URL/°C, temperature 22°C

#### Power supply effects

≤±0.01% URL/V, power supply 24V(refer to full scale output 20mA)

#### Loading effects

≤±0.02% URL/100Ω(refer to full scale output 20mA)

#### Vibration effects

According to IEC60068-2-6, 4g/2...100HZ

#### Output signal

Signal	Туре	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire
1-5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

#### Insulation resistance

≥20M Ω@ reference, 100VDC

#### Power supply

Items	Operating conditions
Standard	10-30VDC
Power consumption	≤500mW@24VDC, 20.8mA

#### Damping time

Total damping time constant: equal to the sum of damping time of amplifer and sensor capsule

Reaction time: ≤10s@ water flow 0.4m/s, outer diameter:



#### **Environment condition**

Items	Operational condition
Working temperature	-40-85°C, integrated LCD display: -20-70°C
Storage temperature	-40-100°C, integrated LCD display: -20-70°C
Working humidity	0-95%RH
Proction class	Aluminum-alloy terminal, IP67

#### Reaction time(Test standard: IEC60751, ≤10s@ water flow 0.4m/s)

Thermal protection tube				
Outer diameter	Reaction time	Reducing pipe 5.3mm	Cone-shaped tube 6.6mm or 9mm	Straight tube
10mm(wall thickness 1 mm)	t50 t90	7.5s 21s	11s 37s	18s 55s
12mm(wall thickness 1 mm)	t50 t90	7.5s 21s	-	18s 55s
16mm(wall thickness 1 mm)	t50 t90	-	11s 37s	38s 125s

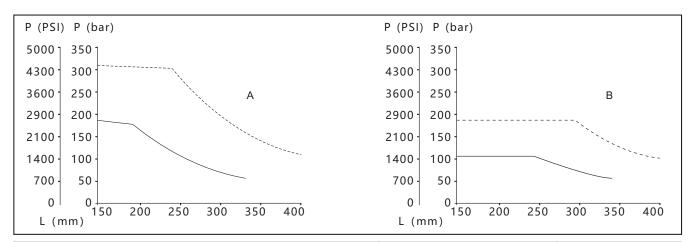
Note: The reaction time above don't include the reaction time of temperature transmitter.

#### Mounting requirements

Mounting position Pipe, tube or others  Insertion length The smallest insertion length should 8 times outer diameter of thermal protection tube, and the end of the probe should reach or surpass the pivot of the tube.	Mounting direction	None
	Mounting position	Pipe, tube or others
l' '		

Please consider technique datas and process connection parameters(such as medium flow rate、process pressure and so on) before confirm the insertion length of the transmitter.

Process pressure (The process pressure beared by thermal protection tube changes along with medium temperature, see chart below )



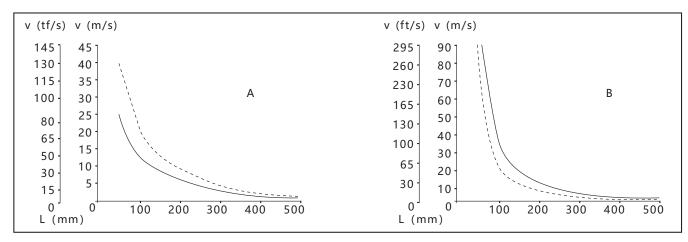
 Tube diameter 10mm	tube wall thickness 1mm	A: water, T=50°C	L: immersion depth
 Tube diameter 12mm	tube wall thickness 2mm	B: superheated steam, T=400°C	P: process pressure

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Maximun medium flow rate (The maximun medium flow rate beared by thermal protection tube reduces with insertion length increases, see chart below)



	 Tube diameter 10mm	tube wall thickness 1mm	A: water, T=50°C	L: immersion depth
Ī	 Tube diameter 12mm	tube wall thickness 2mm	B: superheated steam, T=400°C	V: flow rate

## EMC environment(not RS485 signal output)

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	ок
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	ок
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
I	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1)Performance level A: The preformance within the limits of normal technical specifications.

(Note 2)Performance level B: Temporary reduction or loss of functionality or preformance, it can restore itself. The actual operating conditions, storage and data will not be changed.

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## Pressure sensor types

Code	Nominal value	Deacription
R1 Sensor types		PT100RTD

#### Transmission module

Code	Items	Description
F	Output signal	4-20mA two wire, power supply: 10- 30VDC
Н		4-20mA+HART two wire, power supply: 10.5/16.5-30VDC
1		1-5VDC Three wire, power supply:12-30VDC
R		Modbus-RTU/RS485 Four wire, power supply:5/9-30VDC
С	Display	With LCD display
Α		Without display

## Display module(C)



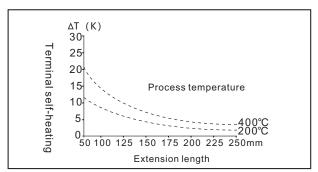
## Display module(C)



#### Extension tube selection

Code	Items	Description
Q1	Specifications	None
Q2		Material: SUS304, length: 50mm, outer diameter: Φ12
Q3		Material: SUS304, length: 100mm, outer diameter: Φ12
Q4		Material: SUS304, length: 150mm, outer diameter: Φ12
Q5		Material: SUS304, length: 200mm, outer diameter: Φ12

#### Extension tube length



The relation chart of thermal resistance terminal self-heating and process temperature

Terminal temperature= environment temperature+ terminal self-healting

## Electrical connection select instruction

Code	Item	Description
T1	Electrical connection	Aluminum-alloy termimal,2 cable entry, M20*1.5(F), red body, white cover
R1	Cable entry protector	Waterproof connector M20*1.5 one side, blind plug another side, PVC material, 6-8mm diameter cable only, IP67
R2		Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67
R3		Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67

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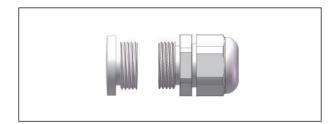
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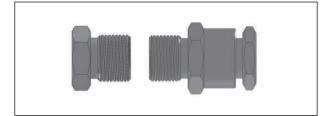
## Housing(T1)



## Standard cable entry adaptor (R1)



## Flame-proof cable entry adaptor (R2/R3)



#### Process connection select instruction

Code	Items	Description
G	Mounting type	Fixed process connection mounting
Н	Material	Movable process connection mounting
4		SUS304
6	Process	SUS316
M01	connection specifications	M20*1.5(M),GB/T192-2003
G01		G1/2(M), EN837
R01		G1/2-14NPT, ANSI/ASME B1.20.1
H01		Flange HG/T20592-2009 DN50PN10-PN40
H02		Flange HG/T20592-2009 DN50PN10-PN40

## Insertion probe select instruction

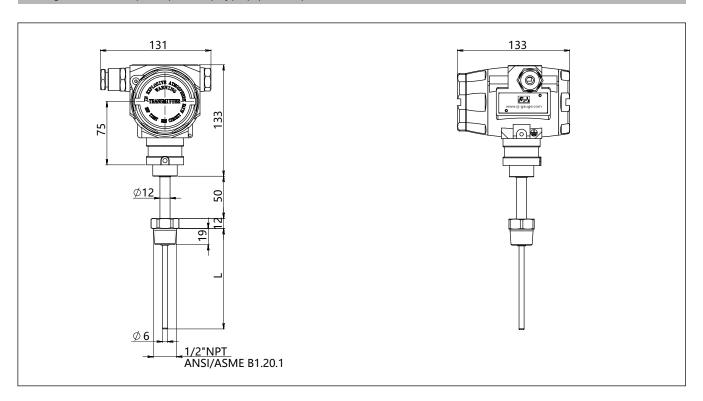
Code	Items	Description
D1	Outer diameter	Diameter: 6mm, probe material is same as process connection material
D2		Diameter: 8mm, probe material is same as process connection material
D3		Diameter: 10mm, probe material is same as process connection material
D4		Diameter: 12mm, probe material is same as process connection material
D5		Diameter: 16mm, probe material is same as process connection material
LXXXX	Insertion length	Customized insertion length: 0 < LXXXX< 3000mm, samples: 80mm=L0080, the minimum gap is 50mm of customized insertion length. Default insertion length includes thread specifications

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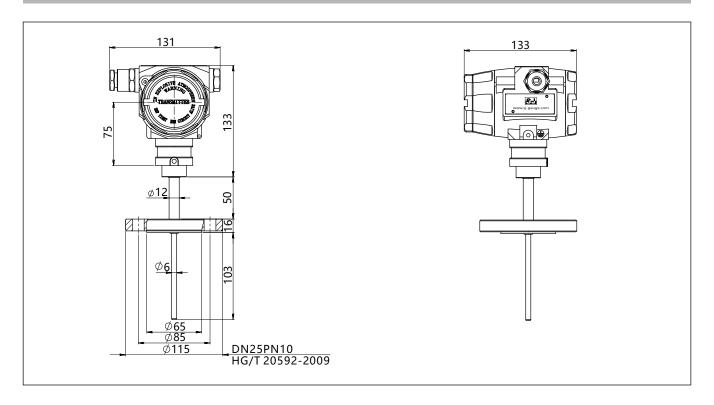
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## Drawing and dimension (thread) with display( C ) ( unit:mm)



## Drawing and dimension (flange) with display(C) (unit: mm)

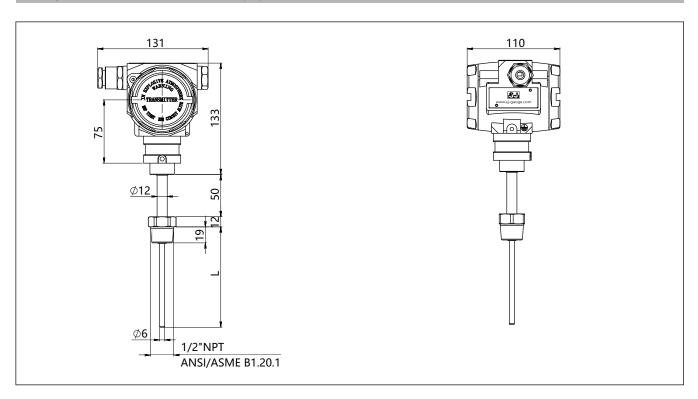


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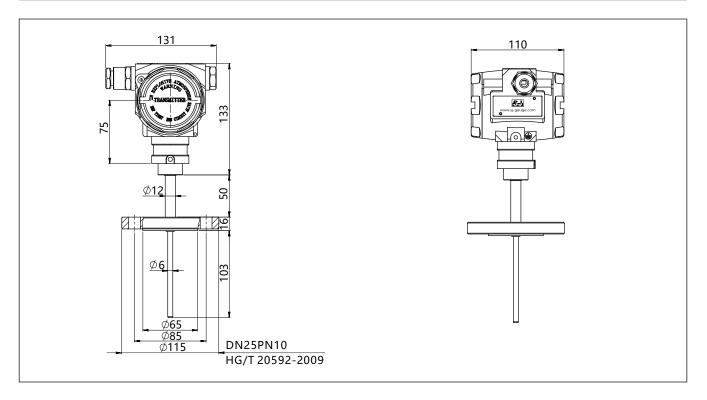
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## Drawing and dimension (thread) without display (A) (unit:mm)



## Drawing and dimension (flange) without display (A) (unit:mm)

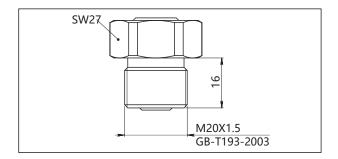


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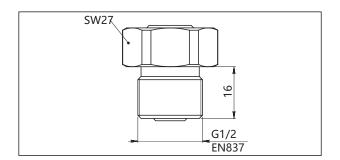
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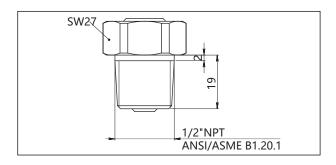
## Process connection(M01) (unit: mm)



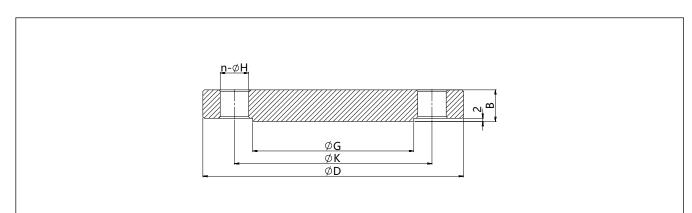
## Process connection(G01) (unit: mm)



## Process connection(R01) (unit: mm)



## Process connection(H01-H02) (unit: mm)



Standard	Specification	Outer diameter (ΦD)	Thickness (B)
HG/T20592-2009	DN50PN10-PN40	165	20
HG/T20592-2009	DN25PN10-PN40	115	16
Hole circle(ΦK)	Raised-face diameter(ФG)	Hole diameter(ΦH)	Number(n)
Hole circle(ΦK) 125	Raised-face diameter(ΦG) 102	Hole diameter(ΦH) 18	Number(n) 4

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## Ordering information chapter

Item	Parameters	Code	Instruction	( ) Fast delivery available
	Model	MSLG200-WRT	Integrated thermal resistance tepmperature transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure range code	R1	PT100RTD	*
-	Separator	-	Detailed specifications as following	
	Electrical connetion	T1	Aluminum-alloy termimal,2 cable entry, M20*1.5(F), red body, white cover	
	Cable entry protection	R1	Waterproof connector M20*1.5 one side, blind plug another side, PVC material, 6-8mm diameter cable only, IP67	*
		R2	Flame proof, 1/2 NPT(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67	*
		R3	Flame proof, M20X1.5(F) one side, blind plug another side, stainless steel material, 6-8mm diameter cable only, IP67	
Output	Separator	-	Detailed specifications as following	
	Output signal	F	4-20mA two wire, power supply: 10-30VDC	*
		Н	4-20mA+HART two wire, power supply: 10.5/16.5-30VDC	
		1	1-5VDC Three wire, power supply:12-30VDC	
		R	Modbus-RTU/RS485 Four wire, power supply:5/9-30VDC	
	Display	С	With LCD display	*
		А	Without display	
Extension pipe	Separator	-	Detailed specifications as following	
	Extension pipe length	Q1	None(suitable temperature: -40°C-85°C)	
pipe le		Q2	Material: SUS304, length: 50mm, outer diameter: Φ12	*
		Q3	Material: SUS304, length: 100mm, outer diameter: Φ12	
		Q4	Material: SUS304, length: 150mm, outer diameter: Φ12	
		Q5	Material: SUS304, length: 200mm, outer diameter: Φ12	
connection	Separator	-	Detailed specifications as following	
	Mounting type	G	Fixed process connection mounting	*
		Н	Movable process connection mounting	
	Material	4	SUS304	*
		6	SUS316	
	Specification	M01	M20*1.5(M),GB/T192-2003	*
		G01	G1/2(M), EN837	*
		R01	1/2-14NPT, ANSI/ASME B1.20.1	
		H01	Flange HG/T20592-2009 DN50PN10	*
		H02	Flange HG/20592-2009DN25PN10	*
Insertion probe	Separator	-	Detailed specifications as following	
	Outer diameter	D1	Diameter: 6mm, probe material is same as process connection material	*

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#### Ordering information chapter

		D2	Diameter: 8mm, probe material is same as process connection material	*
		D3	Diameter: 10mm, probe material is same as process connection material	
		D4	Diameter: 12mm, probe material is same as process connection material	
		D5	Diameter: 16mm, probe material is same as process connection material	
	Insertion length	LXXXX	Customized insertion length: 0 < LXXXX < 3000mm, samples: 80mm=L0080, 150mm=L0150	
Additional Separator options	Separator	-	Detailed specifications as following	
	Calibration report	/Q1	Calibration report provided by our company	
	Approvals	/E1	Flame proof certificate, ExdIICT6, NEPSI	
	Wetted parts	/G1	Ungrease treatment	
	treatment	/G1	Electropolishing treatment	

#### Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	0(No specific settings)
Analog output type	mA	Liner(No specific settings)
Display mode	DISP	PV(No specific settings)
Alarm signal	ALARM	No(No specific settings)

Item	Menu mark	Factory setting value
Damping value	DAMP	0(No specific settings)
4mA Lower range value	LRV	According to the order
20mA Upper range value	URV	According to the order
Process unit	U	According to the order

## Flame proof certificate

Certification organization	NEPSI
License scope	MSLG200-W series temperature
Explosion-proof mark	ExdIICT6
Working environmental temperature	-25-+60°C
Registration number	GYB16.1254X



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