4ManPro

Elements For Manufacturing Processes

SJ MSSMP858-NST

TRANSMISOR DE PRESIÓN CON DIAFRAGMA DE MONOSILÍCICO

Product information

Brief introduction

Standard flush diaphragm

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

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

Technical specifications

Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit (LRL)	Upper range limit (URL)	Static pressure limit*	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 | ≥ | LRV | , needs | URV | ≥ smallest calibratable span; when | URV | ≤ | LRV |, needs | LRV | ≥ 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

Including linearity(BFSL), hysteresis and repeatability. calibration temperature: 20 ℃ ± 5 ℃			
Linear output accuracy	TD≤10(note 1)	±0.2%URL	Nominal value: 40kPa、250kPa 1MPa
	Maximum	±0.5TD% URL	
Square root output accuracy is 1.5 times linear output accuracy			
Note 1: TD is Turn down when | URV | ≥ | LRV | , TD=URL/ | URV | when | URV | ≤ | 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

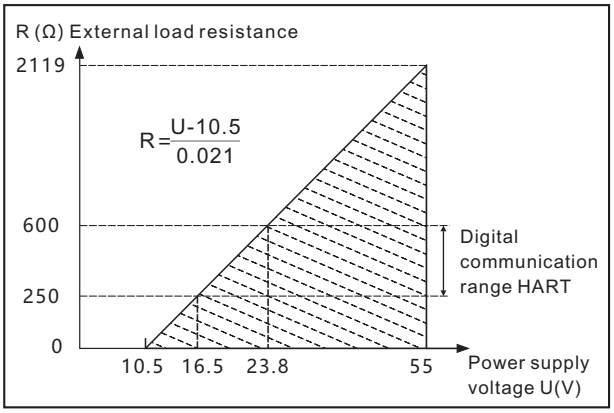
Environment condition

Items	Operational condition
Media temperature	-40-85℃, LCD display unit: -20-70℃
Storage temperature	-40-110℃, LCD display unit: -40-85℃
Isolated filling fluid temperature	With silicon oil
	With Neobee M-20
Working humidity	5-100%RH@40℃
Protection class	IP67
Dangerous condition	ExdIICT6(GYB16.1253X)* ExiaIICT4(GYB16.1965X)*
*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
Modbus-RTU/RS485	12-32VDC
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



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	OK
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℃
mmH2O	Millimeter of water@4℃
mH2O	Meter of water@4℃
inH2O	Inches of water@4℃
ftH2O	Feet of water@4℃
inHg	Inches of mercury@0℃
mHg	Meter mercury column@0℃
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 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

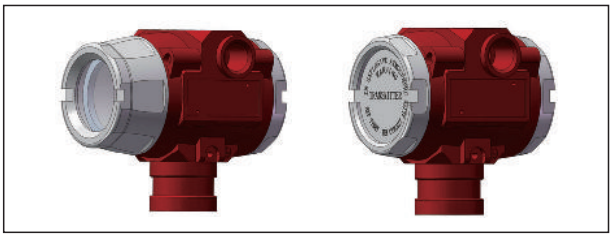
Seal(S)

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

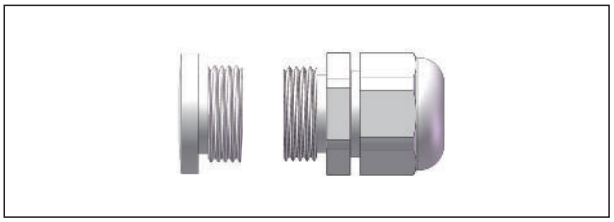
Electrical connection select instruction

Code	Item	Description
T1	Electrical connection	Aluminum-alloy terminal,2 cable entry M20*1.5(F), red 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

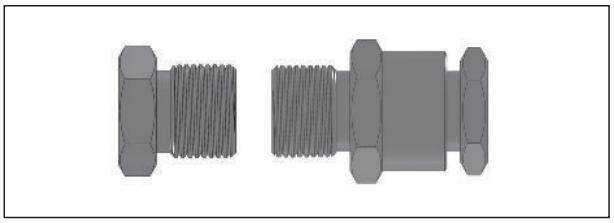
Housing (T1)



Standard cable entry protective adaptor(R1)



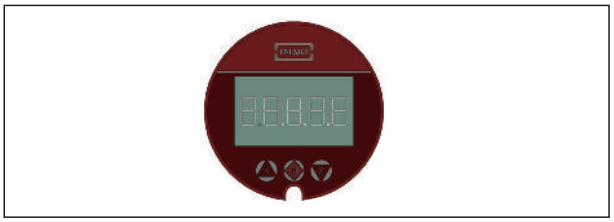
Flame proof cable entry protective adaptor(R2/R3)



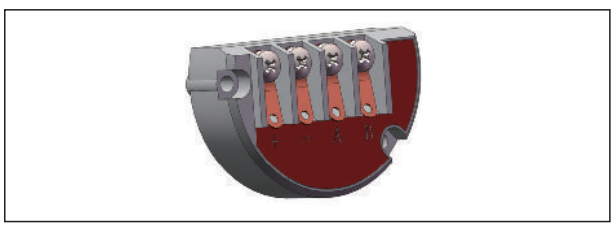
Transmission module

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

Display module(C)



Terminals



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Product selection instruction

Process connection select instruction

Connection position	HL	High-pressure side connection
Connection type	G	Fixed mounting
Isolation fluid filling	S	Silicon oil
	H	Silicon oil
	F	Neobee M-20
Wetted parts material	4	SUS304
	6	SUS316
Diaphragm material	S	SUS316L
	H	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)
Insert tube diameter	D00	None
	D01	Diameter:66mm, length:50mm
	D02	Diameter:66mm, length:100mm
	D03	Diameter:66mm, length:150mm

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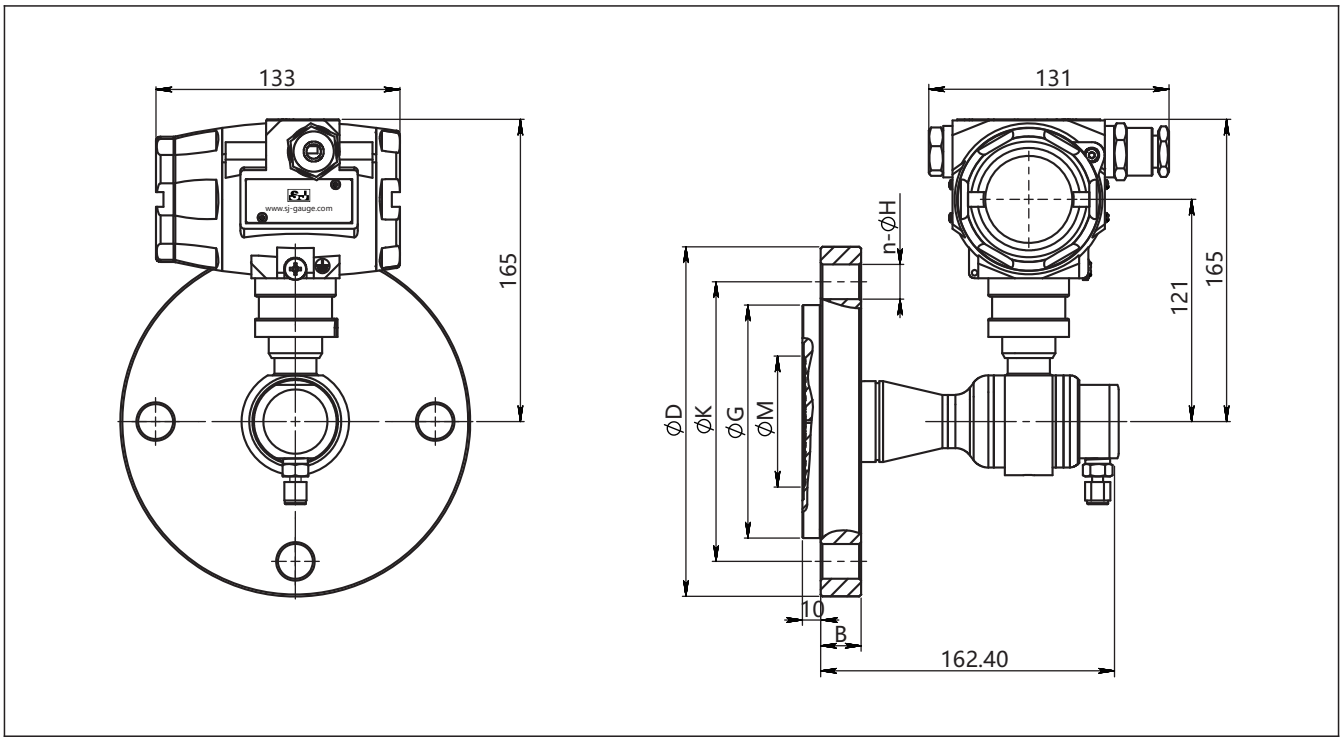
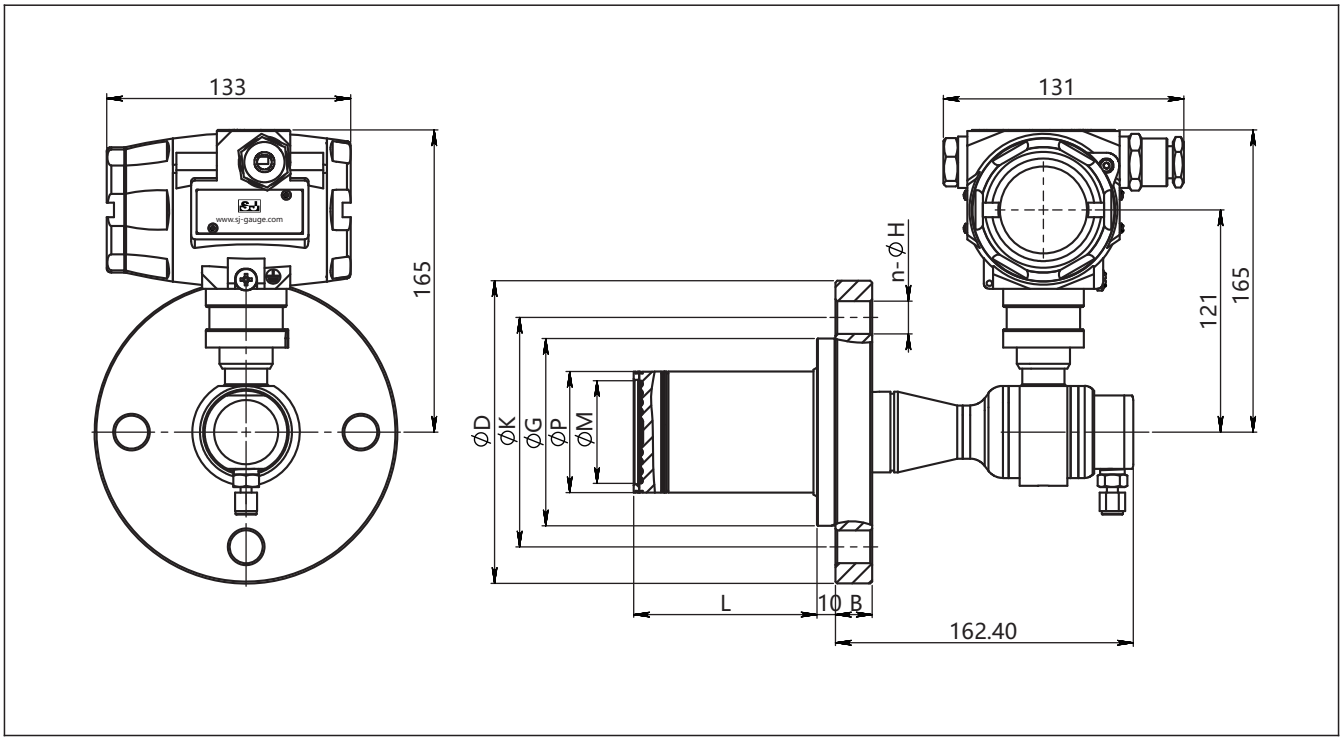
Product drawing and dimension

Standard flush diaphragm drawing and dimension with display(C) (unit:mm)



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



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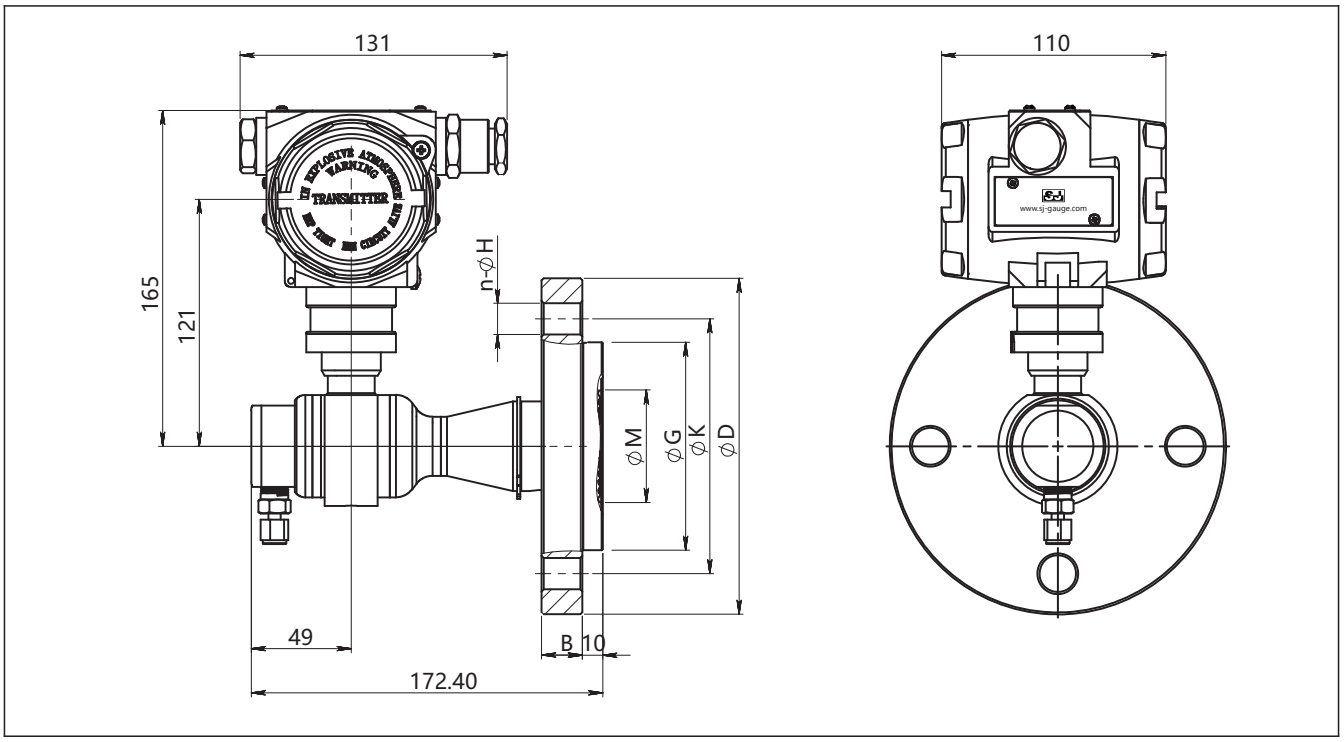
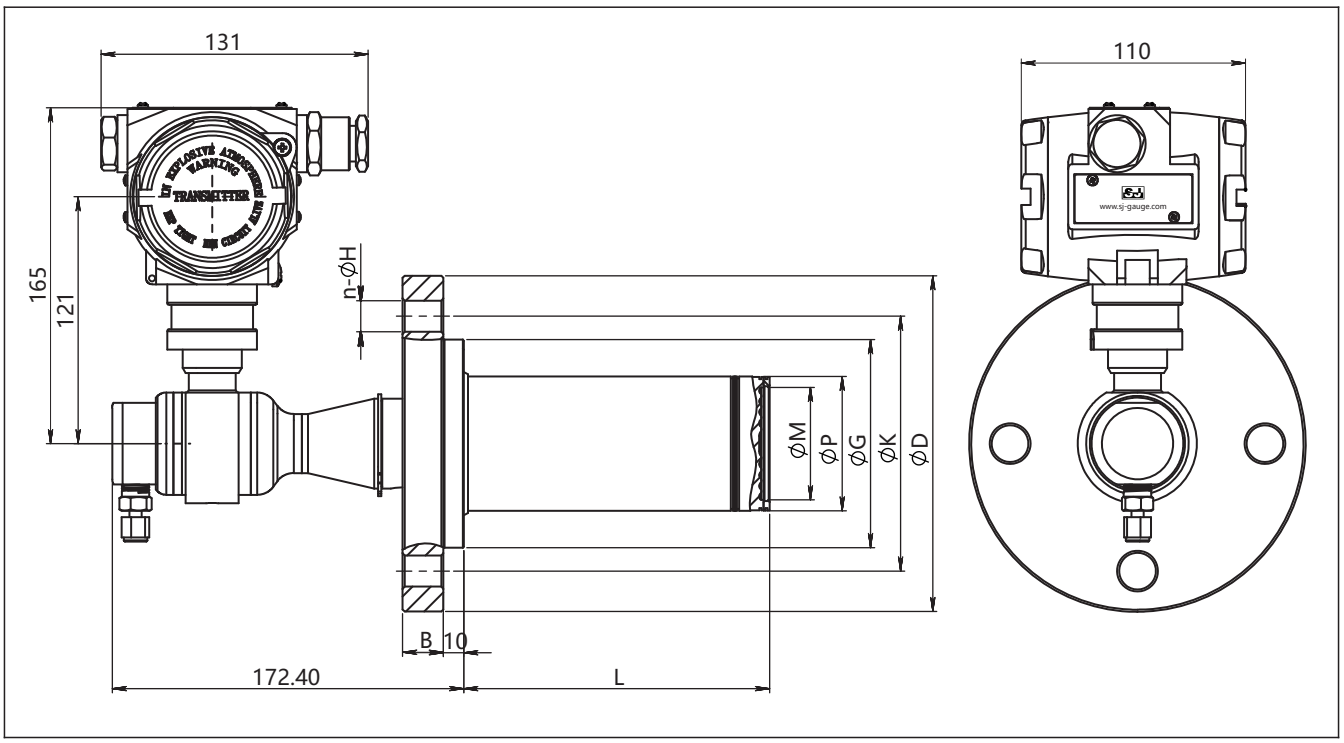
Product drawing and dimension

Standard flush diaphragm drawing and dimension with display(A) (unit: mm)



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



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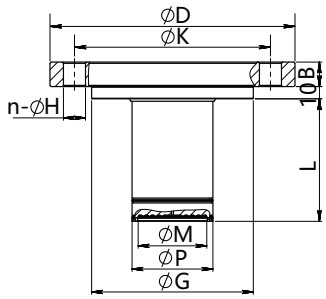
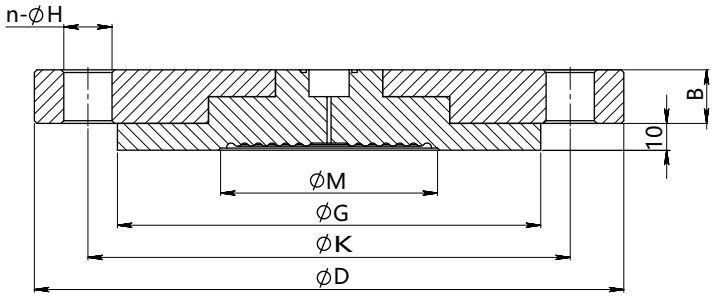
Product drawing and dimension

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



Standard	Specification	Outer diameter(ΦD)	Thickness(B)	Raised face diameter(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(ΦM)
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 range code	S403D	Nominal value(URL): 40kPa	*
		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	*
		H	4-20mA+HART two wire, power supply: 16.5-55VDC	*
	Display	A	Without LCD display	
		C	LCD display	*
Process connection	Separator	-	Detailed specifications as following	
Process connection (High-pressure side)	Connection position	HL	High-pressure side connection	*
	Connection type	G	Fixed mounting	*
	Isolation fluid filling	S	Silicon Oil	*
		H	Silicon Oil	
		F	Neobee M-20	*
	Wetted parts material	4	SUS304	*
		6	SUS316	
	Diaphragm material	S	SUS316L	*
		H	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 diameter	D00	None	
		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	
		/Q3	Static pressure report (Differential pressure only)	
	Approvals (multiple)	/E1	Flame proof certificate, ExdIICT6, NEPSI	*
		/I2	Intrinsic safety certificate, ExiaIICT4, NEPSI	*
		/L3	CE certificate	*
	Wetted parts treatment	/G1	Ungrease 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
Scope of certification	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℃
Maximum medium temperature	-20-+80℃
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	ExiaIICT4
Ambient temperature	-40-+60℃
Medium maximum temperature	+120℃
Registration number	GYB16.1965X
Intrinsically safe parameter description	Maximum input voltage:20VDC
	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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