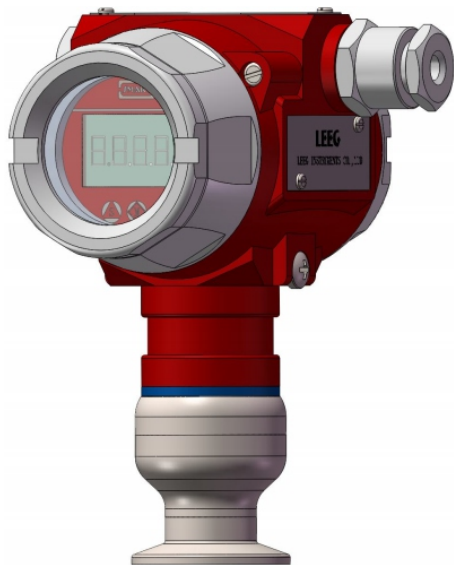


Product introduction

Description



Monosilicon pressure transmitter

SMP858 monosilicon pressure transmitter is a high performance pressure transmitter with international leading technology meticulously designed by LEEG instrument, 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 SMP858 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	Absolute pressure
Measuring range	10kPa-1MPa, 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

The fluids which compatible with wetted parts

Field of application

Pressure

Approvals



Technical specifications

Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit ( LRL ) **	Upper range limit ( URL )	Overpressure limit *
40kPa	10kPa	0kPa	40kPa	25MPa
250kPa	25kPa	0kPa	250kPa	25MPa
1MPa	100kPa	0kPa	1MPa	25MPa

The unit of the measuring range above can be converted into kg/cm<sup>2</sup>, 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.

\* Overvoltage value: depending on the pressure value of the weakest parts

\*\* 0kPa is an approximate value obtained by calculating

Standard specifications and reference conditions

Test standard: GB/T28474/IEC60770; Zero based-calibration span, Linear output, Silicon oil filling, 316L stainless steel isolated diaphragm

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

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/ 1year

Loading effects

Zero and span change should not be more than ± 0.05% URL/kΩ

Reference accuracy

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

Linear output accuracy	TD≤10 (Note1)	±0.2%URL	Nominal value: 40kPa , 250kPa 1MPa
	Max value	±0.5%URL	

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

Note 1: TD is Turn down, TD=URL/ | URV-LRV |

Vibration effects

Vibration resistance According to IEC60068-2-6 , 10g RMS (25-2000HZ)

Impact resistance According to IEC60068-2-27 , 500g/1ms

Output signal

Signal	Type	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire

Ambient temperature effects(Typical)

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

Insulation resistance

≥ 20M Ω@ reference, 100VDC

Technical Specifications

Damping time

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

Weight

Net weight: about 1.6kg(without mounting brackets and process connection accessories)
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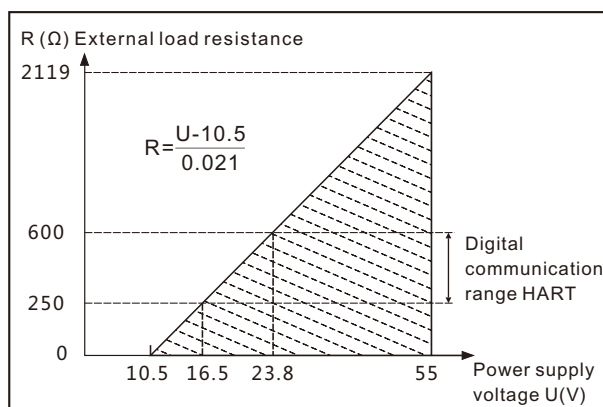
Environment condition

Items	Operational condition
Working temperature	-40-85°C, integrated LCD display: -20-70°C
Storage temperature	-40-110°C, integrated LCD display: -40-85°C
Media temperature	Hygienic fluid filling, Neobee M-20, process temperature: -10-125°C Silicon oil filling, process temperature: -40-120°C
Working humidity	0-95%RH
Protection class	IP67
Dangerous condition	ExialICT4(GYB16.1965X)* ExialICT6(GYB16.1253X)*
*Please consult engineers for details	

Power supply

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

Power supply and load requirements



## Technical Specifications

### 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 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.

**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: 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 $\sqrt{\quad}$	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 caused 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

**Product selection instruction**

**Sensor select instruction**

Code	Nominal value	Description
H403A	40kPa	Range 0-40kPa, smallest calibratable span 10kPa
H254A	250kPa	Range 0-250kPa, smallest calibratable span 25kPa
H105A	1MPa	Range 0-1MPa, smallest calibratable span 100kPa

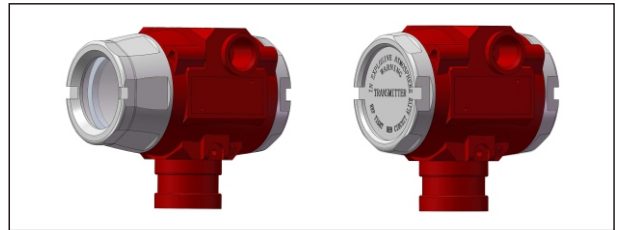
Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, minimum measuring range ≤ |URV - LRV| ≤ maximum measuring range

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

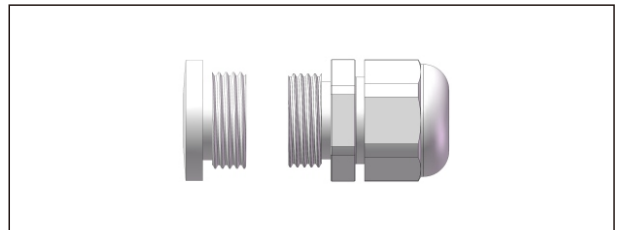
**Electrical connection**

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

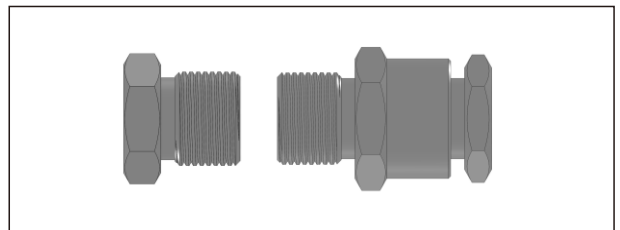
**Housing(T1)**



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



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

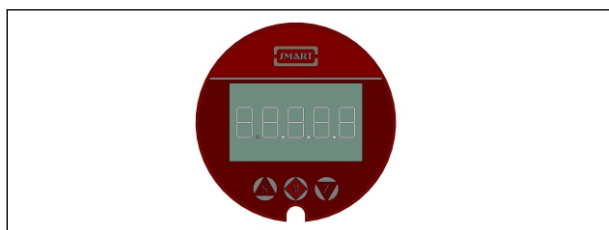


**Product selection instruction**

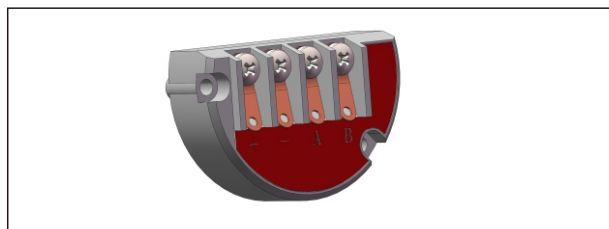
**Transmission module**

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
A	Display	Without display
C		With LCD display

**Display module (C)**



**Terminals**

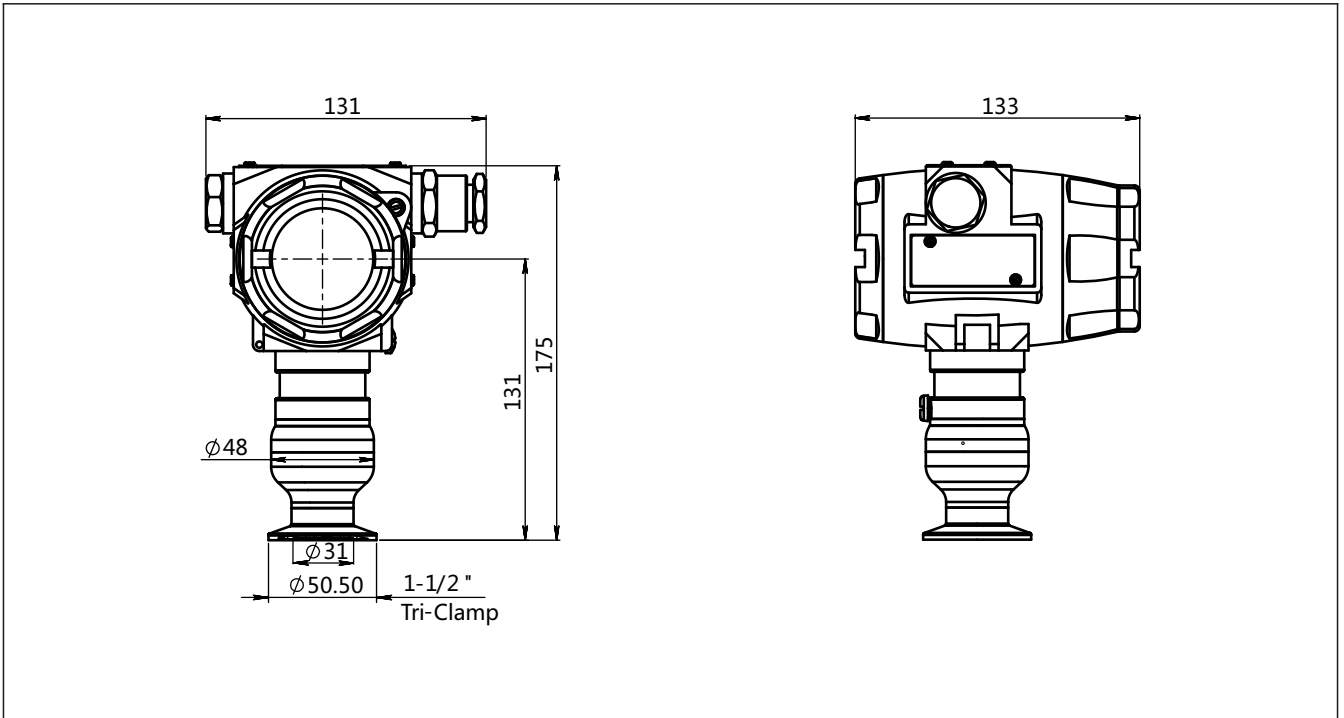


**Process connection select instruction**

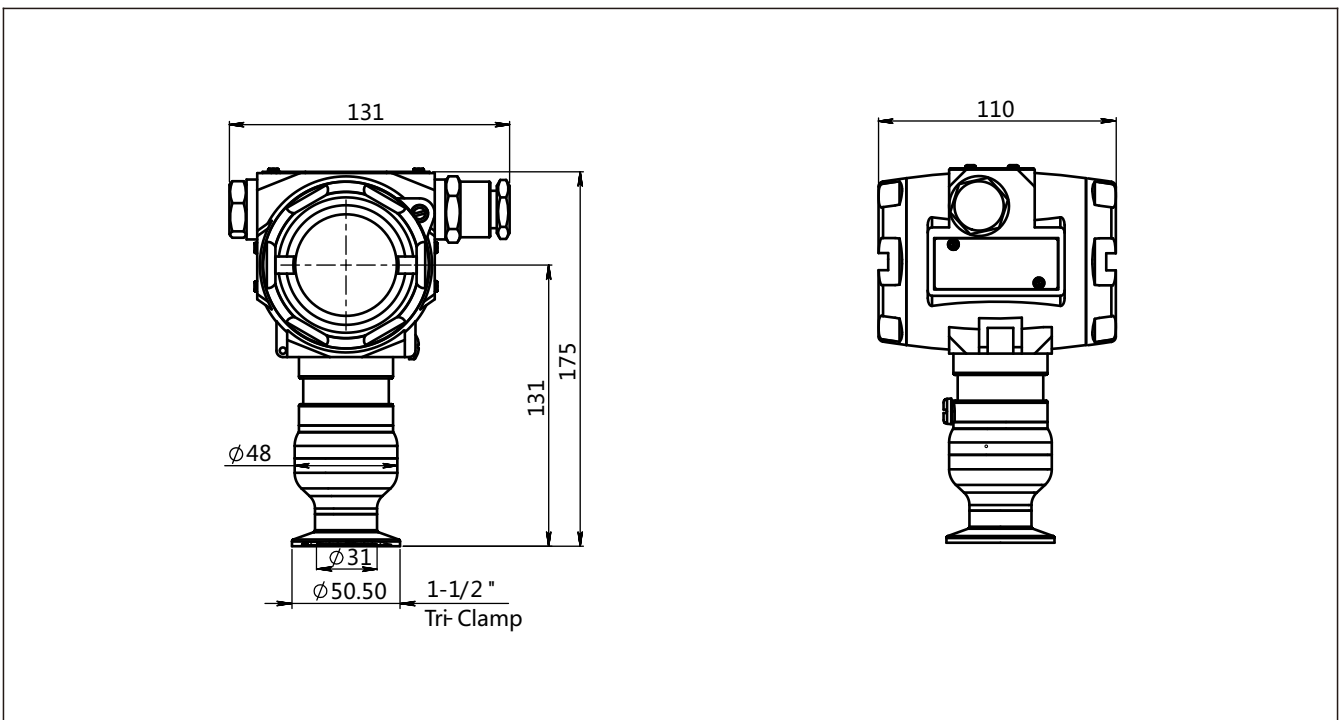
Code	Items	Description
6	Process connector material	Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -2 5-150°C
F	Isolated fluid filling	Hygienic fluid filling, Neobee M-20, process temperature: -10-180°C
S		Silicon oil filling, process temperature: -45-205°C
S	Isolated diaphragm material	Stainless steel, SUS316L
H		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 hygienic-clamp

Product drawing and dimension

SMP858-TST-H standard drawing and dimension with display( C ) ( unit:mm)



SMP858-TST-H standard drawing and dimension without display( A ) ( unit:mm)



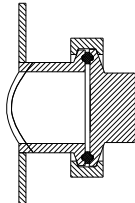
Disclaimer: all the data used in the product description is not legally binding. Relevant technical details may be changed due to further improve



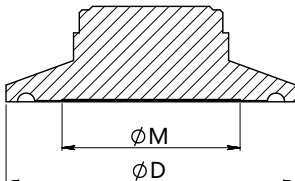
Product drawing and dimension

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

Installation Sketches



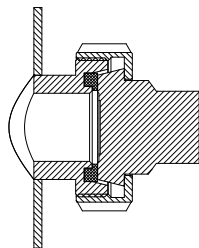
Dimension



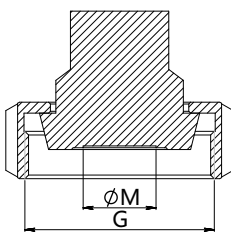
Standard	Specification	Size(ΦD)	Diaphragm size(ΦM)
Tri-Clamp	1-1/2"	50.5	31
Tri-Clamp	2"	64	42
DIN32676	DN32	50.5	31
DIN32676	DN40	50.5	31
DIN32676	DN50	64	42
ISO2852	DN38	50.5	31
ISO2852	DN40	64	42
ISO2852	DN51	64	42

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

Installation Sketches



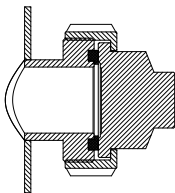
Dimension



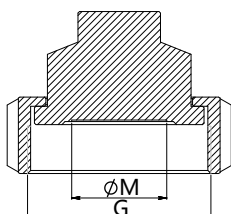
Standard	Specification	Size(G)	Diaphragm size(ΦM)
DIN11851	DN25	Rd 52*1/6	20
DIN11851	DN40	Rd 65*1/6	31
DIN11851	DN50	Rd 78*1/6	42

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

Installation Sketches



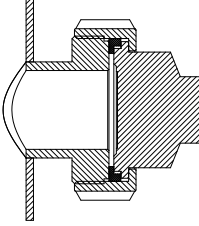
Dimension



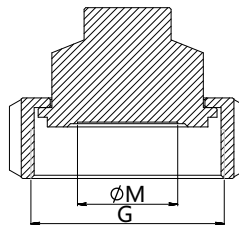
Standard	Specification	Size(G)	Diaphragm size(ΦM)
SMS	1-1/2"	Rd 60*1/6	31
SMS	2"	Rd 70*1/6	42

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

Installation Sketches



Dimension

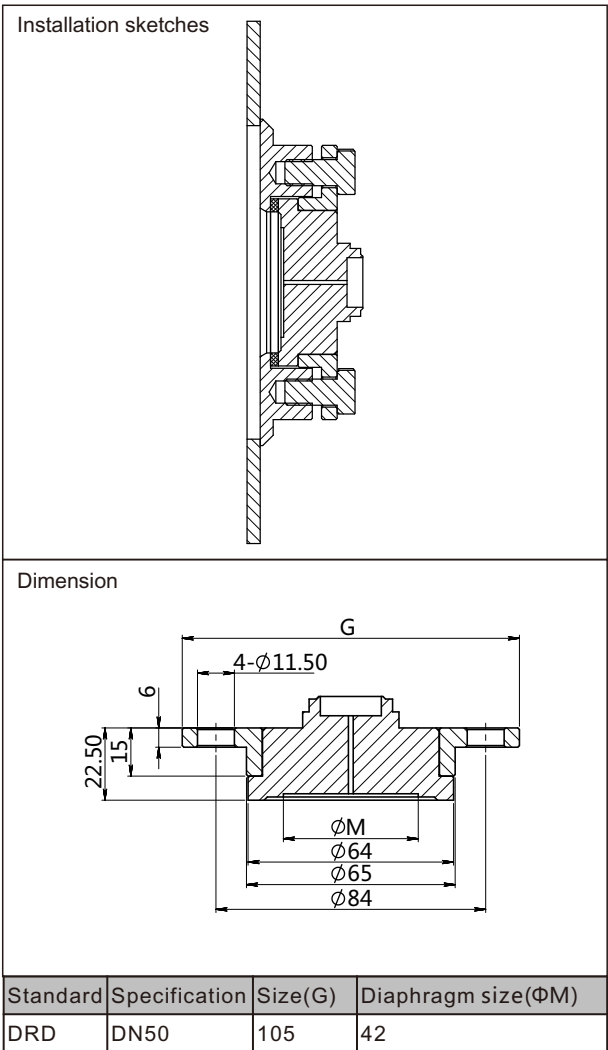


Standard	Specification	Size(G)	Diaphragm size(ΦM)
IDF	1-1/2"	IDF 1-1/2"	31
IDF	2"	IDF 2"	42

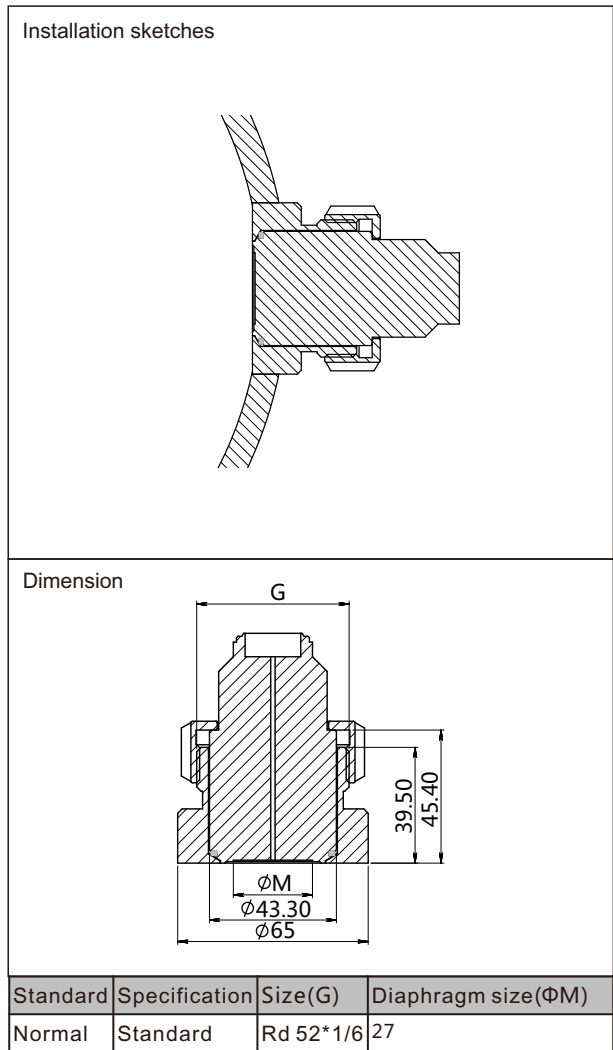
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Product drawing and dimension

Process connection (K18) (unit: mm)

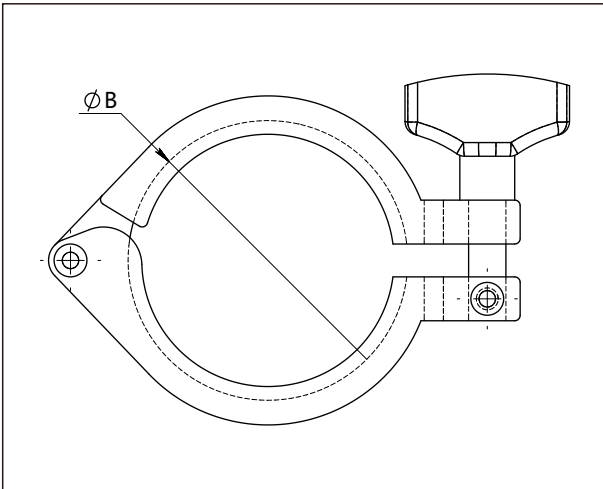


Process connection (K20) (unit: mm)



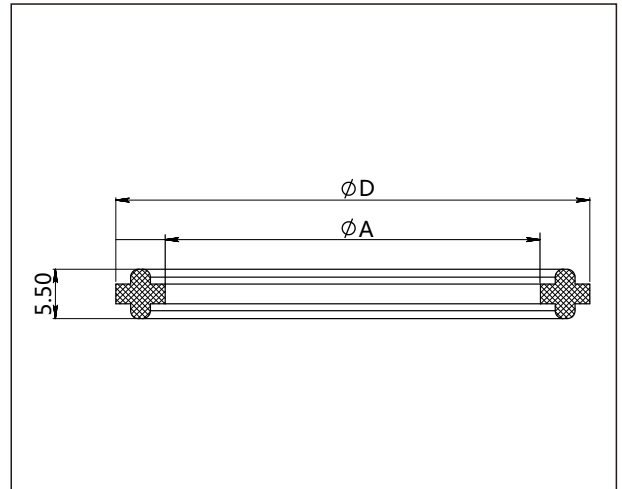
Product drawing and dimension

Clamp(G1-G2)(unit: mm)



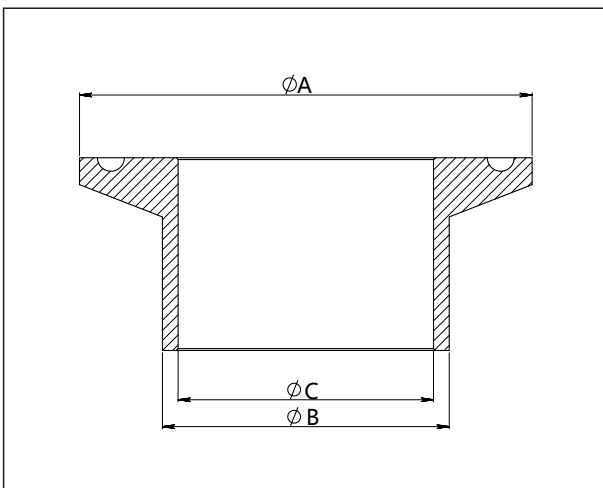
Standard	Specification	Dimension(ΦB)
Tri-Clamp	1-1/2"	53.9
Tri-Clamp	2"	67.4

Sealing gasket (M1-M2) (unit: mm)



Standard	Specification	Size ( ΦD )	Size(ΦA)
Tri-Clamp	1-1/2"	50.5	35
Tri-Clamp	2"	64	47.8

Welding adapter(Z1-Z1)(unit : mm)



Standard	Specification	Size(ΦA)	Size(ΦB)	Size(ΦC)
Tri-Clamp	1-1/2"	50.5	38	35.6
Tri-Clamp	2"	64	51	48.6

**Ordering information chapter**

Item	Parameters	Code	Instruction	(*) fast delivery available	
	Model	SMP858-TST	Monosilicon absolute pressure transmitter		
Sensor	Separator	-	Detailed specifications as following		
	Pressure range code	H403A	Nominal value(URL): 40kPa	*	
		H254A	Nominal value(URL): 250kPa	*	
		H105A	Nominal value(URL): 1MPa	*	
	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	*	
		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	H	4-20mA+HART two wire, power supply: 16.5-55VDC	*	
		F	4-20mA two wire, power supply: 10.5-55VDC	*	
	Display	C	LCD display	*	
		A	Without LCD display		
Process connection	Separator	-	Detailed specifications as following		
	Process connector material	6	Stainless steel SUS316		
	Connection type	NT	Standard connection, suitable for medium temperature -25-150°C	*	
	Isolated filling fluid	F	Hygienic fluid filling, Neobee M-20, process temperature: -10-180°C	*	
		S	Silicon oil, process temperature: -45-205°C	*	
	Isolated diaphragm material	S	Stainless steel SUS316L	*	
		H	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			

Disclaimer: all the data used in the product description is not legally binding. Relevant technical details may be changed due to further improve

## Ordering information chapter

		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 hygienic-clamp, max measuring range: 2MPa	
Additional options	Separator	-	Detailed specifications as following	
	Process connection accessory	/G1	1.5" Tri-clamp	*
		/G2	2" Tri-clamp	*
		/M1	1.5" sealing gasket	*
		/M2	2" sealing gasket	*
		/Z1	Welding adapter for 1-1/2" tri-clamp	*
		/Z2	Welding adapter for 2" tri-clamp	*
	Calibration report	/Q1	Calibration report provided by our company	*
	Approvals (multiple)	/E1	Flame proof certificate, ExdIICT6, NEPSI	*
		/I1	Intrinsic safety certificate, ExialICT4, NEPSI	*
		/F3	CE certificate	*
	Wetted parts requirements	/G1	Degrease treatment	
		/G2	Electropolishing	

**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 value
20mA Upper range value	URV	According to the order value
Process unit	U	According to the order

**Approvals**
**Factory certificate**

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

**Intrinsic safety certificate**

Certification organization name	NEPSI
License scope	SMP858 series pressure transmitter
Explosion-proof mark	ExialICT4
Ambient temperature	-40-+60°C
Medium maximum temperature	+120°C
Registration number	GYB16.1965X
Intrinsically safe parameter description	Maximum input voltage: 28VDC
	Maximum input current: 100mA
	Maximum input power: 0.7w
	Maximum internal equivalent parameters Ci(uF): 0
	Maximum internal equivalent parameters Li(mH): 0.01

**CE**

Certificate organization	ISET
License scope	SMP858 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registration number	IT051353LG161207

**Flame proof certificate**

Certification organization	NEPSI
License scope	SMP858 pressure transmitter
Explosion-proof mark	ExdIICT6
Working environmental temperature	-25-+60°C
Maximum medium temperature	+80°C
Registration number	GYB16.1253X