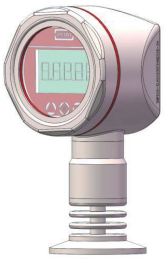
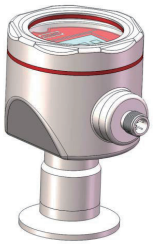
ALTHEN SENSORS & CONTROLS

bar SMP858-TSF-S

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.



Vertical installation



Horizontal installation

MICROSENSOR
AUTHORIZED DISTRIBUTOR

SPECIFICATIONS

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
Field of application	Pressure, level
Measuring medium	viscous, paste-like, adhesive, crystallising, particulatescontaining and contaminated media
Standard specifications and reference conditions	Test standard: GB/T28474 / IEC60770; zero based-calibration span, linear output, silicon 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: ±0.2%URL
	Stability: ±0.2% URL/ 1 year
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/kΩ

Reference accuracy			
Including linearity, hysteresis and repeatability. calibration temperature: 20°C ± 5°C			
Linear output accuracy	Typical	±0.2%URL	Nominal value: 40kPa, 250kPa 1MPa, 3MPa
	Max value	±0.5%URL	
The accuracy of square root output is 1.5 times of above linear reference output accuracy.			
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	
Insulation resistance	≥20M Ω@ reference, 100VDC		
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		

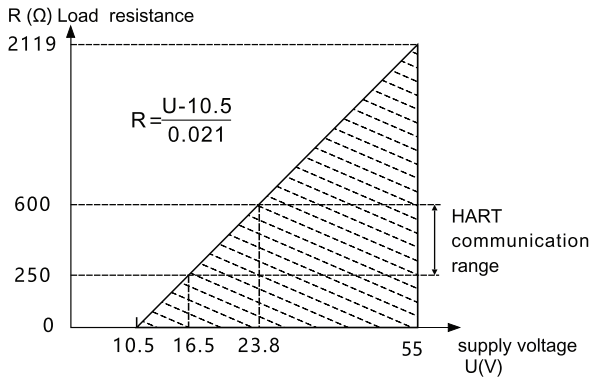
05.2024 | version 0001

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

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

Environment 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: -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	ExiaIICT4(GYB16.1965X)**
*Using heat exchange connector may lead to zero offset and temperature drift. The degree depends on mounting position and filling fluid **Please consult engineers for details	

POWER SUPPLY AND LOAD REQUIREMENTS



MEASURING RANGE AND LIMIT

Nominal value	Smallest calibratable span	Lower range limit (LRL)	Upper range limit (URL)	Overpressure 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 overpressure: depends on the pressure value of the parts with lowest pressure capacity				

05.2024 | version 0001

EMC ENVIRONMENT(NOT RS485 SIGNAL OUTPUT)

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.				

05.2024 | version 0001

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
mmH_2O	Millimeter of water@4°C
mH_2O	Meter of water@4°C
inH_2O	Inches of water@4°C
ftH_2O	Feet of water@4°C
inHg	Inches of mercury@0°C
mHg	Meter mercury column@0°C
Torr	Torr
mbar	Millibar
g/cm^2	Gram per square centimeter
kg/cm^2	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 $\sqrt{}$	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

05.2024 | version 0001

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	3MPa	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

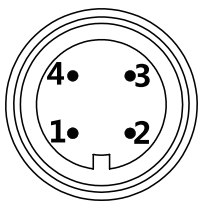
Code	Item	Description
F1	Electrical connection	Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, vertical mounting
F2		Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting

Housing (F1)

Housing (F2)

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

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

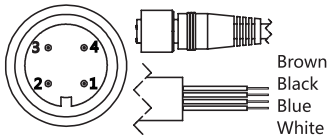


Label	Two wires
1	Power+
2	
3	
4	Power-

05.2024 | version 0001

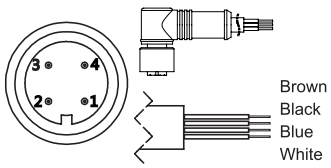
ELECTRICAL CONNECTION ACCESSORY

Aviation plug straighter(J1)



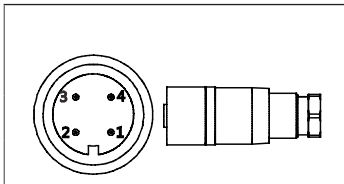
Label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

Aviation plug elbow (J2)



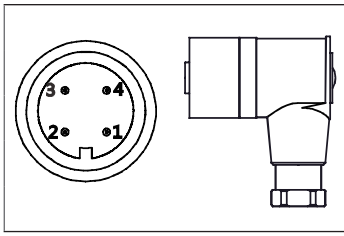
Label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

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 -

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
C	Display	With LCD display
A		Without display

Display module (C)

PROCESS CONNECTION SELECT INSTRUCTION

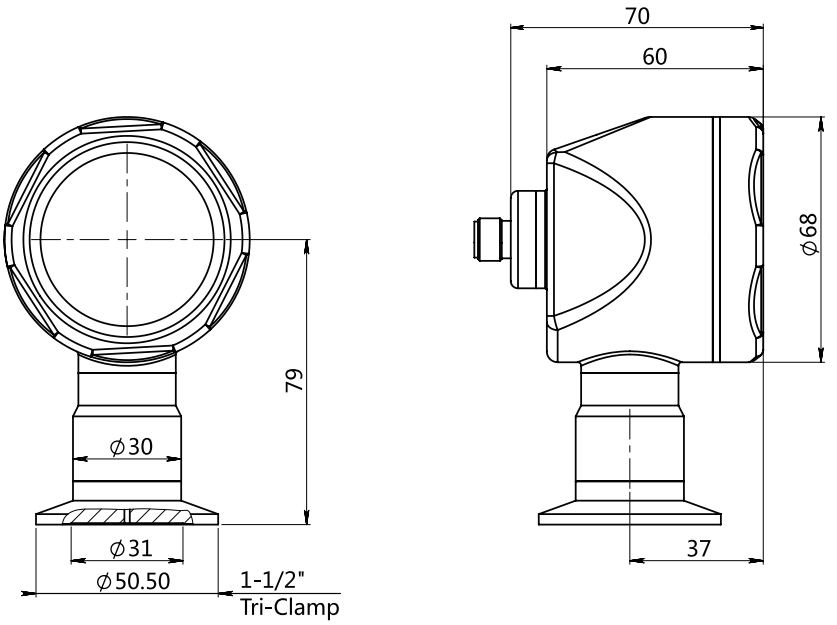
Code	Items	Description
4	Process connection material	Stainless steel, SUS304
6		Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -25-85°C
HT		Cooling element connector, medium temperature: -40-150°C
F	Isolated filling fluid	Hygienic fluid filling, Neobee M-20, process 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

Cooling element connector (HT)

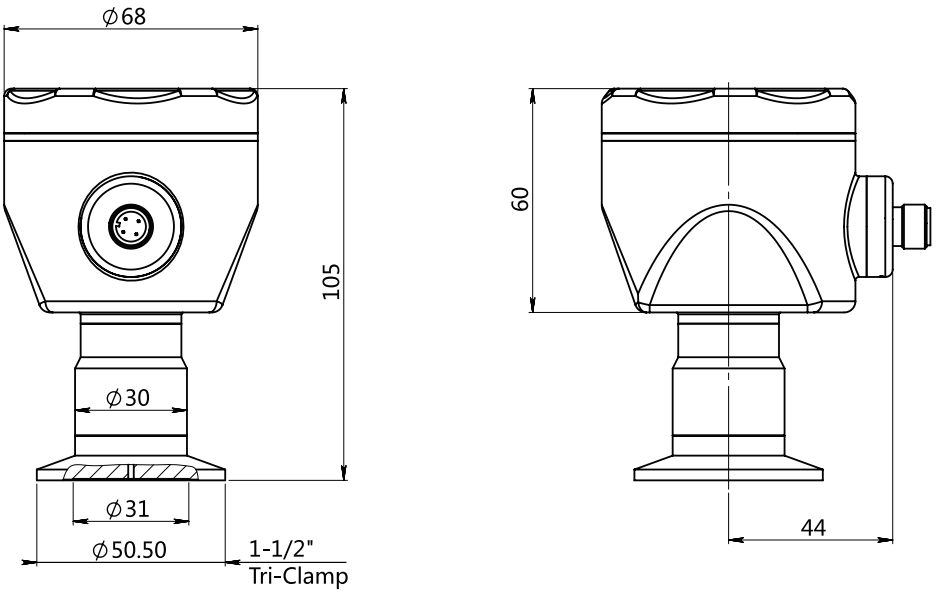
05.2024 | version 0001

PRODUCT DRAWING AND DIMENSION (UNIT:mm)

Standard drawing and dimension with display(C) / without display (A) vertical installation(F1)

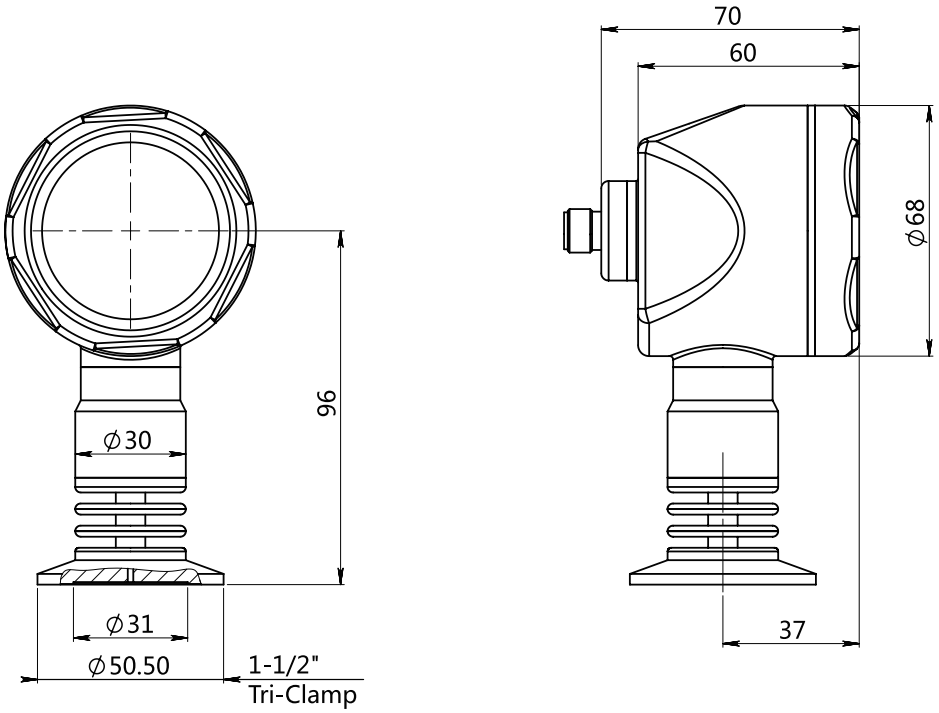


Standard drawing and dimension with display(C) / without display (A) horizontal installation (F2)

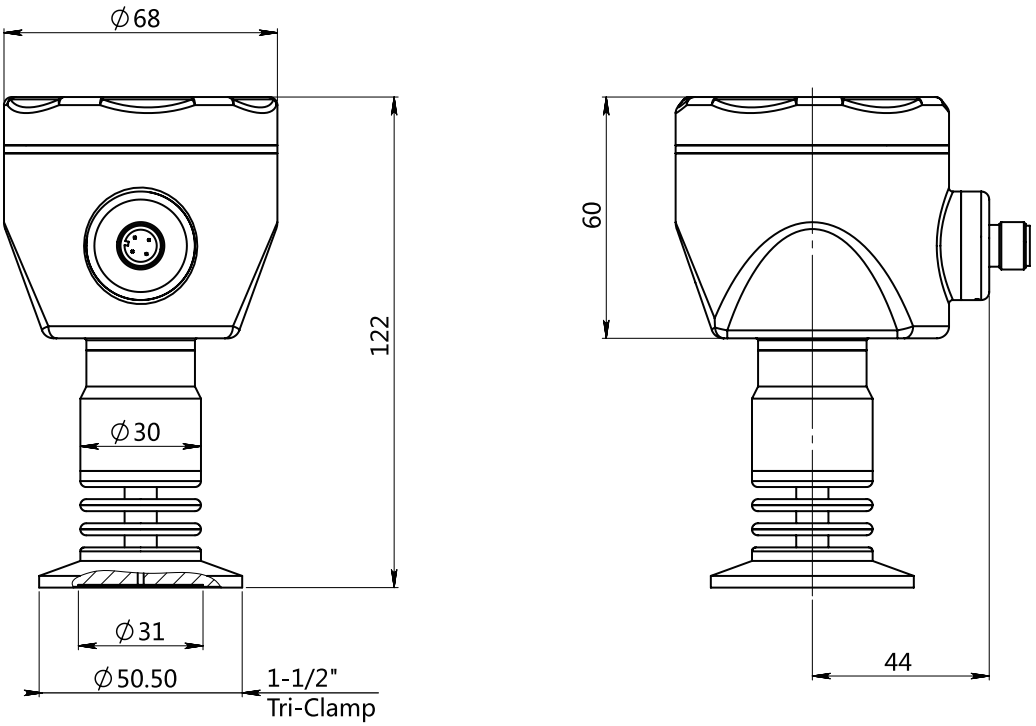


05.2024 | version 0001

Drawing and dimension with display(C)/ without display (A) vertical installation(F1) with cooling element



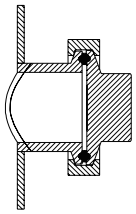
Drawing and dimension with display(C)/ without display (A) horizontal installation(F2) with cooling element



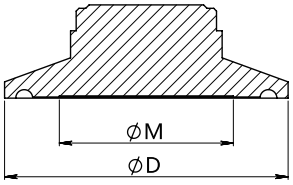
05.2024 | version 0001

Process connection (K01-K08)

Installation Sketches



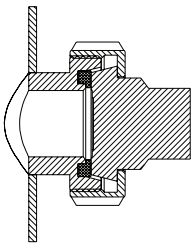
Dimension



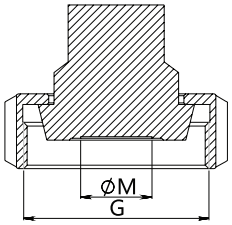
Standard	Specification	Size(ΦD)	Diaphragm size (ΦM)
Tri-Clamp	1-1/2"	50.5	31
Tri-Clamp	2"	64	42
DIN32676	DN32	50.5	31
DIN32676	DN40	50.5	31
DIN32676	DN50	64	42
ISO2852	DN38	50.5	31
ISO2852	DN40	64	42
ISO2852	DN51	64	42

Process connection (K09-K11)

Installation Sketches



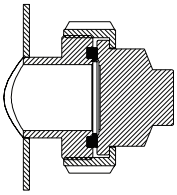
Dimension



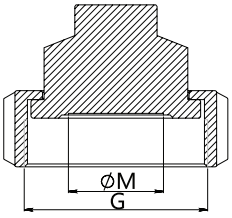
Standard	Specification	Size(G)	Diaphragm size(ΦM)
DIN11851	DN25	Rd 52*1/6	20
DIN11851	DN40	Rd 65*1/6	31
DIN11851	DN50	Rd 78*1/6	42

Process connection (K12-K13)

Installation Sketches



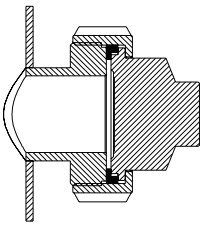
Dimension



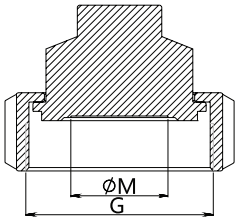
Standard	Specification	Size(G)	Diaphragm size(ΦM)
SMS	1-1/2"	Rd 60*1/6	31
SMS	2"	Rd 70*1/6	42

Process connection (K14-K15)

Installation Sketches



Dimension

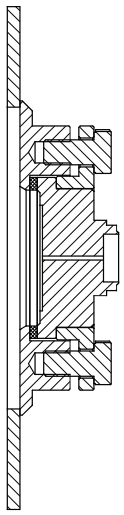


Standard	Specification	Size(G)	Diaphragm size(ΦM)
IDF	1-1/2"	IDF 1-1/2"	31
IDF	2"	IDF 2"	42

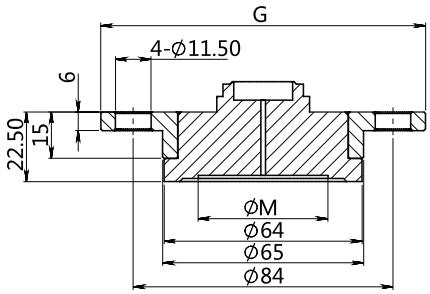
05.2024 | version 0001

Process connection (K18)

Installation sketches



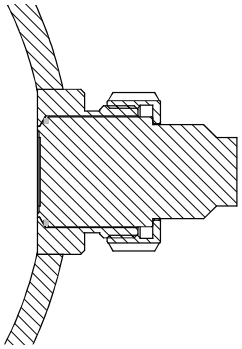
Dimension



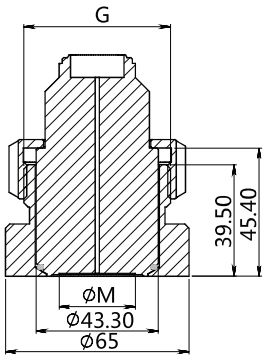
Standard	Specification	Size(G)	Diaphragm size(ΦM)
DRD	DN50	105	42

Process connection (K20)

Installation sketches

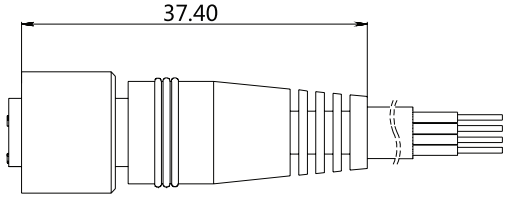


Dimension

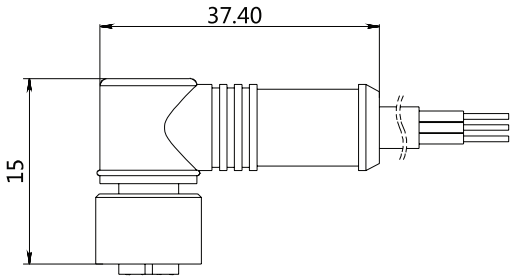


Standard	Specification	Size(G)	Diaphragm size(ΦM)
Normal	Standard	Rd 52*1/6	27

Aviation female plug straighter(J1)

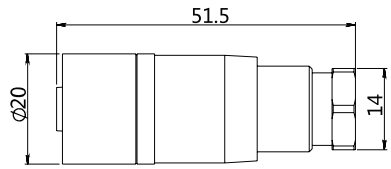


Aviation female plug elbow(J2)

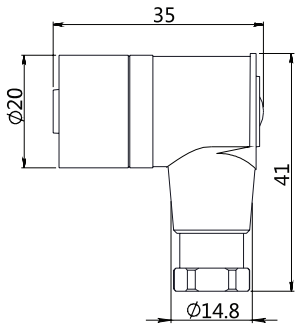


05.2024 | version 0001

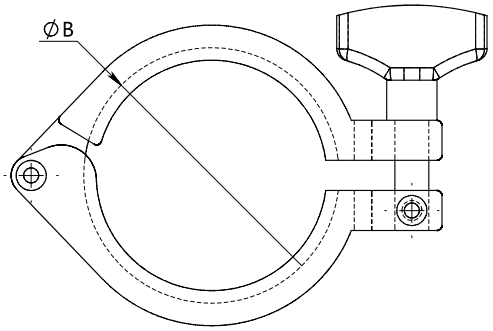
Aviation female plug straighter(J4)



Aviation female plug elbow(J5)

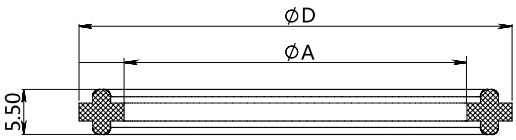


Clamp(G1-G2)



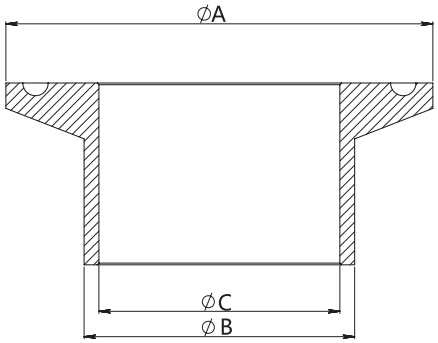
Standard	Specification	Dimension(ΦB)
Tri-Clamp	1-1/2"	53.9
Tri-Clamp	2"	67.4

Sealing gasket(M1-M2)



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

Welding adapter (Z1-Z2)



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

05.2024 | version 0001

ORDERING INFORMATION CHAPTER

Item	Parameters	Code	Instruction	(*) Fast delivery available
	Model	SMP858-TSF	Monosilicon gauge pressure transmitter	*
Sensor	**Separator**	**-**	**Detailed specifications as following**	
	Pressure range code	S403G	Nominal value(URL): 40kPa	*
		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	F1	Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, vertical mounting	*
		F2	Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting	*
	Cable entry protector	R0	None	
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: 10-30VDC	*
	Display	C	With LCD display	*
		A	Without display	
Process connection	**Separator**	**-**	**Detailed specifications as following**	
	Process connection material	4	Stainless steel SUS304	*
		6	Stainless steel SUS316	
	Connection type	NT	Standard connection, suitable for medium temperature -25-85°C	*
		HT	With cooling element, suitable for medium temperature -40-150°C	*
	Isolated filling fluid	F	Hygienic fluid filling, Neobee M-20, process temperature: -10~180°C (FDA approved)	*
		S	Silicon oil, process temperature: -45~205°C	*
	Isolated diaphragm material	S	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	
		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	

05.2024 | version 0001

Additional options	Separator	-	Detailed specifications as following	
	Electrical connection accessory	/J1	Aviation female plug (straighter) with 2m cable, 4 pin, M12*1, IP67	*
		/J2	Aviation female plug (elbow) with 2m cable, 4 pin, M12*1, IP67	
		/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 connection accessory	/G1	1.5" Tri-clamp	
		/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)	/I1	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 treatment	/G1	Ungrease treatment	
		/G2	Electropolishing treatment	
Note1: The process connections accord with regulation 74-06 of 3A certificate				

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

05.2024 | version 0001

APPROVALS

Factory certificate	
Certificate 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	SMP858 series pressure transmitter
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registration number	IT051353LG161207

Intrinsic safety certificate	
Certification organization name	NEPSI
License scope	SMP858 series pressure transmitter
Explosion-proof mark	ExiaIICT4
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

The information provided herein is to the best of our knowledge true and accurate, it is provided for guidance only. All specifications are subject to change without prior notification.

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