

Product introduction

Description



Strong monosilicon gauge 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	Gauge pressure
Measuring range	10kPa-40MPa, 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

Field of application

Pressure, level

Approvals



Measuring medium

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

Technical specifications

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	-0.1MPa	3MPa	15MPa
10MPa	1MPa	-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.

*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, Linear output, Silicon oil filling, 316L stainless steel isolated diaphragm, 4-20mA analog output

Power supply effects

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

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	Typical value	±0.2%URL	Nominal value: 40kPa , 250kPa 1MPa, 3MPa 10MPa, 40MPa
	Max value/ Voltage output	±0.5%URL	

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
0.5-4.5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four 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: $\leq 0.2S$
Startup after power off: $\leq 3S$ (with HART communication: $\leq 6S$)
Normal services after data recovery : $\leq 4S$ (with HART communication: $\leq 31S$)

Environment condition

Items	Operational condition
Working temperature	-40-85°C
Storage temperature	-40-100°C
Media temperature	Hygienic fluid filling: -10-125°C
	Silicon oil filling: -40-120°C
Working humidity	0-95%RH
Protection class	IP67
Dangerous condition	ExialICT4(GYB16.1965X)

Technical Specifications

Signal output	4-20mA	4-20mA+HART*	0.5-4.5VDC	0.5-4.5VDC(ratiometric output)	RS485
Power supply voltage	12-30VDC	10.5/16.5-55VDC	6-15VDC	5VDC	5VDC/9-30VDC
Electric current	$\leq 20.8mA$		$\leq 3.5mA$		$\leq 7mA$
Load resistance(Ω)	$<(U-12)/0.0208$	$<(U-10.5)/0.0208^{**}$	$\geq 5k$, recommend 100k		/
Transmission distance	$<1000m$		$<5m$		$<1200m$
Power consumption	$\leq 500mW(20.8mA \text{ output}@24VDC)$		$\leq 42mW(0.5-4.5VDC \text{ output,}@12VDC)$		$\leq 168mW(RS485 \text{ output}@24VDC)$

*For this output type, the load resistance value in communication is 250 Ω

**The load resistance value 0-2119 Ω is in nominal working condition, 250-600 Ω is HART communication

EMC environment (Only for current 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.

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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 -0.1MPa-1MPa, smallest calibratable span 100kPa
S305G	3MPa	Range -0.1MPa-3MPa, smallest calibratable span 300kPa
S106G	10MPa	Range -0.1MPa-10MPa, smallest calibratable span 1MPa
S406G	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, minimum measuring range $\leq URV - LRV \leq$ maximum measuring range		

Code	Position	Instruction
F	Sensor seal	Stainless steel welding seal

Electrical connection

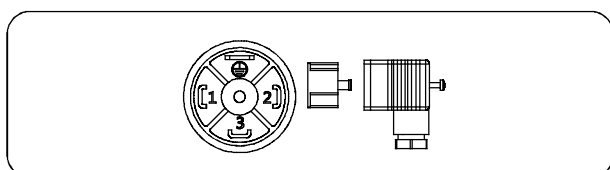
Code	Description
D1	DIN43650 connectors, IP65

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+
⊕			Signal-	B-

Note: Key-z is modified zero pressure

Output signal select instruction

Code	Description
F	4-20mA two wire, power supply: 12-30VDC
H	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: 12-30VDC

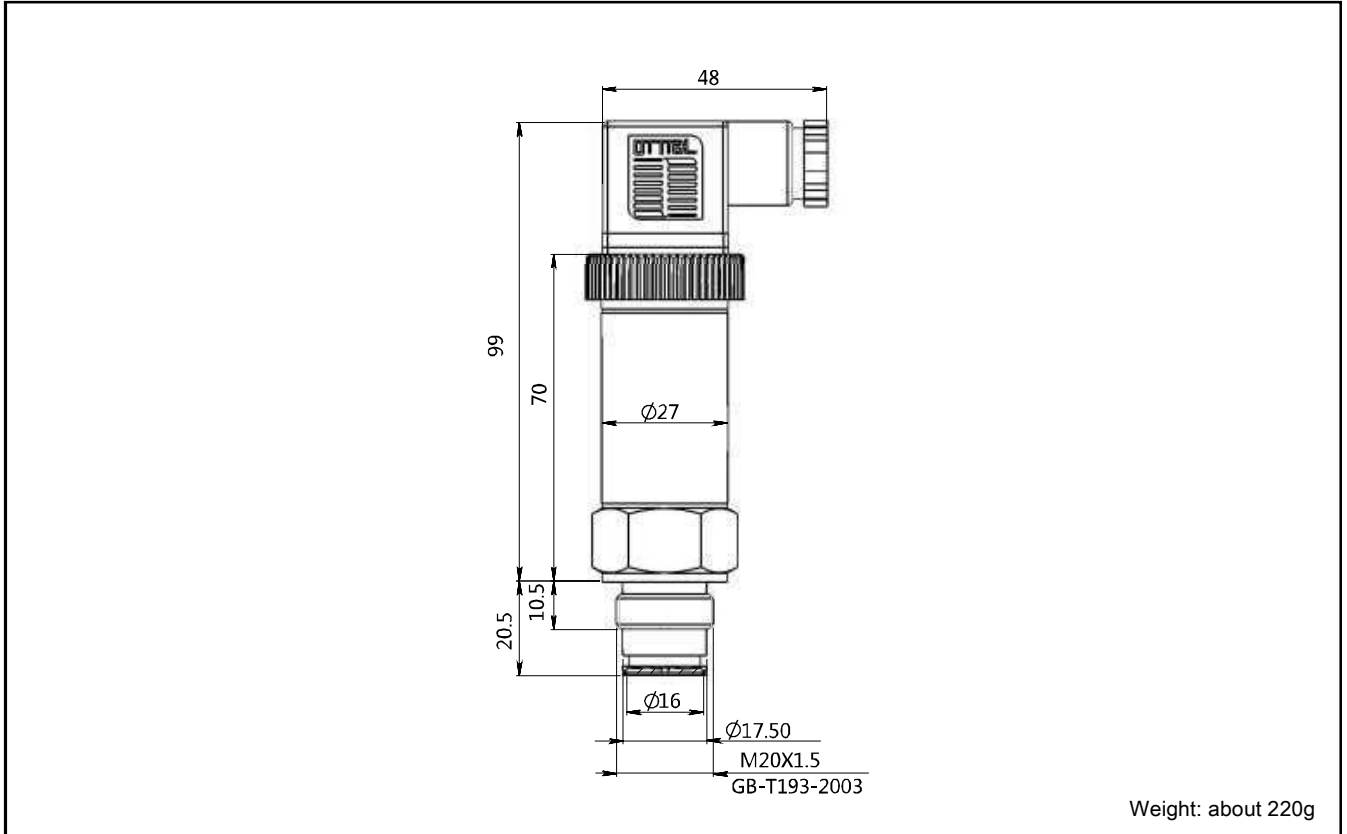
Process connection select instruction

Code	Items	Description
6	Process connection material	Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -25-85°C
F	Isolated filling fluid	Hygienic filling fluid, 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
M01	Process connection specifications	M20*1.5(M), GB/T193-2003, ISO261
G01		G1/2(M), GB/T7307, ISO228, BS2779
G07		G1-1/2(M), GB/T7307, ISO228, BS2779
G12		G1(M), metal seal GB/T7307, ISO228, BS2779

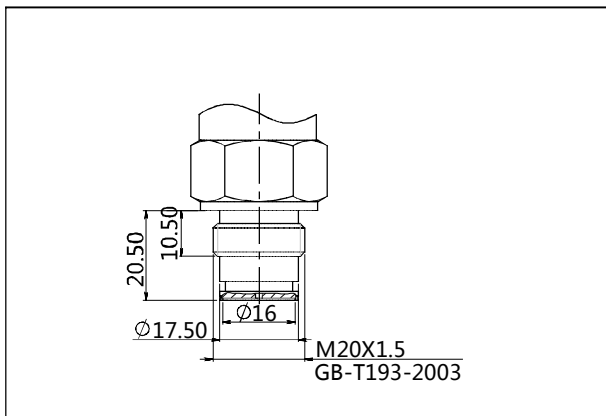
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Product drawing and dimension

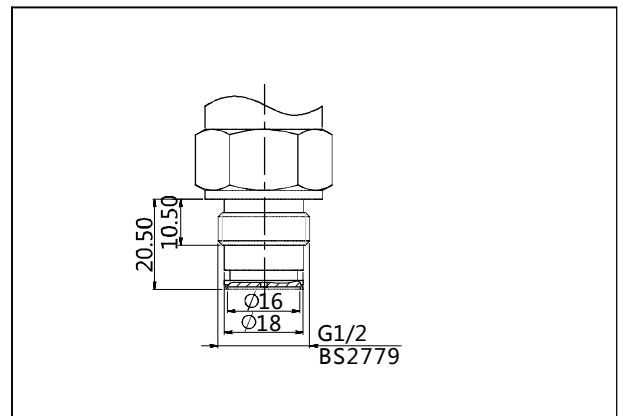
SMP858-TSD-S drawing and dimension (Unit:mm)



Process connection (M01)(unit: mm)

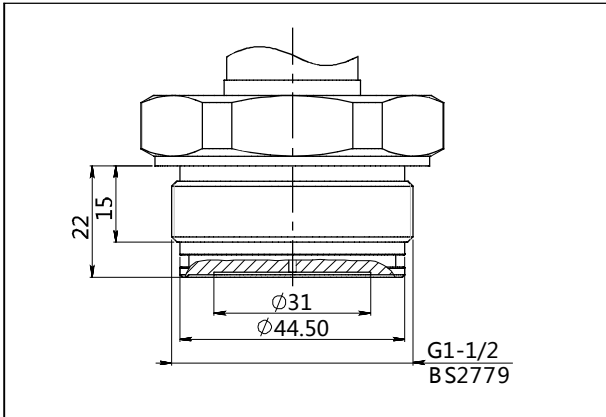


Process connection (G01)(unit: mm)

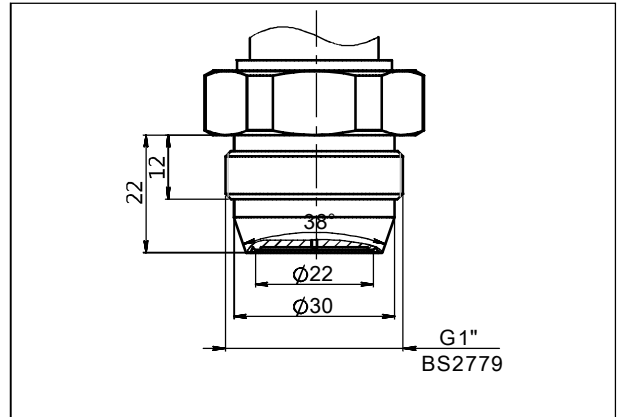


Product drawing and dimension

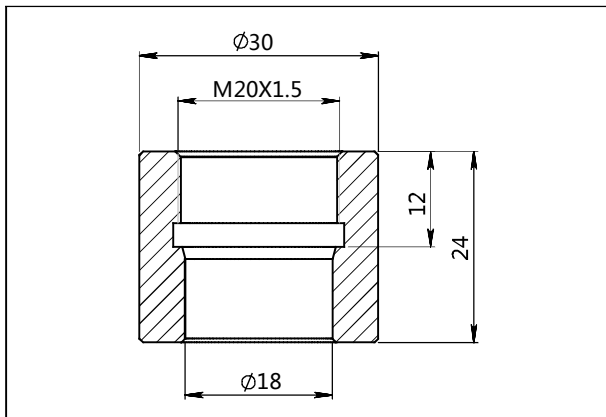
Process connection (G07)(unit: mm)



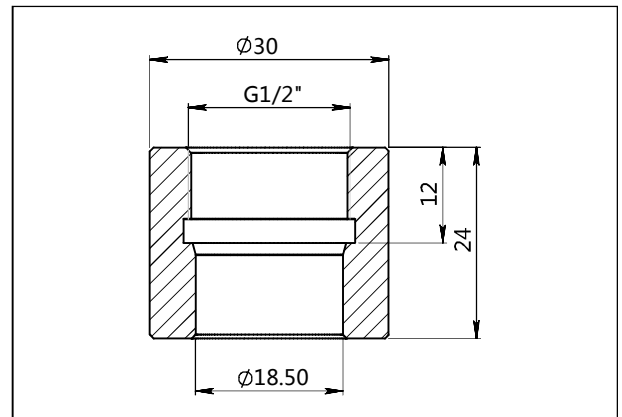
Process connection (G12)(unit: mm)



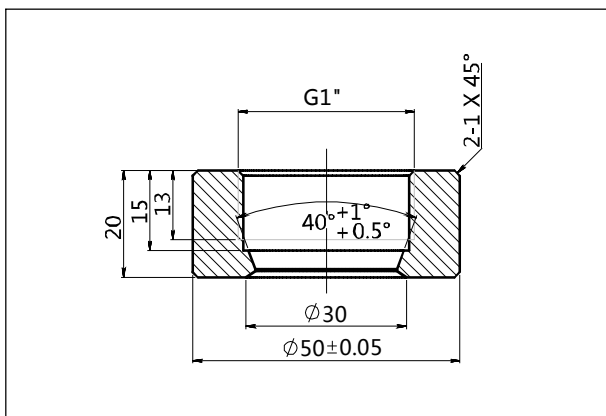
Welding adaptor(Z3)(unit:mm)



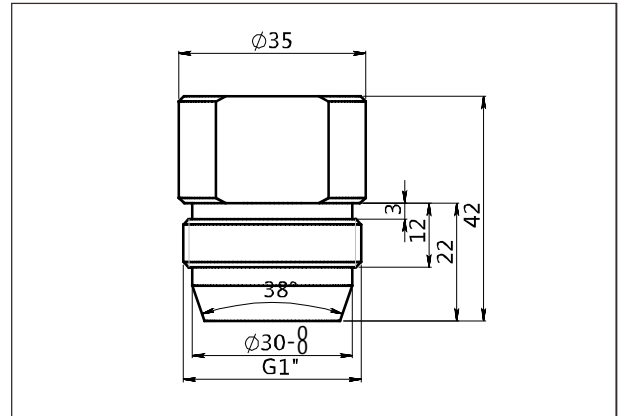
Welding adaptor(Z4)(unit:mm)



Welding adaptor(Z5)(unit:mm)



Welding accessory(H1)(unit:mm)



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Ordering information chapter

Item	Parameters	Code	Instruction	(*) fast delivery available
	Model	SMP858-TSD	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	*
		S106G	Nominal value(URL): 10MPa	
		S406G	Nominal value(URL): 40MPa	
	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: 12-30VDC	
		H	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: 12-30VDC	
Tube type	Separator	-	Detailed specifications as following	
	Tube body	65	Stainless steel tube length: 65mm	
		85	Stainless steel tube length: 85mm	
Process connection	Separator	-	Detailed specifications as following	
	Process connection material	6	Stainless steel SUS316	*
	Connection type	NT	Standard connection, suitable for medium temperature -25-85°C	*
	Isolated filling fluid	F	Hygienic filling fluid, 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	M01	M20*1.5(M), GB/T193-2003, ISO261, measuring range: 250kPa-40MPa	*
		G01	G1/2(M), GB/T7307, ISO228, BS2779, measuring range: 250kPa-40MPa	*

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Ordering information chapter

		G07	G1-1/2(M), GB/T7307, ISO228, BS2779, measuring range: 20kPa-5MPa	
		G12	G1(M), metal seal GB/T7307, ISO228, BS2779, measuring range: 20kPa-10MPa	*
Additional options	Separator	-	Detailed specifications as following	
	Welding adaptor	/Z3	Welding adaptor, M20*1.5 (F), SUS316	
		/Z4	Welding adaptor, G1/2 (F), SUS316	
		/Z5	Welding adaptor, G1 (F), SUS316	*
	Welding accessory	/H1	Adapter plug for welding adaptor, G1 (M), material: copper	*
	Approvals (multiple)	/I1	Intrinsic safety certificate, ExiaIICT4, NEPSI (Please consult engineers for details)	*
		/F3	CE certificate (Please consult engineers for details)	*
	Wetted parts requirements	/G1	Degrease treatment	
/G2		Electropolishing		

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	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	ExiallCT4
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



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