Product introduction

Description

Monosilicon gauge pressure switch

PS858 monosilicon gauge pressure switch 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 PS858 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-3MPa, please refer to the ordering information chapter
Output signal	4-20mA, Modbus-RTU/RS485, transistor output, customer
Reference accuracy	±0.5% URL, optional ±0.2% URL

Field of application

Pressure, level

Approvals

CE MC

Measuring medium

The fluids which compatible with wetted parts

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

Technical Specifications

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	6MPa
3MPa	300kPa	-100kPa	3MPa	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				
*Overload limit value: depending on the pressure value of the weakest parts				

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/ 5 years

Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20℃ ± 5℃			
Linear output accuracy	Typical value	±0.2%URL	Nominal value: 40kPa, 250kPa 1MPa, 3MPa
	Max value/ Voltage output	±0.5% URL	
Note 1: TD is Turn down, TD=URL/ | URV-LRV |			

Power supply effects

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

Mounting position effects

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

Vibration effects

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

Output signal

Signal	Type	Output
4-20mA	Linearity	Three wire
PNP or NPN	Non-Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

Ambient temperature effects(Typical)

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

Insulation resistance

≥ 20M Ω@, 100VDC

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Technical Specifications

Damping time

Startup after power off: ≤3S
Normal services after data recovery: ≤10S

Weight

Net weight: about 1kg (without mounting brackets and process connection accessory)

Environment condition

Items	Operational condition
Working temperature	-40-85℃, integrated LCD display: -20-70℃
Storage temperature	-40-110℃, integrated LCD display: -40-85℃
Media temperature	Hygienic fluid filling: -10-125℃, with heat exchange connector: -10-250℃ *
	Silicon oil filling: -40-120℃, with heat exchange connector: -40-300℃ *
Working humidity	0-95%RH@40℃
Protection class	IP67
Heat exchange connector may lead to different degrees of zero drift and temperature drift vary with mounting position and filling fluid.	

Technical Specifications

Signal output	4-20mA	RS485
Power supply voltage	12-30VDC	12-30VDC
Electric current	≤60mA	≤45mA
Load resistance(Ω)	<(U-12)/0.06	/
Transmission distance	<1000m	<1200m
Power consumption	≤1.44W(4-20mA+transistor+OLED display @24VDC)	≤1.08W(RS485+transistor+OLED display @24VDC)

Technical Specifications

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 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.

Menu function

Transmission module type

Output signal	Local control	Remote control
4-20mA	OLED/3 buttons on body	-

LED display unit

Display mode	Details
Pressure & Unit	Two-row display: pressure value and unit
XX.X&P&Unit	Three-row display: percentage, pressure value and unit
SPn&P&RPn	Three-row display: SPn, pressure value and RPn

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, 20mA
LRV	Lower range value, 4mA

Analog output type

Parameters	Output type
mA LINER	Linearity

Alarm signal

Parameter	Description
AOLC	When too small pressure lead to output current<AOLC setting value, display Out<AOLC
AOHC	When too large pressure lead to output current>AOHC setting value, display Out>AOHC

Fix output

Parameter	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 analog 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

Product selection instruction

Sensor type select instruction

Code	Nominal value	Description
S403G	40kPa	Range -40-40kPa, smallest calibratable span 10kPa
S254G	250kPa	Range -100-250kPa, smallest calibratable span 25kPa
S105G	1MPa	Range -0.1-1MPa, smallest calibratable span 100kPa
S305G	3MPa	Range -0.1-3MPa, 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

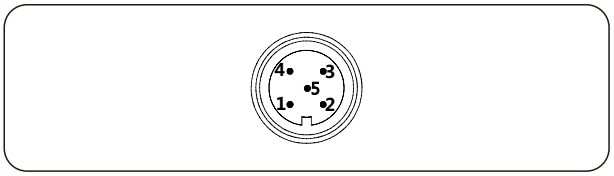
Electrical connection select instruction

Code	Description
H3	Aviation plug, M12*1, 5 pins, IP67
H4	Aviation plug, M12*1, 4 pins, IP67

Aviation plug, M12*1, 5 pins (H3)

Aviation plug, M12*1, 4 pins (H4)

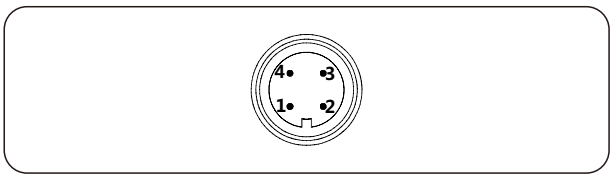
Aviation plug (H3), M12*1 (5 pins)



1	2	3	4	5
Power+	RS485A+	Power-	RS485B-	*Signal +
Power+	transistor output 2	Power-	Transistor output 1	*Signal +

*Signal : 4-20mA

Aviation plug M12*1, 4 pins (H4)

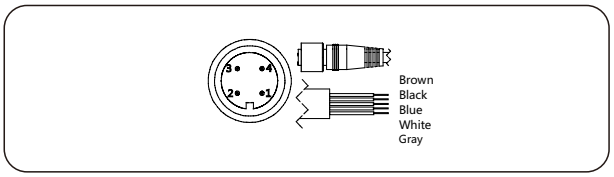


1	2	3	4
Power+	RS485A+	Power-	RS485B-
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power+	*Signal +	Power-	Transistor output 1

*Signal : 4-20mA

Electrical connection accessories

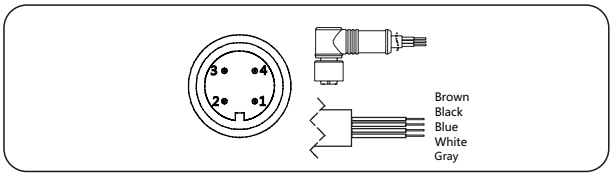
Aviation plug straighter(J1)



1/Brown	2/White	3/Blue	4/Black
Power+	RS485A+	Power-	RS485B-
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power+	*Signal +	Power-	Transistor output 1

*Signal: 4-20mA

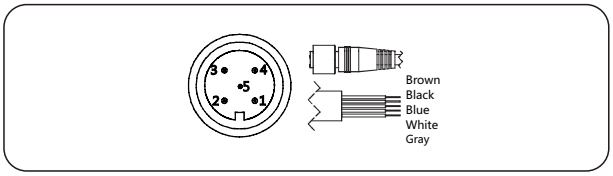
Aviation plug elbow(J2)



1/Brown	2/White	3/Blue	4/Black
Power+	RS485A+	Power-	RS485B-
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power-	*Signal +	Power-	Transistor output 1

*Signal: 4-20mA

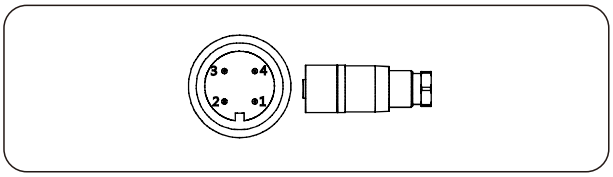
Aviation plug straighter(J3)



1/Brown	2/White	3/Blue	4/Black	5/Gray
Power+	RS485A+	Power-	RS485B-	*Signal
Power+	Transistor output 2	Power-	Transistor output 1	*Signal

*Signal: 4-20mA

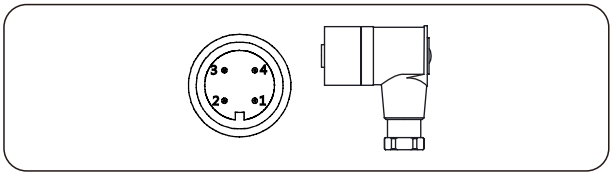
Aviation plug straighter(J4)



1	2	3	4
Power+	RS485A+	Power-	RS485B-
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power-	*Signal +	Power-	Transistor output 1

*Signal: 4-20mA

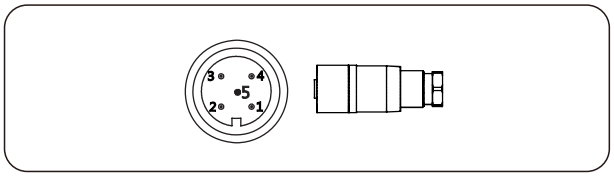
Aviation plug elbow(J5)



1	2	3	4
Power+	RS485A+	Power-	RS485B-
Power+	Transistor output 2	Power-	Transistor output 1
Power+	Transistor output 2	Power-	
Power+		Power-	Transistor output 1
Power-	*Signal +	Power-	Transistor output 1

*Signal: 4-20mA

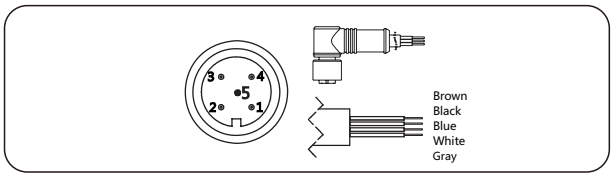
Aviation plug straighter(J6)



1	2	3	4	5
Power+	RS485A+	Power-	RS485B-	*Signal +
Power+	Transistor output 2	Power-	Transistor output 1	*Signal +

*Signal: 4-20mA

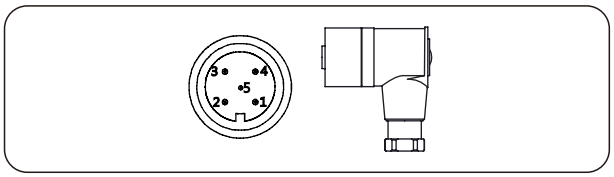
Aviation plug elbow(J7)



1/Brown	2/White	3/Blue	4/Black	5/Gray
Power+	RS485A+	Power-	RS485B-	*Signal+
Power+	Transistor output 2	Power-	Transistor output 1	*Signal+

*Signal: 4-20mA

Aviation plug elbow(J8)



1	2	3	4	5
Power+	RS485A+	Power-	RS485B-	*Signal +
Power+	Transistor output 2	Power-	Transistor output 1	*Signal +

*Signal: 4-20mA

Output signal select instruction

Code	Description
FN	4-20mA + NPN, power supply: 12-30VDC
FP	4-20mA + PNP, power supply: 12-30VDC

Display module (E)

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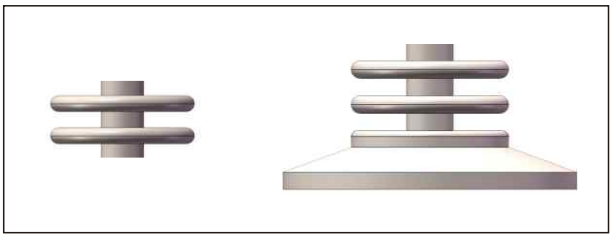
Product selection instruction

Heat exchange connector (HT)



Contact alarm select instruction

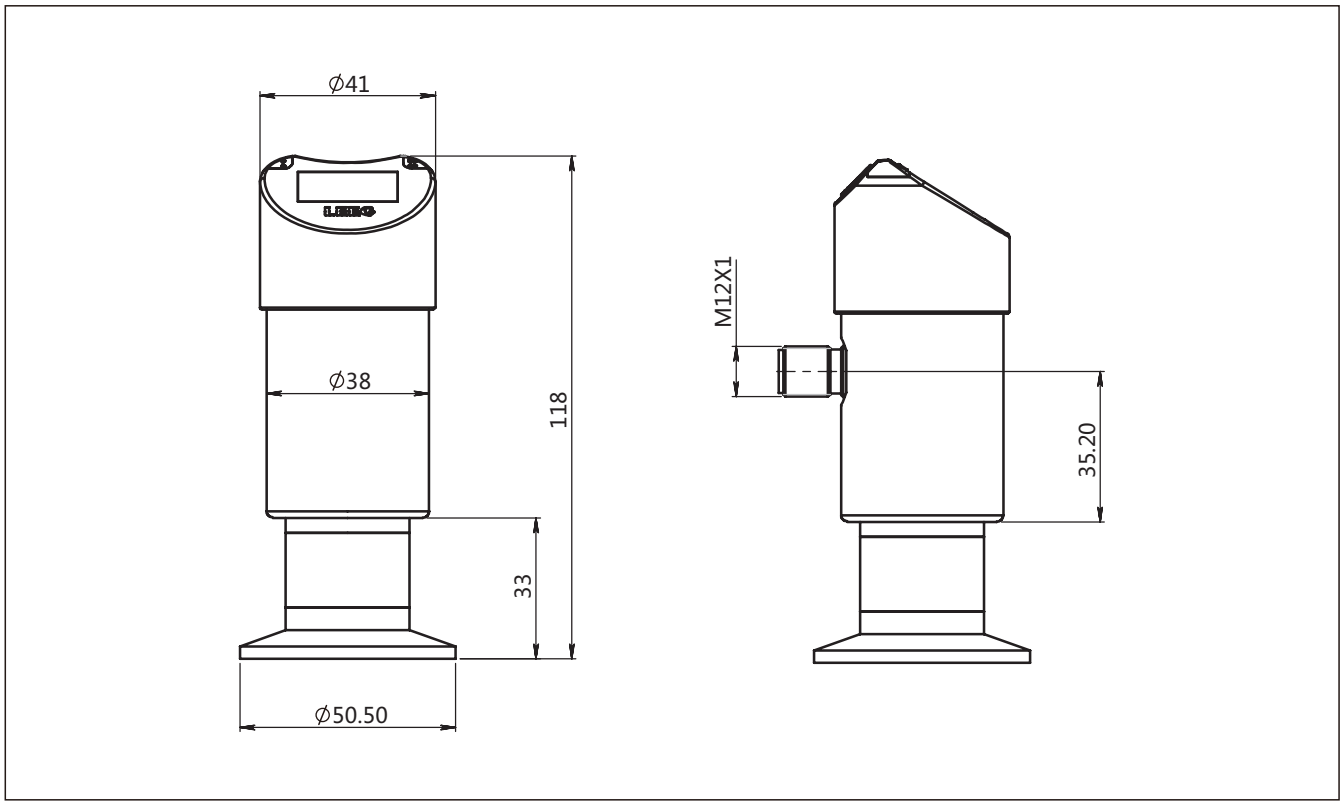
Code	Type	Description
1	Output contact	One PNP or NPN output
2		Two PNP or NPN output
C1	First contact alarm value	Customer setting
A1		Factory setting
L1	First alarm method	Lower than alarm value, output high electrical level
H1		Higher than alarm value, output high electrical level
W1		Alarming in window
W2		Alarming out window
C2	Second contact alarm value	Customer setting
A2		Factory setting
L2	Second alarm method	Lower than alarm value, output high electrical level
H2		Higher than alarm value, output high electrical level
W1		Alarming in window
W2		Alarming out window

Process connection select instruction

Code	Items	Description
6	Material	Stainless steel, SUS316
NT	Connection type	Standard connection, medium temperature: -25-85℃
F	Isolated filling fluid	Hygienic fluid filling, Neobee M-20, process temperature: -10-180℃
S		Silicon oil filling, process temperature: -45-205℃
S	Isolated diaphragm material	Stainless steel, SUS316L
H		Hastelloy alloy 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 dimensio

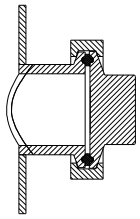
PS858-TSR-S drawing and dimension (unit: mm)



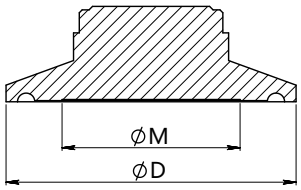
Product drawing and dimension

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

Installation Sketches



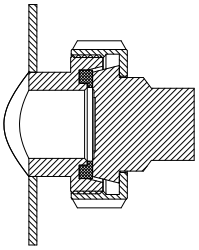
Dimension



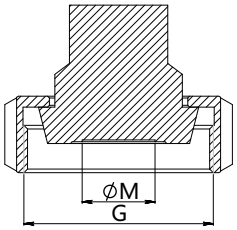
Standard	Specification	Size(ΦD)	Diaphragm size (ΦM)
Tri-Clamp	1-1/2"	50.5	31
Tri-Clamp	2"	64	42
DIN32676	DN32	50.5	31
DIN32676	DN40	50.5	31
DIN32676	DN50	64	42
ISO2852	DN38	50.5	31
ISO2852	DN40	64	42
ISO2852	DN51	64	42

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

Installation Sketches



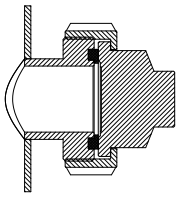
Dimension



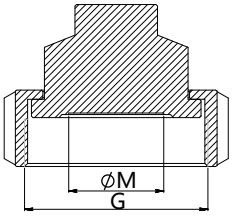
Standard	Specification	Size(G)	Diaphragm size(ΦM)
DIN11851	DN25	Rd 52*1/6	20
DIN11851	DN40	Rd 65*1/6	31
DIN11851	DN50	Rd 78*1/6	42

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

Installation Sketches



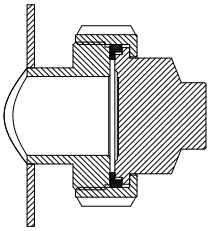
Dimension



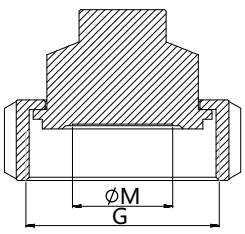
Standard	Specification	Size(G)	Diaphragm size(ΦM)
SMS	1-1/2"	Rd 60*1/6	31
SMS	2"	Rd 70*1/6	42

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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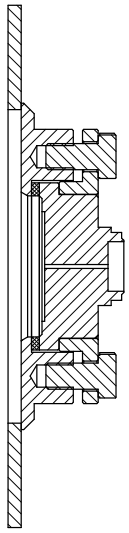
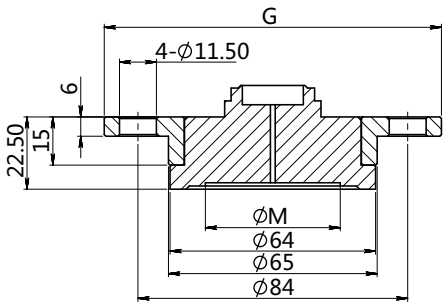
Product drawing and dimension

Process connection (K18) (unit: mm)

Installation sketches



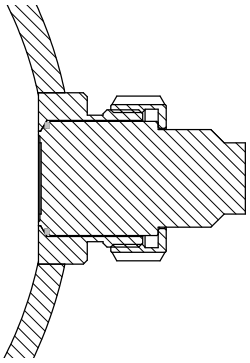
Dimension



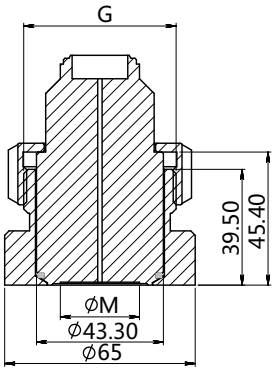
Standard	Specification	Size(G)	Diaphragm size(ΦM)
DRD	DN50	105	42

Process connection (K20) (unit: mm)

Installation sketches

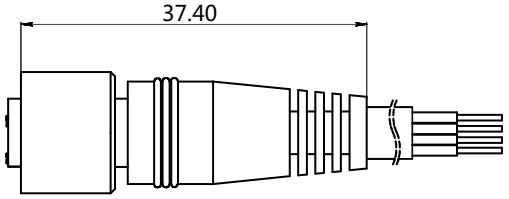


Dimension

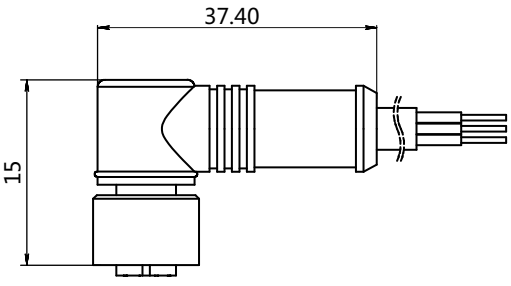


Standard	Specification	Size(G)	Diaphragm size(ΦM)
Normal	Standard	Rd 52*1/6	27

Aviation female plug straighter (4 pins)(J1) (unit: mm)



Aviation female plug elbow (4 pins)(J2) (unit: mm)



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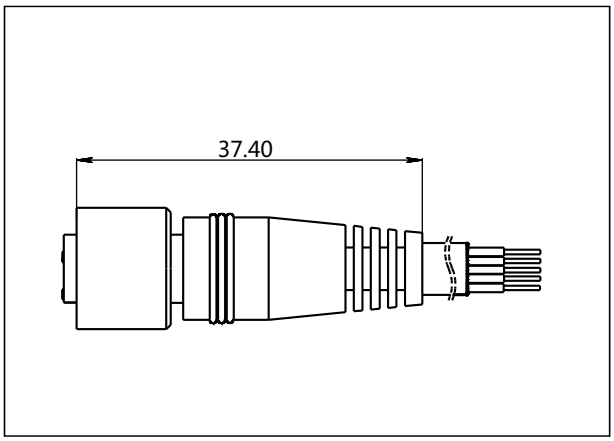
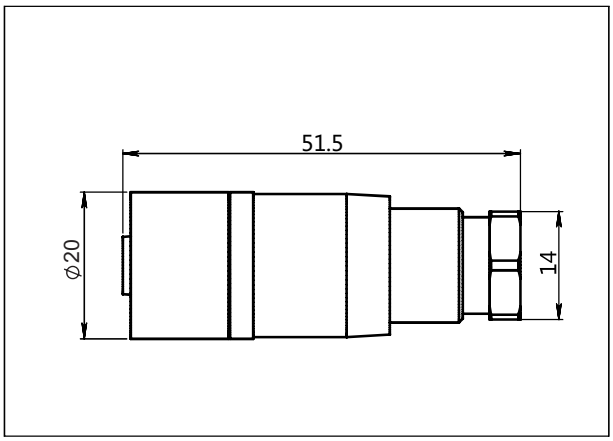
Product drawing and dimension

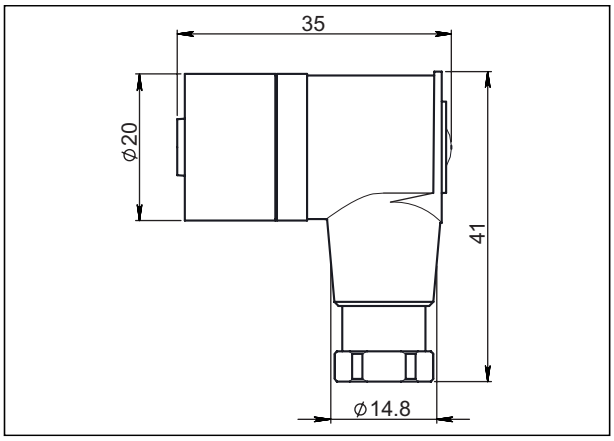
Aviation female plug straighter (5 pins)(J3) (unit: mm)



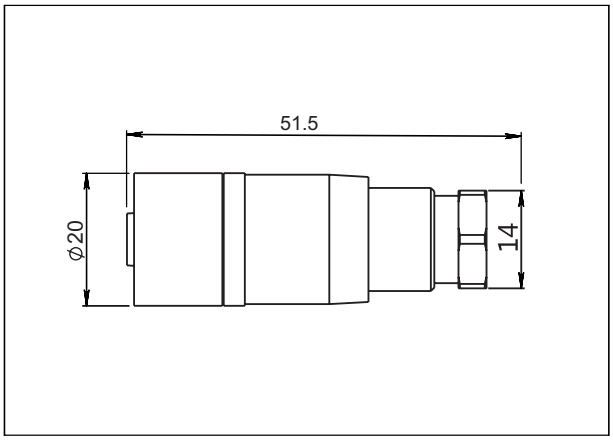
Aviation female plug straighter (4 pins)(J4) (unit: mm)



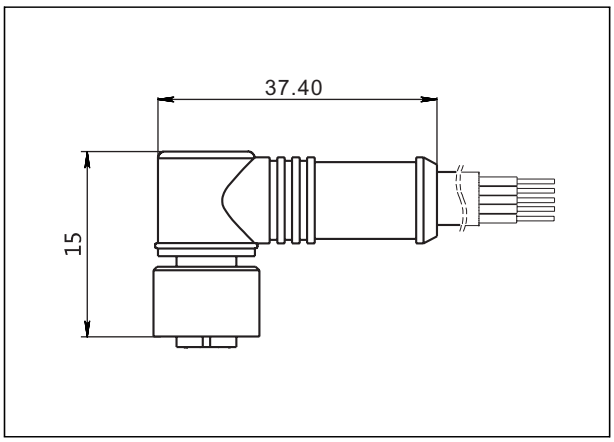
Aviation plug elbow (4 pins) (J5) (Unit: mm)



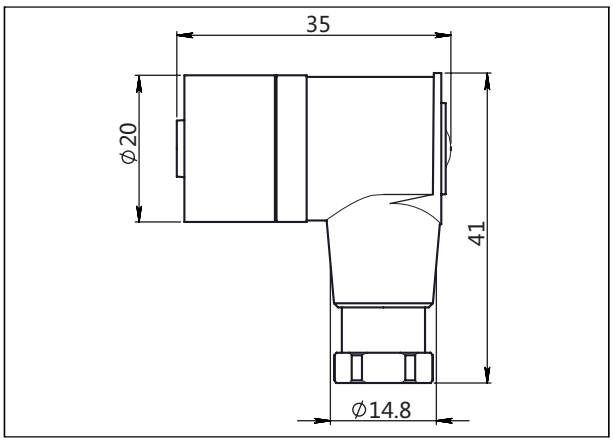
Aviation plug straighter (5 pins) (J6) (Unit: mm)



Aviation plug elbow (5 pins) (J7) (Unit: mm)



Aviation plug elbow (5 pins) (J8) (Unit: mm)



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Ordering information chapter

Item	Parameters	Code	Instruction	(*) fast delivery available
	Model	PS858-TSR	Monosilicon gauge pressure switch	
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	H3	Aviation plug, M12*1(5 pins), IP67	
		H4	Aviation plug, M12*1(4 pins), IP67	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output signal	FN	4-20mA + NPN, power supply: 12-30VDC	*
		FP	4-20mA + PNP, power supply: 12-30VDC	
	Display mode	E	With OLED display	
		A	Without display	
	Output contact	1	One way output contact	
		2	Two way output contact	
	First contact alarm value	C1	Customer setting	
		A1	Factory setting	
	First alarm method	L1	N, P: Lower than alarm value, output high level	
		H1	N, P: Higher than alarm value, output high level	
		W1	Alarming in window	
		W2	Alarming out window	
	Second contact alarm value	C2	Customer setting	
		A2	Factory setting	
	Second alarm method	L2	N, P: Lower than alarm value, output high electrical level	
		H2	N, P: Higher than alarm value, output high electrical level	
		W1	Alarming in window	
		W2	Alarming out window	
Tube type	Separator	-	Detailed specifications as following	
	Tube body	57	Stainless steel tube body length: 57mm	
Process connection	Separator	-	Detailed specifications as following	
	Material	6	Stainless steel, SUS316	

Ordering information chapter

	Connection type	NT	Standard connection, process temperature: -25-85℃	*
		HT	Heat exchange connector connection, process temperature: -40-150℃	
	Isolated filling fluid	F	Hygienic fluid fiilling, Neobee M-20, process temperature: -10-180℃	*
		S	Silicon oil filling, process temperature: -45-205℃	*
	Isolated diaphragm material	S	Stainless steel, SUS316L	*
		H	Hastelloy C	
	Specification (Note1)	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, flange connection, max measuring range 2.5MPa	
		K20	Plug in tube flush hygienic clamp, max measuring range 2MPa	
Additional options	Separator	-	Detailed specifications as following	
	Factory setting pressure alarm value	*/A1-XXX	First contact alarm value: XXX the first two are figures, the third is index (unit:Pa)	
		*/A2-XXX	Second contact alarm value: XXX the first two are figures, the third is index (unit:Pa)	
	Electrical connection accessory	/J1	Aviation female plug (straighter) with 2m cable, M12*1(4 pins), IP67	
		/J2	Aviation female plug (elbow) with 2m cable, M12*1(4 pins), IP67	
		/J3	Aviation female plug (straighter) with 2m cable, M12*1(5 pins), IP67	
		/J4	Aviation female plug (straighter) without cable, M12*1(4 pins), IP67	
		/J5	Aviation female plug (elbow) without cable, M12*1(4 pins), IP67	
		/J6	Aviation female plug (straighter) without cable, M12*1(5 pins), IP67	
		/J7	Aviation female plug (elbow) with 2m cable, M12*1(5 pins), IP67	
		/J8	Aviation female plug (elbow) without cable, M12*1(5 pins), IP67	*

Ordering information chapter

	Process connection accessory	/G1	1.5" Tri-clamp	*
		/G2	2" Tri-clamp	
		/M1	1.5" seal gasket, silicon rubber, temperature range: -60-200℃(Approved by FDA)	*
		/M2	2" seal gasket, silicon rubber, temperature range: -60-200℃(Approved by FDA)	
		/Z3	Welding adapter for 1-1/2" tri-clamp (Accord with regulation 74-06 of 3A certificate)	*
		/Z4	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)	/F3	CE certificate (Please consult engineers for details)	
		/H1	3-A certificate (Please consult engineers for details)	*
	Wetted parts treatment	/G1	Degrease treatment	
		/G2	Electropolishing	
Note1: The process connections accord with regulation 74-06 of 3A hygienic certificate				

Factory settings and parameters

Item	Menu mark	Factory setting value
Tag position	None	None
Analog output type	None	4-20mA
Display mode	DisMod	Pressure & Unit
Alarm URV	AOLC	3.800mA
Alarm LRV	AOHC	23.000mA

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
Scope of certification	Design and production of pressure transmitter
Registration number	110804039

CE

Certificate organization	ISET
License scope	PS series electronic pressure switch
Mark	CE
EMC instruction	2014/30/EU
Standard	EN61326-1: 2013
Registration number	IT011353LG161207

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LEEG SENSING TOMORROW

Shanghai LEEG Instruments Co.,Ltd

ADD: No.100 Duhui Road, Minhang District, Shanghai China
Postcode:201109
Tel: (86) 21-31261976
Fax: (86) 21-31261975
E-mail:sales@leegsensor.com info@leegsensor.com
Web: www.leegsensor.com