Product introduction

Description

Industrial pressure transmitter

The new microprocessor and surface mount technology transmission module which collect and process the signal of pressure sensor and amend the measurement error through built-in temperature sensor, fully improved the performance of pressure transmitter.
The new external three-button menufunction designs make it easier to operate the parameter settings and safer to operate in dangerous situations.The HART manual controller or the HART software can realize measurement information configuration remotely.

LB310

Main parameters

Pressure types	Gauge pressure
Measuring range	5kPa-100MPa, please refer to the ordering information chapter
Output signal	4-20mA,4-20mA+HART,customer
Reference accuracy	±0.2% URL, ±0.5% URL

Field of application

Pressure, level

Approvals

CE

Measuring medium

Liquid, gas, or steam flow as well as liquid level, density and pressure

Technical Specifications

Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit (LRL)	Upper range limit (URL)	Overload limit
7kPa	5kPa	-7kPa	7kPa	10.5kPa
20kPa	10kPa	-20kPa	20kPa	30kPa
35kPa	20kPa	-35kPa	35kPa	52.5kPa
100kPa	35kPa	-100kPa	100kPa	150kPa
200kPa	100kPa	-100kPa	200kPa	300kPa
700kPa	200kPa	-100kPa	700kPa	1050kPa
1MPa	500kPa	-0.1MPa	1MPa	1.5MPa
1.7MPa	1MPa	-0.1MPa	1.7MPa	2.55MPa
3.5MPa	1.7MPa	-0.1MPa	3.5MPa	5.25MPa
7MPa	3.5MPa	-0.1MPa	7MPa	10.5MPa
17MPa	7MPa	-0.1MPa	17MPa	25.5MPa
35MPa	17MPa	-0.1MPa	35MPa	52.5MPa
40MPa	20MPa	-0.1MPa	40MPa	60MPa
60MPa	30MPa	-0.1MPa	60MPa	90MPa
70MPa	35MPa	-0.1MPa	70MPa	105MPa
100MPa	50MPa	-0.1MPa	100MPa	150MPa

The unit of the measuring range above can be converted into kg/cm²、 MPa and kPa, etc. 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, smallest calibratable span≤| URV - LRV |≤URL

Reference accuracy

Standard and reference conditions, including linearity(BFSL), hysteresis and repeatability. calibration temperature: 20 ℃ ± 5 ℃

Linear output accuracy	Typical	±0.2%URL	Nominal value : 7kPa 、20kPa、35kPa、 100kPa、 200kPa、 700kPa、 1MPa、1.7MPa、3.5MPa、7MPa、17MPa、35MPa、40MPa、60MPa、 70MPa、100MPa
	Max	±0.5% URL	

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

Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero based-calibration span, Silicon oil filling, 316L stainless steel isolated diaphragm, 4-20mA analog output.

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: ±0.1% URL/ year

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

Mounting position effects

Apply to any position. Install error less than 400Pa can be corrected by PV=0 reset.

Technical Specifications

Vibration effects

According to IEC61298-3 tests, <0.1% URL

Output signal

4-20mA two wire. Customers can choose linear output or square root output. Digital process variables superimpose on 4-20mA signal and apply to any hosts with HART protocol.

Ambient temperature effects(Typical)

Within the range - 20-80 ℃ total impact	±(0.1+0.1TD)% URL

Insulation resistance

≥ 20M Ω@, 100VDC

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
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 0.52 kg (without mounting bracket and process connection adaptor)

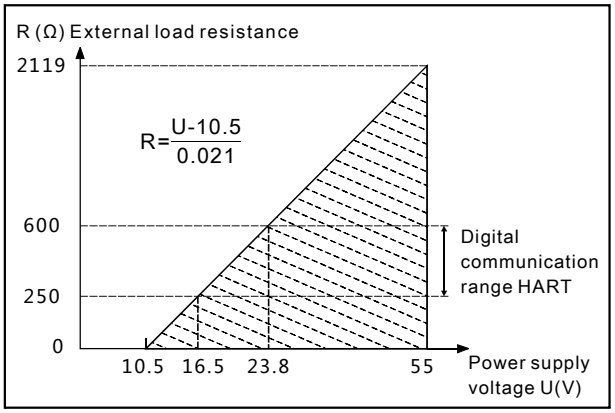
Environment condition

Items	Operational condition
Working temperature	-40-85℃, integrated LCD display: -20-70℃
Storage temperature	-40-110℃, integrated LCD display: -40-85℃
Media temperature	Silicon oil filling: -40-120℃
Working humidity	0-95%RH
Protection class	IP67
Dangerous condition	ExiaIICT6

Power supply

Item	Operating conditions
Standard/flame proof	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	CISPR22	30MHz-1000MHz	OK
2	Conducted interference (DC power port)	CISPR22	0.15MHz-30MHz	OK
3	Electrostatic discharge immunity test (ESD)	IEC61000-4-2	4kV(Contact),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field Immunity test	IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst Immunity Test	IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	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	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+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, 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

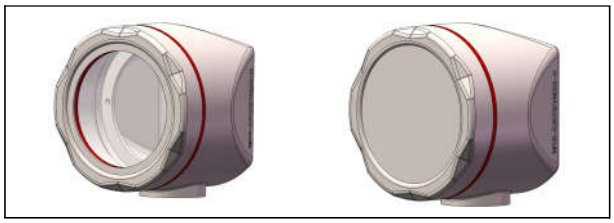
Parameter	Instruction
PV=0	Set current output to zero value, used to correct the error cased by static pressure and installation.
Zero adjustment	4mA re-range with pressure
Span adjustment	20mA re-range with pressure
Restore factory setting	Restore backup data when error

Product selection instruction

Electrical connection

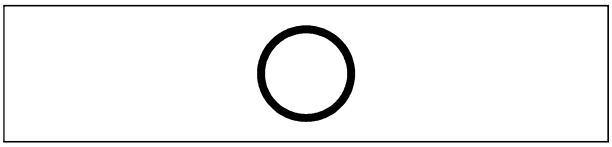
Code	Item	Description
1	Electrical connection	Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67,vertical mounting
2		Stainless steel terminal, aviation plug M12*1 (4 pin) (H2), IP67, horizontal mounting

Housing(1)



Housing(2)

Seal (S)

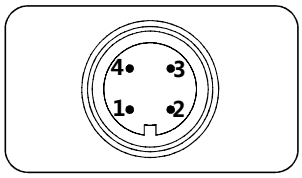


Code	Position	Description
S	Isolated diaphragm material	SUS316L
S	Isolated filling fluid	Silicon oil, process temperature: -45-205℃
S	Sensor seal	O-ring, FKM, process temperature: -20-200℃

Product selection instruction

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

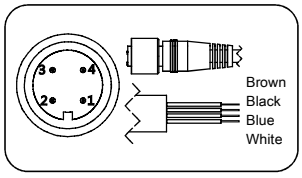
Aviation plug, M12*1, 4 pin(H2)



label	Two wires
1	Power+
2	
3	
4	Power-

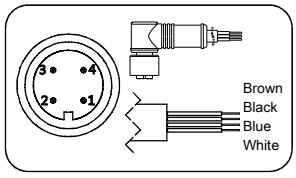
Electrical connetion accessories

Aviation plug straighter(J1)



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

Aviation plug elbow (J2)

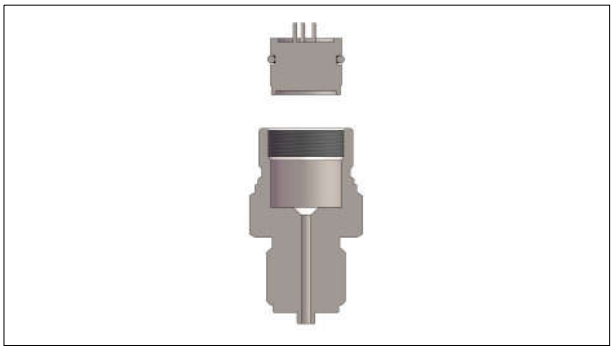


Label	Two wires
1/Brown	Power+
2/White	
3/Blue	
4/Black	Power-

Transmission module

Code	Items	Description
1	Output signal	4-20mA two wire,power supply: 10.5-55VDC
2		4-20mA+HART two wire,power supply: 16.5-55VDC
3	Display	Without display
4		With LCD display

Wetted parts

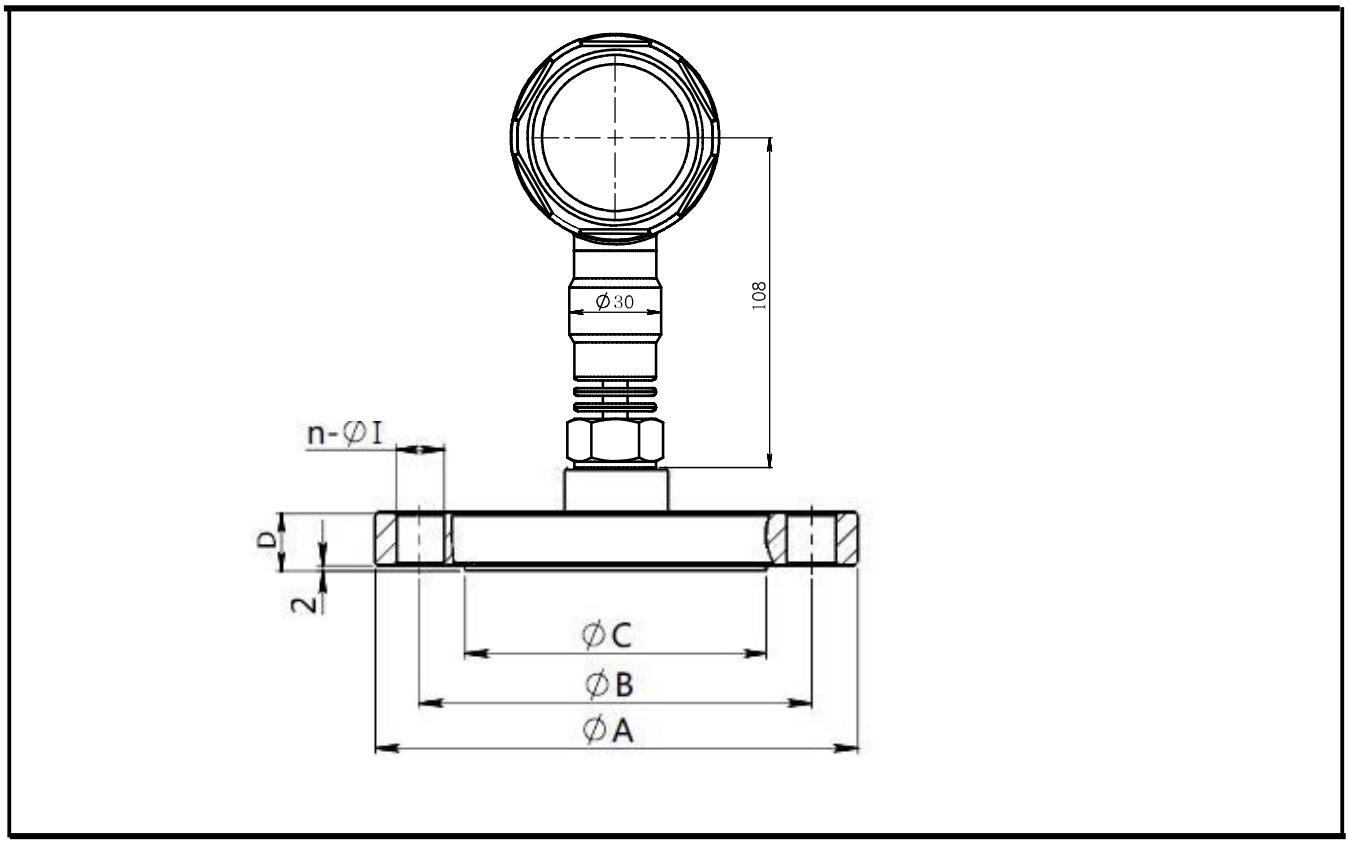


Process connection select instruction

Code	Items	Description
1	Material	Stainless steel, SUS304
2		Stainless steel, SUS316
3	Specifications	HG/T 20592-2009 DN25PN10
4		HG/T 20592-2009 DN40 PN10~PN40
5		HG/T 20592-2009 DN50 PN10~PN40

Product drawing and dimension

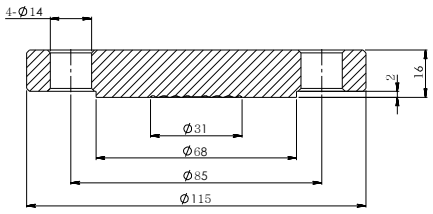
Drawing and dimension with display/without display (horizontal mounting) (unit:mm)



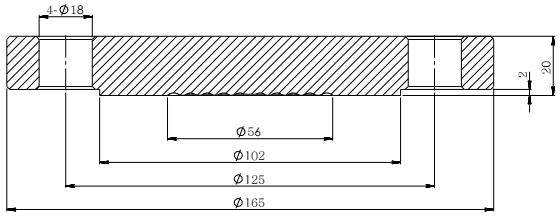
Product drawing and dimension

Process connection(F) (unit: mm)

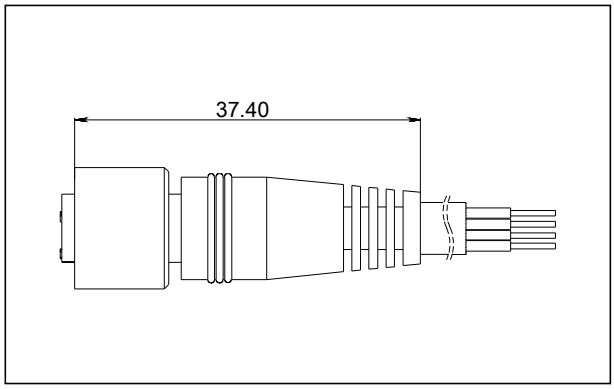
DN25PN10



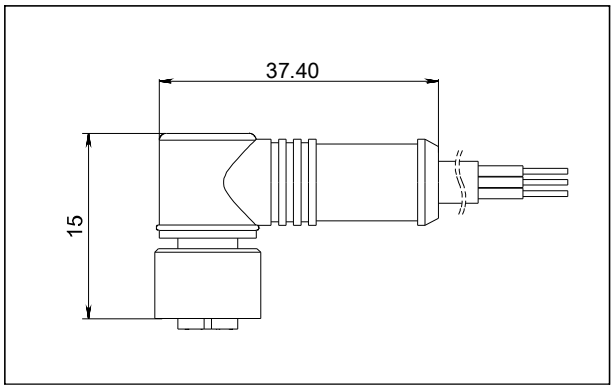
DN50PN10~PN40



Aviation female plug straighter(Z1) (unit: mm)



Aviation female plug elbow(Z2) (unit: mm)



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