

1. Description

UIB3351 series intelligent pressure transmitters are suitable for the measurement of flow, level and pressure (differential pressure, gauge pressure and absolute pressure), this product has strong adaptability and high reliability, and also has good anti-interference ability and zero stability. Its accuracy reaches 0.1%FS. 3351 can be made with HART Protocol communication, can be communicated with many hand-held communicator like HK-375 & Rosemount 275 etc.

UIB3351 intelligent pressure transmitter is composed of pressure sensor and PCB. The pressure sensor includes sensing element, EEPROM and other parts; PCB includes micro processor, digital/analogue converter, digital communication and memory EEPROM etc, to complete the conversion from pressure signal to 4~20mA DC signal.

UIB3351 series intelligent pressure transmitter includes 8 types:

- UIB3351DP differential pressure transmitter
- UIB3351HDP high system differential pressure transmitter
- UIB3351GP gauge pressure transmitter
- UIB3351AP absolute pressure transmitter
- UIB3351DP flow transmitter
- UIB3351LT level transmitter
- UIB3351GP remote pressure transmitter
- UIB3351DP remote differential pressure transmitter



2. Features

- adopting microprocessor to improve its flexibility and functions
- have strong self-diagnostic capability
- wide ranges from 0~100Pa to 42MPa
- accuracy better than 0.1%FS or 0.2%FS, rangeability 15:1
- Zero and span adjustment without mutual influence
- have perfect remote setting, local setting as well as adjustment function
- 2-wire system, Hart Protocol
- use digital compensation technology to compensate for temperature and system pressure error
- good stability, high accuracy, adjustable damping, strong unidirectional overload capacity
- no mechanical transmission parts, little repair work, strong vibration resistance
- all general parts, convenient maintenance
- optional of diaphragm material (contact medium), explosion-proof
- super performance and reliability



UIB3351 Metal Capacitive Pressure/Differential Pressure Transmitters

3. Specifications

Application: measurement of gas, liquid or steam.

Pressure range: 0~0.1kPa...40MPa

Accuracy: 0.1%FS,0.2%FS

Output: 2-wire 4~20mA, and superimposes digital process variable signal which conforms to HART Protocol

Rangeability: 15:1

Power supply: 12~45V DC, standard 24VDC

Load resistance: the max. allowed load resistance on circuit is determined by power supply;
for HART, $250\Omega \leq \text{load resistance} \leq 1100\Omega$

Indicator: 0~100 linear meter or digital indicator

Stability: not exceed the basic error absolute value of the max. range within 12 months

Temperature effect: $< 0.03\%FS/10^\circ C$ for GP DP transmitter

System pressure effect: 0.25%FS/10MPa for DP type(can be revised in pipeline pressure) ;
0.2%FS/32MPa for HP type,(can be revised in pipeline pressure)

Power supply effect: NA

EMI / RFI interference effect: 20~1000MHz, output drift less than 0.01%FS if field intensity reach 30V/m

Influence of vibration: in arbitrary axis, 0.05%FS/g @ 100HZ

Mounting position effect: max. 0.24kPa. When liquid membrane is mounted horizontally, zero drift at most 1.25kPa. Zero drift can be modified and without any influence for range.

Influence of load: in the power supply range, no load effect

Temperature range: 1. ambient temperature: $-40 \sim +85^\circ C$, $-20^\circ C \sim +65$ (for indicator)
2. medium temperature range: $-40 \sim +120^\circ C$
3. storage temperature range: $-40 \sim +105^\circ C$

Relative humidity: 0~100%RH

Weight: 3.5kg (standard configuration without mounting kits,height: 190mm)
electrical connection: M20x1.5 or NPT1/2

Process Connection: 1. 1/4NPT Female
2. connector

Diaphragm material: 316L, hastelloy-C276, or monel

Vent/drain value: 316L, hastello-C276, or monel

O-ring materials: nitrile rubber, fluorine rubber, Teflon, metal sealing ring

Electronic shell and coating: low copper alloy, anodic oxidation, spraying polyurethane

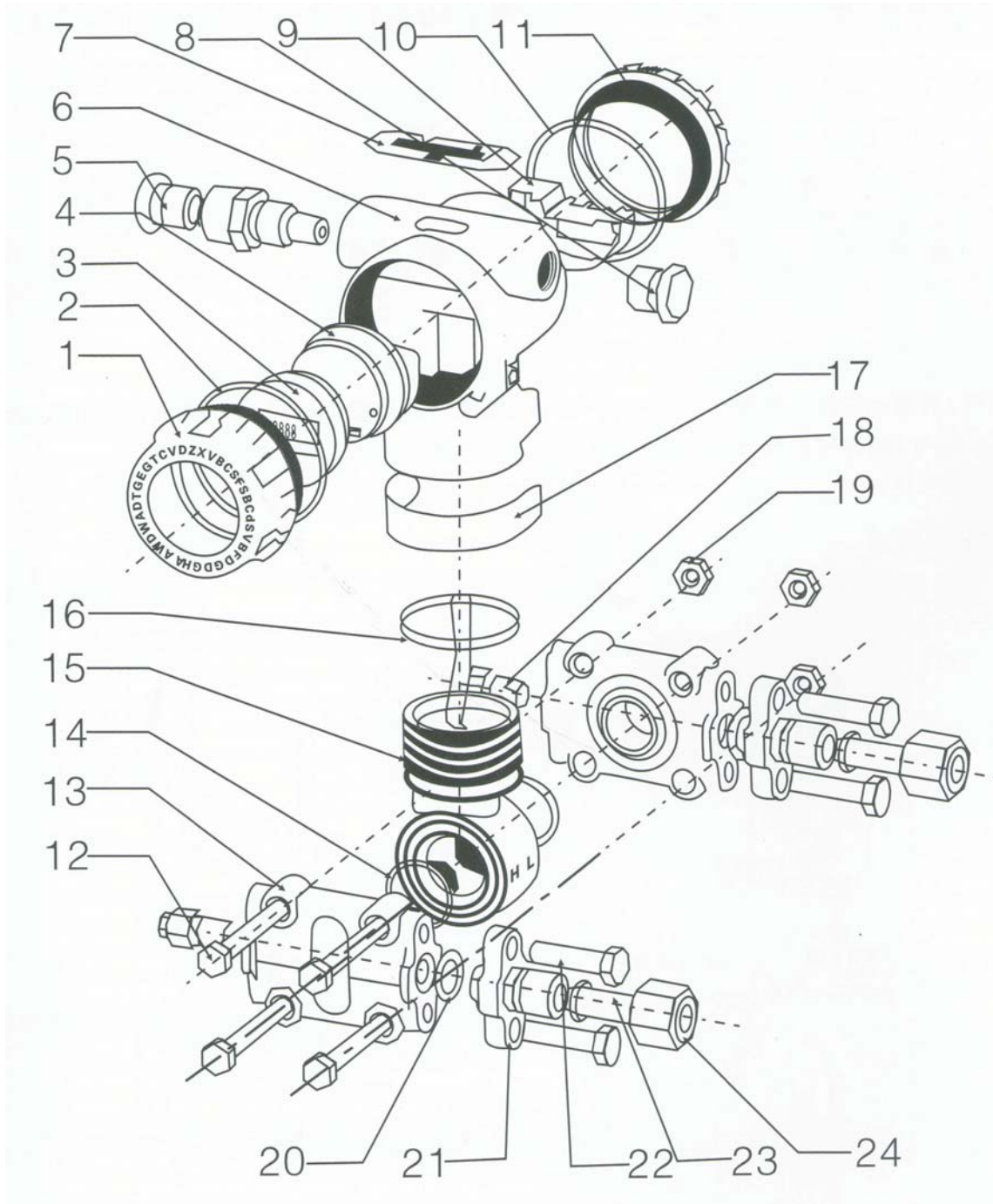
Sensor filling liquid: silicone, fluorosilicone oil

Meter cover and display box: 10mm toughened glass, nitrile rubber seal

Protection: IP67

Explosion-proof: intrinsic safety: Exia II Ct6;
flame proof: Exd II CT6

4. Exploded View



- | | | | |
|-------------------------------|------------------------------|-------------------------|------------------------|
| 1. front cover | 2. front cover O-ring | 3. display head | 4. electronics board |
| 5. electrical connection plug | 6. electronics housing | 7. name plate 1 | 8. sealing plug |
| 9. terminal | 10. back cover O-ring | 11. back cover | 12. bolts |
| 13. flange block | 14. diaphragm capsule O-ring | 15. diaphragm capsule | 16. sensor head O-ring |
| 17. name plate 2 | 18. drain/vent valve | 19. nut | 20. process O-ring |
| 21. T type connector base | 22. bolts | 23. welded process pipe | 24. locking nut |

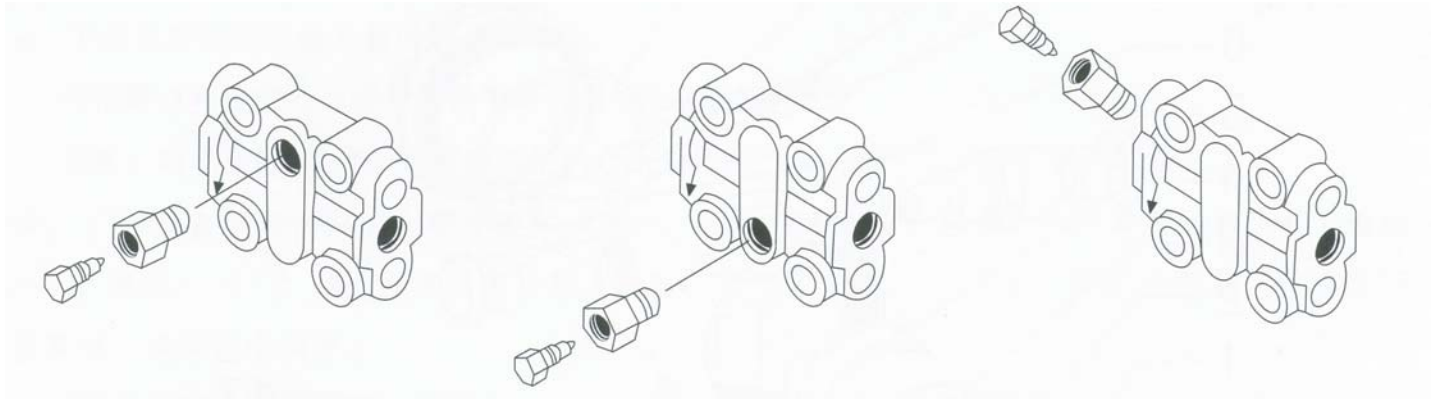


UIB3351 Metal Capacitive Pressure/Differential Pressure Transmitters

Drain/Vent Valve Location

Ordering code D1: drain/vent valve is located on side top of flange. For liquid process application, if the transmitter is installed vertically, the top valve is used to exhaust the gas in the liquid..

Order code D2: drain/vent valve is located on side bottom of flange. For gas process application, if the transmitter is installed vertically, the top valve is used to exhaust the liquid in gas.



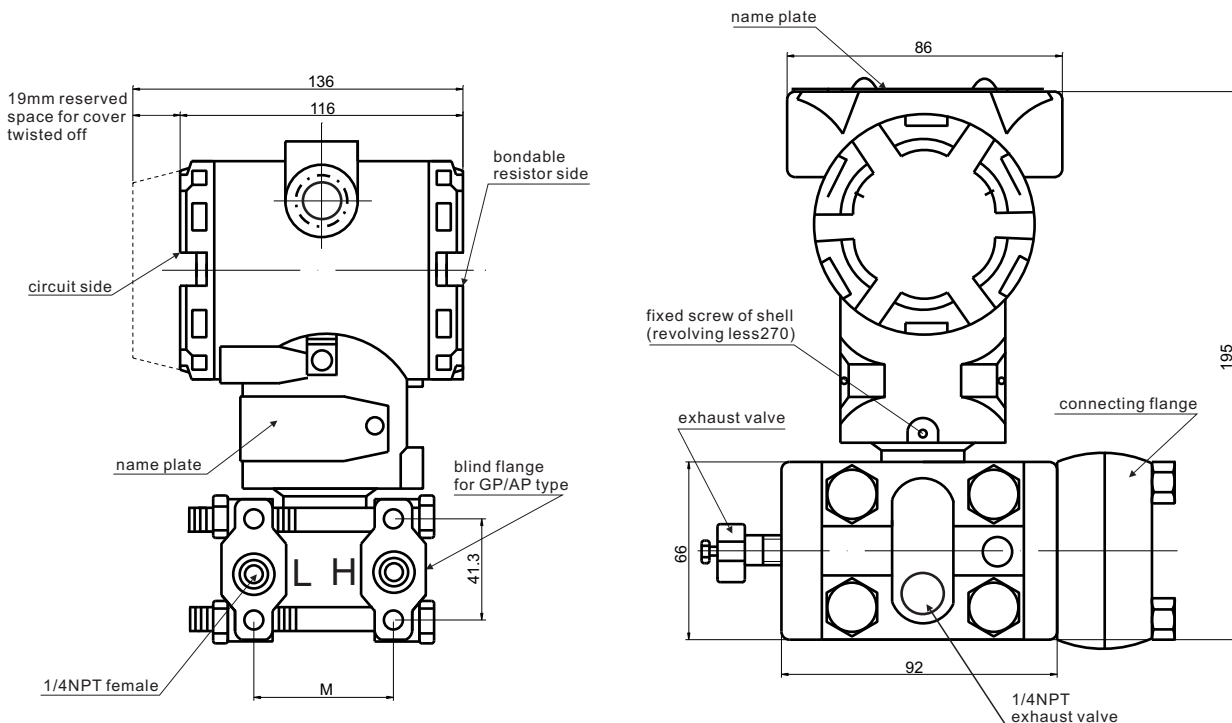
D1: drain/vent valve on top of flange

D2: drain/vent valve on bottom of flange

D0: drain/vent valve on back of flange

Note: if there is no remark when ordering, we will supply D0.

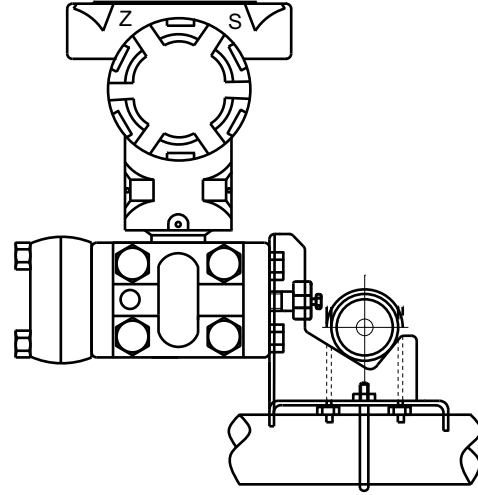
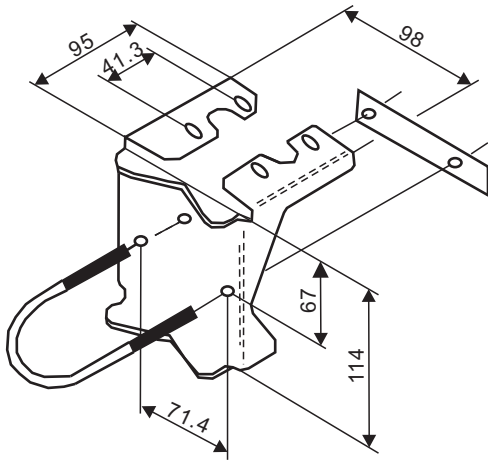
5. Dimensions



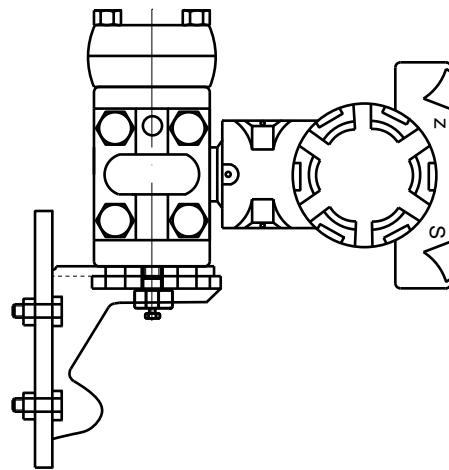
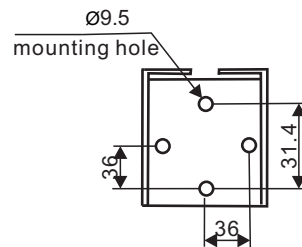
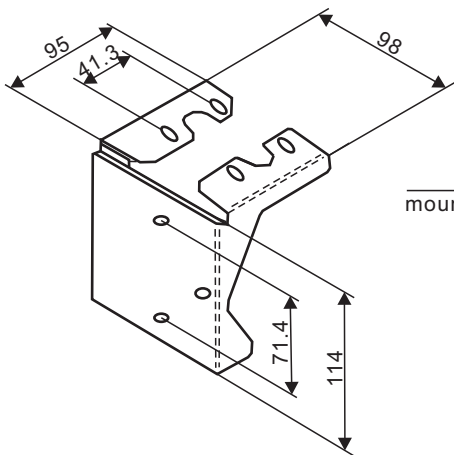
range code	2,3,4,5	6	7	8	9
M(mm)	54	55.4	55.8	57.4	58.5

6. Mounting methods

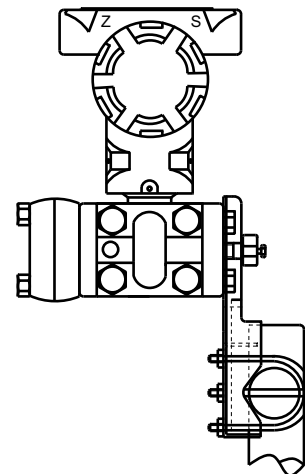
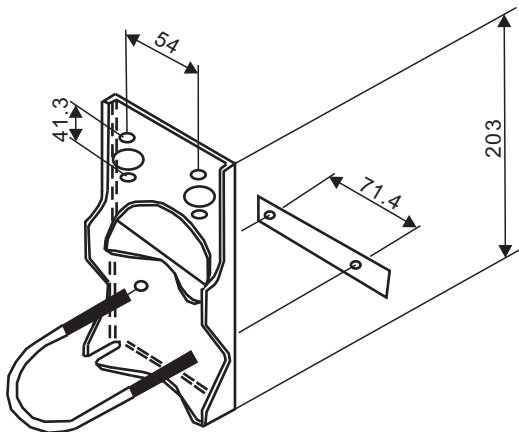
Mounting bracket dimensions and methods, with the help of different structure mounting bracket, the transmitter is independently installed in the measuring object, suitable for DP, GP and AP type.



a. pipe mounting kit B1



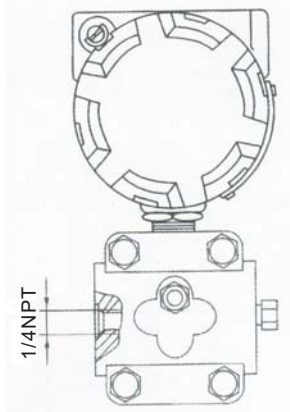
b. panel mounting kit B2



c. pipe flat mount kit B3

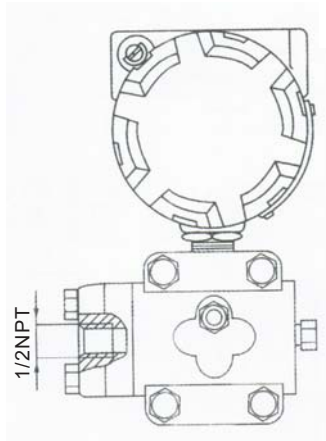
7. Process connection

Pressure Chamber Screw Hole Connection



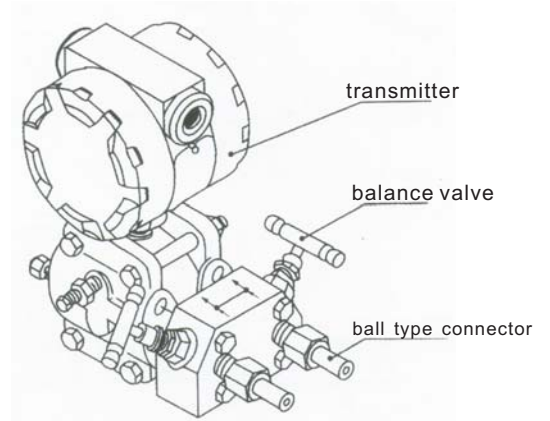
a. GP

Adaptor Screw Hole Connection



b. GP/DP

install balance valve connection



c. DP

Note: 1. in pressure measurement, from pressure point to the leaded out pressure signal, the pressure pass through shut off valve and connector, then connect with the transmitter.

2. in low system pressure, differential pressure measurement, can be connected as pressure measurement method; in high system pressure measurement, differential pressure signal should go through balance valve (generally three valve manifold) firstly, and then connect with transmitter. The aim of balance valve is: there is no one-way overload pressure during the transmitter's working process, (in order to get stable differential pressure signal), and it will be convenient to cut the differential pressure signal and remove the transmitter in maintenance.

Pressure Connection Method



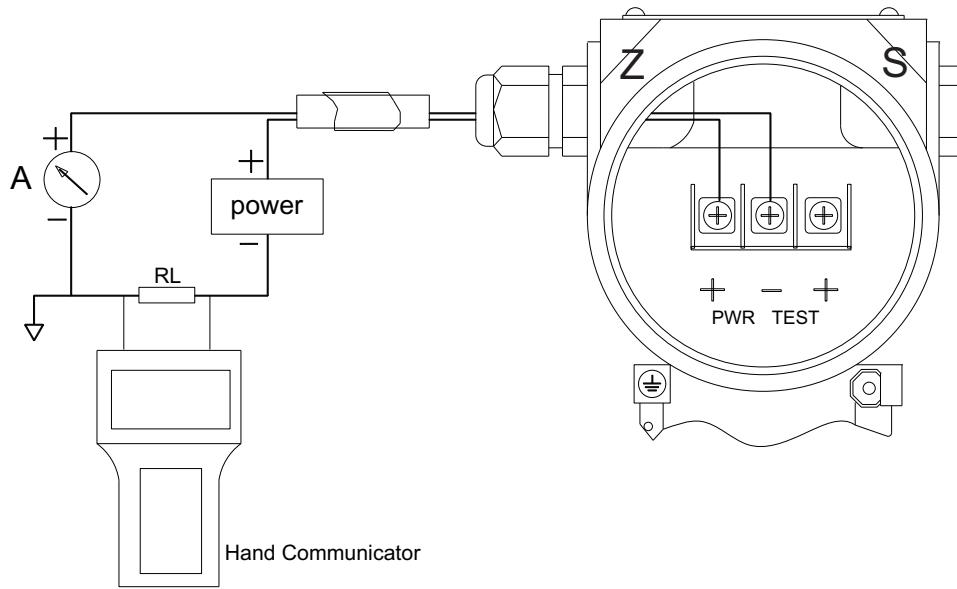
C0: 1/2NPT female connector

C1: 1/2NPT connector with welded pressure pipe

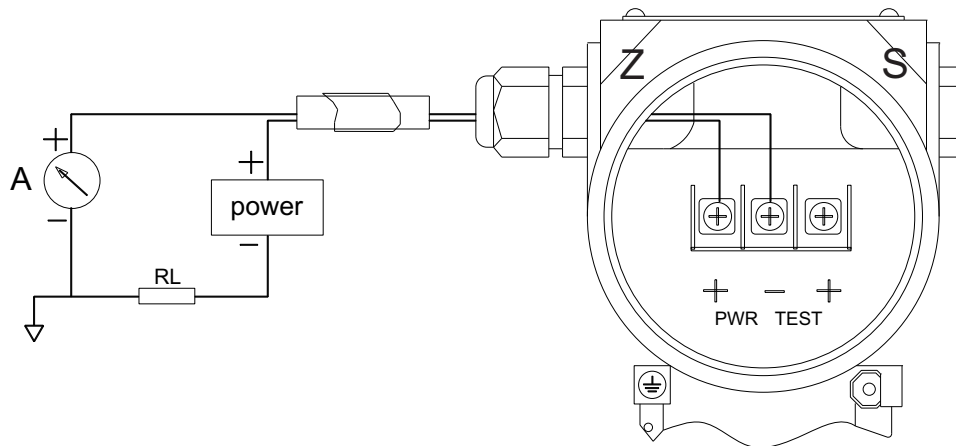
C2: M20x1.5 "T" type connector

Note: if there is no remark when ordering, the transmitter will be supplied with 1/2NPT connector (C0)

8. Electrical connection

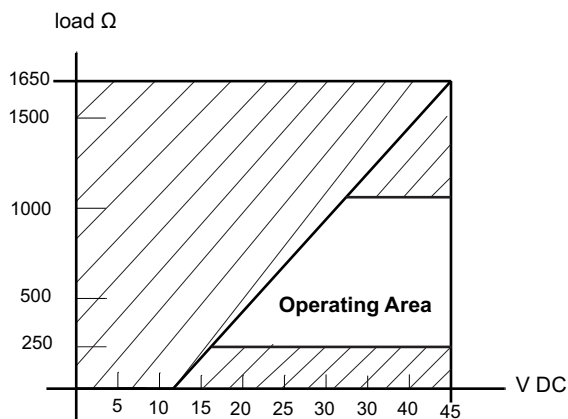


smart 4~20mA output with HART protocol



analogue 4~20mA output

Loading characteristics





UIB3351 Metal Capacitive Pressure/Differential Pressure Transmitters

9. Classification Table of Transmitter Types

S/N	Name	Model	Range	Line pressure (MPa)	Accuracy	
1	Differential Pressure Transmitter	UIB3351DP 2	0~0.15...1kPa	1	0.2 or 0.5	
2		UIB3351DP 3	0~0.4...6kPa	4		
3		UIB3351DP 4	0~2.67...40kPa	10	0.1 or 0.2	
4		UIB3351DP 5	0~16.7...250kPa			
5		UIB3351DP 6	0~66.7kPa...1MPa			
6		UIB3351DP 7	0~0.167...2.5MPa			
7		UIB3351DP 8	0~0.667...10MPa			
8	High System Pressure Differential Pressure Transmitter	UIB3351HDP 4	0~2.67...40kPa	25 or 32		0.1 or 0.2
9		UIB3351HDP 5	0~16.7...250kPa			
10		UIB3351HDP 6	0~66.7kPa...1MPa			
11		UIB3351HDP 7	0~0.167...2.5MPa			
12	Pressure Transmitter	UIB3351GP 3	0~0.4...6kPa		0.1 or 0.2	
13		UIB3351GP 4	0~2.67...40kPa			
14		UIB3351GP 5	0~16.7...250kPa			
15		UIB3351GP 6	0~66.7kPa...1MPa			
16		UIB3351GP 7	0~0.167...2.5MPa			
17		UIB3351GP 8	0~0.667...10MPa			
18		UIB3351GP 9	0~1.67...25MPa			
19		UIB3351GP 10	0~2.67...40MPa			
20	Absolute Pressure Transmitter	UIB3351AP 4	0~2.67...40kPa		0.1 or 0.2	
21		UIB3351AP 5	0~16.7...250kPa			
22		UIB3351AP 6	0~66.7kPa...1MPa			
23		UIB3351AP 7	0~0.167...2.5MPa			
24		UIB3351AP 8	0~0.667...10MPa			
25	Flange Level Transmitter	UIB3351LT 4	0~2.67...40kPa	2.5MPa	0.1 , 0.2 or 0.5	
26		UIB3351LT 5	0~16.7...250kPa			
27		UIB3351LT 6	0~66.7kPa...1MPa			
28		UIB3351LT 7	0~0.167...2.5MPa			
29	Remote Pressure Transmitter	UIB3351GP 4	0~2.67...40kPa		0.2 or 0.5	
30		UIB3351GP 5	0~16.7...250kPa			
31		UIB3351GP 6	0~66.7kPa...1MPa			
32		UIB3351GP 7	0~0.167...2.5MPa			
33		UIB3351GP 8	0~0.667...10MPa			
34	Remote Differential Pressure Transmitter	UIB3351DP 3	0~0.4...6kPa	2.5MPa	0.2 or 0.5	
35		UIB3351DP 4	0~2.67...40kPa			
36		UIB3351DP 5	0~16.7...250kPa			
37		UIB3351DP 6	0~66.7kPa...1MPa			
38		UIB3351DP 7	0~0.167...2.5MPa			

Description

UIB3351DP Differential pressure transmitter is made by using differential metal capacitive sensor as Sensitive element, it is widely used for measurement of gas liquid or vapor pressure, differential pressure, liquid level and density.



Ordering code

UIB3351DP	
code	pressure range & type
3	0~0.4...6kPa
4	0~2.67...40kPa
5	0~16.7~250kPa
6	0~66.7...1000kPa
7	0~167kPa...2500kPa
8	0~667kPa...10000kPa
code	output
E	4~20mA analogue output
S	4~20mA with HART
code	output
B	0.1%FS
C	0.2%FS
code	materials: flange, exhaust vlave, diaphragm
12	nickle plated carbon steel , 316, 316L
22	316,316,316L
23	316,316,Hastelloy-C
24	316,316,Monel
25	316,316,Tantalum
33	Hastelloy-C, Hastelloy-C, Hastelloy-C
35	Hastelloy-C, Hastelloy-C, Tantalum
44	Tantalum, Tantalum, Tantalum
code	system pressure
4	4MPa
10	10MPa
code	other functions(pleaaccording to specific application)
M1	0~100% scale meter
M3	3 1/2LCD digital meter
B1	2" pipe mounting kit
B2	panel mounting kit
B3	2" pipe flat mounting kit
D1	side exhaust valve on top
D2	side exhaust valve on bottom
C1	1/2NPT (the connector is welded 14mm pipe)
C2	M20x1.5 (T shape connector)
E1	flame proof Exd II CT6
E2	intrinsic safety Exia II CT6
UIB3351DP	4 S C 22 4 M3B1D1E1



UIB3351HDP High System Differential Pressure Transmitters

Description

3351HDP high system pressure differential pressure transmitter can work for different pressure measurement under 32MPa line pressure, with 32MPa high work pressure and overload pressure protection, the transmitter is assured its reliable application in high line pressure system.

3351 HDP is used in petrochemical system and power station for differential pressure measurement, and can withstand one-way overload pressure without damage to itself.



Ordering code

UIB3351HDP	
code	pressure range & type
4	0~2.67...40kPa
5	0~16.7~250kPa
6	0~66.7...1000kPa
7	0~167kPa...2500kPa
code	output
E	4~20mA analogue output
S	4~20mA with HART
code	output
B	0.1%FS
C	0.2%FS
code	materials: flange, exhaust vlave, diaphragm
12	nickle plated carbon steel , 316, 316L
22	316,316,316L
23	316,316,Hastelloy-C
24	316,316,Monel
25	316,316,Tantalum
33	Hastelloy-C, Hastelloy-C, Hastelloy-C
35	Hastelloy-C, Hastelloy-C, Tantalum
44	Tantalum, Tantalum, Tantalum
code	system pressure
25	25MPa
32	32MPa
code	other functions(according to specific application)
M1	0~100% scale meter
M3	31/2LCD digital meter
B1	2" pipe mounting kit
B2	panel mounting kit
B3	2" pipe flat mounting kit
D1	side exhaust valve on top
D2	side exhaust valve on bottom
C1	1/2NPT (the connector is welded 14mm pipe)
C2	M20x1. 5 (T shape connector)
E1	flame proof Exd II CT6
E2	intrinsic safety Exia II CT6
UIB3351HDP	4 E C 22 32 M3B1D1E1

Description

UIB3351DP flow transmitter is specialized to accept differential pressure signal from the throttling element, and the signal will be converted to 4~20mA standard output, which is proportional to the flow, through the electronic circuit board with the square root function.

UIB3351DP is used for homogeneous fluid medium in pipeline, or the air flow volume / mass flow measurement.



Ordering code

UIB3351DP	
code	pressure range & type
3	0~0.4...6kPa
4	0~2.67...40kPa
5	0~16.7~250kPa
code	output
E	4~20mA analogue output
S	4~20mA with HART
code	output
B	0.1%FS
C	0.2%FS
code	materials: flange, exhaust valve, diaphragm
12	nickle plated carbon steel , 316, 316L
22	316,316,316L
23	316,316,Hastelloy-C
24	316,316,Monel
25	316,316,Tantalum
33	Hastelloy-C, Hastelloy-C, Hastelloy-C
35	Hastelloy-C, Hastelloy-C, Tantalum
44	Tantalum, Tantalum, Tantalum
code	system pressure
4	4MPa
10	10MPa
code	other functions(according to specific application)
M1	0~100% scale meter
M3	31/2LCD digital meter
B1	2" pipe mounting kit
B2	panel mounting kit
B3	2" pipe flat mounting kit
D1	side exhaust valve on top
D2	side exhaust valve on bottom
C1	1/2NPT (the connector is welded 14mm pipe)
C2	M20x1.5 (T shape connector)
E1	flame proof Exd II CT6
E2	intrinsic safety Exia II CT6
3351HDP	4 E C 22 4 M3B1D1E1

Description

UIB3351GP is capacitive pressure transmitter, it has smart type and analogue type, can measure low pressure till 0.4kPa, and can transfer to a negative pressure transmitter.

It is mainly used for gauge or negative pressure measurement of uniform fluid in pipeline, or for level measurement in open container liquid.



Ordering code

UIB3351GP	
code	pressure range & type
3	0~0.4...6kPa
4	0~2.67...40kPa
5	0~16.7~250kPa
6	0~66.7...1000kPa
7	0~167kPa...2500kPa
8	0~667kPa...10000kPa
9	0~1670...25000kPa
0	0~2670...40000kPa
code	output
E	4~20mA analouge output
S	4~20mA with HART
code	output
B	0.1%FS
C	0.2%FS
code	materials: flange, exhaust vlave, diaphragm
12	nickle plated carbon steel , 316, 316L
22	316,316,316L
23	316,316,Hastelloy-C
24	316,316,Monel
25	316,316,Tantalum
33	Hastelloy-C, Hastelloy-C, Hastelloy-C
35	Hastelloy-C, Hastelloy-C, Tantalum
44	Tantalum, Tantalum, Tantalum
code	other functions(according to specific application)
M1	0~100% scale meter
M3	31/2LCD5 digit digital meter
B1	2" pipe mounting kit
B2	panel mounting kit
B3	2" pipe flat mounting kit
D1	side exhaust valve on top
D2	side exhaust valve on bottom
C1	1/2NPT (the connector is welded 14mm pipe)
C2	M20x1.5 (T shape connector)
E1	flame proof Exd II CT6
E2	intrinsic safety Exia II CT6
UIB3351GP	4 E C 12 M3B2

*: Please indicate required pressure range when ordering. If not, the product will be set the max. range when leaving our factory.

Description

3351AP is absolute pressure transmitter, its chamber's one side receives the measured absolute pressure signal, the other side is closed into a high vacuum reference room .

It is used for absolute measurement in gas removal system, distillation, evaporation tower and a crystallizer, it allows overload pressure within 10MPa.



Ordering code

3351AP	
code	pressure range & type
4	0~2.67...40kPa
5	0~16.7~250kPa
6	0~66.7...1000kPa
7	0~167kPa...2500kPa
8	0~667kPa...10000kPa
code	output
E	4~20mA analouge output
S	4~20mA with HART
code	output
B	0.1%FS
C	0.2%FS
code	materials: flange, exhaust vlave, diaphragm
12	nickle plated carbon steel , 316, 316L
22	316,316,316L
23	316,316,Hastelloy-C
24	316,316,Monel
25	316,316,Tantalum
33	Hastelloy-C, Hastelloy-C, Hastelloy-C
35	Hastelloy-C, Hastelloy-C, Tantalum
44	Tantalum, Tantalum, Tantalum
code	other functions(please select according to specific application)
M1	0~100% scale meter
M3	31/2LCD5 digit digital meter
B1	2" pipe mounting kit
B2	panel mounting kit
B3	2" pipe flat mounting kit
D1	side exhaust valve on top
D2	side exhaust valve on bottom
C1	1/2NPT (the back of the connector is welded 14mm pressure guiding pipe)
C2	M20x1. 5 (T shape connector)
E1	flame proof Exd II CT6
E2	intrinsic safety Exia II CT6
3351AP	4 S C 22 M3B1

Description

ULB3351 flange type level transmitter is one kind of scene transmitter for mounting in pipelines or vessels. Because its isolating diaphragm contacts liquid medium directly, not need pressure pipe to draw out the pressure from positive pressure side (H side), therefore ULB-3351 is suitable for level, pressure, density measurement of high temperature, macro viscosity, easy crystallized, easy precipitated media.

ULB3351 flange type level transmitter included plane type and insert type. The mounting flange has 3" and 4" according to ANSI standard. If the user has any special requirement please indicate on ordering sheet. The wetted part material of ULB3351 has SS 316L, Hastelloy-C 276, tantalum and Monel etc for options.

The ULB3351 flange type level transmitter is especially suitable for level, pressure and density measurement of special media (high temperature, macro viscosity, easy crystallized, easy precipitated, strong corrosion) in open or sealed containers.

Features

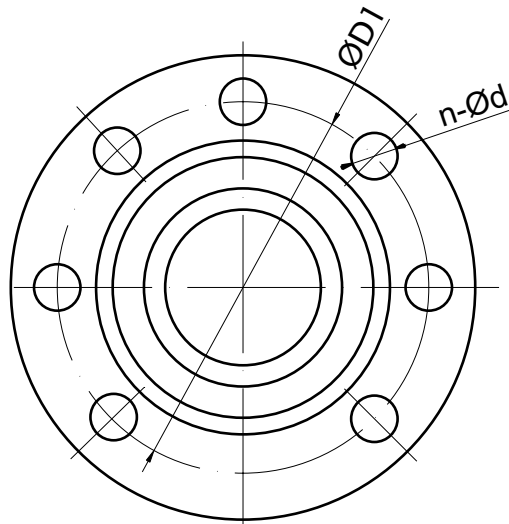
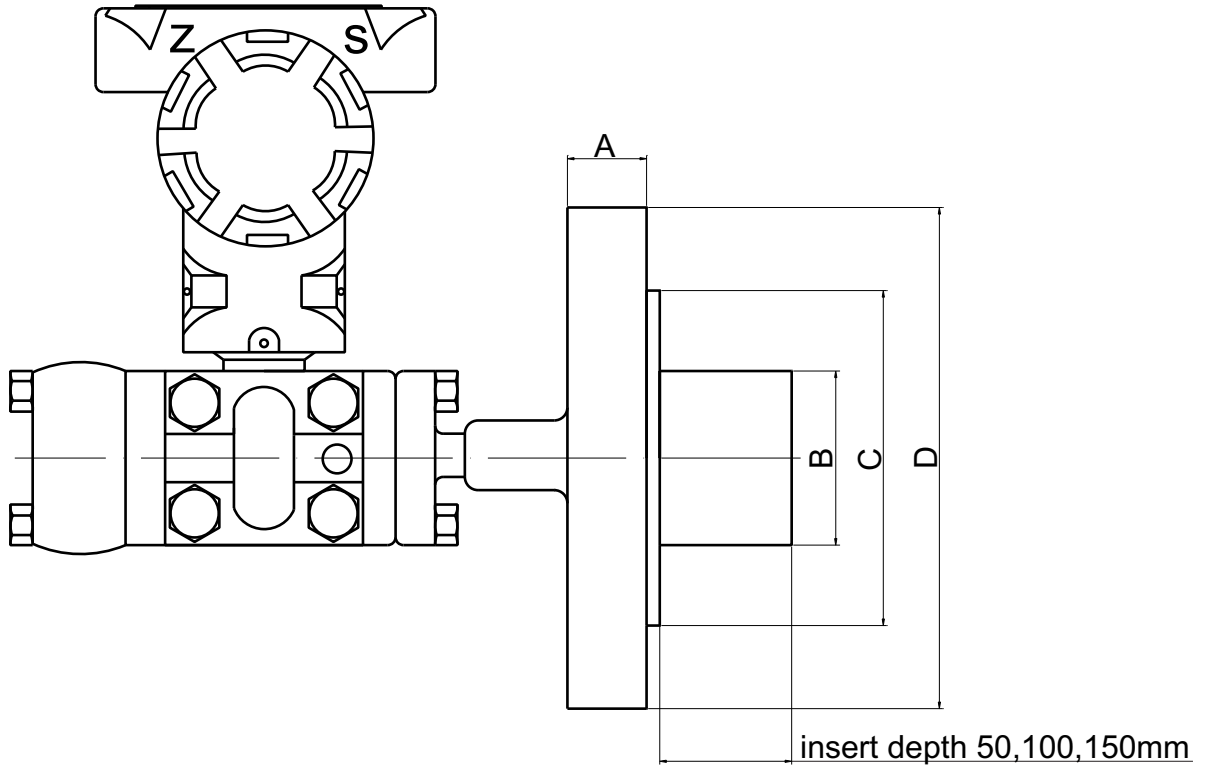
- Measuring range: 0~2.67kPa...2500kPa
- For level, pressure, density measurement of high Temperature, macroviscosity, easy crystallized, easy precipitated or strong corrosive media
- Adjustable range: 6:1 for analog type, 15:1 for intelligent type
- High accuracy, good reliability and stability
- Intrinsic safety and flame proof option.



Specifications

pressure medium	liquid compatible with stainless steel
measuring ranges	0~2.67kPa...2500kPa
output signal	4~20mA (HART optional)
accuracy	0.1%FS,0.2%FS(standard), 0.5%FS
load resistance	$R_L = (U - 12V) / 0.02A$ (4~20mA current output) U—loop voltage (V)
long-term stability	<0.1%FS/year
supply voltage	12~45VDC
storage temperature range	-40~+105°C
operating temperature range	-40~+85°C
measured media temperature range	-40~+200°C
temperature coefficient of zero	0.1%FS/10°C
temperature coefficient of span	0.05%FS/10°C
insulation resistance	100MΩ@50VDC
process connection	3" mounting flange or others
protection	IP67
explosive-proof	Exia II CT6 or Exd II CT6
material of pressure membrane	316L stainless steel
oil-filled	silicone oil or fluorocarbon oil
housing material	low copper aluminum alloy

Dimensions



flange size						bolt hole		
dimensions	type	Diameter (D)	A	B	C	number	diameter(d)	diameter distribution (D1)
3"	150Lb	190	30	66	127	4	19	152
4"	150Lb	228	30	89	157	8	19	190
3"	300Lb	210	35	66	127	8	22	168
4"	300Lb	254	38	89	157	8	22	200



ULB3351 Flange Type Level Transmitter

Ordering code

ULB3351	
code	measuring ranges of intelligent type
4	0~2.67...40kPa
5	16.7...250kPa
6	66.7...1000kPa
7	167...2500kPa
code	output
E	4~20mA analog output
S	4~20mA with HART Protocol
code	accuracy
C	0.2%FS
D	0.5%FS
code	mounting flange & material
A	3"(80)150LB(2.0MPa) zinc plated carton steel or 316L SS
B	4"(100)150LB(2.0MPa) zinc plated carton steel or 316L SS
C	3"(80)300LB(5.0MPa) zinc plated carton steel or 316L SS
D	4"(100)300LB(5.0MPa) zinc plated carton steel or 316L SS
T	as customer's specific request
code	materials: flange, exhaust vlave, diaphragm
12	nickle plated carbon steel , 316, 316L
15	nickle plated carbon steel,316,Tantalum
22	316,316,316L
23	316,316,Hastelloy-C
24	316,316,Monel
25	316,316,Tantalum
33	Hastelloy-C, Hastelloy-C, Hastelloy-C
35	Hastelloy-C, Hastelloy-C, Tantalum
code	oil-filled
S	Dc200# series silicone oil -40~149°C
H	high temperature silicone oil 15~315°C
F	fluorocarbon oil 45~205°C
code	insert depth
H0	0
H1	50mm
H2	100mm
H3	150mm
code	other functions
M0	no display meter
M1	linear display meter, 0~100%scale
M2	3-1/2LCD digital meter
D1	side exhaust valve on top
D2	side exhaust valve on bottom
E1	flame proof Exd II CT6
E2	intrinsic safety Exia II CT6
ULB3351	4 E C C 12 S H0 M1D1E1

*: Please indicate required pressure range when ordering. If not, the product will be set the max. range when leaving our factory.

Description

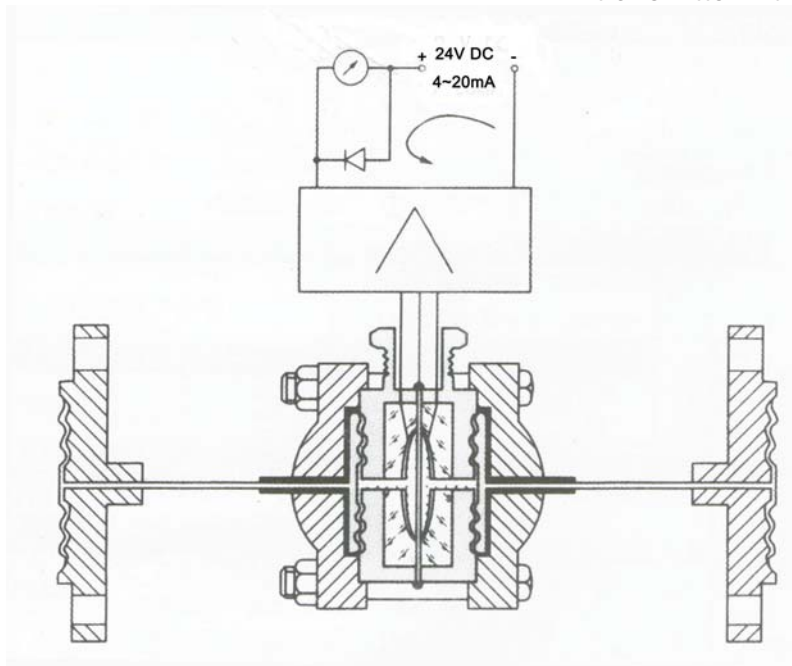
3351GP / DP remote pressure/differential pressure transmitter feels the measured pressure through the remote device which is installed in the pipeline or container. The pressure through the filling silicone oil (or other liquid) in capillary is transmitted to the isolated diaphragm of the transmitter's, realizes the process pressure measurement (see the following structure diagram).



transmitter with single remote device



transmitter with dual remote device



structure diagram

Features

- can eliminate the possibility of medium leakage from the pressure guiding pipe and cause the pollution for surrounding environment.
- improve the process measurement reliability and stability
- remote assembly is welding structure with strong reliability and low volume liquid filled cavity design, reduce the effect of temperature.
- working pressure is no less than 3.5kPa (absolute pressure)



UIB3351 Remote Pressure /Differential Pressure Transmitter

Application

Remote transmitter is mainly used for measurement of following media

- High temperature or high viscosity medium
- Easy to crystallize or solidify medium
- With solid or suspension precipitation medium
- Strong corrosive or toxic medium
- Replacement of the measured medium requires washing but without any not mixing
- Sanitary cleaning requirements are relatively high.

Ordering code

UIB3351GP/DP					
code	pressure range				
4	0~3.5...40kPa				
5	0~16.7...250kPa				
6	0~66.7...1000kPa				
7	0~167...2500kPa				
8	0~0.667...10MPa				
code	output signal				
E	4~20mA analog output				
S	4~20mA digital signal based on HART Protocol				
code	flange	isolated diaphragm			
12	carbon steel nickel plated	316LSST			
22	316 SST	316L SST			
code	remote device				
S1	1 remote device				
S2	2 remote devices				
code	other functions				
D1	linear display meter, 0~100% scale				
D2	3-1/2 digital meter%				
B1	2" pipe mounting kit				
B2	panel mounting kit				
B3	2" pipe flat mounting kit				
E1	flame proof Exd II CT6				
E2	intrinsic safety Exia II CT6				
UIB3351DP	II	A	22	S2	D2B1

Note: remote flange ordering please refer to “1199 remote device ordering and types”