

## REMOTE SEAL UNIT

### DATA SHEET

S1

Seal diaphragm assembly is used to accurately measure the liquid level of open container or pressure of pipe. It avoids the measuring element of transmitter directly contacted with measured medium. The welded structure ensures that the transmitter can work under high temperature and vacuum conditions. It's suitable for the measurement of high temperature medium, strong corrosive medium, high viscosity medium, easy crystallization medium and strong wear medium, etc.

### Features

- Structure**  
The seal diaphragm assembly connected to FCX-AIII series pressure transmitter. This connection using the full welding method, there's no gasket in the middle, if it needs remote by capillary in the middle, please ask for Wuxi Kunlun Fuji Instruments Co., Ltd. The fill fluid can be selected according to the requirements.
- Operating principle**  
The measuring pressure is transmitted to the detecting unit by seal diaphragm assembly and its internal fill fluid.
- part material**  
The materials of wetted parts(seal diaphragm and gasket) are stainless steel, tantalum, Hastelloy-C, manel, titanium, zirconium, nickel, etc. Materials of other parts (capillary, flange, seal device body, direct mounting and connecting parts) are stainless steel. The standard fill fluid is silicone oil, users can select fluorinated oil, high temperature silicone oil, vacuum and sanitary type fill fluid according to the requirements.
- The specification of seal diaphragm assembly**  
The following specifications can be selected according to the different mounting and operating conditions:  
Flat flange type: DN40 ~ DN100  
Flange extension type (with extension length): 50 ~ 200mm  
Sanitary type: meets clamping type of DIN, SMS or Tri standard  
Thread mounting type: G1<sup>1/2</sup> and G2

### Specifications

#### Functional specifications

- Seal diaphragm assembly:**  
Seal diaphragm assembly is directly fixed on the transmitter (for example: mounted at the bottom measuring level of the container)
- Temperature range:**  
Ambient temperature: -40 ~ +85°C  
Process temperature: -40 ~ +150°C, determined according to the temperature range of fill fluid. Please contact Wuxi Kunlun Fuji Instruments Co., Ltd. in advance for the high temperature occasion.
- Pressure limit:**  
Operating pressure: the operating pressure of transmitter or rated pressure of flange of seal diaphragm assembly, selecting the lower of the two above.  
Vacuum limit: determined by vacuum limit of transmitter and fill fluid, the minimum operating pressure of pressure transmitter is 2.7kPa abs.

#### Performance specifications

Comprehensive performance specification of transmitter and seal diaphragm assembly  
Accuracy: (Under reference conditions)  
After the seal diaphragm assembly is mounted on the transmitter, the accuracy is reduced by 0.1%.



Ambient temperature effect:  
·temperature compensation for transmitter

Seal diaphragm assembly	Shift (kPa/10°C)
DN50/2"(stainless steel diaphragm)	0.203
DN80/3"(stainless steel diaphragm)	0.011
DN80/3"(other material diaphragm)	0.022
DN100/4"(stainless steel diaphragm)	0.004
Adapter flange(stainless steel diaphragm)	0.011
Clamping unit 2"	0.206
SMS or DIN 11851standard (DN50 or 2")	0.285
G1 <sup>1/2</sup> "	0.516
G2"	0.203

· The effect of transmitter and seal diaphragm assembly after temperature compensation:  
For remote seal type transmitter (including transmitter and seal diaphragm assembly). Due to the increase of the temperature compensation function, the zero shift caused by the change of environment temperature is improved by about 2 to 5 times.

Process temperature effect:

Seal diaphragm assembly	Shift (kPa/10°C)
DN50/2"(stainless steel diaphragm)	0.124
DN80/3"(stainless steel diaphragm)	0.017
DN80/3"(other material diaphragm)	0.073
DN100/4"(stainless steel diaphragm)	0.008
Adapter flange(stainless steel diaphragm)	0.017
Clamping unit 2"	0.261
SMS or DIN 11851 standard (DN50 or 2")	0.422
G1 <sup>1/2</sup> "	0.142
G2"	0.124

Fill fluid in the seal diaphragm assembly:

7th digit code	Name	Operating temperature(°C)		Density (25°C)
		P abs ≥ 0.1MPa	P abs < 0.1MPa	
Y	Silicone oil	-40 ~ +150	-40 ~ +120	0.934
W	Fluorinated oil	-20 ~ +100	-20 ~ +80	1.84
F	Sanitary type fill fluid	-10 ~ +150	-10 ~ +120	0.92
V	Silicone oil	+20 ~ +200		1.09
T	Silicone oil	+20 ~ +350	+20 ~ +200	1.09

Most of the data above is the specification data of fill fluid. When there're other requirements of special fill fluid, please provide Wuxi Kunlun Fuji Instruments Co., Ltd. with related process temperature, operating pressure and vacuum condition to confirm.

Model code

Digit	Description	Note	1	2	3	4	5	6	7	←Digit No.
2	<Connection type> Flange axial connection Flange radial connection Disc type		S	A R W						
3	<RF flange (flange nominal diameter and nominal pressure)> <Flange nominal diameter and nominal pressure> <Sanitary type standard> <Attentions> ANSI 150LB 3" -ISO PN20 DN80 ANSI 150LB 4" -ISO PN20 DN100 ANSI 300LB 3" -ISO PN50 DN80 ANSI 300LB 4" -ISO PN50 DN100 DIN PN40 DN80 DIN PN16 DN100 ANSI 150LB 2" -ISO PN20 DN50 ANSI 300LB 2" -ISO PN50 DN50 DIN PN40 DN50 G2" thread connection G1 1/2" thread connection Flange adapter-PN40 DN25 Available only for the material code "V" Flange adapter-ISO PN20 DN 25(ANSI 150LB 1") Available only for the material code "V" Flange adapter-ISO PN50 DN 25(ANSI 300LB 1") Available only for the material code "V" Flange adapter-PN40 DN40 Available only for the material code "V" Flange adapter-ISO PN20 DN40(ANSI 150LB 1 1/2") Available only for the material code "V" Flange adapter-ISO PN50 DN40(ANSI 300LB 1 1/2") Available only for the material code "V" 1/2NPT thread adapter Available only for the material code "V" Welding type (2 1/2" pipe) Available only for the material code "V"	Note1 Note2 Note2 Note2 Note8 Note8 Note3 Note3 Note3 Note3 Note3 Note3 Note3 Note3 Note3				4 5 6 7 8 9 H J G K L A B C D E F S T				
4	<Seal diaphragm assembly materials> <Seal diaphragm> <Flange facing> <Flange> 316L stainless steel 316L stainless steel 316L stainless steel Hastelloy C Hastelloy C 316L stainless steel Monel Monel 316L stainless steel Tantalum Tantalum 316L stainless steel Titanium Titanium 316L stainless steel Zirconium Zirconium 316L stainless steel 316L stainless steel + gold plated 316L stainless steel 316L stainless steel 316L stainless steel + FEP lining 316L stainless steel + FEP lining 316L stainless steel	Note7 Note7 Note4					V H B T P R C F			
5	<Diaphragm extension length (flange extension)(mm)> Flat flange Optional material 50 Available for 4th digit material code "V" 100 Available for 4th digit material code "V" 150 Available for 4th digit material code "V" 200 Available for 4th digit material code "V" 50 Available for 4th digit material code "H" 100 Available for 4th digit material code "H" 150 Available for 4th digit material code "H" 200 Available for 4th digit material code "H" 50 Available for 4th digit material code "T" 100 Available for 4th digit material code "T" 150 Available for 4th digit material code "T" 200 Available for 4th digit material code "T"	Note5 Note5 Note5 Note5 Note5 Note5 Note5 Note5 Note5 Note5 Note5 Note5					Y A B C D E F G H P R S T			

Digit	Discription			Note	1	2	3	4	5	6	7	← Digit No.
6	<Mounting method >	<Capillary length(m)>	<Wrapping material of capillary>		S							
	Capillary	1.5	PVC							A		
	Capillary	3	PVC							B		
	Capillary	6	PVC							C		
	Capillary	Other	PVC							D		
	Capillary	1.5	Stainless steel	Note6						G		
	Capillary	3	Stainless steel	Note6						H		
	Capillary	6	Stainless steel	Note6						K		
	Capillary	Other	Stainless steel	Note6						L		
	Direct mounting	2th digit code"A", max. process temperature <150°C								S		
7	<The special treatment of seal diaphragm assembly and fill fluid>											
	<Treatment>	<Fill fluid>										
	None(standard)	Silicone oil									Y	
	None(standard)	Fluorinated oil									W	
	None(standard)	Sanitary type fill fluid									F	
	Chlorine service	Fluorinated oil									D	
	Degreasing	Silicone oil									G	
	Oxygen service	Fluorinated oil									A	
	NACE standard	Silicone oil									N	
	Vacuum, max. temperature 150°C	Silicone oil		Note7							V	
	High temperature (20 ~ 350°C)	Silicone oil									T	

Note1) Processing flange according to user's requirement (such as: RTJ, etc), Sepcial flangematerial can be customized as required (4th digit code: H,B,T,P,R,F).

Note2) Avaible only for the span is more than 0.1 MPa.

Note3) Available only for high range (range more than 0~0.05/0.5Mpa) --max. process temperature: 150°C, it's not available when diaphragm has extension length.

Note4) Not available for 7th digit code "V,T".

Note5) Available only for 3th digit code "4,5,6,7,8,9,H,J,G", all wetted part materials are the same(seal diaphragm, flange facing).

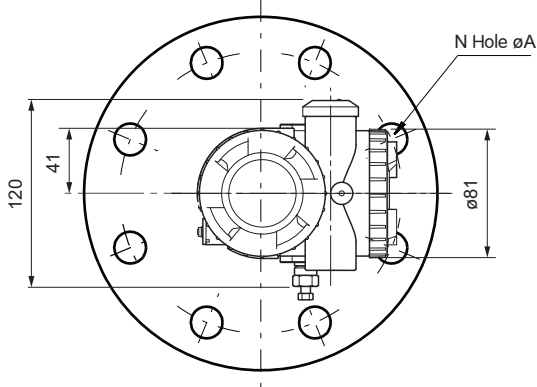
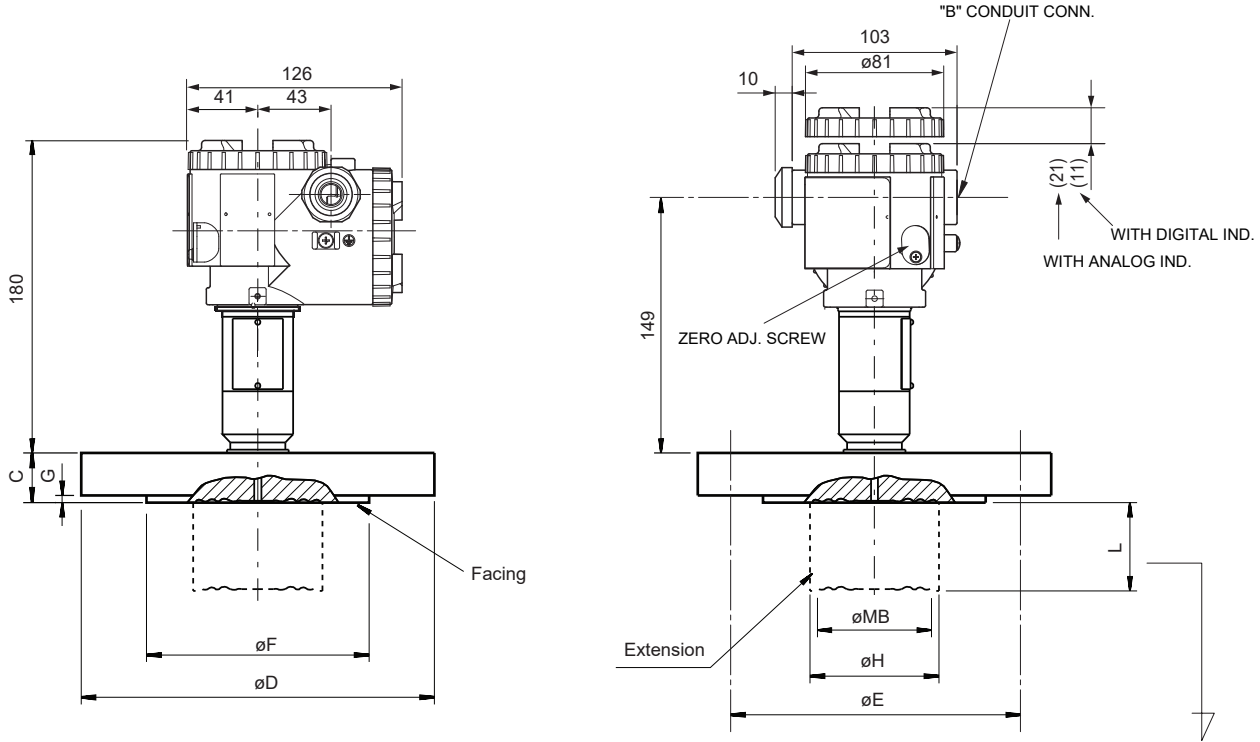
Note6) When using for vacuum and high temperature, the operating temperature is more than 120°C (Capillary inner diameter is ø2)

Note7) The max. operating remperature is 150°C.

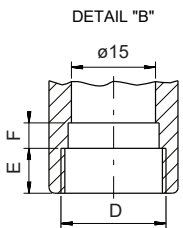
Note8) Available only for direct mounting type.

OUTLINE DIAGRAM(UNIT: mm)

<Direct connection type pressure transmitter>



Seal diaphragm		Extension L (mm)
SA□□	Y	0
	AEJP	50
	BFKR	100
	CGLS	150
	DHMT	200

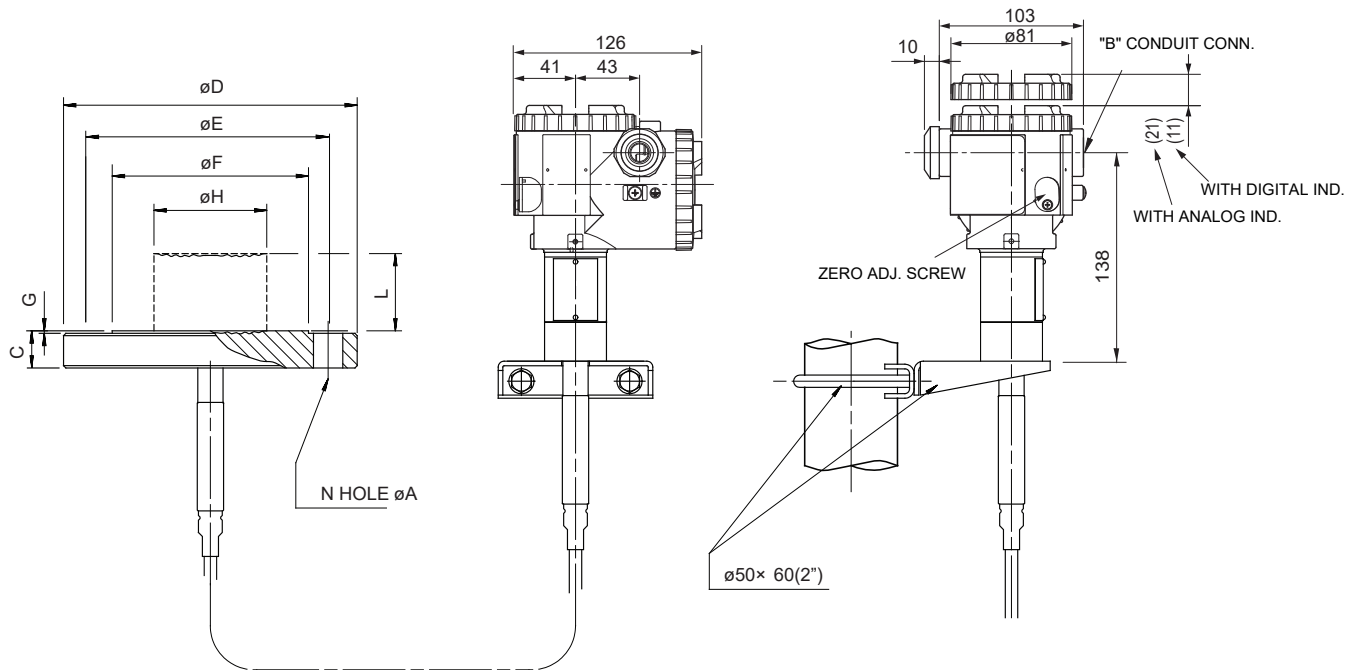


4th digit code	Conduit conn.		
	D	E	F
T	1/2-14NPT	16	5
V	Pg 13.5	8	4.5
W	M20× 1.5	16	5

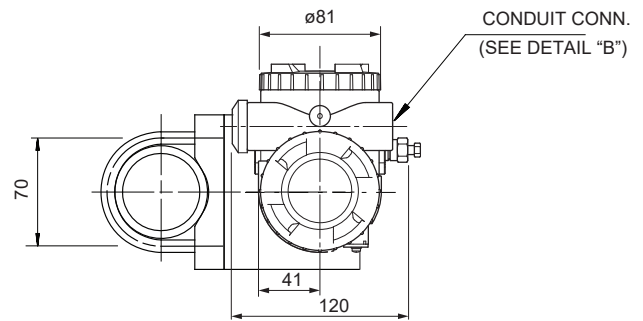
Extension and seal diaphragm size			
SA□ V C Y S□ (L=0)	SA□ V C ≠Y S□ (L>0)	SA□ H B T P R F Y S□ (L=0)	SA□ H B T P R F ≠Y S□ (L>0)
$\phi MB$	$\phi H = \phi MB$	$\phi MB$	$\phi H (\phi MB)$
73	73	89	76(72)
96	96	89	94(89)
73	73	89	76(72)
96	96	89	94(89)
73	73	89	76(72)
96	96	89	94(89)
59	48	59	48.3(47)
59	48	59	48.3(47)
59	48	59	48.3(47)

Seal diaphragm	Flange specifications										
	ISO/DIN		ANSI		C min	$\phi D$	$\phi E$	N- $\phi A$	$\phi F$	G	Gross weight(kg)
	PN	DN	NP	NW							
4	20	80	150 lbs	3"	24	190	152.4	4-19	127	1.6	5.3
	20	100	150 lbs	4"	24	229	190.5	8-19	157.2	1.6	7.7
6	50	80	300 lbs	3"	28.5	210	168.3	8-22.2	127	1.6	7.8
	50	100	300 lbs	4"	32	254	200	8-22.2	157.2	1.6	12.7
SA 8	□	40	80		24	200	160	8-18	138	3	5.8
	S□	16	100		22	220	180	8-18	158	3	5.9
H	20	50	150 lbs	2"	21	152	120.6	4-19	92.1	1.6	2.7
J	50	50	300 lbs	2"	22.4	165	127	8-19	92.1	1.6	3.7
G	40	50			20	165	125	4-18	102	3	3.3

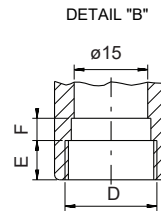
<Capillary connection type>



Seal diaphragm	Extension L (mm)
Y	0
A	50
SA□□ B □□	100
C	150
D	200



Flange specifications												
ISO/DIN		ANSI		C min	$\phi D$	$\phi E$	N- $\phi A$	$\phi F$	G	$\phi H$		Gross weight(kg)
PN	DN	NP	NW							L=0	L>0	
20	80	150 lbs	3"	24	190	152.4	4-19	127	1.6	73	73	5.3
20	100	150 lbs	4"	24	229	190.5	8-19	157.2	1.6	96	96	7.7
50	80	300 lbs	3"	28.5	210	168.3	8-22.2	127	1.6	73	73	7.8
50	100	300 lbs	4"	32	254	200	8-22.2	157.2	1.6	96	96	12.7
40	80			24	200	160	8-18	138	3	73	73	5.8
16	100			22	220	180	8-18	158	3	96	96	5.9
20	50	150 lbs	2"	21	152	120.6	4-19	92.1	1.6	59	48	2.7
50	50	300 lbs	2"	22.4	165	127	8-19	92.1	1.6	59	48	3.7
40	50			20	165	125	4-18	102	3	59	48	3.3



4th digit code	Conduit conn.		
	D	E	F
T	1/2-14NPT	16	5
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W	M20× 1.5	16	5