

FEATURES

- Suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure
- Outputs a 4~20mA DC signal corresponding
- Highly accurate and stable sensor
- Measure the static pressure which can be shown on the integral indicator or remotely monitored via HART communications
- Quick response
- Self-diagnostics
- Optional status output for pressure high/low alarm.



PERFORMANCE SPECIFICATIONS

Reference Accuracy of Calibrated Span (includes terminal-based linearity, hysteresis, and repeatability)*	: $\pm 0.075\%$ or $\pm 0.1\%$ if $TD > 10$ ($TD = URL/SPAN$): $\pm (0.0075 \times TD)\%$ or $\pm (0.01 \times TD)\%$
Ambient temperature effects	: $-20 \dots 65^\circ\text{C}$: $\pm (0.15 \times TD + 0.05)\% \times \text{Span}$ Every 10°C is $\pm 0.08\% \times \text{Span}$ ($TD=1$) $-40 \dots -20^\circ\text{C}$ & $65 \dots 85^\circ\text{C}$: $\pm (0.3 \times TD + 0.1)\% \times \text{Span}$
Static pressure effects	: $\pm (0.05\% \text{URL} + 0.075\% \text{Span}) / 100\text{bar}$
Overpressure effects	: $\pm 0.1\% \times \text{Span} / 100\text{bar}$
Stability	: $\pm 0.1\% \times \text{Span} / 3$ years
Power supply effects	: $\pm 0.001\% / 10\text{V}$ ($12 \sim 42\text{V DC}$)

* The square root accuracy is 1.5 times of reference accuracy of calibrated span.

FUNCTIONAL SPECIFICATIONS

Zero adjustment limits	: Zero can be fully elevated or suppressed, within the lower and upper range limits of the capsule.
Mounting position effects	: Rotation in diaphragm plane has no effect. Tilting up to 90 degree will cause zero shift up to 0.4 kPa which can be corrected by the zero adjustment.
Output	: Two wire 4~20mA DC output with digital communications, linear or square root programmable. HART protocol are superimposed on the 4~20mA DC signal. Output range: 3.9mA to 20.5mA.
Failure alarm (the mode can be selected)	: Low Mode (min): 3.7mA High Mode (max): 21mA No Mode (hold): Keep the effective value before the fault. Note: The standard setting of failure alarm is High Mode.
Response time	: The amplifier damping constant is 0.1 sec; The sensor damping constant is 0.1~1.6 sec, it depends on the range and range compression ratio. Amplifier damping time constant is adjustable from 0.1 to 60 sec by software and added to response time.
Preheat	: < 15s
Ambient temperature limits	: -40 to 85°C -20 to 65°C with LCD display or fluorine rubber sealing

FUNCTIONAL SPECIFICATIONS

Storage and transportation temperature limits	: -50 to 85°C; -40 to 85°C with LCD display		
Working pressure limits (silicone oil)	: Maximum working pressure: 160bar, 250bar, 400bar		
Static pressure limits	: 0.035bar abs. to maximum working pressure.		
One-way overload pressure limit	: The maximum one-way overload pressure is maximum working pressure.		
Explosion protected type	AA: ATEX: II 2 G D Ex db IIC T4/T5/T6 Gb Ex tb IIIC T80°C/T90°C/T130°C Ta = -40°C to +60°C	AB: ATEX: II 1 G Ex ia IIC T4-T6 Ga -40°C ≤ T _{amb} ≤ +40°C, T6 -40°C ≤ T _{amb} ≤ +50°C, T5 -40°C ≤ T _{amb} ≤ +85°C, T4	AC: ATEX: II 2 D Ex ia IIIC T80°C/T95°C/T130°C Da -40°C ≤ T _{amb} ≤ +40°C, T80°C -40°C ≤ T _{amb} ≤ +50°C, T95°C -40°C ≤ T _{amb} ≤ +85°C, T130°C

Span/ Range Limits	mbar	kPa	inH ₂ O	mmH ₂ O	
V30	Span	2~60	0.2~6	0.8~24	20~600
	Range limits	-60~60	-6~6	-24~24	-600~600
V40	Span	4~400	0.4~40	1.6~160	40~4000
	Range limits	-400~400	-40~40	-160~160	-4000~4000
V50	Span	25~2500	2.5~250	10~1000	0.25~25mH ₂ O
	Range limits	-2500~2500	-250~250	-1000~1000	-25~25mH ₂ O
B60	Span	0.3~30bar	30~3000	120~12000	3~300mH ₂ O
	Range limits	-5~30bar	-500~3000	-2000~12000	-5~300mH ₂ O

INSTALL

Supply & load requirements	: 24V DC supply, R≤(Us-12V)/Imax kΩ, Imax=23mA. Maximum voltage limited: 42V DC, Minimum voltage limited: 12V DC, 15V DC (with LCD display) 230Ω to 600Ω for digital communication
Electrical connection	: The electrical connection is made via cable entry M20x1.5. The screw terminals are suitable for wire cross-sections up to 2.5mm.
Process connection	: Flange with fixing thread 7/16-20 UNF and 1/4-18 NPT (F) on both sides.

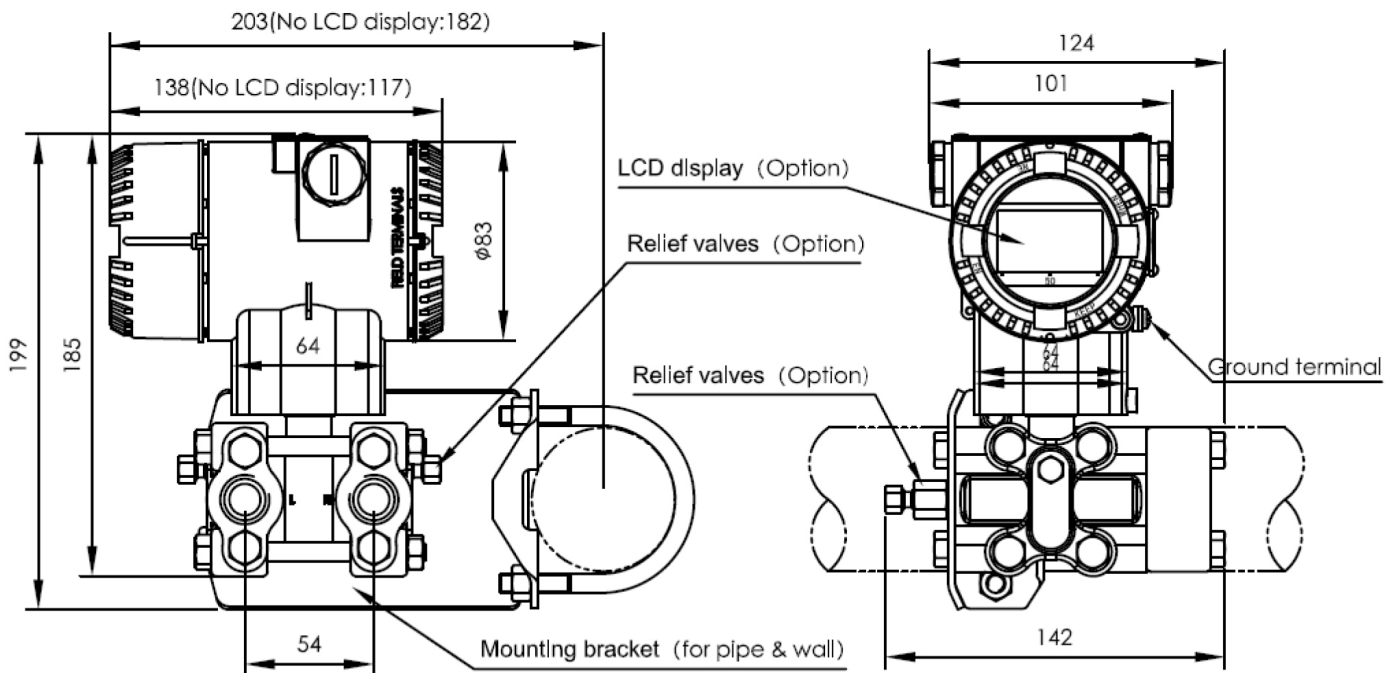
PHYSICAL SPECIFICATIONS

Sensor body	: 316L stainless steel
Isolating diaphragm	: 316L stainless steel / Hastelloy C / Gold plated on 316L / FEP plated on 316L / Tantalum
Cover flange	: 316 stainless steel
Nuts and bolts	: 304 stainless steel
Process connector	: 316 stainless steel
Fill fluid	: Silicone oil
Process connector gasket	: Perbunan(NBR) / Viton(FKM) / Teflon(PTFE)
Amplifier housing	: Aluminum with epoxy resin coat
Housing gasket	: Perbunan(NBR)
Name plate and tag	: 304 stainless steel
Weight	: ~3450 g
Degrees of protection	: IP67

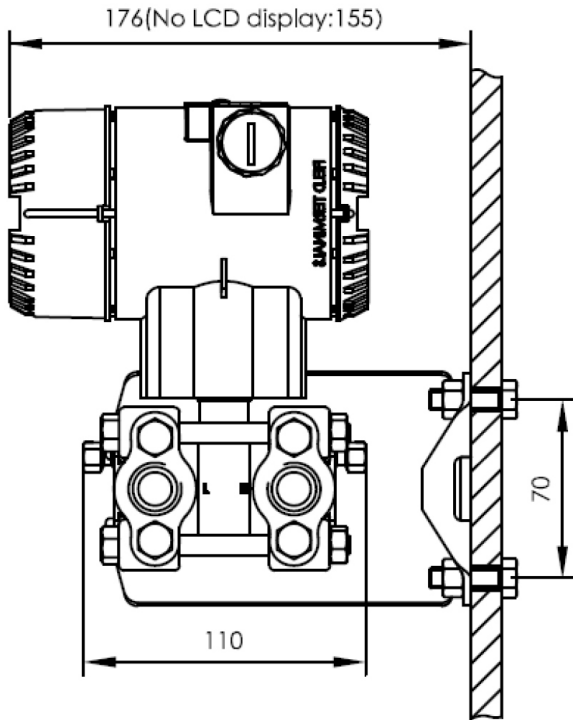
DIMENSIONAL DRAWING

Horizontal Impulse Piping Type (side face)

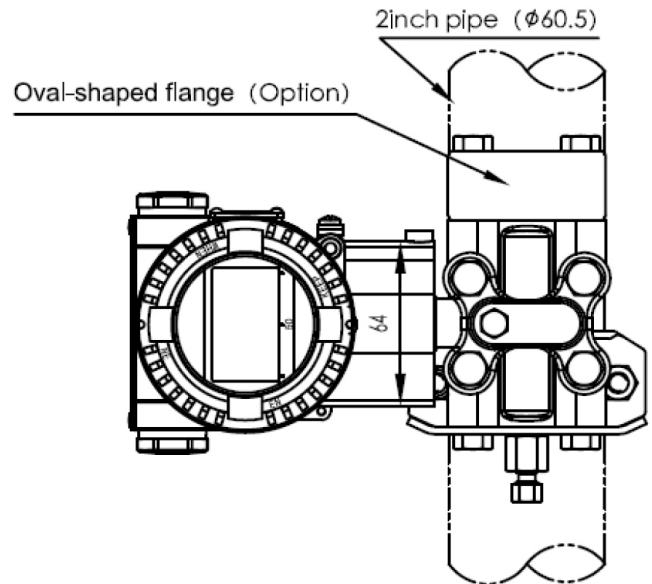
Horizontal Impulse Piping Type (front face)



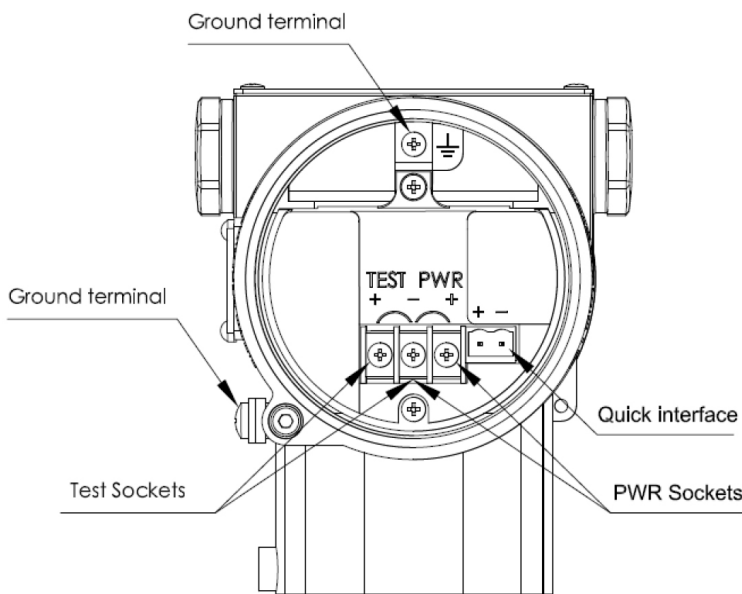
Horizontal Impulse Wall mounting Type



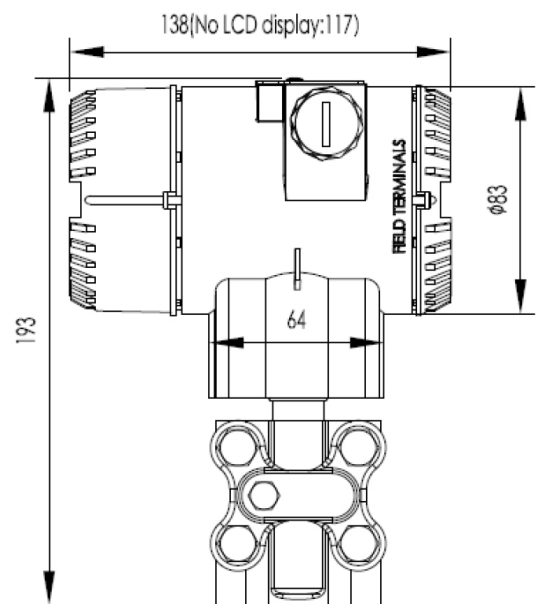
Vertical Impulse Piping Type



Terminal Configuration



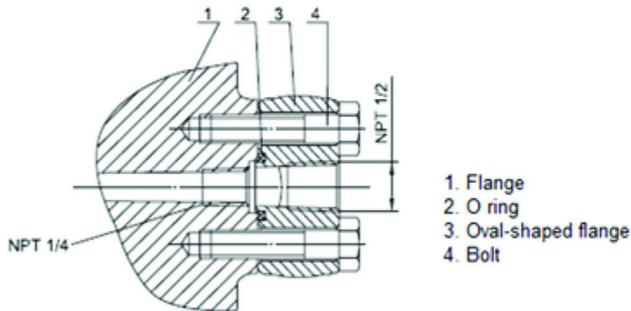
Vertical mounting flange (Code UF)



NOTE: Quick interface functionally equivalent to the signal terminal

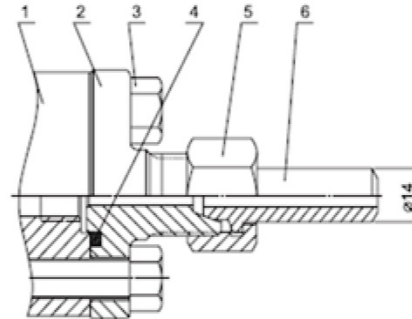
PROCESS CONNECTIONS DESCRIPTION

Oval-shaped flange with 1/4-18 NPT female (Code FO)



- 1. Flange
- 2. O ring
- 3. Oval-shaped flange
- 4. Bolt

D-shaped connector with M20 X 1.5 male (Code FD)



- 1. Flange
- 2. D-shaped connector
- 3. Bolt
- 4. O ring
- 5. M20x1.5 Nut
- 6. Joining pipe

ORDERING CODES

Required

1. APPROVAL

AA	Hazardous area; ATEX: II 2 G D ¹	AA
AB	Hazardous area; ATEX: II 1 G ¹	
AC	Hazardous area; ATEX: II 2 D ¹	
NA	Non-Hazardous area	

2. OUTPUT: DISPLAY

HA	2-wire 4-20mA HART; +LCD	1
HB	2-wire 4-20mA HART; None	

3. SENSOR RANGE: (NOMINAL RANGE)

XXX	Refer Range Table (Page 06)	XXX
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4. REFERENCE ACCURACY

CL1	±0.075% set span	
CL2	±0.1% set span	CL2

5. STATIC PRESSURE SENSOR

N	None	N
Q21	100 bar	
Q22	400 bar	

6. WORKING PRESSURE

W01	160 bar	W01
W02	250 bar	

Note:

1. Refer to page 02

7. PROCESS CONNECTIONS

UA	7/16-20UNF and 1/4-18" NPT(F), No relief valve	
UB	7/16-20UNF and 1/4-18" NPT (F), Relief valves at the end of flanges	UB
UC	7/16-20UNF and 1/4-18" NPT (F), Relief valves at the upper part of the flange side	
UD	7/16-20UNF and 1/4-18" NPT (F), Relief valves at the lower part of the flange side	
UF	Vertical mounting flange, 7/16-20UNF and 1/4-18" NPT (F), Relief valves at the upper part of the flange side	
LE	Level (Low side can select: UB/UC/UD)	
XX	Refer Flange Table for the codes (Page 07)	

8. DIAPHRAGM SEAL MATERIAL

DF	316 stainless steel - Silicone oil	DF
DC	Hastelloy C - Silicone oil	
DU	Gold plated on 316L - Silicone oil	
DZ	FEP plated on 316L - Silicone oil	
MW	Tantalum	

Additional Option

9. SPECIAL FUNCTION

N	None	N
SR	Square root output	
TO	Use for Oxygen service	

10. INTEGRAL INDICATOR

N	None	
LC	LCD display	LC
LB	Backlit LCD display	

ORDERING CODES

11. ACCESSORY

N	None	
AL	Mounting bracket, 304 stainless steel	
AM	Mounting bracket, Carbon steel galvanized	AM
AC60	Sun shade	

12. ACCESSORY MOUNTED

N	None	
M5H	Five valve manifold	M5H
AC42	Siphon	
AC50	Cooling tower	

13. PROCESS CONNECTOR ACCESSORY

N	None	
FO	Stainless steel oval-shaped flange with 1/2" NPT(F)	
FD	Stainless steel D-shaped connector with M20x1.5(M)	FD

14. PROCESS CONNECTOR GASKET

NB	Perbunan (NBR)	NB
FK	Viton (FKM)	
ME	Teflon (PTFE)	

15. MARKING

N	None	N
XB	Position number marked on the nameplate	
XF	SS tag plate, AISI 304 SS	

Ordering Example: SPT1001-AA-1-XXX-CL2-N-W01-UB-DF + N-LC-AM-M5H-FD-NB-N

STANDARD RANGES

RANGE	"mbar"	RANGE	"psi"
-60...60	V30	-0.87...0.87	U30
-400...400	V40	-5.8...5.8	U40
-2500...2500	V50	-36.25...36.25	U50

RANGE	"bar"	RANGE	"psi"
-5...30	B85	-72.5...435	U85

Flange Table

ANSI B 16.5

Code	Size	Rating	Code	Size	Rating	Code	Size	Rating
A01	½"	150#	A02	½"	300#	A03	½"	600#
A04	½"	900#	A05	½"	1500#	A06	½"	2500#
A07	¾"	150#	A08	¾"	300#	A09	¾"	600#
A10	¾"	900#	A11	¾"	1500#	A12	¾"	2500#
A13	1"	150#	A14	1"	300#	A15	1"	600#
A16	1"	900#	A17	1"	1500#	A18	1"	2500#
A19	1¼"	150#	A20	1¼"	300#	A21	1¼"	600#
A22	1¼"	900#	A23	1¼"	1500#	A24	1¼"	2500#
25A	1½"	150#	A26	1½"	300#	A27	1½"	600#
A28	1½"	900#	A29	1½"	1500#	A30	1½"	2500#
A31	2"	150#	A32	2"	300#	A33	2"	600#
A34	2"	900#	A35	2"	1500#	A36	2"	2500#
A37	2½"	150#	A38	2½"	300#	A39	2½"	600#
A40	2½"	900#	A41	2½"	1500#	A42	2½"	2500#
A43	3"	150#	A44	3"	300#	A45	3"	600#
A46	3"	900#	A47	3"	1500#	A48	3"	2500#
A49	4"	150#	A50	4"	300#	A51	4"	600#
A52	4"	900#	A53	4"	1500#	A54	4"	2500#