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Golden Rules Co.,Ltd

Diff. pressure, Level
(Liquid, Gas, Vapor)

Differential Pressure Level Transmitter KC-9100L Series



The nation's development item, 100% domestic goods, Patent **NO.** 10-1660226

11. Smart Differential Pressure Level Transmitter

11-3. D/P Level Transmitter KC-9100L Series

Features & Specification

- Updating time of output current in 200ms
- Accuracy : $\pm 0.075\%$ of span
- Display : 360° rotation LCD display
- 4-20mA output with direct digital HART communication
- Two years stability of 0.2%
- Parameter setting by keypad directly
- Automatic zero calibration by press-button
- Weather proof housing
- Improved performance, increased accuracy greater stability



KC-9100L
Diff. Pressure Level Transmitter

Application

Semiconductor Industry / Steel Industry / Chemical Industry / Environmental engineering / Food / Pharmaceutical / Water Plant / Power Plant / R&D Testing

Description

The differential pressure level transmitter KC-9100L is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure. KC-9100L outputs a 4 to 20mA DC HART signal corresponding to the measured differential pressure. Other key features include quick response, remote set-up using communications, self-diagnostics and optional status output for pressure high/low alarm.

Standard Specification I

- Display range : 5-digits programmable & 0-100% Bargraph
- Display Unit : Standard 22 different engineering unit
- Keyboard : 3 internal keys for programming and output setting
- Protection Class : IP67(STD.)
- Power Supply : 9 ~ 36V DC
- Current Output : 4~20mA 2-wires with HART Signal(Compatible)
- Digital Communiation : HART Protocol
- Damping : 0 – 32 seconds
- Response time : 200mS
- Humidity : 0 – 100% Relative Humidity
- Mounting : Bracket on 2" pipe
- Turn on Time : 2 Seconds with minimum damping
- Cable Entry : M20X1.5P Conduit threads(Female)
- Zero Calibration : Automatic zero calibration by push-button
- Ambient Temperature : -20 °C ~ +60 °C
- Dimensions : 102(W) X 188(H) X 130(D)mm

Standard Specification II

- Process Fluid : Liquid, Gas or Vapor
- Application : Absolute pressure, Gauge pressure
- Measuring Range : 0 – 1kPa ~ 2MPa
- Turndown Ratio : 100:1
- Accuracy : $\pm 0.075\%$ of span
- Stability : $\pm 0.15\%$ of URL for 2 years
- Working Temperature : -20 °C ~ +65 °C
- Max. Pressure : 5801 psi
- Temperature Effect : $\pm 0.18\% \sim 0.5\%$ of span per 20 °C
- Process Connection : Flange with fixing thread 7/16-20 UNF
1/4" – 18 NPT female thread on both sides
- Material : Flange / Adapter : SUS304 / SUS316
Drain / Vent : SUS304 / SUS316
Diaphragm : SUS316L / Hastelloy C / Tantalum
Housing –ALDC 12, yellow(HW) paint
Process O-Ring : Buna N / Viton / PTFE
- Fill Fluid : Silicon / Fluorine Oil

Performance Specifications

Inputs	Measured value		Differential pressure, Level	
	Measuring range	Lower	100% to +100% of the URL (continuously adjustable)	
Upper		Up to 100% of the URL (continuously adjustable)		
Spans	Span code	Measuring range		SWP(Max)
		Min	Max	
	B	1kPa	6kPa	The flange's working pressure
	C	4kPa	40kPa	
	D	25kPa	250kPa	
E	200kPa	2MPa		
Flange	Pipe Nominal diameter(mm)		The minimum measuring range	
Bulge sealing	2"(50mm)		10kPa	
	3"(80mm)		1kPa	
	4"(100mm)		1kPa	
Flat sealing	2"(50mm)		16kPa	
	3"(80mm)		1kPa	
	4"(100mm)		1kPa	

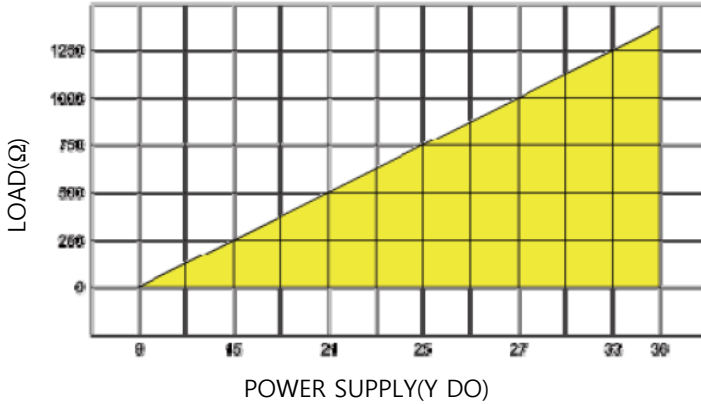
General Conditions

Installation	The transmitter can be directly flanged in any position.
	Preferably in such a position that the process flange axes are vertical.
	Deviations from this can cause a shift in the zero, which can be corrected.
	The electronic housing can be rotated through 360 and can be fixed in any position. A stop prevents the housing being turned too far.
Ambient	Min : depends on the fill fluid / Max : 85°C (-20 ~ 65°C, with LCD-indicator)
Humidity	0 ~ 100%

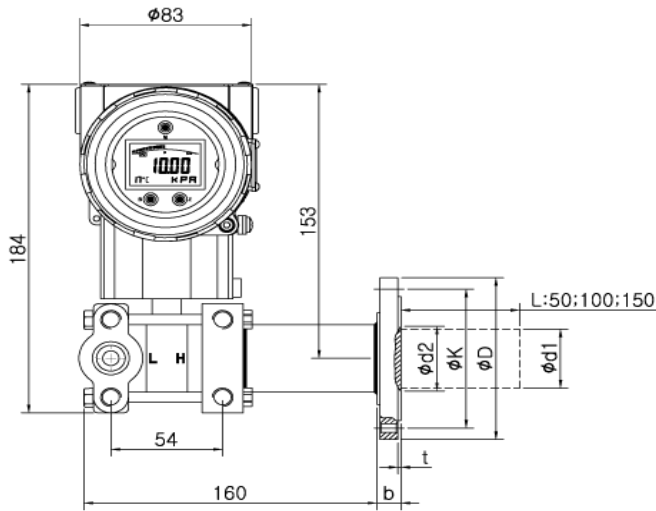
Physical Specifications

Wetted Parts Materials	Sensor Body	316L stainless steel
	Isolating Diaphragm	316L stainless steel / Hastelloy C/ EFP or PFA plated on 316L/Tantalum
	Nuts and Bolts	304 stainless steel
	Process Connector	304 stainless steel
Fill fluid	Silicone oil / Vegetable 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	
Degrees of Protection	IP67	
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 ²	

Supply Voltage vs Loop Load I



Dimension II

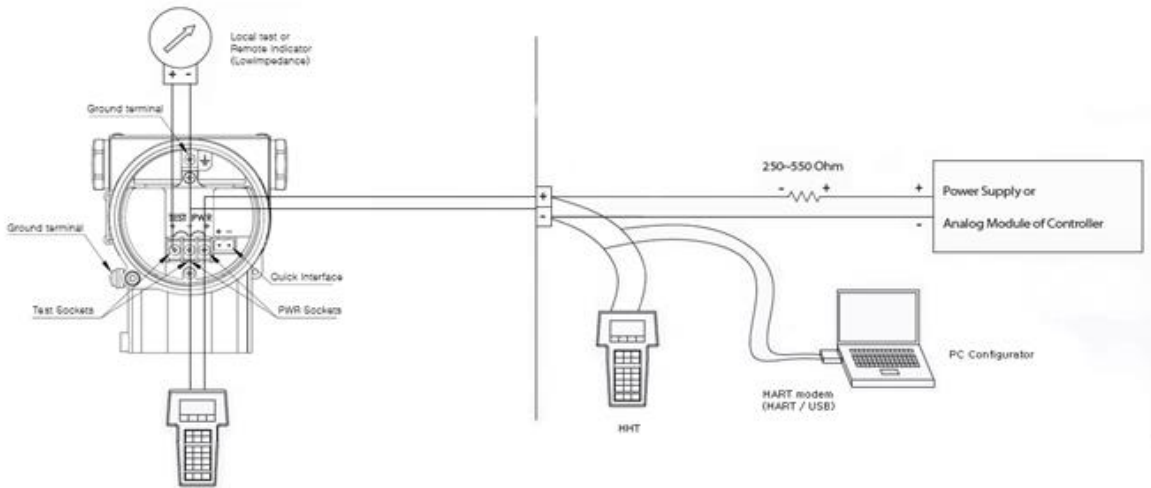


Nominal diameter	Working pressure	ΦD	ΦK	Φd1	Φd2	Φd3	t	b	Bolt	
				Bulge seal	Flat seal					
DN 50	PN 1~4MPa	165	125	48.3	57	102	3 ^{+0.5}	20	4	M16
(Sealing DIN 2526E)	PN 6.4MPa	180	135	48.3	57	102	3 ^{+0.5}	26	4	M20
(Flange DIN 2501)	PN 10MPa	195	145	48.3	57	102	3 ^{+0.5}	28	4	M20
DN 80	PN 1~4MPa	200	160	76	75	138	3 ^{+0.5}	24	8	M16
(Sealing DIN 2526E)	PN 6.4MPa	215	170	76	75	138	3 ^{+0.5}	28	8	M20
(Flange DIN 2501)	PN 10MPa	230	180	76	75	138	3 ^{+0.5}	32	8	M24
DN 2" (ANSI B 16.5 RF)	150psi	152.4	120.6	48.3	57	92.1	3 ^{+0.5}	17.4	4	M18
	300psi	165.1	127.0	48.3	57	92.1	3 ^{+0.5}	20.6	8	M18
	600psi	165.1	127.0	48.3	57	92.1	6.35	31.75	8	M18
DN 3" (ANSI B 16.5 RF)	150psi	190.5	152.4	76	75	127	3 ^{+0.5}	22.2	4	M16
	300psi	209.5	168.3	76	75	127	3 ^{+0.5}	27.0	8	M20
	600psi	209.5	168.3	76	75	127	6.35	38.05	8	M20
DN 4" (ANSI B 16.5 RF)	150psi	229	191	89	89	157	3 ^{+0.5}	30	8	M18
	300psi	255	200	89	89	157	3 ^{+0.5}	32	8	M18

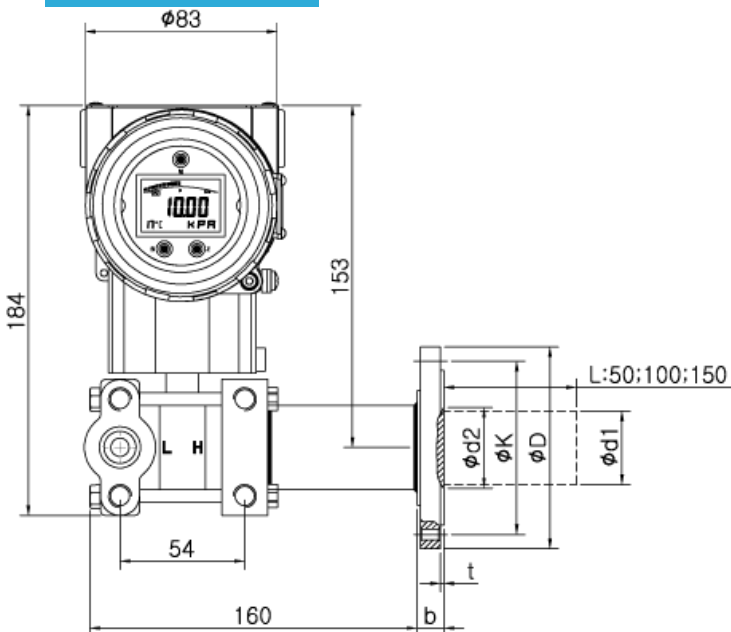
Installation Spec' III

Supply Requirements	24 V DC supply, $R \leq (U_s - 12V) / I_{max} \text{ k}\Omega$, $I_{max} = 23\text{mA}$, Max. voltage limited: 42VDC, Min. voltage limited: 12VDC, 15VDC (with LCD display)
Load Requirements	230 Ω to 600 Ω 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 ² .
Process Connection	Flange with fixing thread 7/16-20 UNF and 1/4-18 NPT female thread on both sides

Wiring Diagram IV



Dimension V



Order Code KC-9100L Series (D/P Level Transmitter)

KC-9100L Series							
Level flange sealing device selection of the differential pressure level transmitter SD3000L							
KC-9100L Type	X	X	X	X	X	X	Description
Flange sealing device	LT	Level flange sealing, no capillary, , ⊕ Side					
Process connection, flange and diaphragm material	A	DN50 DIN 2501	E DN2526	316L stainless steel		Stainless Steel 316L	
	B	DN50 DIN 2501	E DN2526	Hastelloy C		Hastelloy - C	
	C	DN50 DIN 2501	E DN2526	Tantalum		Stainless Steel 316L	
	D	DN80 DIN 2501	E DN2526	316L stainless steel		Hastelloy - C	
	E	DN80 DIN 2501	E DN2526	Hastelloy C		Stainless Steel 316L	
	F	DN80 DIN 2501	E DN2526	Tantalum		Hastelloy - C	
	G	DN2"ANSI B 16.5 RF	ANSI B 16.5	316L stainless steel		Stainless Steel 316L	
	H	DN2"ANSI B 16.5 RF	ANSI B 16.5	Hastelloy C		Hastelloy - C	
	I	DN2"ANSI B 16.5 RF	ANSI B 16.5	Tantalum		Tantalum	
	J	DN3"ANSI B 16.5 RF	ANSI B 16.5	316L stainless steel		Stainless Steel 316L	
	K	DN3"ANSI B 16.5 RF	ANSI B 16.5	Hastelloy C		Hastelloy - C	
	L	DN3"ANSI B 16.5 RF	ANSI B 16.5	Tantalum		Tantalum	
	M	DN4"ANSI B 16.5 RF	ANSI B 16.5	316L stainless steel		Stainless Steel 316L	
	O	DN4"ANSI B 16.5 RF	ANSI B 16.5	Hastelloy C		Hastelloy - C	
P	DN4"ANSI B 16.5 RF	ANSI B 16.5	Tantalum		Tantalum		
Working pressure	1	PN 10(1MPa)~PN 40(4MPa)					
	2	PN 64(6.4MPa)					
	3	PN 100(10MPa)					
	4	150psi(#150)					
	5	300psi(#300)					
	6	600psi(#600)					
Flange sealing type	F	Flat sealing					
	H	Bulge sealing , 316LSS,extended diaphragm seal 50mm					
	I	Bulge sealing , 316LSS,extended diaphragm seal 100mm					
	G	Bulge sealing , 316LSS,extended diaphragm seal 150mm					
	L	Bulge sealing , Hastelloy C, extended diaphragm seal 50mm					
	M	Bulge sealing , Hastelloy C, extended diaphragm seal 100mm					
N	Bulge sealing , Hastelloy C, extended diaphragm seal 150mm						
Fill Fluid	S	Silicone oil-30 ~ 200°C				Silicon	
	V	Vegetable oil0 ~ 250°C				Fluorine	
Diaphragm protection	N	None					
	1	EFP plated on 316L, ≤180°C					
	2	PFA plated on 316L, ≤260°C					
	3	PTFEcoated on 316L ^[2] , ≤200°C					

Note 1 : Before level flange sealing device selection, the selection of the KC-9100L differential pressure transmitter should be completed, and selected L option in line 60 of the in KC-9100L options table ;

Note 2 : The PTFE membrane(F4 membrane) posted on the diaphragm, it could be applied to the measurement of negative pressure, but it applies only to the flat level flange.

Order example : KC-9100L-LT-A1FSN

[LT] : Level flange sealing, no capillary ⊕ Side
[A] : Procss conn. & diaphragm mat'l : DN50 & 316L SS
[1] : Working pressure : 16MPa
[F] : Flange sealing type : flat sealing
[S] : Fill fluid : silicone oil
[N] : Diaphragm protection : None

Note3 : Differential pressure transmitter options see the KC-9100L Series transmitter General Specifications ;

Note4 : The minimum measuring rang of the differential pressure Level transmitter should be the larger value of the minimum range of "1. Performance specifications."
The adjusted span must not be lower than the minimum range.

Note5 : When measuring pressure or static pressure <50kPa (absolute pressure), it requires special handling during the manufacturing process to ensure that performance.



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KC Q ISO 9001 : 2015

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