www.goldenrules.co.kr

Golden Rules Co.,Ltd

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

Remote Seal Diff. Pressure Transmitter

KC-9100R Series

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

11. Remote Seal Differential Pressure Transmitter

11-4. Remote Seal D/P Transmitter KC-9100R Series

Features & Specification

- Updating time of output current in 200ms
- Accuracy : ±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-9100R
Remote Seal Diff. Pressure 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-9100R is suitable to measure liquid, gas, or steam flow as well as liquid level, density and pressure. KC-9100R 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 Communication : 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 ℃ ~ +60 ℃
- 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 : ±0.075% of span
- Stability : ±0.15% of URL for 2 years
- Working Temperature : -20 ℃ ~ +65 ℃
- Max. Pressure : 5801 psi
- Temperature Effect : ±0.18% ~ 0.5% of span per 20 ℃
- 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 theURL(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.					
	The minimum bend radius of the capillary of 75mm, is strictly prohibited winding!					
Ambient	Min：depends on the fill fluid / Max：85℃ (-20～65℃,with LCD-indicator)					
Humidity	0 ~ 100%					
Process conditions	Temperature limits					
	Fill Fluid		-30～400℃			
	Fill Fluid Temp. - Working pressure range		Silicone Oil(S)	High temp. silicone oil （H）	Super high temp. silicone oil (U)	Vegetable oil （V）
		Density 25℃	960kg/m³	980kg/m³	1020kg/m³	937 kg/m³
		Temp. limits	-30～200℃	-10～350℃	-10～400℃	0～250℃
	Temp. - Working Pressure range Pressure limits	Temp.	Working pressure range （kPa abs.）			
		20℃	>10	20℃	>10	20℃
		100℃	>25	100℃	>25	100℃
		150℃	>50	150℃	>50	150℃
		200℃	>75	200℃	>75	200℃
		250℃		250℃		250℃
		350℃		350℃		350℃
		Beyond the above working temperature and working pressure range should be pointed out, a specially designed can be met the requirements.				

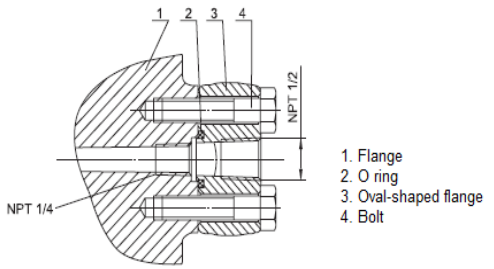
Physical Specifications

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	

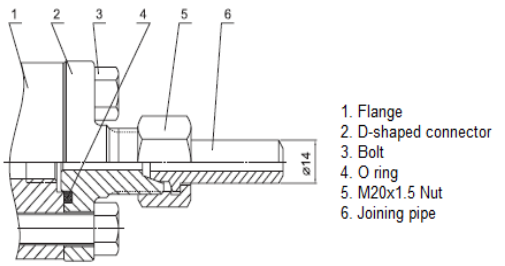
Process connection description I

Process connections

Oval-shaped flange with 1/4-18 NPT female thread(code 1)



D-shaped connector with M20x1.5 male thread(code 2)



Dimension (unit: mm) II

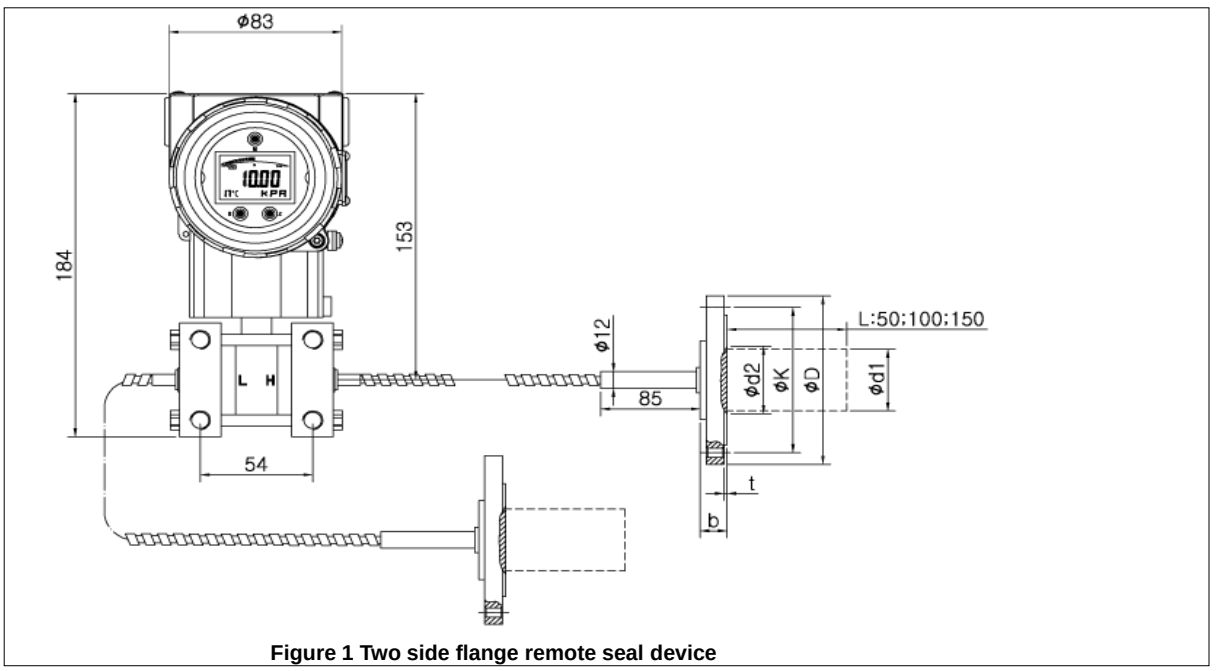


Figure 1 Two side flange remote seal device

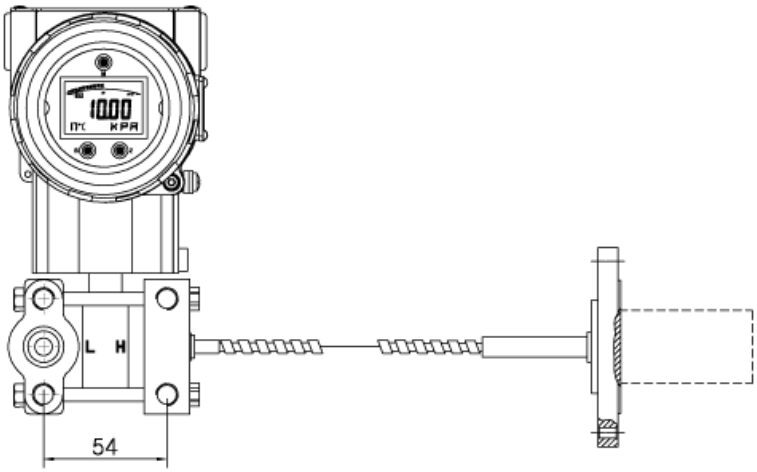


Figure 2 One side flange remote seal device

Note:（1）The one side flange can be installed in the high or low pressure side of the transmitter ;
（2）The one or two side flange remote seal transmitter's installation is the same way as the KC9100R series differential pressure transmitter

Table 1 Remote seal flange dimensions

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	18	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“	150psi	229	191	89	89	157	$3^{+0.5}$	30	8	M18
(ANSI B 16.5 RF)	300psi	255	200	89	89	157	$3^{+0.5}$	32	8	M18

Table 1 Remote Seal flange dimensions

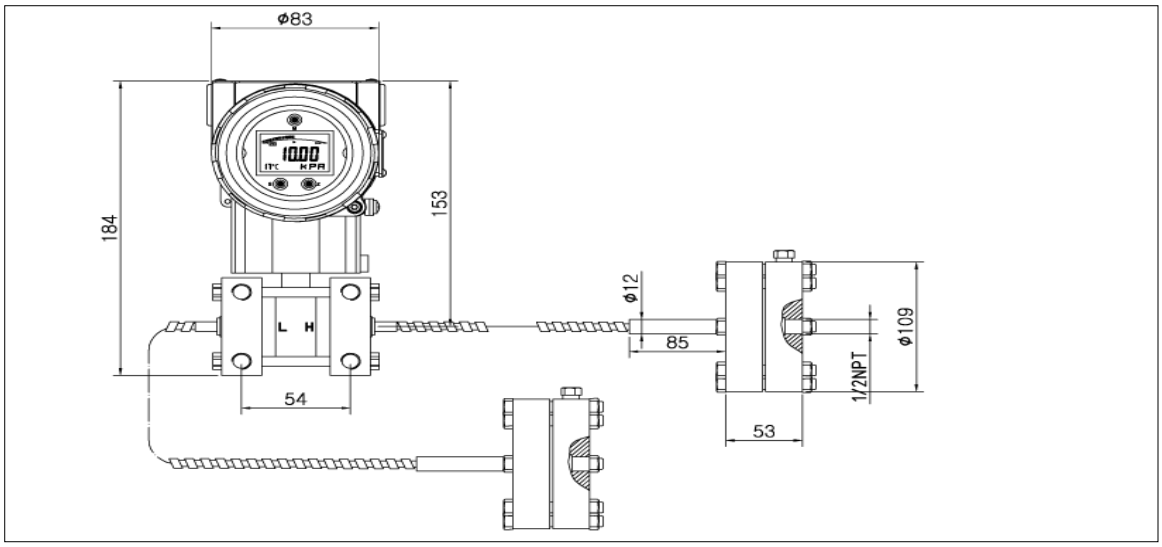


Figure 3 Two side flange remote seal of threaded mount device

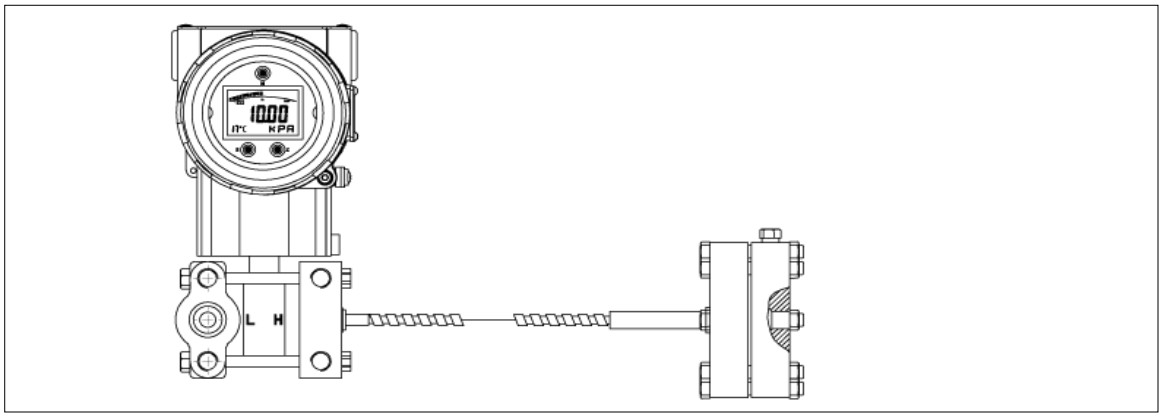
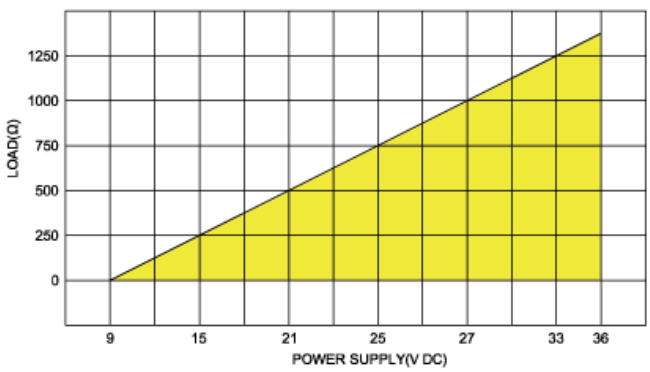


Figure 4 One side flange remote seal of threaded mount device

Note:（1）The one side flange can be installed in the high or low pressure side of the transmitter ;
(2）The one or two side flange remote seal transmitter's installation is the same way as the KC9100R series differential pressure transmitter.

Supply Voltage vs Loop Load

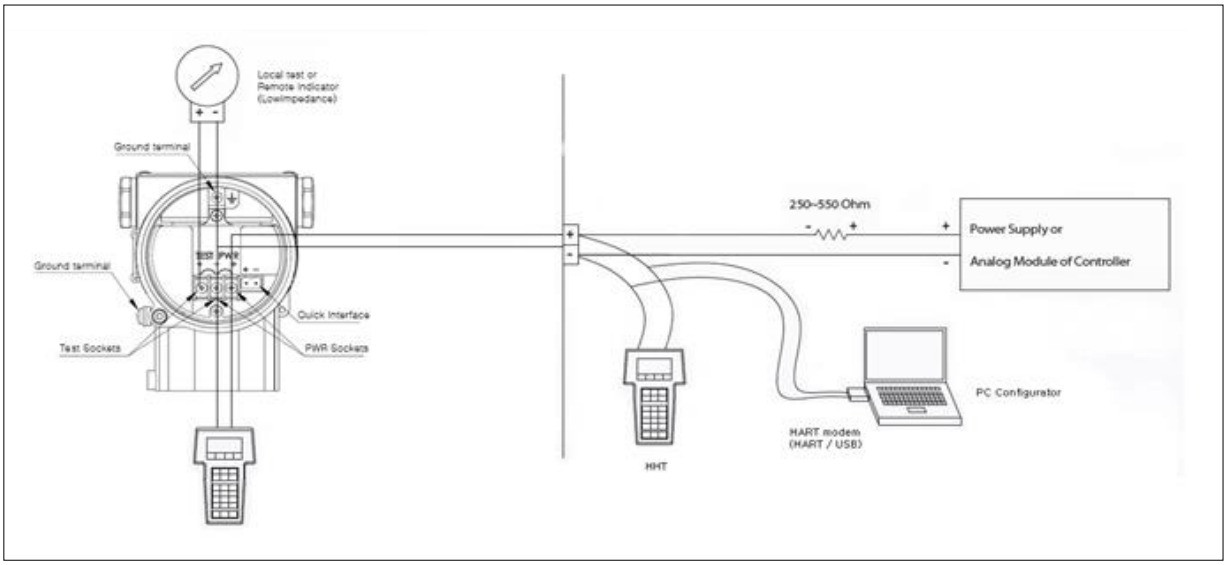


Nominal diameter	Working pr essure	ΦD	ΦK	Φd1 Bulge seal	Φd2 Flat seal	Φd3	t	b	Bolt	
DN 50	PN 1~4MPa	165	125	48.3	57	102	$3^{+0.5}$	20	4	M16
(Sealing DIN 2526E)	PN 6.4MPa	180	135	48.3	57	102	$3^{+0.5}$	26	4	M20
(Flange DIN 2501)	PN 10MPa	195	145	48.3	57	102	$3^{+0.5}$	28	4	M20
DN 80	PN 1~4MPa	200	160	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“	150psi	229	191	89	89	157	$3^{+0.5}$	30	8	M18
(ANSI B 16.5 RF)	300psi	255	200	89	89	157	$3^{+0.5}$	32	8	M18

Installation Spec’ III

Supply Requirements	24 V DC supply, R≤(Us-12V)/Imax kΩ, Imax=23mA, Max. voltage limited: 42VDC, Min. voltage limited: 12VDC, 15VDC (with LCD display)
Load Requirements	230Ω to 600Ω for digital communication
Electrical Connection	The electrical connection is made via cable entry M20x1.5.The screw terminals are suit able 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



Order Code KC-9100 Series (Remote Seal type Diff. Pressure Transmitter)

KC-9100R – [1] – [2] – [3] – [4] – [5] – [6] – [7] – [8] – [9] – [10]

	Type	Range	D-Mat'l	P-Mat'l	B-Mat'l	F-Fluid	W-Mat'l	B-Mat'l	Conn'	C-Entry
	1	2	3	4	5	6	7	8	9	10

Pressure type	Code 1
Very Low differential pressure	V
Differential pressure	D
DP of high system Pressure	H
Absolute pressure	A
Gauge pressure	G
Agency approved specified	W

Pressure Range	Code 2
0 ~ 15 mbar (D or G)	2
0 ~ 75 mbar (D or G)	3
0 ~ 370 mbar (D, G or A)	4
0 ~ 1800 mbar (D, G or A)	5
0 ~ 6.9 bar (D, G or A)	6
0 ~ 20 bar (D, G or A)	7
0 ~ 68 bar (D, G or A)	8
0 ~ 250 bar (D, G or A)	9

Diaphragm Material	Code 3
Stainless Steel 316L	N
Hastelloy – B	B
Hastelloy – C	C
Monel	M
Tantalum	T
Agency approved specified	W

Process Flanges, Drain/Vent Material	Code 4
Stainless Steel 304	N
Stainless Steel 316	S

Bolt / Nuts Material	Code 5
Carbon Steel	N
Stainless Steel 316	S

Fill Fluid	Code 6
Silicon	N
Fluorine	F

Wetted O-ring Material	Code 7
Buna-N	N
Viton	V
PTFE	P
Agency approved sepcified	W

Mounting Bracket Material	Code 8
Stainless Steel 304	N
Stainless Steel 316	S
Other	Z
Agency approved sepcified	W

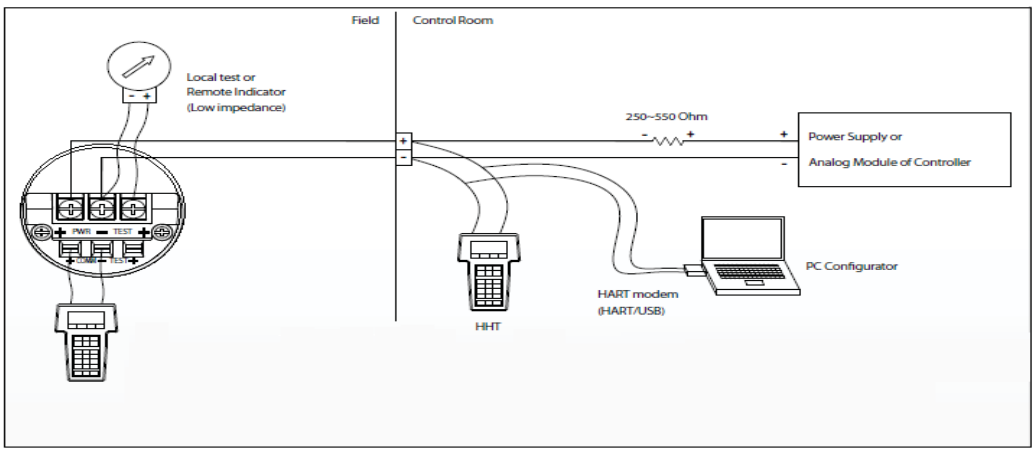
Process Connection	Code 9
NPT ¼" – 18 NPT	N
NPT 1/2"- 14 NPT(with Adapter)	A
Other	Z
Agency approved specified	W

Cable Entry	Code10
M20 X 1.5P Conduit Threads	1
½" NPT(Female)	2

Maximum Pressure Limit	Code11
580 psi	N
928 psi	1
2320 psi	2
5801 psi	3

Option	Code12
None	N
Explosion proof(Ex d IIC T6)	E
HART Signal(Compatible)	H
Others	Z

HART Communication Wiring Diagram



Order Code KC-9100R (Remote Seal type d/p Transmitter)

Selection of flange sealing device for remote sealing differential pressure transmitter KC-9100R										
10	Flange sealing divice									
	RH-	With capillary,⊕ Side								
	RL-	With capillary, Θ Side								
20		Process connection, Flange and diaphragm Size								
		A	JIS 10K 2", Only Flat Sealing type							
		B	JIS 20K 2", Only Flat Sealing type							
		C	JIS 10K 3"							
		D	JIS 20K 3"							
		E	JIS 10K 4"							
		F	JIS 20K 4"							
		G	ANSI 150# 2"							
		H	ANSI 300# 2"							
		I	ANSI 150# 3"							
		J	ANSI 300# 3"							
		K	ANSI 150# 4"							
		L	ANSI 300# 4"							
30			Process connection, Flange and diaphragm Mat'l							
			S	Stainless Steel 316L						
			H	Hastelloy-C						
40				Process connections						
				F	Flat sealing					
				H	Bulge sealing , 316L stainless steel,extended diaphragm seal 50mm					
				I	Bulge sealing , 316L stainless steel,extended diaphragm seal 100mm					
				G	Bulge sealing , 316L stainless steel,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					
50					Fill fluid					
					S	Silicone oil	-30 ~ 200℃			
					H	High temp. silicone oil	-10 ~ 350℃			
					U	Super high temp. silicone oil	-10 ~ 400℃			
					V	Vegetable oil	0 ~ 250℃			
60						Capillary length				
						1	1m			
						2	2m			
						3	3m			
						4	4m			
						5	5m			
						6	6m			
						8	8m			
						A	10m			
						S	Special length			
70							Capillary component characteristics			
							N	None		
							P	With PVC protective coating capillary		
80						Diaphragm Protection				
								N	None	
								1	EFP plated on 316L, ≤180℃	
								2	PFA plated on 316L, ≤260℃	
								3	PTFEcoated on 316L[2], ≤200℃	

Note 1: Before selecting the flange sealing device, you must select the KC-9100R differential pressure transmitter and select the L option in line 60 of the option table.

Note 2: The PTFE membrane attached to the diaphragm (F4 membrane) is applicable for negative pressure measurement, but only for flat flanges.

Remote Seal Type Differential Pressure Transmitter
DP Model Code：KC-9100L-D-4-N-4-S-S-N-N-Z-N-N-H
[D]：Pressure type – DP Application
[4]：Range: 0~400pa~40kpa / 0~40mmH20~4000mmH20 / 0~20mbar~400mbar
[N]：Diaphragm Mat'l : 316L stainless steel
[4]：Drain/Vent Mat'l : 304 Stainless steel
[S]：Bolt & Nuts Mat'l : Stainless steel
[S]：Fill Fluid : Fill fluid is silicone oil
[N]：Wetted Oring : Buna-N
[N]：Bracket Mat'l : stainless steel
[Z]：Process Connection : Others
[N]：Cable Entry : M20 X 1.5 Conduit threads
[N]：Pressure Limit : 580psi
[H]：Option : HART Signal

Remote Seal Molde Code : KC-9100R-RH-A-S-F-S-2-N-N, RL-AFS2NN

[RH] : Flange sealing device : High Side
[A] : Procss conn. & diaphragm Size : JIS 10K 2″ to JIS 10K 1″ I type
[S] : Diaphragm mat'l : Stainless Steel 316L
[F] : Flange sealing type : flat sealing
[S] : Fill fluid : silicone oil
[2} : Capillary length : 2 m
[N]: Capillary component characteristics : None
[N] : Diaphragm protection : None

[RL] : Flange sealing device : High Side
[A] : Procss conn. & diaphragm Size : JIS 10K 2″ to JIS 10K 1″ I type
[S] : Diaphragm mat'l : Stainless Steel 316L
[F] : Flange sealing type : flat sealing
[S] : Fill fluid : silicone oil
[2} : Capillary length : 2 m
[N]: Capillary component characteristics : None
[N] : Diaphragm protection : None

Note 3: For differential pressure transmitter options, see KC-9100R series transmitter general specifications;

Note 4: The minimum measuring range of differential pressure level transmitter should be greater than the minimum value. "A range of 1. Performance specifications." The adjusted range should not be lower than the minimum range.

Note 5: When measuring pressure or static pressure <50kPa (absolute pressure), the manufacturing process to ensure its performance.

• GOLDEN RULES

www.goldenrules.co.kr

Gas & Liquid & Steam

Mass & Total Flowmeter

Specialized manufacturer

Distributer

Certified in accordance with

KC Q ISO 9001 : 2015

KC Q ISO 14001 : 2015

(주)골든룰