



Ultra high temperature single flange remote pressure transmitter

JUN-E91

JUN-E91 ultra-high temperature single flange far transmission pressure transmitter is an ultra-high performance differential pressure transmitter carefully developed by using the world's advanced pressure sensor technology and packaging process, with the highest measuring accuracy of $\pm 0.075\%$. Transmitter has a built-in mono-crystalline silicon sensor Device, export and the DC 4 ~ 20mA signal corresponding to the measured pressure.

The transmitter adopts dual-cavity isolation technology, which is suitable for directly measuring the differential pressure and liquid level of the measured medium in ultra-high temperature medium. The applicable temperature is up to 600°C. It is widely used in ultra-high temperature medium differential pressure measurement conditions of solar thermal power generation, nuclear power, coal chemical industry, petroleum and petrochemical industry.

By mutual communication with intelligent terminals, various functions can be set, adjusted and monitored for export signals.



Standard layout

Export

Export Signal: DC 4 ~ 20mA

Output signal range: DC3.8~20.8mA (maximum)

Supply voltage

DC16.5~55V (See Figure 1 for details)

Load impedance

0~2199 Ω is the working status (See Figure 1 for details)

250~600 Ω HART communication

Communication mode

HART、PROFIBUS-PA、FOUNDATION Field-bus

Determine the pressure range

Scope code	Range	Measurement range
G40	40kPa	gage pressure, Minimum range 10kPa, -40kPa~40kPa
G250	250kPa	gage pressure, Minimum range 25kPa, -100kPa~250kPa
G1K	1MPa	gage pressure, Minimum range 100kPa, -0.1MPa~1MPa
G3K	3MPa	gage pressure, Minimum range 300kPa, -0.1MPa~3MPa
G10K	10MPa	gage pressure, Minimum range 1MPa, -0.1MPa~10MPa
G21K	21MPa	gage pressure, Minimum range 2.1MPa, -0.1MPa~21MPa
G40K	40MPa	gage pressure, Minimum range 4MPa, -0.1MPa~40MPa
A40	40kPa	Absolute pressure, Minimum range 20kPa, 0kPa~40kPa
A250	250kPa	Absolute pressure, Minimum range 50kPa, 0kPa~250kPa
A1K	1MPa	Absolute pressure, Minimum range 100kPa, 0MPa~1MPa
A3K	3MPa	Absolute pressure, Minimum range 300kPa, 0MPa~3MPa

Transmitter body pressure limit

From the vacuum to the rated working pressure.

Use the temperature range

Range of use: 10°C, maximum temperature: 85°C.

Integrated LCD display: -20~70°C

Determination of medium temperature range: See Table 1 for details

Use humidity range

5%~100%RH@ 40°C

Storage temperature range

-40~110°C, Integrated LCD display: -40~85°C

levels of protection

IP67

Failure alarm signal

When the added pressure exceeds the upper limit of range, export alarm current value, lower limit to 3.8mA and upper limit to 20.8mA.

Precision

$\pm 0.075\%$ 、 $\pm 0.1\%$ (See Table 2 for details)

Temperature characteristic

Total impact volume in the range of -20 to 80°C: $\pm (0.1+0.1TD)\%$ range upper limit

Time index

The total damping time constant is equal to the electronic circuit component and the sensing membrane box damping

The sum of the time constants. Damping time of electronic circuit components: 0~100S

Range adjustable. Damping time of the sensing membrane cartridge: 0.2S.

Long-term stability

±0.15%range Upper limit / 10 years

Quick operation menu

Function	Explain
PV zero clearing	So that the current simulation export corresponds to the zero pressure value
zero (point) adjustment	The actual export was set to 4mA using the reference pressure
Full point adjustment	The actual export was set to 20mA using the reference pressure
Factory data reset	During a debugging error, restore the factory backup data

Material quality

Joint fluid diaphragm material quality: Hab C

O-type sealing ring material quality: nitrile rubber

Wiring box material quality: aluminum alloy exterior spraying epoxy resin

Seal into the liquid

Ultra high temperature silicone oil, ultra high temperature filling fluid

Pressure import connection

Flange and capillary connection, flange nominal diameter DN50~DN100 (can be customized according to user requirements)

Distribution interface

M20*1.5 、1/2NPT

Weight

According to the diameter size of the assigned flange, the weight is about 8kg~14kg.

Additional instructions

ATEX, explosion-proof certification

Grade 1, zone 1 / 2, Group G, and Ex db IIC T6 Ga/Gb
 $-30^{\circ}\text{C} \leq \text{Taamb} \leq +75^{\circ}\text{C}$ Process temperature $\leq 85^{\circ}\text{C}$

Grade 1, zone 1 / 2, Group G, and Ex db IIC T5 Ga/Gb
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +80^{\circ}\text{C}$ Process temperature $\leq 100^{\circ}\text{C}$

Grade 1, zone 1 / 2, Group G, and Ex db IC T4 Ga/Gb
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +80^{\circ}\text{C}$ Process temperature $\leq 110^{\circ}\text{C}$

Grade 1, zone 2, Group D, and Ex tb IIIIC T85°C Db
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$ Process temperature $\leq 85^{\circ}\text{C}$

Grade 1, Zone 2, Group D, and ExtbIIICT100C Db
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$ Process temperature $\leq 100^{\circ}\text{C}$

Grade 1, Zone 2, Group D, and Ex tb IIIIC T110°C Db
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$ Process temperature $\leq 110^{\circ}\text{C}$

(Note 1 to use a power cord suitable for working at a temperature 5°C higher than the surrounding area)

ATEX Intrinsic Safety Certification

Grade 1, zone 1, Group G, and Ex ia IIC T4 Ga
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +60^{\circ}\text{C}$ Process temperature $\leq 105^{\circ}\text{C}$

Electrical parameters:

$U_i=30\text{V}$, $L_i=93\text{mA}$, $P_i=1\text{W}$, $C_i=5\text{nF}$, $L_i=0.5\text{mH}$

Grade 1, Zone 1, Group D, Ex ia IIIIC T105°C Da
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +60^{\circ}\text{C}$ Process temperature $\leq 105^{\circ}\text{C}$

Group G Ex ic IIC T4 Gc in level 3
 $-30^{\circ}\text{C} \leq \text{Tamb} \leq +60^{\circ}\text{C}$ Process temperature $\leq 110^{\circ}\text{C}$

Electrical parameters: $U_i=30\text{V}$, $C_i=5\text{nF}$, $L_i=0.5\text{mH}$

NEPSI explosion certification

Ex d IIC T6 Gb; Ex tD A21 T85°C

$-30^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$ Process temperature $\leq 80^{\circ}\text{C}$

Ex d IIC T5 Gb; Ex tD A21 T100°C

$-30^{\circ}\text{C} \leq \text{Tamb} \leq +80^{\circ}\text{C}$ Process temperature $\leq 95^{\circ}\text{C}$

Ex d IIC T4 Gb; Ex tD A21 T115°C

$-30^{\circ}\text{C} \leq \text{Tamb} \leq +80^{\circ}\text{C}$ Process temperature $\leq 110^{\circ}\text{C}$

NEPSI Intrinsic Safety Certification

Ex ia IIC T4 Ga

$-40^{\circ}\text{C} \leq \text{Tamb} \leq +60^{\circ}\text{C}$ Process temperature $\leq 105^{\circ}\text{C}$

Ex ia IIC T4 Gc

$-40^{\circ}\text{C} \leq \text{Tamb} \leq +60^{\circ}\text{C}$ Process temperature $\leq 105^{\circ}\text{C}$

Electrical parameters:

$U_i=30\text{V}$, $L_i=100\text{mA}$, $P_i=1\text{W}$, $C_i=13\text{nF}$,

$L_i=0.5\text{mH}$

(Use a power cord suitable for working at a temperature 5°C higher than the ambient temperature)

IECEx Explosion certification

Exd IIC T6 Ga/Gb

$-30^{\circ}\text{C} \leq \text{Tamb} \leq +75^{\circ}\text{C}$ Process temperature $\leq 85^{\circ}\text{C}$

Exd IIC T5 Ga/Gb

$-30^{\circ}\text{C} \leq \text{Tamb} \leq +80^{\circ}\text{C}$ Process temperature $\leq 100^{\circ}\text{C}$

Exd IIC T4Ga/Gb

$-30^{\circ}\text{C} \leq \text{Tamb} \leq +80^{\circ}\text{C}$ Process temperature $\leq 110^{\circ}\text{C}$

Ex tb IIIC T85°C Db

-30°C ≤ Tamb ≤ +75°C Process temperature ≤ 85°C

Ex tb IIC T100°C Db

-30°C ≤ Tamb ≤ +75°C Process temperature ≤ 100°C

Ex tb IIIC T110°C Db

-30°C ≤ Tamb ≤ +75°C Process temperature ≤ 110°C

(Note: Use a power cord suitable for operating at temperatures 5°C above the surroundings)

IECEX safety safety safety certification

Ex ia IIC T4 Ga

-30°C ≤ Tamb ≤ +60°C Process temperature = 105°C

Electrical parameters:

Ui=30 V, Li=93mA, Pi=1W, Ci=5nF, Li=0.5mH

Ex ia IIIC T105°C Da

-30°C ≤ Tamb ≤ +60°C Process temperature = 105°C

Ex ic IIC T4 Gc

-30°C ≤ Tamb ≤ +60°C Process temperature = 110°C

Electrical parameters: Ui=30V, Ci=5nF, Li=0.5mH

Electromagnetic compatibility (EMC)

EN 61326-1:2013

EN 61326-2-3:2013

EN 61326-2-5: 2013

Electromagnetic compatibility directive: 2014/30/EU

RoHS attestation

EN 50581:2012

EN 62321:2013

Debug method

HART hand operator, local button

The HART manipulator can configure almost all instrument parameters.

The local button can perform various functional configurations of the transmitter: zero (point) adjustment, plus

Set the upper and lower limits of pressure and no pressure, unit selection, damping setting, export selection, etc.

Display interface

Identification	Explain
PV	The main screen displays process variables, the secondary screen displays percentage and progress bar.
mA	The main screen shows the current value, and the secondary screen shows the percentage and progress bar.
%	Home screen display percentage, secondary screen display percentage and progress bar.

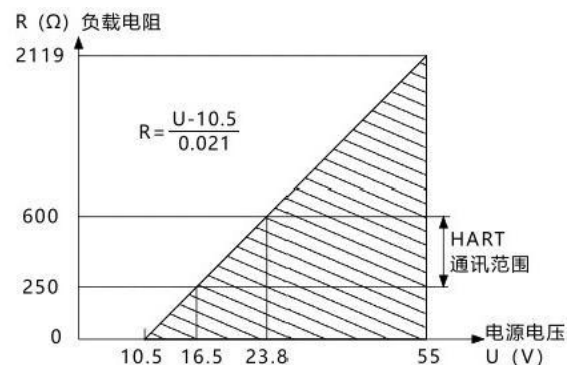


Figure 1. Power supply and load conditions

The filling fluid	Determination of medium temperature
Ultra-high temperature silicone oil	-40~410°C
Ultra-high temperature filling fluid	10~600°C

Table 1 Determine medium temperature range

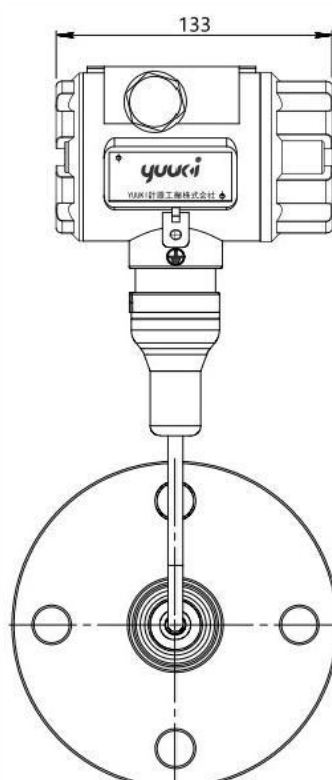
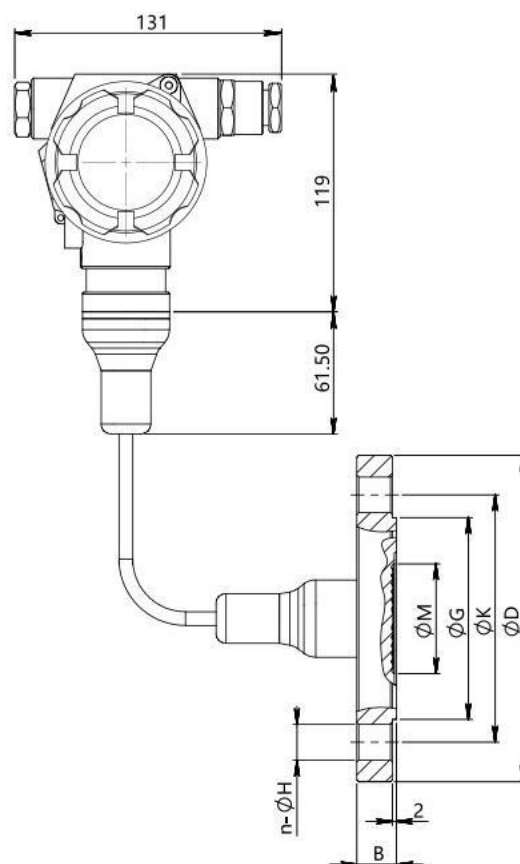
By standards, and test base conditions, including linear, sluggish, and repetitive. Calibration temperature: 20°C ± 5°C	
Linear transmission and output accuracy	± 0.075%, if TD > 10 (Note 10), ± (0.0075 TD)%
	± 0.1%, if TD > 10), it is ± (0.01 TD)%
The square root export accuracy is 1.5 times the linear reference accuracy	
Note 1: TD = max. range / regulatory range	

Table 2 refers to the accuracy

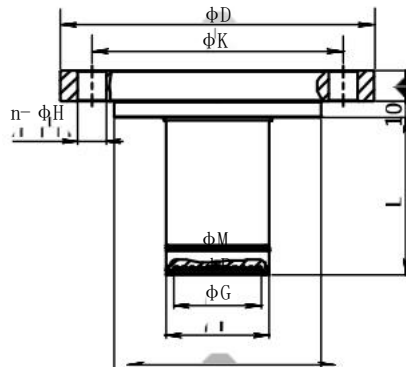
Overall dimension drawing (in mm)



Overall size drawing with display function



Size diagram of the remote transmission flange connection



The flange is called diameter	Nominal pressure	ΦD	ΦK	Plug-in ΦP	Flat type ΦM	ΦG	B	Supporting bolts
DN50 Sealing face DIN2526E flange DIN2501	PN1.6MPa/4MPa	165	125	66	42	102	20	M16×4
	PN6.4MPa	180	135	66	42	102	26	M20×4
	PN10MPa	195	145	66	42	102	28	M24×4
DN80 Sealing face DIN2526E flange DIN2501	PN1.6MPa/4MPa	200	160	66	42	138	24	M16×8
	PN6.4MPa	215	170	66	42	138	28	M20×8
	PN10MPa	230	180	66	42	138	32	M24×8
DN100 Sealing face DIN2526E flange DIN2501	PN1MPa/1.6MPa	220	180	77	42	158	22	M16×8
	PN2.5MPa/4MPa	235	190	77	42	162	26	M20×8
DN2" The ANSI B16.5 RF type	150psi	152.4	120.6	66	42	92.1	17.4	M16×4
	300psi	165.1	127	66	42	92.1	20.6	M16×8
	600psi	165.1	127	66	42	92.1	31.75	M16×8
DN3" The ANSI B16.5 RF type	150psi	190.5	152.4	66	42	127	22.2	M16×4
	300psi	209.5	168.3	66	42	127	27	M20×8
	600psi	209.5	168.3	66	42	127	38.05	M20×8
DN4" The ANSI B16.5 RF type	150psi	229	191	77	42	157	30	M16×8
	300psi	255	200	77	42	157	32	M20×8

Order number	Project	Code	Content
1	Model	JUN-E91	Ultra-high temperature single flange remote pressure transmitter
2	accuracy	B	$\pm 0.075\%$
		C	$\pm 0.1\%$
3	range	G40	Gauge pressure, 0 to 40kPa, Minimum range 4kPa
		G250	Mege pressure, 0 to 250kPa, Minimum range 25kPa
		G1K	Gauge pressure, 0 to 1MPa, Minimum range 100kPa
		G3K	Gauge pressure, 0 to 3MPa, Minimum range 300kPa
		G10K	Gauge pressure, 0 to 10MPa, Minimum range 1MPa
		G21K	Meter pressure, 0~21MPa, Minimum range 2.1MPa
		G40K	Gauge pressure, 0 to 40MPa, Minimum range 4MPa
		A40	Stpressure, 0 to 40kPa, Minimum range 20kPa
		A250	Stpressure, 0 to 250kPa, Minimum range 50kPa
		A1K	Stpressure, 0~1MPa, Minimum range 100kPa
		A3K	Stpressure, 0~3MPa, Minimum range 300kPa
4	communication mode	H	4~20mA + HART, made in two lines
		P	PROFIBUS-PA (ask separately for delivery date)
		F	FOUNDATION Field-bus (Request separately)
5	explosion-proof	N	No explosion-proof function
		G	PCEC explosion suppression
		D	NEPSI explosion suppression
		A	NEPSI Ben Ann
		E	ATEX explosion suppression
		B	ATEX Ben Ann
		M	IECEX explosion suppression
		W	IECEX Ben Ann
6	show	N	No display
		L	LCD liquid-crystal display
		O	OLED display (ask later)
7	Ontology film sheet Mass and filling fluid	S	SUS 316L Membrane sheet, silicone oil filling fluid
8	Type O sealing ring material quality	F	Fluorine-rubber
9	Far spread flange	B	DN 50 DIN 2501 / HG 20592, Type E DIN 2526 sealing surface, Hab C diaphragm

Order number	Project	Code	content
		F	DN 80 DIN 2501 / HG 20592, Type E DIN 2526 sealing surface, Hab C diaphragm
		J	DN 100 DIN 2501 / HG 20592, Type E DIN 2526 sealing surface, Hab C diaphragm
		N	DN 2 " ANSI B 16.5/HG 20615, RF type ANSI B 16.5, Harbin alloy C diaphragm
		R	DN 3 " ANSI B 16.5/HG 20615, RF type ANSI B 16.5, Harbin alloy C film
		V	DN 4 " ANSI B 16.5/HG 20615, RF type ANSI B 16.5, Harbin alloy C film
10	Flange rated pressure and material quality	1	PN1MPa/4MPa, DIN2501/HG20592, SUS 304
		2	PN6.4MPa, DIN2501/HG20592, SUS304
		3	PN10MPa, DIN2501/HG20592, SUS 304
		4	PN 1MPa / 1.6MPa, DIN 2501 / HG 20592 (DN 100 flange as applicable), SUS 304
		5	PN 2.5MPa / 4MPa, DIN 2501 / HG 20592 (DN 100 flange as applicable), SUS 304
		6	Class 150, ANSI B16.5/HG20615, SUS 304
		7	Class 300, ANSI B16.5/HG20615, SUS304
		8	Class 600, ANSI B16.5/HG20615, SUS304
		9	Class 150, ANSI B16.5/HG20615 (4 " flange as applicable), SUS304
		0	Class 300, ANSI B16.5/HG 20615 (4 " flange as applicable), SUS 304
		A	PN1MPa/4MPa, DIN2501/HG20592, SUS 316
		B	PN6.4MPa, DIN2501/HG20592, SUS316
		C	PN10MPa, DIN2501/HG20592, SUS 316
		D	PN 1MPa / 1.6MPa, DIN 2501 / HG 20592 (DN 100 flange as applicable), SUS 316
		E	PN 2.5MPa / 4MPa, DIN 2501 / HG 20592 (DN 100 flange as applicable), SUS 316
		F	Class 150, ANSI B16.5/HG20615, SUS316
		G	Class 300, ANSI B16.5/HG20615, SUS316
		H	Class 600, ANSI B16.5/HG20615, SUS316
		I	Class 150, ANSI B16.5/HG20615 (4 " flange as applicable), SUS316
		J	Class 300, ANSI B 16.5/HG 20615 (4 " flange as applicable), SUS 316
11	Insert tube	0	Flat type
		1	Insertion, liquid diaphragm material quality SUS 316L, cylinder material quality SUS 316, insert length 50mm
		2	Insertion, liquid diaphragm material quality SUS 316L, cylinder material quality SUS 316, insertion length 100mm
		3	Insertion, liquid diaphragm material quality SUS 316L, cylinder material quality SUS 316, insertion length 150mm
		4	Inset, liquid diaphragm material quality Hell C, cylinder material quality SUS 316, insert length 50mm

Order number	Project	Code	content
		5	Insertion, liquid diaphragm material quality Hell C, cylinder material quality SUS 316, insert length 100mm
		6	Insertion, liquid diaphragm material quality Hell C, cylinder material quality SUS 316, insertion length 150mm
12	Seal into the liquid	U	Ultra-high temperature silicone oil-40~410℃
		Z	Ultra-high temperature filling fluid10~600℃
13	Length of capillary And the material quality	01	1m, SUS304
		02	2m, SUS304
		03	3m, SUS304
			...
		A1	1m, SUS316
		A2	2m, SUS316
		A3	3m, SUS316
14	Capillary sheath	N	not have
		P	PVC sheath
15	Flange liquid surface handle	NN	not have
		60	Anti-vacuum treatment (temperature 120℃, working pressure 150 kPa absolute pressure)
		73	DN 50 / 2 " Haret C sheet gold plated
		74	DN 80 / 3 " Haret C sheet gold plated
		75	DN 100 / 4 " Haret film C alloy gold plating
		80	No oil treatment
		81	Water ban treatment
16	Distribution connection	T1	Two M20 * 1.5 internal thread electrical interfaces
		R1	Two M20 * 1.5 internal thread electrical interfaces, with M20 * 1.5 waterproof connector on one side and PVC material quality plug head on the other side
		R2	Inner 1 / 2 NPT connector on one side and stainless steel material quality plug on the other side
		R3	One inner thread M20 * 1.5 joint, the other side with stainless steel material quality plug
17	Additional options-Fixed mounting fittings	-B4	U-shaped bracket, 2 " tube mounting
18	Additional option-Check the report	-Q2	Provide a nationally recognized third-party verification report

Matters need attention

To better perform the performance of the transmitter, please pay attention to the following before use and read the instructions.

Note for transmitter installation

Notice
When installing the transmitter, ensure that the sealing gasket is connected in the process, not from the transmitter to the process fluid (such as fitting flange connection, connecting pipe Lane, flange) connected prominent, if the sealing gasket protruding outside, may lead to liquid leakage and output errors. Do not use the transmitter beyond the specified pressure, temperature range and operating conditions of the product specification, otherwise it may cause the leakage of the product and cause serious accidents. When wiring in dangerous areas, please follow the operation method specified in the explosion-proof standard instructions.

Use the HART protocol equipment notice matters

If the instrument is operated by the helper (HART Communicator, etc.), set the communication interval of the server (DCS, equipment management system) for more than 8 seconds, or stop the communication between the server and the instrument. If the server communicates with the instrument repeatedly within 8 seconds, the instrument may not accept the request of the helper (may not be able to communicate with the instrument).

If the electrical noise interference in the surrounding environment affects the HART communication with the server, please take corresponding measures, such as separating the signal cable from the noise source, improving the grounding or replacing the signal shielding cable, etc. If an analog signal of 4-20mA is used, the use will not be affected even if the HART communication is disturbed by the noise.

Notice
Please do not stand on the installed transmitter, take it as a foot.foot may occur splash, causing fluid splash injury personnel. Be careful of the glass display, do not use tools to hit the glass part of the digital watch head, breaking the glass may cause body injury. The transmitter is heavy, please carefully install and wear safety shoes. The collision transmitter may damage the sensor module.

Wiring notice matters

Warning
To prevent a short circuit, please do not use wet hands or in a live state of the wiring work.

Notice
Please connect correctly according to the technical specification. Wrong wiring will cause instrument failure or irreparable damage. Please use the power supply that meets the technical specification. Using the inappropriate power supply can cause instrument failure or irreparable damage.

△ Read the operation manual carefully before using this product.

△ Any change in appearance or specification due to improvement without notice.