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JK-592G Single Crystal Silicon Pressure Transmitter

Overview

JK-592G single crystal silicon pressure transmitter has high quality, high reliability and wide selection range, providing high quality and high value-added pressure measurement solutions for various process control systems.

Working principle

1.1 Schematic diagram

Please see Fig1-1 for the schematic diagram of JK-592G series intelligent transmitter.

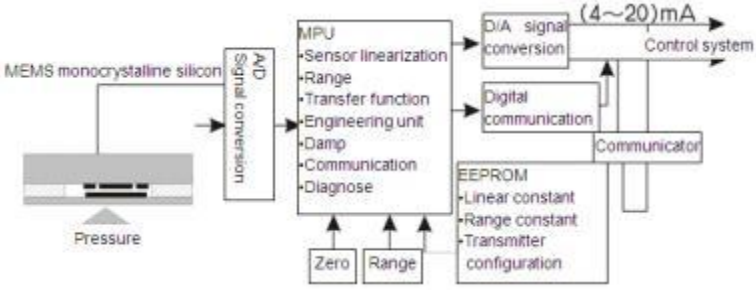


Fig. 1-1 Block diagram for working principle

1.2.1 Working principle of JK-592G series intelligent transmitter

Transmitter is composed of sensor and signal processing circuit. There is Wheatstone bridge on the pressure sensing surface of the sensor. The resistance value of the bridge arm will change with the increasing of pressure and then convert to standard (4~20)mA signal output via signal processing circuit, shown as in Fig. 1-2.

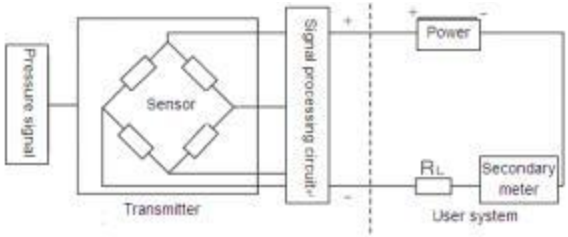


Fig. 1-2

1.2.2 D/A conversion

After D/A conversion, the corrected digital signals, which are transmitted by the microprocessor, can be converted into 4~20mA analog signals and then output.

1.2.3 Digital communication

Test and configure the JK-592G intelligent transmitter through a communicator or complete the communication by an upper computer with HART communication protocol. HART protocol adopts the BELL202 Frequency Shift Keying (FSK) technology and realizes the communication by overlaying the 1200Hz or 2200Hz digital signal onto the 4~20mA signals. While communicating, there is no frequency signal interference.

2.Parameter

2.1 Functional parameters

Rated voltage: DC24V

Power supply influence: less than ±0.005% range/volt

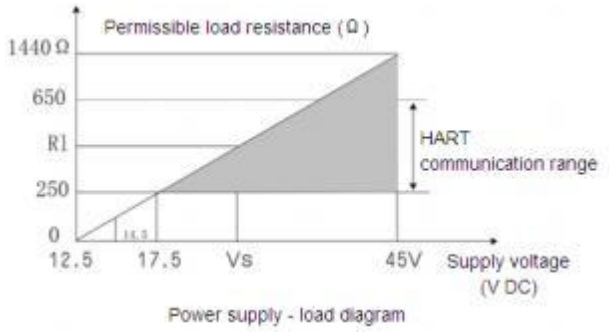
Ambient temperature: -20° C to +40° C

Application: the measurement of liquid, gas and steam

Range as follow

Converter type	Range code	Min. range	Max. range
JK592G	1	12.5KPa	250KPa
	2	0.15MPa	3MPa
	3	0.5MPa	10MPa
	4	2MPa	20MPa
	5	5MPa	40MPa
	6	16MPa	80MPa

Load limit:



Power supply - load diagram

Note:

The supply voltage range of the transmitter with backlight display is 14.5~45V

The supply voltage range of the intrinsic-safety series transmitter is 14.5～28V. The working voltage during HART communication should be larger than 17.5V.

Power supply: An external power supply is needed. When the transmitter works without load, the voltage is 14.5-36V DC.

2.2 Temperature limit

Process: Sensor (filled with Silicon oil): -40℃ to 121℃

Sensor (filled with Inert liquid): -30℃ to 121℃

Environment: -20℃~+70℃

Storage: -46℃ to 110℃

-40℃ to 85℃ (LCD gauge outfit)

Humidity limit: 0- 100% relative humidity

Starting time

Output code: 2s without warm-up

2.3 Performance index

(Zero-base range, reference conditions, silicone oil filling liquid, 316SS isolation diaphragm)

Damping time: Set the time constant according to the actual condition of the field. It is suggested to be 1s.

Influence of vibrations: less than 0.065%URL

Vibration test conditions: peak-peak value 4mm (5- 15Hz)

Accelerated speed 2g (15- 150Hz) and 1g (150-2000Hz)

Influence of power supply: ＜0.01% range/v

Influence of installation position: there will be no null drift effect by changing the installation position, which is parallel to the diaphragm surface. If the change between the installation position and the diaphragm surface do not exceed 90。, the null shift within 0.4KPa can be corrected by zero setting without influencing the range.

2.4 Mechanical performance index

Electrical interface:

ANSI (American Standard), NPT1/2(F) female resistance

ISO (Chinese standard), M20×1.5 female thread

Process interface:

1/2 female NPT,

1/2 male NPT,

M20×1.5 female NPT/inner boreΦ3 (standard),

M20×1.5 male NPT/inner bore Φ10 (viscous media)

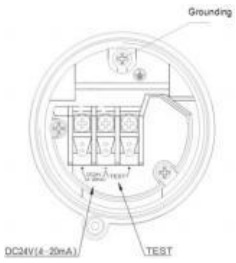
Materials of process connecting pieces:

Isolation diaphragm:316 stainless steel and hastelloy C

Process interface:

316L stainless steel CF-3M

Wiring diagram of terminal side



Connecting terminal	
DC24V(4~20mA) + −	Power supply and output end
TEST + −	Connect to the testing terminal of ampere meter (impedance should be less than 10Ω)
⏚	Grounding terminal

Calibration

JK592G series intelligent transmitter has been calibrated before out of factory. Please refer to the manual for the detailed modifications.

3.Introduction of anti-explosion

3.1 Anti-explosion sign

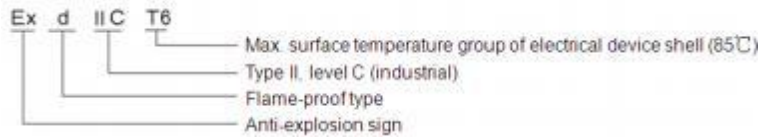
Sign for flame-proof type: Exd IIC T6 Gb

Product standard: Q/FSJY 008-2014

Sign for intrinsically safe type: Exia IIC T6 Ga

Product standard: Q/FJSR 008-2014

Flame-proof type



4. Structure

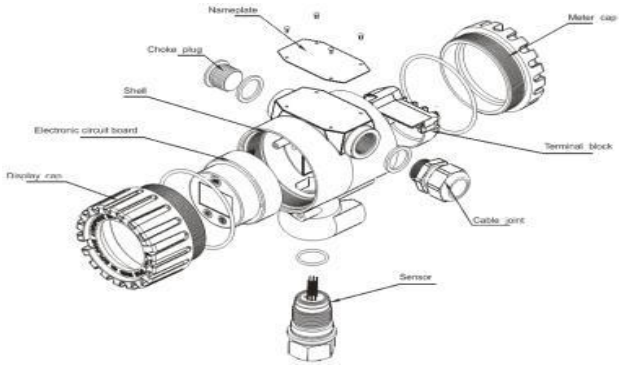
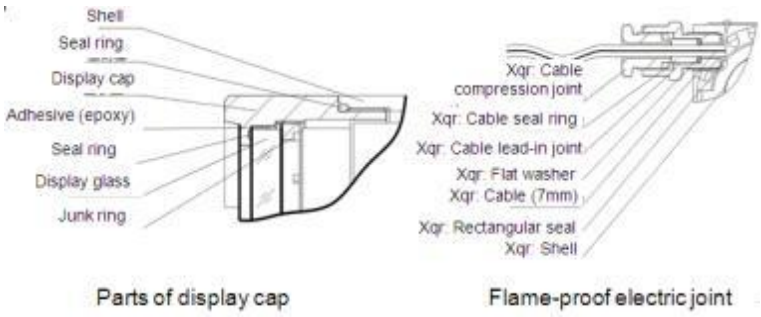


Fig. 5-1 Parts of WP362 series monocyrstalline silicon pressure transmitter

5. Vulnerable parts



Parts of display cap Flame-proof electric joint

6. Dimension (with valve banks)

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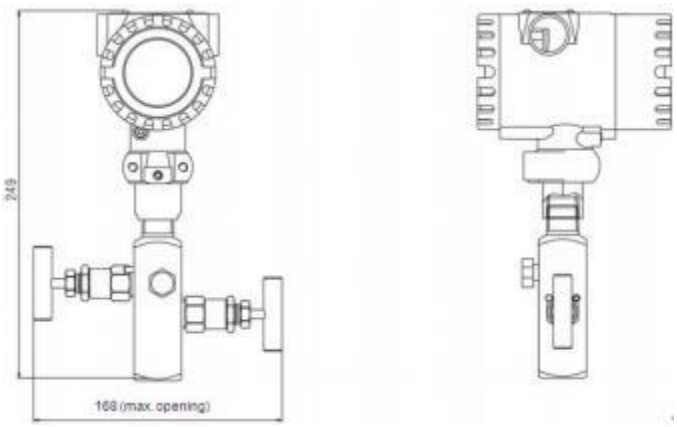

Dimension (with V2 series 2-valve manifold) (Unit: mm)