

Product introduction

Description



High performance pressure transmitter

SMP 131 compact pressure transmitter combined with all the latest available technologies of the modern electronic pressure measurement fields. It's the most cost-effective products after 10 year's research and development. The sensor adopts full-automatic linear and temperature compensation technology to ensure the efficiency and quality of mass production. Fully-sealed and isolated air cavity design to ensure the long term reliability. Signal transmitting module adopts original calibration technology to realize parameters setting easily without any tools. SMP 131 compact pressure transmitter has unique technological advantage which is different from other ordinary products with the same price and its' capabilities are equivalent to the most of the high-end products, which is the first selection of the most cost-effective products.

Main parameters

Pressure types	Differential pressure
Measuring range	10kPa-3.5MPa, please refer to the ordering information chapter
Output signal	4-20mA, 4-20mA+HART, 0.5-4.5VDC, Modbus-RTU/RS485, others
Reference accuracy	±0.2% URL, ±0.5% URL, optional ±0.1% URL

Field of application

Pressure, differential pressure and level measurement

Approvals



Measuring medium

The fluid which compatible with wetted parts

Technical specifications

Measuring range and limit

Nominal value	Smallest calibratable span	Lower range limit(LRL)	Upper range limit (URL)	High pressure side overload limit	Low pressure side overload limit
35kPa	10kPa	-35kPa	35kPa	70kPa	35kPa
70kPa	35kPa	-70kPa	70kPa	150kPa	70kPa
100kPa	50kPa	-100kPa	100kPa	200kPa	100kPa
200kPa	100kPa	-200kPa	200kPa	400kPa	200kPa
350kPa	200kPa	-350kPa	350kPa	700kPa	350kPa
700kPa	350kPa	-500kPa	700kPa	1400kPa	700kPa
1MPa	500kPa	-0.5MPa	1MPa	2MPa	1MPa
2MPa	1MPa	-0.5MPa	2MPa	4MPa	1MPa
3.5MPa	1.7MPa	-0.5MPa	3.5MPa	7MPa	1MPa

Above measurement range can be replaced by kg/cm2, MPa and kPa units .Which can provide other measurement range according to the requirements. Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span ≤ | URV-LRV | ≤ upper range limit

Reference accuracy

Including linearity, hysteresis and repeatability. calibration temperature: 20°C ± 5°C			
Linear output accuracy	Typical	±0.2%URL (HART output accuracy: ±0.1% URL)	Nominal value: 35kPa、70kPa、100kPa、200kPa、350kPa、700kPa、1MPa、2MPa、3.5MPa
	Max/Voltage output	±0.5% URL	

Standard specifications and reference conditions

Test standard: GB/T28474 / IEC60770; Zero based-calibration span, Linear output, Silicon oil filling, 316L stainless steel isolated diaphragm.

Power supply effects

Zero and span change should not be more than ± 0.005% URL/V

Performance specifications

The overall performance including but not limited to 【reference accuracy】 , 【environment temperature effects】 and other comprehensive error  
 Typical accuracy: ±0.2% URL (HART output accuracy: ±0.1% URL)  
 Stability: ±0.1% URL/ year

Loading effects

Zero and span change should not be more than ± 0.05% URL/kΩ

Ambient temperature effects(Typical)

Within the range - 20-80 °C total impact ±0.2%URL/10k

Vibration effects

Vibration resistance	According to IEC60068-2-6 , 10g RMS (25-2000Hz)
Impact resistance	According to IEC60068-2-27 , 500g/1ms

**Technical specifications**

**Output signal**

Signal	Type	Output
4-20mA	Linearity	Two wire
4-20mA+HART	Linearity	Two wire
0.5-4.5VDC	Linearity	Three wire
Modbus-RTU/RS485	Linearity	Four wire

**Working life**

>10 million max pressure circulation

**Insulation resistance**

≥ 20M Ω@, 100VDC

**Damping time**

Total damping time constant: equal to the sum of damping time of amplifier and sensor capsule
Damping time of amplifier: 0-100S adjustable (with HART protocol)
Startup after power off: ≤3S (HART output time: ≤ 6S)
Normal services after data recovery: ≤4S (HART output time: ≤31S)

**Environment condition**

Items	Operational condition
Working temperature	-40-85°C
Storage temperature	-40-100°C
Media temperature	-30-80°C
Working environment humidity	0-95%RH
Protection class	IP 65
Dangerous condition	ExialICT4(GYB16.1964X)*
*Only for 4-20mA output	

**Technical Specifications**

Signal output	4-20mA	4-20mA+HART*	0.5-4.5VDC	0.5-4.5VDC(ratiometric output)	RS485
Power supply voltage	10-30VDC	10.5/16.5-55VDC	6-15VDC	5VDC	5VDC/9-30VDC
Electric current	≤20.8mA		≤3.5mA		≤7mA
Load resistance(Ω)	<(U-10)/0.0208	<(U-10.5)/0.0208**	≥5k, recommend 100k		/
Transmission distance	<1000m		<5m		<1200m
Power consumption	≤500mW(20.8mA output@24VDC)		≤42mW(0.5-4.5VDC output, @12VDC)		≤168mW(RS485 output@24VDC)
*For this output type, the load resistance value in communication is 250Ω					
**The load resistance value 0-2119Ω is in nominal working condition, 250-600Ω is HART communication					

Technical specifications

EMC environment(not RS485 signal output)

NO.	Test items	Basic standards	Test conditions	Performance level
1	Radiated interference	GB/T 9254/CISPR22	30MHz-1000MHz	OK
2	Conducted interference (DC power port)	GB/T 9254/CISPR22	0.15MHz-30MHz	OK
3	Electrostatic discharge immunity test (ESD)	GB/T 17626.2/IEC61000-4-2	4kV(Contact ),8kV(Air)	B(Note2)
4	Immunity to radio frequency EM-fields	GB/T 17626.3/IEC61000-4-3	10V/m(80MHz-1GHz)	A(Note1)
5	Power frequency magnetic field immunity test	GB/T 17626.8/IEC61000-4-8	30A/m	A(Note1)
6	Electrical fast transient / Burst immunity test	GB/T 17626.4/IEC61000-4-4	2kV(5/50ns,100kHz)	B(Note2)
7	Surge immunity requirements	GB/T 17626.5/IEC61000-4-5	1kV(Line to line) 2kV(Line to ground) (1.2us/50us)	B(Note2)
8	Immunity to conducted disturbances induced by radio frequency fields	GB/T 17626.6/IEC61000-4-6	3V(150kHz-80MHz)	A(Note1)

(Note 1) Performance level A: The performance within the limits of normal technical specifications.

(Note 2) Performance level B: Temporary reduction or loss of functionality or performance, it can restore itself. The actual operating conditions, storage and data will not be changed.

**Product selection instruction**

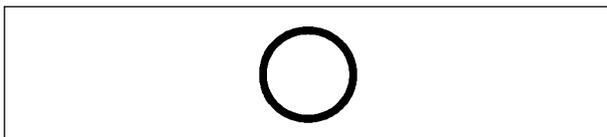
**Sensor select instruction**

Code	Nominal value	Description
L353D	35kPa	Range -35kPa-35kPa, smallest calibratable span 10kPa
L703D	70kPa	Range -70kPa-70kPa, smallest calibratable span 35kPa
L104D	100kPa	Range -100kPa-100kPa, smallest calibratable span 50kPa
L204D	200kPa	Range -200kPa-200kPa, smallest calibratable span 100kPa
L354D	350kPa	Range -350kPa-350kPa, smallest calibratable span 200kPa
L704D	700kPa	Range -500kPa-700kPa, smallest calibratable span 350kPa
L105D	1MPa	Range -0.5MPa-1MPa, smallest calibratable span 500kPa
L205D	2MPa	Range -0.5MPa-2MPa, smallest calibratable span 1MPa
L355D	3.5MPa	Range -0.5MPa-35MPa, smallest calibratable span 1.7MPa

Adjust requirements: lower range value (LRV) and upper range value (URV) can be adjusted within the scope of the upper and lower range limit, smallest calibratable span  $\leq |URV - LRV| \leq$  upper range limit

Code	Parts	Description
S	Isolated diaphragm material	SUS316L
S	Isolated filling fluid	Silicon oil, process temperature: -45-205°C
S	Sensor seal	O-ring, FKM, process temperature: -20-200°C

**Seal(S)**



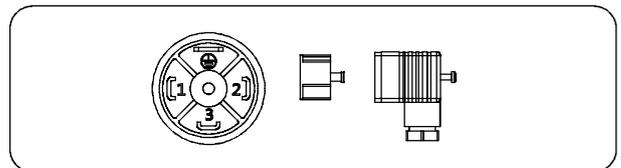
**Electrical connection select instruction**

Code	Description
D1	DIN43650, IP65

**DIN43650 ( D1 )**



**DIN43650(D1)**



Label	Two wires	Three wires	Four wires	Modbus-RTU/RS485
1	Power+	Power+	Power+	Power+
2	Power-	Power-	Power-	Power-
3	Key-z	Signal+	Signal+	A+
⊕			Signal-	B-

Note:Key-z is modified zero pressure

Product selection instruction

Output signal select instruction

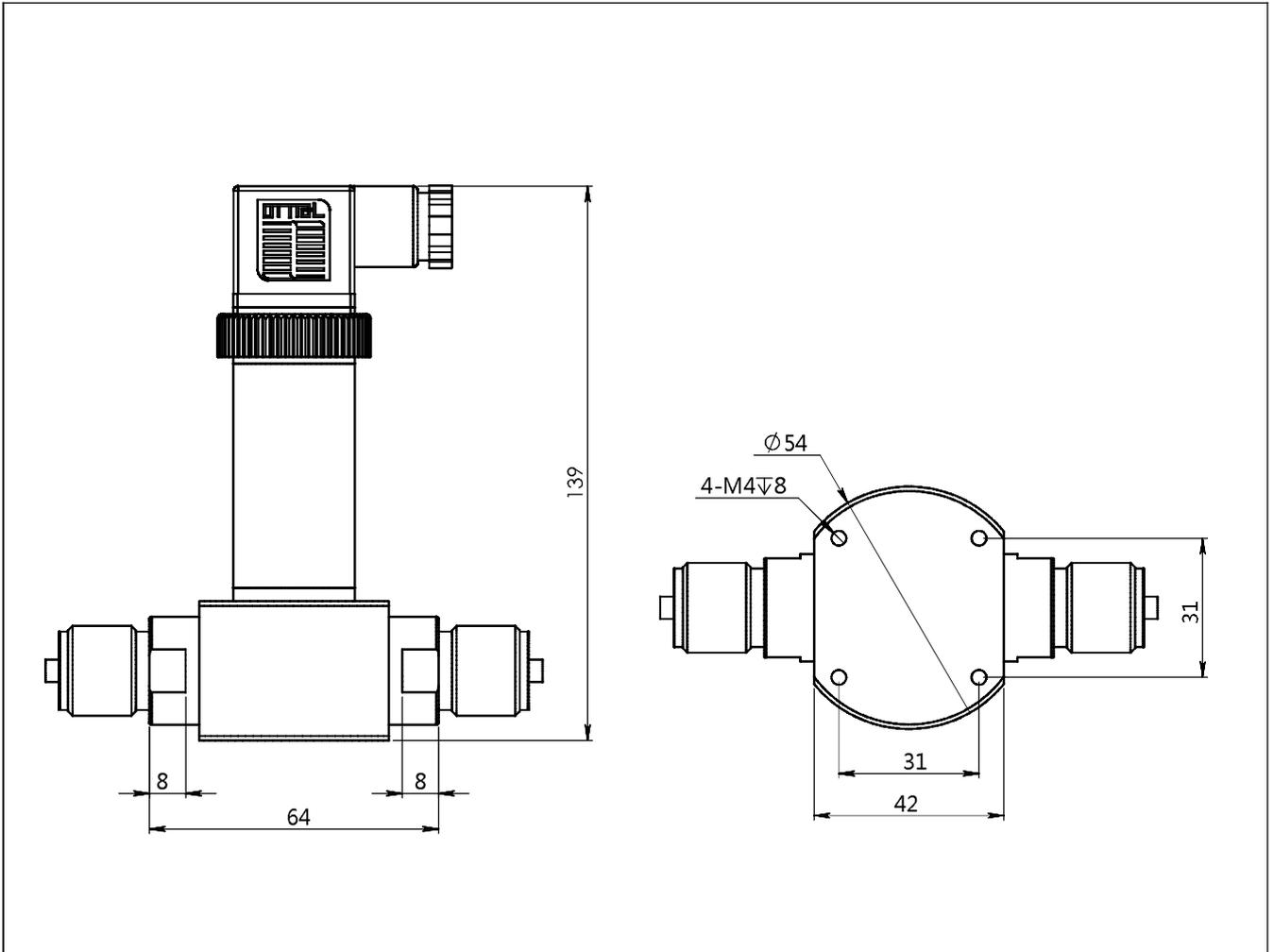
Code	Description
F	4-20mA two wire, power supply: 10-30VDC
H	4-20mA+ HART two wire, power supply: 16.5-55VDC
R	Modbus-RTU/RS485 5V/9-30VDC
5	0.5-4.5V DC three wire, power supply: 6-30VDC
6	0.5-4.5V DC three wire, ratiometric output, power supply: 5VDC
A	4-20mA two wire, Intrinsic safety, power supply: 10-30VDC

Process connection select instruction

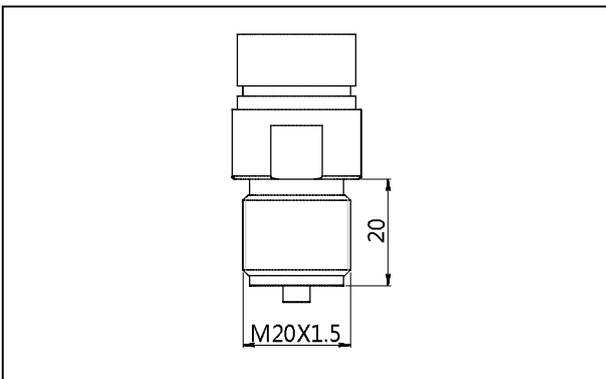
Code	Type	Description
4	Material	SUS304
6		SUS316
M01	Specification	M20*1.5(M), Φ3 pressure lead hole, GB/T193-2003, ISO261
G01		G1/2(M), Φ3 pressure lead hole, EN837
G02		G1/4(M), Φ3 pressure lead hole, EN837
G09		G1/4(F), EN837
R02		1/4NPT(M), ANSI/ASME B1.20.1
R04		1/4NPT(F), ANSI/ASME B1.20.1

Product drawing and dimension

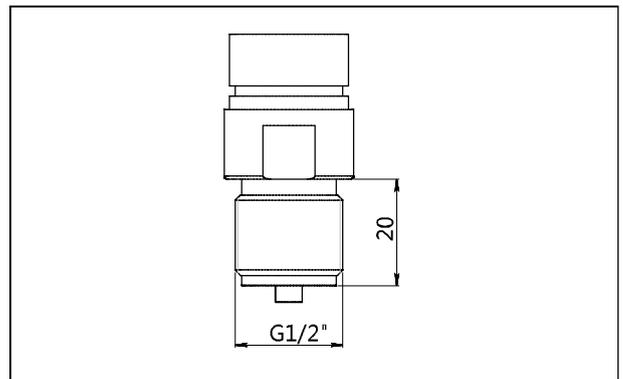
Drawing and dimension with DIN43650(D1) (unit: mm)



Process connection(M01) (unit: mm)



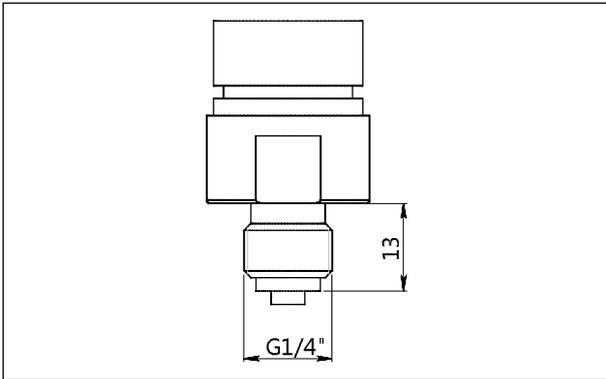
Process connection(G01) (unit: mm)



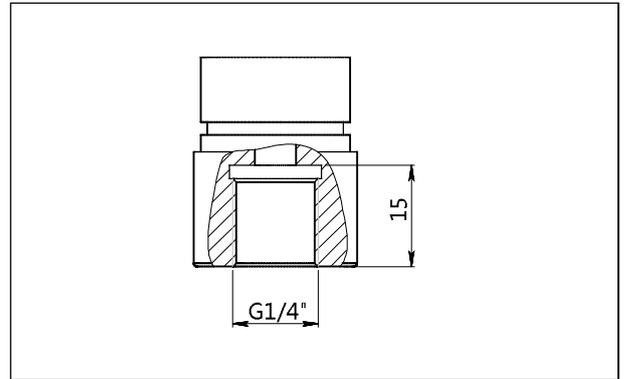
Disclaimer: all the data used in the product description is not legally binding. Relevant technical details may be changed due to further improve

Product drawing and dimension

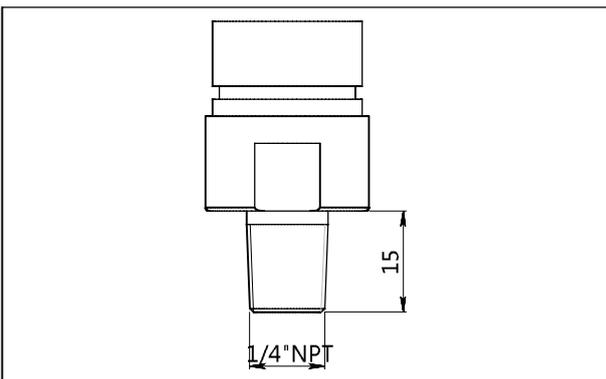
Process connection(G02) (unit: mm)



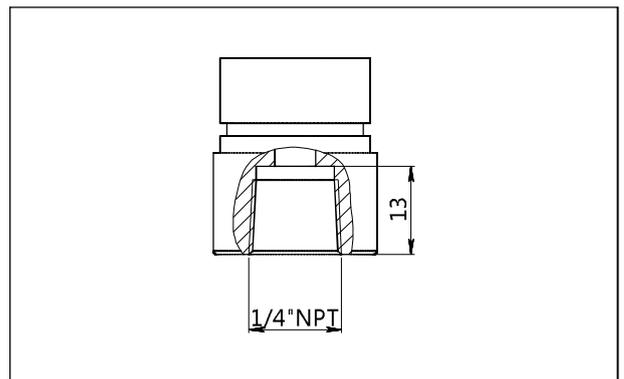
Process connection(G09) (unit: mm)



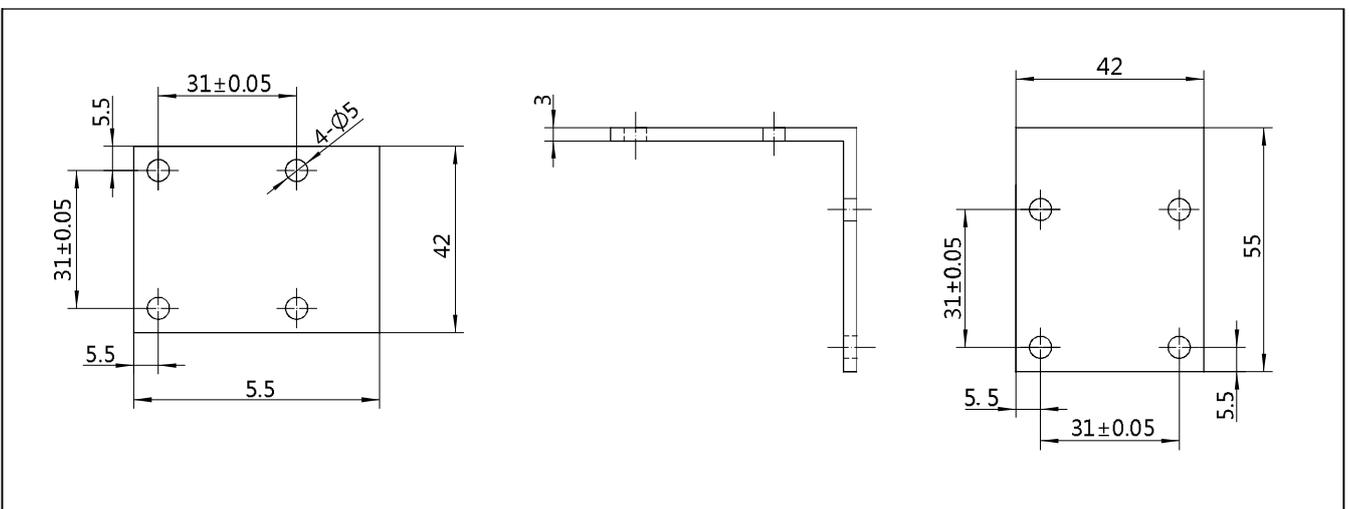
Process connection(R02) (unit: mm)



Process connection(R04) (unit: mm)



Fixed mounting accessory(G1) (unit: mm)



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**Ordering information chapter**

Item	Parameters	Code	Instruction	(*) fast delivery available
	Model	SMP131-DLD	Piezoresistive silicon differential pressure transmitter	
Sensor	Separator	-	Detailed specifications as following	
	Pressure range code	L353D	Nominal value(URL): 35kPa	
		L703D	Nominal value(URL): 70kPa	
		L104D	Nominal value(URL): 100kPa	*
		L204D	Nominal value(URL): 200kPa	*
		L354D	Nominal value(URL): 350kPa	*
		L704D	Nominal value(URL): 700kPa	*
		L105D	Nominal value(URL): 1MPa	*
		L205D	Nominal value(URL): 2MPa	*
		L355D	Nominal value(URL): 3.5MPa	*
	Isolated diaphragm material	S	SUS316L	*
Isolated filling fluid	S	Silicon oil, process temperature: -45-205°C	*	
Sensor seal	S	O-ring, FKM, process temperature: -20-200°C	*	
Electrical connection	Separator	-	Detailed specifications as following	
	Electrical connection	D1	DIN43650, IP65	*
	Cable entry protector	R0	None	
Output	Separator	-	Detailed specifications as following	
	Output signal	F	4-20mA two wire, power supply: 10-30VDC	*
		H	4-20mA+HART two wire, power supply: 16.5-55VDC	
		R	Modbus-RTU/RS485 four wire, power supply: 5vdc/9-30VDC	
		5	0.5-4.5VDC three wire, power supply: 6-15VDC	
		6	0.5-4.5VDC three wire, ratiometric output, power supply: 5VDC	
A	4-20mA two wire, intrinsic safety, power supply: 10-30VDC			
Process connection	Separator	-	Detailed specifications as following	
	Material	4	SUS304	*
		6	SUS316	
	Specification	M01	M20*1.5 (M), Φ3 pressure lead hole, GB/T193-2003, ISO261	*
		G01	G1/2 (M), Φ3 pressure lead hole, EN837	*
		G02	G1/4(M), Φ3 pressure lead hole, EN837	
		G09	G1/4(F), EN837	
		R02	1/4NPT(M), ANSI/ASME B1.20.1	
R04	1/4NPT(F), ANSI/ASME B1.20.1			

**Ordering information chapter**

Additional options	Separator	-	Detailed specifications as following	
	Fixed mounting accessory	/G1	Fixed mounting bracket on base, matched mounting accessory, SUS304	*
	Approvals (multiple)	/I1	Intrinsic safety certificate, ExiaIICT4, NEPSI	
		/F3	CE certificate	
	Wetted parts treatment	/G1	Ungrease treatment	
		/G2	Electropolishing treatment	

**Approvals**
**Factory certificate**

Certification organization	Intertek
Quality management system	ISO9001-2008
Scope of certification	Design and production of pressure transmitter
Registration number	110804039

**CE**

Certificate organization	ISET
License scope	SMP131 series pressure transmitter
Mark	EU
EMC instruction	2014/30/EU
Standard	AC/0100708
Registration number	IT031353LG161207

**Intrinsic safety certificate**

Certification organization name	NEPSI
Licenses range	SMP131 series pressure transmitter
Explosion-proof mark	ExiaIICT4
Ambient temperature	-40-+60°C
Medium maximum temperature	+120°C
Registration number	GYB16.1964X
Intrinsically safe parameter description	Maximum input voltage: 28VDC
	Maximum input current: 100mA
	Maximum input power: 0.7w
	Maximum internal equivalent parametersCi(uF): 0
	Maximum internal equivalent parametersLi(mH): 0