

Pressure measurement

Conventional pressure sensor



P.139 [▶](#)

Micro pressure sensor



P.145 [▶](#)

Micro differential pressure transducer



P.147 [▶](#)

Conventional pressure sensor



SYP series pressure sensors adopt metal strain gauge or semiconductor strain gauge to stick on the specific surface of the elastic element. When the physical quantities such as force, torque, speed, acceleration and flux, etc. are applied to the elastic element, it will lead to the change of the stress and strain of the element, and then result in the change of the strain gauge resistance. The change of resistance will be converted into electrical signal output after being processed by circuit, that is the working principle of resistance strain sensor. The SYP series pressure sensor adopts high precision pressure sensor component and converts the output millivolt signal generated by sensor subject into pressure, standard current or voltage output signal through the built-in circuit. All-stainless steel integrated welding process is adopted in the structure to ensure the long-term stable operation of the products under severe working conditions.

SYP250E series explosion-proof pressure sensor is a product that is specially designed for dangerous working conditions that may explode. The product includes two explosion-proof types including intrinsically safe explosion-proof type and isolation explosion-proof type, and both of them have passed the explosion-proof certification of China National Quality Supervision and Test Center for Explosion Protected Electrical Products.

Inquiry Soway

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Ultra-low temperature characteristics,-40 Celsius stable operation

Wide range, anti-RF interference and stable signal

High overload capacity (4 times), anti-vibration, anti-impact, anti-lightning

Abundant head choices, suitable for high and low temperature, corrosion, waterproof environment

Product application example



SYP210 and SYP240 series are standard type, applicable to industrial control and air conditioning pressure inspection.



SYP240H series are applicable to the hydraulic control of construction machinery and places with severe pressure fluctuation.



SYP250E series are applicable to inflammable and explosive places. Its explosion-proof grade: Exd IICT6 Gb. Intrinsically safe explosion-proof grade: Exia IICT6 Ga (the intrinsically safe explosion-proof products need to use safety barrier for power supply).



SYP250T series are applicable to outdoor, with characteristics of lightning-proof, and insulation and withstand voltage greater than 2KV.

Basic performance parameter

Product series	SYP030	SYP210	SYP240H	SYP250T	SYP250E	SYP250L	SYP25K
Product structure chart	Figure 1	Figure 2	Figure 3	Figure 4	Figure 5	Figure 6	Figure 7
Applicable occasion	Minor and small occasion	Vehicle mounted air conditioning	Hydraulic control	Lightning protection place	Explosion-proof place	Liquid level measurement	Alarm control
Measuring medium	Various liquids, gases, or vapours that is compatible with 316 or 304 stainless steel.						
Measuring range	Surface pressure: 0.01Mpa-250MPa, absolute pressure: 0.1Mpa-250MPa, vacuum: 0~-0.1 MPa						
Overload pressure	2 times of full range or 300 MPa (whichever is smaller)						
Output signal	4-20 m ADC (two-wire system) 0-5 VDC, 0-10 VDC (three-wire system)						Switch output
Supply voltage	9-36 VDC (two-wire system) 24± 5 VDC (three-wire system)						
Dielectric temperature	-30 ~ +85℃						
Ambient temperature	-20 ~ +85℃						
Storage temperature	-40 ~ +90℃						
Relative humidity	≤95%(40℃)						
Rise time	≤5 milliseconds up to 90% FS						
Degree of accuracy	Class 0.5 and Class 0.25(inclusive of comprehensive errors including nonlinearity, repeatability and hysteresis)						
Temperature drift	±0.05%FS / ℃(Temperature range-20-85 ℃, including zero and temperature effects of range)						
Temperature compensation range	0 ~ 70℃						
Stability	Typical: ± 0.1% FS/year maximum: ± 0.2% FS/year						
Dielectric contact material	304 or 316 stainless steel						
Shell material	304 or 316 stainless steel, when industrial type is selected, the shell is painted with aluminum alloy						
Installation method	Thread mounting						
Pressure connection	M20x1.5, M12x1, G1/4 and G1/2 external screw thread, etc.						
Electrical connection	Four-core shielded cable, aviation plug, and Hersman joint, etc.						

Note: consult business personnel for special indicators of specific application scenarios

Position detection
Angle measurement
Speed measurement
Displacement measurement
Liquid level measurement
Flow measurement
Pressure measurement
Temperature and humidity measurement
Current measurement
Special sensor

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Machine dimensions

Figure 1: applicable to minor and small occasion

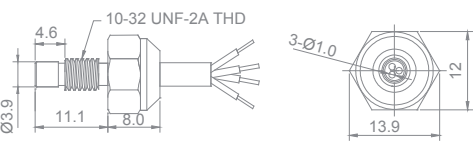


Figure 2-2: applicable to air conditioning systems

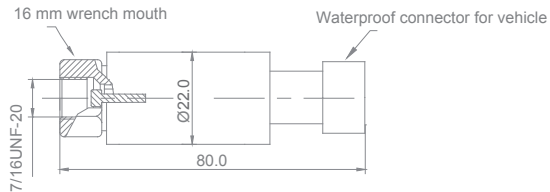


Figure 3: applicable to hydraulic control and lightning protection place

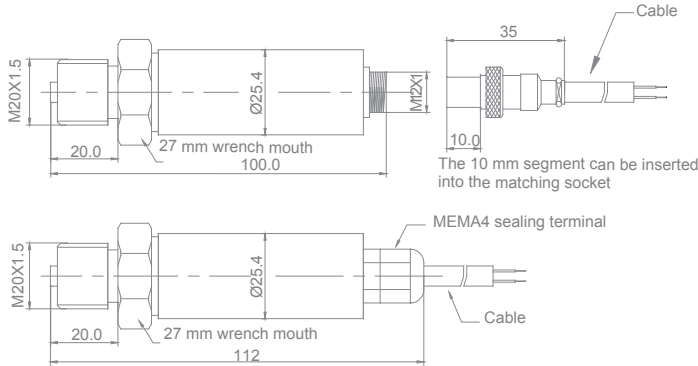


Figure 4: applicable to for lightning protection place

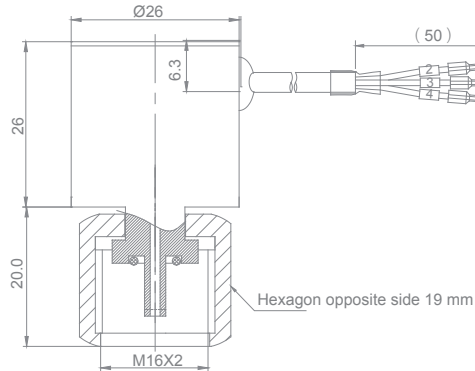


Figure 6: applicable to liquid level measurement

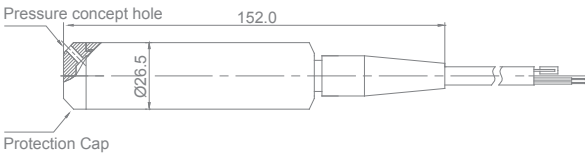


Figure 2-1: applicable to vehicle mounted control

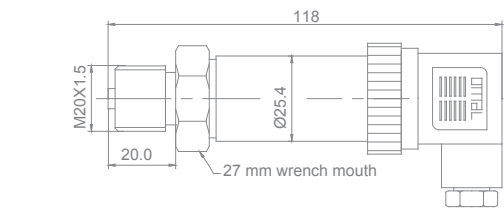
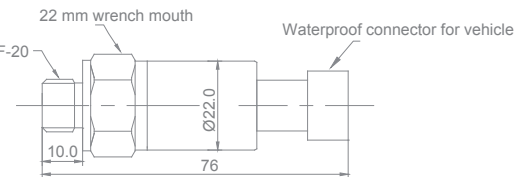
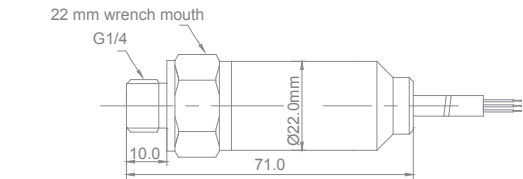


Figure 5: applicable to explosion-proof site

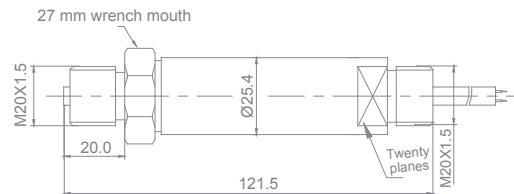
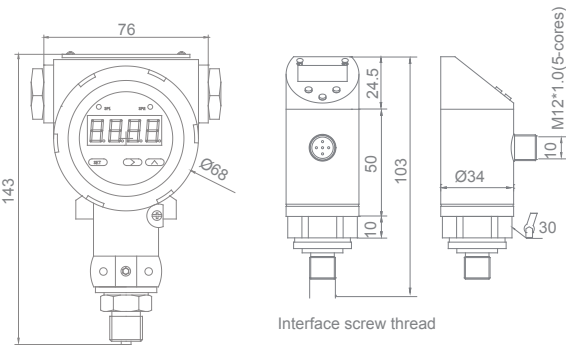


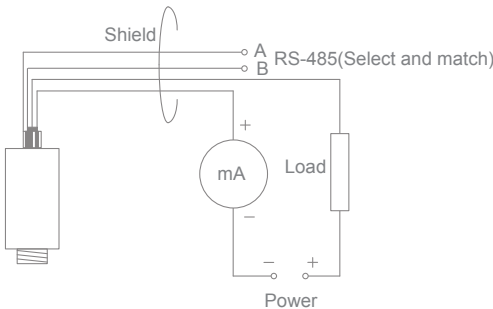
Figure 7: Applicable to alarm control



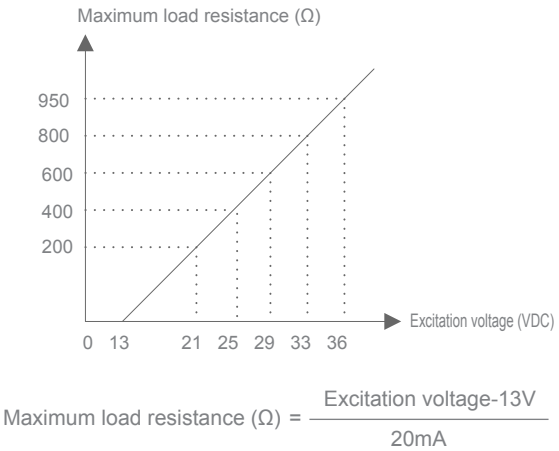
Wiring method

	Cable	Hersman joint	Air plug	Industrial type
Power supply positive (V+)	Red wire	Pin 1	Pin 1	OUT +
Signal output positive (OUT+) or power supply (-)	Black wire	Pin 2	Pin 2	OUT -
Grounding (GND)	Bare wire	Grounding pin	Pin 4	Grounding pin
Hanging	None	Pin 3	Pin 3	None
Test terminal (I+)	None	None	None	TEST +
Test terminal (I-)	None	None	None	OUT -
RS-485A (Select and match)	Green wire	Pin 3	Green wire	A
RS-485B (Select and match)	White wire	Grounding pin	White wire	B

Current-type product wiring diagram:



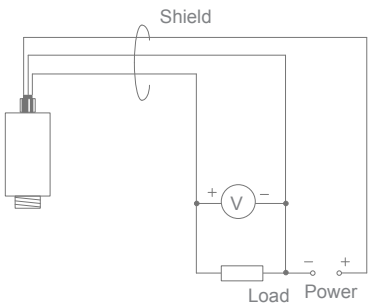
Current output load characteristic diagram:



Voltage type product wiring diagram:

	Cable connection	Hersman joint	Aviation connector
Power supply positive (V+)	Red wire	Pin 1	Pin 1
Power supply negative/ signal negative(V-/OU-)	Black wire	Pin 2	Pin 2
Signal output positive (OUT+)	Green wire	Pin 3	Pin 3
Grounding (GND)	Bare wire	Grounding pin	Pin 4

Note: the power supply voltage of voltage type product is 24± 5VDC. If there is a special power supply need, or signal output need, please contact our company for details.



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Micro differential pressure sensor

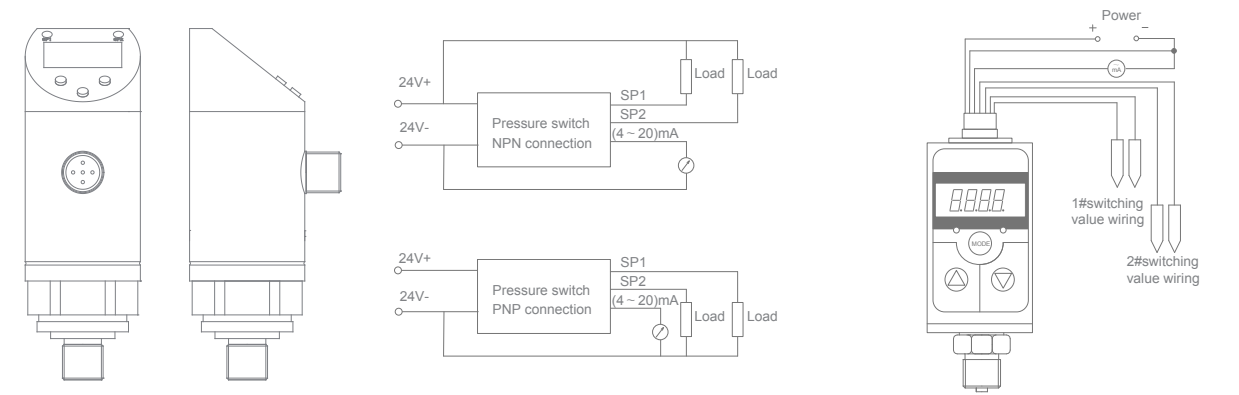


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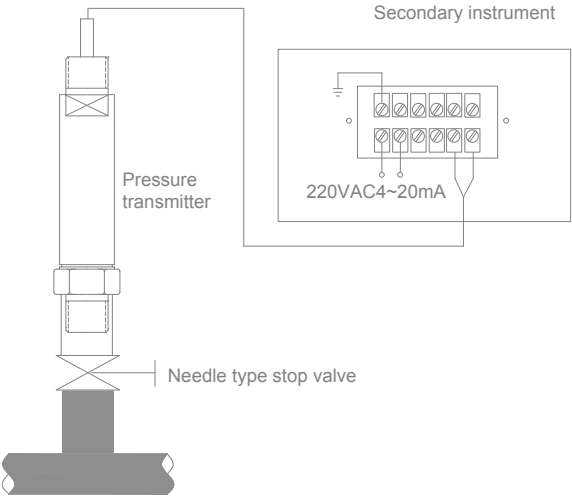
Switch type product wiring diagram:



Exterior pressure switch of oblique gauge

Square gauge outfit outline pressure switch

Method of installation



Product selection list

SYP	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	—	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	—	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/>	—	<input type="checkbox"/> <input type="checkbox"/>	<input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/> <input type="checkbox"/>	—	<input type="checkbox"/> <input type="checkbox"/>
	Main body dimensions	Type		Measuring range	Pressure type	Accuracy		Output signal	Temperature compensation		Installation method	Electrical interface		Other information
Product series	Lack: standard type C: viscous liquid H: hydraulic type E explosion-proof type F: Food grade L: liquid level meter M: coal mine grade S: steam occasion T: outdoor lightning protection A: air conditioning			The end is unit B:bar S:Psi P:Pa K:KPa M:MPa G:GPa	A: absolute pressure S: surface pressure D: differential pressure	S:0.1% A:0.25% B:0.50% C:1.0%		See Table 1 A1、4~20mA V1、0~10V V2、0~5V V7、0.5~4.5V VR, Ratio output M、Modus	Lack: No T: Yes		See Table 2 MB:M12x1 MC:M14x1 MD:M16x1.5 MF:M20x1.5 G1:G1/8″ G2:G1/4″ G3:G3/8″ G4:G1/2″ N1:NPT1/8″ N2: NPT1/4″ N3: NPT3/8″ N4: NPT1/2″	See Table 3		XX

Schedule 1: selection of signal output information

Signal output information selection (2 bits)			
	<input type="checkbox"/>	<input type="checkbox"/>	
Analog output	Current or voltage output	Output range	
	A: Current output	1、4~20mA	
	V: Voltage output	1、0~10V 2、0~5V 7、0.5~4.5V	
	VR: Ratio output		
Digital output	M: Modbus output	Data format and baud rate	
		RTU format	ASCII format
		0: 2400 1: 4800 2: 9600 3: 19200	A: 2400 B: 4800 C: 9600 D: 19200 E: 57600

Schedule 2: Installation Information Selection

Install information selection (2 bits)		
	<input type="checkbox"/> <input type="checkbox"/>	Description of type selection
Thread mounting	MB	M12x1
	MC	M14 x1
	MD	M16 x1.5
	MF	M20 x1.5
	G1	1/8″
	G2	1/4″
	G3	3/8″
	G4	1/2″
	N1	1/8″
	N2	1/4″
	N3	3/8″
	N4	1/2″

Schedule 3: Electrical Interface Information

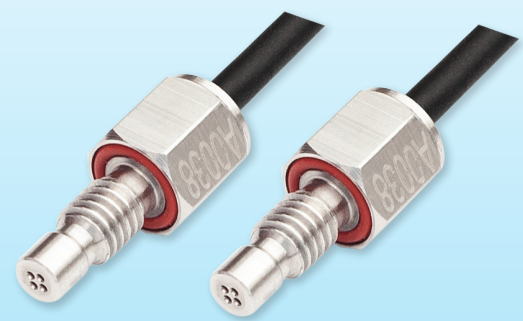
Electrical interface information selection (2 bits)		
	<input type="checkbox"/>	Description of type selection
Outgoing mode	D	Aeronautical joint
	Q	Packard
	P	TPU sheathed cable
	J	JST Joint
	M	Transmitter head
	U	PU sheathed cable
	H	Hersman joint
	S	Silicone rubber sheathed cable

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Micro pressure sensor




SYP series micro pressure sensor is a micro and high sensitive piezoresistive pressure sensor used to measure absolute pressure. The gas behind the diaphragm is pumped out and sealed with glass to provide absolute pressure reference. The full range output is 225mV, with strong overload capacity and high response frequency. The measure range is from 15 psia to 100 psia. The pressure sensor has a four arm strain bridge potential, which is embedded in the unique engraved silicon diaphragm, to achieve maximum sensitivity and broadband frequency response. The self-contained hybrid temperature compensation provides stable performance at temperatures range from 0°F to 200°F (from-18°C to+93°C). The sensor also has the characteristics of excellent linearity (even over 3 times range), high impact resistance and high stability during temperature transients.

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Absolute pressure measurement

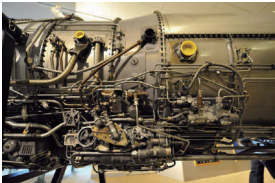
Fast response and high sensitivity

Small in size, strong and durable

Application area



Various non-corrosive gas measurement



Engine pressure inspection

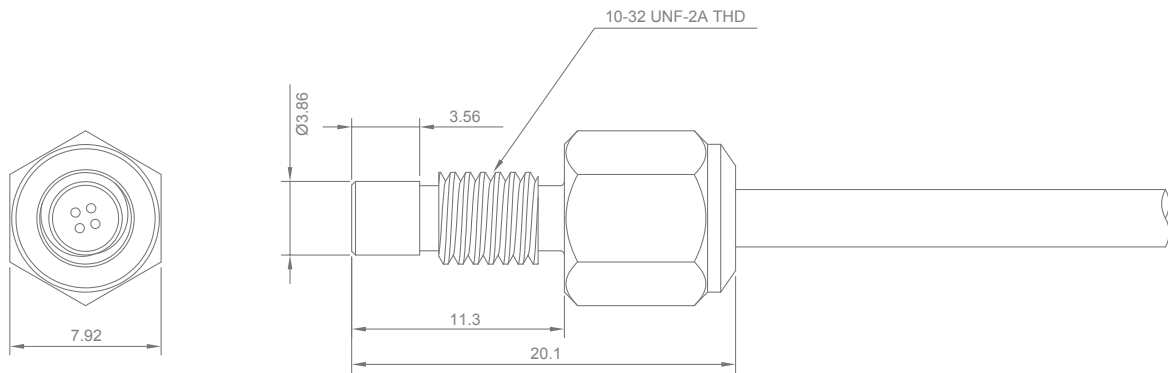


Hydraulic mechanism pressure inspection



Culvert air pressure inspection

Machine dimensions



Basic performance parameter

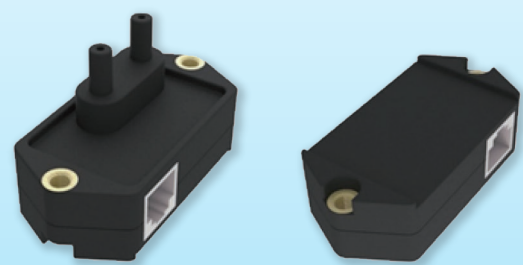
Product model	SYP-101A-002	SYP-102S-002
Medium	Non-corrosive gas	
Measure range	700kPa	40kPa
Supply voltage	10V DC	
Zero output	±20mV	
Full-scale output	110mV (±20mV)	
Zero drift	≤1.0%FS/year	
Thermal zero drift	≤0.2%/FS/°C	
Thermal full range drift	≤0.3%/FS/°C	
Nonlinear	≤0.3%/FS	
Overload capacity	≥300%FS	
Sensitivity Temperature drift	≤0.2%	
Shell material	316 stainless steel	
Working temperature	-55℃~+100℃	
Storage temperature	-55℃~+150℃	
Humidity	Normal environment 25% H~95% H	
Vibration resistance	1000g Peak value	
Shock resistance	20000 g, 100 uS half sine wave pulse	

- Position detection
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Micro differential pressure sensor



Micro differential pressure sensor adopts the imported high-precision, high-stability MEMS pressure core, equipped with single-chip microcomputer, RS-485 communication- and control circuit to convert the pressure difference between two gas areas into a 4-20mA two-wire system signal output which is proportional to it. By adoption of Modbus standard communication protocol, it can carry out local networking, and can directly control the fan equipment through remote control to adjust the local air supply, intelligently monitoring and regulating the air quality in local space. It is applicable to HVAC, energy management system, VAV and fan control, environmental pollution control, static pipeline and clean room pressure, smoke hood control, oven pressurization and furnace ventilation control and other fields.

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Static precision is $\pm 1.0\%$ FS at room temperature

The minimum range is 0 - ± 10 Pa and the maximum range is 0 - $\pm 10,000$ Pa.

Applicable to air or neutral gas

Application field



Air pressure inspection of air conditioning system in plant



Air volume regulation of dedusting equipment



Air pressure measurement of ventilation and exhaust works

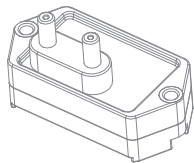
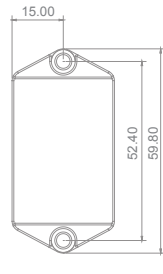
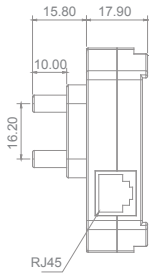
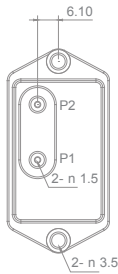


Underground ventilation pressure measurement

Basic performance parameter

Model	SPY601
Supply voltage	10 ~ 28VDC
Measuring range	0 ~ 5000pa
Repeated accuracy	$\pm 0.25\%$ FS
Measurement accuracy	$\pm 1\%$ FS
Communication interface	4-20mA four-wire system, 0-5VDC, 0-10VDC three-wire system, optional MODBUS output based on RS48
Indication function	Two color LEDs are respectively used to indicate the power (green) and fault (red) status of the system

Machine dimensions



Axle side diagram

Unit: mm

Wiring method

Product interface and wiring

The electrical interface of this product is RJ45 crystal / male connector, including the integration of power line and signal line. The wiring sequence of crystal head is in accordance with the wiring specifications of T568b: ① white-orange, ② orange, ③ white-green, ④ blue, ⑤ white-blue, ⑥ green, ⑦ white-brown, ⑧ brown. The function of a single line is defined in Table 1; and there are two gas pipe interfaces

Wiring terminal description (RJ45 crystal / male connector)

Serial Number	Item	Definition	Line Color
1	RS485-A	T/R+ of RS485	White-orange
2	RS485-B	T/R- of RS485	Orange
3	NC		White-green
4	Current+		Blue
5	Current-		White-blue
6	NC		Green
7	GND	Power grounding (GND)	White-brown
8	VCC	Typical value of power supply (+24V)	Brown

Explanation

- 1.This wiring is standard color. Please refer to the physical description for any difference;
- 2.The factory settings of terminal equipment is RTU mode of RS485 communication, with baud rate of 9600bps, no parity, one start bit, eight data bits and one stop bit.

✖ When the current is output, the external loop load resistance shall be connected if the output is not full.

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