Datasheet

Intelligent PID controller

SUP-2300

Supmea®

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E-mail: info@supmea.com

www.supmea.com

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Artificial intelligence temperature controller/adjuster adopts real artificial intelligence formula. When instrument starts self tuning function, it will automatically find optimal parameters according to the features of objects to realize a good control effect, and need no manual tuning parameters. The precision of temperature control is around ±0.1℃, without overshoot or undershoot. Temperature controller can reach up to international advanced level. It can work with all sorts of sensors and transmitters to realize the measured display of physical quantity like temperature, pressure, liquid level, capacity, power and etc, and possesses PID adjustment and control, alarm control, data collection and other functions on electric heating devices, solenoid valve and electric valves with the assistance of all sorts of actuators.

Applications

- Industrial furnace
- Electric furnace
- Drying furnace
- Experiment devices
- Shoe making machinery
- Injection molding machinery
- Packaging machinery
- Food machinery

Features

- Learning and memory functions
- Intelligent fault diagnosis
- Remote monitoring and commissioning
- Multi-mode control
- Optimised start-up features
- High anti-interference capability
- High precision control
- Adaptive adjustment

Intelligent PID controller

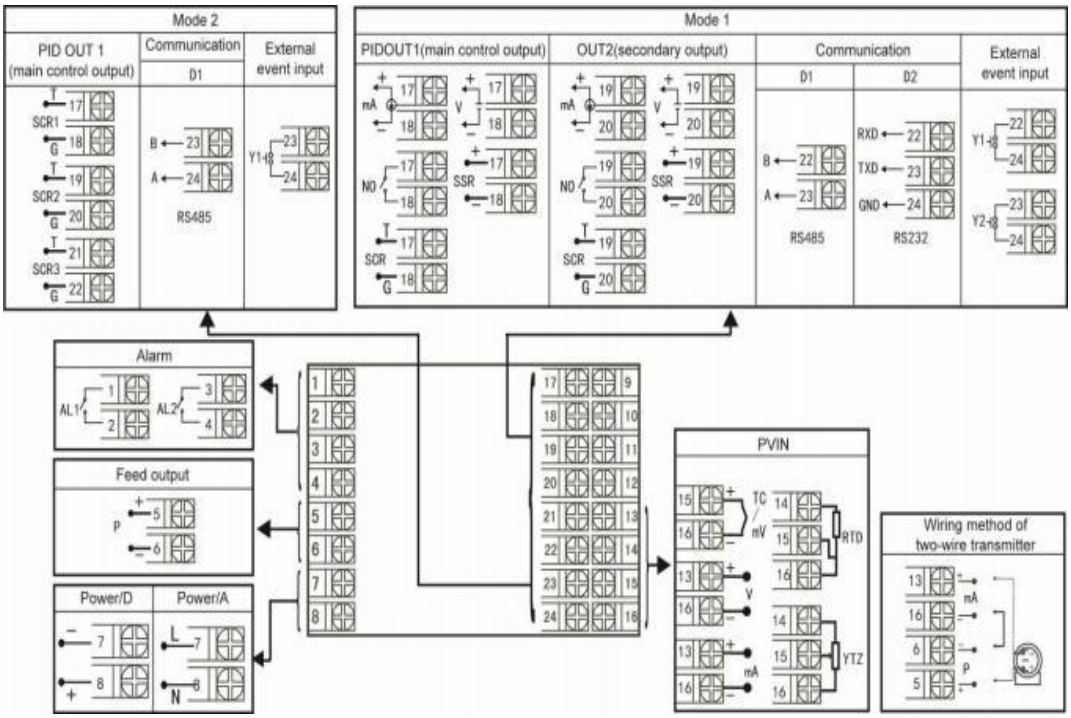
Principle

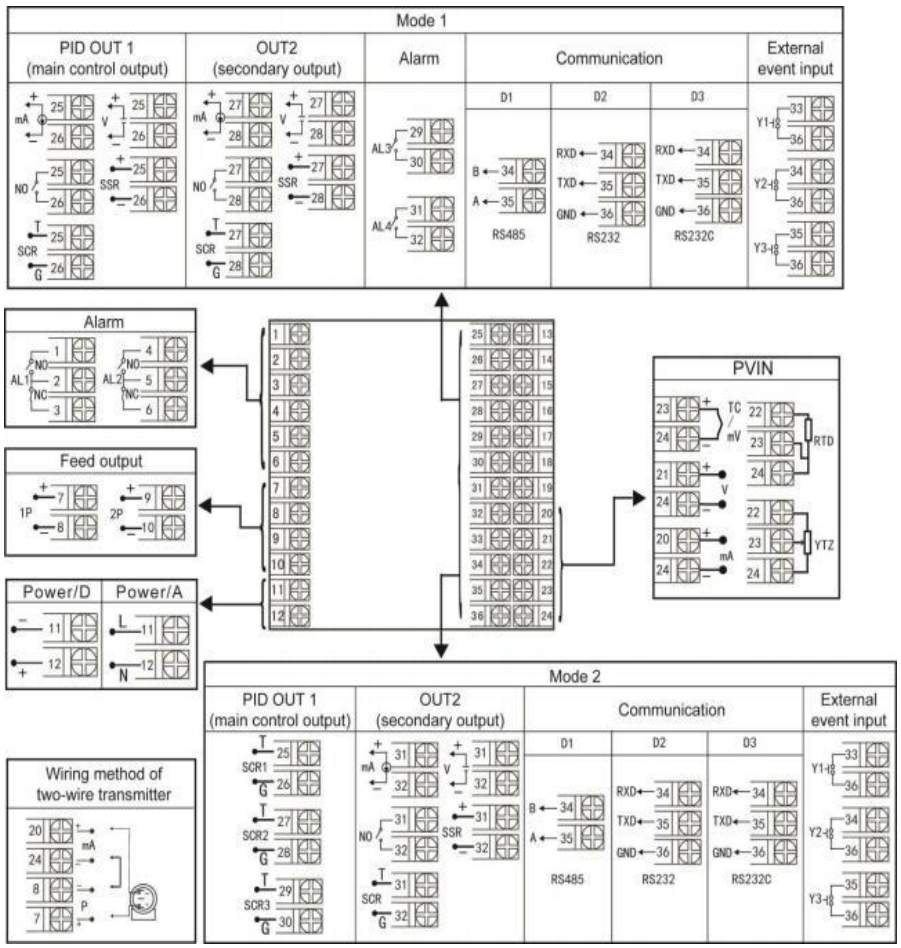
The working principle of the intelligent PID controller is as follows. Firstly, it continuously monitors the actual value of the controlled variable like temperature, pressure or flow rate, which is collected by sensors. Then, it computes the error between the actual value and the preset setpoint. Based on this error, the controller uses its advanced built-in algorithms to adjust the P, I and D parameters in real time. For instance, in industrial production, if the temperature in a reaction vessel changes due to heat dissipation or raw material addition, the controller can quickly modify the PID parameters. The proportional term responds rapidly to error changes; the integral term accumulates errors over time to eliminate steady-state errors; the differential term anticipates error trends to prevent overshoot. Through continuous feedback and adjustment, it makes the controlled object reach and maintain the setpoint. Meanwhile, its anti-interference and filtering technologies ensure the accuracy of input signals. During system startup, it either follows a preset startup curve or conducts intelligent analysis to smoothly raise the controlled variable to the set value, reducing startup shock. Also, it can communicate with external devices via network technology, allowing operators to remotely monitor and adjust parameters, enhancing controllability and flexibility.

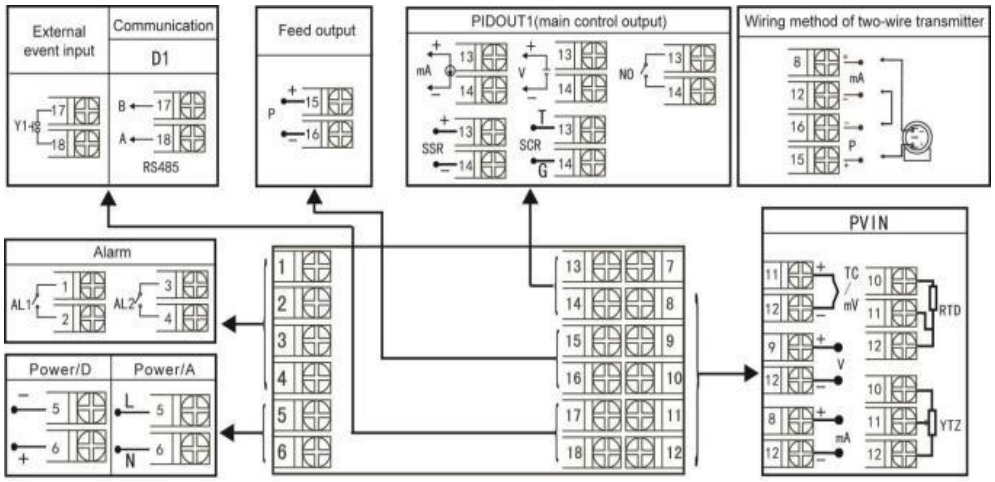
Parameters	
Measurement Accuracy	0.2%FS±1 byte
Setting Method	Panel touching key number setting; parameter set value locked by password; set value is stored permanently after outage.
Display Mode	Red/green LED double row display or red/green LED double row display + 51 segments LED bar graphic display
Operating Environment	Ambient temperature: 0 to 50℃; relative humidity: ≤85%RH; away from strongly corrosive gases.
Working Power Supply	AC 100 to 240 V (switching power supply) (50-60 HZ); DC 20 to 29 V (switching power supply)
Power Consumption	≤5W
Structure	Standard snap-in
Communication	Adopt standard MODBUS communication protocol, with RS-485 able to reach up to1 km and RS-232 up to 15m in terms of their communication distance. Note: When the instrument is equipped with the communication function, an active communication converter is recommended.

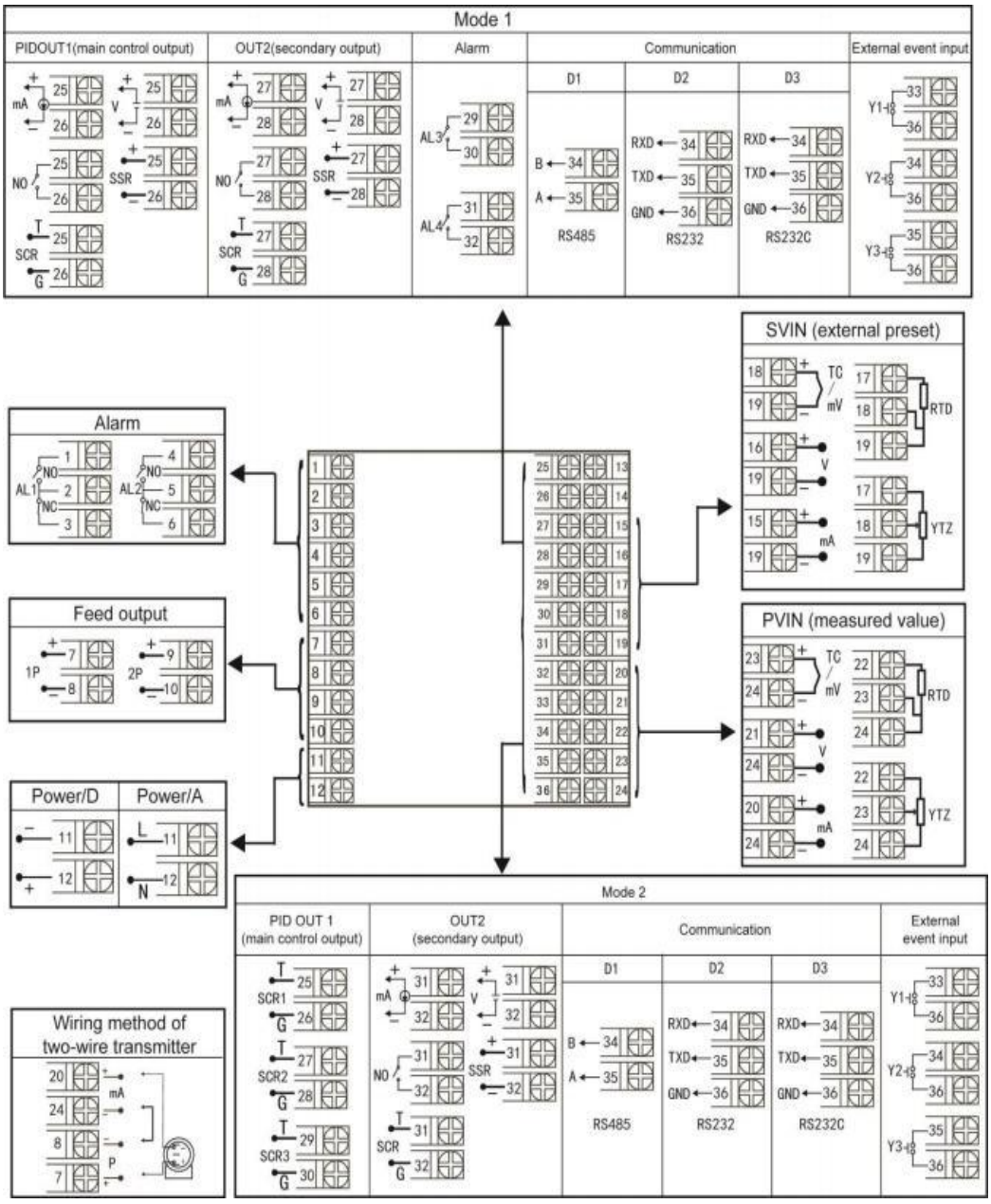
Wiring

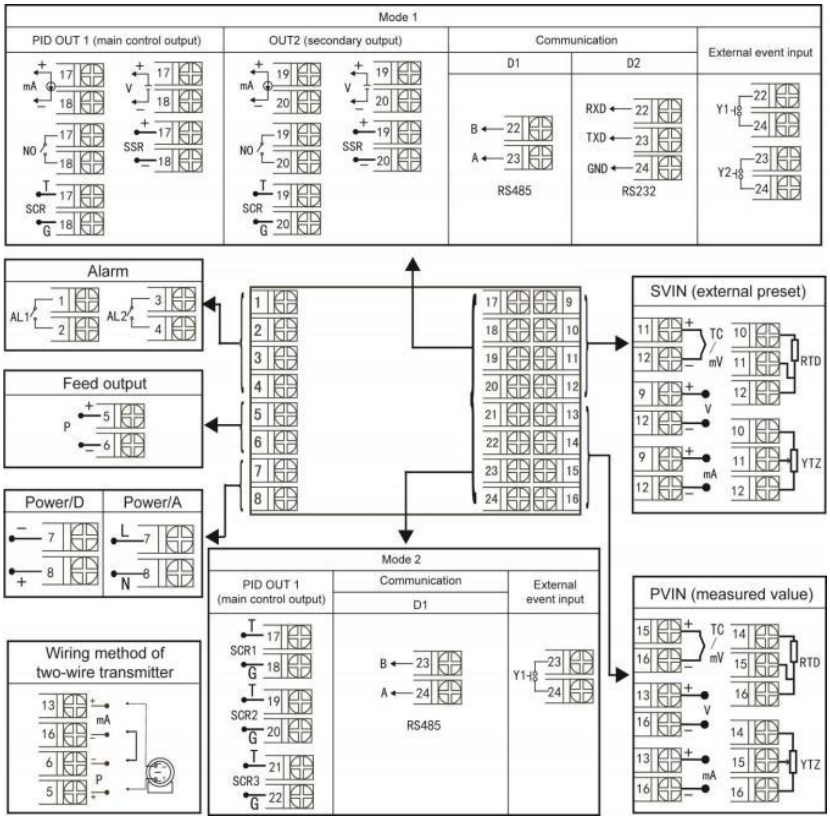
Channel PID temperature controller/adjuster wiring diagram

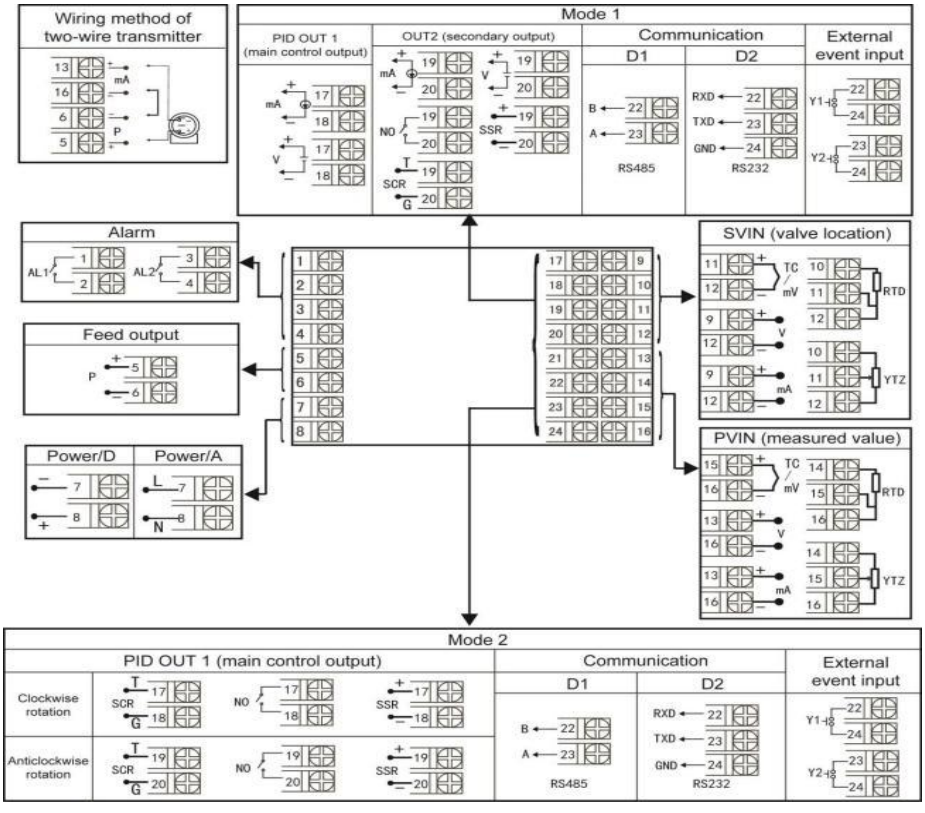


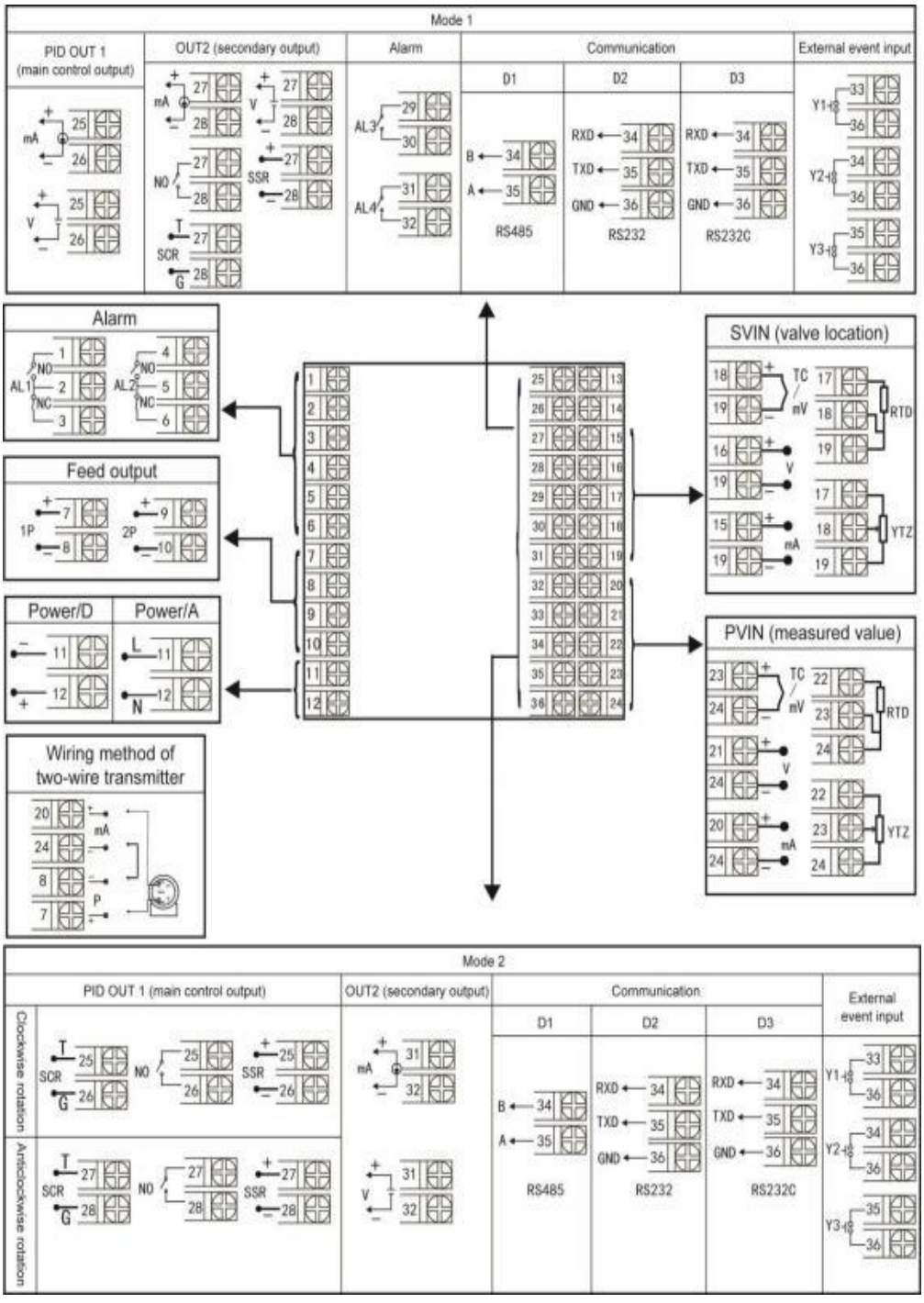



External event input
Communication
D1
Y1
B
A
RS485
Feed output
P
PIDOUT1(main control output)
mA
V
NO
SSR
SCR
Wiring method of two-wire transmitter
Alarm
AL1
AL2
Power/D
Power/A
L
N
PVIN
TC
mV
RTD
YTZ


Mode 1
PIDOUT1(main control output)
OUT2(secondary output)
Alarm
Communication
External event input
D1
D2
D3
RS485
RS232
RS232C
SVIN (external preset)
PVIN (measured value)
Feed output
Power/D
Power/A
Wiring method of two-wire transmitter
Mode 2
PID OUT 1 (main control output)
OUT2 (secondary output)
SCR1
SCR2
SCR3


Mode 1
PID OUT 1 (main control output)
OUT2 (secondary output)
Communication
D1
D2
External event input
RS485
RS232
Alarm
Feed output
Power/D
Power/A
SVIN (external preset)
PVIN (measured value)
Mode 2
PID OUT 1 (main control output)
Communication
D1
External event input
RS485
Wiring method of two-wire transmitter


Wiring method of two-wire transmitter
Mode 1
PID OUT 1 (main control output)
OUT2 (secondary output)
Communication
D1
D2
External event input
RS485
RS232
Alarm
Feed output
Power/D
Power/A
SVIN (valve location)
PVIN (measured value)
Mode 2
PID OUT 1 (main control output)
Communication
D1
D2
External event input
Clockwise rotation
Anticlockwise rotation
RS485
RS232


Mode 1
PID OUT 1 (main control output)
OUT2 (secondary output)
Alarm
Communication
D1
D2
D3
External event input
RS485
RS232
RS232C
Alarm
Feed output
Power/D
Power/A
Wiring method of two-wire transmitter
SVIN (valve location)
PVIN (measured value)
RTD
YTZ
Mode 2
Clockwise rotation
Anticlockwise rotation

Dimension

Outline Dimensions	Outline Dimensions
160*80mm (horizontal/bar graphic)	96*48mm (horizontal)
80*160mm (vertical/bar graphic)	48*96mm (vertical)
96*96mm (squared/bar graphic)	72*72mm (squared)
48*48mm (squared)	

Print Function

Print Function

1. Manual print

In the instrument measurement value display status, press , and print the current real-time measurement value.

2. Timed print

When the measured time is equal to the interval time, the instrument will control the printer to perform timed print where the current real-time measurement value will be printed in a timed manner. The print format is

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TIME PRINT
2009－04－14 ----------Date
21 ： 06 ： 15 ----------Time
PV= －250℃ ----------First channel measurement value
SV= 500 ----------Control target value
Out= 0.0% ----------Percentage output value
Alm：○ ● ----------Alarm state

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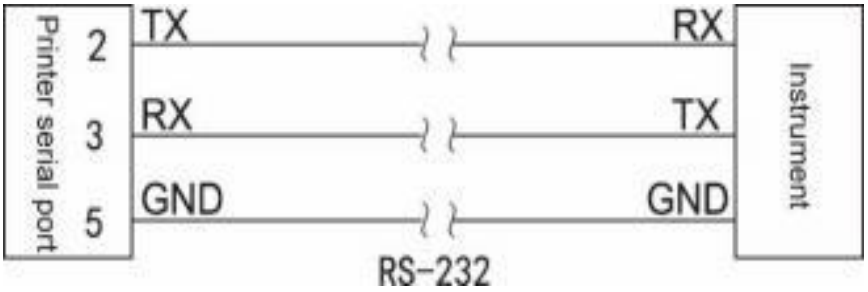
3. Wiring mode



Ordering code

SUP-2300 -H1-W-00-00-00-0-E1								Description
SUP-2300	-	-	-	-	-	-	-	
Overall Dimensions (Width × Height × Depth)	H1							160×80×110mm（horizontal）
	S1							80×160×110mm（titular）
	F1							96×96×110mm（square）
	H2							96×48×110mm（horizontal）
	S2							48×96×110mm（titular）
	F2							72×72×110mm（square）
	F3							48×48×110mm（square）
	H4							light bar display，160×80×110mm（horizontal）
	S4							light bar display，80×160×110mm（titular）
Input		W						light bar display，96×96×110mm（square）
Output1			00					universal input
			A5					None
			V7					4-20mAcontrol output
			V8					1-5Vcontrol output
			P1					0-10Vcontrol output
			P2					relay control output
			XX					Solid State Relay Drive Voltagecontrol output
Output2				00				other
				A5				None
				V7				4-20mAcontrol output
				V8				1-5Vcontrol output
				P1				0-10Vcontrol output
				P2				relay control output
				A2				Solid State Relay Drive Voltagecontrol output
				V3				4-20mAtransformer output
				V4				1-5Vtransformer output
				XX				0-10Vtransformer output
Communication output					00			other
					R1			None
					XX			RS485
Alarm Output						0		other
						3		None
						4		1-channelSPDT
						A		2-channelSPDT
						B		2-channelSPDT+1-channelSPST
Power Supply and Distribution Output							E1	2-channelSPDT+2-channelSPST
							E0	220VAC，1-channel24VDC

E2	220VAC，None
C1	220VAC，2-channel24VDC
C0	24VDC，1-channel24VDC
C2	24VDC，None