RTD Thermal Resistance Signal Transducer (SIP12 PIN)

SY Z-W Series

Features	Applications
● Three-wire, four or two-wire PT100/Cu50 signal input. ● Accuracy, Linearization error grade:0.2 (Relative Temperature). ● Built-in linear processing and long-term compensation circuit. ● Isolation Voltage: 3000VDC between power and singal I/O. ● Auxiliary Power Supply: 5V, 12V, 15V or 24VDC. ● International standard signal output: 4-20mA/0-5V/0-10V,etc. ● Small size, low cost, easy use and high reliability. ● Standard DIP 24/SIP12 Pin, UL94V-0 package. ● Industrial temperature range: - 45℃ ~ + 85 ℃.	● Temperature signal isolation, acquisition and transfer. ● Industry site high-precision temperature measure. ● Terminal resistance signal isolation and temp. control. ● Ground interference suppression. ● Temperature sensor signal converter to standard signal. ● Oil temperature measure and alarm. ● Signal remote without distortion transmission. ● Power monitoring, medical equipments, temperature control isolation barrier

SY Z-W Series is a mixed integrate circuit that thermal resistance signal as temperature high/low isolation converter to linearity standard signal to temperature. It integrated a set of isolated DC/DC converters, Linearization disposal and long line compensate circuit, can bring two group of each other isolated power to input port for magnifying circuit, modulating circuit powered and output port demodulation. They can meet industrial wide temperature, humidity, shaky poor operation condition.SY W-Z Series temperatures signal isolation amplifier is very convenient, with minimal external components, can be realized Pt100 RTD signal isolation transmitter. And can achieve the industrial site temperature control signal into two, into four functions.

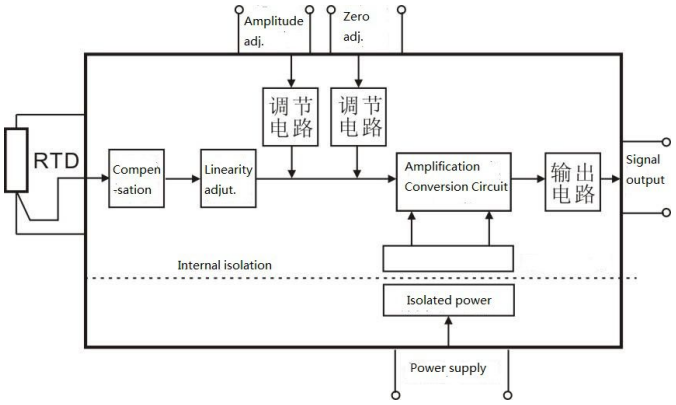


Fig. 1 SY Z-W Series isolation transducer functional block

Max work range: If work over above the range, will cause products damaged permanently.

Continue isolation voltage value:	3000VDC
Auxiliary power supply range:	±25%Vdd
Junction Temperature	- 45℃ ~ + 85℃
Lead temperature (10Secs):	+300℃
Vout signal load(MIN):	2KΩ

General Technical Parameters

Accuracy, linearity error grade ---------- 0.1, 0.2	Hysteresis error ---------- < 0.5%
Auxiliary power---------- 5V, 12V, 15V, 24VDC.	Isolation ---------- auxiliary power and signal I/0.
Operating Temp. ---------- -20 ~ +70℃	Insulation Resistance ---------- ≥20MΩ
Operating Humidity ---------10~90% (no condensation)	Withstand Voltage ---------- 3KV(60HZ/S), leak current 1mA
Storage Temp.---------- -45 ~ +85℃	Impact Resistance Volt. ---------- 3KV, 1.2/50us (peak value)
Storage Humidity -------10 ~ 95% (no condensation)	

Product Model Selection and Definition

SY Z□ - W□ - P□ - O□

RTD input
- Z1: Pt100 Z2: Pt10
- Z3: Cu100 Z4: Cu50

Input temperature range
- W1: -20-100℃
- W2: 0-100℃
- W3: 0-150℃
- W4: 0-200℃
- W5: 0-400℃
- W8: User-define

Power supply
- P1: DC24V P2: DC12V
- P3: DC5V P4: DC15V P8: User define

Output signal
- O1: 4-20mA O2: 0-20mA O4: 0-5V O5: 0-10V
- O6: 1-5V O8: User-define

Model Selection Examples

E.g.1: Input: Pt100, Temperature range: -20-100℃; Signal Output:4-20 mA; Power supply:24VDC
Product Model: SY Z1-W1-P1-O1

E.g.2: Input: Cu50, temperature range 0-100℃; signal output: 0-5V; Power supply:12VDC
Product Model: SY Z4-W2-P2-O4

Technical Parameters

Parameter		Test Conditions	Min.	Typical	Max.	Unit
Isolated voltage		1min	1500	3000		VDC
Non-linearity(to				0.2	0.5	%FSR
Output signal	Voltage			5	10	V
	Current			20		mA
Frequency response				10		mS
Load capability	Voltage	Vout=10V		2		kΩ
	Current	Iout=20mA		500	650	Ω
Signal output ripple		No-filter		10		mV
Output temperature drift				100		ppm/℃
Auxiliary power supply	Voltage	User-define	3.3	12	24	VDC
	Current	VD=12V		42		mA
Power consumption			0.3	0.5	1	W
Operating temperature			-45		85	℃
Storage temperature			-55		125	℃

Typical Application Diagram

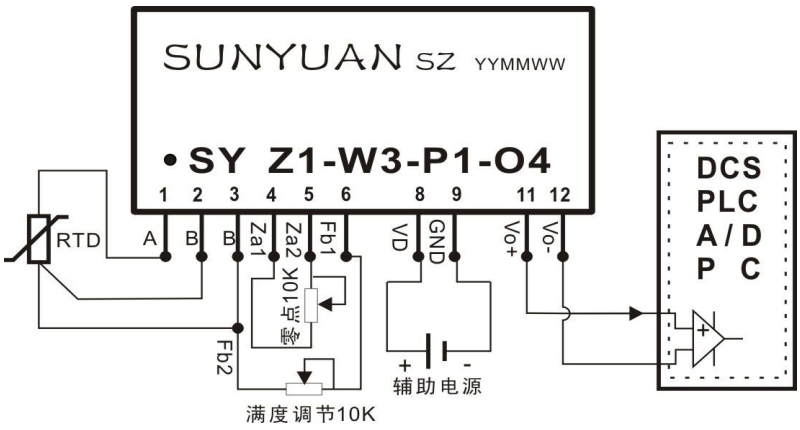


Fig. 2 SY Z-W Series voltage output typical application

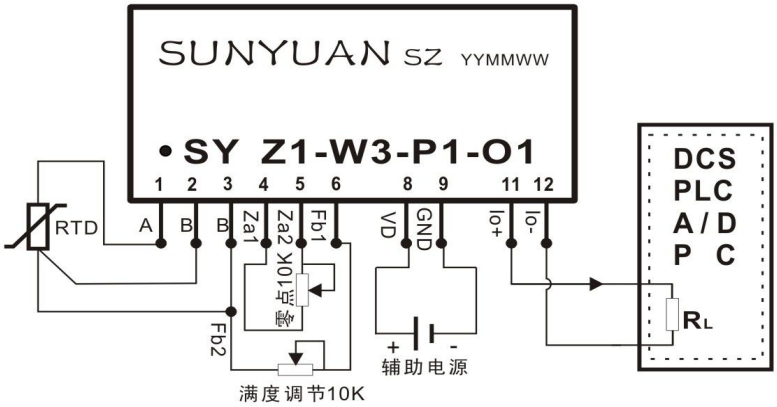


Fig. 3 SY Z-W Series current output typical application

SY Z-W Series Function Description

RTD input A Port	RTD input B Port	RTD input B Port and ADJ (Gain) 2 port	"Zero" adjust 1Port	"Zero" adjust 2 Port	(Gain)ADJ 1Port	NC	Power +	Power GND	NC	Vout+	Vout -
A	**B**	**B / FB2**	**ZA1**	**ZA2**	**FB1**	**NC**	**VD+**	**GND**	**NC**	**Out+**	**Out-**
1	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**	**12**

Note: 1. If it is two-wire RTD input, short connect PIN2 and PIN3(RTD input B Port); if four-wire RTD input, short connect pin1 and RTD A port. 2. Detection of RTD disconnection: **a.** Output Max. Value, there is disconnection in the wire which is connected to Pin1 or Pin 3; **b.** Output Min value：there is disconnection in the wire which is connected to Pin 2.

Product Calibration

Calibration instruments: a standard resistance box with 0.01ohm accuracy, one DC power supply source and one Four and a half Multimeter.

Calibration Steps:

1. Connect the product according to the application diagram or install the product in your PCB.
2. Connect the power according to the power supply value, install adjustable potentiometer, connect the output to the multimeter.
3. Check the reference tables according to the input temperature range and get the corresponding resistance value **Rlow~ Rhigh**.
4. Let Power-on, starting up for 15 minutes.
5. Adjust the value of resistance box to **Rlow** value, adjust the "zero" potentiometer, make the output correspond to the output value of zero (e.g.: 4mA).
5. Adjust the resistance box value to **Rhigh**, adjust the amplitude potentiometer, make the output value correspond to the output value of Span. (e.g. 20mA)
6. Repeat seveal times of the 5-6 steps to improve the output precision.
7. Finished Calibration.

SY Z-W Series Application Cases

SY Z-W Series signal transmitter and SY EM U/A-P-O series signal transducer is easy to realize RTD single signal input, multi-channel output (If there is strong interference in industrial site, please order ISO Z-W Seres).

The theory of Single input, multi-channel output: Make SY Z-W Series isolation transmitter output signal connect to the input port of SY EM Series products，SYEM Series will output a group of signal fully isolated with input port, then it realize one RTD signal input, dual isolated standard signal output. Similarly, make SY Z-W Series output signal connect to input port of multi SYEM transducer, each SYEM transducer will output one group signal that fully isolated with input port, then it realizes one RTD signal input, multi isolated standard signal output.

SY Z-W Series single RTD signal input, dual signal output please refer below applications:

Application E.G. 1: one RTD signal in, dual voltage signal output:

Choose SY Z1-W3-P1-O4 and SY EM-U1-P1-O5 to realize one Pt100/Cu50 signal input (temperature range: 0-150℃), Dual isolated voltage signal output, one 0-5V signal and one 0-10V signal. Connect the output port of transducer SY Z1-W3-P1-O4-S to the input port of transducer module SY EM-U1-P1-O5 (If there is strong interference in industrial site, please order ISO Z-W Seres).

Application E.G. 2: one RTD signal input，Dual current signal output

Choose SY Z1-W2-P1-O1-S and SY EM-A4-P1-O1to realize one Pt100 input (temperature range: 0-100℃), dual non-isolated 4-20mA signal output. Connect the output port of SY Z1-W2-P1-O1-S to the input port of SY EM-A4-P1-O1, then output 4-20mA signal, meanwhile, the SY EM-A4-P1-O1 also output one-channel 4-20mA current signal.

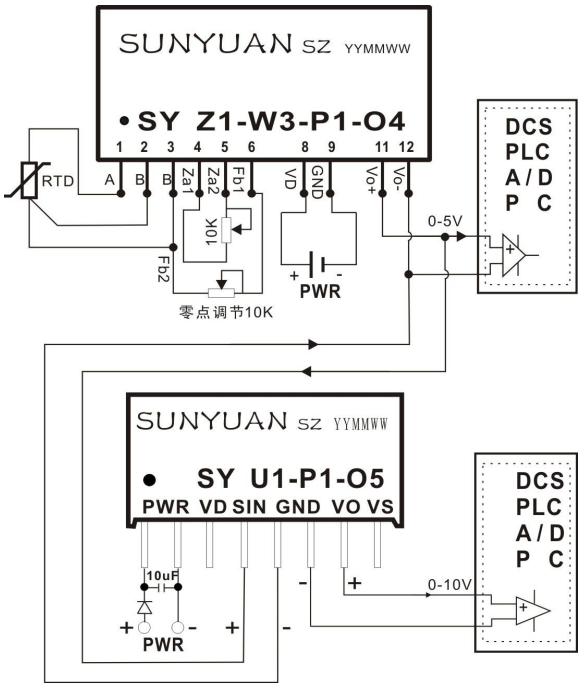


Fig. 4 One RTD signal input dual voltage output

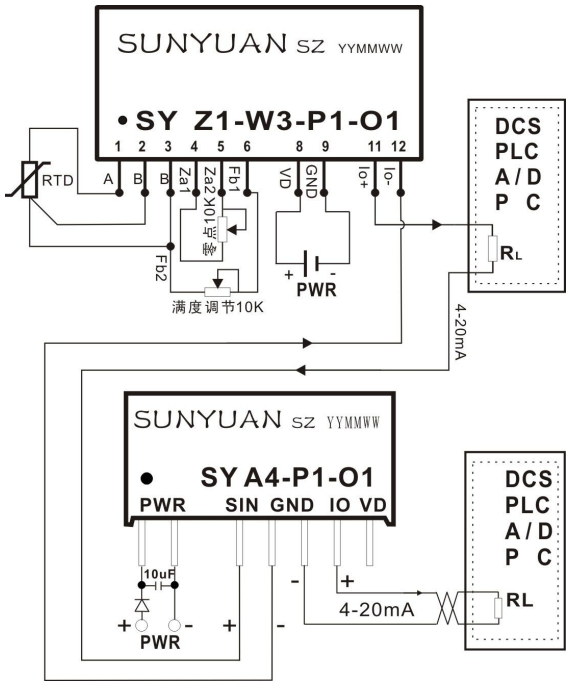
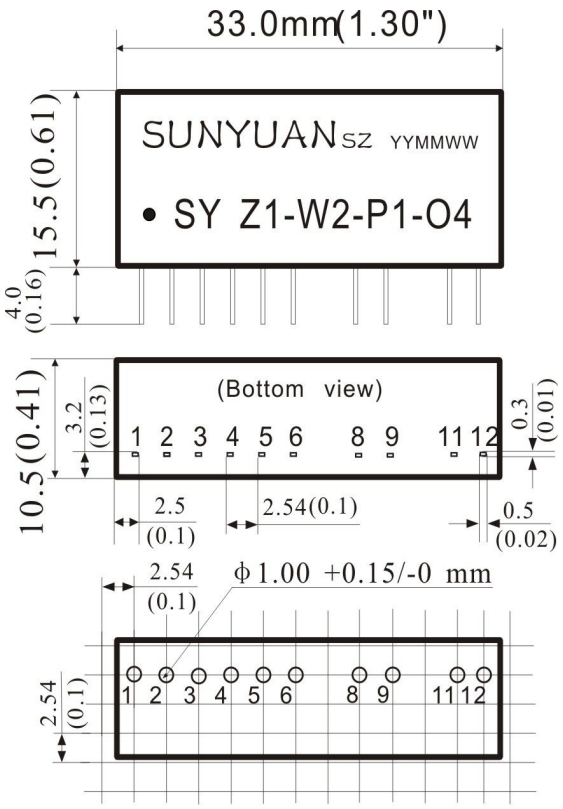


Fig. 5 One RTD signal input dual current signal output

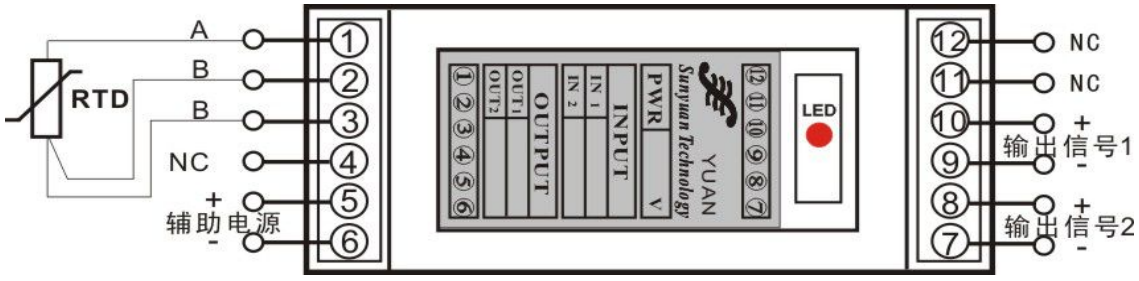
SY Z-W Series Dimension



IC封装SIP12PinPCB布板参考

Multi-channel Standard 35mm DIN Rail-mounted DIN 1X1/1X2 SY Z-W-P-O Series Dimension & Wring Diagram

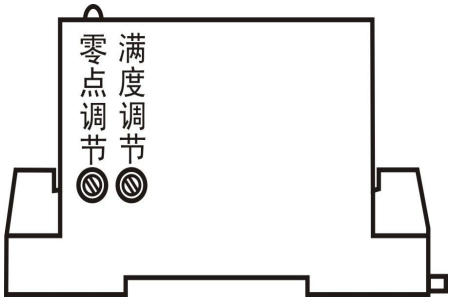
Sunyuan **I** Type standard DIN35 Rail-mounted multi-channel dual-isolation RTD thermal-resistance transmitter has several sets of SY Z-W-P-O series IC modules inside. The converters can be 1-input 1-output (DIN1X1),1-input 2-output (DIN 1X2) to achieve multi-channel RTD thermal resistance to analog signal conversion. Zero and full adjustment are available, user can adjust Zero and Span through the zero & span adjustment button in the left/right side of the transmitter. PCB size inside L*W: 79.5*32.5(mm).



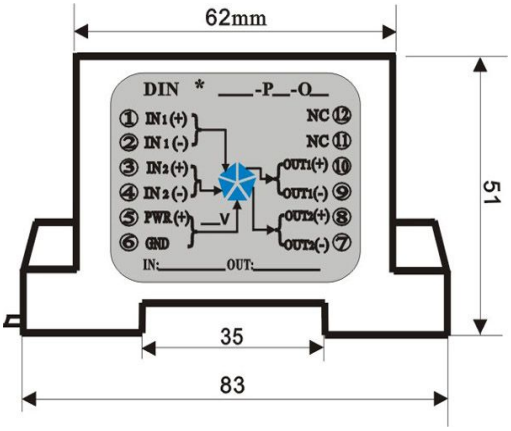
DIN 1X1 / 1X2 Rail-mounted Type Thermal Resistance Signal Dual Isolation Transmitter

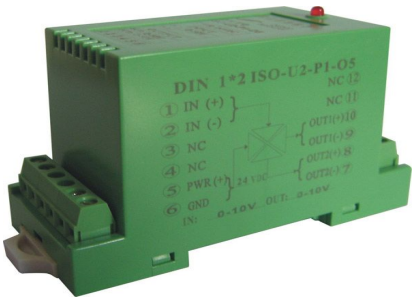
DIN Rail-mounted Type Dimension & Pin Functions Description

Pin	Pin Functions Description	
1	A	Thermal-resistance input #A
2	B	Thermal-resistance input #B
3	B	Thermal-resistance input #B
4	NC	No connection
5	Power in	Auxiliary power supply +
6	Power GND	Auxiliary power supply -
7	Out2 -	Output signal #2-
8	Out2+	Output signal #2+
9	Out1 -	Output signal #1-
10	Out1+	Output signal #1+
11	NC;	No connection
12	NC;	No connection



Zero Span





Note: ①If there is strong interference in industrial site, please order ISO Z-W Seres.

② The specification is subject to change without notice.