

Miniature low-cost high-precision analog signal amplifier IC

Low cost and small volume analog conversion amplifier: SYS U-P-O and SYS A-P-O series

Features

- 1.High-precision levels: 0.05, 0.1, 0.2
- 2.Very high linearity over the full range (non-linearity error <0.1%)
- 3.Low cost, small size, SIP 4Pin meets UL94-V0 standard flame retardant package
- 4.No need for external potentiometers and other components, no zero and gain adjustment
- 5.Auxiliary power supply: 5V/9V/12V/15V/24V DC single power supply
- 6.The power supply voltage only needs to be higher than the output signal voltage value by more than 2V
- 7.0-2.5V/0-5V/1-5V/0-10V/0-20mA/4-20mA and other signal input and output
- 8.Industrial temperature range: -40 ~ +85 °C

Typical application

- 1.Conversion and amplification of non-standard analog quantity and standard analog signal
- 2.PLC/DCS and other controllers match the sensor signal
- 3.Sensor analog signal acquisition, amplification, conversion and transmission
- 4.Conversion and amplification between 4-20mA/0-10V and other signals
- 5.Instrumentation and sensor signal sending and receiving and matching
- 6.High-precision transmission of non-electricity signals
- 7.Analog signal remote transmission without distortion
- 8.Industrial control equipment and instrumentation signal matching and long-term transmission

Summarize

Sunyuan SYS U-P-O series analog voltage signal and **SYS A-P-O** series analog current signal amplification transmitter ICs adopt small size (single row four pins, SIP4 Pin) and low-cost design solutions, mainly used to solve the matching of sensors and instrumentation, PLC, DCS interface. Between: 0-2.5V/0-5V/1-5V/0-10V/0-20mA/4-20mA and other standard analog quantity and non-standard analog signal conversion problem. The product has the characteristics of ultra-high precision (0.05% error of full scale) and high linearity (0.1% error of full scale). The design adopts a common ground between the working power supply and the signal channel, without external adjustment potentiometers and other components. Simplified solution without zero point and gain adjustment, suitable for conversion and amplification of analog signals with zero offset in field instruments and equipment (For example: 1-5V and 0-5V, 4-20mA and 0-10V and other input signal zero points are offset, and the output signal zero point needs to be set to "0"), it can realize the interface of industrial field instrument equipment Matching, conversion and remote amplification of analog signals.)

SYS U-P-O series and **SYS A-P-O** series products adopt advanced feedback zero adjustment technology, which can ensure the high accuracy of the zero point and full scale value within the signal input and output range. Due to the size limitation, the internal power supply of the product is not boosted and isolated, so the power supply voltage for the product must be higher than the signal output voltage by more than 2VDC. (For example: the output signal is 0-5V, the power supply voltage needs to be above 7VDC, and 9VDC or 12VDC power supply can be selected). If the user needs full isolation between the signal and the working power supply, please choose our company's ISO EM U-P-O or ISO EM A-P-O series products.

The **SYS U-P-O** series and **SYS A-P-O** series products are mainly used in applications where analog voltage and current signals are directly converted and amplified with high precision without isolation. Compared with the company's fully isolated products ISO series photoelectric isolation amplifiers and ISO EM series magnetic isolation transmitters, it has a small size, low cost, and better accuracy and linearity. It is widely used in metallurgy and mining, petrochemical industry, power equipment, medical equipment, industrial automation, new energy facilities and military scientific research and other fields. Users can choose suitable products according to site needs.

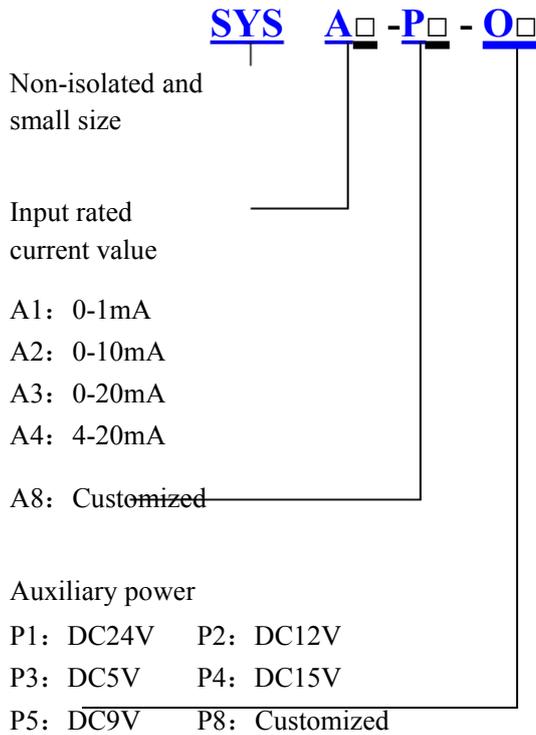
Maximum product rating (Long-term work under the maximum rated value environment will affect the service life of the product, and irreparable damage will occur if the maximum value is exceeded.)

PW (Maximum range of power supply voltage input)	±25%Vdd
Junction Temperature (Maximum working environment temperature)	- 45°C ~ + 85°C
Lead Temperature (Maximum installation welding temperature<10S)	+300°C
Output Voltage Load Min (Minimum load when outputting voltage signal)	2KΩ

General parameters

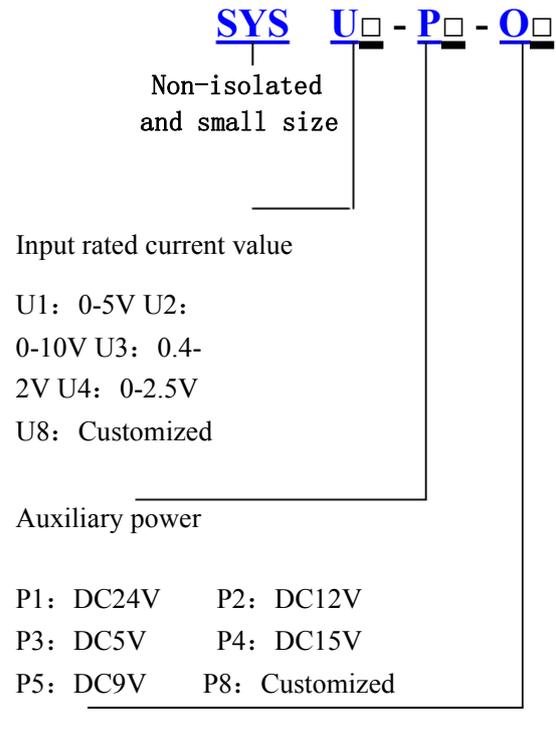
Accuracy, linearity error level -- 0.05 grade、0.1 grade、0.2 grade	Back difference----- < 0.5%
Auxiliary power---5V,9V,12V,15V,24VDC Single power supply	isolation-----No
Operating temperature 40 ~ +85°C	Insulation resistance-≥100MΩ (With shell)
Working humidity 10 ~ 90% (No condensation)	Withstand voltage---no
storage temperature45~ +85°C	Impulse withstand voltage--no
Storage humidity--10 ~ 95% (No condensation)	

Product model and definition



Output

O1: 0.4-2V O2: 0-2.5V
O3: 0-3.3V O4: 0-5V
O5: 0-10V O6: 1-5V
O8: Customized



Output

O1: 0.4-2V O2: 0-2.5V
O3: 0-3.3V O4: 0-5V
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Product selection example:

Example 1: Input: 0.4-2V; output: 0-2.5V; auxiliary power supply: 5V. Model number: SYS U3-P3-O2
Example 3: Input: 0-5V; Output: 0-10V Auxiliary power supply: 24V. Model number: SYS U1-P1-O5

Example 2: Input: 4-20mA; output: 0-5V; auxiliary power supply: 9V. Model number: SYS A4-P5-O4
Example 4: Input: 4-20mA; Output: 0-10V; Auxiliary power supply: 15V. Model number: SYS A4-P4-O5

Technical parameter

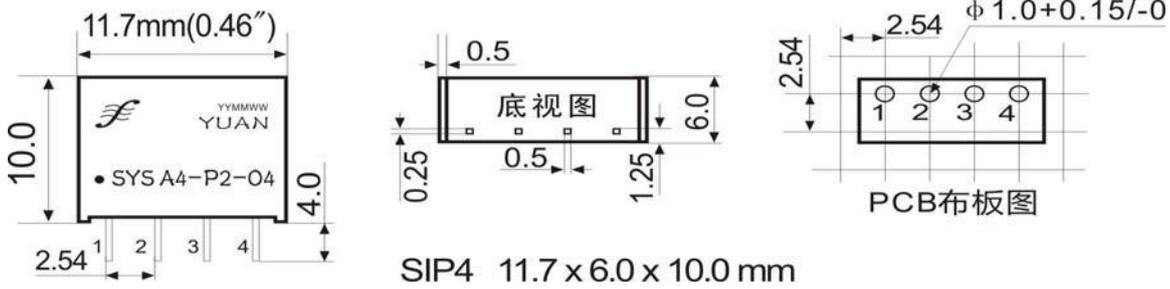
parameter name	Test Conditions	Min	Typical value	Max	Unit	
Gain			0.25		V/mA	
Gain temperature drift			50		ppm/°C	
Non-linearity		0.05	0.2	0.5	%FSR	
Voltage signal input		0		10	V	
Current input impedance		50	250	2000	Ω	
load capacity		1	2		KΩ	
Frequency response			1	10	KHz	
Signal output ripple	No filtering			10	mVRMS	
Auxiliary power	Voltage	Customized	5	12	24	VDC
	Power consumption			0.3	0.5	W
Working temperature		-40		85	°C	

Pin function description

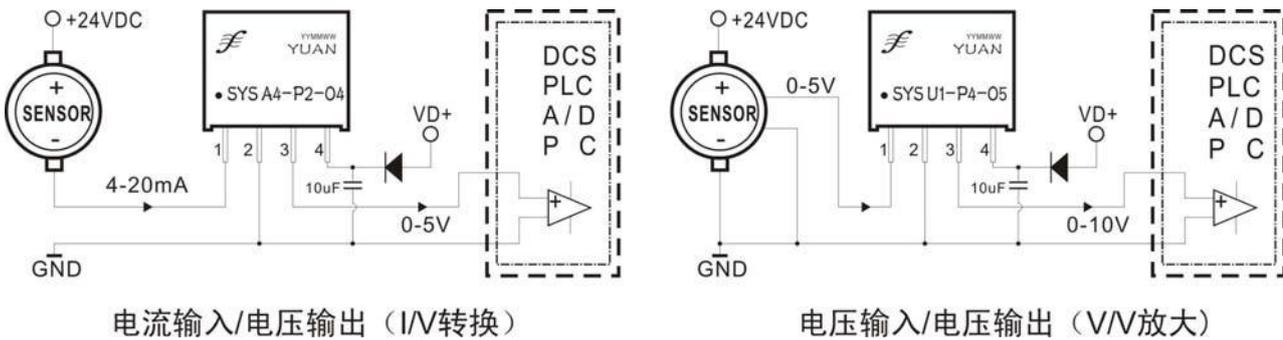
1	2	3	4
signal input SIN+	Public land COM	Signal output Vo+	Positive power input VD+



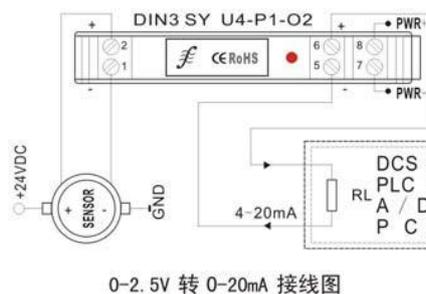
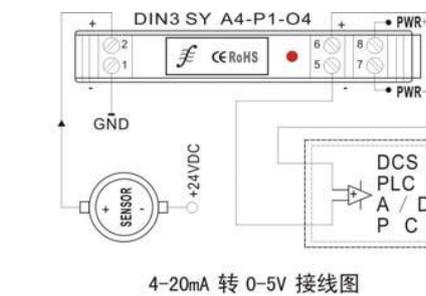
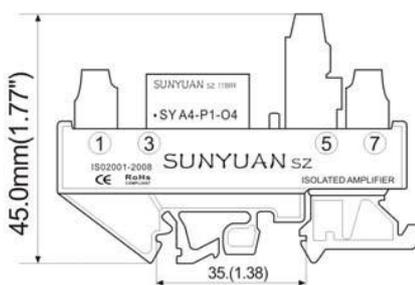
Appearance and PCB layout size reference:



Typical application:



Small volume DIN3 rail mounting product typical application wiring diagram:



DIN3 系列小体积单路UI/IU转换器外形尺寸

0-2.5V 转 0-20mA 接线图