Analog Photoelectric Isolated Amplifier/Transmitter IC

Analog Active Signal Photoelectric Isolated Transmitter/Amplifier

ISO A-P-O Series /ISO U-P-O Series

Features:	**Applications:**
● Precision grade: 0.1, 0.2, 0.5, non-linearity (full range) <0.2%. ● Zero, gain adjustment, full scale calibration are available through external multi-turn potentiometer. ● 3KVDC isolation among auxiliary power supply, analog input and output. ●Auxiliary power: 5V,12V,15V,24VDC, etc single power supply. ● Mutual isolation, amplification, conversion among 0-75mV/ 0-5V/ 0-10V/ 0-1mA/ 0-20mA/ 4-20mA,etc. ● Industrial operating range: -20 ~ +70 ℃ ●Strong capacity in anti-interference to electric-magnetic waves (EMC) and high frequency signals. ● Low cost, compact SIP 12Pin, UL94V-0 standard flame retardant package.	● DC current/voltage signal isolation, conversion and amplification. ● Industrial site signal isolation and long-distance transmission. ● Analog signal ground interference rejection and data acquisition. ●Meters and instruments signal, sensor signal transmission. ● PLC, DCS site analog signals isolated acquisition. ● Long distance transmission of frequency signal without distortion. ● Power monitoring control, medical equipment isolated safety bar. ● Sensor 4-20mA analog signal 1x2, 2x2,1x4 isolated amplification and transmission.

Generalization:

SUNYUAN ISO Series Analog Photoelectric Isolated Amplifier/Transmitter is a kind of modules with hybrid integrated circuit inside which generates the signals with according matchable precision and linearity after the isolation, amplification, distribution, conversion process to the analog signals between sensors and PLC, instruments. In the IC, there are one multi-isolation DC/DC transforming power and a set of photo-electric coupling analog signal isolated amplifier/transmitter. And by employing internal isolation technique, proper I/O side cree-page distance, the isolated voltage of signal transmitter is up to 3000VDC.

Linear photo-electric coupling technique is employed in ISO Series Analog Photo-electric Amplifier/Transmitter which mainly used in the fields or equipments where there are no special requirements on EMC (Photo-electric interference). The Zero, Gain adjustment and calibration on full scale are available through external multi-turn potentiometer to make it easy to do calibration and adjustment based on the operating states of the equipments in the industrial site. The transmitter is widely applied in electric monitoring control, PLC, DCS, FCS, frequency converter, meters and instruments, medical equipments, industrial automatic equipments and other equipments or fields where electric measuring, isolated acquisition and control are required.

For ISO Series Analog Photo-electric Amplifier/Transmitter, DC signal analog photo-electric coupling transmission technique is employed, not the signal modulated carrier technique adopted in ISO EM Series Analog Magneto-electric Isolated Transmitter, so compared with photo-electric transmitter, magneto-electric transmitter has better performance in anti-interference to electro-magnetic waves and high-frequency signals.

Max. Rated Value:

(If the product operates in the max. rated value for a long time, may affect the durability, if exceed the max. values, may cause unrepairable damage.)

Max. Continuous Isolation Voltage	3KVDC/rms
Power Supply Volt. Input Range:	±25%Vdd
Operating Temperature	- 45℃ ~ + 85℃
Max. Wielding Temperature （<10S）	+300℃
Voltage Signal Output Min. Load	2KΩ

General Parameters:

Precision, Linearity Error Grade--------- 0.1 , 0.2 , 0.5	Backlash ---------- < 0.5%
Auxiliary Power Supply-------- 5V,12V,15V,24VDC,etc	Isolation----------Signal Input/Output/Auxiliary Power Supply
Operating Temp.---------- -20 ~ +70℃	Insulation Resistance---------- ≥20MΩ
Operating Humidity---------- 10 ~ 90% (No condensation)	Withstand Volt.-------3KVDC(60HZ/S) leakage current: 1mA
Storage Temp.---------- -45~ +85℃	Impulse Volt. Test--------3KVDC， 1.2/50us (peak value)
Storage Humidity---------- 10 ~ 95% (No condensation)	

Technical Parameters:

Items		Testing Conditions	Min.	Typical Value	Max.	Unit
Isolated Voltage		1min		3000		VDC
Gain				1		V/V
Gain Temp. Drift				100		ppm/℃
Non-linearity				0.1	0.2	%FSR
Gain, Full Scale Adj.（ADJ）*1		Multi-turn Potentiometer		**10K / 50K**		Ω
Zero Adj.（ZA）*2		Multi-turn Potentiometer		**1K**		Ω
Signal Input	Volt.		0		50	V
	Current		0		30	mA
Input Offset Volt.				2	5	mV
Input Impedance	Volt.		0.3	1		M
	Current			250		Ω
Signal Output	Volt.		0		10	V
	Current		0		20	mA
Load Capacity	Volt.	Vout=10V		2	*	kΩ
	Current		0	350	*	Ω
Frequency Response		-3DB		1		KHz
Signal Output Ripple Wave		No filtering		10	20	mVRMS
Signal Volt. Temp. Drift					0.2	mV/℃
Auxiliary Power	Volt.	Customized	3.3	12	24	VDC
	Consumption			0.5	1	W
Operating Temp.			-45		85	℃
Storage Temp.			-55		105	℃

***1 Note:** If the output of ISO U(A)-P-O module is Volt. Signal, the potentiometer used to do gain adjustment should be 10KΩ multi-turn potentiometer. If the output of ISO U(A)-P-O module is current signal, the potentiometer used to do gain adjustment should be 50KΩ multi-turn potentiometer. (Refer to Technical Parameters Table above)

***2 Note:** If the input is 0-xV Volt., output is 4-20mA analog current signal, it should be externally added both gain adjustment and zero adjustment multi-turn potentiometer. If the input and output signals of ISO U(A)-P-O

module are the same values, that is 0-xV/0-xmA （zero to zero.), it is not necessary to do externally zero adjustment.

Input	Input Impedance	Input Over-load
0-1mA	1KΩ	1.5 times of the Rated：Continuous 3.0 times of the Rated: 1S
0-10 mA	250Ω (For the load, if 100Ω or other values are required, please notify us when placing orders)	
0-20mA		
4-20mA		
Volt.	≥10KΩ	2.0 times of the Rated: Continuous

Output	Output Load Capacity	Response Time
4-20mA	≤350Ω (For the impedance, if 650 Ω or other values are required, please notify us when placing orders) *3	≤1mS
0-20mA		
4-12-20mA		
0-5V	> 2KΩ	
0-10V		
1-5V		

***3 Note**: Customized product is available for the product which has special requirements on load capacity of analog signal output. User can also order 0-1V (max 1A), 0-5V(max 500mA) high current output ISO Series Linearity Adjusting/Controlling Isolated Amplifier/Transmitter: (Product model: DIN 1X1 ISO L-A-P-O).

Model Selection:

ISO U(A)□-P□- O□

Input Volt./Current

U1：0-5V　　A1：0-1mA
U2：0-10V　　A2：0-10mA
U3：0-75mV　　A3：0-20mA
U4：0-2.5V　　A4：4-20mA
U8: Customized　　A8: Customized

Auxiliary Power Supply

P1：DC24V　　P2：DC12V
P3：DC5V　　P4：DC15V
P8：Customized

Output Signal

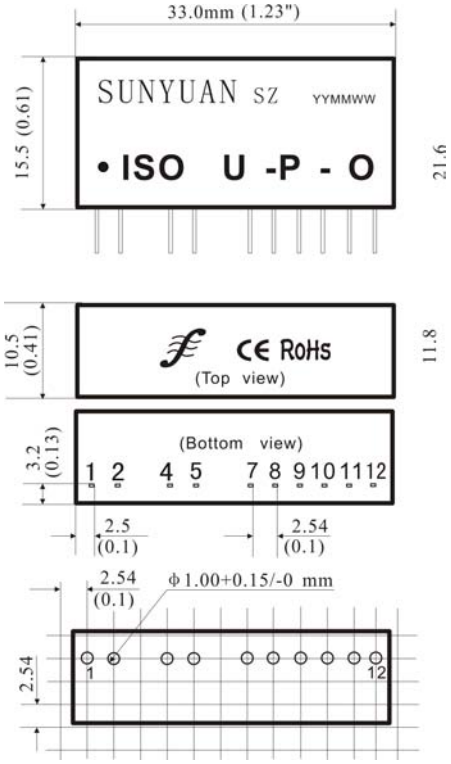
O1: 4-20mA　　O2: 0-20mA　　O3: 4-12-20mA
O4: 0-5V　　O5: 0-10V　　O6: 1-5V
O8: Customized

Model Selection Examples:

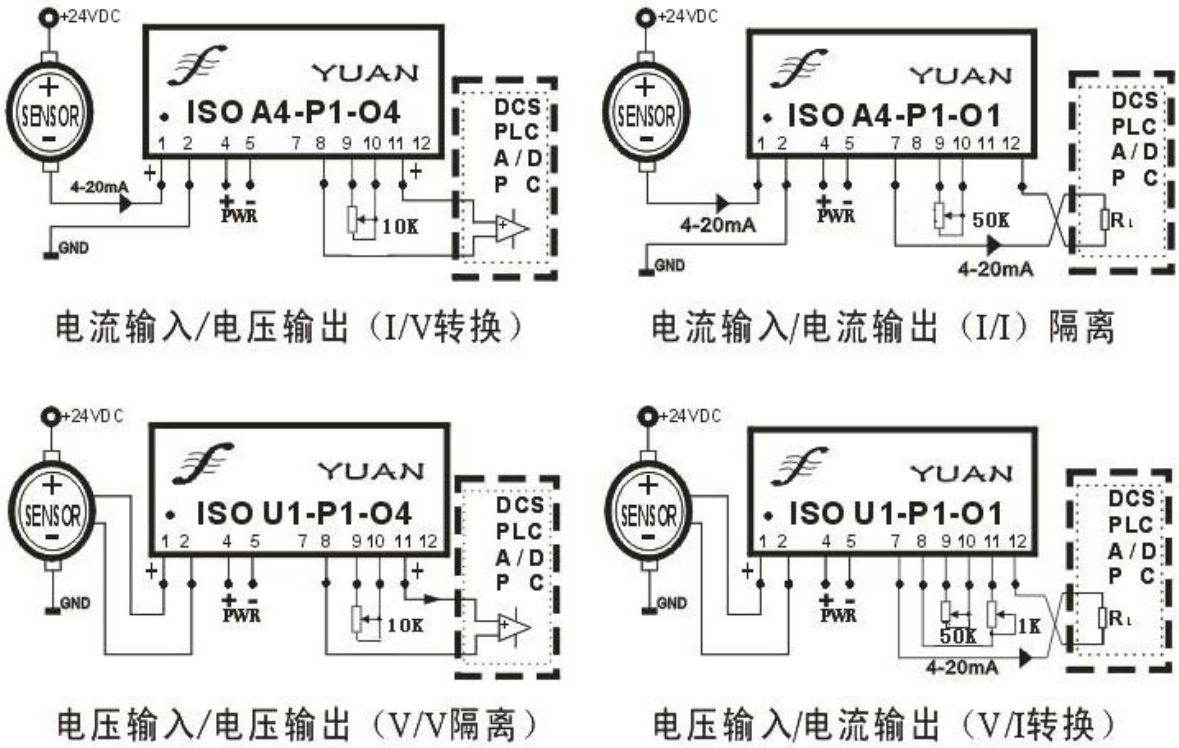
E.g.1: Input signal: 0-5V ; Auxiliary power supply: 24VDC; Output signal: 4-20mA
Product Model: **ISO U1-P1-O1**

E.g. 2: Input signal: 4-20mA ; Auxiliary power supply: 24VDC; Output signal:4-20mA
Product Model: **ISO A4-P1-O1**

Dimension:



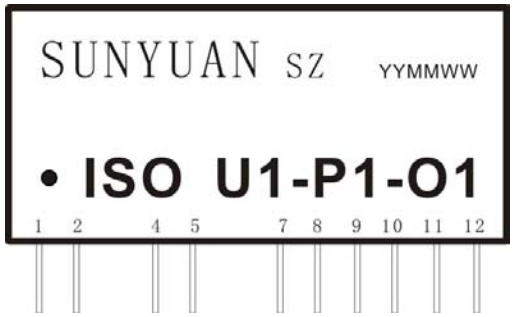
Typical Applications:



Note *4: The product with current output, which has no zero adjustment terminals (no 8th PIN, 11th PIN) in output end can be up to the required precision without doing zero adjustment. If user requires to do zero adjustment, please order ISO mV Series Small Signal Isolated Amplifier/Transmitter. Data sheet: http://www.szsunyuan.com/products/proclass.asp?Cid=38

Note *5: For the high input impedance in voltage input product (ISO U-P-O), its output generates the max. value when its input terminal is the open circuit. In order to avoid damage, user should parallelly connect a 1MΩ resistance and one 0.1UF capacitor between 1st PIN and 2nd PIN in input end to achieve the min. value 0 output when its input is the open circuit.

PIN Definition:



Current Signal Output Product PIN Diagram (4-20mA/0-10mA/0-20mA)

Current Signal Output Product (Optional Zero and Gain Adjustment), PIN Definition: SIP 12Pin Package

1	2	3	4	5	6	7	8	9	10	11	12
Signal Input Sin+	Signal Input GND	Null	Auxiliary Power PW+	Auxiliary Power PW-	Null	Signal Output Io+	Zero Adj. Terminal or （Null）	Gain Adj. Adj.	Gain Adj. Adj	Zero Adj. Terminal or （Null）	Signal Output Io-

Voltage Signal Output Product PIN Diagram (0-2.5V/0-5V/0-10V)

Voltage Signal Output Product (Only has Gain Adjustment), PIN Definition: SIP 12Pin Package

1	2	3	4	5	6	7	8	9	10	11	12
Signal Input Sin+	Signal Input GND	Null	Auxiliary Power PW+	Auxiliary Power PW-	Null	Null	Signal Output GND1	Gain Adj. Adj.	Gain Adj. Adj.	Signal Output Vo+	Null

External View & Optional Packages: