

High Precision Analog Voltage Signal Isolator

Capacitive Isolated $\pm 10\text{V}$ Input High Precision Isolation Amplifier: ISOC 124P

Product Features

- 50KHz (-3dB) high bandwidth Pin-Pin compatible with ISO 124P isolator
- Low cost and small size, standard DIP16Pin flame retardant material package
- Accuracy level: ± 0.01 level, non-linearity 0.01% in full scale
- Between signal input and output: 3000VDC isolation withstand voltage
- Bipolar operation: $V_o = \pm 10\text{V}$, power supply range: $\pm 4.5\text{V} \sim \pm 18\text{V DC}$
- DIN-mount type with optional 5V/12V/24V DC single power supply commonly used in the field.
- Easy to use, fixed unit gain configuration
- Small size: 22.8 X 10.2 X 8.5 mm (L X W X H)
- Wide temperature range for industrial grade operating environments: $-40 \sim +85^\circ\text{C}$

Typical application

- Bipolar Voltage Signal Isolation Acquisition Transmission
- Industrial process control system power supply voltage monitoring, etc.
- PLC/FCS/DCS Control System Analog Signal Isolation Acquisition
- Isolated motor and SCR amplification control
- Analog Signal Ground Interference Suppression and Loop Isolation Acquisition
- Industrial field analog signal isolation and amplification conversion and long line transmission
- Instrumentation and sensors, PLC analog signal transceiver
- High-voltage isolation safety barriers for power monitoring and medical equipment
- Multi-channel intelligent sensor inputs are isolated from each loop and anti-interference

Summarize

The SunYuan ISOC 124P Analog Voltage Signal Isolation Amplifier is a hybrid IC with capacitively coupled isolation that uses a new modulation-demodulation capacitively coupled isolation technology. The signals in the module are transmitted digitally through the capacitive isolation layer. The integrity of the signals is maintained through digital modulation and capacitive coupling isolation, which enables the digital signals to pass through the capacitive isolation layer and also provides excellent reliability and superior immunity to high-frequency transients.

ISOC 124P is packaged in a small size standard DIP 16Pin flame retardant case and resin material, which is Pin-Pin compatible with ISO 124P isolation amplifier Pin-Pin, an integrated module commonly used in the market today. Module input and output only need to use an independent positive and negative power supply for the module power supply, you can complete the analog signal input and output signal isolation and amplification and transmission functions, and support single-ended and positive and negative bidirectional DC signal isolation transmission.

The ISOC 124P is simple to use and features a fixed unit gain configuration that requires no external components to operate. The module can meet the ultra-wide range of $\pm 4.5\text{V}$ to $\pm 18\text{V}$ power supply, in the full range of the analog signal isolation and amplification transmission with extremely high accuracy and linearity, maximum 0.05% of the non-linearity value and 50kHz (-3dB) small signal bandwidth. The products are available in IC modular package and DIN35 standard rail mounting, which can meet the requirements of humidity, vibration and wide temperature range of $-40 \sim +85^\circ\text{C}$ industrial-grade field working environment, and have a wide range of applications in the field of rail voltage monitoring, generator or motor safety operation monitoring, power transmission and distribution remote monitoring, instrumentation and sensor signal transceiving and transmitting, medical equipment safety isolation barriers, industrial robotics automation control, chemical industry and nuclear equipment, and so on.

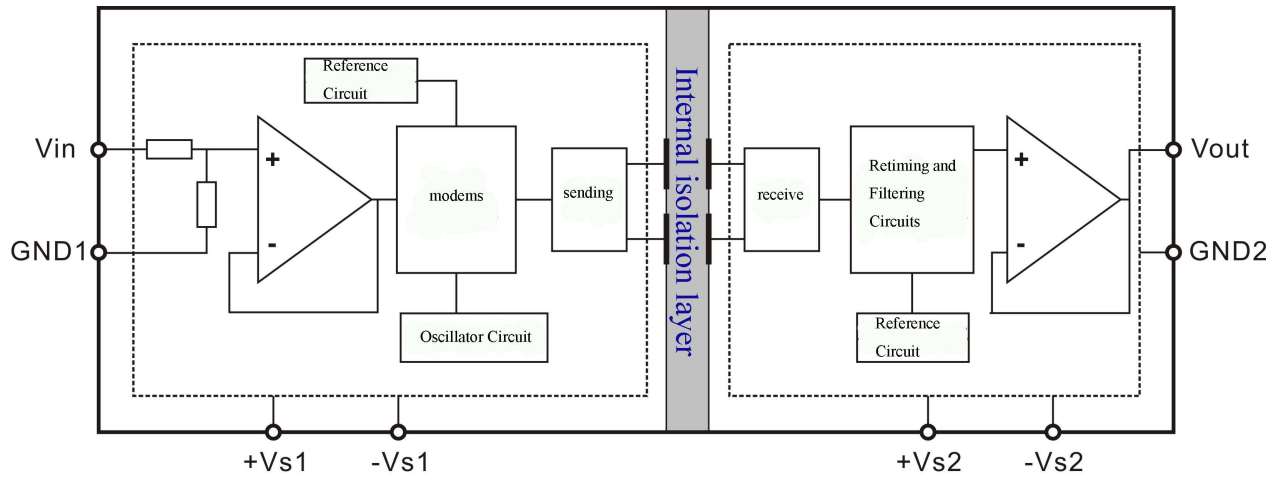


Figure 1 ISOC124P Block Diagram

Maximum product rating (It affects the product's service life by operating at maximum ratings for long periods of time, beyond which irreparable damage occurs.)

Continuous Isolation Voltage (Maximum continuous isolation voltage for inputs and outputs)	3KVDC/rms
PWR (Maximum input range of auxiliary supply voltage)	±18V/MAX
Vin(Analog Input Voltage)	100V/MAX
Junction Temperature (Maximum range of operating ambient temperature)	- 40℃ ~ + 85℃
Lead Temperature (Maximum pin soldering temperature and duration<10S)	+300℃
Output Voltage Load Min (Minimum load at output voltage signal)	1KΩ

Recommended working conditions for product use

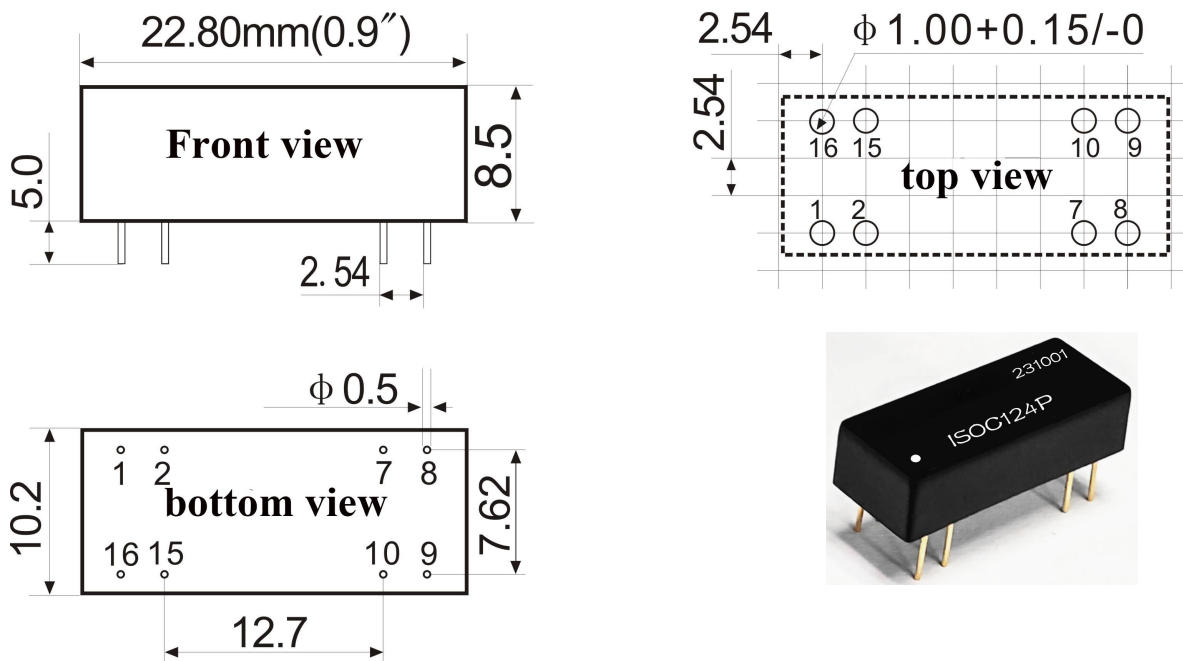
Vs1	High-side (input) operating supply voltage	±4.5V/MIN	±15V/NOM	±18V/MAX
Vs2	Low-side (output) operating supply voltage	±4.5V/MIN	±15V/NOM	±18V/MAX
Vin(Analog Input Voltage)			±10V/NOM	

Product Technical Parameters

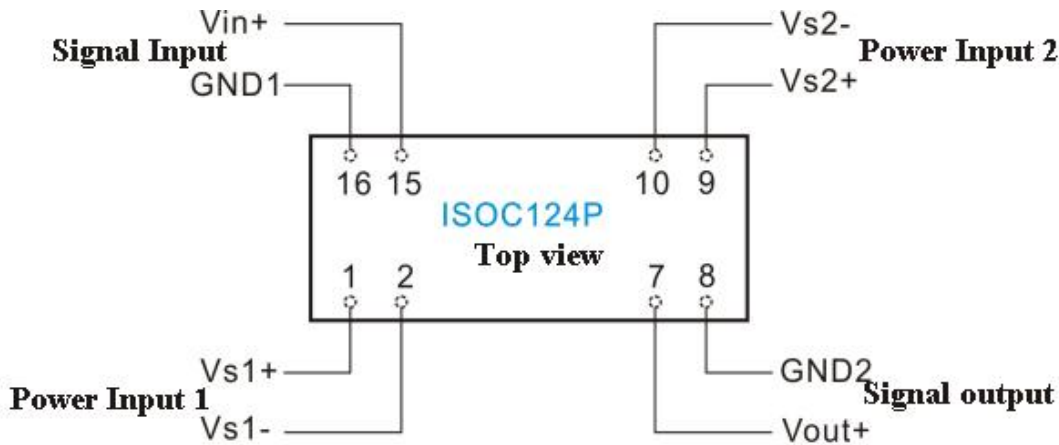
Parameter name	test condition	Min	typical value	Max	unit
Isolated Voltage	AC,60Hz,1min		3000		VDC
Isolation Impedance			$10^{10} \parallel 1$		$\Omega \parallel \text{pF}$
Nominal Gain	VO=±10V		1		V/V
gain error	VO=±10V		±0.01	±0.2	%FSR
temperature drift of gain			±30		ppm/℃
nonlinearity			0.01	0.05	%FSR
Input Voltage			±10	±12.5	V
lossy voltage			2	5	mV
Input Impedance			240		KΩ
output voltage			±10	±12.5	V

load capacity		Vout=±10V	1	2		kΩ
capacitive load				0.1		uF
Small signal bandwidth		-3dB		50		KHz
conversion rate				2		V/us
Common mode rejection					110	dB
Signal output ripple				20		mVp-p
Supply Voltage Rejection				120		dB
Power supply	high side	Vs1(voltage)	±4.5	±15	±18	VDC
		IQ1(quiescent current)		+12/-1		mA
	low side	Vs2(voltage)	±4.5	±15	±18	VDC
		IQ2(quiescent current)		+12/-3		mA
Working environment			-40		85	℃
storage temperature			-55		105	℃

Product shape and PCB layout reference size drawing (standard DIP 16 pins)

**Figure 2 External Dimensions and PCB Layout Reference**

Product Pin Function Description



Product Pin Function Description

1	2	3~6	7	8	9	10	11~14	15	16
Vs1+	Vs1-	NC	Vout+	GND2	Vs2+	Vs2-	NC	Vin+	GND1
IN Positive power IN	IN Negative power IN	Empty pin	Positive signal out	Output Common Ground	Positive power input at output	Negative power input at out	Empty Pin	Signal Input Positive	Input Common Ground

Typical Application Diagram

Figure 3 shows the use of high side (input) power supply to meet the signal input and output two isolated typical application wiring diagram. In addition to providing power to the outputs of the ISOC124P module itself, the single-to-dual isolated power supply module can also provide isolated $\pm 15V$ power distribution to power other functional expansion circuits at the outputs of the module.

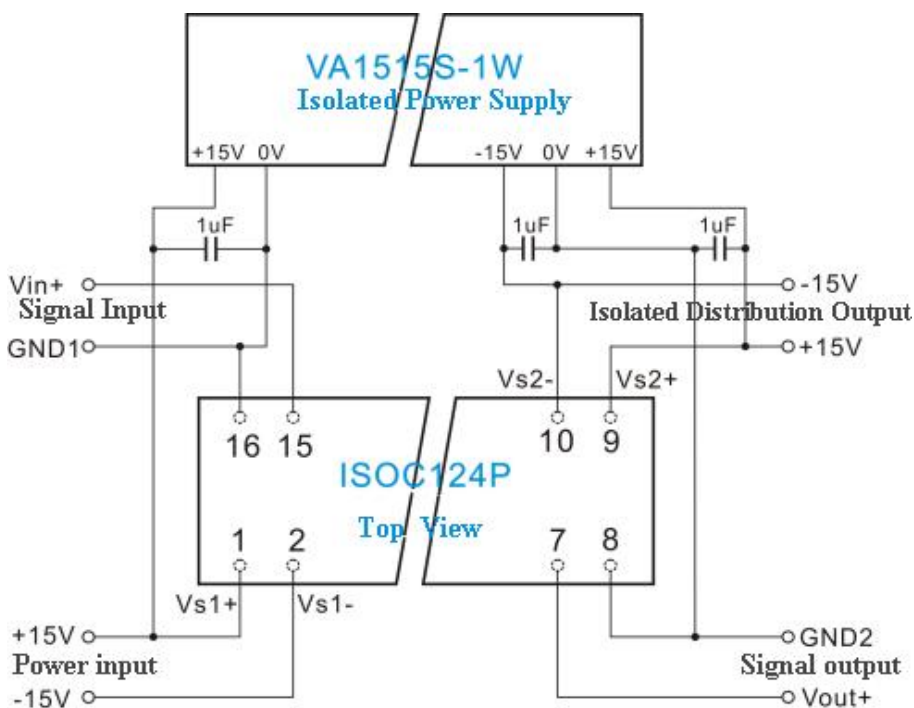


Fig. 3 Typical Application Circuit with Two Isolations for Input Supply

Figure 4 shows the use of low-side (output) power supply to meet the signal input and output two isolated typical application wiring diagram. In addition to providing power to the inputs of the ISOC124P module itself, the single-to-dual isolated power supply module can also provide isolated $\pm 15\text{V}$ distribution power to power other functional expansion circuits at the module inputs.

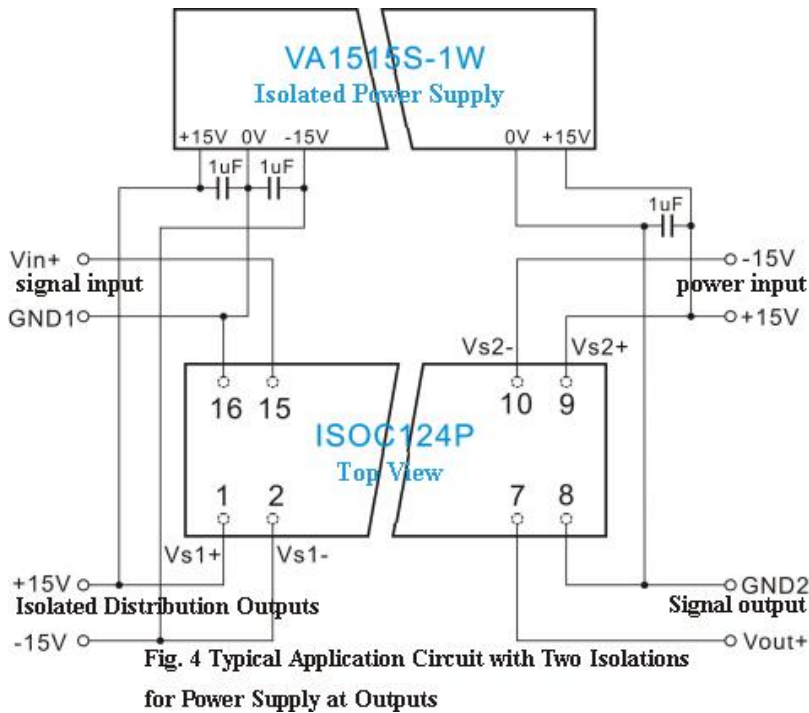
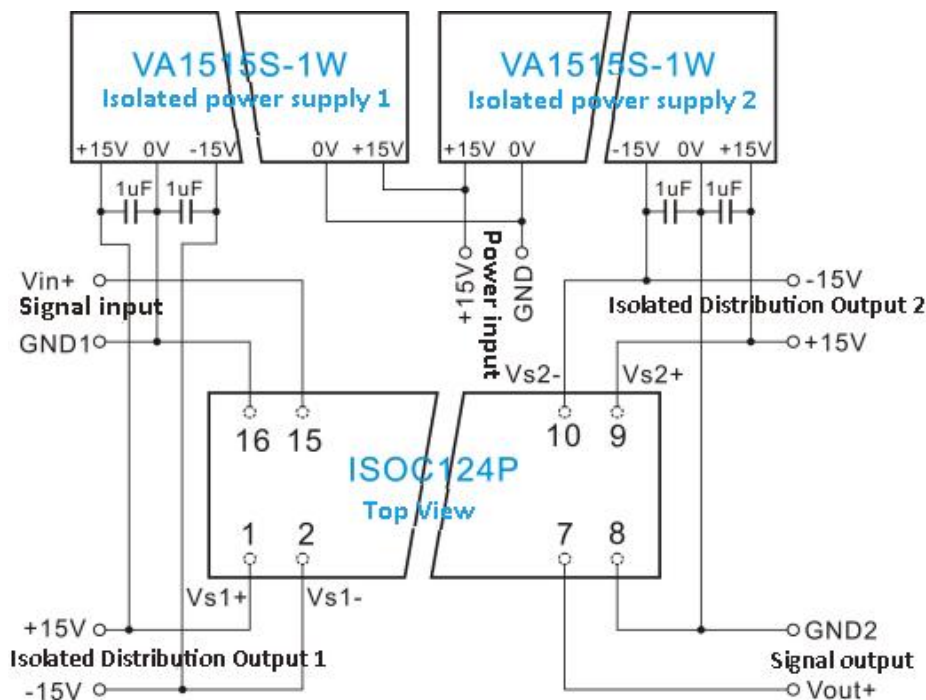


Figure 5 shows the use of independent single-supply power supply to realize the power supply, signal input, signal output three-terminal fully isolated typical application wiring diagram. ISOC124P input and output each use a single to dual DC-DC isolated power supply module to ISOC124P independent power supply, isolated power supply in addition to the ISOC124P module itself to provide power to the input and output terminals, but also to provide isolated $\pm 15\text{V}$ power supply to the module input and output terminals of the other functions of the expansion of the circuit power supply.



Recommended Circuits for Power Filtering and EMC Solutions

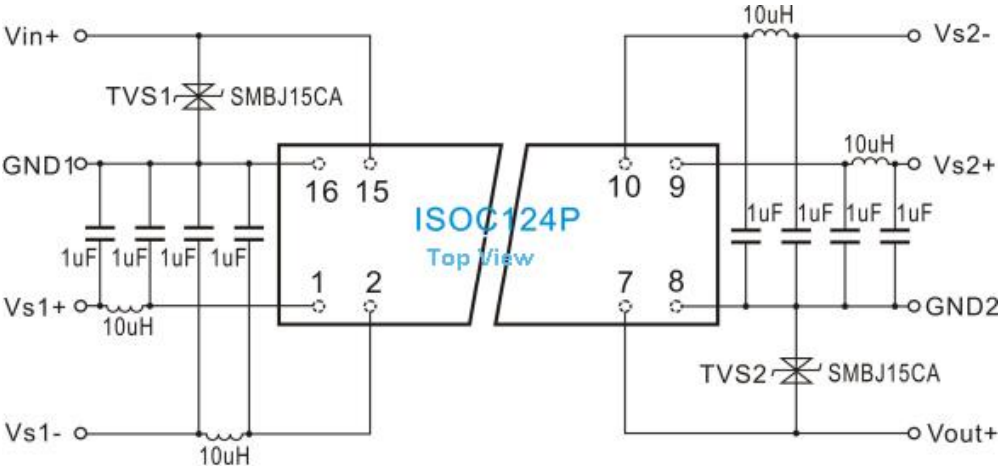


Figure 6 Recommended Circuit for Filtering and EMC Solutions

DIN35 DIN rail-mounted type product selection application

ISOC 124P signal isolator can be made into DIN35 DIN-rail mounting, the mounting of the internal integration of DC-DC isolation power supply, the user only needs to provide an independent single power supply to the product power supply, you can realize the bipolar arithmetic: $V_o = \pm 10V$ signals DIN 1X1 (one in and one out), DIN 1X2 (one in and two out), DIN 2X2 (two in and two out), such as the type of single-channel and multi-channel isolation amplification, and the power supply voltage can be selected as a single power supply 5V/12V/24V DC, more convenient to the user in the field of the selection of the application.

Model Selection:

DIN ☐ X ☐ ISOC 124P ☐

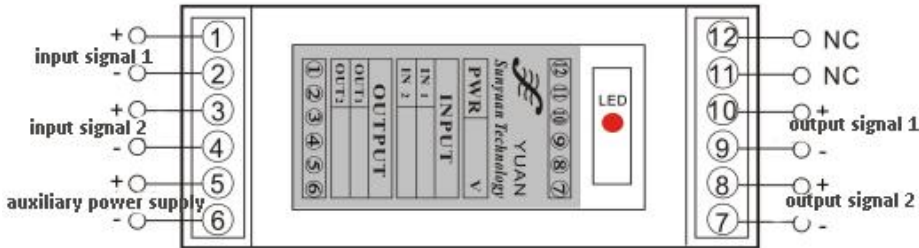
Channel for option Auxiliary power

DIN 1X1: 1-in&1-out P1:24V
DIN 1X2: 1-in&2-out P2:12V
DIN 2X2: 2-in&2-out P3:5V
P4:15V
P5:220VAC
P8:自定义



Model Selection for example	Signal Input	Signal Output	Power supply
DIN 1X1 ISOC 124P4	0-±10V	0-±10V	15VDC
DIN 2X2 ISOC 124P1	2-CN 0-±10V	2-CN 0-±10V	24VDC
DIN 1X2 ISOC 124P3	1-CN 0-±10V	2-CN 0-±10V	5VDC

Product Dimensions and Pin Function Description Wiring Diagrams:



DIN1X1 /1X2/ 2X2 Single/Multiple Isolation Amplifier Pin Function and Wiring Diagram

Pin	Pin Function	
1	Signal in1 +	Input signal 1 positive
2	Signal in1 -	Input signal 1 negative
3	Signal in2 +	Input signal 2 positive
4	Signal in2 -	Input signal 2 negative
5	Power in	Auxiliary power supply positive
6	Power GND	Auxiliary Power Supply Negative
7	Out2 -	Output signal 2 negative
8	Out2+	Output signal 2 positive
9	Out1 -	Output signal 1 negative
10	Out1+	Output signal 1 positive
11	NC	empty
12	NC	empty

