

## PWM pulse width signal DA conversion high-precision miniature isolation transmitter IC

Single-chip PWM signal to analog, small size and low cost isolation transmitter: ISOS D-P-U series

### Features:

- 1.PWM pulse width signal input, 0-5V/0-10V and other analog voltage signal output
- 2.PWM signal 30Hz~30KHz wide frequency input, sensitive resolution and fast response speed
- 3.Very high conversion accuracy and linearity in the full range (non-linearity <0.2%)
4. There are 3000VDC two isolation between the signal input and output
5. The power supply voltage only needs to be higher than the output signal voltage value by more than 3VDC
6. Ultra-small size (19.6 X 6 X 10mm), error levels: 0.1, 0.2, 0.5
- 7.SIP7 Pin standard PCB board installation, in line with UL94V-0 flame-retardant package
- 8.Strong anti-EMC electromagnetic interference and high-frequency signal spatial interference characteristics
- 9.Industrial temperature range: - 40℃ ~ + 85℃

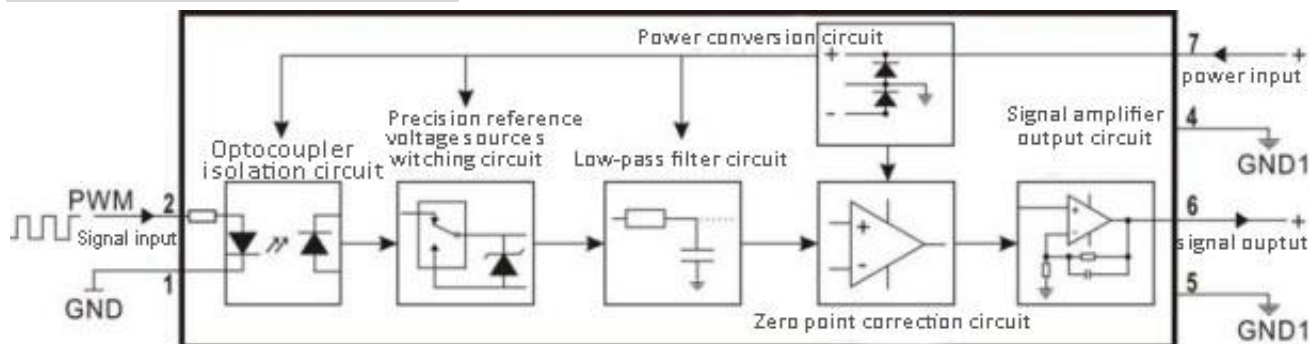
### Summarize:

**SunYuan ISOS D-P-U** series products are the industry-leading technology, small size (SIP7 Pin), low-cost PWM pulse width modulation signal isolation transmitter IC newly developed by Sunyuan.It can convert the duty cycle of the internal output PWM square wave signal of frequency converter, single-chip microcomputer, PLC/DCS, and instrumentation into analog signals such as standard 0-5V/0-10V through isolation, so as to realize the DA conversion, isolation, amplification and change of the single-chip PWM signal. Send contro function

**SunYuan ISOS D-P-U** series products are especially suitable for DA conversion and isolation transmission of PWM pulse width modulation signals in industrial fields, single-chip microcomputer, field bus, Ethernet Internet of Things, PLC/DCS upper computer to multi-channel sensor signal acquisition analysis and control.The internal SMD process structure and new technology isolation measures enable the device to achieve: PWM signal input and analog signal output 3000VDC isolation. And it can meet the requirements of industrial-grade harsh working environment with wide temperature, humidity and vibration.Due to the size limitation, the internal power supply of the product is not boosted and isolated, so the power supply voltage value for the product must be higher than the signal output voltage value by more than 3VDC. (For example: the output signal is 0-5V, the power supply voltage needs to be above 8VDC, and 9VDC or 12VDC power supply can be selected). If the user needs to isolate the signal from the working power supply completely or the user's power supply voltage is lower than the signal output voltage, you can choose to use the company's IBS series of isolated power modules to supply power, or directly use the company's ISC D-P-O-Q series of products.

**ISOS D-P-U** series products are very convenient to use, and can realize the isolation transmission function of PWM signal and analog signal without any external components.7-pin single in-line ultra-small size (19.6X6.0X10mm) and standard PCB board mounting design, which effectively simplifies user system design options, reduces volume and reduces product footprint. Realize the miniaturization design requirements of user terminal products.

### Product principle block diagram:



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

Continuous Isolation Voltage	3000Vrms
Vin (Maximum input voltage)	24VDC/+10%
Junction Temperature (Operating temperature)	- 40 ~ +85℃
Storage Temperature	+150℃
Lead Temperature (Welding temperature)	+300℃
Output Short to Common	10S

General parameters:

Accuracy, linearity error level -----0.1, 0.2, 0.5grade	Insulation resistance ----- $\geq 100M\Omega/500VDC$
Auxiliary power--5V,9V,12V,15V,24VDC Single power supply	Isolation ----- signal input/output two isolation
Operating temperature----- -40 ~ +85°C	Package-----SIP 7 Pin (single row 8 pin)
Working humidity----10 ~ 90% (No condensation)	Withstand voltage ----- 3KVDC/60S, leakage current <1mA
storage temperature----- -45~ +105°C	Return difference ----- <0.05%
Storage humidity----- 10 ~ 95% (No condensation)	Temperature drift ----- 0.0050%/F.S./°C (Within working temperature range of -40°C ~ +85°C)

Product Specifications:

Name	Test Conditions	Min	Typical value	Max	Unit	
Isolation voltage	1min		3000		VDC	
Temperature drift	-40°C ~ +85°C		$\pm 50$ 0.2		ppm/°C	
Non-linearity		0.1		0.5	%FSR	
signal input	frequency	30	1K	30K	Hz	
	Duty cycle	0		100	%	
	Input high level	3.6	5	24	V	
	Input low level	0	0.5	1.2	V	
input resistance			1		K $\Omega$	
Signal output	Voltage	RL=2K $\Omega$	0	5	12	V
load capacity	current	Vo= 10V	1000	2000	$\infty$	$\Omega$
Own power consumption	Io= 5mA		<0.2		W	
Signal output ripple	No filtering		10	20	mVRMS	
Response time	frequency>1KHZ		0.1		S	
Working temperature		-40		+85	°C	
Insulation resistance	100M $\Omega$ , 500VDC(Signal input terminal and signal output terminal)					

Remarks: If the amplitude of the input PWM pulse width signal is higher than 10V, it needs to be explained separately when placing an order.

Product model and definition:

**ISOS D□ -P□- U□**

Isolated small volume

SIP 7Pin

Input signal

- D1: 30Hz-99Hz PWM signal input
- D2: 100Hz-0.9KHz PWM signal input
- D3: 1KHz-9KHz PWM signal input
- D4: 10KHz-19KHz PWM signal input
- D5: 20KHz-30KHz PWM signal input
- D8: User Customized

- P1: DC24V    P2: DC12V    P3: DC5V
- P4: DC15V    P5: DC9V    P8: User Customized

Output signal

- U1: 0-2V    U2: 0-2.5V    U3: 0-3.3V
- U4: 0-5V    U5: 0-10V    U8: User Customized

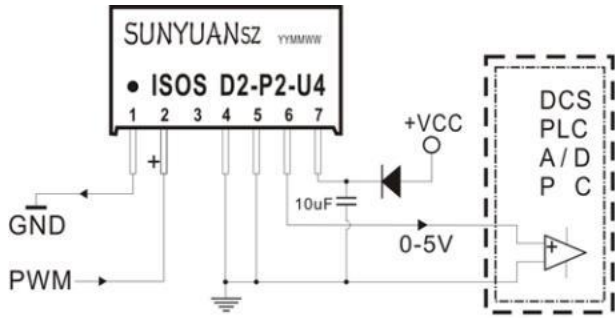


Product selection example:

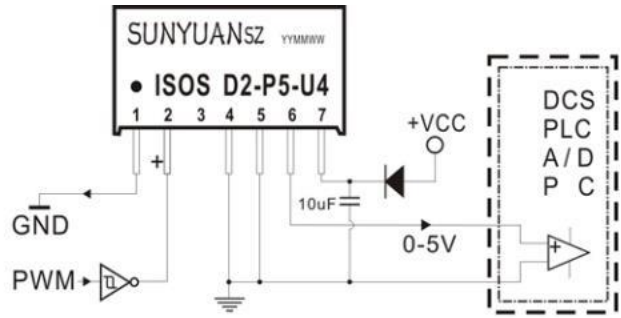
Example 1: PWM pulse width signal input: 20KHz square wave; auxiliary power supply: 12V; signal output: 0-5V;  
Corresponding product model: ISOS D5-P2-U4

Example 2: PWM pulse width signal input: 1KHz square wave; auxiliary power supply: 5V; signal output: 0-2.5V;  
Corresponding product model: ISOS D3-P3-U2

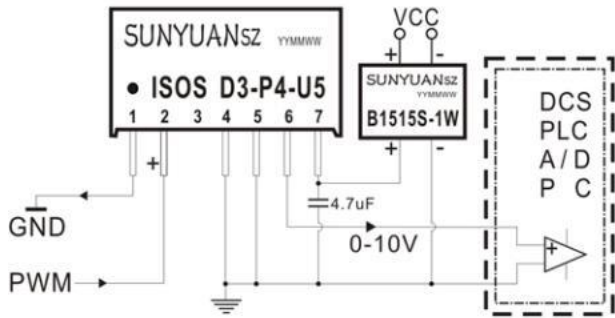
Typical application examples:



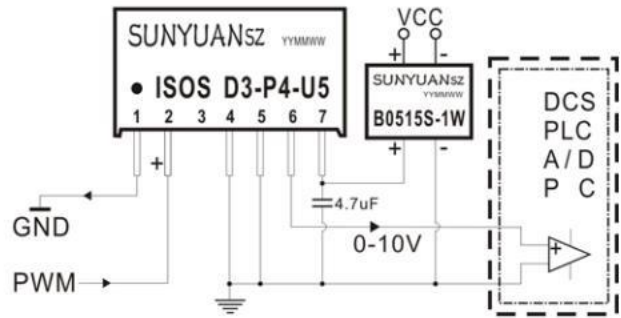
ISOS D-P-U两隔离典型应用接线图1



ISOS D-P-U两隔离IC典型应用接线图2



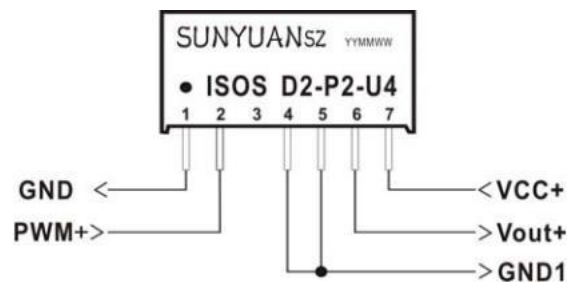
ISOS D-P-U三隔离典型应用接线图



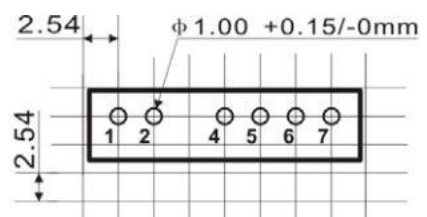
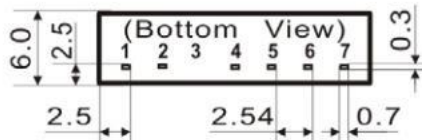
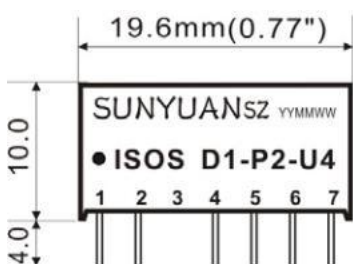
ISOS D-P-U三隔离典型应用接线图（电源升压型）

Pin function description:

1	2	3	4~5	6	7
Signal input GND	Signal input SIN+	NC	COM (GND1)	Signal output Vout+	Positive power input VCC+



IC package product outline dimensions and PCB layout reference dimensions:



7Pin封装PCB布板参考