

## 2-Wire Passive PWM to Current Signal Isolation Transmitter

Low cost small size two-wire passive PWM to 4-20mA Isolation Transmitter  
ISO D-01 Series

### Features

- Unique loop-powered technique used, external power supply is not required.
- PWM pulse width signal input, 4-20mA loop powered output type.
- 10Hz--50kHz PWM signal input, high sensitivity, fast response.
- High linearity in full measuring range, non-linearity<0.2%
- 3kV isolation between input and output.
- Extra small size 22x11x9mm, error grade: 0.1, 0.2, 0.5
- SIP 8-Pin PCB-mounting, UL94V-O flame-retardant package.
- High anti-interference ability on EMC magnetic interference or high frequency signal.
- Industrial operating temperature range: -40--+85Cel. deg.

### Applications

- PMW signal long-distance transmission, isolated conversion.
- PLC and Inverter control in industrial site.
- Signal Ground wire anti-interference.
- Boiler temperature automatic control.
- DA Converter designed on the basis of PWM.
- Processing control and automatic equipment
- PWM to 2-wire 4-20mA signal isolated control, 1-channel input 1-channel output or 2-in 2-out isolated conversion.

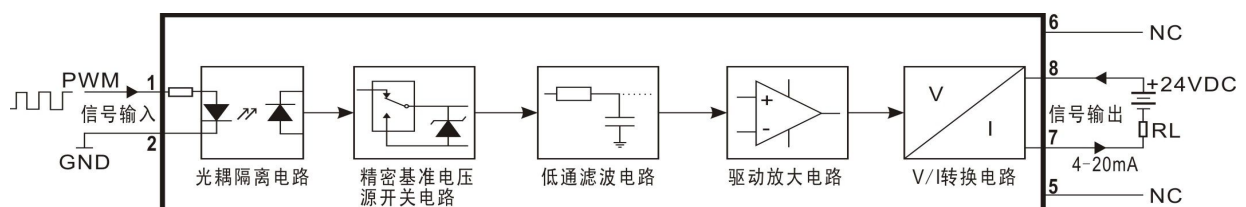
### Description

**SunYuan ISO D-01** is an micro-size low power consumption passive integrated transmitter IC designed for the isolated conversion from PWM pulse width signal into 2-wire 4-20mA signal. That IC operates in current loop powered in output terminal mode, it receives PMM signal from input, and converts it into corresponding isolated 4-20mA standard 2-wire current signal in linearity.

**SunYuan ISO D-01 series** PWM Pulse width transmitter is a kind of integrated mixed circuits which can convert the duty ratio of PWM signal into isolated standard current signal. The transmitter IC is in low cost, small size standard SIP 8Pin flame-retardant package. It has combined with the following circuits: signal coupling isolated conversion circuit, precision reference voltage source switching control circuit, low-pass filtering circuit, driving and amplification circuit, VI conversion circuit, etc. The output loop powered power supply range is 12-36VDC, PWM signal is converted in high accuracy and linearity. The hybrid integrated circuit and isolated technique used enable that transmitter IC to operate in 3KV isolation between input and output and operate normally in the severe operating environment, like high/low temperature, humidity, shake, etc in industrial site.

**SunYuan ISO D-01** is designed by using high speed optically coupled isolation mode and high efficiency feedback loop powered technique to achieve the isolated conversion from PWM signal to 4-20mA standard signal. It can be well matched with the input interface of various types of meters and instruments like PLC, DCS, FCS, etc. Operating in loop powered mode and extra small size (22.0X11.0X9.0mm) can effectively simplify user's system layout and save the space and cost in designing an application solution. The transmitter has 35mm DIN Rail-mounting package and PIM embedded board with display type. For 35mm rail-mounting type, it has single input, single output, dual input-output, triple input-output type. PIM embedded board with display type can realize sensor signal isolation and display, alarm control, long-distance transmission without distortion. It is widely applied to electric power system, telecom, instrumentations & measurements, medical equipments, industrial intelligent control, automotive electronics, security-monitoring system, military industry, etc.

### Functional Block



**Max. Rated Value** (Use it in max. rated conditions long time affect life time of the transmitter, exceed the max. Rated value many case unrepaired damage.)

Continuous Isolation Voltage	3000Vrms
Max Vin	36VDC
Junction Temperature	- 40 ~ +85 °C
Storage Temperature	+150°C
Lead Temperature	+300°C
Output Short to Common	Continuous

### General Parameters

Accuracy, linearity error grade ----- 0.1, 0.2, 0.5	Load regulation ----- <0.05% meas.val./100Ω
Auxiliary power supply ----- None	Isolation-----Dual isolation between input and output.
Operating temperature ----- -40 ~ +85°C	Package ----- SIP 8 Pin
Operating humidity-----10-90% (non-condensation)	Withstand voltage ----- 3KV(60HZ / S), leakage current <1mA
Storage temperature ----- -45~ +105°C	Impulse withstand volt. ----- 3KV, 1.2/50us (Peak)
Storage humidity ----- 10 ~ 95% (non-condensation)	Temperature drift ----- 0.0050%F.S./°C (-40°C ~ +85°C operating temperature range)

### Technical Parameters

Items		Testing conditions	Min.	Typical	Max,	Unit
Isolation voltage		1min		3000		VDC
Temperature drift		-40°C ~ +85°C		±100		ppm/°C
Non-linearity			0.1	0.2	0.5	%FSR
Signal input	Frequency		30	10K	50K	Hz
	Duty ratio		0		100	%
	Input high level		3.3	5	24	V
	Input low level		0	0.5	1.2	V
Input impedance				1		KΩ
Signal output	Current		4		24	mA
Load capability	Current	Io= 20mA	0	250	750	Ω
Internal consumption	power	Io= 20mA		0.15		W
Output ripple		No filtering		10	20	mV <sub>RMS</sub>
Loop powered voltage range			12	24	36	VDC
Response time				0.1	1	S
Operating temperature range			-40		+85	°C
Insulation resistance		100MΩ, 500VDC(Signal input terminal and output terminal)				

### Model Selection & Definition

ISO D□ - O1

#### Input signal

- D1: 10Hz-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-50KHz PWM signal input
- D8: Customized

#### Output signal

- O1: Output 4-20mA



### Model selection examples

E.g.1: PWM pulse width signal input: 20KHz square wave, signal output: 4-20mA;

**Model No:** ISO D5-O1

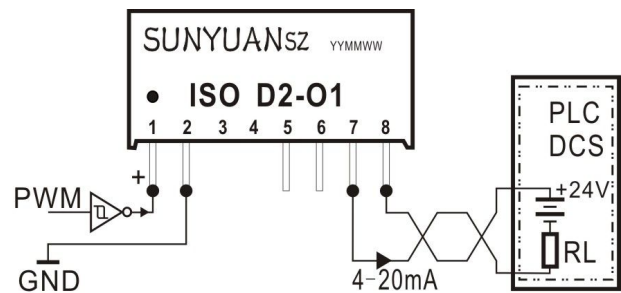
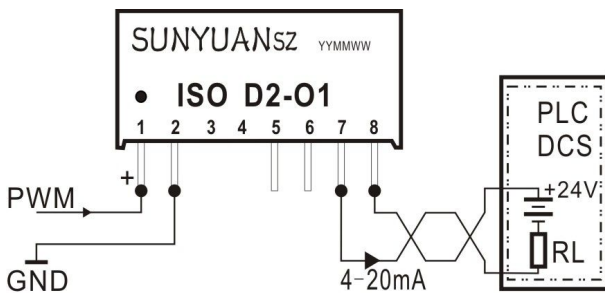
E.g. 2: PWM pulse width signal input: 50Hz square wave, signal output: 4-20mA;

**Model No:** ISO D1-O1

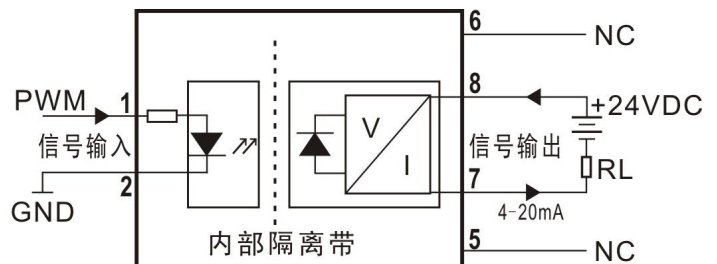
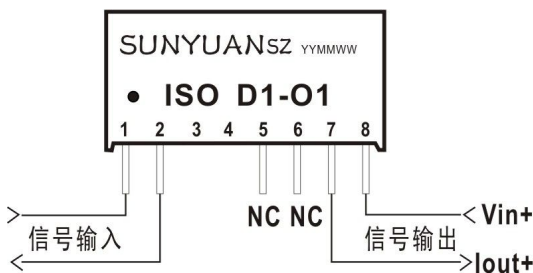
E.g. 3: PWM pulse width signal input: 1KHz square wave, signal output: 4-20mA;

**Model No:** ISO D3-O1

### Typical applications



### Pin Definition & Functional Block



### Pin Function Description (SIP8 Pin)

Signal input +	Signal input GND	No pin	No pin	No pin	No pin	Current output +	Voltage input +
IN+	GND	NC	NC	NC	NC	Iout+	Vin+
1	2	3	4	5	6	7	8