

Micro Size Low Cost 4-20mA Current Loop Isolator IC

4-20mA(0-20mA) 2-wire Analog Signal Isolator ISOS 4-20mA Series

Features	Applications
Micro size 19.5X12.5X9.8mm, zero/span adjustment is not required. <ul style="list-style-type: none"> • Special high efficient signal loop power extraction technique, external power supply is not required. • 2-wire 4-20mA signal input and output, 3000VDC isolation. • 4-20mA current loop signal isolated transmission, accuracy, linearization error grade:0.1, 0.2 • High linearity, non-linearity error < 0.2%. • 4-20mA signal extra wide voltage range (8.5~32VDC) input. • Signal low consumption (voltage drop 3V, type @20mA). • Industrial operating temperature range: - 45℃ ~ + 85℃. • SIP7 Pin standard PCB installation, UL94V-0 flame-retardant package. 	<ul style="list-style-type: none"> • Industry site 4-20mA signal isolation and long-distance transmission. • PLC, DCS signal input channels isolation and anti-channeling. • Ground wire loop isolation and interference suppression. • Analog signal data acquisition, isolated transmission. • Steady signal transmitting and receiving between meters and sensors. • Power monitoring, medical equipment control and isolated safety barrier. • Rail-transit DC high voltage monitoring isolated safety barrier. • 4-20mA signal isolated transmission, realize the functions: 1-input 1-output, 2-input 2-output, 3-input 3-output.

Introduction

Sunyuan ISOS 4-20mA is one of the smallest size (SIP 7Pin) low cost passive 2-wire 4-20mA loop powered signal isolator IC. ISOS 4-20mA is a kind of 4-20mA current signal input, 4-20mA output passive analog signal isolated integrated circuits. Inside the IC, there is current signal modulation and demodulation circuit, signal coupling isolated conversion circuit, etc. The unique magneto-electric isolation and efficient loop power extraction technique are adopted in solving the power supply requirements in 4-20mA (0-20mA) current signal isolation and transmission among sensors, meters, PLC, DCS. SIP 7pin, extra small size (19.5x12.5x9.8mm), the isolator can be easily installed in PCB, meters, sensors, PLC and other panels, it can largely reduce customers' cost and simplify the design plan.

The low input equivalent resistance makes the IC module achieve wide range input voltage (8.5~28VDC) to realize the long-distance, non-distortion transmission of signals without external power supply. By adopting SMD technological structure and new isolation technology, the modules possess the features: 3KVDC isolation between signal input and output (total isolation type), and operates in normal in abominable industrial conditions like wide temperature, humidity and vibration.

Sunyuan ISOS 4-20mA has the following features: small size, easy to use, can be easily installed in the other devices, it can realize 4-20mA or 0-20mA current loop signal acquisition and isolated conversion with high accuracy without any external components. The signal isolator has two types of package, small size PCB-mounted package, 35mm DIN rail-mounted package. The 35mm DIN rail-mounted products can be 1-input 1-output, 2-input 2-output, 3-input 3-output and 16-channel isolation, etc.

Max. Rated Value

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

Continuous isolation voltage	3KVrms
Vin (Max. input voltage)	32VDC
Junction Temperature (Max. Range of ambient temperature)	- 40℃ ~ + 85℃
Storage temperature	+150℃
Lead Temperature (Continuous time <10S)	+300℃
Output Short to Common	Continuous

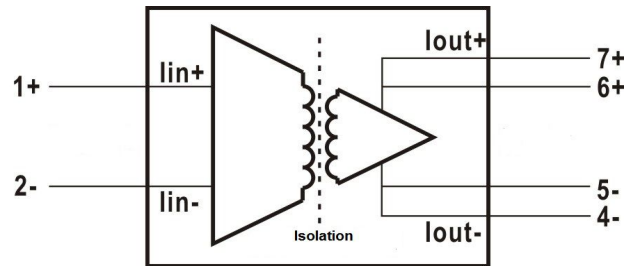
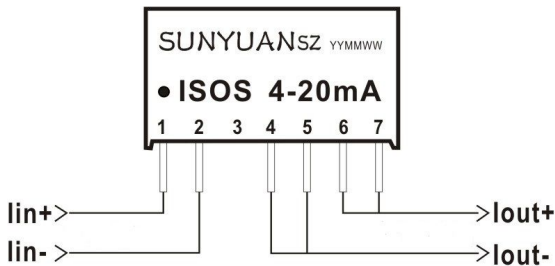
General Parameters

Accuracy, linearization error grade----- 0.1, 0.2	Load regulation ratio ----- <0.05% meas.val./100Ω
Auxiliary power supply ----- None	Isolation ----- Signal input and output, dual isolation.
Operating temperature range ----- -40 ~ +85℃	Package ----- SIP 7 Pin
Operating humidity-----10 ~ 90% (non-condensation)	Isolation voltage----- 3KV(60HZ / S), leakage current <1mA
Storage temperature----- -45~ +105℃	Impulse withstand voltage -----3KV, 1.2/50us (peak value)
Storage humidity-----10 ~ 95% (non-condensation)	Temperature drift ----- 0.0050%F.S./℃ (-40℃~+85℃, operating temperature range)

Technical Parameters

Parameters	Conditions	Min.	Typical	Max.	Unit
Isolated voltage AC, 60Hz	10S	2000	3000	4000	Vrms
Insulation resistance	500VDC		100		MΩ
Leakage current	240Vrms, 60Hz		0.5		uA
Temperature drift	-40~+85℃		±50	±100	PPm/℃
Non-linearity	Full measuring range		±0.1	±0.2	%FSK
Input signal voltage range		8.5		32	V
Output linearity range		0	4	20	mA
Output current I _o		0.1		40	mA
Output voltage drop V _{oh}	I _o =20mA		3		V
Output load capacity	I _o =20mA		250		Ω
Frequency response (small bandwidth)	I _o =20mA		100		Hz

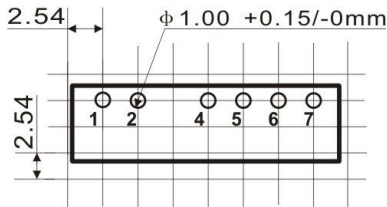
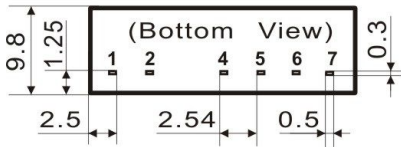
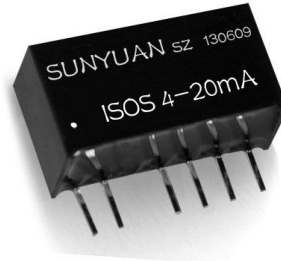
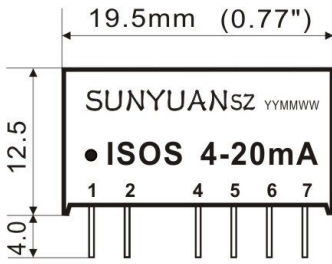
Pin Definition & Functional Block



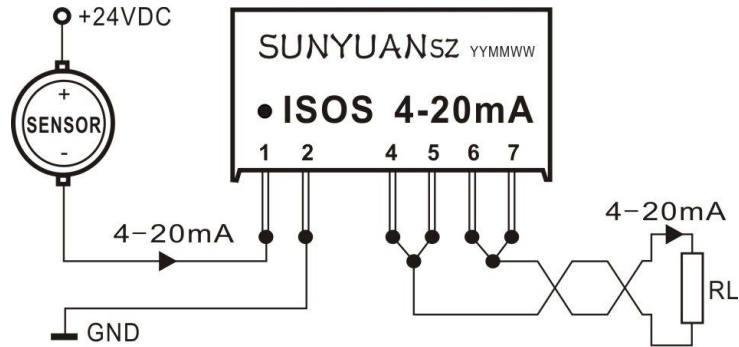
Pin Function Description (SIP 7Pin PCB-mounted):

Signal input +	Signal input -	No connection	Signal output -	Signal output -	Signal output +	Signal output +
lin+	lin-	NC	lout-	lout-	lout+	lout+
1	2	3	4	5	6	7

Dimension & Typical Application



7 Pin PCB Dimension



Micro-size 4-20mA Current Loop Isolator Wiring Circuit

Notifications

1. Please read the specification before using it; any doubt, contact our technical support personnel.
2. Do not use it in hazardous area.
3. Do not dismantle the product privately to avoid operation failure or damage.

After-sale Service

1. The products have passed quality inspection before ex-factory, if there are abnormal operation or failure, please contact our technical support personnel.
2. Quality warranty: 2 years. During valid quality warranty period, any quality problems, we will provide free replacement or maintenance free service.

Note:

1. All the parameters are tested @ $T_a=25^{\circ}\text{C}$, humidity <75%, nominal input and rated output load.
2. The testing methods are done based on our internal quality inspection standards.
3. The the special requirements or parameters (not presented), please contact the technicians for details.
4. Customized products are available.
5. The specification is subject to change without notice.