HART Transmissive 4-20mA Isolation Conditioner

2-Wire Passive 4-20mA Loop Isolated HART Transmission Conditioner: ISO 4-20mA-EHT

Product Features

●Unique signal circuit feeder invention patent technology, no need for external power supply
● 4-20mA loop signal input and output 3000VDC voltage isolation
●With HART transmitting function, supports bidirectional transmission of HART signals.
●Isolates 4-20mA inputs and outputs while allowing bi-directional communication for HART protocol signaling and manual operator measurement and control.
●Active 4-20mA Signal Acquisition Voltage (5 ~ 32V) Ultra Wide Range Inputs
●Loop power output method to solve the conflict problem of different power supply circuits
●Active signal input, passive output controls the active load in the current loop
●Extremely high accuracy and linearity over the full range, non-linearity error < 0.2%
●Industrial temperature range: -40 ~ +85 °C
●Small size standard SIP 12Pin UL94V-0 compliant flame retardant package

Typical application

● Provide HART signal transmission channel, can give full play to the double advantages of digital + analog signals
●Bi-directional transmission of HART signals supports communication between intelligent sensors and instrumentation in the field and DCS centralized systems in the control room.
● Two-wire active load signal matching and control
●Sensor 4-20mA signal acquisition, isolation, conditioning and transmission
●PLC, DCS input channel signal acquisition isolation between the anti-tampering
●Ground loop loop current interference isolation and suppression
●Power instrumentation, medical equipment monitoring isolation barrier
● 4-20mA current signal isolation and transmission of 1-input&1-output, 2-input&2-output and the realization 2-of multi-channel transmission and transmission 3-function

Summarize

SunYuan ISO 4-20mA-EHT series HART transmissive 4-20mA two-wire passive isolation regulator, is a special HART protocol transmission and control of industrial instruments, intelligent sensors and transmitters signal isolation regulator converter module, can be input active 4-20mA current signals into isolated passive control signal output to control the two-wire power supply (explosion-proof) 4-20mA current loop, to achieve the sensor signal acquisition and analog input interface active load matching, an effective solution to the collection of active 4-20mA current signals and two-wire current loop power supply interface different power supply circuit.) 4-20mA current loop, sensor signal acquisition and analog input interface active load matching, effectively solving the collection of active 4-20mA current signals and two-wire current loop power supply loop interface of different power supply loop conflict. The product combines the advantages of signal isolation conditioning and HART communication technology, which can realize the signal isolation conversion and on-line accurate measurement and control between two-wire sensors, instruments and transmitters in the industrial field. It is widely used in the fields of intelligent sensors, intelligent control instruments and transmitters, industrial control intelligentization, safety isolation barriers for electric power and medical equipments, industrial robots, chemical fuels, and safety equipments for nuclear power.

ISO 4-20mA-EHT module is mainly used for industrial field intelligent sensor 4-20mA signal isolation and conditioning and HART signal transmission, the product adopts high-efficiency circuit power stealing patented technology, without independent power supply two-wire circuit power supply output can save two power lines, simplify the user's power design and field wiring costs. The product adopts advanced digital technology and electromagnetic isolation technology, in the realization of bidirectional communication HART protocol signals at the same time with the isolation of 4-20mA analog signal input and output functions.

The ISO 4-20mA-EHT output is designed for a 2-wire power loop with 24VDC and sampling resistors (2-wire instrumentation) in series, matching the analog input ports of current analog input interface boards (host computers), PLCs, DCSs, or other instrumentation with active loads commonly used in the industrial field. The very small input equivalent resistance can be collected from the sensor output loop to the current signal voltage value to reach an ultra-wide range (5 ~ 32VDC) to meet the user without external auxiliary power supply to realize the need for long-distance, distortion-free signal transmission. The module integrates HART digital signal isolation transmission circuit and active 4-20mA current signal to passive output isolation conditioning circuit, HART signal bidirectional isolation transmission circuit, etc., which can support the communication between on-site intelligent sensors and instrumentation and DCS centralized system in the control room, and give full play to the double advantages of digital and analog signals.The product is very easy to use, only need to connect an external 2KΩ multi-turn potentiometer for ADJ calibration, can realize the two-wire 4-20mA signal isolation, transmission and acquisition control. Internal integration process and new technology isolation measures so that the module can achieve 3KVDC insulation voltage and industrial grade wide temperature, humidity, vibration of the harsh environmental requirements of the site, the product has IC packaging PCB board welding module mode and DIN35 standard rail mounting mode, rail mounting mode can realize the signal into one out, two into two out and multi-channel isolation and transmission of the transformation function, the user can be configured according to the site needs of the product. Users can configure the products according to the needs of the site.

Maximum product rating （Prolonged operation in a maximum rated environment affects product life and irreparable damage occurs beyond the maximum value.）

Continuous Isolation Voltage	3000Vrms
Vin (Maximum input voltage)	36VDC
Junction Temperature (working temperature)	-40 ~ +85℃
Lead Temperature (welding temperature)	+300℃

Common parameter

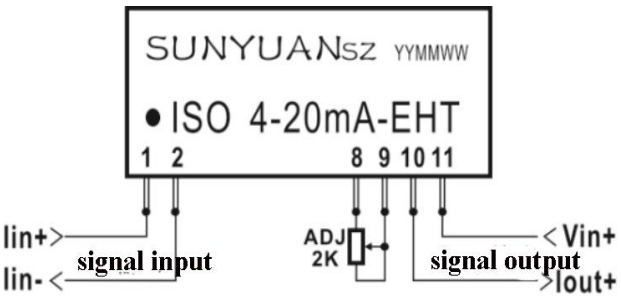
Accuracy, Linearity Error Class ---------- Class 0.2; Class 0.5	Load regulation rate ------ ＜0.05% meas.val./100Ω
Auxiliary power supply ---------- No	Isolation --------- Signal Input/Signal Output, Dual Isolation
Operating Temperature ---------- -40 ~ +85°C	Response time ---------- ≤100mS
Operating humidity ---------- 10 ~ 90% (no condensation)	Withstanding Voltage --------- 3KV(60HZ / S), Leakage Current <1mA
Storage temperature ---------- -45~ +105°C	Impulse voltage ------- 3KV, 1.2/50us (peak)
Storage humidity ---------- 10 ~ 95% (no condensation)	Temperature Drift --------- 0.0050%F.S./°C (-40°C to +85°C operating temperature range)

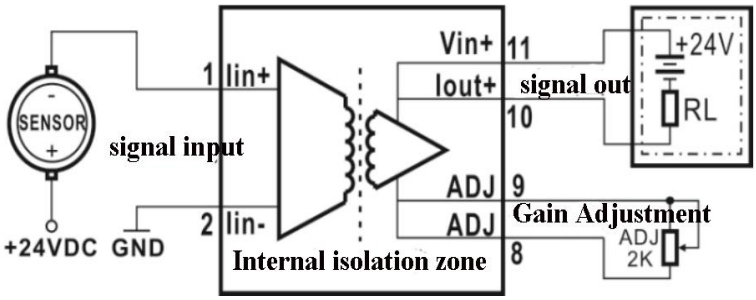
Technical Parameters

parameters	Condition	minimum value	typical value	maximum values	unit
Isolated Voltage AC，60Hz	10S		3000		Vrms
Insulation impedance	500VDC		100		MΩ
leakage current	240Vrms，60Hz		0.5		uA
running the temperature	-40~+85℃		±50	±100	PPm/℃
nonlinearity	Full scale range		±0.2	±0.5	%FSK
Output Linear Range		0.2	4	24	mA
Output Current Io		4		20	mA
Output Voltage Drop Voh	Io=20mA		7		V

Output signal voltage range	RL=250Ω	12	24	36	V
Output Carrying Capacity	24VDC			850	Ω
communication	test signal Vpp≤500mV		Supports bi-directional transmission of HART signal frequencies		

Block diagram and pin definition of IC module package functions（SIP12 Pin）

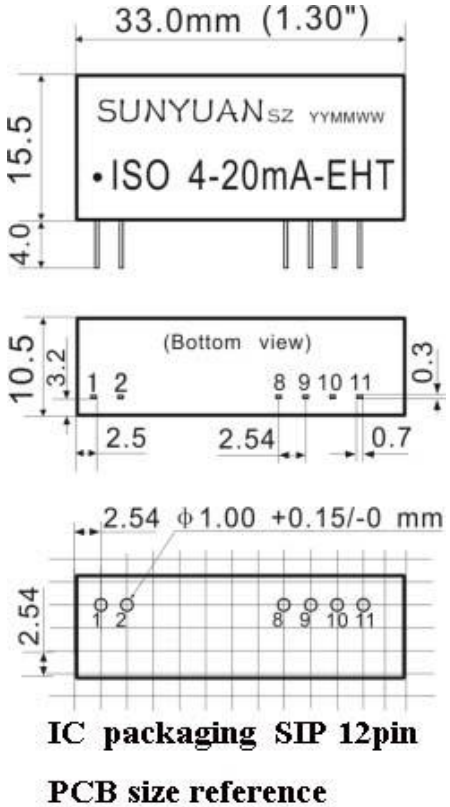




Pin Function Description (Single In-line: SIP12 Pin)

Signal Input Positive end	Signal Input Negative	empty-handed	Gain Adjustment pins	Gain Adjustment pins	signal Output positive terminal	Voltage Input Positive	empty-handed
Iin+	Iin-	NC	ADJ	ADJ	Iout+	Vin+	NC
1	2	3~7	8	9	10	11	12

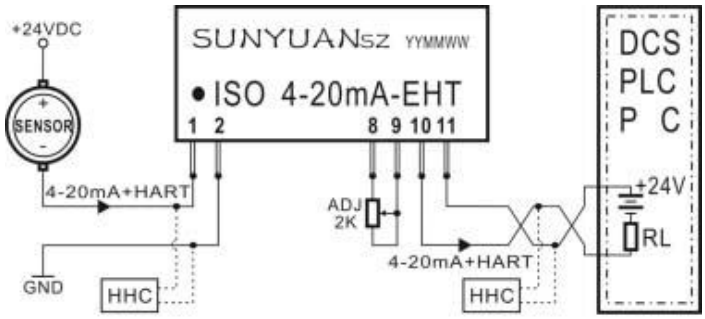
IC Module Package Form Factor and Typical Application Diagram



IC packaging SIP 12pin

PCB size reference

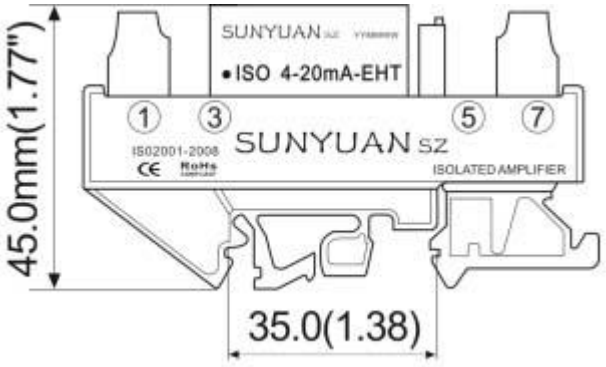


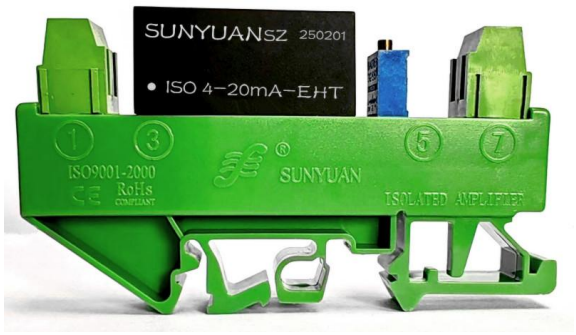


ISO 4-20mA-EHT Isolation Conditioner IC Typical Application Diagrams

DIN3 small size, low cost DIN rail-mounted type external dimensions and typical application diagrams

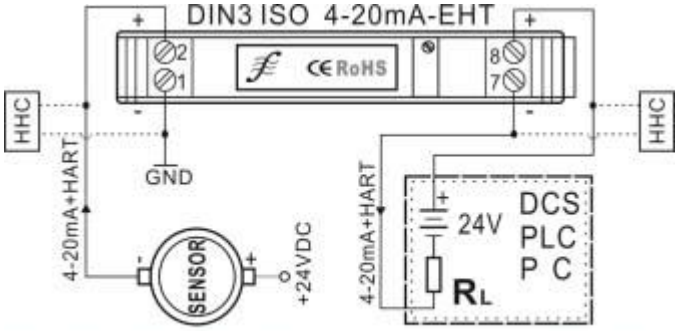
SunYuan DIN3 ISO 4-20mA-EHT small volume, low-cost DIN rail mounted HART transmissive 4-20mA two-wire passive isolation regulator products, thin and lightweight, no external devices, the international common industrial standard 35mm DIN rail slot mounting, the two sides of the terminals connected to the line can be realized at the same time the isolation of a single two-wire 4-20mA signals, regulating the conversion and HART transmissive function. Functions.







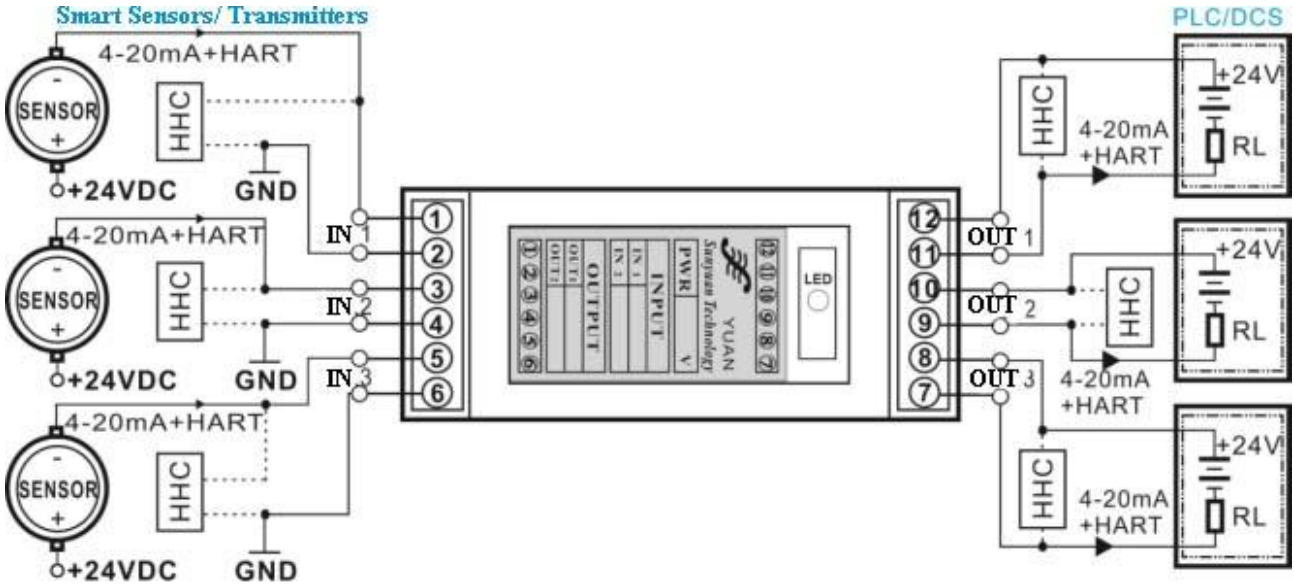
DIN3 Small Volume HART Transmissive Isolation Conditioner External Dimensions



DIN3 ISO 4-20mA-EHT Wiring Diagram for Typical Applications

DIN35 Multi-Signal Rail Mount Product Dimensions and Typical Applications

SunYuan **DIN 1X1 ISO 4-20mA-EHT** (1-input&1-output)，**DIN 2X2 ISO 4-20mA-EHT** (2-input& 2-output)，**DIN 3X3 ISO 4-20mA-EHT** (3-input&3-output) series HART transmission type 4-20mA two-wire passive isolation regulator, the use of no external devices, the international common industrial standard 35mm DIN rail slot mounting, can realize single or multi-channel two-wire 4-20mA signal isolation regulator conversion and HART digital signal transmission function.



DIN35 rail-mounted product dimensions and pin function description（* product logo can printing on the shell of product）

Pin	Pin Description	
1	Iin1+	The First current input positive terminal
2	Iin1-	The First current input negative terminal
3	Iin2+	The Second current input positive
4	Iin2-	The Second current input negative terminal
5	Iin3+	The Third current input positive
6	Iin3-	The Third current input negative terminal
7	Io3+	The third current output is positive
8	Vin3+	The third voltage input is positive
9	Io2+	The second current output is positive
10	Vin2+	The second voltage input is positive
11	Io1+	The first current output is positive
12	Vin1+	The first voltage input is positive

