ISO-1001 **Signal Isolated Amplifier IC**

Characteristics:

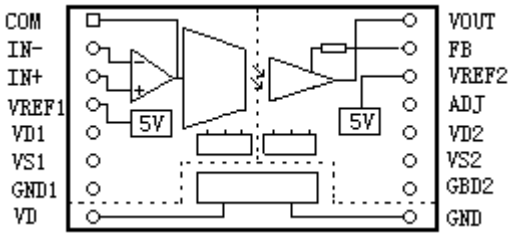
- ●Power supply Signal: input/output 3000VDC isolation
- ●Wide signal bandwidth:100KHz
- ●Power:5VDC,12VDC,15VDC or 24VDC
- ●:0~±10VDC or 0~ 5VAC Signal isolate amplifier （nonlinearity<0.2%）
- ●Two groups of basic voltage power supply (isolate 5VDC)
- ●Ceramic base, SMD
- ●Super small footprint, standard DIP24

Typical Application:

- ●Analog signal data acquisition
- ●Industrial signal switch
- ●Ground interference control
- ●Equipment and sensor signal acquisition
- ●Signal long routed transmit
- ●Isolated safe bar

Description：

ISO 1001 isolation amplifier IC integrates a high isolated DC/DC power supply and a high-powered isolated amplifier. It also provides a group of isolated dc power supply and two 5V base voltage supply for use of exterior circuit extending, like electric bridge circuit and other circuits. Input and output isolated voltage is 3000VAC.ISO-1001 Isolation Amplifier IC is very easy to use; just a few external components are required.



Maximum Input Characteristic:

If input value is over above range, it may cause permanent

Continuous isolated voltage: 3000VDC
Power supply voltage input range: 25%Vin
Soldering temperature (10 seconds): +300℃
Output minimum load: 2KΩ

Electric performance index 1:

Parameter	Terms	Min	Typ	Max	Unit
Isolated enduring voltage	10s	3000			VDC
Gain	Pin1 and Pin2, Pin13 and Pin 14 short circuit		10		V/V
Gain vs Temperature			±50		ppm/℃
Nonlinearity			±0.1	±0.3	%FSR
Input maladjust voltage			±1	±5	mV
Signal input		0.01	0.5	1000	V
Signal output			5		V

Electric performance index 2:

Parameter	Terms	Min	Typ	Max	Unit
Frequency response	| Vin <500mV		200		Hz
Load capability	VOUT=5V		2		
Signal input ripple	No ripple		5		mV
Signal Voltage vs Temperature			2.5		mV/℃
Refer voltage supply	Output current<0.5mA		5		V
VD1,2 and VS1,2 power supply output	Output current<20mA	±6.5	±8	±9	V
Power output ripple	No ripple		10		mV
Operation current	Operation current		15		mA
Assistance Power Supply		±10	±12	±14	VDC

Application Note:

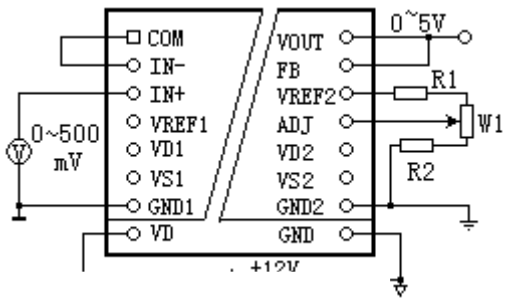
Figure 2 is the typical connection figure for ISO-1001 isolated amplifier. Input and output amplifier are following mode.

Isolated amplifier is magnified 10 times.

R1, R2 & W1 is zero circuit□

R1=2K, R2=5.1K, W1=2K

Assistant power supply is +12VDC



Input amplifier design:

Input amplifier circuit is as Figure 3, when input（Pin1 COM）is 0.5V, output is 5V(pin13 and 14 short)

Input Reverse Amplifier Circuit:

The design of input Reverse amplifier is as Figure 4, Kin = - R11/R12, R3 = R11//R12

For example: when Vin is 0~-100mV,output is 0~5V:

R11=50K R12=10K R13=8.3K Kin=-50/10=-5

Input In-phase Amplifier Design:

The design of input in-phase amplifier is as Figure 5 Kin=1+R2/R1

For example: when Vin is 0~+100Mv, output is 0~5V:

R11=51K R12=10K R13=10K Kin=1+39.9/10=4.99

In Figure 4 and Figure 5, R11 can be replaced by a potentiometer series connecting with a resistance to get a better amplifying adjustment.

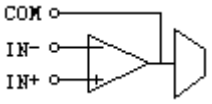


Figure 3 Input amplifier

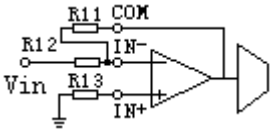


Figure 4 reverse amplifier

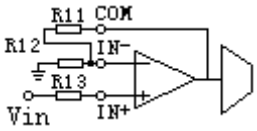


Figure 5 In-phase Amplifier

Input Amplifier Design:

SY-FG01 is the design of an output amplifier for the users (see Figure 6), FB is the reversing input end of the amplifier. When Pin 13 connected to Pin 14, the output amplifying multiples Kout=1+33/10=4.3.

Due to some parts of Isolation Amplifier have already had an amplifying multiple of 2.35, the total amplifying multiple shall be K=4.3*2.35=10.1.

When the voltage in the COM end of input amplifier is lower than 0.5v, the amplifying multiple can be adjusted by output amplifier (see Figure 7), W2 is within the range of 1~100K.

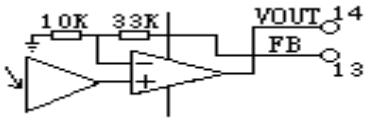


Figure 6 Output Amplifier

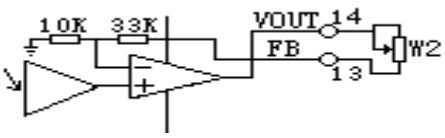


Figure 7 Output Amplifier Adjusting Circuit

Example 1:Measure high voltage signal

Input:0~±100VDC dc voltage signal

Output: 0~5V DC isolated signal

RI1=RI2=100K RI3=910 V in=0.453V W2=5K

Input the amplifying multiple of

Data Amplifier: Kin=1

Isolated the amplifying multiple of Amplifier:K=2.35

Output the amplifying multiple of Amplifier:K out=1+ (33+5)/10=4.8 (W2=Max)

K out=4.3 (W2=Min)

K=Kin*K*K out: 10.1~11.28

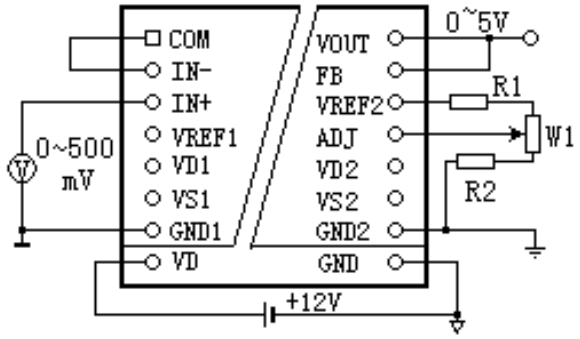


Figure 8 Example 1

When input signal is not enough, the user can use In-phase amplifying circuit as stated in Figure5, so that

Example 1: **Small output bridge differential signal**

Input:0~±25mV bridge differential signal

Output: 0~±10V DC isolated signal

A1, A2 and the input amplifier forms a Data Amplifier

When R= 100K, RG=5K, the amplifying multiple of Data Amplifier is Kin=100/5=20;

W2=5K

Input the amplifying multiple of Data Amplifier: Kin=20

Isolated the amplifying multiple of Amplifier: K=2.35

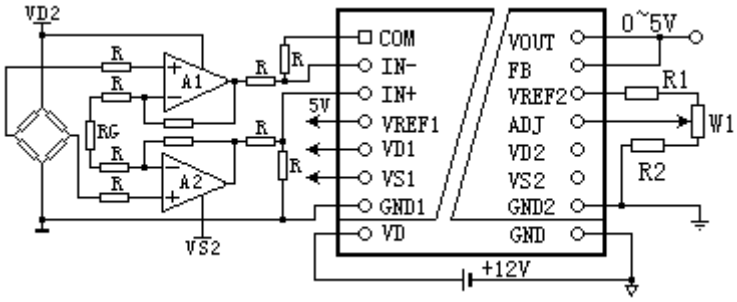


Figure 9 Example 2

ISO 1001 choose type:

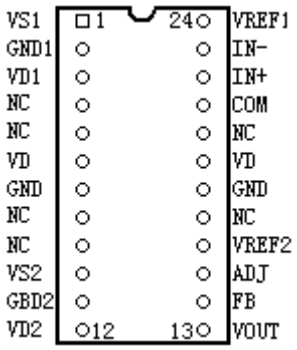
ISO- 1001 Input□-Power□-Output□

Input rated voltage（or current）		Accessorial power supply P	Output
	0~+/-0.5V	P1： DC24V	O1：0~+/- 5V
		P2： DC12V	O2：0~+/- 10V
		P3： DC5V	
		P4： DC15V	
		P5：Customer choose	

ISO- 1001B- Input□-Output□ (No power)

Input rated voltage（or current）		Output
	0~+/-0.5V	O1：0~+/- 5V
		O2：0~+/- 10V

Pin Definition:



Pin	Connection		
1	Output	**VS1**	Input may use Negative power
2	Output	**GND1**	VS1& VD1 power ground
3	Output	**VD1**	Input may use positive power
4~5		**NC**	Omitted
6	Input	**VD**	Input Assistant Power
7	Input	**GND**	Input Assistant Power ground
8~9		**NC**	Omitted
10	Output	**VS2**	Output may use Negative power
11	Output	**GND2**	VS2&VD2 power ground
12	Output	**VD2**	output may use Negative power
13	Output	**Vout**	
14	Input	**FB**	Feedback Port
15	Input	**ADJ**	
16	Output	**VREF2**	Output may use +5V benchmark power
17		**NC**	Omitted
18		**NC**	Omitted
19		**NC**	Omitted
20		**NC**	Omitted
21	Output	**COM**	
22	Input	**IN+**	
23	Input	**IN-**	
24	Output	**VREF1**	+5V benchmark power

Suggest PCB Dimension (Standard DIP24 Pin)