Isolated Transmitter
TP210

MORNSUN®

Active Precision, Wide Bandwidth Isolation Amplifier

FEATURES

- 3-port isolation (input, output and power supply)
- High Accuracy Level (0.05% F.S.)
- High Linearity (0.05% F.S.)
- High Isolation (2.5kVDC/60s)
- Ultra low Temperature Drift (25PPM/℃)
- ESD(IEC/EN61000-4-2 Contact ±4KV
- perf. Criteria B)
- Industrial level
- (Operating Temperature Range: -25~85℃)
- High Reliability (MTBF＞500 K hours)

TP210 series is a new high-precision isolation amplifiers. The power, signal and reliable isolation, it break ground loops and leakage pathways, effective suppression of common mode noise. Internal module was Embedded an efficient micro power supply, it can Provide power to Internal signal processing circuit and isolated power supply to the output and input of the external circuit。
TP210 series' feature: Good Temperature Drift, Linearity and High-bandwidth.
The main application:
Signal isolation
Multi-channel data acquisition
Instrumentation amplifier
Current monitoring

Selection Guide

Part No.	Power Supply input (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC, no-load)
TP210	15	±10V	±10V	±15
TP210B	15	0~15V	0~15V	-6.5 / +18

Notes: Customization products are available if required.

Input Specifications

Item		Operating Conditions	Value
Input Power Supply	Input voltage		(Nominal value of power supply input) ±5%
	Static Current	Signal, power full load	About 50mA
	Full Power Current		About 80mA
Input	Input signal		See selection guide
	Input impedance	Differential Voltage	⩾10MΩ
Input	Max. Differential Voltage	TP210	±15V
		TP210B	18V

Output Specifications

Item		Operating Conditions	Value
Output of Isolated Power Supply	Output voltage	Power, current full load	(Nominal value) ±10%
	Output current		TP210⩽ 10mA TP210B⩽ 5mA
	Ripple	Bandwidth 60MHz Load Current 10mA	⩽ 20mVpp
Output	Output signal		See selection guide
	Load capacity		2KΩ
	Ripple & noise	Bandwidth 60MHz	⩽ 20mVpp

Transmission Specifications

Item	Operating Conditions	Value
Zero Offset		0.05%F.S.

Precision		0.05%F.S.
Temperature Drift	Operating temperature range of -25 to +85℃	0.0025%F.S./℃
bandwidth		10KHz (G=1V/V) 6KHz (G=100V/V)
Response Time		100μs (G=1V/V) 150μs (G=100V/V)
Gain	Range	1V/V - 100V/V
	Error	± 0.05%F.S.
	Power Error（±5%）	± 0.05%F.S.

General Specifications

Item	Operating Conditions	Value
Electric Isolation		Three-port isolation (Input, Output and Power supply)
Degree of Isolation	testing for 1 minute, leakage current <1mA, humidity <70%	2.5KVDC
Insulation Resistance	500VDC (Between signal input, signal output, power supply and isolation power output)	100MΩ
Operating Temperature		-25~+85℃
Transportation and Storage Temperature		-50~+105℃
Storage Humidity		10%~90%
Application Environment		The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product

Physical Specifications

Casing Material	WH8100-F (1)
Package	DIP38 25.40*53.30*8.90 mm
Weight	22g(Typ.)
Cooling method	Free air cooling

EMC Specifications

EMS	Electrostatic Discharge	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
	EFT	IEC/EN61000-4-4	±2KV(Pin com and Pin) (see Fig. 5 for recommended circuit)	perf. Criteria B
		IEC/EN61000-4-4	±1KV (Other Port) (see Fig. 5 for recommended circuit)	perf. Criteria B
	Surge Immunity	IEC/EN61000-4-5	Power supply ±1KV(Pin com and Pin) (see Fig. 5 for recommended circuit)	perf. Criteria B
		IEC/EN61000-4-5	±1KV(line against ground ,Other ports) (see Fig. 5 for recommended circuit)	perf. Criteria B

Application Precautions

1. Please read the instructions carefully before use; contact our technical support if you have any problem.
2. Do not use the product in hazardous areas.
3. Use DC power supply for the product and 220V AC power supply is prohibited.
4. Do not dismount and assemble the product without permission to avoid failure or malfunction of equipment.

After-sales service

1. Ex-factory inspection and quality control have been strictly conducted for the product; if there occurs abnormal operation or possibility of failure of internal module, please contact the local representative or our technical support.
2. The warranty period for the product is 3 years as calculated from the date of delivery. If any quality problem occurs under normal use within the warranty period, the product can be repaired or changed for free.

Applied circuit

See *Application Notes for Isolated Transmitter* for details.

Design Reference

1. Typical application

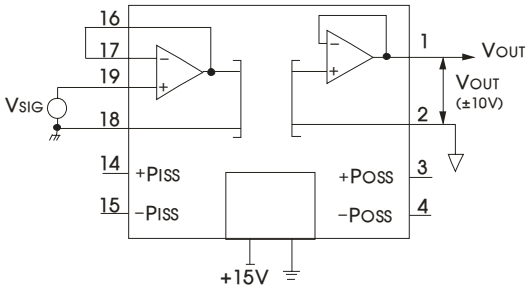


Fig. 1 Basic Unity Gain Configuration

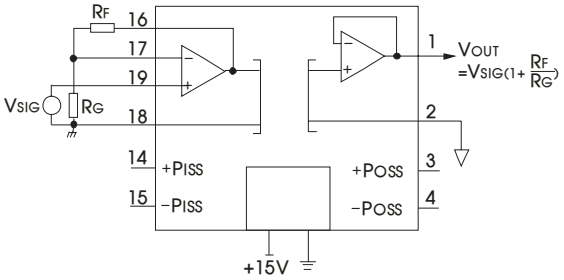


Fig. 2 Input Configuration for G>1

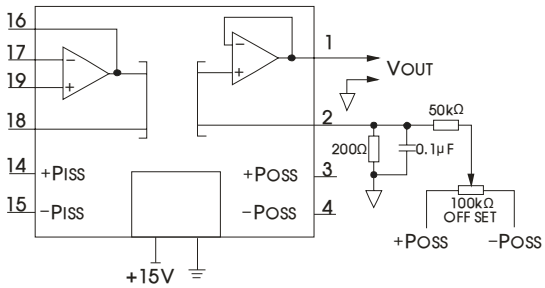


Fig. 3 Output-Side Offset Adjustments

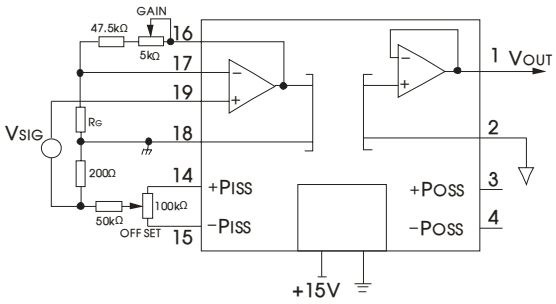


Fig. 4 Adjustments for Noninverting Input

2. Recommended EMC circuit

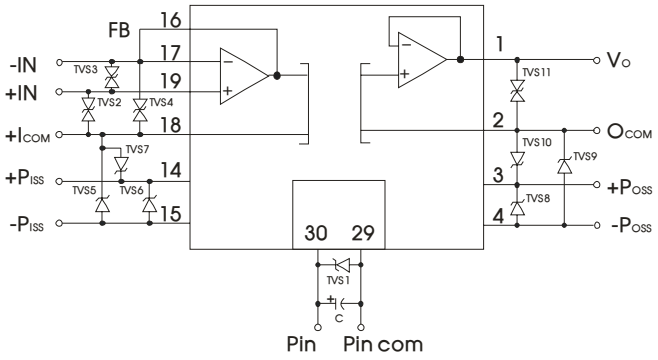


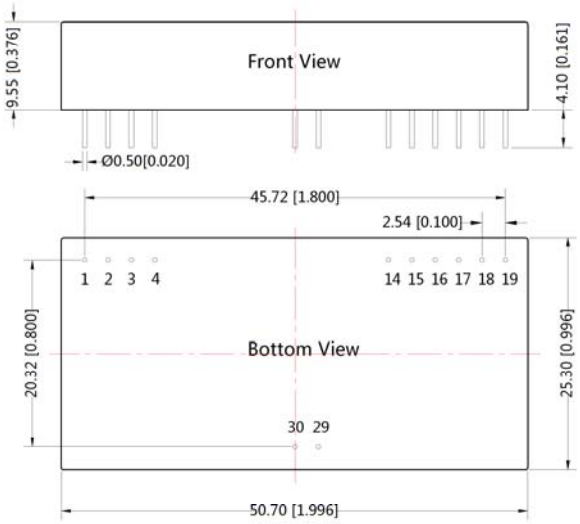
Fig. 5

Components	Specifications
TVS1	SMCJ18A
TVS2,TVS4,TVS11	SMBJ16CA
TVS3	SMBJ24CA
TVS5,TVS7,TVS9,TVS10	SMBJ18A
TVS6,TVS9	SMBJ33A
C	220μF/25V

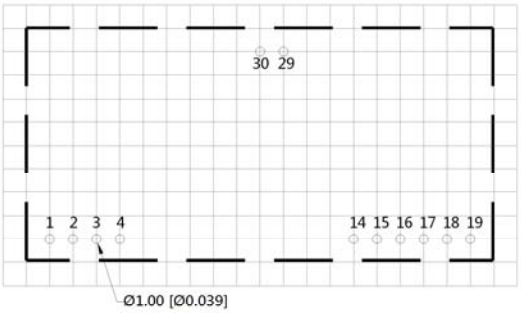
3. For more information please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note:
Unit:mm[inch]
Pin diameter tolerances:±0.10[±0.004]
General tolerances:±0.50[±0.020]



Note : Grid 2.54*2.54mm

Pin-Out		
Pin	Sign	Function
1	Vo	Output
2	O_{COM}	Output Common
3	$+P_{OSS}$	+Isolated power, Output
4	$-P_{OSS}$	-Isolated power, Output
14	$+P_{ISS}$	+Isolated power, Intput
15	$-P_{ISS}$	-Isolated power, Intput
16	FB	Input Feedback
17	-IN	-Input
18	I_{COM}	Input Common
19	+IN	+Input
29	Pin com	Power Common
30	Pin	Power supply

Note:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number:58220005;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25℃, humidity<75% when inputting nominal voltage and outputting rated load;
3. All index testing methods in this datasheet are based on our Company's corporate standards;
4. The performance indexes of the product models listed in this manual are as above, but some indexes of non-standard model products will exceed the above-mentioned requirements, and please directly contact our technician for specific information;
5. We can provide product customization service;
6. Specifications of this product are subject to changes without prior notice.

Mornsun Guangzhou Science & Technology Co., Ltd.
Address: No. 5, Kehui St. 1, Kehui Development Center, Science Ave., Guangzhou Science City, Luogang District, Guangzhou, P. R. China
Tel: 86-20-38601850-8801 Fax: 86-20-38601272 E-mail: info@mornsun.cn