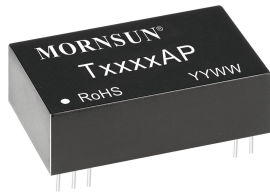


Active high precision signal conditioning module, with positive and negative signal input and with a positive signal output



RoHS

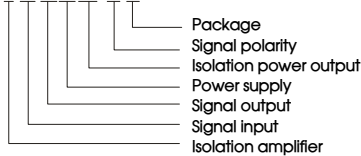


## FEATURES

- Four-port isolation (signal input, signal output, power input, and isolation power output are all isolated from each other)
- High accuracy of 0.1% Full Scale
- High linearity of 0.1% Full Scale
- Isolation test voltage of 2.5kVDC for 60 seconds
- Extremely low temperature coefficient of 35PPM/°C
- Operating ambient temperature range -25°C to +71°C
- High reliability with >500,000 hours MTBF

## PART NUMBER SYSTEM

### TxxxAP



The TxxxAP series are highly integrated and efficiency active signal conditioning modules, consisting of positive and negative signal input with a positive signal output. These modules have a built-in highly efficient and isolated micro-power source, that can provide energy for the integrated signal processing circuit as well as providing isolated power for peripheral devices and circuits. The product greatly simplifies the design of three-wire and four-wire user applications and also greatly reduces the space needed for circuitry on the PC Board. These modules have four-port isolation (input, output, power supply and isolation power output). These modules adopt unique electromagnetic isolation technology, allowing for higher accuracy and extremely low temperature drift in comparison with opto-coupler devices.

## Selection Guide

Part No.	Power Supply input (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
T5130AP	24	±10V	4-20mA	None
T5530AP	24	±10V	0-10V	None
T5650AP	12	±10V	0-5V	None
T6130AP	24	±5V	4-20mA	None
T6630AP	24	±5V	0-5V	None

Notes: Customization of products is available on request, for example:

Power supply: 24/15/12VDC  
 Input signal: 0 to ±5V/±10V  
 Output signal: 0 to 5V/10V, 0/4-20 mA  
 Isolation power output: 24/15/12/5VDC.

## Input Specifications

Item	Operating Conditions	Value
Power input	Input voltage	Nominal value of power supply input ±5%
	Input power	Single output & Isolation Power output full load ≤2W
	Power supply protection	Anti-reverse protection
Signal Input	Input signal	Reference selection guide
	Input impedance	In case of max. input of voltage signal ≥10MΩ
	Over range	In case of voltage signal input -15V<Vin<15V
Hot Plug		Unavailable

## Output Specifications

Item	Operating Conditions		Value
Isolation Power Output	Output voltage	Output current of isolated power supply full loads	Nominal value±10%
	Output current		≤25mA
Signal Output	Output signal		Reference selection guide
	Load capacity	Voltage output	≥2KΩ
		Current output	≤500Ω

## Transmission Specifications

Item	Operating Conditions	Value
Zero Offset		0.1%Full Scale
Signal Precision		0.1%Full Scale
Temperature Coefficient	Operating temperature range: -25 to +71℃	0.0035%Full Scale/℃

## General Specifications

Item	Operating Conditions	Value
Electric Isolation		Four-port isolation (signal input, signal output, power input and isolation power output are all isolated from each other)
Isolation Test	Electric strength test for 1 minute with a leakage current <1mA, humidity <70%RH	2.5kVDC from signal input to signal output (note: When there is power supply output, the isolation voltage between power supply output and input signal is 500VDC)
Insulation Resistance	500VDC	100MΩ (signal input port, signal output port, power supply port and isolated power output port)
Operating Temperature		-25℃ to +71℃
Transportation and Storage Temperature		-50℃ to +105℃
Application Environment		The presence of dust and corrosive gas may cause damage to the product

## Mechanical Specifications

Case Material	Black plastic, flame-retardant and heat-resistant
Package	DIP24
Weight	11.2g( typ.)
Cooling method	Free air convection

## Electromagnetic Compatibility (EMC)

Immunity	ESD	IEC/EN61000-4-2	Contact ±4kV	(see Fig. 2 for recommended circuit)	perf. Criteria B
		EFT	IEC/EN61000-4-4	Power supply port ±2kV	(see Fig. 2 for recommended circuit)
	IEC/EN61000-4-4		Other ports ±1kV	(see Fig. 2 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	Power supply ports ±1kV	(see Fig. 2 for recommended circuit)	perf. Criteria B
		IEC/EN61000-4-5	Other ports ±1kV (line to ground)	(see Fig. 2 for recommended circuit)	perf. Criteria B

## Application Precautions

1. Carefully read and follow the instructions before use; contact our technical support if you have any question;
2. Do not use the product in hazardous areas;
3. use only DC power supply source for this product. 220VAC power supply is prohibited;
4. It is strictly forbidden to disassemble the product privately in order to avoid product failure or malfunction.

### After-sales service

1. Factory inspection and quality control are strictly enforced before shipping any product; please contact your local representative or our technical support if you experience any abnormal operation or possible failure of the module;
2. The products have a 3-year warranty period, from the date of shipment. The product will be repaired or exchanged free of charge within the warranty period for any quality problem that occurs under normal use.

### Applied circuit

Please refer to Isolated Transmitter application notes.

## Design Reference

### 1. Wiring diagram for product application

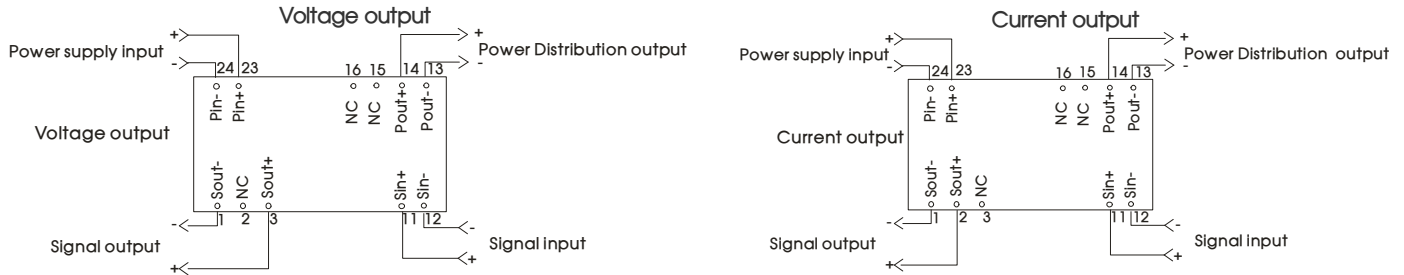


Fig. 1

### 2. EMC compliance recommended circuit

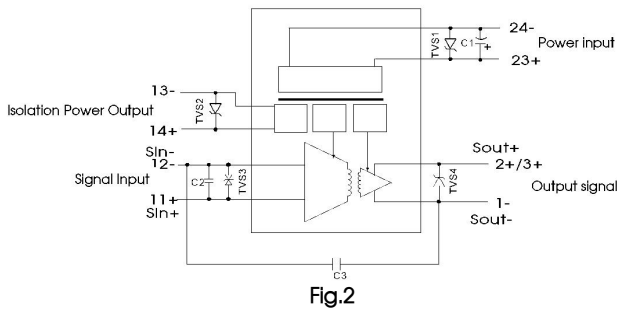


Fig.2

Component	Recommended part
TVS1	SMCJ30A
TVS2	SMBJ30A
TVS3	SMBJ15CA
TVS4	SMBJ15A
C1	220uF/35V
C2	1uF/50V
C3	2200pF/400VAC

### 3. Schematic diagram of signal input and signal output(Ideal state)

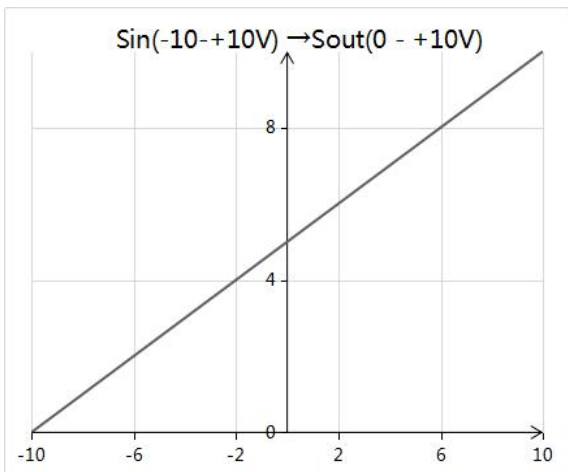


Fig.3

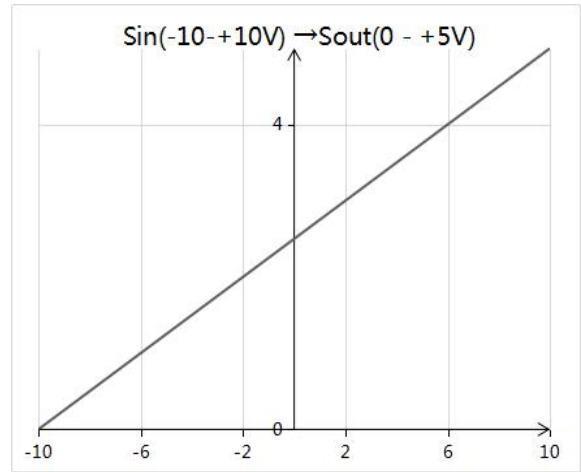


Fig.4

Sin(-10- +10V) → Sout(4- 20mA)

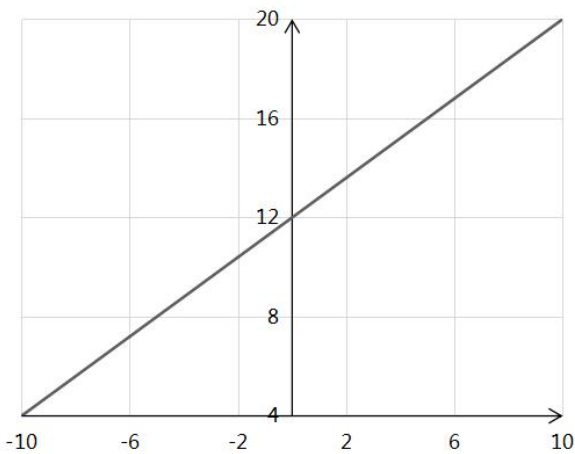


Fig.5

Sin(-5- +5V) → Sout(4- 20mA)

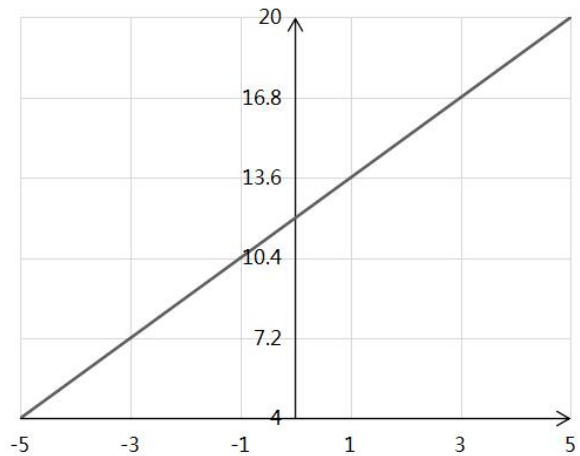
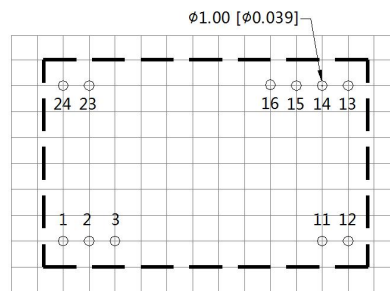
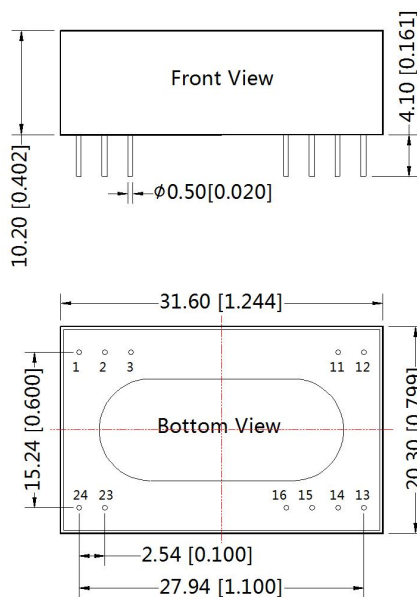


Fig.6

4. For more information please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

## Dimensions and Recommended Layout

THIRD ANGLE PROJECTION



Note : Grid 2.54\*2.54mm

Pin	Pin-Out		Function
	Vo	Io	
1	Sout-	Sout-	Signal output(-)
2	NC	Sout+	Signal output(+)
3	Sout+	NC	Signal output(+)
11	Sin+	Sin+	Signal input(+)
12	Sin-	Sin-	Signal input(-)
13	Pout-	Pout-	Power distribution output-
14	Pout+	Pout+	Power distribution output+
15,16	NC	NC	No function pin
23	Pin+	Pin+	Power supply(+)
24	Pin-	Pin-	Power supply(-)

Note:

Unit :mm[inch]

Pin diameter tolerances :±0.10[±0.004]

General tolerances:±0.50[±0.020]

NC:Not available for electrical connection

### Notes:

1. For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). The Packaging bag number: 58210008;
2. Unless otherwise specified, parameters in this datasheet were measured under the conditions of  $T_a=25^{\circ}\text{C}$ , humidity<75%RH with nominal input voltage and rated output load;
3. All index testing methods in this datasheet are based on company corporate standards;
4. The above are the performance indicators of the product models listed in this datasheet. Some indicators of non-standard models will exceed the above requirements. For details, please contact our technical staff;
5. We can provide product customization service, please contact our technicians directly for specific information;
6. Products are related to laws and regulations: see "Features" and "EMC";
7. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

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