

Active high precision signal conditioning module with millivolt level positive and negative signal for input and output



### FEATURES

- 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

The TMxxxxCP series are highly integrated and efficiency active signal conditioning modules, consisting of millivolt level positive and negative signal input with a positive and negative 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 three-port isolation (input, output and power supply). 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 Typ. (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
TM1630CP	24V	±10mV	±5V	None
TM2630CP	24V	±20mV	±5V	None
TM4630CP	24V	±50mV	±5V	None
TM5630CP	24V	±75mV	±5V	None
TM6630CP	24V	±100mV	±5V	None
TM7650CP	12V	±200mV	±5V	None
TM4530CP	24V	±50mV	±10V	None
TM5530CP	24V	±75mV	±10V	None
TM6530CP	24V	±100mV	±10V	None

Notes: Customization of products is available on request, for example:  
Power supply: 24/15/12VDC;  
Input signal: 0 to ±10/±20/±30/±50/±75/±100mV;  
Output signal: 0 to ±5V/±10V.

### Input Specifications

Item	Operating Conditions	Value
Power Supply	Input voltage	Typ. ±5%
	Input power	≤1W
	Power supply protection	Input reverse polarity protection
Signal Input	Input signal	See selection guide
	Input impedance	In case of max. input of voltage signal ≥10MΩ
	Overload	10V

### Output Specifications

Item	Operating Conditions	Value
Signal Output	Output signal	See selection guide
	Load capacity	In case of max. output of voltage signal ≥2kΩ

### Transmission Specifications

Item	Operating Conditions	Value
Zero Offset		-0.1%FS to 0.1%FS
Signal Precision		-0.1%FS to 0.1%FS
Temperature Drift	Operating temperature range from -25°C to +71°C	35PPM/°C (input signal range ≥100mV) 50PPM/°C (input signal range <100mV)

### General Specifications

Item	Operating Conditions	Value
Electric Isolation		signal input, signal output and power input terminals are all isolated from each other
Isolation Voltage	Electric Strength Test for 1 minute with a leakage current <1mA, humidity <70%RH	2.5kVDC
Isolation Resistance	At 500VDC	100MΩ
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	11.4g(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)	perf. Criteria B
		IEC/EN61000-4-4	Other ports ±1kV (see Fig. 2 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	Power supply ±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 & Schematic diagram

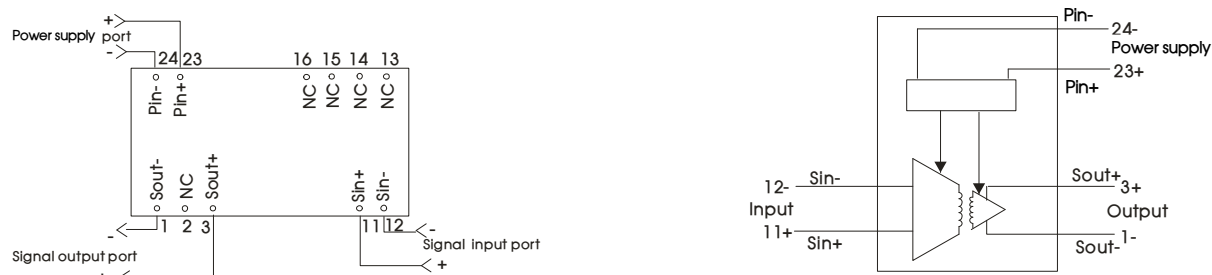


Fig.1

## 2. EMC compliance recommended circuit

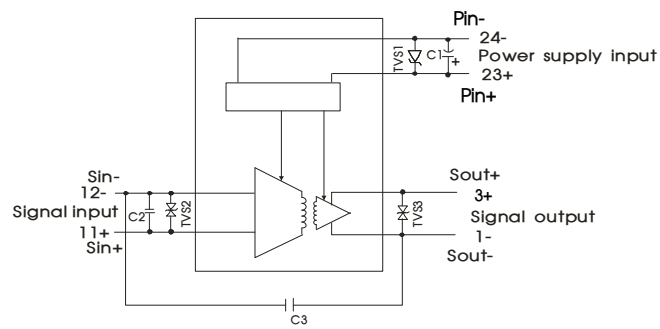


Fig.2

Component	Recommended part
TVS1	SMCJ30A
TVS2	SMBJ5CA
TVS3	SMBJ15CA
C1	220 $\mu$ F/35V
C2	1 $\mu$ F/50V
C3	2200pF/400VAC

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

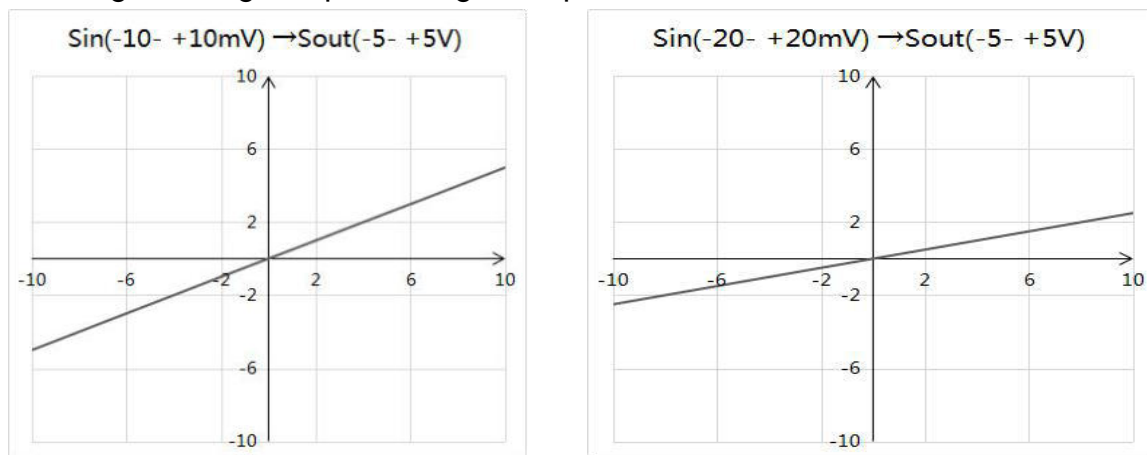
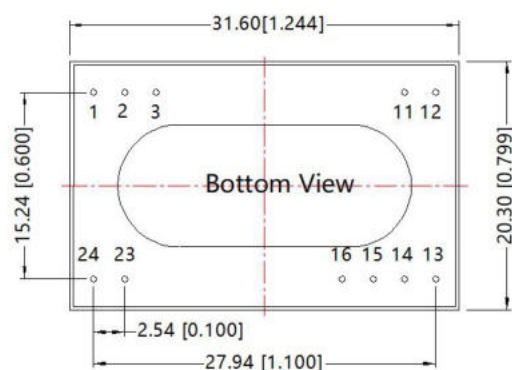
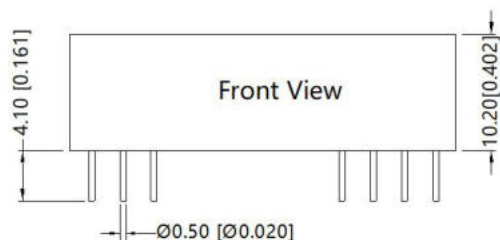


Fig. 3

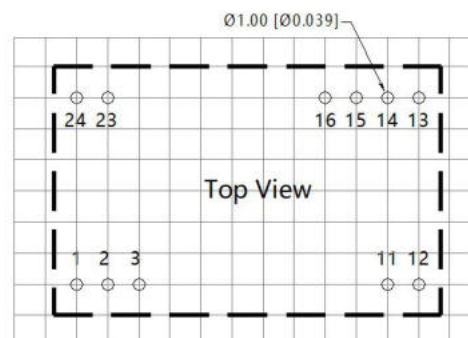
4. For more information please find the application notes on [www.mornsun-power.com](http://www.mornsun-power.com)

## Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Note:  
Unit :mm[inch]  
Pin diameter tolerances : $\pm 0.10$  [ $\pm 0.004$ ]  
General tolerances:  $\pm 0.50$  [ $\pm 0.020$ ]



Note : Grid 2.54\*2.54mm

Pin-Out		
Pin	Name	Function
1	Sout-	Signal output(-)
2	NC	No Connection
3	Sout+	Signal output(+)
11	Sin+	Signal input(+)
12	Sin-	Signal input(-)
13	NC	No Connection
14	NC	No Connection
15	NC	No Connection
16	NC	No Connection
23	Pin+	Power supply(+)
24	Pin-	Power supply(-)

NC:No connection

### Notes:

- For additional information on Product Packaging please refer to [www.mornsun-power.com](http://www.mornsun-power.com). The Packaging bag number: 58210008;
- 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;
- All index testing methods in this datasheet are based on company corporate standards;
- 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;
- We can provide product customization service, please contact our technicians directly for specific information;
- Products are related to laws and regulations: see "Features" and "EMC";
- 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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