

Signal conditioning modules

TxxxxCP Series

MORNSUN®

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



FEATURES

- Three-port isolation (signal input, signal output and power input 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 50PPM/°C
- Operating ambient temperature range -40°C to +85°C
- High reliability with >500,000 hours MTBF

The TxxxxCP series are highly integrated and efficiency active signal conditioning modules, consisting of 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 (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
T6630CP	24	±5V	±5V	None
T5530CP	24	±10V	±10V	None
T6660CP	5	±5V	±5V	None
T5540CP	15	±10V	±10V	None
T6640CP	15	±5V	±5V	None
T5550CP	12	±10V	±10V	None
T6650CP	12	±5V	±5V	None

Note: Customization of products is available on request.

Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Power Input	Input voltage	Typ.-5%	Typ.	Typ.+5%	VDC	
	Input power	Isolated signal power at full load	--	--	1	W
	Power supply protection		Input reverse polarity protection			
Single Input	Input signal	See selection guide				
	Input impedance	Voltage signal input type@Maximum voltage	10	--	--	MΩ
	Over range	Voltage signal input type	--	--	±15	V

Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Single Output	Output signal	See selection guide				
	Load capacity	In case of max. input of voltage signal	2	--	--	kΩ
	Ripple & Noise	Maximum test bandwidth 20MHz	--	30	--	mVp-p

Transmission Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Signal Precision	Ta=25°C	-0.1%FS	--	+0.1%FS	--
Load Regulation	Change from no-load to full load	-0.05%FS	--	+0.05%FS	--
Power Regulation	Power supply input Typ. ±5%	-0.05%FS	--	+0.05%FS	--
Temperature Coefficient	Operating temperature range from -40°C to +85°C	--	--	50	PPM/°C
Band Width		2	--	--	kHz

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Response Time		--	--	1	ms
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General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Electric Isolation		Three-port isolation (signal input, signal output and power input terminals are all isolated from each other)			
Isolation Test	Electric strength test for 1 minute with a leakage current <1mA, humidity <70%RH	2.5	--	--	kVDC
Insulation Resistance	500VDC	100	--	--	MΩ
Operating Temperature		-40	--	+85	°C
Transportation and Storage Temperature		-40	--	+85	°C
Case Temperature Rise	Ta=25°C	--	--	30	°C
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	11.5g(typ.)
Cooling Method	Free air convection

Electromagnetic Compatibility (EMC)

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

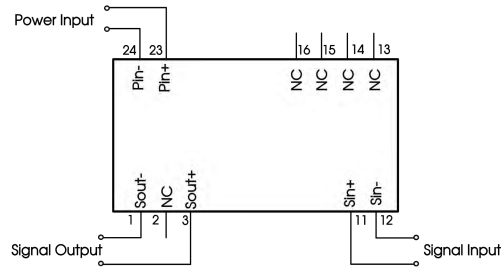
1. Factory inspection and quality control are strictly enforced before shipping any product; please contact your local representative or our technical support if you experience any abnormal operation or possible failure of the module;
2. The products have a 3-year warranty period, from the date of shipment. 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

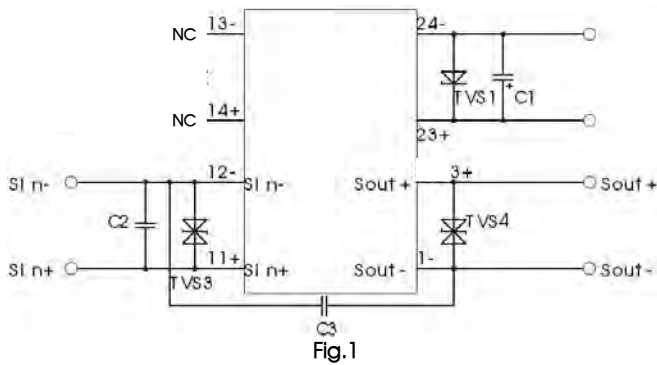
Please refer to Isolated Transmitter application notes.

Design Reference

1. Wiring diagram for product application



2. EMC compliance recommended circuit



Component	Recommended part
TVS1	SMCJ30A
TVS3	SMBJ15CA
TVS4	SMBJ15CA
C1	220uF/35V
C2	1uF/50V

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

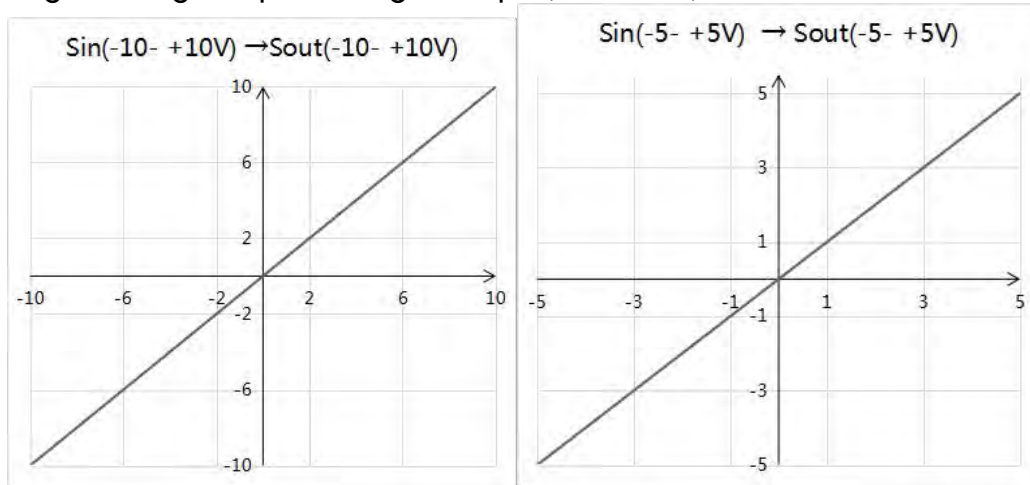
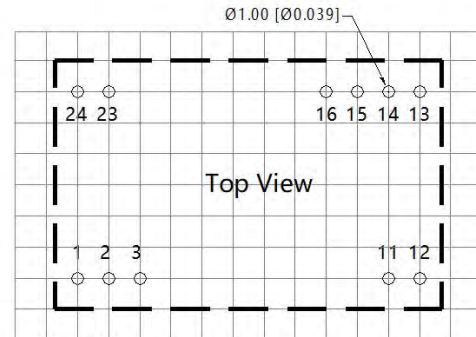
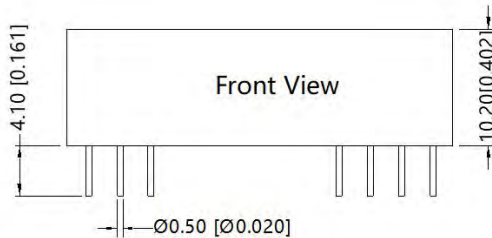


Fig.2

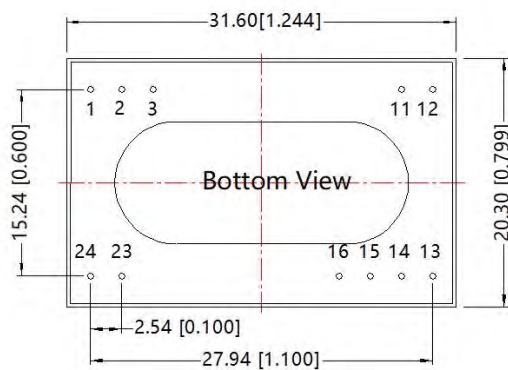
4. For more information please find the application notes on www.mornsun-power.com

Dimensions and Recommended Layout

THIRD ANGLE PROJECTION 



Note : Grid 2.54*2.54mm



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

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 connector

Notes:

- For additional information on Product Packaging please refer to 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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