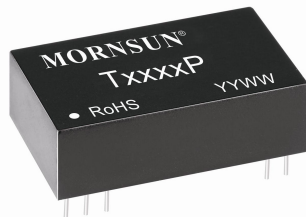


Active high precision signal conditioning modules



RoHS



## FEATURES

- Four-port isolation (signal input, signal output, power input and isolation power output are mutually isolated)
- High accuracy (0.1% F.S.)
- Isolation voltage: 2.5KVDC/60s
- Low temperature coefficient : 50PPM/°C
- Industrial grade operating temperature: -40°C to +85°C
- Low ripple & noise: 30mVp-p
- ESD protection (IEC/EN61000-4-2 Contact ±4KV perf. Criteria B)

*TxxxP Series signal conditioning modules (also called isolated transmitter), are the analog signal isolated modules with preceding current/voltage signal input and post current/voltage signal output. With an embedded high-efficient micro-power supply, the product supplies power to the internal signal processing circuit and inputs a line of isolated power to the preceding-stage transducer at the same time. The electromagnetism isolated technology of the product features that the input, output, power supply, power distribution are isolated from each other, which can completely replace the traditional linear optocoupler isolation, it is available to keep higher accuracy and extremely lower temperature drift than optocoupler isolation. TxxxP Series are widely applied in PLC, DCS, MCU and other signal isolation & conversion.*

## Selection Guide

Certification	Model	Power Supply input Typ. (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
/	T1130P	24V	4-20mA	4-20mA	None
	T1133P	24V	4-20mA	4-20mA	24V
	T1430P	24V	4-20mA	1-5V	None
	T1433P	24V	4-20mA	1-5V	24V
	T1450P	12V	4-20mA	1-5V	None
	T1530P	24V	4-20mA	0-10V	None
	T1533P	24V	4-20mA	0-10V	24V
	T1630P	24V	4-20mA	0-5V	None
	T1633P	24V	4-20mA	0-5V	24V
	T1650P	12V	4-20mA	0-5V	None
	T1S33P-2.5	24V	4-20mA	0-2.5V	24V
	T1S55P-2.5	12V	4-20mA	0-2.5V	12V
	T2230P	24V	0-20mA	0-20mA	None
	T2233P	24V	0-20mA	0-20mA	24V
	T2633P	24V	0-20mA	0-5V	24V
	T2650P	12V	0-20mA	0-5V	None
	T4130P	24V	1-5V	4-20mA	None
	T4630P	24V	1-5V	0-5V	None
	T5130P	24V	0-10V	4-20mA	None
	T5133P	24V	0-10V	4-20mA	24V
T5150P	12V	0-10V	4-20mA	None	
T5153P	12V	0-10V	4-20mA	24V	
CE	T5230P	24V	0-10V	0-20mA	None
	T5530P	24V	0-10V	0-10V	None
/	T5533P	24V	0-10V	0-10V	24V
	T5535P	24V	0-10V	0-10V	12V
	T5544P	15V	0-10V	0-10V	15V
	T5550P	12V	0-10V	0-10V	None
	T5555P	12V	0-10V	0-10V	12V
	T5630P	24V	0-10V	0-5V	None

T5650P	12V	0-10V	0-5V	None
T5660P	5V	0-10V	0-5V	None
T6130P	24V	0-5V	4-20mA	None
T6150P	12V	0-5V	4-20mA	None
T6230P	24V	0-5V	0-20mA	None
T6233P	24V	0-5V	0-20mA	24V
T6235P	24V	0-5V	0-20mA	12V
T6250P	12V	0-5V	0-20mA	None
T6530P	24V	0-5V	0-10V	None
T6560P	5V	0-5V	0-10V	None
T6630P	24V	0-5V	0-5V	None
T6640P	15V	0-5V	0-5V	None
T6650P	12V	0-5V	0-5V	None
T6S36P-2.5	24V	0-5V	0-2.5V	5V
T6S60P-3	5V	0-5V	0-3V	None

Notes: Customization products are available if required.

### Input Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Power Input	Input Voltage	Typ.-5%	Typ.	Typ.+5%	VDC	
	Input Power	Signal, isolation power full load	--	--	2.0	W
	Power Supply Protection		Reverse protection			
Signal Input	Input Signal		See selection guide			
	Input Impedance	In case of max. input of current signal	--	--	250	mV
		In case of max. input of voltage signal	10	--	--	MΩ
	Over Range	In case of current signal input	--	--	50	mA
In case of voltage signal input		--	--	30	V	

### Output Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit	
Isolation Power Output	Output Voltage	Isolation power output at full load	Typ.-10%	Typ.	Typ.+10%	VDC
	Output Current		--	--	25	mA
	Short Circuit Protection		Continuous short-circuit protection under normal temperature(except the 24V power input)			
Signal Output	Output Signal		See selection guide			
	Load Capacity	In case of max. input of voltage signal	2	--	--	KΩ
		In case of max. input of current signal	--	--	500	Ω
Ripple & Noise	20MHz Bandwidth	--	30	--	mVp-p	

### Transmission Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Signal Precision	Ta=25℃	-0.1%F.S.	--	+0.1%F.S.	--
Power Regulation	(Typ. value of power supply input)±5%	-0.05%F.S.	--	+0.05%F.S.	--
Load Regulation	Change between no-load to full load	-0.05%F.S.	--	+0.05%F.S.	--
Temperature Coefficient	Operating temperature range of -40℃ to +85℃	--	--	50	PPM/℃
Band Width		2	--	--	KHz
Response Time		--	--	1	ms

### General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Electric Isolation		Four-port isolation (signal input, signal output, power input and isolation power output are mutually isolated)			
Isolation Voltage	Testing for 1 minute, leakage current <1mA, humidity <70%	2.5	--	--	kVDC
Isolation Resistance	500VDC	100	--	--	MΩ
Operating Temperature		-40	--	+85	°C
Transportation and Storage Temperature		-40	--	+85	°C
Casing Temperature Rise	Ta=25°C	--	--	30	°C
Application Environment		The presence of dust and corrosive gas may cause damage to the product			

### Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic
Package	DIP24
Weight	11.5g( Typ.)
Cooling Method	Free air convection

### EMC Specifications

EMS	ESD	IEC/EN61000-4-2	Contact ±4KV	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 port ±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. Please read the instructions carefully before use; contact our technical directly 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 dismantle and assemble the product without permission to avoid failure or malfunction of equipment.
5. Unless otherwise specified, parameters in this datasheet were measured under the conditions of Ta=25°C, humidity<75% with power input nominal voltage and rated signal output full load.

#### 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

Please refer to Isolated Transmitter application notes.

### Design Reference

#### 1. Wiring diagram for product application

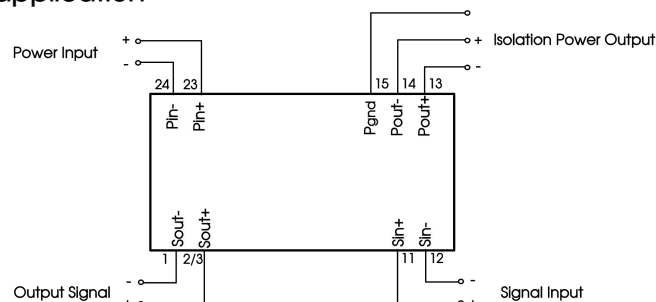


Fig. 1

Notes :① Pins 13, 14 and 15 are NC pins in case of no isolation power output.

② In case of positive and negative isolation power output, Pin 13 is isolation power output negative, Pin 14 is isolation power output positive, Pin 15 reference ground.

③ In case of single isolation power output, Pin 13 is isolation power output negative, Pin 14 is isolation power output positive, Pin 15 NC.

### 2. EMC solution-recommended circuit

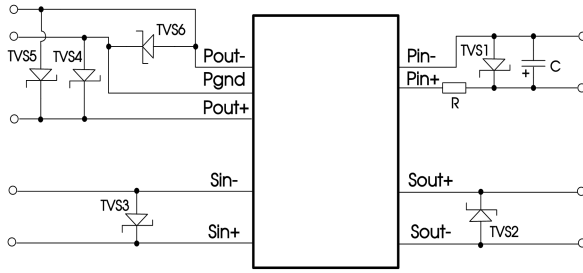


Fig. 2

Notes : ① T2633P need to be connected to resistance R, other products are not connected to the R, with a wire instead

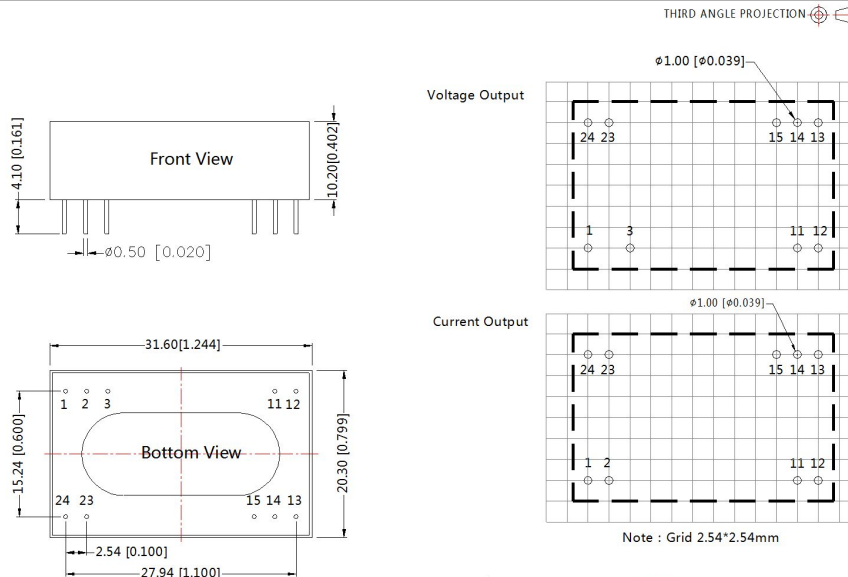
② In case of positive and negative isolation power output, Pin 13 is isolation power output negative, Pin 14 is isolation power output positive, Pin 15 Reference ground.

③ In case of single isolation power output, Pin 13 is isolation power output negative, Pin 14 is isolation power output positive, Pin 15 NC. NO need to use TVS4 and TVS6.

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

Components	Recommended parameters
TVS1	SMCJ30A
TVS2	SMBJ15A
TVS3	SMBJ15A
TVS4	SMBJ15A
TVS5	SMBJ28A
TVS6	SMBJ15A
R	2 Ω /1W
C	220μF/35V

### Dimensions and Recommended Layout



Note:  
Unit :mm[inch]  
Pin diameter tolerances :±0.10[±0.004]  
General tolerances:±0.25[±0.010]

Pin-Out			
Pin	Vo	Io	Function
1	Sout-	Sout-	Signal output(-)
2	No Pin	Sout+	Signal output(+)
3	Sout+	No Pin	Signal output(+)
11	Sin+	Sin+	Signal input(+)
12	Sin-	Sin-	Signal input(-)
13	Pout-	Pout-	Isolation power output-
14	Pout+	Pout+	Isolation power output+
15	NC	NC	No Connection
23	Pin+	Pin+	Power supply(+)
24	Pin-	Pin-	Power supply(-)

NC:Pin to be isolated from circuitry

#### Notes:

1. Packing information please refer to Product Packing Information which can be downloaded from [www.mornsun-power.com](http://www.mornsun-power.com). Packing bag number: 58210008;
2. All index testing methods in this datasheet are based on our Company's corporate standards;
3. The performance parameters of the product models listed in this manual are as above, but some parameters of non-standard model products may exceed the requirements mentioned above. Please contact our technicians directly for specific information;
4. We can provide product customization service;
5. Products are related to laws and regulations: see "Features" and "EMC";
6. 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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