Isolated Transmitter

TxxxxP Series

MORNSUN®

Active high precision isolated transmitter

FEATURES

- Four-terminal isolation (signal input, signal output, power supply and output of power supply are mutually isolated)
- High precision grade (0.1% F.S.)
- High linearity (0.1% F.S.)
- Isolation voltage (2.5KVDC/60s)
- Extremely low temperature drift (50PPM/°C, within ~40 to +85°C)
- Industrial grade (range of operating temperature: ~40 to +85° C)
- High reliability (MTBF >500,000 hours)
- Low ripple & noise: ≤30mVp-p
- ESD protection (IEC/EN61000~4~2 Contact ±4KV perf. Criteria B)

TxxxxP series is analog signal isolation modules with front~end current/voltage signal input and rear~end current/voltage signal output. They are equipped with built~in efficient micro~power source and can output one~circuit isolated power supply while supplying power to the internal signal processing circuit. The product adopts the electromagnetic isolating technology as a substitute for the traditional linear opto~isolator. In contrast, this type of product has a better performance in temperature drift, linearity and precision.

Selection Guide

Model	Power Supply input (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
T1130P	24	4~20mA	4~20mA	None
T1133P	24	4~20mA	4~20mA	24V
T2230P	24	0~20mA	0~20mA	None
T2233P	24	0~20mA	0~20mA	24V
T1530P	24	4~20mA	0~10V	None
T1533P	24	4~20mA	0~10V	24V
T1630P	24	4~20mA	0~5V	None
T1633P	24	4~20mA	0~5V	24V
T1S33P~2.5	24	4~20mA	0~2.5V	24V
T5530P	24	0~10V	0~10V	None
T5630P	24	0~10V	0~5V	None
T6630P	24	0~5V	0~5V	None
T6650P	12	0~5V	0~5V	None
T5133P	24	0~10V	4~20mA	24V
T5153P	12	0~10V	4~20mA	24V
T6130P	24	0~5V	4~20mA	None
T6235P	24	0~5V	0~20mA	12V
T6250P	12	0~5V	0~20mA	None
T1430P	24	4~20mA	1~5V	None
T1433P	24	4~20mA	1~5V	24V
T1450P	12	4~20mA	1~5V	None
T5130P	24	0~10V	4~20mA	None

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%
	Input power	Signal, power full load	≤2W
	Power supply protection		Reverse polarity protection

Input	Input signal		See selection guide
	Input impedance	In case of max. input of current signal	≤250mV
		in case of input of voltage signal	≥10MΩ
	Overload	in case of input of current signal	≤50mA
		in case of input of voltage signal	≤30V

Output Specifications

Item		Operating Conditions	Value
Output of Isolated Power Supply	Output voltage	Power, current full load	(Nominal value) ±10%
	Output current		≤25mA
	Short circuit protection		Continuous short circuit protection under normal temperature
Output	Output signal		See selection guide
	Load capacity	Voltage output	≥2KΩ
		Current output @ 20mA	≤500Ω
	Load regulation		0.050%
	Ripple & noise	Bandwidth 20MHz	≤30mVpp

Transmission Specifications

Item	Operating Conditions	Value
Precision		0.1%F.S.
Zero Offset		0.1%F.S.
Temperature Drift	Operating temperature range of -40 to +85℃	≤50ppm/℃
bandwidth		≥2KHz
Response Time		≤5ms

General Specifications

Item	Operating Conditions	Value
Electric Isolation		Four-terminal isolation (signal input, signal output, input power supply and output of isolated power supply are mutually isolated)
Degree of Isolation	testing for 1 minute, leakage current <1mA, humidity <70%	2.5KVDC (note: isolated power supply provided; the isolation voltage between the terminal of isolated power supply and the input terminal is 500VDC)
Insulation Resistance	500VDC (signal input terminal, signal output terminal, power supply terminal and output terminal of isolated power supply)	100MΩ
Operating Temperature		-40~+85℃
Transportation and Storage Temperature		-50~+105℃
Max. Operating Temperature for Casing	Ta=25℃	≤50℃
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	DIP24
Weight	10g(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	Power supply port ±2KV	perf. Criteria B
		IEC/EN61000~4~4	Other ports ±1KV (see Fig. 2 for recommended circuit)	perf. Criteria B
	Surge Immunity	IEC/EN61000~4~5	Power supply ±1KV (see Fig. 2 for recommended circuit)	perf. Criteria B
		IEC/EN61000~4~5	Other ports ±1KV (line against ground) (see Fig. 2 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

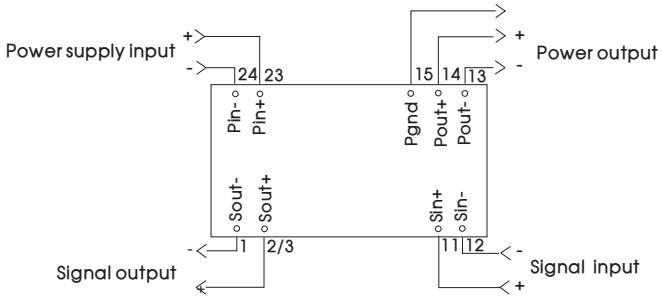


Fig. 1

Notes:① Pins 13, 14 and 15 are NC pins in case of no power output.
② In case of positive and negative power output, Pin 13 is power output negative, Pin 14 power output positive, Pin 15 reference ground.
③ In case of single power output, Pin 13 is power output negative, Pin 14 power output positive, Pin 15 NC.

2. Recommended EMC circuit

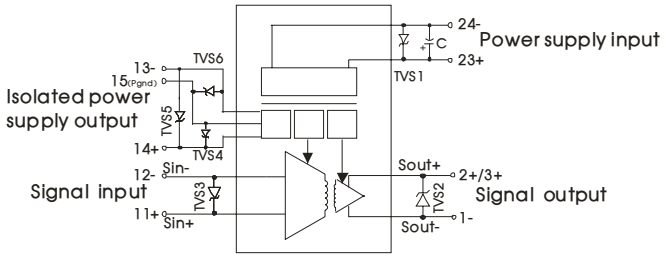
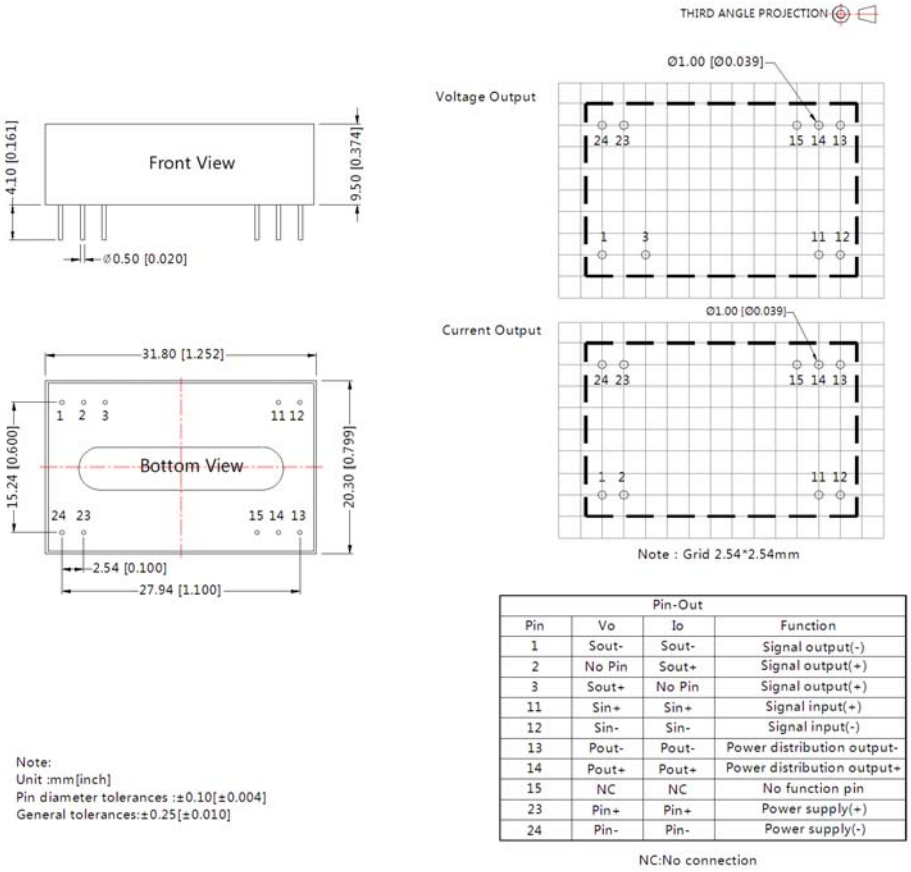


Fig. 2

Components	Recommended parameters
TVS1	SMCJ30A
TVS2	SMBJ15A
TVS3	SMBJ15A
TVS4	SMBJ15A
TVS5	SMBJ28A
TVS6	SMBJ15A
C	220μF/35V

3. For more information Please find the application notes on www.mornsun~power.com

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-	Power distribution output-
14	Pout+	Pout+	Power distribution output+
15	NC	NC	No function pin
23	Pin+	Pin+	Power supply(+)
24	Pin-	Pin-	Power supply(-)

NC:No connection

Note:
1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58210008;
2. Unless otherwise specified, data in this datasheet should be tested under the conditions of Ta=25° C, 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.

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