

Active high precision signal conditioning module



### 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)

*STxxxxP 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)
ST1130P	24	4~20mA	4~20mA	None
ST1133P	24	4~20mA	4~20mA	24V
ST1430P	24	4~20mA	1~5V	None
ST1433P	24	4~20mA	1~5V	24V
ST1450P	12	4~20mA	1~5V	None
ST1530P	24	4~20mA	0~10V	None
ST1533P	24	4~20mA	0~10V	24V
ST1630P	24	4~20mA	0~5V	None
ST1633P	24	4~20mA	0~5V	24V
ST1S33P~2.5	24	4~20mA	0~2.5V	24V
ST1S55P~2.5	12	4~20mA	0~2.5V	12V
ST2230P	24	0~20mA	0~20mA	None
ST2233P	24	0~20mA	0~20mA	24V
ST2650P	12	0~20mA	0~5V	None
ST4130P	24	1~5V	4~20mA	None
ST5130P	24	0~10V	4~20mA	None
ST5133P	24	0~10V	4~20mA	24V
ST5153P	12	0~10V	4~20mA	24V
ST5230P	24	0~10V	0~20mA	None
ST5530P	24	0~10V	0~10V	None
ST5533P	24	0~10V	0~10V	24V
ST5550P	12	0~10V	0~10V	None
ST5555P	12	0~10V	0~10V	12V
ST5630P	24	0~10V	0~5V	None
ST6130P	24	0~5V	4~20mA	None
ST6150P	12	0~5V	4~20mA	None
ST6230P	24	0~5V	0~20mA	None
ST6235P	24	0~5V	0~20mA	12V
ST6250P	12	0~5V	0~20mA	None
ST6560P	5	0~5V	0~10V	None

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ST6630P	24	0~5V	0~5V	None
ST6650P	12	0~5V	0~5V	None
ST6S36P-2.5	24	0~5V	0~2.5V	5V
ST6S60P-3	5	0~5V	0~3V	None

Notes: Customization products are available if required.

### Input Specifications

Item		Operating Conditions	Value
Input Supply	Power	Input voltage	(Nominal value of power supply input) $\pm 5\%$
		Input power	Signal, power full load $\leq 2W$
		Power supply protection	Reverse polarity protection
Input		Input signal	See selection guide
		Input Impedance	In case of input of current signal voltage drop $\leq 250mV$
			in case of input of voltage signal $\geq 10M\Omega$
		Overload	in case of input of current signal $\leq 50mA$
	in case of input of voltage signal $\leq 30V$		

### Output Specifications

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

### 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 $+85^{\circ}C$	$\leq 50ppm/^{\circ}C$
bandwidth		$\geq 2KHz$
Response Time		$\leq 5ms$

### 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)	100M $\Omega$
Operating Temperature		$-40 \sim +85^{\circ}C$
Transportation and Storage Temperature		$-50 \sim +105^{\circ}C$
Max. Operating Temperature for Casing	$T_a = 25^{\circ}C$	$\leq 50^{\circ}C$
Application Environment		The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product

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### 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 $\pm 4\text{KV}$	perf. Criteria B
	EFT	IEC/EN61000~4~4	Power supply port $\pm 2\text{KV}$ (see Fig. 2 for recommended circuit)	perf. Criteria B
		IEC/EN61000~4~4	Other ports $\pm 1\text{KV}$ (see Fig. 2 for recommended circuit)	perf. Criteria B
	Surge Immunity	IEC/EN61000~4~5	Power supply $\pm 1\text{KV}$ (see Fig. 2 for recommended circuit)	perf. Criteria B
IEC/EN61000~4~5		Other ports $\pm 1\text{KV}$ (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 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

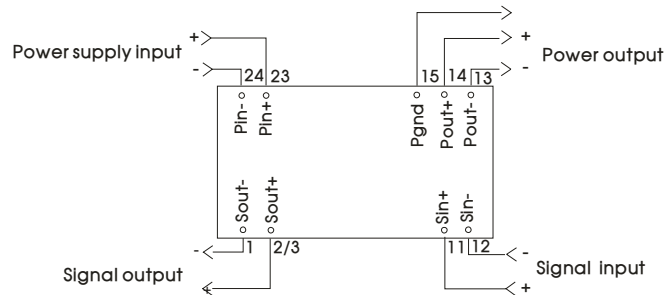


Fig. 1

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

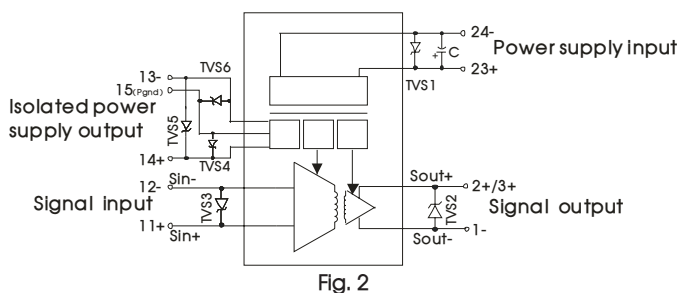


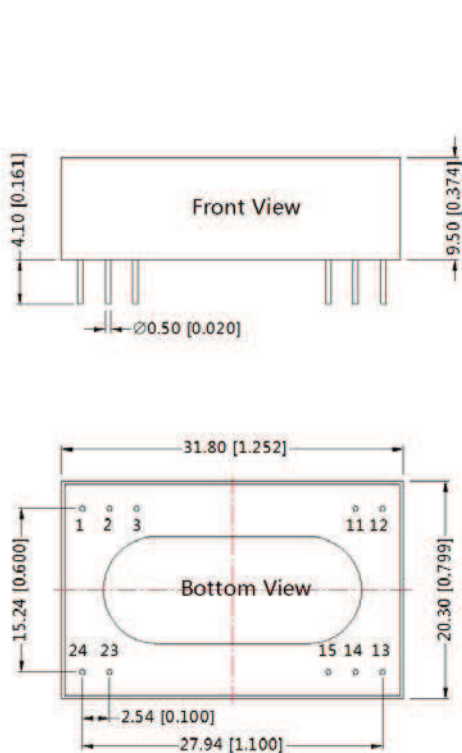
Fig. 2

Components	Recommended parameters
TVS1	SMCJ30A
TVS2	SMBJ15A
TVS3	SMBJ15A
TVS4	SMBJ15A
TVS5	SMBJ28A
TVS6	SMBJ15A
C	220 $\mu\text{F}$ /35V

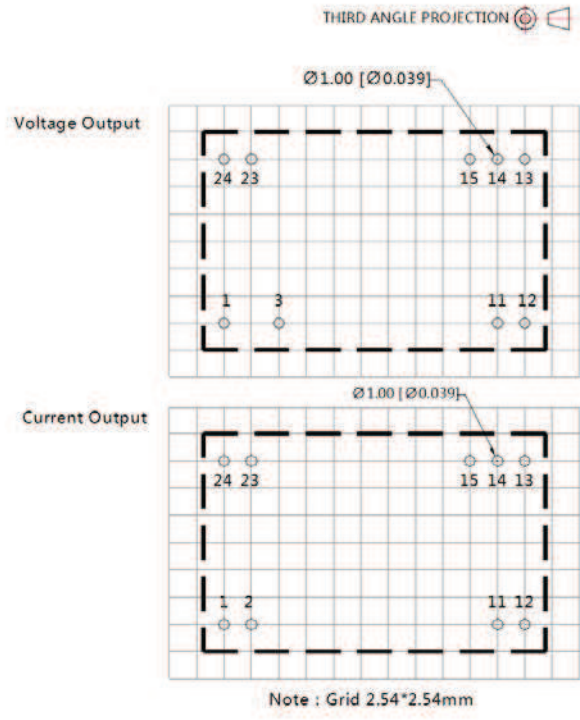
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## STxxxxP Series

### 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.