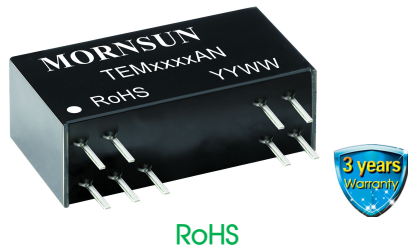
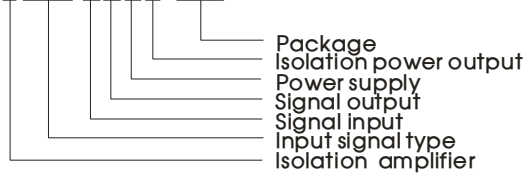


Signal conditioning modules



PART NUMBER SYSTEM

TEMxxxxAN



TEMxxxxAN series is analog signal isolation modules with front-end mV-level positive/negative signal input and rear-end positive signal output. They are equipped with built-in efficient micro-power source can supply other power to the internal circuit of input signal. 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, low power consumption and Low ripple. They are two-terminal isolation (input of power supply, signal output and signal output are mutually isolated)

FEATURES

- Two- port isolation (signal input and output are mutually isolated)
- High precision (0.1% F.S.)
- High linearity (0.1% F.S.)
- Isolation voltage (2KVAC/60s)
- Extremely low temperature coefficient (50PPM/°C)
- Industrial grade (operating temperature range: -40°C to +85°C)
- High reliability (MTBF >500,000 hours)
- Low ripple & noise: ≤30mVp-p(20MHz)
- ESD protection (IEC/EN61000-4-2 Contact ±4KV perf. Criteria B)
- Compact size: DIP Package(26*9.5*12.5mm)
- With load capacity: ≥2KΩ(@Max. signal output @10V)

Selection Guide

Part No.	Power Supply input Typ. (VDC)	Input Signal	Output Signal	Isolation Power Output (VDC)
TEM5630AN	24VDC	±75mV	0~5VDC	None
TEM6650AN	12VDC	±100mV	0~5VDC	None
TEM6640AN	15VDC	±100mV	0~5VDC	None

Input Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Power Input	Input voltage		Typ.-5%	Typ.	Typ.+5%	VDC
	Input power	Signal full load	--	--	1.0	W
	Power supply protection		Anti-reverse connection protection			
signal Input	Input signal		See selection guide			
	Input impedance	in case of max. input of voltage signal	10	--	--	MΩ
	Over range		-10	--	+10	V

Output Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
signal Output	Output signal		See selection guide			
	Load capacity	Voltage output	2	--	--	KΩ
	Ripple & noise	Bandwidth 20MHz	--	--	35	mVp-p

Transmission Specifications

Item	Operating Conditions		Min.	Typ.	Max.	Unit
Zero Offset			-0.1%F.S.	--	+0.1%F.S.	--
Signal Precision			-0.1%F.S.	--	+0.1%F.S.	--
Temperature Coefficient	Operating temperature range of -40 to +85°C		--	--	50	PPM/°C
bandwidth			2	--	--	KHz
Response Time			--	--	1	ms

General Specifications

Item	Operating Conditions	Min.	Typ.	Max.	Unit
Electric Isolation		Power input and the signal output are on the common ground. Isolated between signal input terminal and signal output terminal.			
Degree of Isolation	testing for 1 minute, leakage current <1mA, humidity <70%	2	--	--	KVAC
Isolation Resistance	500VDC(signal input terminal and signal output terminal)	100	--	--	MΩ
Operating Temperature		-40	--	+85	°C
Transportation and Storage Temperature		-50	--	+105	°C
Casing Temperature Rise	Ta=25°C	--	--	30	°C
Application Environment		The presence of dust, fierce vibration, impulsion and corrosive gas may cause damage to the product			

Physical Specifications

Casing Material	Black flame-retardant and heat-resistant plastic
Package	DIP18
Weight	8g(Typ.)
Cooling Method	Natural cooling

EMC Specifications

EMS	ESD	IEC/EN61000-4-2	Contact ±4KV	perf. Criteria B
	EFT	IEC/EN61000-4-4	Signal input port ±1KV(see Fig. 3 for recommended circuit)	perf. Criteria B
	Surge	IEC/EN61000-4-5	Signal input port ±1KV (line-to-ground)(see Fig. 3 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 220VAC power supply is prohibited;
4. Do not dismount 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

See *Application Notes for Isolated Transmitter* for details.

Design Reference

1. Wiring diagram for product application

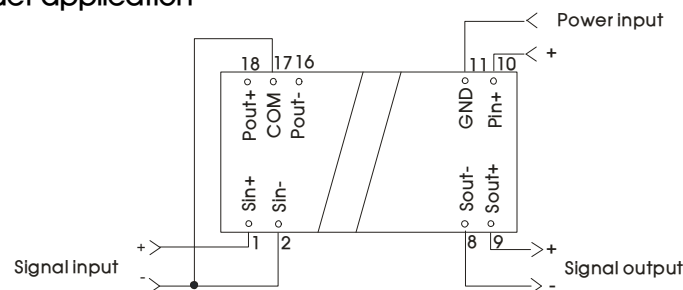


Fig. 1

Note: The other applications required short rest 2 pin and 17 pin besides Figure (b) shows in the typical application circuit two

2. Typical application circuit

Typical application circuit one: Positive and negative power supply current signal detection scheme

The signal conditioning module TEMxxxxAN series, in the dual power supply conditions (VCC, VEE), can be used to detect any direction's current values. As shown in the Fig. 1, if the current detection resistor series to the current loop, then the loop current will generate mV level voltage signal in the resistance, the signal conditioning modules, complete signal amplification, and feedback to the back-end instrument.

The resistance values, to be measured current's range, and the signal conditioning modules should be matched, such as: needs to detect the ±5A current, signal conditioning modules select ±100mV model, so the detecting resistors should be 20mΩ, and the resistance value can be realized by controlling the PCB line length.

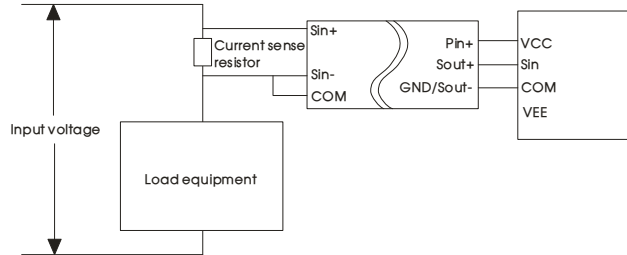


Fig. 2

Typical application circuit two: The detection scheme based on the resistance bridge pressure

As shown in the figure, the pressure strain resistance is connected in a bridge structure, the change in pressure makes the corresponding change of resistance value, and in the bridge circuit, the change of the resistance will cause the voltage change between the Sin+ and Sin- pins. This voltage is typically mV level, but signal conditioning modules can make the signal from mV level amplify to V level, for the back end uses.

$$V_{\text{sin}} = V_{\text{ref}} \left(\frac{R_3}{R_3 + R_4} - \frac{R_2}{R_1 + R_2} \right)$$

To match it, let $R_1=R_2=R_3=R$, R_3 is the pressure strain resistance, V_{sin} is the voltage between Sin+ and Sin- pins. The above equation can be simplified to

$$V_{\text{sin}} = V_{\text{ref}} \left(\frac{R}{R + R_3} - \frac{1}{2} \right)$$

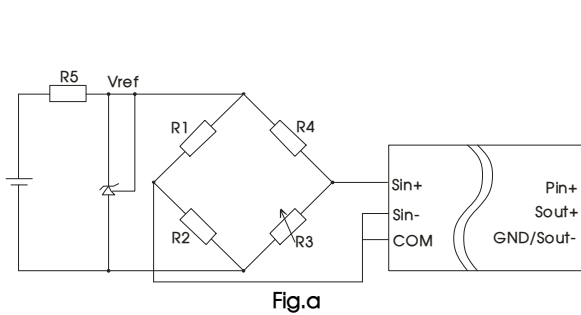


Fig.a

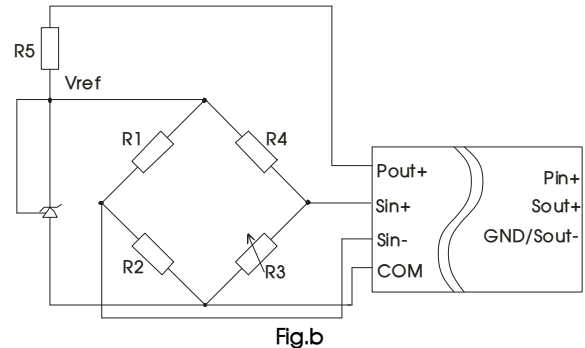


Fig.b

3. Recommended EMC circuit

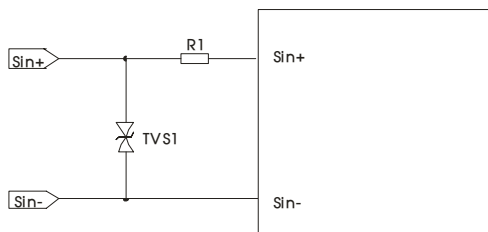
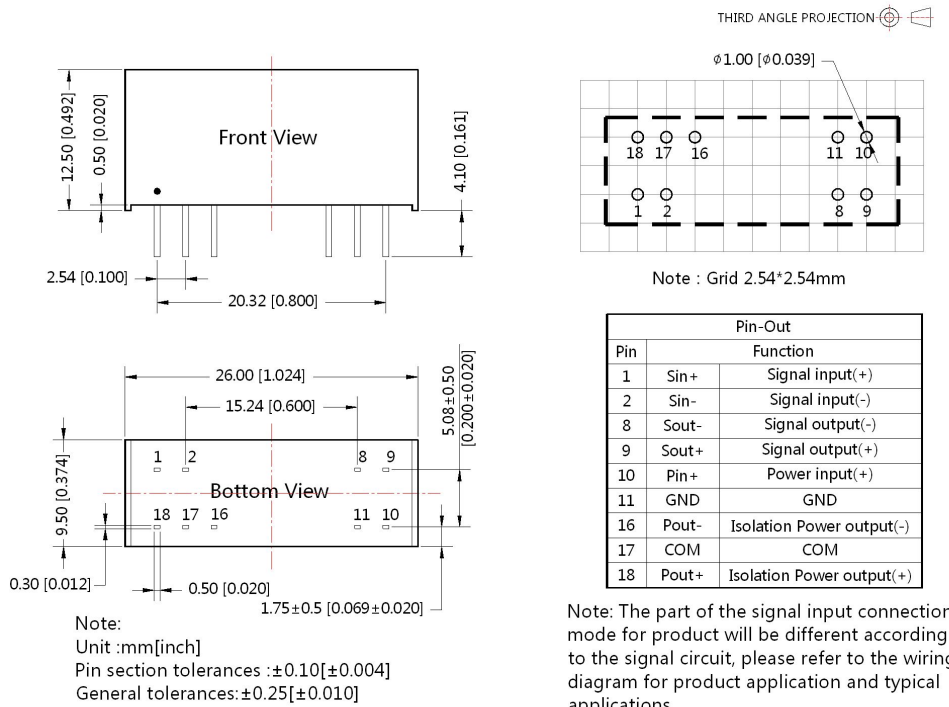


Fig. 3

Components	Recommended parameters
R1	12 Ω /2W
TVS1	SMBJ5CA

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

Dimensions and Recommended Layout



Notes:

1. Packing Information please refer to 'Product Packing Information'. Packing bag number: 58240002;
2. All index testing methods in this datasheet are based on our Company's corporate standards;
3. The performance indexes of the product models listed in this datasheet 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;
4. We can provide product customization service;
5. Specifications of this product are subject to changes without prior notice.

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