MORNSUN®

TWO-WIRE LOOP-POWERED SIGNAL CONDITIONING MODULES

VOLTAGE SIGNAL INPUT & CURRENT SIGNAL OUTPUT

——TxxxxL-F

FEATURES

- Output loop-powered
- High accuracy (0.1% F.S.)
- High linearity (0.1% F.S.)
- High isolation voltage(2KVAC/1mA)
- Small size: SIP9 (26*9.5*12.5mm)
- Extremely low temperature drift:50PPM/℃
- Operating temperature range: -40°C ~ +85°C
- ESD protection(±4KV)

PART NUMBER SYSTEM

TxxxxL-F

- Loop-powered series
- Package
- Isolation power output
- Power supply
- Signal output
- Signal input
- Product series

GENERAL DESCRIPTION

TxxxxL-F is a voltage input and two-wire current output loop-powered signal conditioning module.After the adoption of the current loop feed-level approach to the pre-power devices and equipment received from the preceding stage output voltage signal.The isolation module output 4 ~ 20mA standard two-wire current signal.

This product incorporates a unique electromagnetic isolation mode and high performance level after feeding technology, the voltage signal to a 4 ~ 20mA standard signal isolation accurate conversion, can be used with a variety of instruments analog input port (such as PLC, DCS systems, etc.) to match.

In addition, this module has extremely small form factor (SIP9) and excellent temperature drift characteristics (at -40 ℃ ~ +85 ℃ operating temperature range drift is less than 50PPM / ℃), the input and output ends of energy bear 2KVAC isolation voltage.

SELECTION GUIDE

Model	Loop Supply Voltage	Distribution Voltage	Input Signal	Output Signal	Channels	Package
TS107L-F-2	10~24VDC	3.3V	0~2V	4~20mA	1	SIP9

ELECTRICAL SPECIFICATIONS

Input signal	Input signal	See selection guide
	Input impedance	≥10MΩ
	Over-load	≤5V
Distribution	Distribution voltage	See selection guide
	Distribution voltage accuracy	±3%
	Maximum load current	≥3mA
	Short circuit protection	Sustainable distribution circuit; withdrawal product to resume normal work after a fault
Output signal	Output Signal	See selection guide
	The Min. supply voltage	10V(Signal output load)
	The Max. supply voltage	30V；(Need to consider power consumption, long-term work in the 30V power supply, no-load status may overheat and damage the module)
	The power port equivalent capacitance	≤2.2μF*1.05
	Load ability	RL≤（Vin–10）/0.02 Ω Us：Loop supply voltage
	Load regulation	≤0.05%F.S./100Ω
	Ripple & Noise	≤30mVpp(20MHz bandwidth,250Ω/0.01μF load)

TRANSMISSION SPECIFICATIONS

Zero Offset	0.1%F.S.
Gain Error	0.1%F.S.
Bandwidth	≥500Hz（250Ω/0.01μF load）
Response time	≤5mS
Temperature drift coefficient	0.0050%F.S./℃ (-40℃~+85 ℃)

ISOLATION SPECIFICATIONS

Electrical Isolation	Two-port isolation (signal input, signal output)
Isolation voltage	2KVDC (Tested for 1minute and leakage current < 1mA, humidity < 70%)
Insulation Resistance	≥100MΩ@500VDC

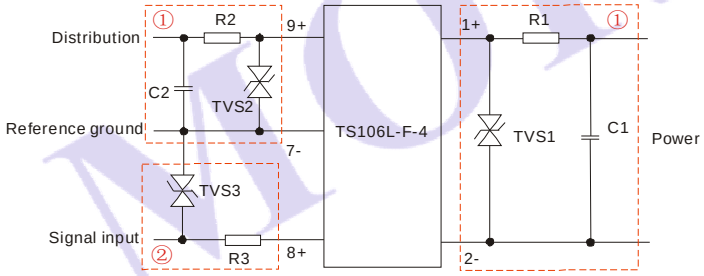
EMC SPECIFICATIONS

EMI	CE	CISPR22/EN55022 CLASS A (Recommended Circuit Refer to Figure 1-①)	
	RE	CISPR22/EN55022 CLASS A (Recommended Circuit Refer to Figure 1-①)	
EMS	ESD	IEC/EN61000-4-2 Contact ±4KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 Power port±2KV (Recommended Circuit Refer to Figure 1-①)	perf. Criteria B
		IEC/EN61000-4-4 Power port±1KV (Recommended Circuit Refer to Figure 1-②)	perf. Criteria B
	Surge	IEC/EN61000-4-5 Power port±1KV/±2KV (Recommended Circuit Refer to Figure 1-①)	perf. Criteria B
		IEC/EN61000-4-5 Power port±1KV (Recommended Circuit Refer to Figure 1-②)	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. CriteriaA

OTHER SPECIFICATIONS

Ambient Temperature	Operating temperature:-40℃~+85℃
	Transport and storage temperature: -55℃~+105℃
The Max. Case Temperature	≤55℃(Ta=25℃,24V Power supply,250Ω/0.01μF load)
Package	SIP9
Weight	About 6g
Application Environment	No dust, fierce shocking, impulsion and corrosive gas

EMC RECOMMENDED CIRCUIT



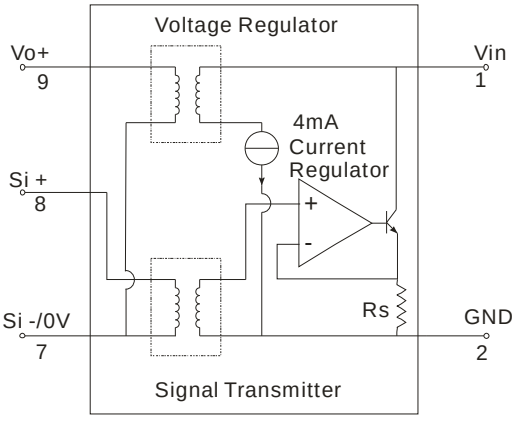
C1	100uF/35V
C2	10uF/35V
TVS1	SMCJ30CA
TVS2	SMCJ6.5CA
TVS3	SMBJ5CA
R1、R2、R3	12Ω/2W

(Figure 1) EMC recommended circuit

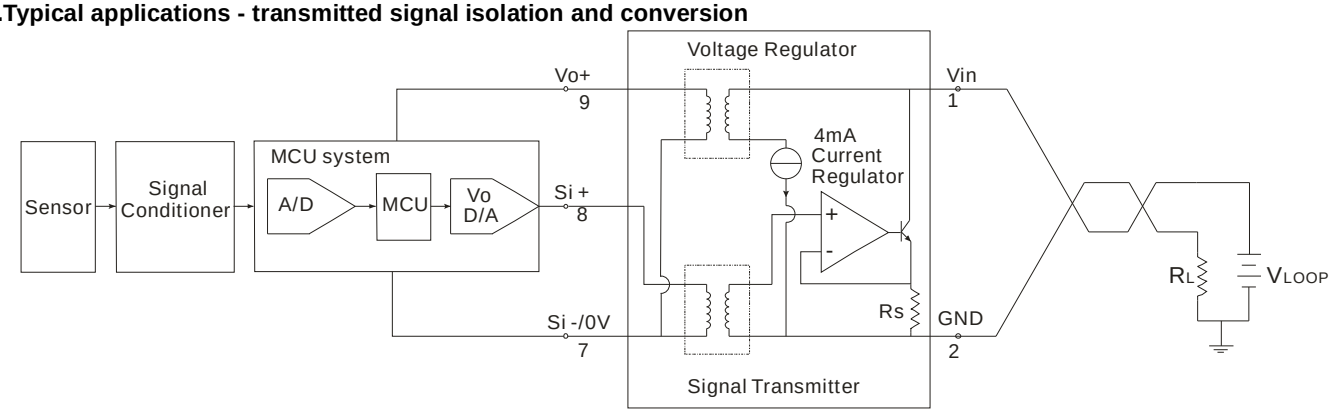
Note: Figure 1 is a recommendation made to meet EMC performance design, non-essential peripheral circuits used according to the actual situation.

APPLICATION CIRCUIT DIAGRAM & SCHEMATIC DIAGRAM

1.Schematic diagram



2.Typical applications - transmitted signal isolation and conversion



Function

The picture shows the way an application module with MCU system together constitute the signal conversion, isolation transfer functions.

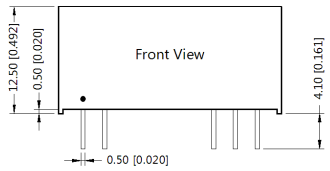
Working principle

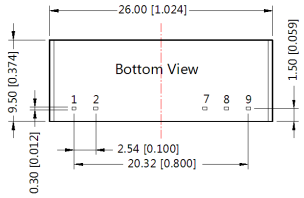
As shown, the signal conditioning modules VLoop take power from the output circuit for signal input device provides one isolated power Vo +;MCU for the first stage of the system power supply.The strain sensor output signal after signal conditioning modules into the MCU system, by the MCU system the collected signal processing, computing, and then the D / A converter, converted to a voltage signal.Module receives the voltage signal, the internal precision isolation transferred to the output, and converted to 4 ~ 20mA standard signal output to VLoop loop.

The system of the sensor signal to the 4 ~ 20mA standard current signal isolation transmission, the output remotely, using the sampling resistor RL, the current signal can be converted to a voltage signal, the various instruments of the type of input signal to the output of the module match.

PACKAGING SIZE AND PIN DESCRIPTION

MECHANICAL DIMENSIONS

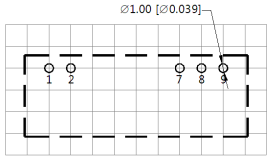




PIN CONNECTION		
Pin	Function	
1	Vin	Power supply(+)
2	GND	Power supply(-)
7	Si-/0V	Signal input(-)
8	Si+	Signal input(+)
9	Vo+	Power distrubution(+)

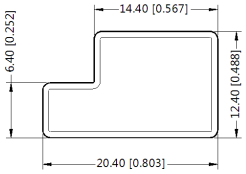
Note:
Unit :mm[inch]
Pin section tolerances :±0.10[±0.004]
General tolerances:±0.25[±0.010]

RECOMMENDED FOOTPRINT DETAILS



Note : Grid 2.54*2.54mm

TUBE PACKAGING DIMENSIONS



Note:
Unit :mm[inch]
General tolerances: ± 0.50[± 0.020]
L=530[20.866] Tube Quantity: 19pcs
L=220[8.661] Tube Quantity: 7pcs
Inner carton(S): L*W*H=255*170*80
Outer carton(S): L*W*H=375*280*270, 6 inner cartons(S)
Inner carton(L): L*W*H=580*200*100
Outer carton(L): L*W*H=600*215*220, 2 inner cartons(L)
Outer carton(L): L*W*H=600*215*325, 3 inner cartons(L)

NOTICE

1. Please read the user manual carefully before using. If any question please contact our FAE.
2. Please do not use this product in hazardous area.
3. To avoid invalid explosion protection function, or any failure, disassembling this product is forbidden.

AFTER-SALES SERVICE

1. Products are carefully inspected and quality controlled during production and before shipment. If they operated abnormally or there was anything wrong, please contact our agent from which you purchased or MORNSUN FAE as soon as possible.
2. MORNSUN warranty our product for 3 years from manufacturing date. During this period, MORNSUN will repair or replace the product if product was found to have manufacturing defect.

Note:

1. All specifications measured at Ta=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
2. In this datasheet, all the test setup and methods are based on our corporate standards.
3. Contact us for your specific requirement.
4. Specifications of this product are subject to changes without prior notice.

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