

# MORNSUN

## ANALOG SIGNAL ISOLATING DETECTION BARRIER



### DESCRIPTION

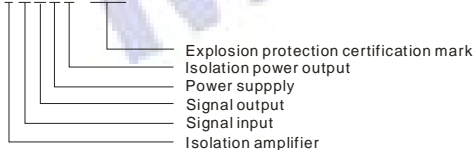
Analog signal isolating detection barrier, which can receive the current output from the hazardous area, meanwhile it can transmit a standard output signal to the safe area after isolated. It also provides isolation power to hazardous area. With a digital bus interface, the device can provide digital network output of DCS system, and configure signal range of input & output, it is an intelligent product.

### FEATURES

- Three port Isolation(input, output, power supply)
- High accuracy (0.1% F.S.)
- High linearity (0.1% F.S.)
- Isolation voltage(2500VDC/60S)
- Low temperature drift(35PPM/°C)
- Modbus digital bus
- Input & output range programmable
- High reliability(MTBF>500,000 hours)

### MODEL SELECTION

Txxxx-EX



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### PRODUCT PROGRAM

Part Number	Power Supply		Input	Output	Isolation Power Output
	Nominal	Range			
TII13-EX	24VDC	18-32VDC	4-20 mA (OR 0-20mA)	4-20mA (OR 0-20mA)	24VDC
TI513-EX	24VDC	18-32VDC	4-20mA (OR 0-20mA)	0-10V (OR 2-10V)	24VDC
TI613-EX	24VDC	18-32VDC	4-20mA (OR 0-20mA)	0-5V (OR 1-5V)	24VDC

### ELECTRICAL CHARACTERISTICS

Category	Parameter	Value
Power Supply Data	Power Supply	18-32VDC
	Power Dissipation	About 2.0W
	Power Protection	Reverse protection
Hazardous area	Input Signal	4-20mA(OR 0-20mA)
	Input Impedance	Voltage drop about <2V(At input=20mA)
	Overload	<60mA
	Power distribution voltage	≤26VDC(Open circuit) ≥18VDC(AT output=20mA)
Safe area	Output Signal	See above
	Overload	≤500Ω(At output=20mA) >1KΩ(At input=Voltage)
	Communication interface	RS485 physical bus interface
	Communication protocol	Modbus digital bus

### TRANSMISSION CHARACTERISTICS

Offset	0.1%F.S.
Gain Error	0.1%F.S.
Plus error	0.1%F.S.
Temperature Drift	0.0035%F.S./°C (-20°C ~ +60°C)

### ISOLATION CHARACTERISTICS

Galvanic Isolation	Isolation among input, output and power supply
Isolation Voltage	2.5KVDC(Tested for 1minute and 1mA max, humidity < 70%)
Surge resist	5KV 1.2/50us (Based on IEC255-4)
EMC	IEC61326.1-2005

### STANDARDS & CERTIFICATIONS

Explosion protection Certification mark	[Exia]IIC
Explosion protection Certification parameters	11-12: Um:250Vrms, Uo:26.5V, Io:112 mA, Po:742 mW Co:0.07μF, Lo:2.4 mH 9-10: Um:250Vrms, Uo:10.5VDC, Io:---
Certified by: CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS NO:CNEx08.1565	

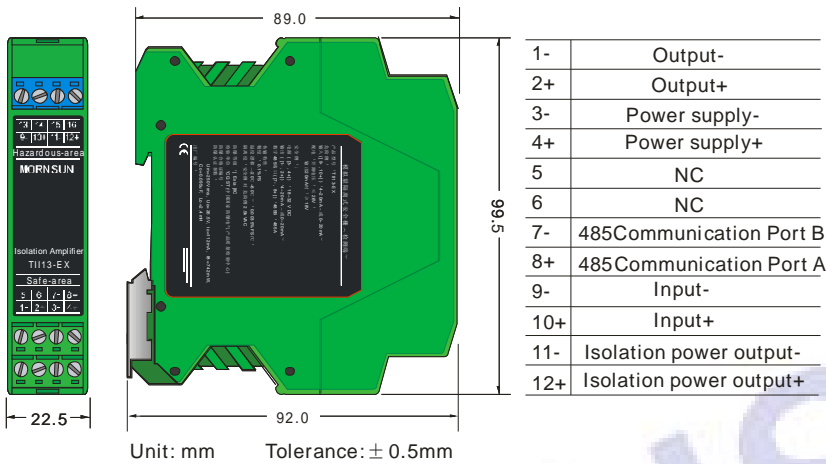
## OTHER CHARACTERISTICS

Ambient temperature	Operation temperature: -20°C ~ +60°C
	Transport and Storage temperature: -40°C ~ +85°C
Package	35mm DIN-rail package: T-rail card package (DIN50022), 3*4 pluggable connection pin, thickness 22.5mm, Plastic UL94-V0
Safety Class	IP20(IEC60529 / EN60529)
Weight	About 100g

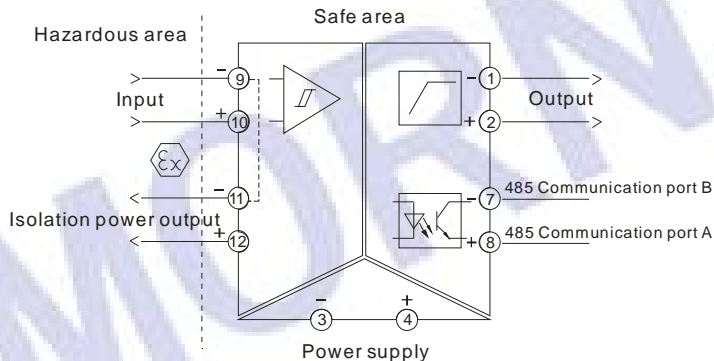
### Note:

- All specifications measured at TA=25°C, humidity<75%, nominal input voltage and rated output load unless otherwise specified.
- Only typical models listed. If you need other model, please contact us.
- Communication protocol details refer to 《MORNSUN Science & Technology Modbus Protocol Rule》.

## PACKAGING SIZE AND TERMINAL DESCRIPTION



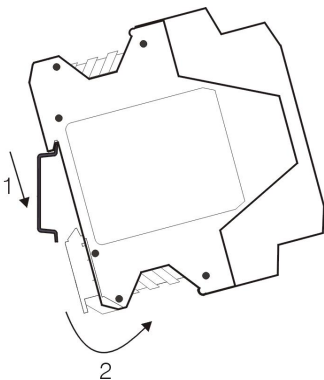
## APPLICATION CIRCUIT DIAGRAM



## INSTALLATION

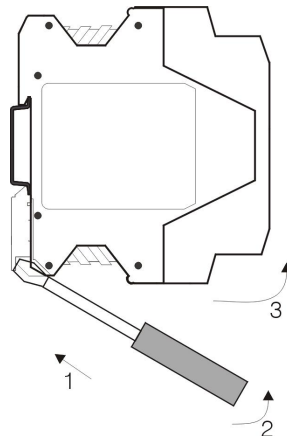
DIN35mm standard rail installation

- Upside of the instrument card in the rail;
- Push underside of the instrument into the rail.



## DISASSEMBLY

- Use a screwdriver (Width of edge≤6mm), cut in the metal card lock from the underside;
- Boost up the screwdriver and prize the metal card lock downwards;
- Pull the instrument out of the rail.



## CONNECTION

- Removable terminal;
- Cross section area of wiring: 0.5mm<sup>2</sup>-2.5 mm<sup>2</sup>;
- The length of bare wire is about 8mm, locked up by M3 bolt.

## APPLICATION IN INTRINSICALLY SAFE EXPLOSION PROTECTION SYSTEM

- The explosion protection grade of the barrier must be equal to or higher than that of in spot intrinsic safety explosion protection device.
- Take inconsideration of hazardous end output resistance and loop resistance, make sure the barrier's output voltage meets the minimum operation voltage requirement of in spot intrinsic safety device.
- The safety parameters of Barrier's intrinsic safety end meets:  
 $U_o \leq U_i$ ,  $I_o \leq I_{in}$ ,  $P_o \leq P_{in}$   
 $C_o \geq C_{in}$ ,  $L_o \geq L_{in}$
- Select suitable Safety barrier which matches the in spot intrinsic safety device for the power's phase, signal type and transmission mode.
- Apply necessary protections, avoid influence the in spot intrinsic safety device's operation from leakage current that generated by safety barrier.

## OPERATION NOTES

- Please read the user manual carefully before using. If any questions please contact our technical support department.
- Please do not use this product in hazardous area.
- The power supply of this product should be 24VDC power source. It is forbidden to use 220VAC power supply.
- To avoid invalid explosion protection function, or any failure, users disassemble this product is forbidden.