MORNSUN®

Isolating / Safety Switching Barrier (Transistor Output)

——TSX01-EX Series

FEATURES

- Fitted devices: 1. NAMUR Sensors; 2. Mechanical Joints.
- Phase-angel and inverse control setting;
- Open circuit detection setting
- Operation Temperature:-25°C to +71°C
- Reliable Performance (MTBF>1,000,000 hours)

PART NUMBER SYSTEM

TS201-EX

- Safety barrier mark
- Transistor output
- Channel number
- Signal style
- Product seriers

GENERAL DESCRIPTION

This Isolation Switching Barrier can detect switch or approach switch's status in locations where hazardous exists; isolate, transmit and output it to safe area. Input and output can be set to inverse control. Approach switch open circuit detection function. Isolation between Input/ Output/Power source.

PRODUCT PROGRAM

Part number	Input(Power)		Output(Hazardous end)		Output (Safe end)	Channel numbers
	Voltage(VDC)		Voltage	Short Circuit Current		
	Typ.	Range	Typ.			
TS101	24	18-36	8VDC	About 8mA	Transistor Output	1
TS201						2
TS101-EX						1
TS201-EX						2

ELECTRICAL SPECIFICATIONS

Common parameter	Operation voltage	18-36VDC
	Input frequency	About 2.4W
	Power indicating	LED light (green) ON when operating
Hazardous Area	Input Signal	Switch status of NAMUR sensor, mechanical joint etc
	Distribution voltage	About 8V (Open status)
	Short circuit current	About 8mA
	Input switching frequency	≤5kHz
	Open circuit threshold current	≤0.1mA
	Switching threshold	Typ:1.55mA (hysteresis:0.2mA)
Safe Area	Output signal	Transistor output (Passive pulse)
	External source	≤40VDC
	Driving capability	≤40mA(Build-in short circuit protection)
	Transistor collector	High Level: Vcc ; Low Level: ≤2.5VDC
	Transistor Emitter	High Level: Vcc-2.5V ; Low Level: ≤0.5VDC

TRANSMISSION SPECIFICATIONS

Under phase-angel control (K2 K3 OFF)	Input loop current > 2.1mA, transistor output open, channel indicator light (red) ON.
	Input loop current < 1.2mA, transistor output close, channel indicator light (red) OFF.
Under inverse control (K2 K3 ON)	Input loop current > 2.1mA, transistor output close, channel indicator light (red) OFF.
	Input loop current < 1.2mA, transistor output open, channel indicator light (red) ON.
When connected with NAMUR sensor	Input loop current < 0.05mA, open circuit alarm, channel red indicator light (yellow) ON.
When connected with common contact joint switch	To achieve open circuit detection function, a 10KΩ resistor must be connected to the switch in parallel.
Note: K2 is setup channel1 to be reverse or not ,K3 is setup channel2 to be reverse or not.	

ISOLATION SPECIFICATIONS

Five-port isolation	Output ~ Input: 2.5KVAC Power Supply ~ Input: 2.5KVAC Power Supply ~ Output: 1.5KVAC Output 1 ~ Output 2: 1.5KVAC Input 1 ~ Input 2: 1.5VAC
Electrical isolation	Three-port isolation (Single channel); Five-port isolation(Dual channels)
Isolation strength	2.5KVAC (test for 1minute, humidity < 70%)
EMC	EN61326

STANDARDS & CERTIFICATES

Explosion protection Certificate mark	[Exia]IIC
Explosion protection certificate parameters	Between the pin 11 and 12: Um=250VAC/DC Uo=10.5VDC Io=5.3mA Po=14mW Co=1.68μF Lo=1000mH
Explosion protection certificate agency	CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS
Explosion qualified NO.	CNEx08.0003

OTHER SPECIFICATIONS

Ambient temperature	Operation temperature:-25°C ~ +71°C
	Transport and Storage temperature:-50°C ~ +105°C
Mounting	35mm DIN-rail package, hot plug, thickness: 22.5mm, Plastic UL94-V0
Safety Grade	IP20(IEC60529 / EN60529)
Weight	About 128g

CONNECTION

In intrinsic safety explosion protection systems, isolating barrier belongs to affiliated device. It is installed at safe area, as a connection between intrinsic safety devices in the hazardous area and non-intrinsic safety devices in the safe area. By limiting the energy to a certain safe amount, it ensures the safety of in spot devices and people.

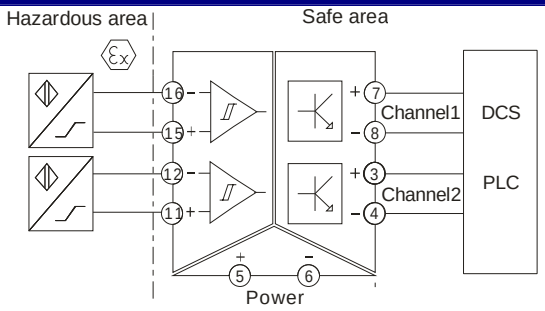
Selection regulations for intrinsic safety explosion protection system:

1. The explosion protection grade of the barrier must be equal to or higher than that of in spot intrinsic safety explosion protection device.
2. Take inconsideration of hazardous end output resistance and loop resistance, ake sure the barrier's output voltage meets the minimum operation voltage requirement of in spot intrinsic safety device.
3. The safety parameters of Barrier's intrinsic safety end meets:
   Uo ≤ UI, Io ≤ Iin, Po ≤ Pin
   Co ≥ Cin, Lo ≥ Lin
4. Select suitable Safety barrier which matches the in spot intrinsic safety device for the power's phase, signal type and transmission mode.
5. Apply necessary protections, avoid influence the in spot intrinsic safety device's operation from leakage current that generated by safety barrier.

Operation notes:

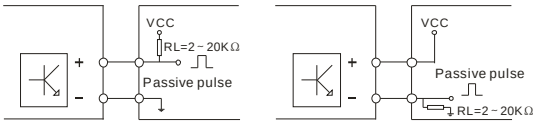
1. Please read the user manual carefully before using. If any questions please contact our technical support department.
2. Please do not use this product in hazardous area.
3. The power supply of this product should be 24VDC power source. It is forbidden to use 220VAC power supply.
4. To avoid invalid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

APPLICATION CIRCUIT DIAGRAM & PIN DESCRIPTION



Note:In single model channel2 is invaid

Transistor output mode and connections (safe area):



Transistor collector output　　Transistor Emitter output

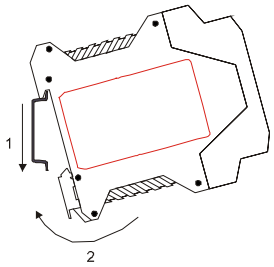
INSTALLATION & DISASSEMBLY

Installation

DIN35mm standard rail installation:

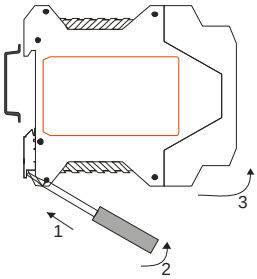
1.Insert the top of the instrument card in the rail;

2.Push the bottom of the instrument into the rail.



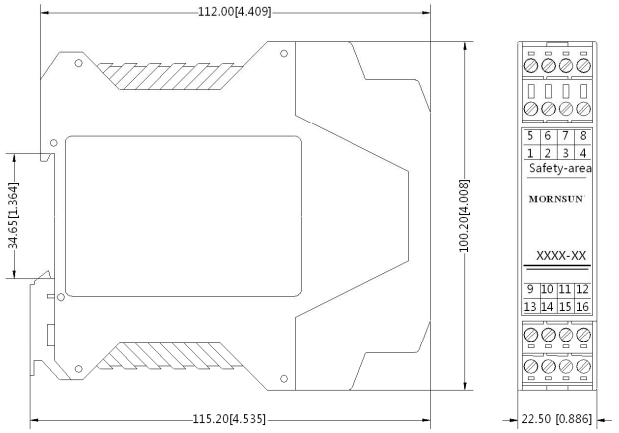
Disassembly

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



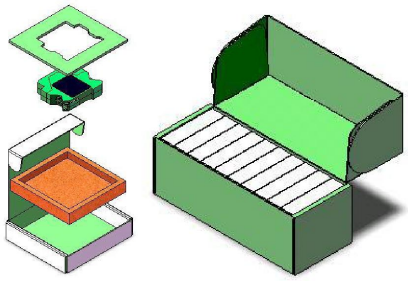
PACKAGING DIMENSION & PACKAGING DIAGRAM

MECHANICAL DIMENSIONS



Note:
Unit:mm[inch]
Wire range : 28-12 AWG
General tolerances:±1.00[±0.039]

PACKAGE DIAGRAM



Note :
Unit:mm[inch]
Small white box:L*W*H=165*155*40
Packaging quantity: 1pcs
Inner carton:L*W*H=425*175*160
Packaging quantity: 10 pcs
Outer carton:L*W*H=560*450*520
Packaging quantity: 90pcs

Note:

1. All specifications are 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. All characteristics are for listed models, and non-standard models may perform differently. Please contact our technical support for more details.
4. Please contact our technical support for any specific requirement.
5. Specifications of this product are subject to changes without prior notice.

MORNSUN Science & Technology Co.,Ltd.
Address: No. 5, Kehui St. 1, Kehui development center, Science Ave., Guangzhou Science City, Luogang district, Guangzhou,P.R.China.
Tel: 86-20-38601850
Fax:86-20-38601272
E-mail: info@mornsun.cn
Http://www.mornsun-power.com