MORNSUN®

ULTRA-THIN ANALOG SIGNAL OUTPUT DETECTION SAFETY BARRIER

—— TAxxxW-EX-xx Series

PART NUMBER SYSTEM

TA x x x W - E X - x x

- Output signal
- Input signal
- Isolation barrier mark
- Slim case
- Serial number
- Channel configuratior
- Analog signal
- Transducer type

FEATURES

- ●Three-port isolation (input, output and power supply)

(intrinsically safe end and non-intrinsically safe end: 2.5KVAC/60S)

- ● High accuracy (0.1% F.S.)
- ● High linearity (0.1% F.S.)
- ●Low temperature drift(50PPM/°C)
- ●Excellent EMC performance
- ●The products of current input and voltage output support HART communication protocol
- ●With the base power supply
- ●High reliability(MTBF>500,000 hours)

GENERAL DESCRIPTION

Ultra-thin analog signal Output Isolation safety Barrier, the current (voltage) signal come from the safe area is processed linearly, and then isolation transmission to the dangerous areas and output in a standard current signal .Limiting the energy of intrinsically safe end string into hazardous area, to ensure that the system is intrinsically safe explosion-proof performance.

Connection of field devices: 2-wire or 3-wire isolation transducer, industrial standard current source.

Connection of the work regions: Zone 0, Zone 1, Zone 2; IIA, IIB, IIC, and hazardous area of T4~T6.

SELECTION GUIDE

TA	x	xx	W-	EX-	X	X	Description
Channels	1						1 input 1 output
	6						1 input 2output
Serial Number		00					Current signal input, Current source or voltage source output
		02					Current signal input,2-wire current source output
		05					(Distribution)2-wire current input, current source or voltage source output
		40					voltage signal input, current source or voltage source output
		42					voltage signal input, 2-wire current source output
Package Mark							Slim case
Explosion Mark							Isolation barrier explosion symbol
Input Signal					1		4~20mA
					2		0~20mA
					3		2~10V
					4		1~5V
					5		0~10V
					6		0~5V
Output Signal						1	4~20mA
						2	0~20mA
						3	2~10V
						4	1~5V
						5	0~10V
						6	0~5V

ELECTRICAL CHARACTERISTICS

Power Supply	Input voltage	18~30VDC（Typical 24VDC）
	Power Dissipation	≤1.5W(TAx4xW-EX， TAx00W-EX , TAxx2W-EX)
		≤2.4W(TAx05W-EX)
	Power Protection	Reverse protection, over- current protection
Distribution (Isolators with isolated power output)	No-load Voltage	24V±10%
	Full-load Voltage	>16V（Isolation power output current @ 20mA）
Field Area	Input Signal	See selection guide
	Input Impedance	≤ 4V (Current input @20mA)
		≥100KΩ（Voltage input）
Control Area	Output Signal	See selection guide
	Load	≤500Ω(@maximum output current)
		≥2000Ω（@maximum output voltage）
	Ripple & Noise	≤60mVp-p (20MHz bandwidth)

TRANSMISSION CHARACTERISTICS

Zero Offset	0.1%F.S.
Accuracy	0.1%F.S.
Gain Error	0.1%F.S.
Temperature Drift	0.0050%F.S./℃(-25～+71℃ operating temperature range)

ISOLATION CHARACTERISTICS

Electrical Isolation	Three-port isolation (input, output and power supply)
Isolation Voltage	2500VAC between application field and control cabinet
	2500VDC between signal input or output and power supply
	2500VDC between channels (multi-channel products)
Test conditions: testing for 1minute, humidity < 70%, leakage current < 1mA	

EMC CHARACTERISTICS

EMS	ESD	IEC/EN61000-4-2 Contact ±4KV/Air ±8KV	perf. Criteria B
	RS	IEC/EN61000-4-3 10V/m	perf. Criteria A
	EFT	IEC/EN61000-4-4 Power Port±2KV	perf. Criteria B
		IEC/EN61000-4-4 Signal Port±1KV	perf. Criteria B
	Surge	IEC/EN61000-4-5 Power Por±1KV/2KV	perf. Criteria B
		IEC/EN61000-4-5 Signal Port±1KV(Line to GND)	perf. Criteria B
	CS	IEC/EN61000-4-6 3 Vr.m.s	perf. Criteria A

STANDARDS & CERTIFICATES

Explosion Protection	[Exia Ga] IIC
Explosion Protection Certification Parameters	Um : 250VAC/DC 1) TA100W-EX , TA102W-EX , TA600W-EX , TA602W-EX ; (Between the pin 3 and 4): Uo : 10.5VDC , Io: ------ 2) TA105W-EX , TA605W-EX ; (Between the pin 4 and 1): Uo : 28VDC , Io : 115mA , Po : 0.81W , Co : 0.05μF, Lo : 2.2mH . (Between the pin 3 and 1): Uo : 10.5VDC , Io : ------ 3) TA140W-EX , TA640W-EX;(Between the pin 4and 3) Uo : 13VDC , Io : 7mA , Po : 23mW , Co : 0.8μF , Lo:100mH .
Explosion Protection Certification Agency	CHINA NATIONAL QUALITY SUPERVISION AND TEST CENTRE FOR EXPLOSION PROTECTED ELECTRICAL PRODUCTS
Explosion Qualified NO.	CNEx13.3120

OTHER CHARACTERISTICS

Ambient Temperature	Operating temperature range:-25~+71℃
	Transport and storage temperature:- 40~+85℃
Package	35mm DIN-rail package: T-rail card package (DIN50022), pluggable connection pin, thickness 12.50mm
Safety Class	IP20(IEC60529 / EN60529)
Weight	1 input 1 output: about 100g;1 input 2 output: about 128g

CONNECTION

1. Connection used dismountable terminals;
2. Cross section area of wiring: 0.5mm^2 ~2.5 mm^2;
3. The length of bare wire is about 8mm, locked up by the M3 bolt.

Selection guidelines for intrinsically safe explosion protection system

1.The explosion protection grade of the barrier must be not less than that of intrinsically safe explosion protection device in spot.

2.Take inconsideration of hazardous end output resistance and loop resistance make sure the barrier output voltage meets the minimum operation voltage requirement of intrinsically safe device in spot.

3.The safety parameters about intrinsically safe end meets:

Uo ≤ UI, Io ≤ Iin, Po ≤ Pin

Cc ≤ Co-Ci, Lc ≤ Lo-Li

4.Select suitable safety barrier which matches the intrinsically safe device in spot according to the power polarity, signal type and transmission mode about the device.

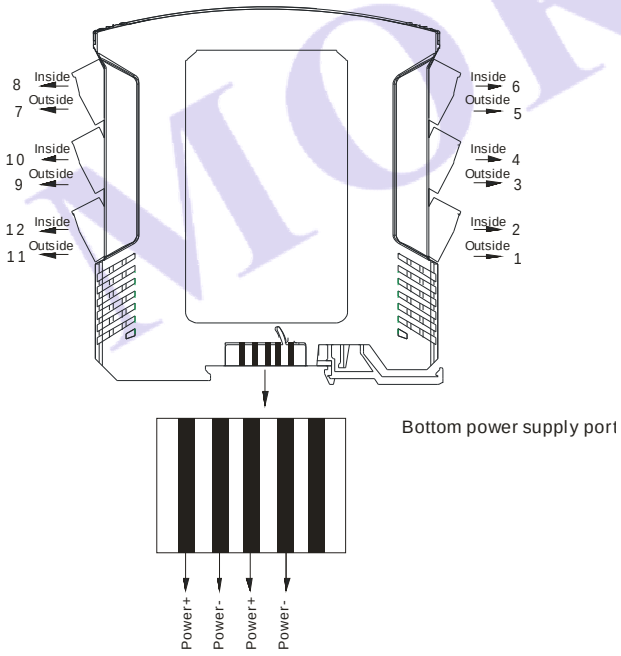
5.Much more protection is required, which can avoid the influence of the leakage current generated by safety barrier on intrinsically safe device in spot.

6. The wires leading to dangerous field should be constrainted in blue intrinsically safe wires, and its copper cross-section should be more than 0.5mm^2; Insulation intensity should be more than 500VDC.

Operation notes

1. Please do not use this product in hazardous area.
2. The power supply of this product should be 24VDC power source. It is forbidden to use 220VAC power supply.
3. To avoid invalid explosion protection function, or any failure, users disassemble this product is forbidden.

APPLICATION CIRCUIT DIAGRAM & PIN DESCRIPTION

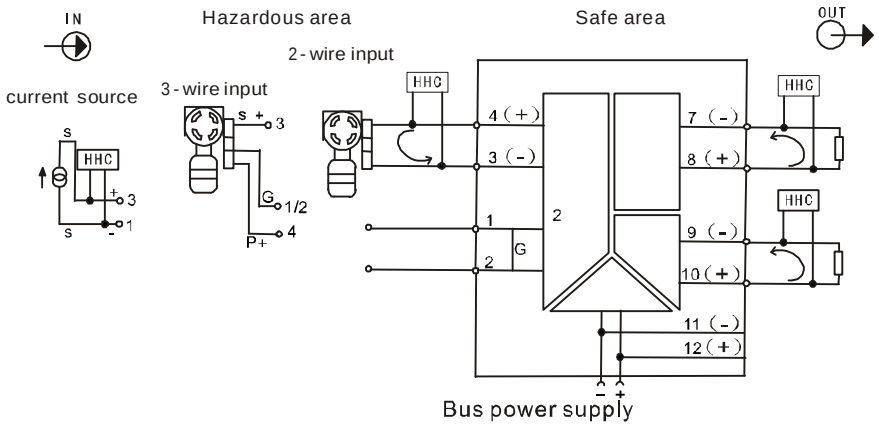


Note: When use bottom power supply, anyone group or both is OK.

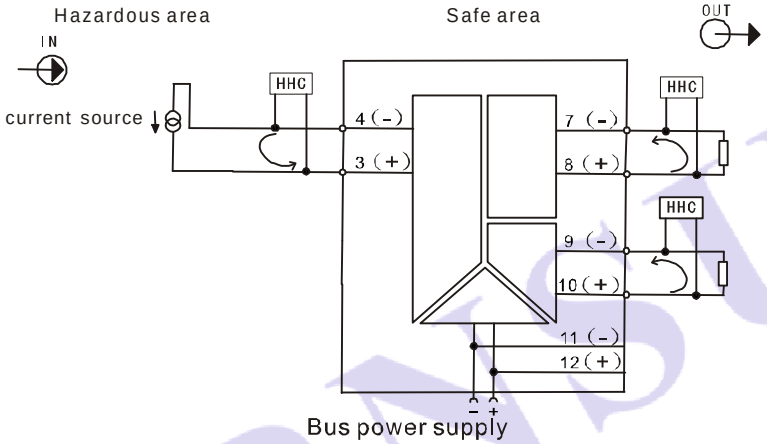
Pins 1, 2, 3, 4, 5, and 6 are in the field area, belong to the dangerous side, use blue terminals;
Pin 7, 8, 9, 10, 11 and 12 are in the control area, belong to the safe side, use green terminals

PIN	TAx4x-EX
1	NC
2	NC
3	Signal input-
4	Signa linput+
5	NC
6	NC
7	Signal 1 output-
8	Signal 1 output+
9	Signal 2 output-
10	Signal 2 output+
11	Power Input-
12	Power Input+

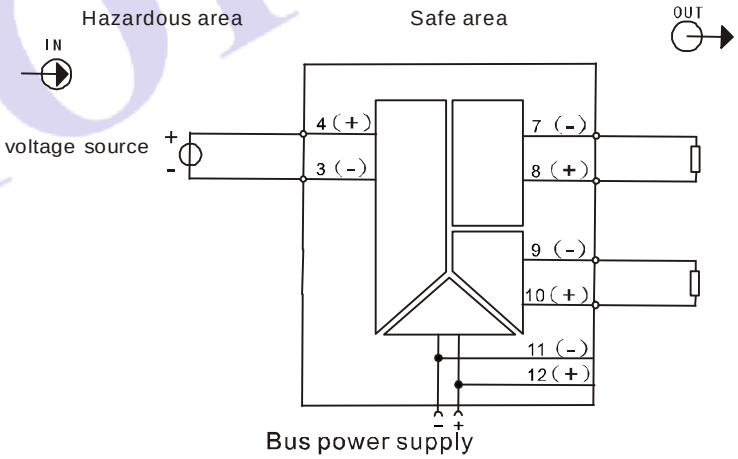
PIN	TAx05W-EX	TAx00W-EX（TAx02W-EX）
1	Signal input-	NC
2	isolated output -	NC
3	Signal input+	Signal input+
4	isolated output+	Signal input-
5	NC	NC
6	NC	NC
7	Signal 1 output-	Signal 1 output-
8	Signal 1 output+	Signal 1 output+
9	Signal 2 output-	Signal 2 output-
10	Signal 2 output+	Signal 2 output+
11	Power Input-	Power Input-
12	Power Input+	Power Input+



TA605W-EX-xx



TA600W-EX-xx



TA640-EX-xx

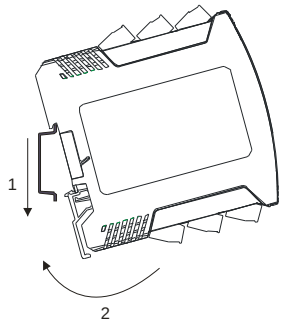
Note:
1. S: signal;
G:GND;
P: Power distribution;
The products of current input and voltage output support HART communication protocol.
2. Others:
Please refer to the pin definitions and product labels shell diagram.

INSTALLATION & DISASSEMBLY

Installation

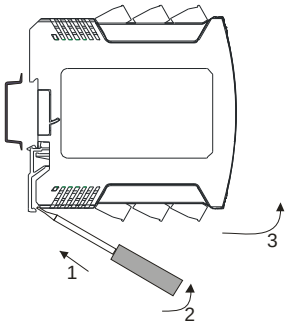
DIN35mm standard rail installation:

1. Insert the top of the instrument card in the rail;
2. Push the bottom of the instrument into the rail.



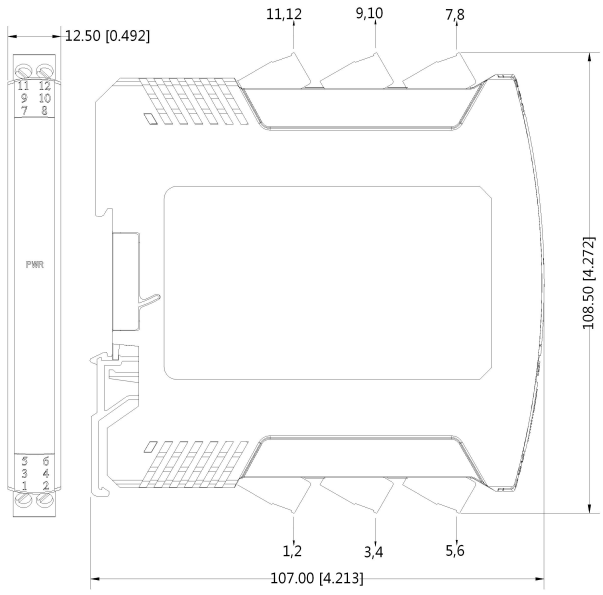
Disassembly

1. Insert a screwdriver between the bottom of the card lock and the rail;
2. Pull up the screwdriver and press the card lock downwards;
3. Pull the instrument out of the rail.



PACKAGING DIMENSION & PACKAGING DIAGRAM

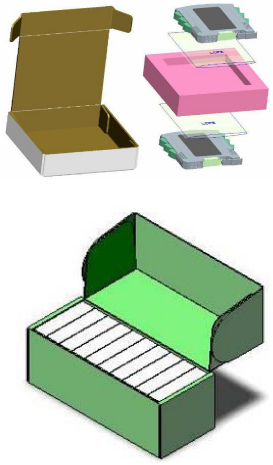
MECHANICAL DIMENSIONS



Note: Unit:mm tolerances:±0.50mm

THIRD ANGLE PROJECTION

PACKAGE DIAGRAM



Small white box dimensions: L*W*H=165*155*40mm
Packaging Quantity: 2pcs
Inner carton dimensions: L*W*H=425*175*160mm
Packaging Quantity: 20 pcs
Outer carton dimensions: L*W*H=560*450*520mm
Packaging Quantity: 180 pcs

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. All characteristics are meant for listed model, non-standard models may perform differently, you can contact MORNSUN FAE for more details.
4. Contact us for your specific requirement.
5. Specifications are subject to change 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