

**Relay Output Terminal Unit**






**TUA711-DOR32**

**User manual**

**IM23H66-E**














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Symbol Definition	
	<b>WARNING:</b> Indicates information that a potentially hazardous situation which, if not avoided, could result in serious injury or death.
	<b>RISK OF ELECTRICAL SHOCK:</b> Indicates information that Potential shock hazard where HAZARDOUS LIVE voltages greater than 30V RMS, 42.4V peak, or 60V DC may be accessible.
	<b>ESD HAZARD:</b> Indicates information that Danger of an electro-static discharge to which equipment may be sensitive. Observe precautions for handling electrostatic sensitive devices
	<b>ATTENTION:</b> Identifies information that requires special consideration.
	<b>TIP:</b> Identifies advice or hints for the user.

## Safety& Caution Symbols

The following table lists Safety& Caution symbols used on equipments.

No.	Symbol	Description
1		Direct current (DC)
2		Alternating current (AC)
3		Ground (Earth) terminal
4		Protective earth (ground) terminal
5		Reference ground (Earth) terminal
6		Frame or chassis
7		Equipotentiality
8		On (power)
9		Off (power)
10		Caution, risk of electric shock
11		Caution, hot surface
12		Caution, risk of danger
13		Electrostatic sensitive devices (ESD)

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# Relay Output Terminal Unit TUA711-DOR32

## Section 1 Overview

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TUA711-DOR32 is a relay isolated digital output terminal unit of 32 channels, and mainly works with 1 non-redundant or a pair of redundant 32-channel digital output modules DO716-S11. The control digital signal in system is sent to field after isolated by the relay of terminal unit, and mainly used for driving the field devices of high power. The terminal unit can work with the change-over bases MB745-S11 or MB746-S11 via the wire DB37.

Each channel of TUA711-DOR32 has 4 terminals, and supports outputting signals of passive normally open/closed and active normally open. Every channel has the changeable fuse, the power supply has changeable fuse and power indicator light, and the relay has socket. Therefore, user can change and maintain conveniently.

This terminal unit applies DIN rail installation and supports inlet wire of single side.

## Section 2 Specifications

**Table 2-1 Specifications**

Parameter		Instruction
Model		TUA711-DOR32
Type		Relay Output Terminal Unit
Channel		32
Temperature	Work	(-20~70)°C
	Storage	(-40~85)°C
Humidity	Work	10%RH~90%RH, No Condensation
	Storage	5%RH~95%RH, No Condensation
Power Supply	Coil	24V DC $\pm$ 10%
	Contact	24VDC $\pm$ 10% or 220VAC $\pm$ 10%
Fuse	Coil ( for 32 Channels)	2A Pluggable Fuse
	Contact (Every 8 Channels)	10A Pluggable Fuse
	Contact (Per Channel)	1A/250V Pluggable Fuse, 2A or 3.15A can be selected
Relay	Type	HF41F/24-ZST(414)
	Rated Voltage	24VDC
	Operate Voltage	18V
	Release Voltage	1.2V
	Rated Current	7mA
	Rated Resistive Load	6A@250VAC, 6A@30VDC
Dimension (L×W×H)		402.2mm×85.6mm×70.1mm

## Section 3 Usage



### RISK OF ELECTRICAL SHOCK:

The terminals in terminal unit may have high voltage and cannot be touched directly!

### 3.1 Appearance

The appearance of TUA711-DOR32 is shown in Figure 3-1.

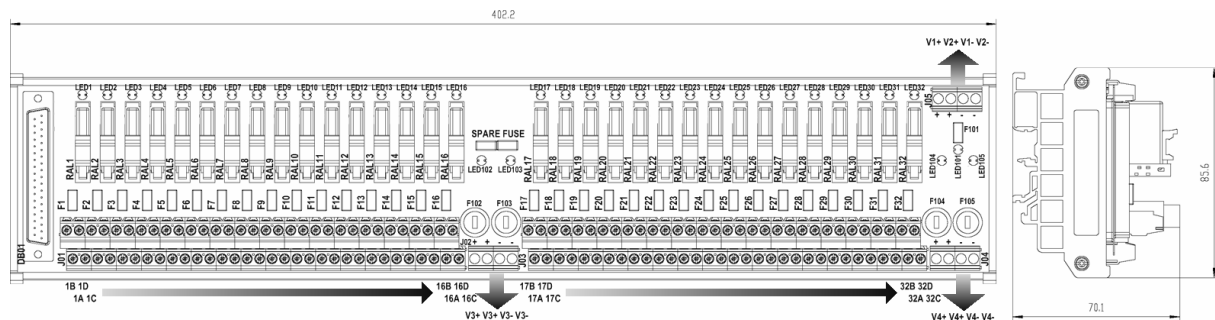


Figure 3-1 Appearance (Unit: mm)




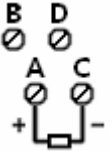
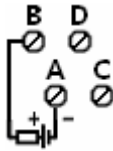
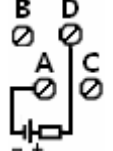
### 3.2 Connectors

Table 3-1 Connectors

Sign	Instruction
DB01	Data Wire Socket of 32-Channel DO Module
J05	Terminal of Coil Power Supply
J02	Terminal of Contact Power Supply (For the Former 16 Channels)
J04	Terminal of Contact Power Supply (For the Later 16 Channels)
J01, J03	Signal Terminal
F1~F32	Channel fuse for both active and passive jumpers. The first channel (CH1) corresponds to F1, the rest is in the same manner (Model: T 1A, 2A or 3.15A can be selected).
F101	Fuse of Coil Power Supply (Model: F 2A)
F102, F103, F104, F105	Fuse of Contact Power Supply, Changeable Fuse of Glass Tube (Model: T 10A)
LED101	Power Indicator Light of Coil Power Supply
LED102, LED103, LED104, LED105	Power Indicator Light of Contact Power Supply
RAL1~RAL32	Pluggable Relay of 32-Channel (Model: HF41F/24-ZST (414) )
LED1~LED32	Indicator Light of 32-Channel (ON: have signal; OFF: No Signal)

### 3.3 Wiring of Signal Connection

Table 3-2 Wiring of signal connection

Signal	Active Normally Open Signal Output	Passive Normally Open Signal Output	Passive Normally Closed Signal Output
Settings of F1~F32	 (Fuse Jump up)	 (Fuse Not Jump)	 (Fuse Not Jump)
Wring of CH1~CH32			



**Attention:**

Please make sure that the fuse settings in signal channel are correct before power on. Otherwise, damage for terminal board or module may be caused.

### 3.4 Interface Features

For active signal output (passive load), plug the corresponding fuse of F1~F32 in the socket (as shown in Figure 3-2), the load connects the A and C terminals of the 4 channel terminals. For passive signal output (active load), F1~F32 cannot be plugged in the socket (as shown in Figure 3-2), and connect the terminals A and B or A and D from the 4 channel terminals according to the field requirements of normally open or normally closed. The circuit is shown in Figure 3-2.



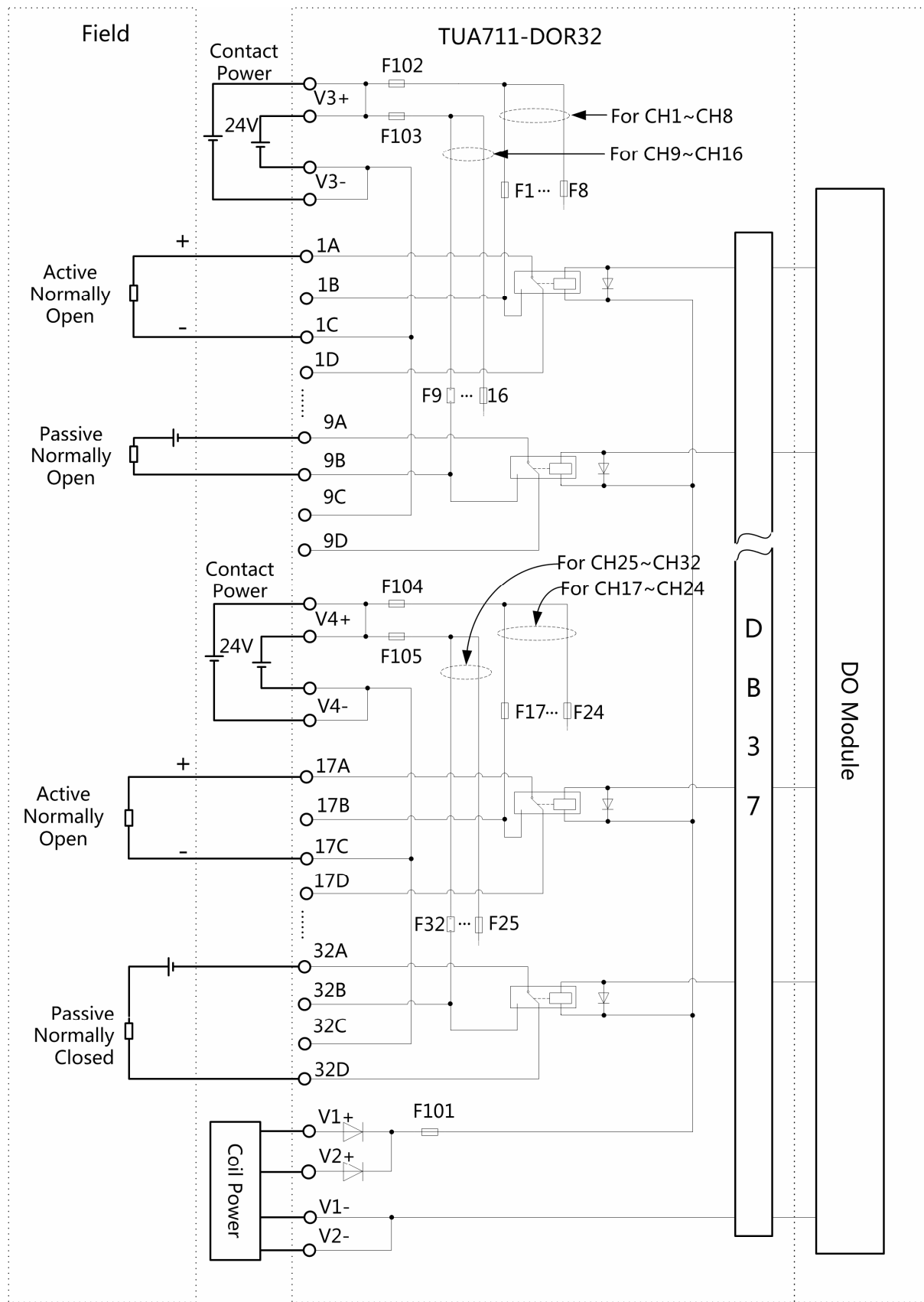


Figure 3-2 Circuit of TUA711-DOR32 (DC)

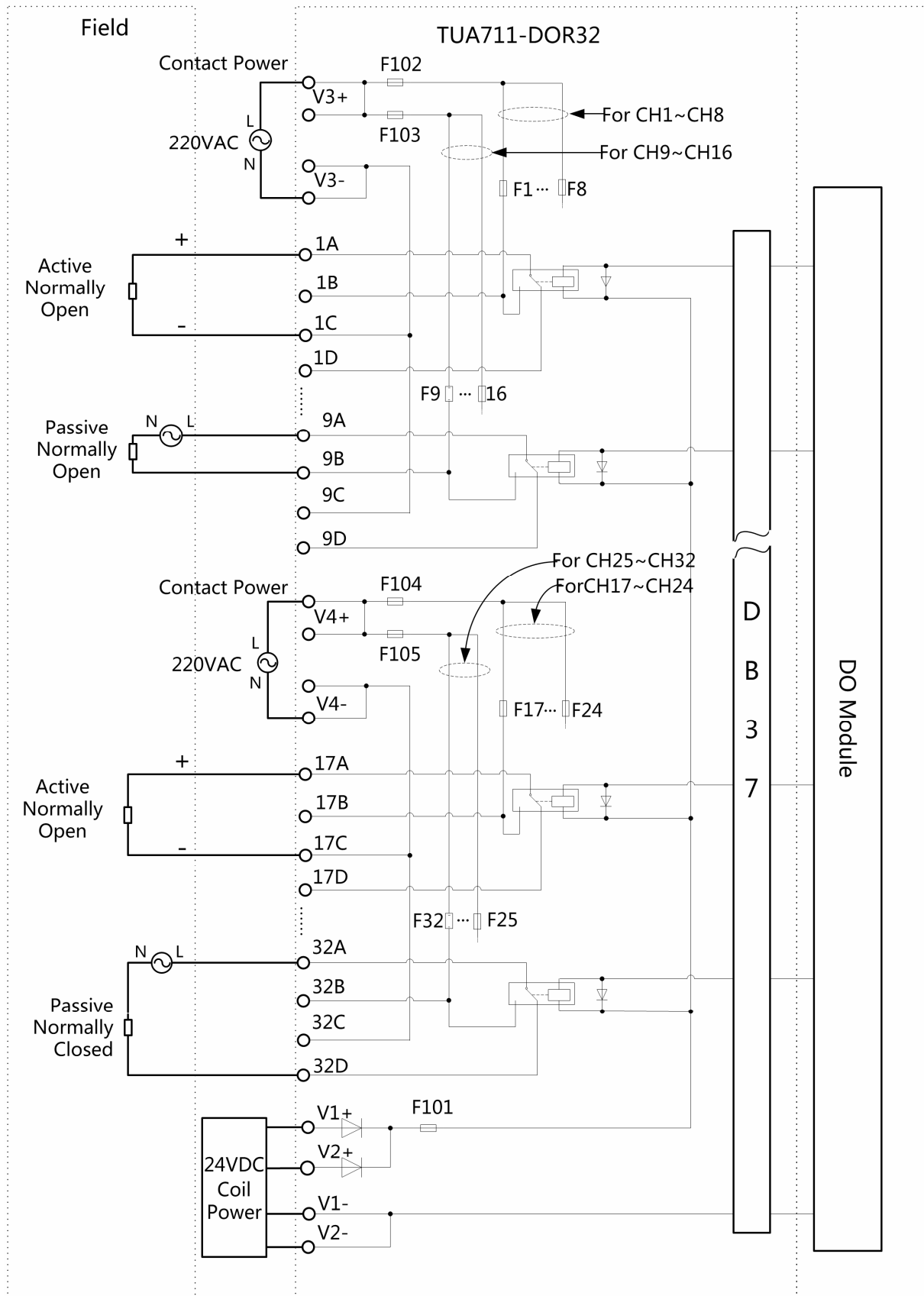


Figure 3-3 Circuit of TUA711-DOR32 (AC)

The maximum section of wire allowed to connect the terminal in TUA711-DOR32 is 2.5mm<sup>2</sup>. The wires with sections of 1mm<sup>2</sup> or 1.5mm<sup>2</sup>, the wire stripping length of 8mm and the tightening torque of (0.5~0.6)Nm are recommended.

### 3.5 Terminal Definition and Wiring

Wiring of TUA711-DOR32 is shown in the table below. If the channel belongs to the former 16 channels, the contact power terminal Vn selects V3, while the later channels select V4. For active signal output, the contact should connect 2 powers of 10A parallel to achieve the performance of 20A power for 16 channels. The “n” of nA, nB, nC and nD refers to channel number. For example, the terminal numbers of CH16 are 16A, 16B, 16C and 16D.

**Table 3-3 Wiring**

Wiring	CH1~16	Terminal	CH17~32	Terminal
<p>A Common terminal (Passive Normally Open -, Active Normally Open +, Passive Normally Closed)</p> <p>B Passive Normally Open +</p> <p>C Active Normally Open -</p> <p>D Passive Normally Closed +</p> <p>F Passive Normally Open -</p> <p>Vn Contact Power Terminal (n is 3/4)</p>	CH1	1A	CH17	17A
		1B		17B
		1C		17C
		1D		17D
	CH2	2A	CH18	18A
		2B		18B
		2C		18C
		2D		18D
	CH3	3A	CH19	19A
		3B		19B
		3C		19C
		3D		19D
	CH4	4A	CH20	20A
		4B		20B
		4C		20C
		4D		20D
	CH5	5A	CH21	21A
		5B		21B
		5C		21C
		5D		21D
	CH6	6A	CH22	22A
		6B		22B
		6C		22C
		6D		22D
	CH7	7A	CH23	23A
		7B		23B
		7C		23C
		7D		23D
	CH8	8A	CH24	24A

Wiring	CH1~16	Terminal		CH17~32	Terminal	
		8B			24B	
		8C			24C	
		8D			24D	
	CH9	9A		CH25	25A	
		9B			25B	
		9C			25C	
		9D			25D	
	CH10	10A		CH26	26A	
		10B			26B	
		10C			26C	
		10D			26D	
	CH11	11A		CH27	27A	
		11B			27B	
		11C			27C	
		11D			27D	
	CH12	12A		CH28	28A	
		12B			28B	
		12C			28C	
		12D			28D	
	CH13	13A		CH29	29A	
		13B			29B	
		13C			29C	
		13D			29D	
	CH14	14A		CH30	30A	
		14B			30B	
		14C			30C	
		14D			30D	
	CH15	15A		CH31	31A	
		15B			31B	
		15C			31C	
		15D			31D	
	CH16	16A		CH32	32A	
		16B			32B	
		16C			32C	
		16D			32D	
	Contact Power of Former 16 Channels	J02 (24VDC or 220VAC)		Contact Power of Later 16 Channels	J04 (24VDC or 220VAC)	
		V3+, V3+, V3-, V3-			V4+, V4+, V4-, V4-	
	Coil Power	J05 (24VDC)				
		V1+, V2+, V1-, V2-				

## Section 4 Engineering Application

### 4.1 Notes

- When the load in TUA711-DOR32 is active load, the terminals J02 and J04 will not be powered, and the indicator lights LED102, LED103, LED104 and LED105 will be off.
- When the load in TUA711-DOR32 is active load, J02 and J04 should connect 2 different groups of 10A parallel power to achieve the performance of 20A power for 16 channels.
- If the contact power in TUA711-DOR32 is 220V AC, terminal J02 (or J04) should only be connected to one AC power supply, and the + terminal is connected to L, the - terminal is connected to N.
- Functions terminal boards achieve and wiring methods of this version (V11.00.00) are compatible with previous version. They are mutually alternative. But, relays of this version are not compatible with the previous. Don't mix up.
- Don't make relays fall down from on high or suffer shock to avoid performance degradation.
- Don't use relays near high-intensify magnetic field to avoid relay's mistaken acts.
- Relays are better to be used in a dust-free, SO<sub>2</sub>-free and H<sub>2</sub>S-free environment.

### 4.2 Troubleshooting

- When the input power of J05, J02 and J04 is normal but the LED101, LED102, LED103, LED104 and LED105 are off, the power loop has fault. Please check the fuses F101, F102, F103, F104 and F105.
- Relay fault analysis is shown in the table below.

**Table 4-1 Relay trouble-shooting list**

Failure phenomena	Failure mode	Causes	Solution
Relay	Coil side has no voltage or insufficient voltage	Power supply fault; Power supply circuit opening	Check power supply firstly; Check power supply circuit; Use a new relay to have a test.
	Relay fault	Fall down or suffer shock	
Relay act unstable	Unstable power	Large power ripple	Check power supply firstly; Use a new relay to have a test; check the control program.
	Unstable parameters	Fall down or suffer shock	
	Relay mistaken act	Control program error	
Contact adhesion	Over-current	Large surge current	Replace the old one with a relay marked with larger external load capacitance.

Failure phenomena	Failure mode	Causes	Solution
Contact unclosed	No current on contact side	Movable contact damage or load circuit opening	Check load circuit; Use a new relay to have a test.
	Contact resistance is too large.	Contact oxidization or	

## Section 5 Revision

**Table 5-1 Retrofit list of the version**

Document Version	Applicable Product Version	Remarks
V1.0(20131012)	TUA711-DOR32 V10.00.00 and later versions	The first version.
V1.1(20140428)	TUA711-DOR32 V10.00.00 and later versions	Add attention, modify relay model and appearance
V1.2(20160503)	TUA711-DOR32 V10.00.00 and later versions	Modify the description about active signal output (passive load) and passive signal output (active load) in Interface Features
V1.3(20170721)	TUA711-DOR32 V10.00.00 and later versions	Add wire specifications Modify the sign of fuse in appearance Add code
V1.4(20210206)	TUA711-DOR32 V11.00.00 and later versions	Modify size and relay
V1.5(20220707)	TUA711-DOR32 V11.00.00 and later versions	Revised error description