






Relay Input Terminal Unit
TU713-R Series
User manual
IM23H72-E

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

Security& Caution Symbols

The following table lists Security& 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 Input Terminal Unit TU713-R Series

Section 1 Description

TU713-R is a 16-channel relay isolated switch value input terminal board, which can be used for one non-redundant or a pair of redundant DI711-S card, or one non-redundant DI713-S card . The field switch signal will be sent to the DI711-S or DI713-S card after being isolated by the relay of the terminal board. The terminal board is connected to the switch base MB745-S or MB746-S through DB37 line.

TU713-R series terminal board has two types: TU713-R1200 and TU713-3200. TU713-R1200 is a 24VDC relay terminal board, which is connected to the 24VDC contact signal, while the TU713-R3200 is a 220VAC relay terminal board, which is connected to the 220VAC contact signal.

Section 2 Technical Specifications

Table 2-1 technical specifications of TU713-R

Type	TU713-R1200	TU713-R3200
Channel number	16	16
Rated voltage	24VDC	220VAC, 50Hz±5%~60Hz±5%
Working input voltage	(18~30)VDC	(185~265)VAC, 50Hz±5%~60Hz±5%
Input electric level	ON:>18VDC OFF:<3VDC	ON:>185VAC OFF:<60VAC
Current consumption of each channel	23mA(24V typical value)	5mA(220V typical value)
Contact type impedance	ON:<500Ω OFF:>10kΩ	ON: <5KΩ OFF: >100KΩ

Section 3 Interface Feature

3.1 24VDC passive contact

When 24V passive contact input is adopted as connection method, 17th and 18th terminals of JP1 and 40th and 41th terminals of JP2 are in short connection respectively. Connect redundant 24V DC to the 20th, 21th, 22th, 23th terminals of J3, and connect the channel terminal to passive contact signal. The schematic diagram is shown in Figure 3-1.

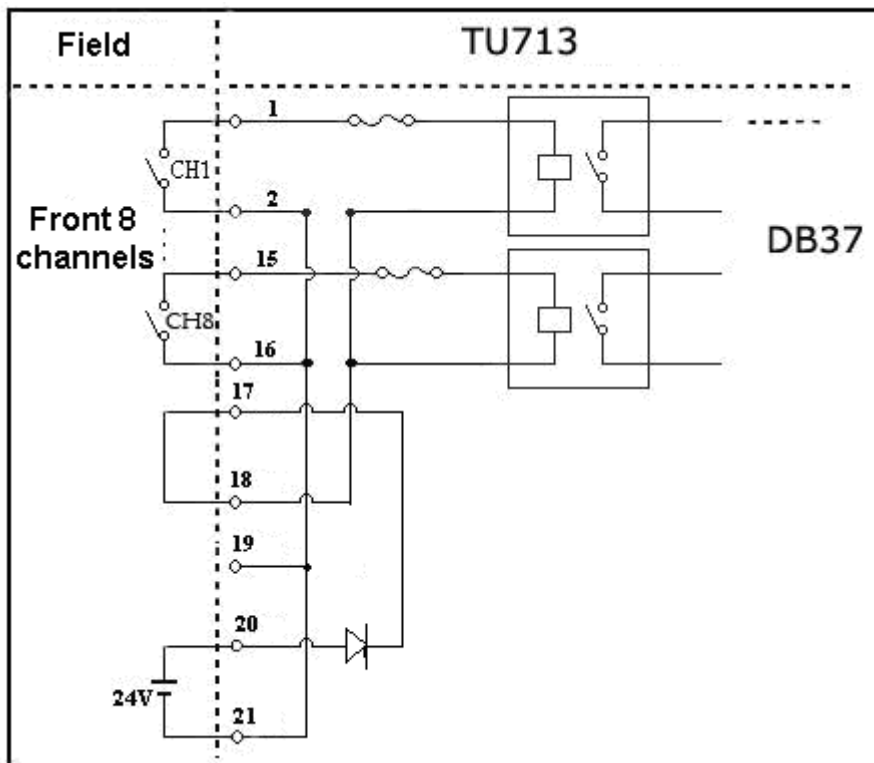


Figure 3-1 Schematic diagram of 24V passive contact signal connection

3.2 24VDC active contact

When 24V active contact is adopted as connection method, the 18th and 19th terminals of JP1 and 41th and 42 th terminals of JP2 are in short connection respectively, and connect the channel terminal to active contact signal. The schematic diagram is shown in Figure 3-2.

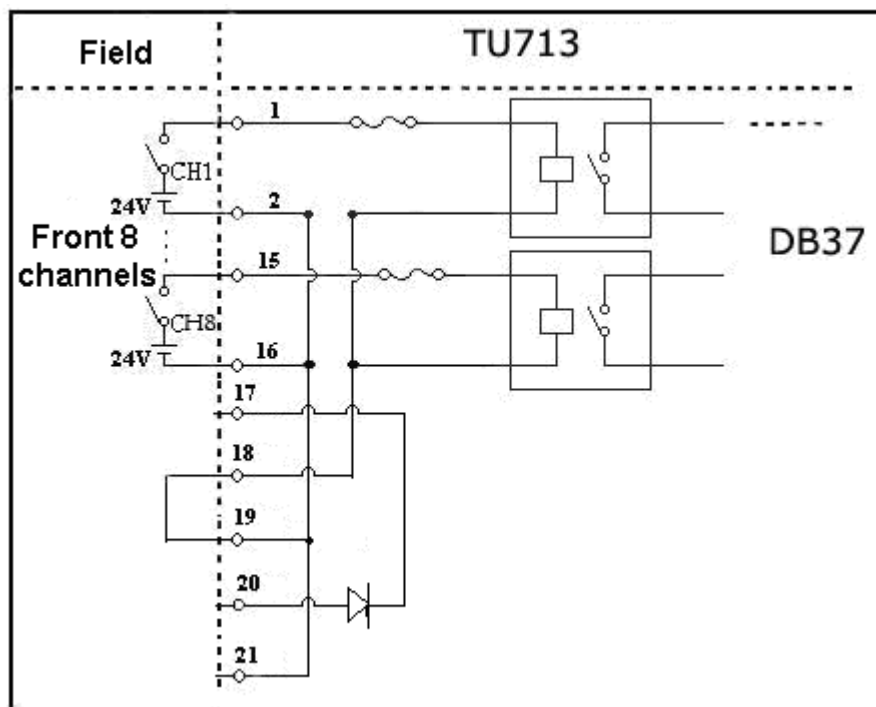


Figure 3-2 Schematic diagram of 24V active contact signal connection

3.3 220 VAC passive contact

When 220V passive contact input is adopted as connection method, the 17th and 18th terminal of JP1, 40th and 41th terminal of JP2 are in short connection respectively. Connect the 43 th and 44th terminal of J4 to 220V, and connect the channel terminal to passive contact signal. The schematic diagram is shown in Figure 3-3.

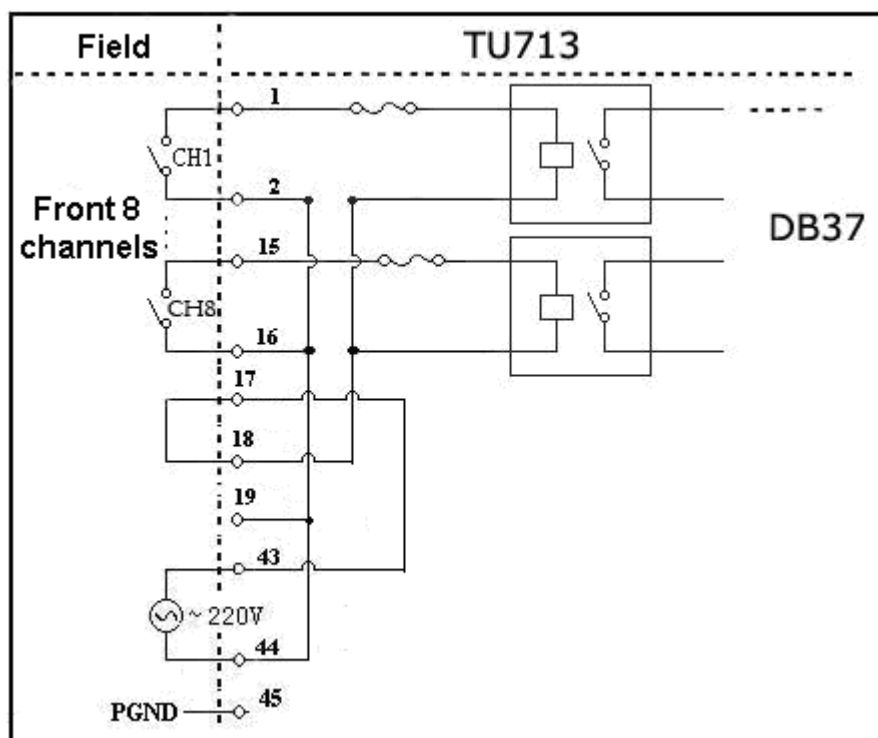


Figure 3-3 Schematic diagram of 220V passive contact signal connection

3.4 220 VAC active contact

When 220V active contact input is adopted as connection method, 18th and 19th terminal of JP1 and the 41th and 42 th terminal of JP2 are in short connection respectively. Connect the channel terminal to the 220VAC voltage signal. The schematic diagram is shown in Figure 3-4.

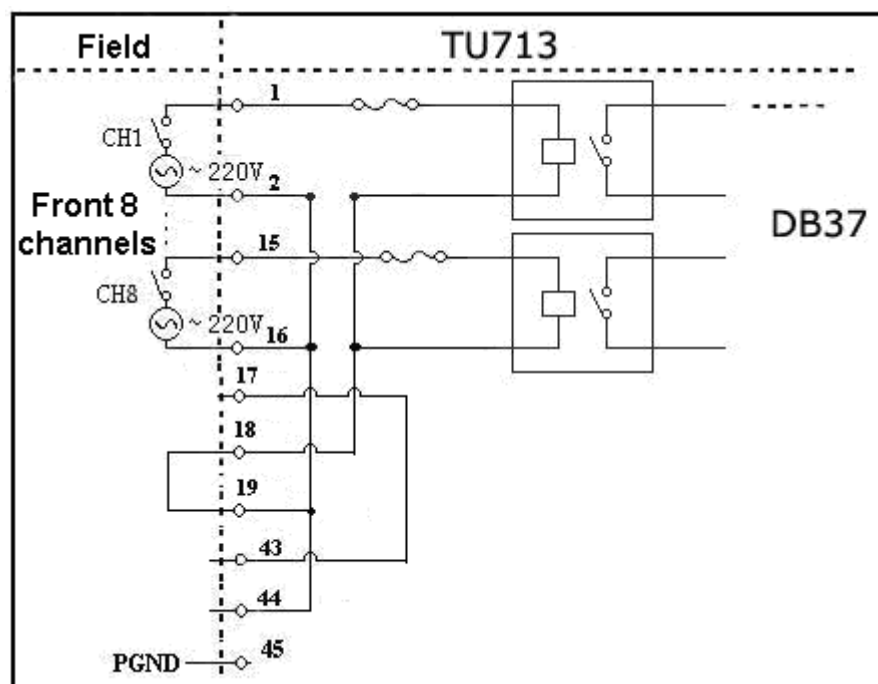


Figure 3-4 Schematic diagram of 220V active contact signal connection

Section 4 Usage Instruction



RISK OF ELECTRICAL SHOCK:

Don't touch the terminal board directly to avoid the high voltage shock.

4.1 External dimension of TU713-R

Length: 153.5mm Width: 151.5mm

4.2 External structural diagram of TU713-R

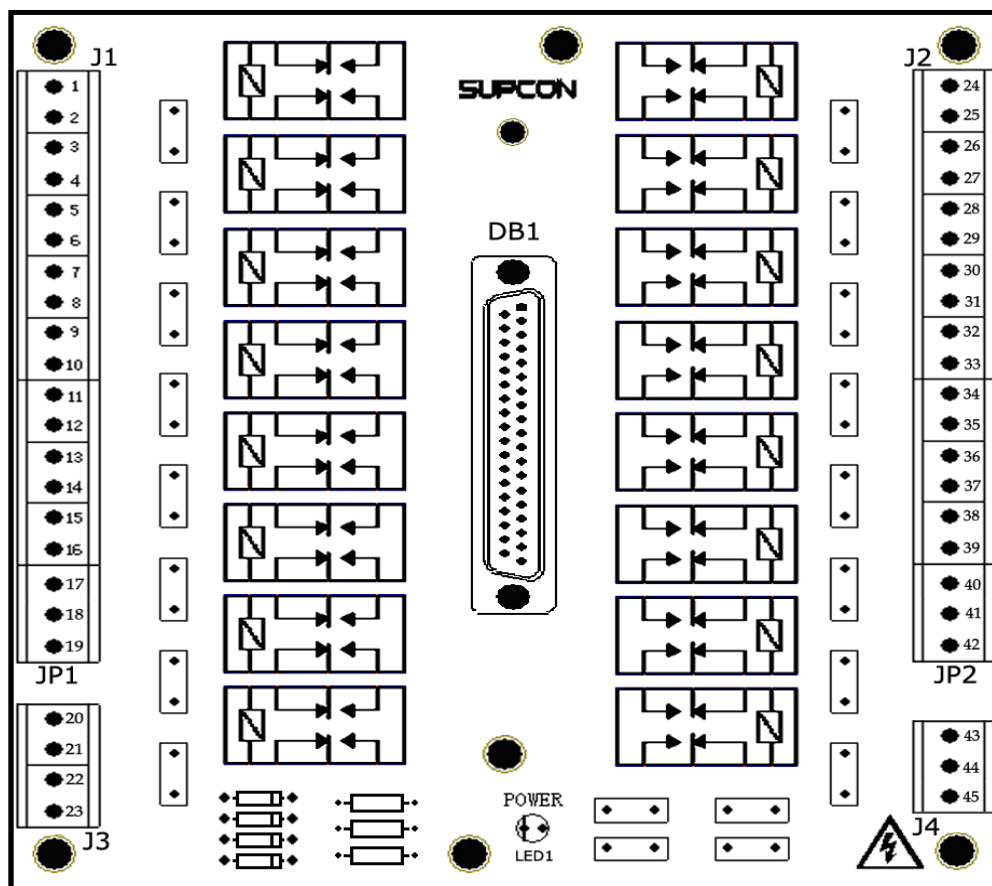


Figure 4-1 External structural diagram of TU13-R terminal board

The J3 connection terminal of TU713-R1200 is 24VDC external power distribution connection terminal. The 45th terminal of J4 connection terminals is shielding ground PGND. When LED1 is passive contact, it is input indicator. JP1 and JP2 are connection terminals of passive contact and active contact respectively.

J4 connection terminal of TU713-R3200 is 220VAC external power distribution connection terminal. The 45th terminal is shielding ground PGND. When LED1 is passive contact, it is indicator of 220VAC distribution. JP1 and JP2 are connection terminals of passive contact and

active contact respectively.



RISK OF ELECTRICAL SHOCK:

J1, J2 and J4 connection terminals may carry high voltage. Direct body contact is forbidden.

4.3 Socket connector

Table 4-1 socket connectors in TU713-R1200

Mark	Instruction
DB1	Data connection socket
J1	Connection terminals of the first 8 channels
J2	Connection terminals of the latter 8 channels
J3	Connect redundant 24V voltage if passive contact connection is used.
J4	Connect the 45th terminal to PGND, and leave the other terminals suspended.
JP1	Connection terminals provided for the first 8 channels with including passive contacts and active contacts
JP2	Connection terminals provided for the latter 8 channels with including passive contacts and active contacts

Table 4-2 Plug Instruction of TU713-R3200 terminal board

Symbol	Instruction
DB1	Data connection socket
J1	Connection terminal of the first 8 channels
J2	Connection terminal of the latter 8 channels
J3	Unused
J4	Terminal connected to AC 220V voltage, 45th terminal connected to PGND
JP1	Connection terminal provided for the first 8 channels with including passive contact and active contact
JP2	Connection terminal provided for the latter 8 channels with including passive contact and active contact

4.4 Connections of signal access mode

Table 4-3 Connection instruction of TU713-R signal access mode selection

Label	Instruction
JP1	The connection configuration of the passive contact and active contact selection mode of the first 8 channels: Terminals 17 and 18 in short connection are passive contacts and terminals 18 and 19 in short connection are active contacts.
JP2	The connection configuration of the passive contact and active contact selection mode of the latter 8 channels: Terminals 40 and 41 in short connection are with passive contact, and terminals 41 and 42 in short connection are with active contact.

4.5 Terminals definition & connection

the first 8 channels and the latter 8 channels are group isolated. Active and passive contact can be set separately. When the connection mode adopts passive contact input, short the 17th and 18th terminal and short 40th and 41th terminal, when the connection mode adopts active contact input, short the 18th and 19th terminal and short 41th and 42th terminal.

4.5.1 Connection description of terminal board TU713-R1200

Table 4-4 Connection terminal instruction of TU713-R1200

Wiring diagram	channel	Desc.	Terminal		Desc.	channel
	CH1	CH-1	1	24	CH-1	CH9
		CH-2	2	25	CH-2	
	CH2	CH-1	3	26	CH-1	CH10
		CH-2	4	27	CH-2	
	CH3	CH-1	5	28	CH-1	CH11
		CH-2	6	29	CH-2	
	CH4	CH-1	7	30	CH-1	CH12
		CH-2	8	31	CH-2	
	CH5	CH-1	9	32	CH-1	CH13
		CH-2	10	33	CH-2	
	CH6	CH-1	11	34	CH-1	CH14
		CH-2	12	35	CH-2	
	CH7	CH-1	13	36	CH-1	CH15
		CH-2	14	37	CH-2	
	CH8	CH-1	15	38	CH-1	CH16
		CH-2	16	39	CH-2	
		CH-a	17	40	CH-a	
		CH-b	18	41	CH-b	
		CH-c	19	42	CH-c	
		POW	20	43	No connection	
		GND	21	44	No connection	
		POW	22	45	PGND	
		GND	23			

4.5.2 Connection description of terminal board TU713-R3200

Table 4-5 Connection terminal instruction of TU713-R3200

Wiring diagram	channel	Desc.	Terminal		Desc.	channel
220VAC passive contact	CH1	CH-1	1	24	CH-1	CH9
		CH-2	2	25	CH-2	
	CH2	CH-1	3	26	CH-1	CH10
		CH-2	4	27	CH-2	

Wiring diagram		channel	Desc.	Terminal		Desc.	channel
<p>220VAC active contact</p>		CH3	CH-1	5	28	CH-1	CH11
			CH-2	6	29	CH-2	
		CH4	CH-1	7	30	CH-1	CH12
			CH-2	8	31	CH-2	
		CH5	CH-1	9	32	CH-1	CH13
			CH-2	10	33	CH-2	
		CH6	CH-1	11	34	CH-1	CH14
			CH-2	12	35	CH-2	
		CH7	CH-1	13	36	CH-1	CH15
			CH-2	14	37	CH-2	
		CH8	CH-1	15	38	CH-1	CH16
			CH-2	16	39	CH-2	
			CH-a	17	40	CH-a	
			CH-b	18	41	CH-b	
			CH-c	19	42	CH-c	
			No connection	20	43	220V AC	
			No connection	21	44		
			No connection	22	45	PGND	
			No connection	23			

Section 5 Application

5.1 Application Notice

1. POWER indicator of TU713-R1200 is 24V DC input indicator.
2. When active contact is adopted as the input signal of TU713-R1200 and the J3 connection terminal is not connected to the power, the POWER indicator is off.
3. Power indicator of TU713- R3200 is 220V AC input indicator. When 220V passive power is connected, the indicator will slightly flash when voltage is higher than 50V, and it's a normal phenomenon.
4. When active contact is adopted as the input signal of TU713-R3200, the POWER indicator is off when J4 connection terminal is not connected to the power.

5.2 Fault diagnosis and troubleshooting

If the POWER indicator is OFF when passive contact is adopted as signal input method, please check if the power connection is correct.

Section 6 Revision

Table 6-1 Retrofit list of the version

Document Version	Applicable Product Version	Remarks
V1.0	TU713-R-11.00.00	
V1.1	TU713-R-11.00.00	
V1.2(20151027)	TU713-R-11.00.00	Delete Specification Code
V1.3(20160503)	TU713-R-11.00.00	Modify the base and add DI713-S in the overview
V1.4(20161116)	TU713-R-11.00.00	Add code