






**Transfer Terminal Unit
TUA712-DI16
User Manual
IM23H74-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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Section 4 Revision 10

Transfer Terminal Unit TUA712-DI16

Section 1 Overview

TUA712-DI16 is a 16-channel 220V AC digital input module transfer terminal board, and mainly used in the case of wiring with transferring mode. Used with the MB745-S base, it can be connected to a non-redundant DI711-S11. With the MB746-S base, a pair of redundant DI711-S11 can be connected.

The terminal board is mounted by DIN guide rail and supports single inlet

Section 2 Specifications

Table 2-1 Specifications

Parameter		Instruction
Model		TUA712-DI16
Type		220V AC Digital Input Module Transfer Terminal Board
Channel		16
Signal Type		220V AC Active or Passive Dry Contact Signal
Rated Input Voltage		220VAC, 50Hz \pm 5%~60Hz \pm 5%
Working Input Voltage		(185~265)VAC, 50Hz \pm 5%~60Hz \pm 5%
Single-channel Current		6mA (Typical)
Contact-type Impedance Index		ON: <1k Ω OFF: >100k Ω
Input Electrical Level		ON: (170~265)VAC OFF: <60VAC
Temperature	Working Temperature	(-20~70) $^{\circ}$ C
	Storage Temperature	(-40~85) $^{\circ}$ C
Humidity	Working Humidity	10%RH~90%RH, No Condensation
	Storage Humidity	5%RH~95%RH, No Condensation
Dimension (L×W×H)		300mm×90mm×55mm

Section 3 Usage

This section contains the appearance of the terminal board, the description about interface component, interface characteristics, terminal definition, wiring instructions, and so on.

3.1 Appearance

The appearance of TUA712-DI16 is shown in Figure 3-1. Only the external interface is identified in the figure, and the other components on the terminal board are subject to the actual product.

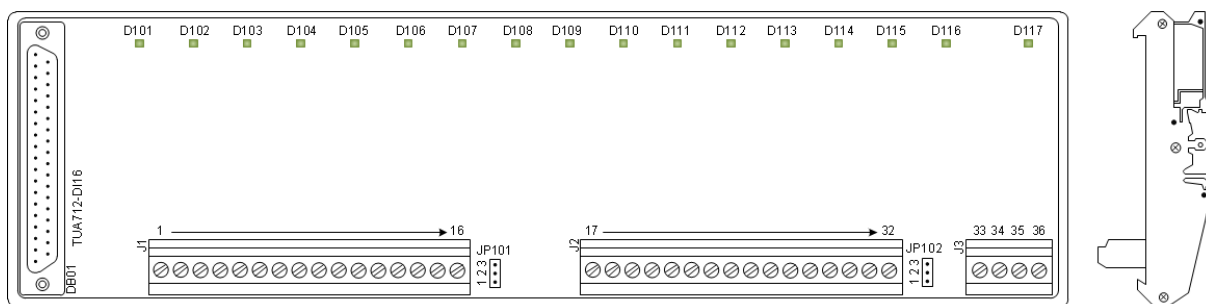


Figure 3-1 Appearance of TUA712-DI16



RISK OF ELECTRICAL SHOCK:

The wiring terminals J1, J2 and J3 may contain high-voltage electricity, direct human contact is prohibited.

3.2 Connectors

Table 3-1 Connectors

Sign	Instruction
DB01	DB37 Interface, connected to DI module
J1, J2	Field side signal input terminal block, two terminals constitute one channel <ul style="list-style-type: none"> ● Channel 1 to 16 are the first eight channels, and the signal type is configured by JP101. ● Channel 17 to 32 are the last eight channels, and the signal type is configured by JP102.
J3	Power Supply Terminal
D101~D116	Signal indicators of 16 channels. D101 corresponds to the first channel. D102 corresponds to the second channel, and so on. (ON: the indicator has signal; OFF: no signal).
D117	Power Indicator
JP101, JP102	Configure the jumpers for the channel signal type: <ul style="list-style-type: none"> JP101: configuring jumper for the first eight channels of passive and active contacts JP102: configuring jumper for the last eight channels of passive and active contacts

3.3 Jumper

TUA712-DI16 terminal board contains two sets of jumpers, JP101 and JP102, which are used to configure the signal types of the first and the last eight channels respectively. The description of the usage is shown in the following table.

Table 3-2 Jumper

Jumper	Configuration	Result
JP101	Jumper 1, 2	The first eight channels support field active contact signal input.
	Jumper 2, 3	The first eight channels support field passive contact signal input.
JP102	Jumper 1, 2	The last eight channels support field active contact signal input.
	Jumper 2, 3	The last eight channels support field passive contact signal input.

3.4 Interface Features

TUA712-DI16 terminal board is used with the digital input module DI711-S11, which can support the input of active or passive contact signal through jumper. This section mainly describes the interface characteristic diagram when it is connected to different signals.

3.4.1 Passive Contact Signal Input

If the field signal source is a passive contact signal input, the configuration jumper should be set as jumper 2 and 3. The wiring principle is shown in Figure 3-2. The even-numbered terminals between 2 and 32 of each channel are connected to the inside of the terminal 34 and are common.

When the field signal is passive, terminal 33 and 34 need to be connected to 220V AC, supporting the common N (neutral wire) or common L (live wire) wiring.

- Common N wiring: It is safe but its anti-interference is weak. And its use is recommended because the unavoidable signal interference can be improved by reducing the cable distributed capacitance and changing the wiring method according to the actual application. The wiring is shown in Figure 3-2.
- Common L wiring: It is highly resistant to interference but unsafe and the risk of electric shock may present. Therefore, its use is not recommended. The terminal 33 is connected to the N terminal and 34 to the L terminal when wiring, as shown in Figure 3-2.

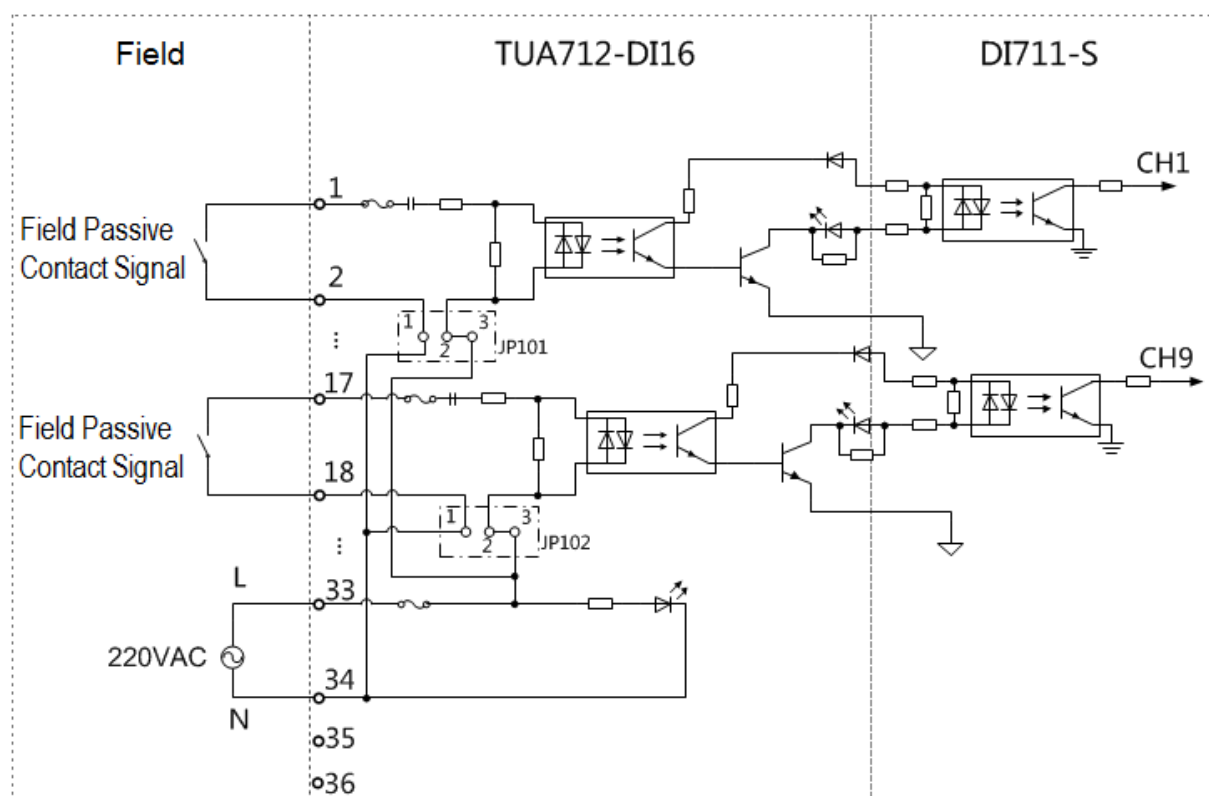


Figure 3-2 Passive contact signal wiring diagram (channels 1, 9 for example)

3.4.2 Active Contact Signal Input

If the field signal source is an active contact signal input, the configuration jumper should be set as jumper 1 and 2. The wiring principle is shown in Figure 3-3. When the field is an active signal, the terminal board does not need to be distributed.

The even-numbered terminals between 2 and 32 of each channel are connected to the inside of the terminal 34 and are common. The terminal N or L connected to the common terminal must be unified. For example, the terminal N is uniformly connected as shown in Figure 3-3.

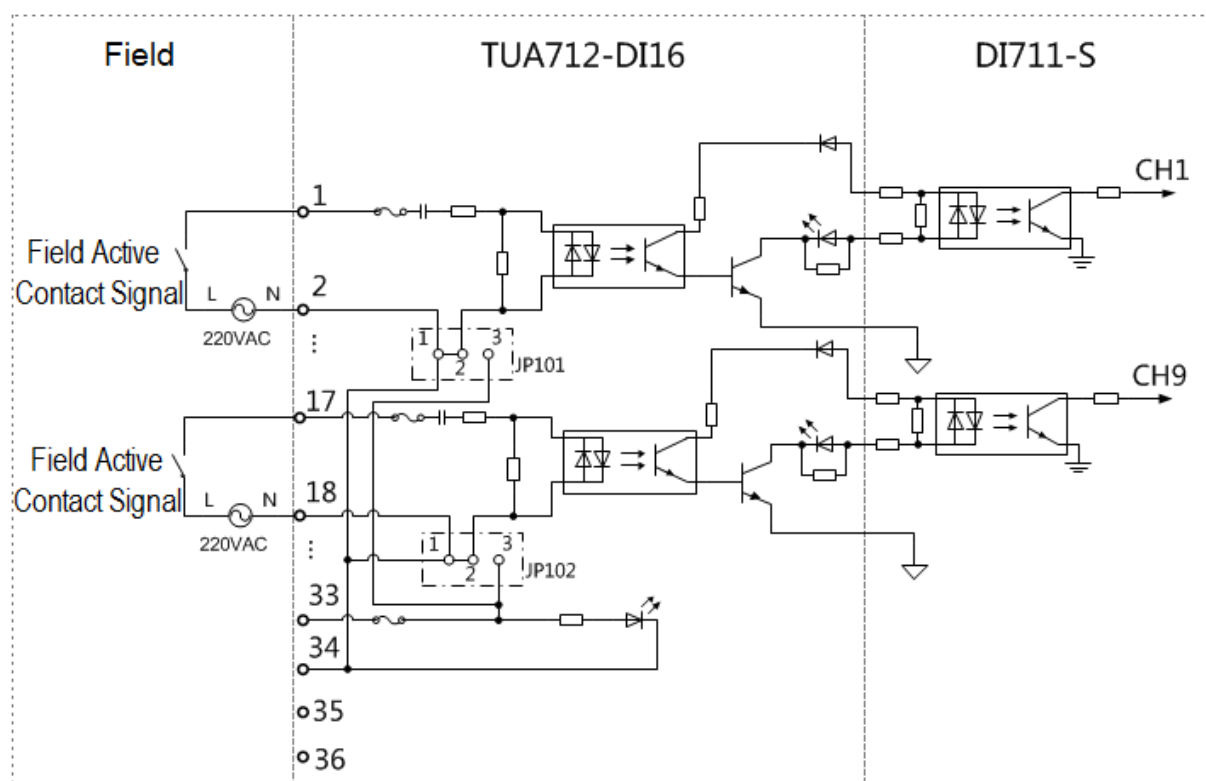


Figure 3-3 Active contact signal wiring diagram (channels 1, 9 for example)

3.5 Terminal Definition and Wiring

The TUA712-DI16 terminal board contains three sets of interfaces described below, as shown in Figure 3-4.

- DB01: DB37 cable interface, using DB37 cable to connect I/O module transfer base (with DI module).
- J1, J2: There are 32 terminals in each group. Two terminals constitute one channel and there are 16 channels in total. J1 are the first eight channels and J2 are the last eight channels. They are used to connect the signals of field side, and the signal types of the first and last eight channels can be separately configured by jumpers.
- J3: 220V AC power supply terminal. When any or all of the first and last eight channels support the passive contact signal input, the power supply needs to be connected to the field side for power distribution.

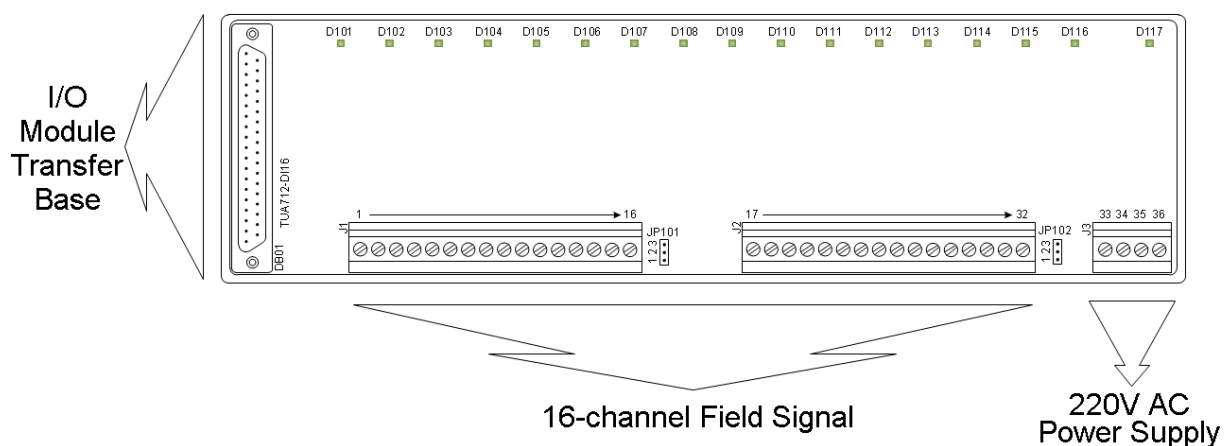


Figure 3-4 Wiring diagram

This section introduces the signal of field side, the definition of power terminal and the wiring instructions.

The terminal of the TUA712-DI16 terminal board allows the maximum cross-section of the access wire to be 2.5 mm². It is recommended to use a 1 or 1.5 mm² cross-section wire with a stripping length of 8 mm and a tightening torque (0.5~0.6) Nm.

3.5.1 Field Side Signal Terminal Definition

There are 16 input channels on the TUA712-DI16 terminal board, corresponding to the 16 channels of the DI711-S11 module.

Table 3-3 The first eight channels

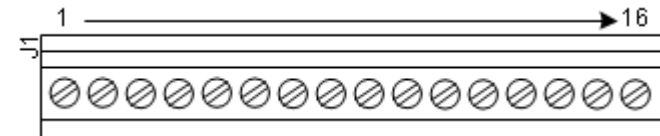
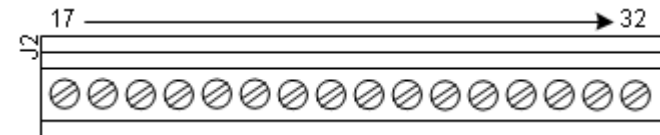
Terminal																
Identification	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
Channel	CH1		CH2		CH3		CH4		CH5		CH6		CH7		CH8	
	Channel 1		Channel 2		Channel 3		Channel 4		Channel 5		Channel 6		Channel 7		Channel 8	

Table 3-4 The last eight channels


Terminal																
Identification	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32
Channel	CH9		CH10		CH11		CH12		CH13		CH14		CH15		CH16	
	Channel 9		Channel 10		Channel 11		Channel 12		Channel 13		Channel 14		Channel 15		Channel 16	

3.5.2 Power Terminal Definition

There are two ways to access the power supply:

- Common N: 33, 34 respectively access L, N
- Common L: 33, 34 respectively access N, L

Table 3-5 Power supply terminal

Terminal				
	33	34	35	36
Identification	L (N)	N (L)	NC	PGND
Implication	Live wire (neutral wire)	Neutral wire (live wire)	Blank	Protected Ground

3.5.3 Wiring Diagram

The terminal board can form the following working modes through the setting of the jumper:

- The first and last eight channels only support passive contact signal input and require power distribution.
- The first and last eight channels only support active contact signal input and do not require power distribution.
- The first eight channels support passive contact signal input, and the last eight channels support active contact signal input, requiring power distribution.
- The first eight channels support active contact signal input, and the last eight channels support passive contact signal input, requiring power distribution.

This section lists the wiring diagrams for the various modes as shown below.

Only Passive Contact Signals Connected

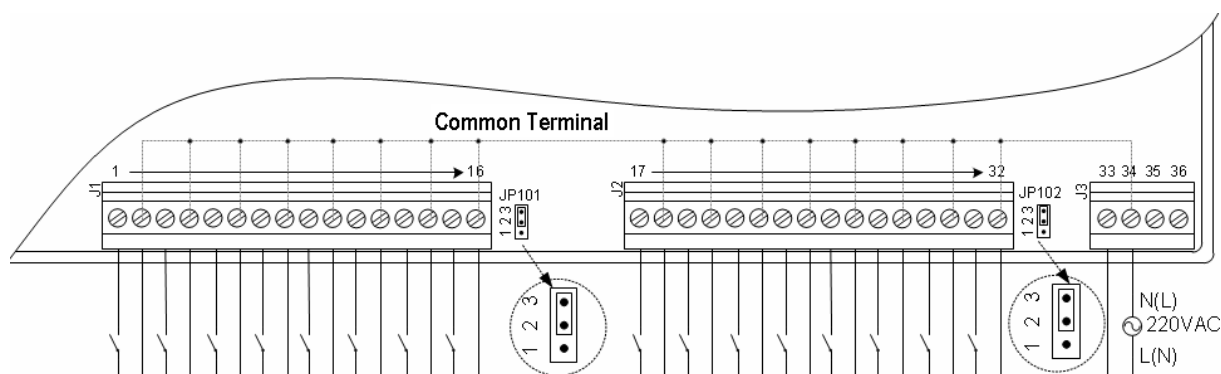


Figure 3-5 Only passive contract signals are connected

Only Active Contact Signals Connected



Attention:

When the terminal board only supports active contact signals, the common terminal of all active contact signal channels must be common N or common L.

As shown in Figure 3-6, terminals between 2 and 16 in J1 are aligned with the N (or L) of terminals between 18 and 32 in J2.

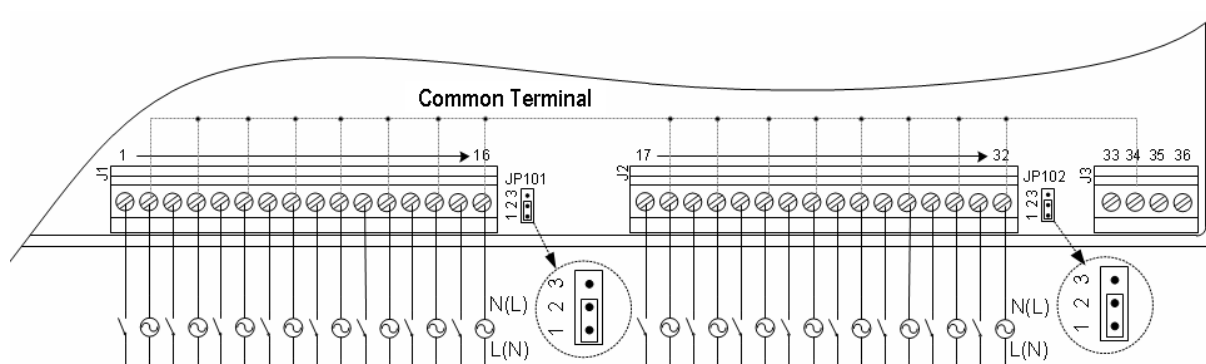


Figure 3-6 Only active contact signals are connected

Access Passive and Active Contact Signals

For example, the first eight channels are used as active contact signals, and the last eight channels are passive contact signals.



Attention:

When the terminal board supports both passive and active contact signals, the common terminal of all active contact signal channels must be N or common to terminal NO. 34.

As shown in Figure 3-7, terminals between 2 and 16 in J1 are aligned with the N (or L) of terminals connected to the terminal No. 34.

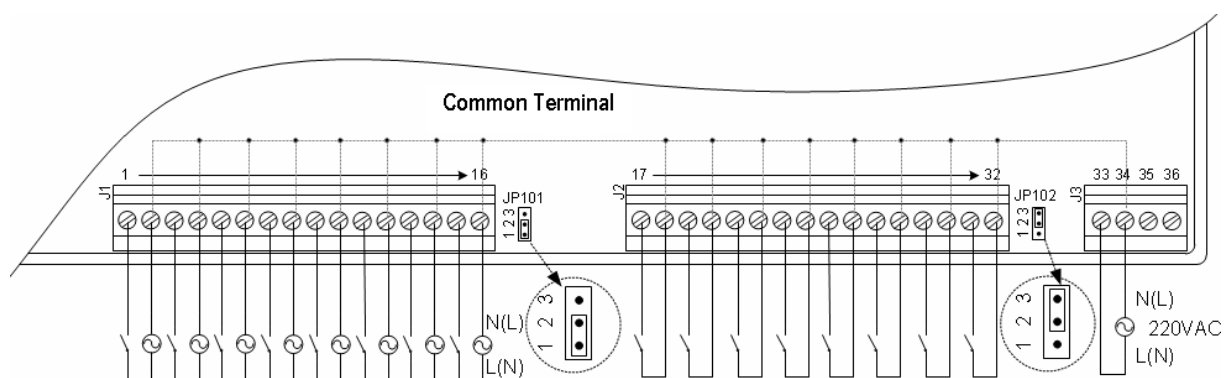


Figure 3-7 Access passive and active contact signals

Section 4 Revision

Table 4-1 Retrofit list of the version

Document Version	Applicable Product Version	Remarks
V1.0(20180814)	TUA712-DI16 V10.00.00 and later versions	The first version.