

Digital Output Module






DO712-S11

User manual

IM23H46-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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Digital Output Module DO712-S11

Section 1 Overview

DO712-S11 is a 16-channel digital signal output module of passive transistor output. It can drive electric control device via relay terminal unit, or work with the input isolated barrier of passive digital signal. The module has function of single trigger pulse width output, and can output the single pulse of 0.01s~60s by the time range set in configuration. The module can set as redundant of 1:1.

The module can check the external power when working with the relay terminal unit.

Section 2 Specifications

Specifications of digital signal output module is shown in Table 2-1.

Table 2-1 Specifications

Parameter		Instruction
Model		DO712-S11
Type		Digital Signal Output Module
Channel		16
Redundancy		Support
Isolation type		Isolated
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		24VDC \pm 10%
System Power Consumption		<2.0W
Output Signal		Passive Transistor Output
Load		Single Channel 100mA (max)
OFF Leakage Current		0.1mA
Response	ON—OFF:	2ms (max)
	OFF—ON:	2ms (max)

Section 3 Usage

3.1 Indicator Light

The instruction of indicator light is shown in Table 3-1.

Table 3-1 Instruction of indicator light

LED	Fault (Red)	Status (Green)	Duplex (Green)	L-Bus (Green)	Supply (Green)
Meaning Status	Fault	Running	Work/ Standby	Communication	Channel Power
Dark	Normal	Fail-safe	Standby	Communication Link Disconnected	Fault
Bright	Serious Fault	Normal	Work	Normal	Normal
Flash	--	No Configuration	--	Address Conflict	--

3.2 Installation

The I/O module is installed in the I/O module base, in which has the field signal terminal, etc.
Please refer to the *Control Station Hardware User Manual* for installation details.

3.3 Interface Features

The circuit of DO712-S11 is shown in Figure 3-1.

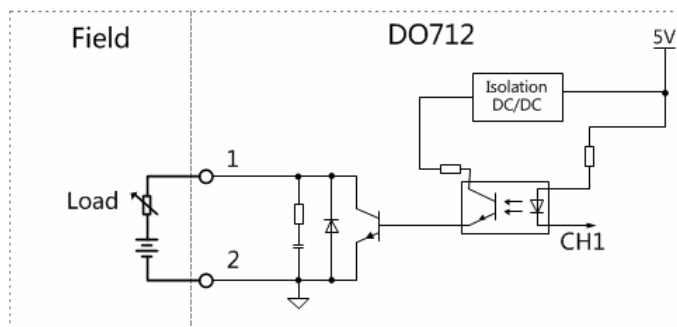


Figure 3-1 Circuit (take MB735-S11 as an example)

3.4 Wiring

When working with the change-over bases MB745-S11 and MB746-S11 and the change-over terminal unit TUA711-DOR16, DO712-S11 can set the output of passive normally open signal and normally closed signal. The wiring of terminal please refer to the *TUA711-DOR16 User Manual*.

When working with the TUA712-DOR16 and TUA713-DOR16, it can set the output of passive normally open signal and active normally open signal. Please refer to the *TUA712-DOR16 User Manual* and *TUA713-DOR16 User Manual*.

When DO712-S11 works with the change-over bases MB745-S11 and MB746-S11 and the change-over terminal unit TUA711-GS00, or with the I/O bases MB735-S11 and MB736-S11, the wiring is shown below. TUA711-GS00 corresponds to the 36 terminals of I/O base.

The wiring of DO712-S11 is shown in Table 3-2. CH* refers to the channel number. Each channel has 2 terminals, CH-1 and CH-2.

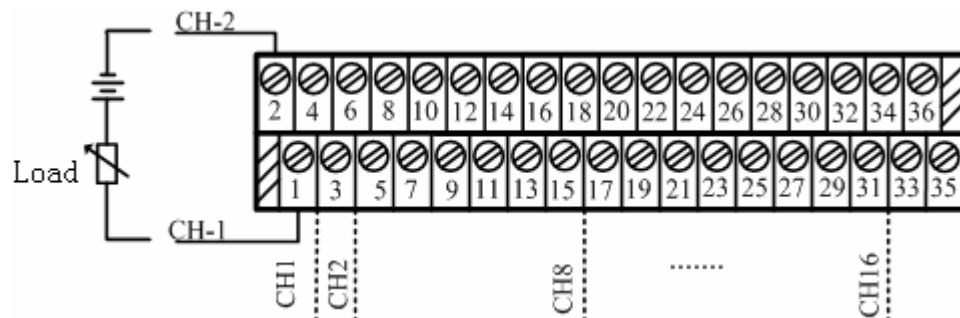


Figure 3-2 Wiring diagram

Table 3-2 Wiring

Wiring	CH1~8	Terminal	Instruction	CH9~16	Instruction	Terminal
	CH1	1	CH-1	CH9	CH-1	17
		2	CH-2		CH-2	18
	CH2	3	CH-1	CH10	CH-1	19
		4	CH-2		CH-2	20
	CH3	5	CH-1	CH11	CH-1	21
		6	CH-2		CH-2	22
	CH4	7	CH-1	CH12	CH-1	23
		8	CH-2		CH-2	24
	CH5	9	CH-1	CH13	CH-1	25
		10	CH-2		CH-2	26
	CH6	11	CH-1	CH14	CH-1	27
		12	CH-2		CH-2	28
	CH7	13	CH-1	CH15	CH-1	29
		14	CH-2		CH-2	30
	CH8	15	CH-1	CH16	CH-1	31
		16	CH-2		CH-2	32
	/	33	No Connected	/	No Connected	35
		34				36

The standard base wiring of DO712-S11 is shown in Figure 3-2. CH* refers to the channel number. Terminal number corresponds to the terminal row number of base.

3.5 Base/ Terminal Unit Selection

The bases and terminal units matching DO712-S11 are shown in Table 3-3. When working with the terminal unit, please refer to the user manual of specific terminal unit.

Table 3-3 Bases and terminal units matching DO712-S11

Output Mode	Module	Base	Terminal Unit
Direct Output	Single	MB735-S11	-
	Redundant	MB736-S11	
Change-over Output	Single	MB745-S11	TUA711-GS00
	Redundant	MB746-S11	
Relay Output (Passive)	Single	MB745-S11	TUA711-DOR16 TUA712-DOR16 TUA713-DOR16
	Redundant	MB746-S11	
Relay Output (Active)	Single	MB745-S11	TUA712-DOR16 TUA713-DOR16
	Redundant	MB746-S11	

3.6 Configuration Parameter

Please refer to the *Hardware Module Builder User Manual* and the *Tag Builder User Manual* for configuration parameters.

The address of DO712-S11 is determined by the position of module in rack (refer to the *Control Station Hardware User Manual*). When configuring, user can select the corresponding control domain address (0~15), controller address (2~126), I/O link module address (1~7), I/O rack address (0~3), module address (0~15) and channel number (0~15) by the position of module in rack.

3.7 Maintenance

Clear and fix all powers and the junctions of grounding every 6 months (or when system shuts down).

Dust following devices by anti-static vacuum cleaner every 6 months (or when system shuts down): module, base, rack, fan unit and power wiring board, etc.

Please refer to the *Control Station Hardware User Manual* for installing and uninstalling.

Section 4 Engineering Application

4.1 Achievement of Channel-channel Isolation

Module can achieve the channel-channel isolation of field signal by setting the relay terminal unit or safety barrier.

In channel-channel isolation, the selection of base, terminal unit and safety barrier is shown in Table 4-1. The achievement of channel-channel isolation for relay terminal unit is shown in Figure 4-1. The achievement of channel-channel isolation for safety barrier is shown in Figure 4-2. The safety barrier should support the input of passive contact signal.

Table 4-1 Selection of base, terminal unit and safety barrier

Field Signal Type	I/O Module Base	I/O Change-over Base	Relay Terminal unit	Baseplate Isolated Barriers	Rail Isolated Barriers
Passive Signal	-	√	√	-	-
Active Signal	-	√	-	√	-
	√	-	-	-	√

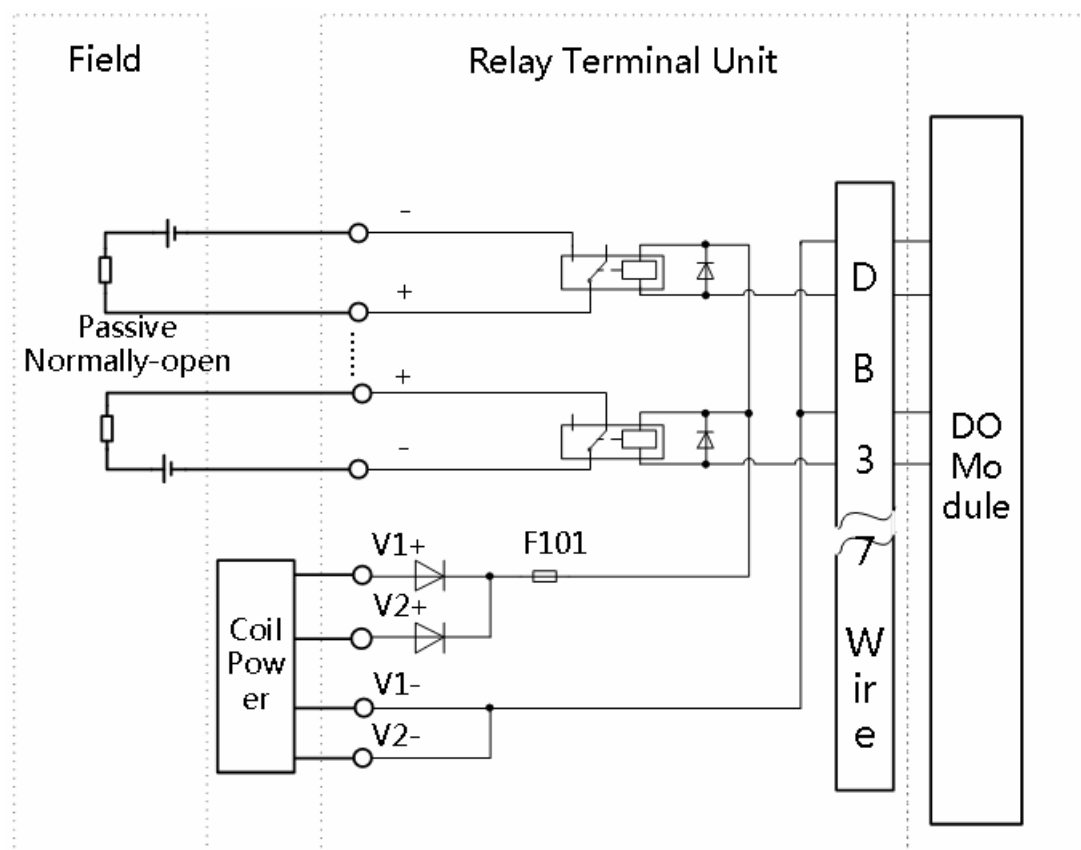


Figure 4-1 Achievement of channel-channel isolation for relay terminal unit

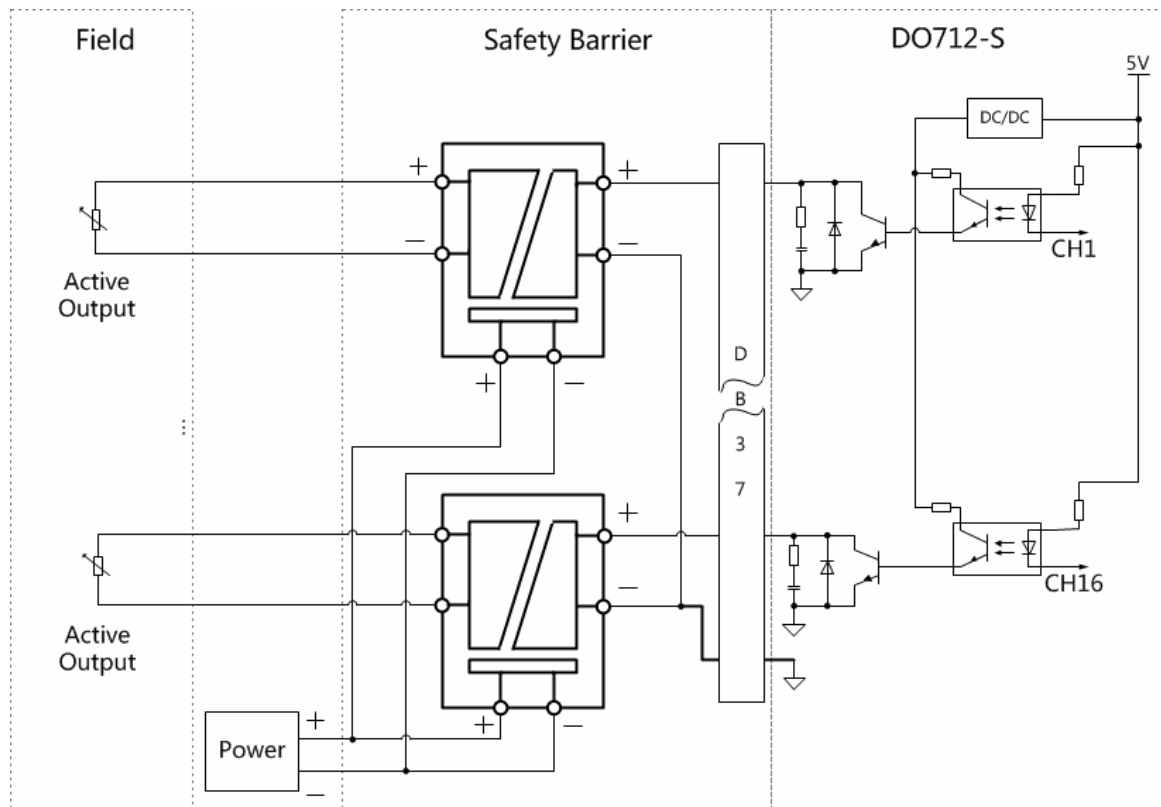


Figure 4-2 Achievement of channel-channel isolation for safety barrier

4.2 Notes

- Fail-safe mode only works for status output.
- Fail-safe mode is only started when the module communication has fault.
- For pulse width output, the trigger condition of pulse width should be positive of OFF→ON. The channel outputs OFF after the pulse width output finished.

4.3 Troubleshooting

- When the light “**Fault**” is always on, the module has serious fault and should be replaced.
- When the light “**L-Bus**” is always off, please check the communication wiring, if it is normal, the module has fault and should be replaced.
- When the light “**L-Bus**” is flash, the address conflicts. Please check if there is conflicting module in the bus.
- When the light “**Supply**” is always off, please plug out the module and then plug in again. If the light “**Supply**” is always off, the module has fault and should be replaced.
- If all lights are off after powering on, please check the power connection of module system, if it is normal, the module has fault and should be replaced.

Section 5 Revision

Table 5-1 Retrofit list of the version

Document Version	Applicable Product Version	Remarks
V1.0(20131012)	DO712-S11 V 10.10.00 and later versions.	The first version.
V1.1(20141222)	DO712-S11 V 10.10.00 and later versions.	Modify achievement and wiring
V1.2(20150917)	DO712-S11 V 10.10.00 and later versions.	Modify I/O link module address Modify specifications Modify achievement and wiring
V1.3(20161116)	DO712-S11 V 10.10.00 and later versions.	Add code