

Digital Input Module






DI716-S11

User manual

IM23H43-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 Input Module DI716-S11

Section 1 Description

Module DI716-S11 is 48 V digital signal input module. It can collect 16 channels of multi-type digital signal. The module can be used with 1:1 redundancy.

Section 2 Technical Specifications

Table 2-1 Performance of module DI716-S11

Parameter		Description
Module model		DI716-S11
Type		Digital input module
Channel numbers		16
Redundancy		Support
Isolation type		Isolated
Temperature	Operating temperature	(-20~70)°C
	Storage temperature	(-40~85)°C
Humidity	Operating humidity	10%RH~90%RH. No vapor condensation
	Storage humidity	5%RH~95%RH. No vapor condensation
System power supply		24V DC±10%
System power consumption		< 1.2 W
Auxiliary power supply consumption		<0.3W per channel
Signal type	Passive contact input	Common end can be set to common-positive or common-grounding input
	Active contact input	
ON/OFF condition	Passive contact	ON: <1kΩ; OFF: >100kΩ
	Active contact	ON: (34~50)V; OFF: <10V

Section 3 Usage Instructions

3.1 LED Indicators

Table 3-1 Instructions of Module Indicator Light

LED indicator light	Fault (Red)	Status (Green)	Duplex (Green)	L-Bus (Green)	Supply (Green)
Indication Status	Fault indication	Operation indication	In use/Standby	Communication indication	Standby power supply status indication
Off	Normal	--	Standby	Communication loop disconnected	Standby power supply abnormal
On	Major fault	Normal	In use	Normal	Normal
Flash	--	No configuration	--	Address conflict	--

3.2 I/O Module Installation

DI716-S11 is installed on I/O Module base, which equips with power terminal and field signal terminal.

Please refer to *Control Station Hardware User Manual*.

3.3 Interface Characteristics

Module DI716-S11 can achieve multi-type digital signal collection by signal input interface circuit. The connection methods vary according to different signal type.

3.3.1 Connection of Passive Contact Signal Input

If the signal source is passive contact common ground input, terminal 33 is short connected with 35; terminal 34 is short connected with 36 (recommended); for common anode input, terminal 33 is short connected with 36; terminal 34 is short connected with 35. Connection principle is shown in Figure 3-1.

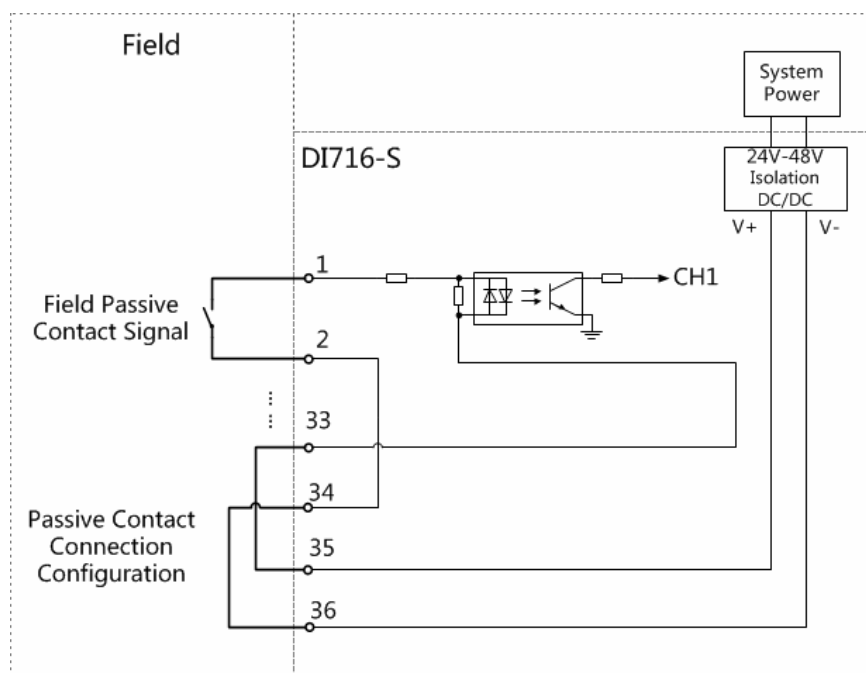


Figure 3-1 Connection of Passive Contact Signal

3.3.2 Connection of Active Contact Signal Input

If the signal source is active contact signal input, base connection terminal 33 is short connected with 34, terminal 35, 36 will not be connected. Connection principle is shown in Figure 3-2.

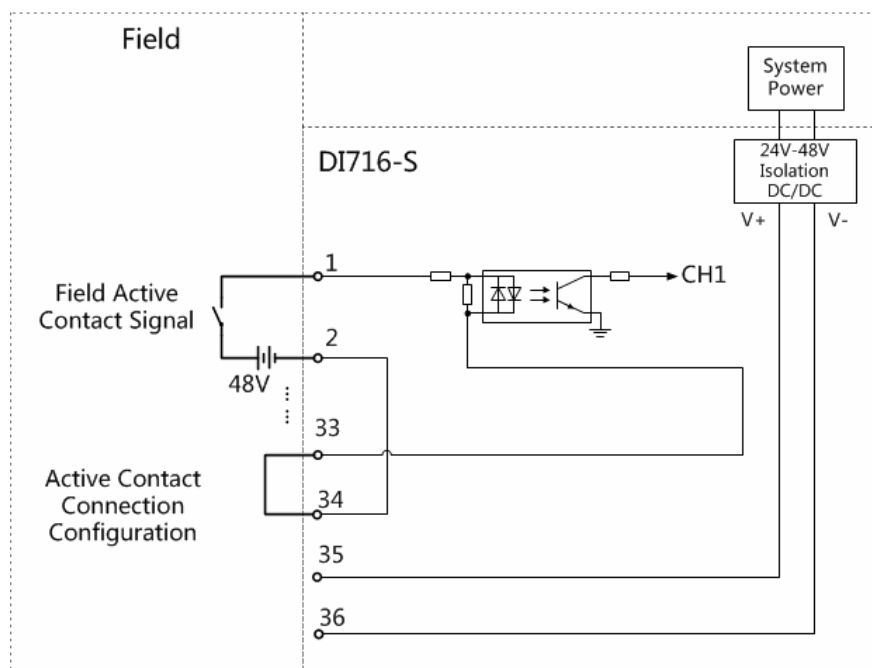


Figure 3-2 Connection of Active Contact Signal Input

3.4 Terminal Connection

The terminal wiring of DI716-S11 working 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 is shown below. TUA711-GS00 corresponds to the 36 terminals of I/O base respectively.

CH* stands for channel number. 1 refers to CH1. CH-1 and CH-2 refer to the 2 terminals of each channel.

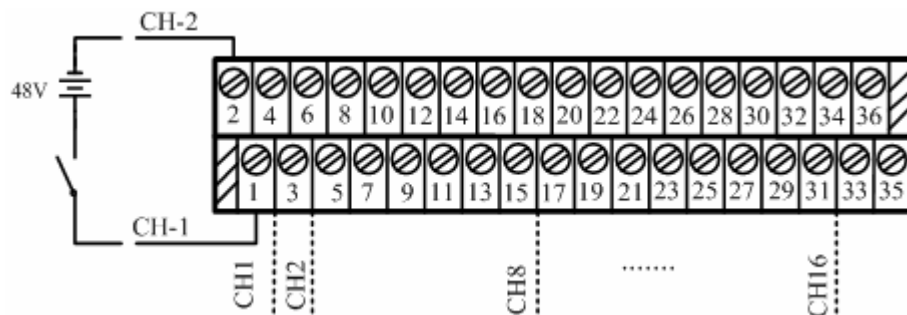


Figure 3-3 Connection Diagram of Active Signal Terminal

Table 3-2 Terminal Connection List of Active Contact Signal

Wiring diagram	Channel	Terminal	Instruction	Instruction	Terminal	Terminal
	CH1	1	CH-1	CH-1	17	CH9
		2	CH-2	CH-2	18	
	CH2	3	CH-1	CH-1	19	CH10
		4	CH-2	CH-2	20	
	CH3	5	CH-1	CH-1	21	CH11
		6	CH-2	CH-2	22	
	CH4	7	CH-1	CH-1	23	CH12
		8	CH-2	CH-2	24	
	CH5	9	CH-1	CH-1	25	CH13
		10	CH-2	CH-2	26	
	CH6	11	CH-1	CH-1	27	CH14
		12	CH-2	CH-2	28	
	CH7	13	CH-1	CH-1	29	CH15
		14	CH-2	CH-2	30	
	CH8	15	CH-1	CH-1	31	CH16
		16	CH-2	CH-2	32	
	-	33	Collocation terminal	Collocation terminal	35	-
		34			36	

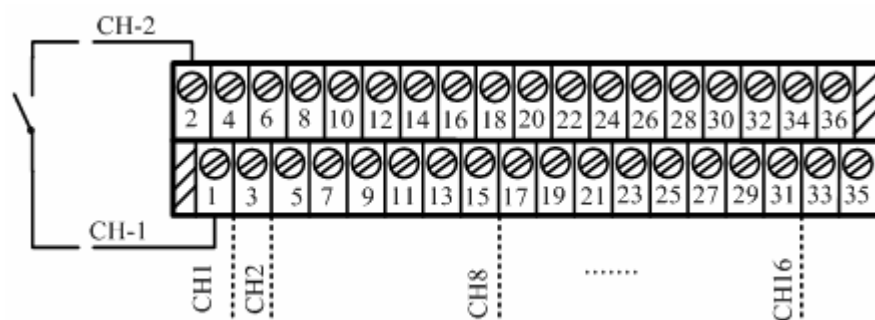


Figure 3-4 Connection Diagram of Passive Signal Terminal**Table 3-3 Terminal Connection List of Passive Contact Signal**

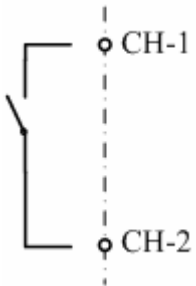
Wiring diagram	Channel	Terminal	Instruction	Instruction	Terminal	Terminal
	CH1	1	CH-1	CH-1	17	CH9
		2	CH-2	CH-2	18	
	CH2	3	CH-1	CH-1	19	CH10
		4	CH-2	CH-2	20	
	CH3	5	CH-1	CH-1	21	CH11
		6	CH-2	CH-2	22	
	CH4	7	CH-1	CH-1	23	CH12
		8	CH-2	CH-2	24	
	CH5	9	CH-1	CH-1	25	CH13
		10	CH-2	CH-2	26	
	CH6	11	CH-1	CH-1	27	CH14
		12	CH-2	CH-2	28	
	CH7	13	CH-1	CH-1	29	CH15
		14	CH-2	CH-2	30	
	CH8	15	CH-1	CH-1	31	CH16
		16	CH-2	CH-2	32	
	-	33	Collocation terminal	Collocation terminal	35	-
		34			36	

Table 3-4 Instruction of Power Supply Terminal

Signal Type	Connection instruction
Passive contact	Common ground input: Terminals 33 and 35, terminals 34 and 36 in short connection respectively(recommended); Common anode input: Terminals 33 and 36, and terminals 34 and 35 in short connection respectively
Active contact	Terminal 33 is short connected with 34, terminal 35, 36 will not be connected

3.5 Base/Terminal Unit Selection

Selection table of bases/terminal unit matching DI716-S11 is shown in Table 3-5.

Table 3-5 Selection table of bases/terminal unit matching DI716-S11

Signal Type	Module working mode	Base model	Terminal unit model
48V DI signal	Single module	MB735-S11	-
	Redundant	MB736-S11	-
48V DI change-over signal	Single module	MB745-S11	TUA711-GS00
	Redundant	MB746-S11	

DI716-S11 of this version is totally compatible with last version.

3.6 Configuration Parameter Instruction

For detailed instructions, please refer to *Hardware Module Builder User Manual* and *Tag Builder User Manual*.

Module address is determined by the position of module in rack; please refer to *Control Station Hardware User Manual*. During configuration, according to module position in rack, choose corresponding control domain address (0~15), controller address (2~126), I/O connection module address (1~7), IO rack address (0~3), module address (0~15).

3.7 Maintenance

Clean and fasten all the power and grounding points every six months (or system stops running).

Vacuum the modules, bases, racks, fan unit, power supply terminal unit, etc via static-resistant vacuum every six months (or system stops running).

Please refer to *Control Station Hardware User Manual* for the installation and disassembly.

Section 4 Application

4.1 Notices

Since there's many kinds of digital input signal, connection method should be selected according to the field signal type in application.

4.2 Fault Diagnosis and Troubleshooting

1. If the Fault indicator is ON all the time, there is a severe module fault. Module replacement is required.
2. If L-Bus indicator is OFF, there is a communication fault or L-Bus indicator circuit damage or there is no other node in the I/O bus. Please check the communication connection.
3. If the L-Bus indicator flashes, there is IP confliction. Please check if there is module confliction in the bus.
4. If Supply indicator is OFF, there is bad connection of periphery 24V power source or unreliable module connection. Please check the auxiliary power connection and the connection between module and base.
5. If all indicators are OFF when the module is energized, the power of module system has problem. Check the system power connection. If the connection is reliable, please replace the module.

Section 5 Revision

Table 5-1 Retrofit list of the version

Document Version	Applicable Module Version	Remarks
V1.0	DI716-S-10.10.00	
V2.1(20131210)	DI716-S11 V11.10.00 and later versions	Bases selection and power distribution have been changed Modified interface circuit Add model information
V2.2(20150917)	DI716-S11 V11.10.00 and later versions	I/O connection module address
V2.3(20161116)	DI716-S11 V11.10.00 and later versions	Add code