

Digital Input Module






DI718-S11

User manual

IM23H44-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 DI718-S11

Section 1 Description

DI718-S11 module is a 48V digital input module, which can collect 16-channel SOE signal and do not support redundancy configuration.

SOE is the abbreviation of Sequence of Event. SOE module is mostly used in power plant. In case of tripping due to accident, there will be a series of switch actions which will be recorded according to the sequence for accident analysis in future.

DI718-S11 module can recorded switch events with min. interval 0.5 millisecond, such as breaker operation, switch tripping etc. The recorded events include time of happening, status, type and location and so on. It is a multifunction module, which can sent SOE signal and real time DI signal of 16 channels to the controller and have function of low frequency accumulation of the first 8 channels.

Section 2 Technical Specifications

Table 2-1 technical specifications of DI718-S11

Parameter		Description
Module model		DI718-S11
Type		Digital input module
Channel number		16
Redundancy		Not Support
Isolation type		Isolated
Temperature	Operating temperature	(-20~70)°C
	Store Temperature	(-40~85)°C
Humidity	Operating humidity	10%RH~90%RH, no condensation
	Store Humidity	5%RH~95%RH, no condensation
System power supply		24V DC±10%
System power consumption		<1.2W
Cabinet power consumption		<0.3W/channel
Signal type	Passive contact input	The common terminal can be set in common anode input or common ground input
	Active contact input	
ON and OFF condition	Passive contact	ON:<1kΩ ; OFF:>100kΩ
	Active contact	ON: (34~50)V;OFF:<10V
Scanning cycle		0.5ms
Relative time resolution		0.5 ms
Resolution precision		1 ms
Record buffer		Max. 100 buffer records in the module
Low frequency impulse accumulation	Channel	0~7 channels have impulse accumulation function
	Impulse width requirement	>20 millisecond(should be bigger than filter time and anti-jitter time)
Communication cycle		50ms

Section 3 Usage Instruction

3.1 Led Indicators

Table 3-1 LED indicators in DI718-S11

LED indicator	Fault (red)	Status (green)	Duplex (green)	L-Bus (green)	Supply (green)
Description Status	Fault indicator	Running indicator	Work/standby indicator	Communication indicator	Auxiliary power supply status indicator
OFF	Normal	--	Standby	Communication link break	Abnormal auxiliary power supply
ON	Fault	Normal	Work	Normal	Normal
Flashing	--	No configuration	--	IP confliction	--

3.2 I/O Module Installation

DI718-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 Feature

DI718-S11 module can collect many types of digital signals through signal input interface circuit. Different types of signals have different connection methods.

3.3.1 Passive Contact Signal Input

If the signal source is the passive contact signal input, the base connection terminals 33 and 35, 34 and 36 should in short connection respectively (recommended); common anode input: or 33 and 36, 34 and 35 in short connection respectively. The connection principle diagram is shown as in Figure 3-1.

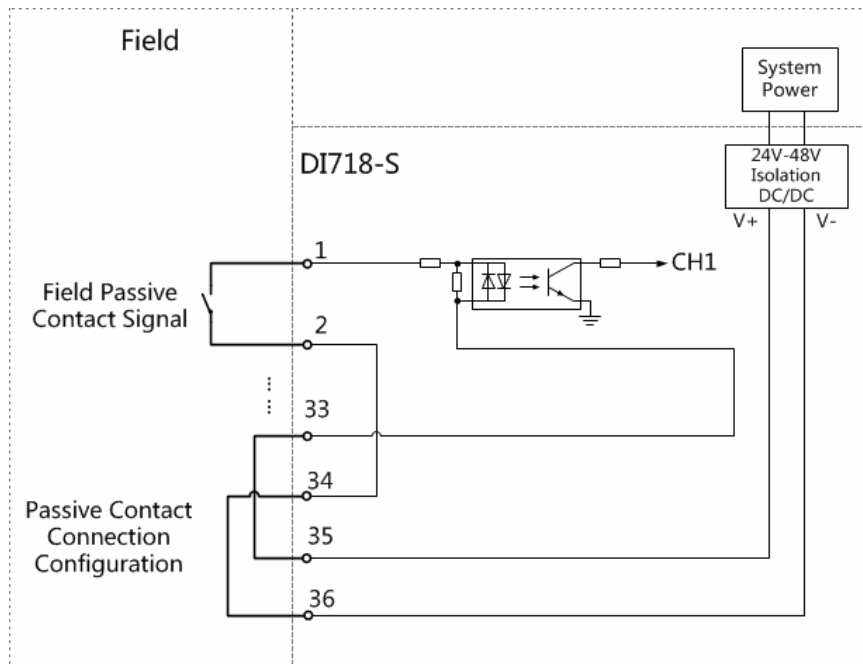


Figure 3-1 Connection diagram of passive contact signals (with the example of common ground input)

3.3.2 Active Contact Signal Input

If it is active contact signal input, the connection terminals of base 33 and 34 should be in short connection, 35 and 36 be suspended. The connection principle is shown as in Figure 3-2.

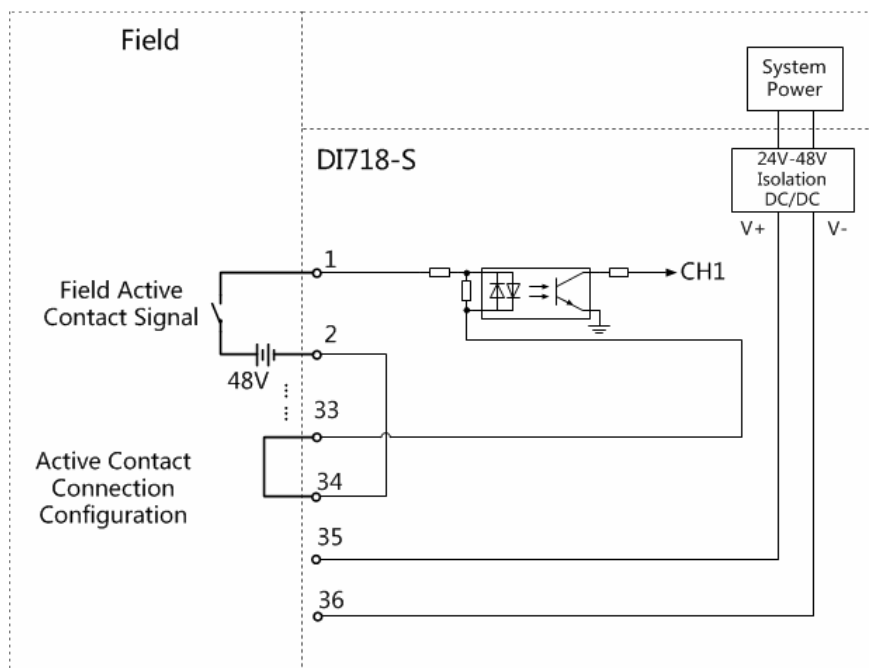


Figure 3-2 Connection diagram of active contact signals

3.4 Terminals Definition & Connection

The terminal wiring of DI718-S11 working with the change-over bases MB745-S11 and the change-over terminal unit TUA711-GS00 or with the I/O bases MB735-S11 is shown below.

TUA711-GS00 corresponds to the 36 terminals of I/O base respectively.

3.4.1 Passive Contact Signal Terminal Connection Instruction

CH* refers to the channel number. 1 means CH1. The 2 terminals of each channel are CH-1 and CH-2.

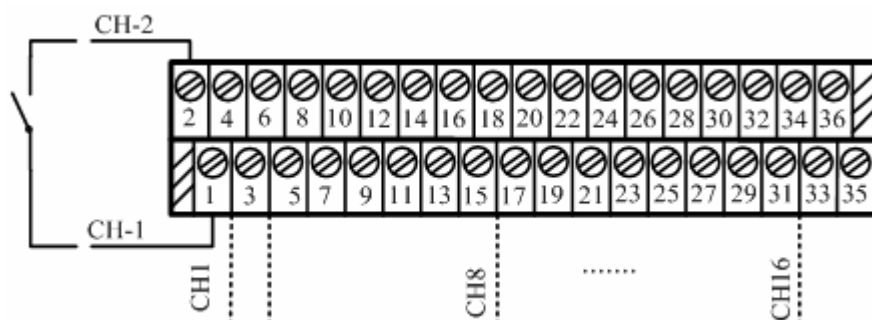


Figure 3-3 Connection Diagram of Passive Signal Terminal

Table 3-2 Passive Contact Signal Terminal Connection

Wiring diagram	Channel	Terminal	Instruction	Instruction	Terminal	Channel
	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		35	-
		34			36	

3.4.2 Active Contact Signal Terminal Connection Instruction

CH* refers to the channel number. 1 means CH1. The 2 terminals of each channel are CH-1 and CH-2.

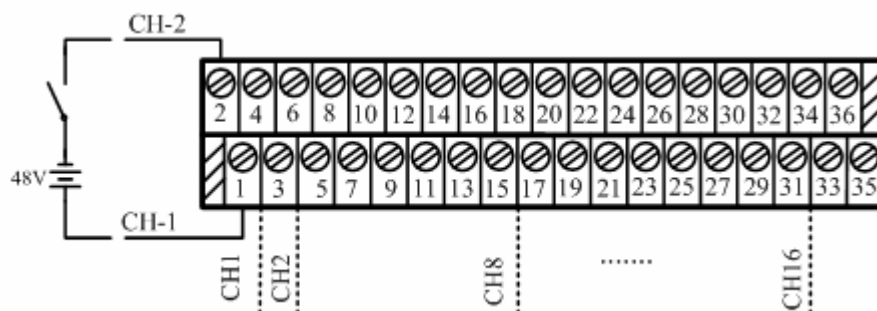


Figure 3-4 Terminal Connection Diagram

Table 3-3 Active Contact Signal Terminal Connection

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

Table 3-4 Power distribution terminal instruction table

Signal Type	Connection Instruction
Passive Contact Signal	Common ground input: Terminals 33 and 35 are in short connection. Terminals 34 and 36 are in short connection (recommended). Common anode input: Terminals 33 and 36 are in short connection. Terminals 34 and 35 are in short connection.
Active Contact Signal	Terminals 33 and 34 are in short connection. Terminals 35 and 36 are disconnected.

3.5 Base/Terminal Unit Selection

Selection of bases/terminal unit matching DI718-S11 is shown in Table 3-5.

Table 3-5 Selection of bases/terminal unit matching DI718-S11

Signal type	Working mode	Base model	Terminal unit model
48V DI signal	Single	MB735-S11	-
48V DI change-over signal	Single	MB745-S11	TUA711-GS00

DI718-S11 of this version is totally compatible with last version.

3.6 Configuration Instruction

Please refer to *Hardware Module Builder User Manual* and *Tag Builder User Manual* for details.

The module address is determined according to the module position in the rack (please refer to the *Control Station Hardware User Manual*). When configuring, according to the module position in the rack to choose corresponding control domain addresses (0~15), controller address (2~126), IO connecting module address (1~7), IO rack address (0~3) and 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

- Because there are many types of digital input signals, proper connection method should be selected according to the site signal type.
- DI718-S11 module used for SOE record can only be installed in local cabinet connected directly through local I/O bus and controller because controller in the local cabinet can provide sync pulse signal but IO connection module can not provide sync pulse signal.

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	DI718-S-10.10.00	
V2.0	DI718-S-10.10.00	Modified the base type.
V2.1(20131210)	DI718-S11 V11.10.00 and later versions	Bases selection and power distribution have been changed Modified interface circuit Add model information
V2.2(20141218)	DI718-S11 V11.10.00 and later versions	Modify description
V2.3(20150916)	DI718-S11 V11.10.00 and later versions	Modify IO connecting module address Replace FCU711-S as controller in notices
V2.4(20161116)	DI718-S11 V11.10.00 and later versions	Add code