

Digital Signal Input Module






DI717-S11

User manual

IM23H52-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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DI717-S11 User Manual

Section 1 Basic Introduction

The DI717-S11 module is an 8-channel digital signal input module that captures signals from NAMUR sensor and passive contact signals. The module has a line fault detection function (LFD), which tells if it is an open or short circuit based on current or resistance. The module does not support redundancy.

NAMUR signal and the conventional passive contact signal can be directly connected to the terminals of the module base. The passive contact signal with isolation requirements needs to be used with the special relay terminal board.

Section 2 Performance Specification

Parameter		Illustration
Module Model		DI717-S11
Module Type		Digital signal input module (NAMUR)
Channel Number		8
Redundancy		Not supportive
Isolation Type		Isolation Uniformly
Temperature	Operating temperature	(-20~70) °C
	Storage temperature	(-40~85) °C
Humidity	Operating humidity	10%RH~90%RH, no condensation
	Storage humidity	5%RH~95%RH, no condensation
System Power Supplier		24V DC \pm 10%
Power of System Power Supplier		<2.5W
Signal Type		NAMUR signal Passive contact signal
Signal Frequency		0~100Hz
ON、OFF Conditions	NAMUR proximity switch	ON: >2.1mA; OFF: <1.2mA
	Passive Contact	ON: <1K Ω ; OFF: >100K Ω
Line Fault Detection (LFD) *	Open circuit	Open circuit alarm, current is less than 50uA Open circuit alarm-eliminating, current is more than 350uA
	Short circuit	Short circuit alarm, resistance is less than 100 Ω Short circuit alarm-eliminating, resistance is more than 360 Ω

*: The LFD function can be realized through an external resistor when the dry contact signal is input. For details, please refer to Interface Features.

Section 3 Use Illustration

3.1 Light Indicator Illustration

Table 3-1 Light Indicator Illustration

LED Light Indicator	Fault (Red)	Status (Green)	Duplex (Green)	L-Bus (Green)	Supply (Green)
Indication Status	Fault Indication	Operation indication	Work/backup	Communication indication	Channel power supplying status
OFF	Normal	--	backup	Communication on link breaks	fault
ON	Multi-fault	Normal	work	normal	normal
FLASH	--	No configuration	--	Address conflict	--

3.2 Module Installation

The I/O module is mounted on the I/O module base with live signal wiring terminals and so on.

For details on how to install it, please see *Control Station Hardware User's Manual*.

3.3 Interface Features

The circuit diagram of the module accessing the NAMUR signal and the passive contact signal is shown in the figure below. For the NAMUR signal, the LFD function can be realized without an external accessory; for the passive contact signal, two external resistors should be connected with, and the circuit is as shown like ③.

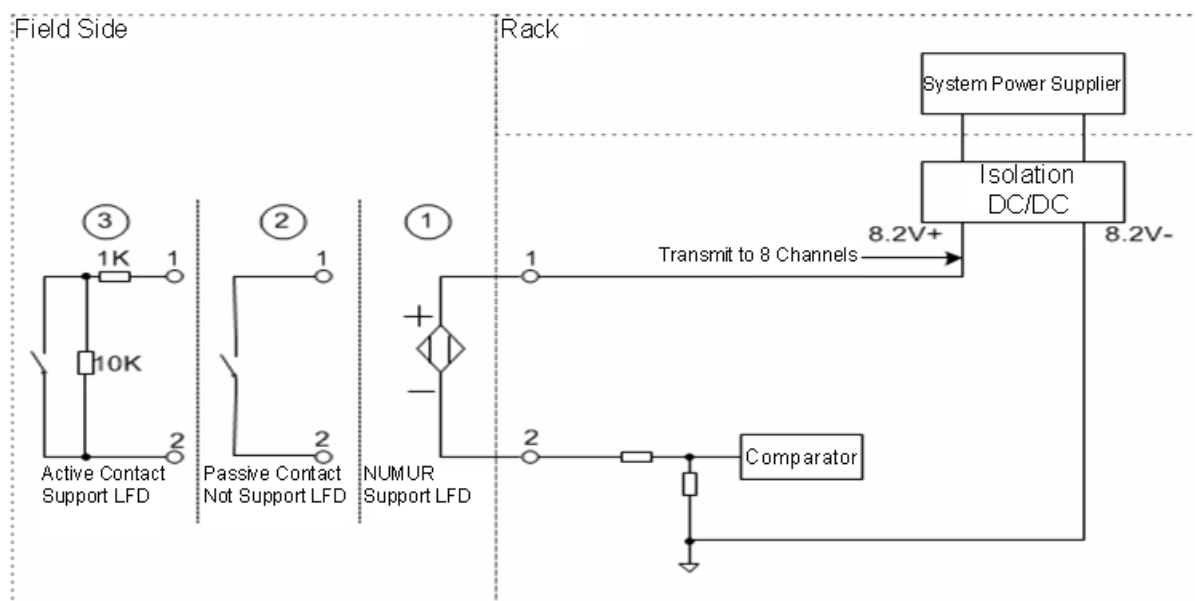


Figure 3-1 Circuit Diagram

3.4 Illustration for Type Selection and Wiring

This section mainly describes base and terminal type selection of DI717-S11 module, and the wiring illustration is shown as follows.

3.4.1 Base/Terminal Board Type Selection

Base and terminal boards DI717-S11 supports are shown in Table 3-2

Table 3-2 Base/terminal boards type-selecting table

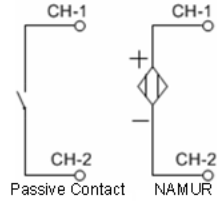
Signal/access method	Module working mode	Base type	Transmission cable	Terminal board
Passive contact signal or NAMUR signal/direct connection	Single module	MB735-S11	no	
Passive contact signal or NAMUR signal/transmission	Single mode	MB745-S11	DB37 cables	TUA711-GS00
Passive contact signal/transmission	Single mode	MB745-S11		TUA711-DIR16

Specification of signal cables accessing the base or terminal board: The maximum cross-section of the access wire is allowed to be 2.5mm^2 . It is recommended to use a wire with a cross section of 1mm^2 or 1.5mm^2 , a stripping length of 8mm, and a tightening torque of (0.5~0.6) Nm.

3.4.2 Terminal Definition and Wiring

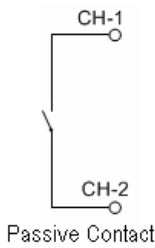
The I/O module base and general transmission terminal board TUA711-GS00 both have 36 terminals, and the markers are 1~36. When used with DI717-S11, only terminals 1~16 are used, and other terminals are reserved terminals, therefore no wiring is required. The terminal is defined as shown in the following table, where CH* is the channel number, that is, 1 channel is CH1, and 2 terminals of each channel are defined as CH-1 and CH-2 respectively.

Table 3-3 Terminal definition and wiring table

Wiring Illustration	8 channels	Terminal	Definition
	CH1	1	CH-1
		2	CH-2
	CH2	3	CH-1
		4	CH-2
	CH3	5	CH-1
		6	CH-2
	CH4	7	CH-1
		8	CH-2
	CH5	9	CH-1
		10	CH-2
	CH6	11	CH-1
		12	CH-2
	CH7	13	CH-1
		14	CH-2
	CH8	15	CH-1
		16	CH-2

When the module is used with the relay input terminal board TUA711-DIR16, only passive contact signals can be connected. The terminal definitions are shown in the following table.

Table 3-4 The definition of Relay terminal board and wiring table

Wiring Illustration	8 channel	Terminal	Definition
	CH1	1A	CH-1
		1B	CH-2
		1C	Empty
	CH2	2A	CH-1
		2B	CH-2
		2C	Empty
	CH3	3A	CH-1
		3B	CH-2
		3C	Empty
	CH4	4A	CH-1
		4B	CH-2
		4C	Empty
	CH5	5A	CH-1
		5B	CH-2
		5C	Empty
	CH6	6A	CH-1
		6B	CH-2
		6C	Empty
	CH7	7A	CH-1

Wiring Illustration	8 channel	Terminal	Definition
		7B	CH-2
		7C	Empty
	CH8	8A	CH-1
		8B	CH-2
		8C	Empty

3.5 Configuration Parameter Illustration

For a detailed description of the configuration parameters, refer to *Hardware Configuration Software User Manual* and *Tag Configuration Software User Manual*. The module address is determined by the position of the module in the rack (see *Control Station Hardware User Manual*). When configuring module address, select the corresponding module address (0~15) .

3.6 Maintenance

Clean and tighten all power supplier and ground connection points every 6 months (or when the system shutdowns).

Remove dust for the following devices every 6 months (or when the system shutdowns) by antistatic vacuum cleaner: module, base, rack, fan unit, power supplier terminal board, etc.

Refer to the *Control Station Hardware User Manual* for the methods of module installation and uninstallation.

Section 4 Project Application Illustration

4.1 Application Notes

- Due to the wide variety of digital input type signals, when you use it, select the appropriate wiring method according to the type of the actual signal on field.
- SPD protection should be performed when the length of the signal cable is greater than 30 meters and needs to be deployed outside.

4.2 Fault Analysis and Troubleshooting

- The Fault light indicator is always on, indicating that the module has multi-fault and needs to be replaced.
- The L-Bus light indicator is always off. Check whether the communication cable is normal. If it is normal, the module has fault and needs to be replaced.
- The L-Bus light flashes, indicating that there is a conflict in the address. Please check if there is a conflict module on the bus.
- If the Supply light is always off, please re-plug the module. If the Supply light is still off, the module has fault and needs to be replaced.
- After the module is powered on, all indicators are always off. Check whether or not the connection of the system power on modules is normal. If it is normal, the module has fault and needs to be replaced.

Section 5 Revision

Table 5-1 Retrofit list of the version

Document Version	Applicable Software Version	Remarks
V1.0 (20191218)	DI717-S11 V10.10.00 and later versions	The first version.