

Digital Input Module






DI715-S11

User manual

IM23H42-E

Notices
<ul style="list-style-type: none"> ● The reproduction, transmission or use of this document or its contents is not permitted without express written authority. ● Information and specifications in this document are subject to change without notice. ● While information in this document is well edited and checked, mistake or omission may exist. Please don't hesitate to contact SUPCON if you have any question about this document. ● Please contact SUPCON via email "SMS@supcon.com" if you have any question.

Trademarks
<p>Trademarks or marks SUPCON, SPlant, Webfield, ESP-iSYS, MultiF, InScan, SupField are all registered, registering or using by Zhejiang SUPCON Technology Co., Ltd., which owns the properties of all trademarks or marks above. Without the written authority from Zhejiang SUPCON Technology Co., Ltd, no individual or company shall use any trademarks or marks above. We reserve the right to take legal action for any individual or company using trademarks or marks above illegally.</p>

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)

Table of Contents

Section 1 Description	1
Section 2 Technical Specifications	2
Section 3 Usage Instruction	3
3.1 Led Indicators.....	3
3.2 I/O Module Installation.....	3
3.3 Interface Feature	3
3.4 Terminals Definition & Connection.....	3
3.4.1 Works with TUA711-DIO32	3
3.4.2 Works with TUA711-DIR32.....	4
3.5 Base/Terminal Unit Selection.....	5
3.6 Configuration Parameter	6
3.7 Maintenance.....	6
Section 4 Application	7
4.1 Achievement of Channel-channel Isolation.....	7
4.2 Notices	8
4.3 Fault diagnosis and troubleshooting	8
Section 5 Revision.....	10

Digital Input Module DI715-S11

Section 1 Description

DI715-S11 module is a 24VDC digital input module, which can collect digital signal. The module supports 1:1 redundant configuration.

DI715-S11 works with the relay input terminal unit TUA711-DIR32 or the digital input module change-over terminal unit TUA711-DIO32 by the change-over bases MB745-S11 or MB746-S11.

Section 2 Technical Specifications

Table 2-1 Technical Specifications of DI715-S11

Parameter		Description
Module Model		DI715-S11
Type		Digital input module
Channel Number		32
Redundancy		Support
Isolation type		Isolated
Temperature	Run Temperature	(-20~70)°C
	Store Temperature	(-40~85)°C
Humidity	Run 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
24V auxiliary cabinet power consumption		<0.12W/channel
Signal Type		Active Contact Input, and passive contact is allowed input when module works with relay terminal unit
ON and OFF Condition	Active Contact Input	ON:<1kΩ; OFF:>100kΩ

Section 3 Usage Instruction

3.1 Led Indicators

Table 3-1 LED indicators in DI715-S11

LED Indicator	Fault (Red)	Status (Green)	Duplex (Green)	L-Bus (Green)	Supply (Green)
Description Status	Fault	Operation	Work/standby	Communication	Cabinet power supply status
OFF	Normal	--	Standby	Communication link break	Abnormal cabinet power supply
ON	Fault	Normal	Work	Normal	Normal
Flashing	--	No configuration	--	IP confliction	--

3.2 I/O Module Installation

DI715-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

Only passive contact signal is allowed input DI715-S11. But passive contact signal and active contact signal can be allowed input when DI715-S11 works with terminal unit. The connection is shown in Figure 3-1, Figure 3-2. Please refer to terminal unit user manual for detail.

3.4 Terminals Definition & Connection

Passive contact signal and active contact signal be allowed input when DI715-S11 works with TUA711-DIR32, and the passive contact signal be allowed input when DI715-S11 works with TUA711-DIO32.

3.4.1 Works with TUA711-DIO32

The passive contact signal is allowed input when DI715-S11 works with TUA711-DIO32. The connection is shown in the figure below.

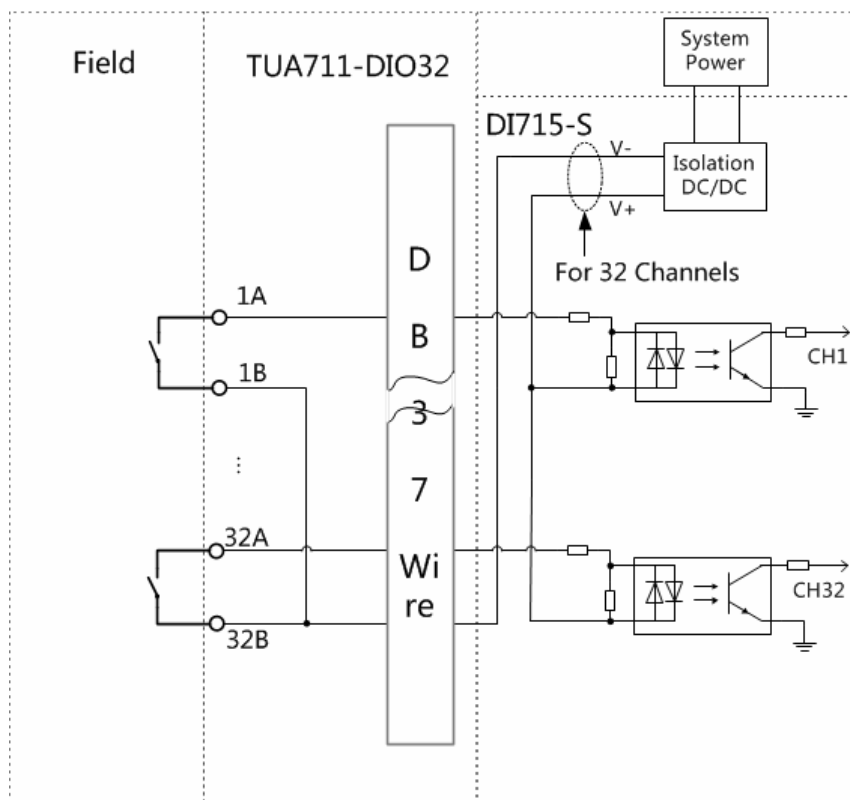


Figure 3-1 Connection of Passive Contact Signal

3.4.2 Works with TUA711-DIR32

If the signal source is the active contact signal and passive contact signal input, the system of TUA711-DIR32 should connect with power supply. The connection is shown in the figure below.

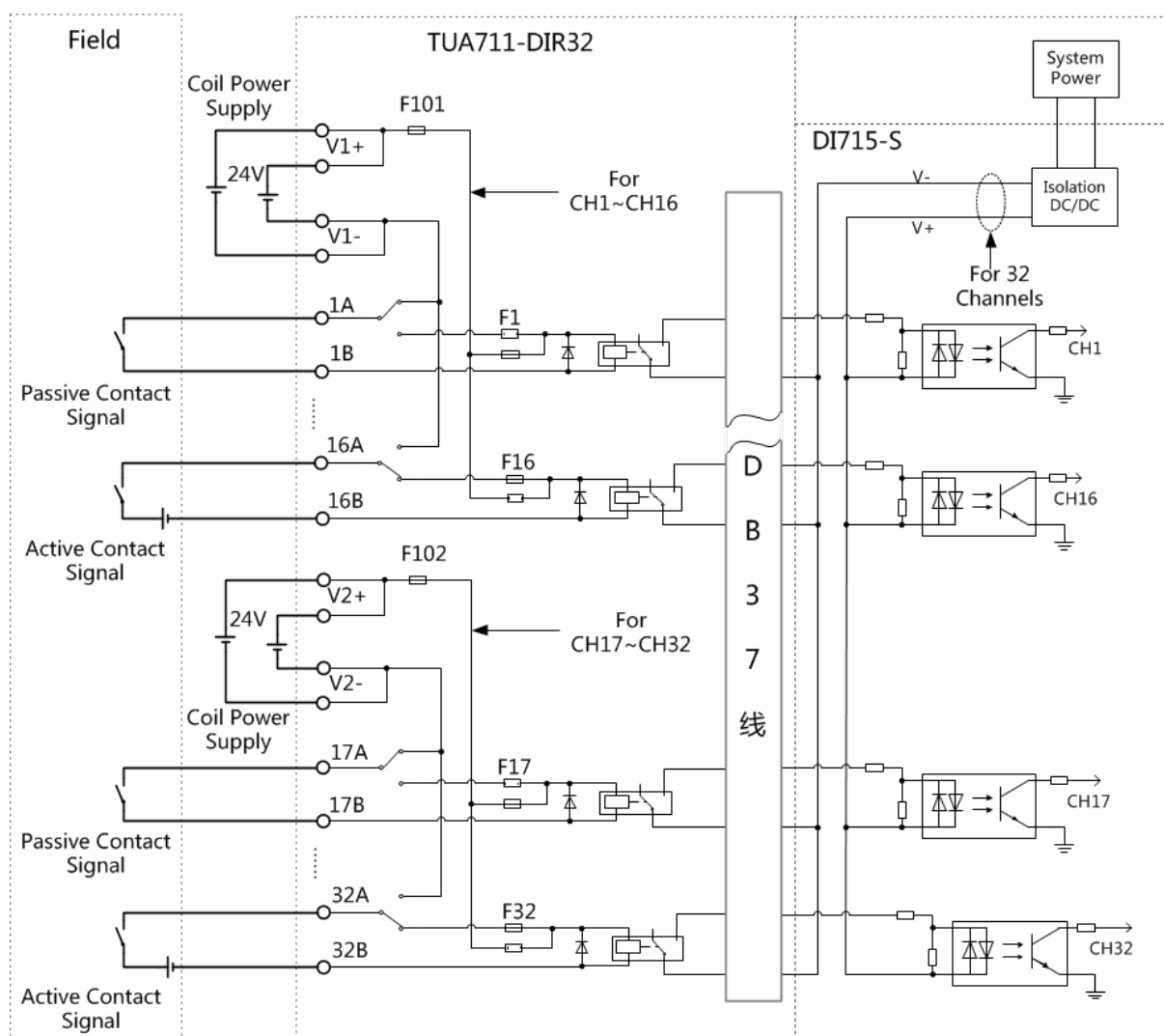


Figure 3-2 Connection of Active Contact Signal

3.5 Base/Terminal Unit Selection

Selection of bases/terminal unit matching DI715-S11 is shown in Table 3-2.

Table 3-2 Selection of Bases/Terminal unit Matching DI715-S11

Signal Type	Working Mode of Module	Base Model	Terminal Unit
Relay Isolation Passive Signal Relay Isolation Active Signal	Single	MB745-S11	TUA711-DIR32
	Redundant	MB746-S11	
Passive Contact Signal	Single	MB745-S11	TUA711-DIO32
	Redundant	MB746-S11	

DI715-S11 of this version is totally compatible with last version.

3.6 Configuration Parameter

Method to set filter parameter: open the VFExplorer and select Hardware Configuration. Select DI715-S11 in the left pane, the configuration options of module channel will show in the right pane. Select one and set the parameter of filter time.

Configure the DI signal anti-interference, the filter parameters can be set include 16ms and 32ms. Users can choose one in application.

Details refer to the *Hardware Module Builder User Manual* and the *Tag Builder User Manual*.

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), control machine address (2~126), I/O connecting module address (1~7), I/O rack address (0~3), module address (0~15) and channel number (0~31).

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 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 output 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 Barrier	Rail Isolated Barrier
Passive Signal	✓	-	-	-	✓
	-	✓	-	✓	-
Active Signal	-	✓	✓	-	-

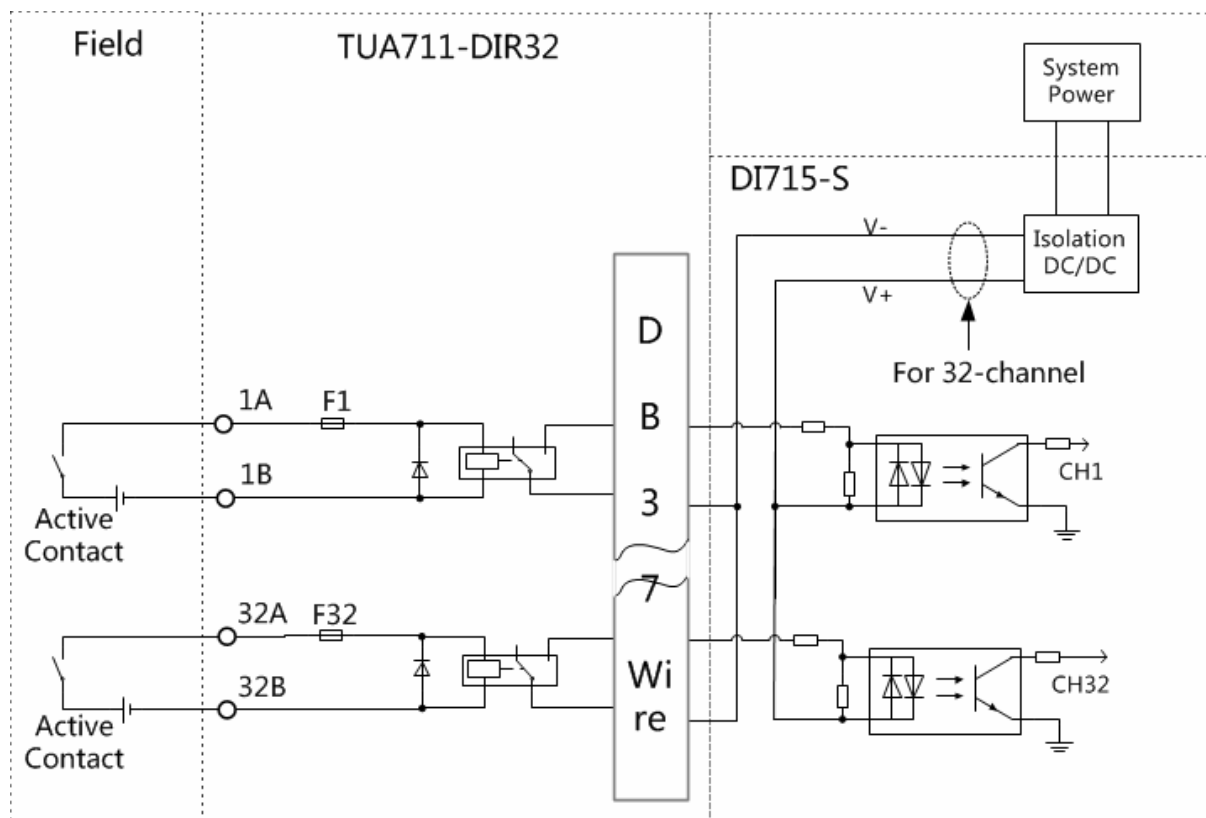


Figure 4-1 Achievement of channel-channel isolation for relay terminal unit

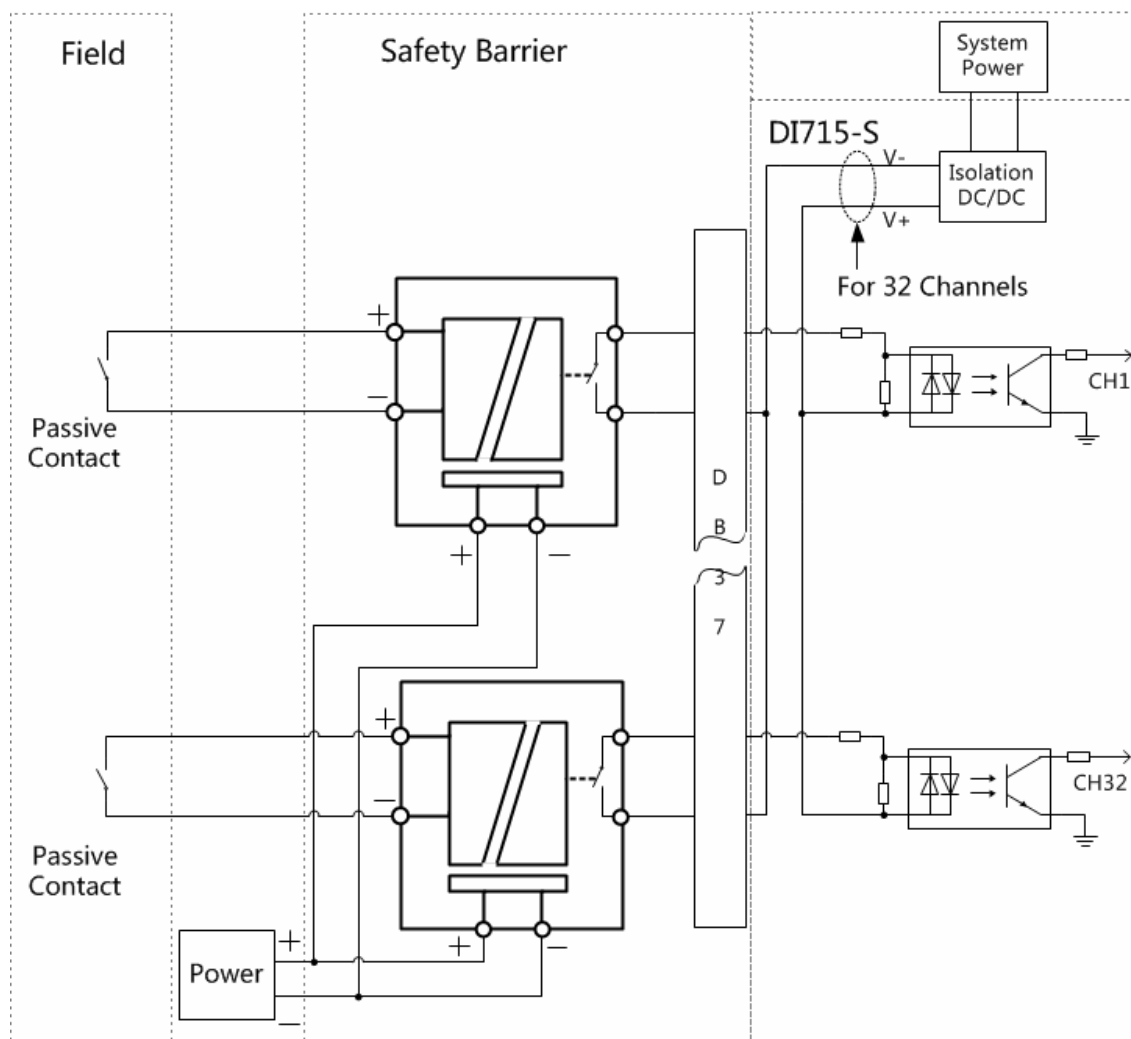


Figure 4-2 Achievement of channel-channel isolation for safety barrier

4.2 Notices

- Users should know the effect of relay time delay for the DI dithering when the module connecting with the relay terminal unit. Generally, the DI dithering parameter can be set as less than 30 times per second when connecting with the relay terminal unit. It can be set according to the specific relay parameter.

4.3 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	DI715-S-10.10.00	
V2.1(20131029)	DI715-S11 V11.10.00 and later versions	Bases selection and power distribution have been changed Add Achievement of Channel-channel Isolation
V2.2(20141218)	DI715-S11 V11.10.00 and later versions	Modify figure 4-2
V2.3(20150917)	DI715-S11 V11.10.00 and later versions	Modify I/O connecting module address
V2.4(20161116)	DI715-S11 V11.10.00 and later versions	Add code