

Isolated Barriers Backplane






TU731-I0000

User manual

IM23H69-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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Isolated Barriers Backplane TU731-I0000

Section 1 Description

TU731-I0000 is an 8-channel isolated barriers backplane, which can be used for one or a pair of redundant module AI711. 8 MTL4500 series or SB400 series analogue input isolated barriers can be installed on TU731-I0000. The isolated barriers are connected with the signal of safe-area side in the field, then output (4~20)mA current to the system side.

The terminal board supports DIN railways.

Section 2 Technical Specifications

Table 2-1 technical specifications of TU731-I0000

Parameter	Description	
Module model	TU731-I0000	
Channel No.	8	
The matched isolated barriers type	MTL4541/C/Y(input/output isolated) MTL4575(TC/RTD)(input/output isolated) SB4042(input/output isolated) SB4073-EX(input/output isolated)	safe-area side AI ((4 ~20) mA ,TC/RTD) input, system side (4~20) mA output, equipped with HART
Power supply	24V DC (redundancy)	With fuse
dimension	153.5 mm*51.5mm	
Working temperature	-20°C ~70°C	

Section 3 Usage Instruction

3.1 External structure diagram

The structure diagram of TU731-I0000 is shown as Figure 3-1. The 8 signals of 8 isolated barriers are introduced to J1.

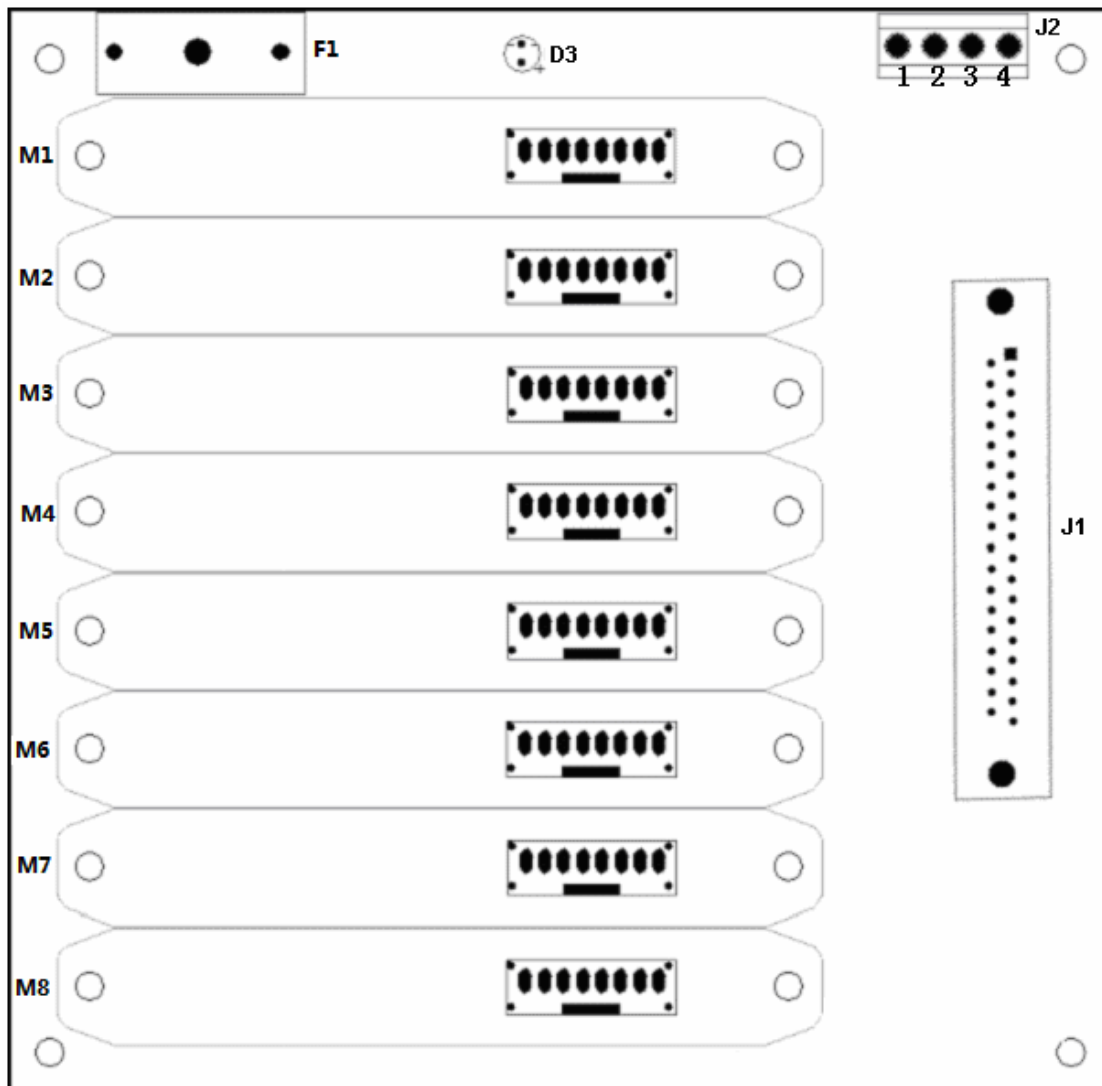


Figure 3-1 Structure Diagram of TU731-I0000

3.2 Connectors

The connectors of TU731-I0000 are shown as below:

Table 3-1 Connector of TU731-I0000

Socket	Note
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Socket	Note
J1	Connector for DB37
J2	Wiring terminal; for power supply
F1	fuse

3.3 Isolated barriers type supported by backplane

Table 3-2 Isolated barriers type supported by backplane

Isolated barriers	Remark	Clip kit
MTL4541/C/Y	safe-area side AI (4~20)mA input, system side (4~20)mA output, with HART	MCK45
MTL4575(TC/RTD)	safe-area side AI (TC/RTD) input, system side (4~20)mA output, with HART	MCK45
SB4042	safe-area side AI (4~20)mA input, system side (4~20)mA output, with HART	-
SB4073-EX	safe-area side AI (TC/RTD) input, system side (4~20)mA output, with HART	-

3.4 Backplane power supply terminals definition

The power supply wiring terminals instruction of J2 in the TU731-I0000 is shown as Table 3-3. When isolated barrier connects to an external power supply, a 24V external power supply can be connected to the barrier by 1 and 2 terminals or 3 and 4 terminals. “24VA” and “24VB” represents they should connect to the anode of a 24V power supply externally while “VS-” represents it should connect to the cathode of a 24V power supply. When the redundant 24VDC is needed, it can be introduced via terminals 1 and 2, 3 and 4 respectively.

Table 3-3 power supply wiring terminal description

Definition	NO.	Remarks
24VA	1	Connects to 24V(1) anode
VS-	2	Connects to 24V(1) cathode
24VB	3	Connects to 24V(2) anode
VS-	4	Connects to 24V(2) cathode

3.5 Signal terminals Connection instruction

AI isolated barriers of MTL4500 series can be installed on the isolated barriers backplane TU731-I0000, with 6 wiring terminals on the top. It is connected to the isolated barriers backplane via the 8PIN socket at the bottom. The field signals are connected to the 6 terminals mentioned above, they're sent to the 8PIN socket via switchover and isolating by the isolated barrier, then connected to the AI711 via DB37 cable. The wiring is shown as Figure 3-2.

Table 3-4 Terminals wiring of field signals

Signal description	Wiring terminal(MTL4541/C/Y)
current signal(no power distribution)	5(signal+)
	6(signal -)
Two-wire transmitter(power distribution)	2(signal +)

Signal description	Wiring terminal(MTL4541/C/Y)
	5(signal -)
Three-wire transmitter	2(power supply+)
	6(power supply -)
	5(signal wiring)

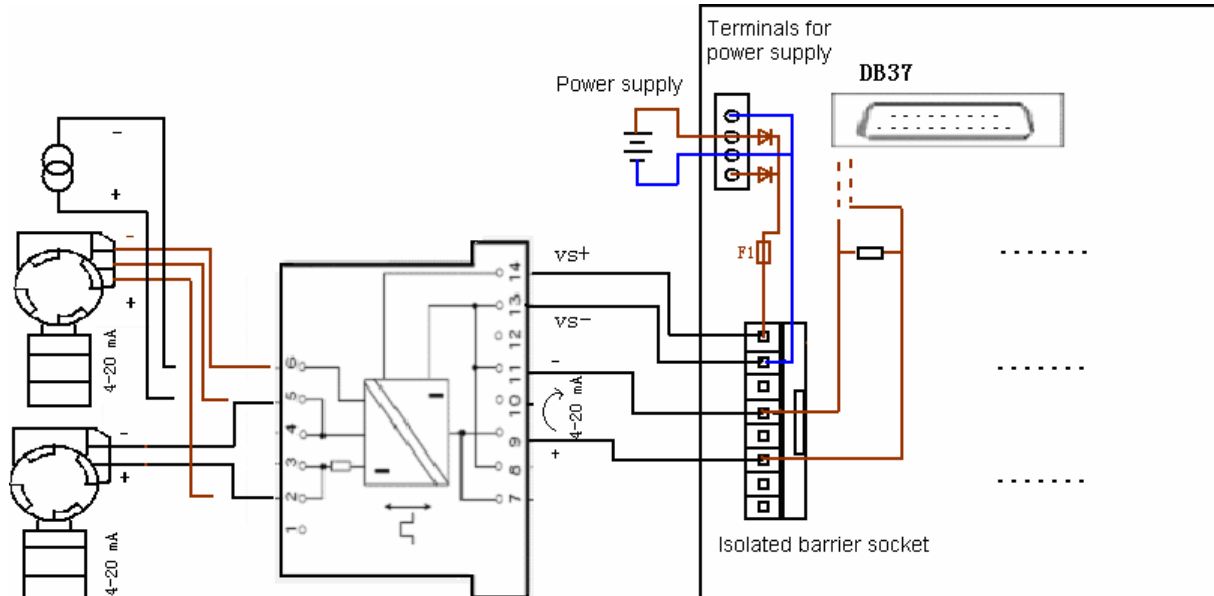


Figure 3-2 Wiring diagram of isolated barrier MTL4541/C/Y

3.6 D3 indicator

D3 indicator is the power supply indicator of the TU731-I0000 backplane. “on” represents the 24VDC is normal, “off” represents the 24VDC is abnormal.

3.7 Base Selection

Selection of bases/I/O module applicable to TU731-I0000 is shown in Table 3-5.

Table 3-5 Selection of bases/module

Signal Connection Requirement	Working Mode	Base Model	I/O module	Terminal for Auxiliary Power
Terminal Adaptor	Single	MB741-S01	AI711-S	With Terminal
	Redundancy	MB742-S01	AI711-H	
	Single	MB745-S11	AI711-S11	Without Terminal
	Redundancy	MB746-S11	AI711-H11	

3.8 Maintenance

As shown in Figure 3-1, F1 is the fuse base of 24VDC for isolated barriers backplane TU731-I0000, with 20* 5 glass tube fuse installed in it, Models and specifications of fuse are shown below.

Table 3-6 Instruction of consumable.

Marking	Type	Specification	Model (Standard)
F1	Glass Tube, Time-lag Fuse	4A-250V	0218004.MXP

3.9 Application notices

- The channel group is 'no power distribution' when the system configuration, and the power supply of field signals is supplied by the isolated barrier.
- Isolated barriers backplane should be installed and fixed with MCK45 when using with MTL4500 series isolated barrier.

Section 4 Revision

Table 4-1 Retrofit list of the version

Document Version	Applicable Controller Version	Remarks
V1.0	Applicable Module Version: TU731-I0000-10.00.00	
V1.1	Applicable Module Version: TU731-I0000-10.00.00	
V1.2(20130407)	Applicable Module Version: TU731-I0000-11.00.00	Change the fuse capacity
V1.3(20130608)	Applicable Module Version: TU731-I0000-11.00.00	Add the information of MCK45, add maintenance
V1.4(20140411)	Applicable Module Version: TU731-I0000-11.00.00	Add Base Selection
V2.0(20141218)	Applicable Module Version: TU731-I0000-11.00.00	Modify structure diagram
V2.1(20161117)	Applicable Module Version: TU731-I0000-11.00.00	Add code
V2.2(20190318)	Applicable Module Version: TU731-I0000-11.00.00	Refine the circuit figure of power supply.