

DEH

**Change-over Terminal Board for Manual
Operation Instrument**






TU051-S

User manual

IM19H29-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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Change-over Terminal Board for Manual Operation Instrument TU051-S

Section 1 Description

TU051-S terminal board is the change-over terminal board for manual operation instrument and works with OP051-S. TU051-S adopts DIN rail installation.

Section 2 Technical Specifications

Table 2-1 Technical Specifications

Parameter	Description	
Model	TU051-S	
Power Supply	24VDC (-5%~10%)	
Temperature	Operating Temperature	(-20~70)°C
	Storage Temperature	(-40~85)°C
Humidity	Operating Humidity	10%~90%, No Vapor Condensation
	Storage Humidity	5%~95%, No Vapor Condensation
Dimension (With Cover)	158*152*50.5 mm	

Section 3 Usage Instruction

3.1 External Structural Diagram

External structural diagram and dimension with cover of TU051-S is shown as Figure 3-1.

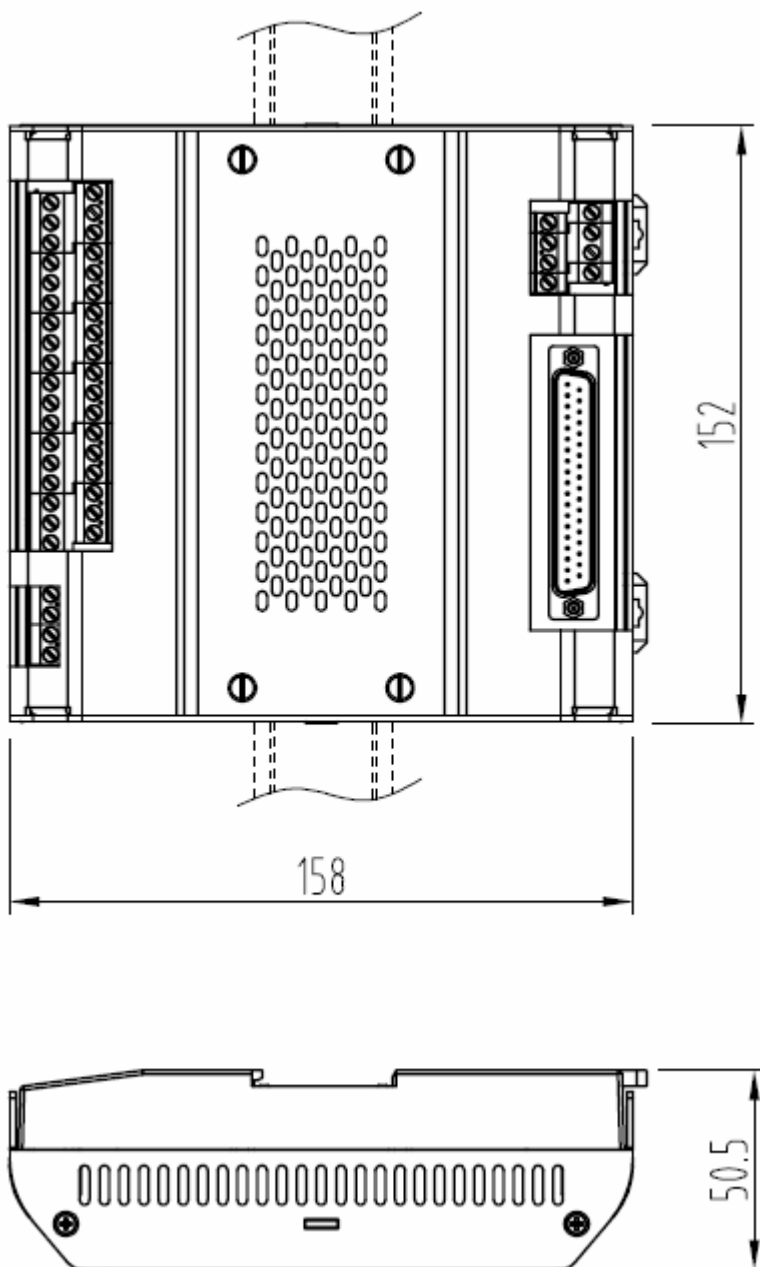


Figure 3-1 External Structural Diagram and Dimension of TU051-S

3.2 Socket Connectors

The socket connectors are shown as below.

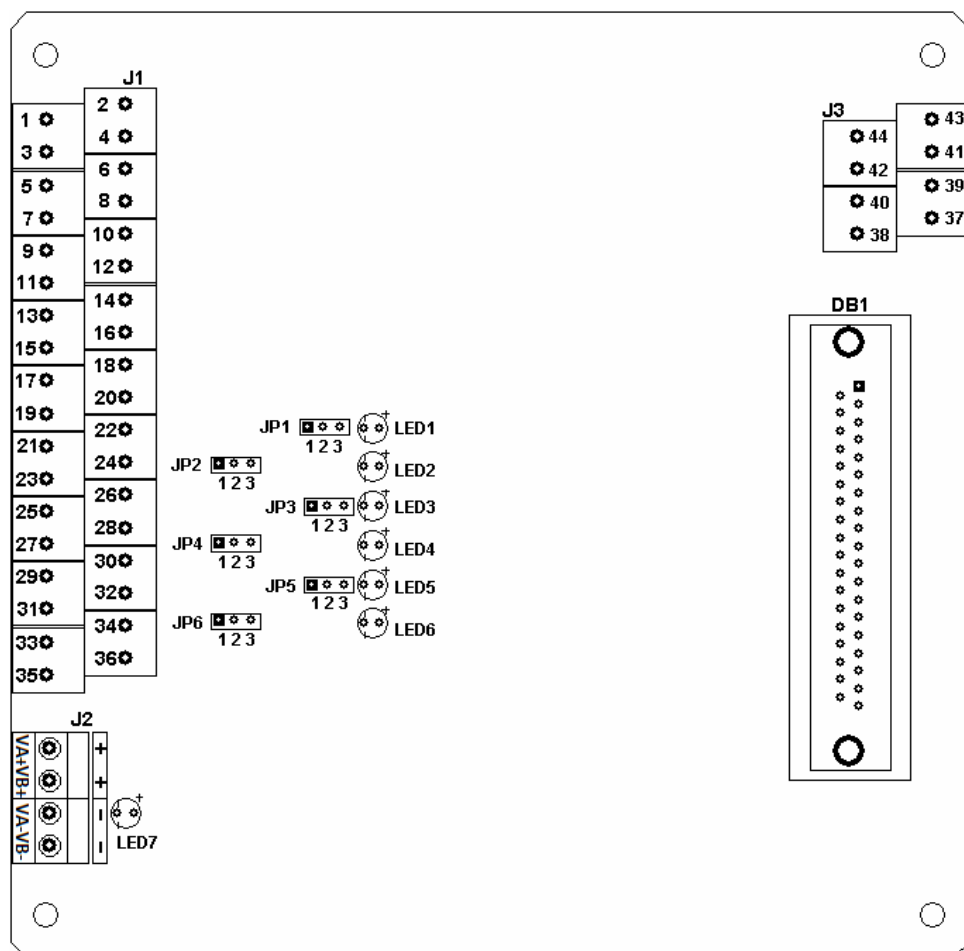


Figure 3-2 Terminal Board TU051-S

Instruction for socket connectors on TU051-S is shown in Table 3-1.

Table 3-1 Instruction for Socket Connectors on TU051-S

Socket	Instruction
J1, J3	Terminal
J2	Auxiliary Power Terminal
JP1~JP6	Jumper
DB1	Socket for DB37 Cable
LED7	Auxiliary Power Indicator
LED1~LED6	Manual Feedback Indicator (ON: Manual Feedback, OFF: No Feedback)

3.3 Jumper Instruction

JP1~JP6 correspond to 6-channel manual feedback signal controls. If the channel connects with the manual feedback signal of DEH servo module, connect the jumpers with 1-2 by short circuit block. If the channel does not connect the manual feedback signal of DEH servo module, connect the jumpers with 2-3. Instruction for jumpers on TU051-S is shown in Table 3-2.

Table 3-2 Jumper Instruction of TU051-S

Jumper	Terminal	Connect Manual Feedback	Not Connect Manual Feedback
JP1	J1-19 J1-20	1-2	2-3
JP2	J1-21 J1-22	1-2	2-3
JP3	J1-23 J1-24	1-2	2-3
JP4	J1-25 J1-26	1-2	2-3
JP5	J1-27 J1-28	1-2	2-3
JP6	J1-29 J1-30	1-2	2-3

3.4 Terminals Definition & Connection

Terminal definition & connection of TU051-S is shown in Table 3-3.

Table 3-3 Terminal Definition & Connection of TU051-S

Terminal No.	Terminal Channel	Connection Object	Remarks
1	Braking -	Negative Pole of Braking Signal, Dry Contact Output	Braking Signal
2	Braking +	Positive Pole of Braking Signal, Dry Contact Output	
3	Manual -	Negative Pole of Manual/Auto Switch, Dry Contact Output	Manual/Auto Switch Signal
4	Manual +	Positive Pole of Manual/Auto Switch, Dry Contact Output	
5	Emergency Shutdown -	Negative Pole of Emergency Shutdown Button, Dry Contact Output	Emergency Shutdown Signal
6	Emergency Shutdown +	Positive Pole of Emergency Shutdown Button, Dry Contact Output	
7	Test -	Negative Pole of Test Key Switch, Dry Contact Output	Test Signal
8	Test +	Positive Pole of Test Key Switch, Dry Contact Output	
9	High Increase -	Negative Pole of High adjustment Valve Position Increase, Dry Contact Output	High Adjustment Valve Increase Signal
10	High Increase +	Positive Pole of High adjustment Valve Position Increase, Dry Contact Output	
11	High Decrease -	Negative Pole of High Adjustment Valve Position Decrease, Dry Contact Output	High Adjustment Valve Decreasing Signal
12	High Decrease +	Positive Pole of High Adjustment Valve Position Decrease, Dry Contact Output	
13	Medium Increase -	Negative Pole of Medium Adjustment Valve Position Increase, Dry Contact Output	Medium adjustment valve increasing signal
14	Medium Increase +	Positive Pole of Medium Adjustment Valve Position Increase, Dry Contact Output	
15	Medium Decrease -	Negative Pole of Medium Adjustment Valve Position Decrease, Dry Contact Output	Medium adjustment valve decreasing signal
16	Medium Decrease +	Positive Pole of Medium Adjustment Valve Position Decrease, Dry Contact Output	
17	Emergency Shutdown Feedback-	Negative Pole of Emergency Shutdown Feedback, Dry Contact Input	Emergency Shutdown Feedback

Terminal No.	Terminal Channel	Connection Object	Remarks
18	Emergency Shutdown Feedback+	Positive Pole of Emergency Shutdown Feedback, Dry Contact Input	Emergency Shutdown Feedback
19	Manual Feedback 1 -	Feedback for Manual Status of Servo Module 1	Connect These 6 Channels of Signals in Series, and Send them to the Manual Operation Instrument as Manual Feedback. For Each Channel of Signal, Apply the LBD on Terminal Board as Status Indicator.
20	Manual Feedback 1 +	Feedback for Manual Status of Servo Module 1	
21	Manual Feedback 2 -	Feedback for Manual Status of Servo Module 2	
22	Manual Feedback 2 +	Feedback for Manual Status of Servo Module 2	
23	Manual Feedback 3 -	Feedback for Manual Status of Servo Module 3	
24	Manual Feedback 3 +	Feedback for Manual Status of Servo Module 3	
25	Manual Feedback 4 -	Feedback for Manual Status of Servo Module 4	
26	Manual Feedback 4 +	Feedback for Manual Status of Servo Module 4	
27	Manual Feedback 5 -	Feedback for Manual Status of Servo Module 5	
28	Manual Feedback 5 +	Feedback for Manual Status of Servo Module 5	
29	Manual Feedback 6 -	Feedback for Manual Status of Servo Module 6	
30	Manual Feedback 6 +	Feedback for Manual Status of Servo Module 6	
31	High Adjustment Valve 1-	Negative Pole of Current Input of high Adjustment Valve 1 Valve Position	Feedback of High Adjustment Valve 1 Valve Position
32	High Adjustment Valve 1+	Positive Pole of Current Input of high Adjustment Valve 1 Valve Position	
33	High Adjustment Valve 2-	Negative Pole of Current Input of High Adjustment Valve 2 Valve Position	Feedback of High Adjustment Valve 2 Valve Position
34	High Adjustment Valve 2+	Positive Pole of Current Input of High Adjustment Valve 2 Valve Position	
35	High Adjustment Valve 3-	Negative Pole of Current Input of High Adjustment Valve 3 Valve Position	Feedback of High Adjustment Valve 3 Valve Position
36	High Adjustment Valve 3+	Positive Pole of Current Input in High Adjustment Valve 3 Valve Position	
37	High Adjustment Valve 4-	Negative Pole of Current Input of High Adjustment Valve 4 Valve Position	Feedback of High Adjustment Valve 4 Valve Position
38	High Adjustment Valve 4+	Positive Pole of Current Input of High Adjustment Valve 4 Valve Position	
39	Medium Adjustment Valve 1-	Negative Pole of Current Input Of Medium Adjustment Valve 1 Valve Position	Feedback of Medium Adjustment Valve 1 Valve Position
40	Medium Adjustment Valve 1+	Positive Pole of Current Input of Medium Adjustment Valve 1 Valve Position	
41	Medium Adjustment Valve 2-	Negative Pole of Current Input Of Medium Adjustment Valve 2 Valve Position	Feedback of Medium Adjustment Valve 2 Valve Position
42	Medium Adjustment Valve 2+	Positive Pole of Current Input of Medium Adjustment Valve 2 Valve Position	
43	Hold	Hold	Hold

Terminal No.	Terminal Channel	Connection Object	Remarks
44	Hold	Hold	Hold

3.5 Installation & Maintenance

The terminal board applies standard DIN rail installation. Details refer to the *OS Hardware User Manual*.

TU051-S has a special cover. Its installation is shown as below. Screw down the four screws to the double-screw bolts.

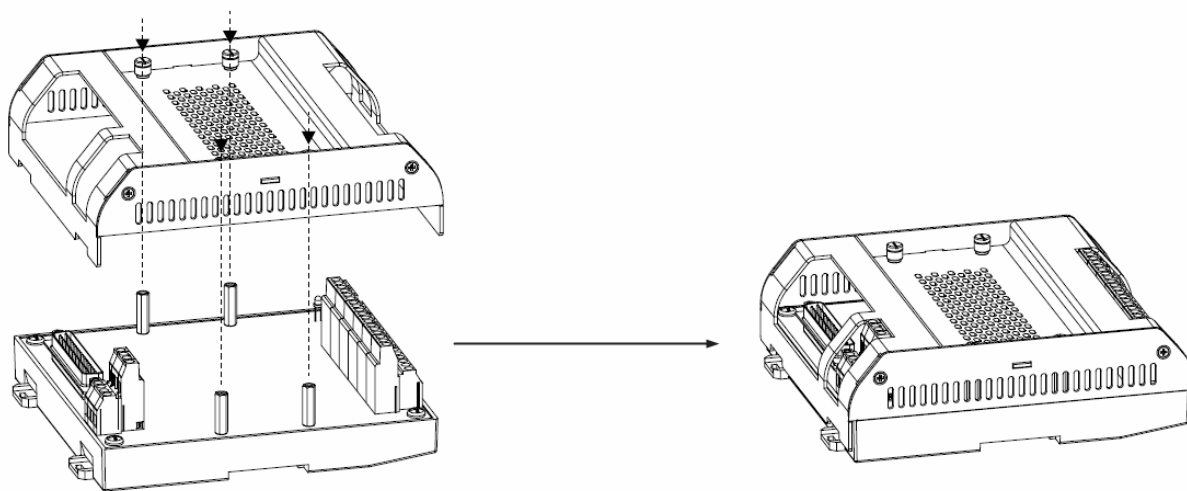


Figure 3-3 Installation of the Special Cover

Section 4 Revision

Table 4-1 Retrofit list of the Version

Document Version	Product Model	Remarks
V1.0(20121224)	TU051-S V10.00.00	The First Version
V1.1(20161017)	TU051-S V10.00.00	Delete naming criterion of specification code of terminal board
V1.2(20170725)	TU051-S V10.00.00	Modify the temperature and terminal feinition & connection