

DEH

Servo Module Terminal Board






TU704-R1100

User manual

IM19H30-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)

Table of Contents

Servo Module Terminal Board TU704-R1100.....	1
Section 1 Description.....	1
Section 2 Technical Specifications	2
Section 3 Usage Instruction	3
3.1 External Structural Diagram.....	3
3.2 Socket Connector	3
3.3 Jumper and Dial Switch Instruction	4
3.3.1 Jumper	4
3.3.2 DIP Switch.....	5
3.4 Terminals Definition & Connection.....	5
3.5 Installation & Maintenance	7
Section 4 Revision.....	8

Servo Module Terminal Board TU704-R1100

Section 1 Description

The terminal board TU704-R1100 works with electric fluid servo module, and they together compose the DEH electric liquid servo control unit which can receive the electric signal of turbine oil driver stroke, grid connected switch tripping signal and manual increase/decrease signal, etc.

TU704-R1100 applies DIN rail installation.

Section 2 Technical Specifications

Table 2-1 Technical Specifications

Parameter	Description	
Model	TU704-R1100	
Power Supply	24VDC	
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 TU704-R1100 is shown as below.

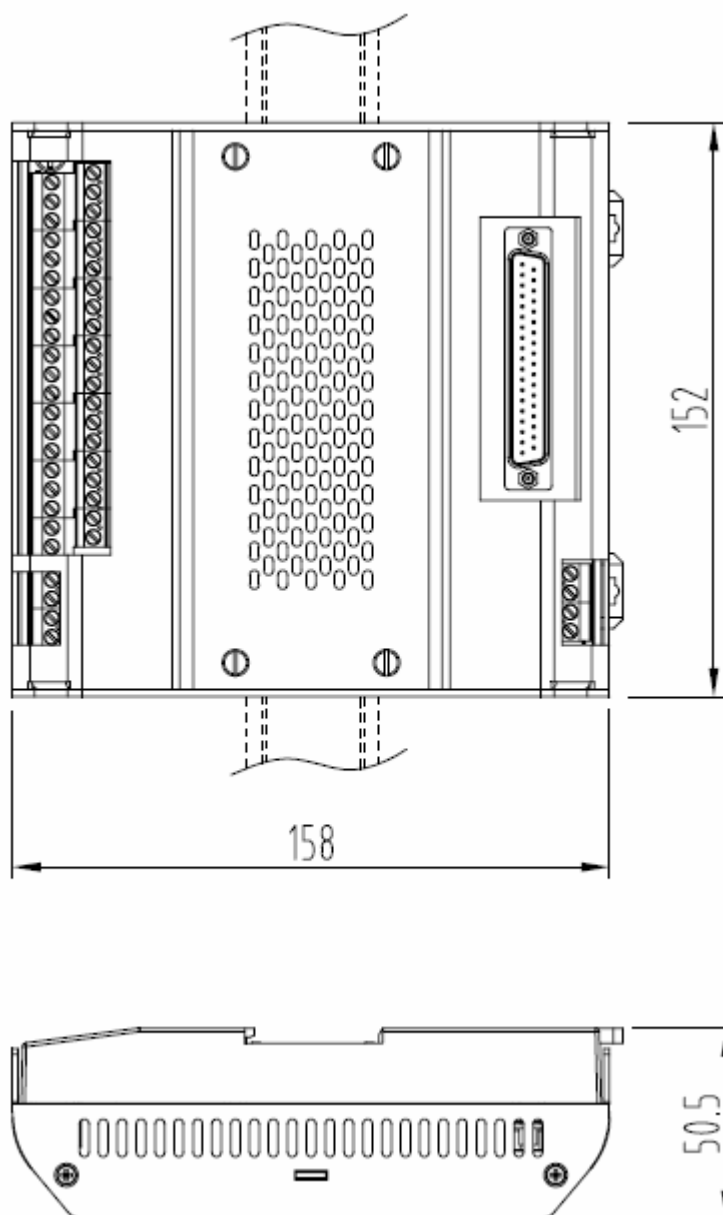


Figure 3-1 External Structural Diagram and Dimension of TU704-R1100

3.2 Socket Connector

The socket connectors are shown as below.

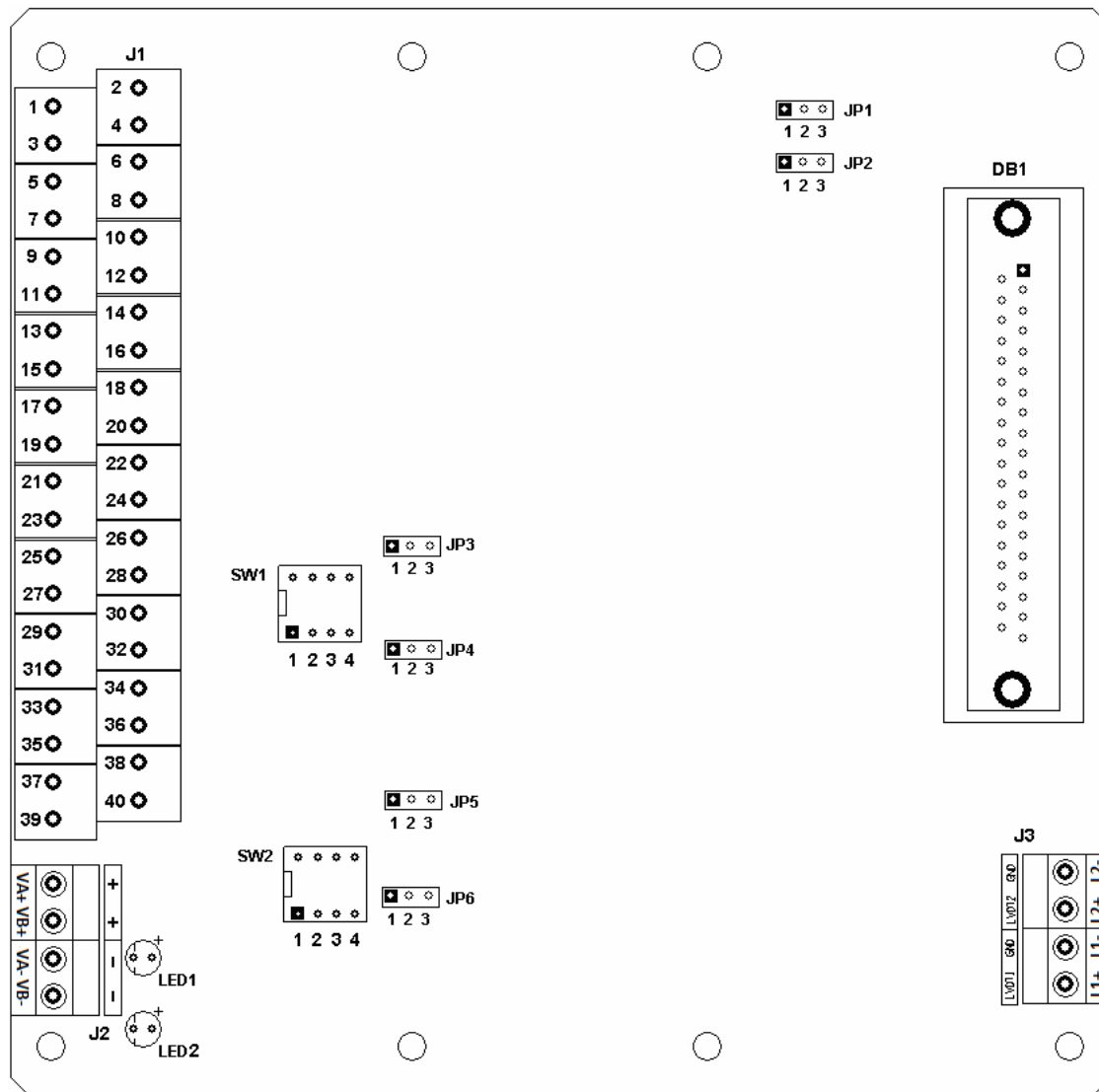


Figure 3-2 Socket Connector Diagram of TU704-R1100

Instruction for socket connectors on TU704-R1100 is shown as below.

Table 3-1 Instruction for Socket Connectors on TU704-R1100

No.	Instruction
J1	Field Signal Terminal
J2	Auxiliary Power Terminal
J3	LVDT Test Terminal
LED1	Terminal Board Power Indicator
LED2	Module Power Indicator
DB1	DB37 Cable Socket
JP1, JP2, JP3, JP4	Jumper Terminal
SW1, SW2	Dial Switch

3.3 Jumper and Dial Switch Instruction

3.3.1 Jumper

Jumper instruction is shown as below.

Table 3-2 Jumper Instruction

No. of Socket Connector	Jumper	Instruction
JP1	Jump 1-2	Channel 1 Current Signal Output
	Jump 2-3	Channel 1 Voltage Signal Output
JP2	Jump 1-2	Channel 2 Current Signal Output
	Jump 2-3	Channel 2 Voltage Signal Output
JP3、JP4	All Jump 1-2	LVDT1 Sensor Signal Input
	All Jump 2-3	LVDT1 Input by Transmitter
JP5、JP6	All Jump 1-2	LVDT2 Sensor Signal Input
	All Jump 2-3	LVDT2 Input by Transmitter

3.3.2 DIP Switch

DIP switches SW1 and SW2 can set the amplitude of voltage output by LVDT1 and LVDT2 after modulation and demodulation. The larger the gated resistance value, the larger the output voltage after LVDT modulation and demodulation. SW1 corresponds to LVDT1, and SW2 corresponds to LVDT2. The 4 resistances each group DIP switches corresponded are in parallel connection. Dial of two groups should be the same. (ON: gated 1. OFF: gated 0.)

Valve position indicated by the system should be near the maximum or minimum of the range 0~100% after adjusting the resistance value, to ensure the LVDT can work in the full range. The resistance values corresponding to SW1, SW2 dial digits are shown as below.

Table 3-3 Resistance Value Corresponding to Different Dial Switch Digits

SW1-1	SW1-2	SW1-3	SW1-4	SW2-1	SW2-2	SW2-3	SW2-4
10kΩ	12kΩ	15kΩ	39kΩ	10kΩ	12kΩ	15kΩ	39kΩ

General dial modes are shown as below.

Table 3-4 General dial modes

Gated Resistance Value	Dial Value	Oil Driver Stroke Full Stroke/ LVDT Full Range
9.18 kΩ	0101	96%~100%
10kΩ	1000	92%~96%
10.83kΩ	0011	83%~92%
12kΩ	0100	74%~83%

3.4 Terminals Definition & Connection



Attention:

Make sure the correction of all connection to avoid serious fault.

Table 3-5 Terminal Definition & Connection

Terminal No.	Channel function	Connection Object
1	Channel 1 (-) Current Output	Negative Terminal of Current-type Electric Fluid Servo Valve Control Signal
2	Channel 1 (+) Current Output	Positive Terminal of Current-type Electric Fluid

Terminal No.	Channel function	Connection Object
		Servo Valve Control Signal
3	Channel 1 (-) Voltage Output	Negative Terminal of Voltage-type Electric Fluid Servo Valve Control Signal
4	Channel 1 (+) Voltage Output	Positive Terminal of Voltage-type Electric Fluid Servo Valve Control Signal
5	Channel 2 (-) Current Output	Negative Terminal of Current-type Electric Fluid Servo Valve Control Signal
6	Channel 2 (+) Current Output	Positive Terminal of Current-type Electric Fluid Servo Valve Control Signal
7	Channel 2 (-) Voltage Output	Negative Terminal of Voltage-type Electric Fluid Servo Valve Control Signal
8	Channel 2 (+) Voltage Output	Positive Terminal of Voltage-type Electric Fluid Servo Valve Control Signal
9	Channel 3 (-) Current Output	Display of LVDT Signal Value on Manual Operation Instrument (-)
10	Channel 3 (+) Current Output	Display of LVDT Signal Value on Manual Operation Instrument(+)
11	DO Channel 1	Manual/Auto Feedback Display on Manual Operation Instrument
12	DO Channel1	Manual/Auto Feedback Display on Manual Operation Instrument
13	DO Channel2	Hold
14	DO Channel2	Hold
15	DI Channel1	DI Public Side
16	DI Channel1	External Grid Connected Switch Tripping Signal Side
17	DI Channel2	DI Public Side
18	DI Channel2	Manual & Auto Switch Signal Side on Manual Operation Instrument
19	DI Channel3	DI Public Side
20	DI Channel3	Manual Increase Signal Side on Manual Operation Instrument
21	DI Channel4	DI Public Side
22	DI Channel4	Manual Decrease Signal Side on Manual Operation Instrument
23	NC	
24	NC	
25	LVDT1 Primary Loop (+)	LVDT Sensor
26	LVDT1 Primary Loop (-)	LVDT Sensor
27	LVDT1 Secondary Loop 1 (+)	LVDT Sensor
28	LVDT1 Secondary Loop 2 (+)	LVDT Sensor
3229	LVDT1 Secondary Loop 1 (-)	LVDT Sensor
30	LVDT1 Secondary Loop 2 (-)	LVDT Sensor
31	LVDT1 Input After The Transmitter (-)	LVDT Standard Signal Displacement Transmitter(-)
32	LVDT1 Input After The Transmitter (+)	LVDT Standard Signal Displacement Transmitter(+)
33	LVDT2 Primary Loop (+)	LVDT Sensor
34	LVDT2 Primary Loop (-)	LVDT Sensor
35	LVDT2 Secondary Loop 1(+)	LVDT Sensor
36	LVDT2 Secondary Loop 2(+)	LVDT Sensor
37	LVDT2 Secondary Loop 1(-)	LVDT Sensor
38	LVDT2 Secondary Loop 2(-)	LVDT Sensor

Terminal No.	Channel function	Connection Object
39	LVDT2 Input After the Transmitter(-)	LVDT Standard Signal Displacement Transmitter(+)
40	LVDT2 Input After the Transmitter(+)	LVDT Standard Signal Displacement Transmitter(-)

J3 is LVDT test terminal, whose instruction is shown as below.

Table 3-6 LVDT Test Terminal Instruction

No.	Channel Function	Connection Object
L1+	LVDT1 Voltage Output is Positive	LVDT Zero-adjust and Amplitude-adjust Positive Test Point
L1-	LVDT1 Voltage Output is Negative	LVDT Zero-adjust and Amplitude-adjust Negative Test Point
L2+	LVDT2 Voltage Output is Positive	LVDT Zero-adjust and Amplitude-adjust Positive Test Point
L2-	LVDT2 Voltage Output is Negative	LVDT Zero-adjust and Amplitude-adjust Negative Test Point

3.5 Installation & Maintenance

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

TU704-R1100 has a special cover. Its installation is shown as below. Screw down the four screws to the double-screw bolts.

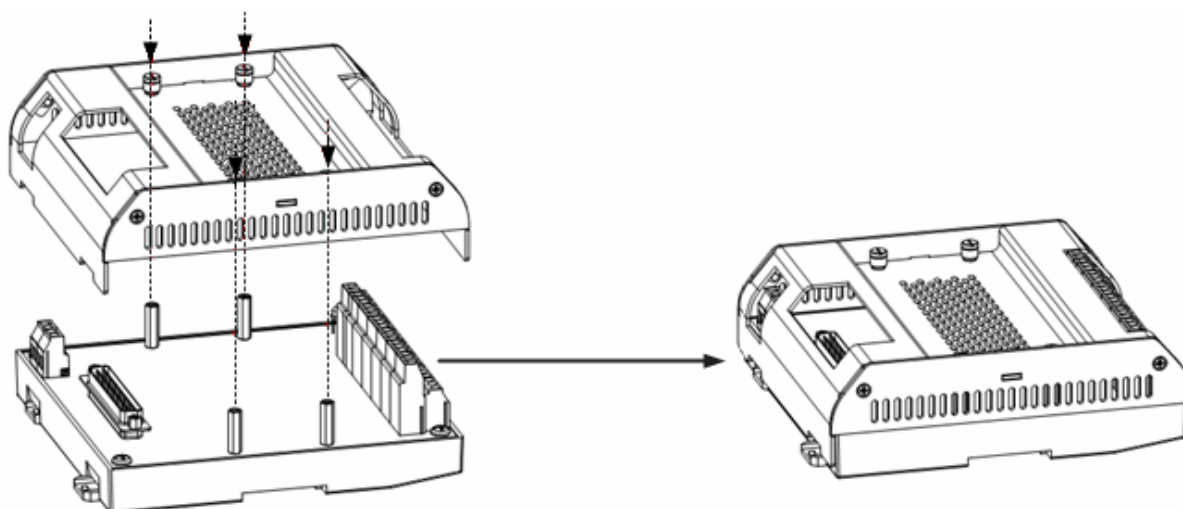


Figure 3-3 Installation of the Special Cover

Section 4 Revision

Table 4-1 Retrofit list of the Version

Document Version	Product Model	Remarks
V1.0 (20111118)	TU704-R1100 V10.00.00	The First Version
V1.1 (20170511)	TU704-R1100 V10.00.00	Add code, delete naming criterion of specification code of terminal board
V1.2 (20170922)	TU704-R1100 V10.00.00	Modify some information