MITSUBISHI

Temperature Control Module

Mitsubishi General-Purpose Programmable Controller

User's Manual

(Hardware)

A1S64TCTRT
A1S64TCTRTBW

Thank you for purchasing the Mitsubishi general-purpose programmable controller MELSEC-A series.

Prior to use, please read this manual thoroughly and familiarize yourself with the product.

Type	A1S64TCTRT-U-HW
Type Code	13JP77
IB(NA)-0800320-B(0701)MEE	

A MELSEC

● SAFETY PRECAUTIONS ●

(Please read these precautions prior to use)

When using Mitsubishi equipment, thoroughly read this manual and the associated manuals introduced in this manual. Also, pay careful attention to safety and handle the module properly.

These precautions apply only to Mitsubishi equipment. Refer to the CPU module user's manual for a description of the PC system safety precautions.

These ●SAFETY PRECAUTIONS● classify the safety precautions into two categories: "DANGER" and "CAUTION".

⬦**DANGER**	Procedures which may lead to a dangerous condition and cause death or serious injury if not carried out properly.
⚠**CAUTION**	Procedures which may lead to a dangerous condition and cause superficial to medium injury, or physical damage only, if not carried out properly.

Depending on circumstances, procedures indicated by ⚠**CAUTION** may also be linked to serious results.

In any case, it is important to follow the directions for usage.

Store this manual in a safe place so that you can take it out and read it whenever necessary. Always forward it to the end user.

[Design precautions]

⬦**DANGER**
● Configure a safety circuit outside the PLC, so that the entire system operates safety even if there is an external power error or if the PLC is malfunctioning.
(1) The output status to the outside varies, depending on the output status setting in the external-output control setting mode: Please be careful when performing the setting. Refer to the Section 3.3.9 of detailed manual for details on the output status.
(2) Due to malfunction of the output element or its internal circuit, normal output may not be obtained or erroneous output may be performed. For output signals that may cause a severe accident, set an external circuit to monitor the output.

[Design precautions]

⚠ **CAUTION**
● Do not bundle the control cables and communication cables with the main circuit and power cables. Keep a distance of least 100mm (3.94inch) between them. Noise may cause erroneous operation.

[Installation precautions]

⚠ **CAUTION**
● Use the PLC in the environment given in the general specifications of the this manual. Using the PLC outside the range of the general specifications may result in electric shock, fire or malfunction, or may damage or degrade the module.   ● Insert the tabs at the bottom of the module into the mounting holes in the base unit to install the module, and tighten the module fixing screws with the specified torque. Failure to do so may result in malfunction, failure or drop of the module.   ● Do not directly touch the module's conductive parts or electronic components. Doing so could cause malfunction or failure in the module.

[Wiring precautions]

⚠ **CAUTION**
● Do not grab on the cable when removing the communication or power cable connected to the module.   When disconnecting a cable without a connector, first loosen the screws on the terminal block.   Pulling the cable when it is still connected to the module may cause damage to the module or cable, or malfunction.   ● Be sure to ground the shield wire to the protective ground conductor. Not doing so could result in an electric shock or malfunction.   ● Connect the cables to the PLC correctly, checking the product's rated voltage and the terminal layout. Connecting a power supply that has a different rating or incorrect wiring could result in fire or failure.   ● Tighten the terminal screws within the specified torque range. Loose terminal screws may cause a short circuit, fire, or malfunction.   Tightening the terminal screws too far may cause damage to the screw and/or the module, resulting in short circuit, or malfunctions.   ● Be sure that cuttings, wire chips, or other foreign matter do not enter the module. Foreign matter may cause a fire, failure or malfunctions.

[Starting and maintenance precautions]

⚠CAUTION
● Do not touch the terminal while the power is on. It may cause malfunction. ● Make sure to switch all phases of the external power supply off before cleaning or re-tightening the terminal screws. Failure to do so will cause failure or malfunction of the module. ● Never disassemble or remodel the module. This may cause failure, malfunction, injury and/or fire. ● Make sure to switch all phases of the external power supply off before mounting or removing the module. Failure to do so will cause failure or malfunction of the module. ● Do not install/remove the terminal block more than 50 times after the first use of the product. (IEC 61131-2 compliant) ● Always touch a grounded metal object to discharge the static electricity from the human body before handling the module. Failure to do so may cause a failure or malfunctions of the module.

[Disposal precaution]

⚠CAUTION
● When disposing of this product, handle it as an industrial waste.

Revisions

CONTENTS

About the Manuals

The following manual is related to this product.
Please purchase it if necessary.

Detailed Manual

Manual name	Manual No. (Model code)
Temperature Control Module Type A1S64TCTRT/ Temperature Control Module with Disconnection Detection Function Type A1S64TCTRTBW User's Manual	SH-080549ENG (13JR79)

Conformance to the EMC and Low Voltage Directives

When incorporating the Mitsubishi PLC into other machinery or equipment and ensuring compliance with the EMC and low voltage directives, refer to the User's Manual for this module.
A module compliant with the EMC and low voltage directives bears a CE mark logo printed on the rating plate.

1. OVERVIEW

This user's manual provides the specifications, handling, part names and others of the following temperature control modules used with the MELSEC-A series CPU modules.
• A1S64TCTRT temperature control module
• A1S64TCTRTBW temperature control module with wire break detection feature

After unpacking, confirm that the following is included.

Model code	Product name	Quantity
A1S64TCTRT	Type A1S64TCTRT temperature control module	1
A1S64TCTRTBW	Type A1S64TCTRTBW temperature control module with disconnection detection function	1
Disconnection detection connector	Included in the A1S64TCTRTBW package.	1

2. SPECIFICATIONS

The specifications of the A1S64TCTRT (BW) are indicated below.

2.1 Performance Specifications

2.1.1 Performance specifications of the A1S64TCTRT (BW)
(1) Common specifications

Table 2.1 Common specifications of the A1S64TCTRT (BW) (1/2)

Item		Specifications	
		A1S64TCTRT	A1S64TCTRTBW
Control output		Transistor output	
Applicable temperature sensor		Refer to Section 2.1.2	
Specification accuracy	Ambient temperature: 25°C ± 5°C	Full scale × (±0.3%)±1 digit[1]	
	Ambient temperature: 0°C to 55°C	Full scale × (±0.7%)±1 digit[1]	
Control output period		1 to 100s	
Input filter		0 to 100s (0: input filter off)	
Sensor compensation value setting		-50.00 to 50.00%	
Set value setting range		Within the temperature range set by the temperature sensor to be used.	
Dead zone setting range		0.1 to 10.0%	
Transistor output	Output signal	ON/OFF Pulse	
	Rated load voltage	10.2 to 30.0VDC (Peak voltage 30.0V)	
	Maximum load current	0.1A/point 0.4A/common	
	Maximum inrush current	0.4A 10ms	
	Maximum leakage current when OFF	0.1mA or less	
	Maximum voltage drop when ON	1.0VDC (TYP) 0.1A 2.5VDC (MAX) 0.1A	
	Response time	OFF → ON: 2ms or less ON → OFF: 2ms or less	
No. of reads/writes to FeRAM[2]		Up to 10^{12} times	
Insulation system		Between the input terminal and PLC power supply :Transformer isolation Between input channels : Transformer isolation	
Dielectric withstand voltage		Between the input terminal and PLC power supply :500VAC, 1min. Between input channels : 500VAC, 1min.	
Insulation resistance		Between the input terminal and PLC power supply :500VDC 10MΩ or more Between input channels : 500VDC 10MΩ or more	

Table 2.1 Common specifications of the A1S64TCTRT (BW) (2/2)

Item		Specifications	
		A1S64TCTRT	A1S64TCTRTBW
Heater disconnection detection specifications	Current sensor	—	The following current sensor made by URD Co., Ltd. Input accuracy[3] • CTL-12-S36-8(0.0 to 100.0A) • CTL-6-P-H(0.00 to 20.00A)
	Input method		Multiplexer method A/D conversion
	Input accuracy		Full scale × (±1.0%)
	Alarm delay count		3 to 255
I/O occupied points		32 points (I/O assignment : special 32 points)	
Connection terminal		20-point terminal block	
Supported cable size		0.75 to 1.5 [mm^2]	
Supported solderless terminal		R1.25-3,1.25-YS3,RAV1.25-3,V1.25-YS3A	
Internal current consumption		0.33A (0.19A)[4]	0.39A (0.25A)[4]
Weight		0.26kg	0.28kg
External dimensions (mm)		130 (H) × 34.5 (W) × 93.6 (D)	

*1: "±1 digit" error depends on the input range.
*2: Total number of reads and writes is shown.
*3: Only the current sensor of URD Co., Ltd. may be used.
*4: These are current values applied when not using the temperature conversion function for unused channels in Heating-cooling control mode.
*5: For the noise resistance, dielectric withstand voltage, and insulation resistance for the PLC system which uses this module, refer to the power supply module specifications given in the CPU Module User's Manual.

(2) Specifications by application (temperature sensor)

Table 2.2 The A1S64TCTRT (BW) specifications by application (temperature sensor)

Item		Specifications	
		Thermocouple	Platinum RTD
Effect of external resistance		0.35μV/Ω	—
Input impedance		1MΩ	—
Sensor current		—	Approx. 0.3mA
Allowable input wire resistor effects		—	10Ω or less
When sensor input is disconnected		Up-scale processing	Up-scale processing
When sensor input is short-circuited		—	Down-scale processing
Cold junction compensation accuracy (Ambient temperature: 0 to 55°C)	Measured temperature: -100°C or more	Within ±1.0°C	—
	Measured temperature: -150 to -100°C	Within ±2.0°C	—
	Measured temperature: -200 to -150°C	Within ±3.0°C	—

(3) Specifications by application (control mode)

Table 2.3 The A1S64TCTRT (BW) specifications by application (control mode)

Item		Specifications	
		Standard control	Heating/cooling control
Temperature input points		4-channel/module	2-channel/module
Sampling cycle		0.5s/4 channels (Constant regardless of the number of channels used)	0.5s/2 channels (Constant regardless of the number of channels used)
Temperature control method		PID ON/OFF pulse or 2-position control	PID ON/OFF pulse
PID constant range	PID constant setting	Auto-tuning or Self-tuning setting is possible.	Auto-tuning setting is possible.
	Proportional region (P)	0.0 to 1000.0% (0.0: 2-position control)	0.1 to 1000.0%
	Integral time (I)	1 to 3600 s	
	Derivative time (D)	0 to 3600 s	
Cooling type setting		—	Air-cooling/Water-cooling
Dead zone setting range		0.0 to 10.0%	—

2.1.2 Applicable temperature sensor types, measured temperature ranges, and data resolutions

(1) When using a thermocouple

Table 2.4 List of thermocouple types, measured temperature ranges, and data resolutions

| Thermocouple Type	°C		°F	
	Measured temperature range	Data resolution	Measured temperature range	Data resolution
R	0 to 1700	1	0 to 3000	1
K	0 to 500 0 to 800 0 to 1300	1	0 to 1000 0 to 2400	1
	-200.0 to 400.0 0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
J	0 to 500 0 to 800 0 to 1200	1	0 to 1000 0 to 1600 0 to 2100	1
	0.0 to 400.0 0.0 to 500.0 0.0 to 800.0	0.1	0.0 to 1000.0	0.1
T	-200 to 400 -200 to 200 0 to 200 0 to 400	1	0 to 700 -300 to 400	1
	-200.0 to 400.0 0.0 to 400.0	0.1	0.0 to 700.0	0.1
S	0 to 1700	1	0 to 3000	1
B	400 to 1800	1	800 to 3000	1
E	0 to 400 0 to 1000	1	0 to 1800	1
	0.0 to 700.0	0.1	—	—
N	0 to 1300	1	0 to 2300	1
U	0 to 400 -200 to 200	1	0 to 700 -300 to 400	1
	0.0 to 600.0	0.1	—	—
L	0 to 400 0 to 900	1	0 to 800 0 to 1600	1
	0.0 to 400.0 0.0 to 900.0	0.1	—	—
PL II	0 to 1200	1	0 to 2300	1
W5Re/W26Re	0 to 2300	1	0 to 3000	1

(2)When using a platinum RTD

Table 2.5 List of applicable platinum RTDs, measured temperature ranges, and data resolutions

Platinum RTD Type	°C		°F	
	Measured temperature range	Data resolution	Measured temperature range	Data resolution
Pt100	-200.0 to 600.0	0.1	-300 to 1100	1
	-200.0 to 200.0		-300.0 to 300.0	0.1
JPt100	-200.0 to 500.0	0.1	-300 to 900	1
	-200.0 to 200.0		-300.0 to 300.0	0.1

For general specifications, refer to the User's Manual for your PLC CPU.
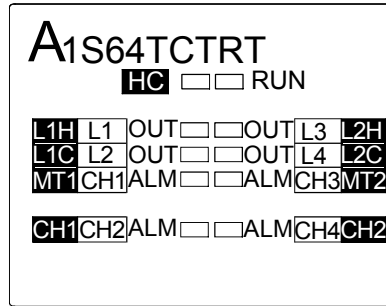
3. NAME OF EACH PART

3.1 Name of Each Part

[A1S64TCTRT]   [A1S64TCTRTBW]
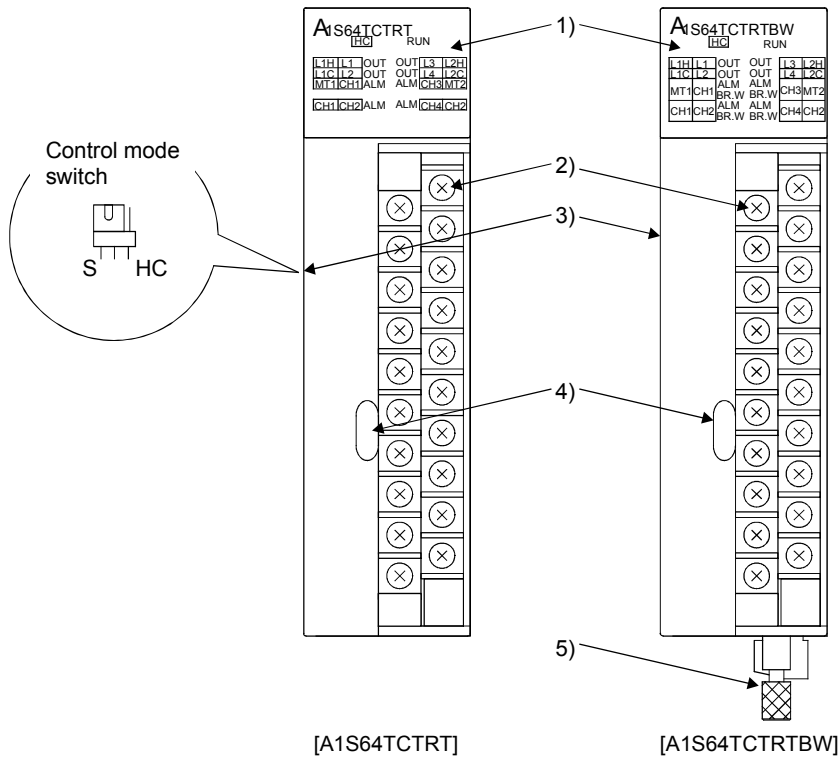
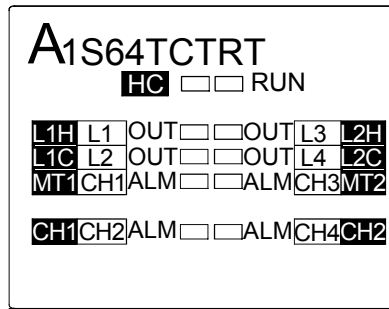| Number	Name and Appearance	Description
1)	LED	Indicate the operating, error or alert status of the A1S64TCTRT (BW). (Refer to Section 3.1.1.)
2)	Terminal block	Used for temperature sensor input, transistor output and current sensor (CT) input. (Refer to Section 3.1.2.)
3)	Control mode switch	Switches the mode between the standard and heating/cooling controls. (Refer to Section 3.1.3.)
4)	Cold junction temperature compensation resistor	When a thermocouple is used as a temperature sensor, this must be connected. (Connected to the terminal block as factory default)
5)	Disconnection detector connector	Connected to the current sensor. Used for the A1S64TCTRTBW only. (Refer to Section 3.1.4.)

3.1.1 LED indication

(1) When the A1S64TCTRT is in Standard control mode

```
A1S64TCTRT
  HC  ▢▢ RUN

L1H L1  OUT▢ ▢OUT L3  L2H
L1C L2  OUT▢ ▢OUT L4  L2C
MT1 CH1 ALM▢ ▢ALM CH3 MT2

CH1 CH2 ALM▢ ▢ALM CH4 CH2
```

Name	Function	LED indication	Description
RUN	A1S64TCTRT operation status indication	ON	Normal operation
		Flashing (2s. ON, 2s. OFF)	Write data error occurred.
		Flashing (1s. ON, 1s. OFF)	Hardware failure (Including the case where no cold junction temperature compensation resistor is connected.)
		OFF	5V power OFF, or watchdog timer error
HC	Control mode indication	ON	Heating/cooling control
		OFF	Standard control
L1 OUT	Transistor output status indication (L1 to L4 correspond to CH1 to CH4 respectively.)	ON	Transistor output ON
L2 OUT			
L3 OUT		OFF	Transistor output OFF
L4 OUT			
CH1 ALM	Alert alarm status indication	ON	• The alert alarm turned ON. • Loop disconnection detected.
CH2 ALM		Flashing	• Measured temperature range exceeded. • Temperature sensor not connected. • Temperature sensor cable disconnected.
CH3 ALM			
CH4 ALM		OFF	Disconnection alarm turned OFF.

(2) When the A1S64TCTRT is in Heating-cooling control mode

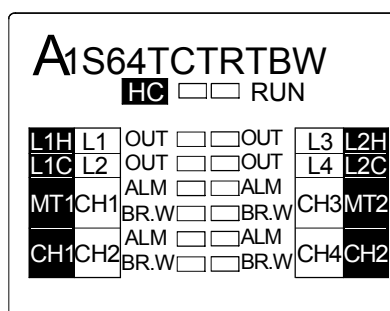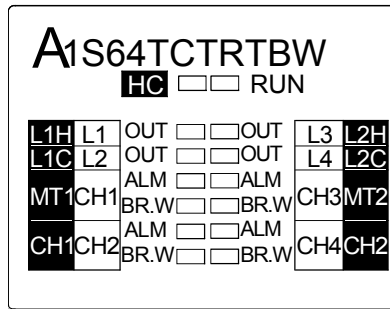| Name	Function	LED indication	Description
RUN	A1S64TCTRT operation status indication	ON	Normal operation
		Flashing (2s. ON, 2s. OFF)	Write data error occurred.
		Flashing (1s. ON, 1s. OFF)	Hardware failure (Including the case where no cold junction temperature compensation resistor is connected.)
		OFF	5V power OFF, or watchdog timer error
HC	Control mode indication	ON	Heating/cooling control
		OFF	Standard control
L1H OUT	Heating transistor output status indication (L1H and L2H correspond to CH1 and CH2 respectively.)	ON	Transistor output ON
L2H OUT		OFF	Transistor output OFF
L1C OUT	Cooling transistor output status indication (L1C and L2C correspond to CH1 and CH2 respectively.)	ON	Transistor output ON
L2C OUT		OFF	Transistor output OFF
MT1 ALM	Alert alarm status indication (Temperature measurement alert status)	ON	• Loop disconnection detected.
		Flashing	• Measured temperature range exceeded. • Temperature sensor not connected. • Temperature sensor cable disconnected.
MT2 ALM		OFF	Disconnection alarm turned OFF.
CH1 ALM	Alert alarm status indication	ON	• The alert alarm turned ON. • Loop disconnection detected.
		Flashing	• Measured temperature range exceeded. • Temperature sensor not connected. • Temperature sensor cable disconnected.
CH2 ALM		OFF	Disconnection alarm turned OFF.

(3)When the A1S64TCTRTBW is in Standard control mode

```
A1S64TCTRTBW
HC □□ RUN

L1H L1  OUT □□OUT   L3 L2H
L1C L2  OUT □□OUT   L4 L2C
        ALM □□ALM
MT1 CH1 BR.W □□BR.W CH3 MT2
        ALM □□ALM
CH1 CH2 BR.W □□BR.W CH4 CH2
```

Name	Function	LED indication	Description
RUN	A1S64TCTRTBW operation status indication	ON	Normal operation
		Flashing (2s. ON, 2s. OFF)	Write data error occurred.
		Flashing (1s. ON, 1s. OFF)	Hardware failure (Including the case where no cold junction temperature compensation resistor is connected.)
		OFF	5V power OFF, or watchdog timer error
HC	Control mode indication	ON	Heating/cooling control
		OFF	Standard control
L1 OUT	Transistor output status indication (L1 to L4 correspond to CH1 to CH4 respectively.)	ON	Transistor output ON
L2 OUT			
L3 OUT		OFF	Transistor output OFF
L4 OUT			
CH1 ALM	Alert alarm status indication	ON	• The alert alarm turned ON. • Loop disconnection detected.
CH2 ALM		Flashing	• Measured temperature range exceeded. • Temperature sensor not connected. • Temperature sensor cable disconnected.
CH3 ALM			
CH4 ALM		OFF	Disconnection alarm turned OFF.
CH1 BR.W	Heater disconnection detection status indication	ON	Heater disconnection is detected.
CH2 BR.W			
CH3 BR.W		OFF	Heater disconnection is not detected.
CH4 BR.W			

(4)When the A1S64TCTRTBW is in Heating-cooling control mode

```
A1S64TCTRTBW
  HC □□ RUN

L1H L1  OUT □□OUT   L3 L2H
L1C L2  OUT □□OUT   L4 L2C
        ALM □□ALM
MT1 CH1 BR.W□□BR.W  CH3 MT2
        ALM □□ALM
CH1 CH2 BR.W□□BR.W  CH4 CH2
```

| Name	Function	LED indication	Description
RUN	A1S64TCTRTBW operation status indication	ON	Normal operation
		Flashing (2s. ON, 2s. OFF)	Write data error occurred.
		Flashing (1s. ON, 1s. OFF)	Hardware failure (Including the case where no cold junction temperature compensation resistor is connected.)
		OFF	5V power OFF, or watchdog timer error
HC	Control mode indication	ON	Heating/cooling control
		OFF	Standard control
L1H OUT	Heating transistor output status indication (L1H and L2H correspond to CH1 and CH2 respectively.)	ON	Transistor output ON
L2H OUT		OFF	Transistor output OFF
L1C OUT	Cooling transistor output status indication (L1C and L2C correspond to CH1 and CH2 respectively.)	ON	Transistor output ON
L2C OUT		OFF	Transistor output OFF
MT1 ALM	Alert alarm status indication (Temperature measurement alert status)	ON	• Loop disconnection detected.
		Flashing	• Measured temperature range exceeded. • Temperature sensor not connected. • Temperature sensor cable disconnected.
MT2 ALM		OFF	Disconnection alarm turned OFF.
CH1 ALM	Alert alarm status indication	ON	• The alert alarm turned ON. • Loop disconnection detected.
		Flashing	• Measured temperature range exceeded. • Temperature sensor not connected. • Temperature sensor cable disconnected.
CH2 ALM		OFF	Disconnection alarm turned OFF.
MT1 BR.W	Not used	—	—
MT2 BR.W			
CH1 BR.W	Heater disconnection detection status indication	ON	Heater disconnection is detected.
CH2 BR.W		OFF	Heater disconnection is not detected.

11

3.1.2 Signal names of the terminals on the terminal block
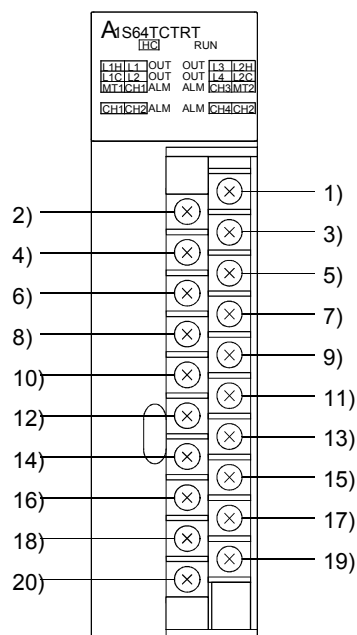
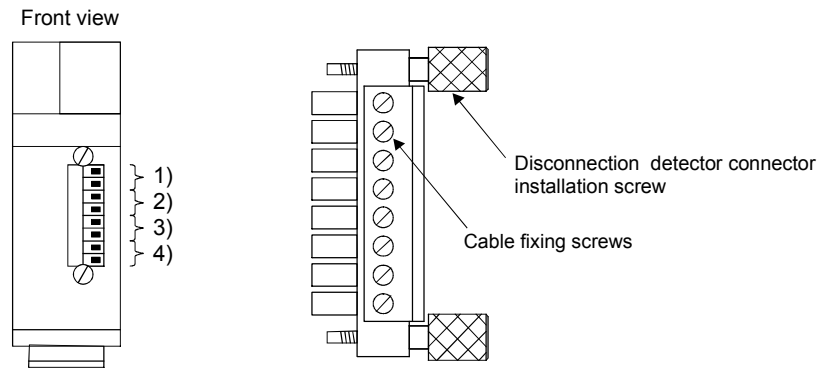| Terminal number	Signal name			
	Standard control mode		Heating-cooling control mode	
	Thermocouple	Platinum RTD	Thermocouple	Platinum RTD
1	L1	L1	L1H	L1H
2	L2	L2	L1C	L1C
3	L3	L3	L2H	L2H
4	L4	L4	L2C	L2C
5	COM-	COM-	COM-	COM-
6	Unused	CH2 A	Unused	CH1 A
7	Unused	CH1 A	Unused	MT1 A
8	CH2+	CH2 B	CH1+	CH1 B
9	CH1+	CH1 B	MT1+	MT1 B
10	CH2-	CH2 b	CH1-	CH1 b
11	CH1-	CH1 b	MT1-	MT1 b
12	CJ	Unused	CJ	Unused
13	Unused	Unused	Unused	Unused
14	CJ	Unused	CJ	Unused
15	Unused	CH3 A	Unused	MT2 A
16	Unused	CH4 A	Unused	CH2 A
17	CH3+	CH3 B	MT2+	MT2 B
18	CH4+	CH4 B	CH2+	CH2 B
19	CH3-	CH3 b	MT2-	MT2 b
20	CH4-	CH4 b	CH2-	CH2 b

3.1.3 Control mode switch

The control mode switch changes the mode between the standard and heating-cooling controls. This is preset to "S: Standard control" as factory default.

Enlarged view

S   HC

Control mode switch
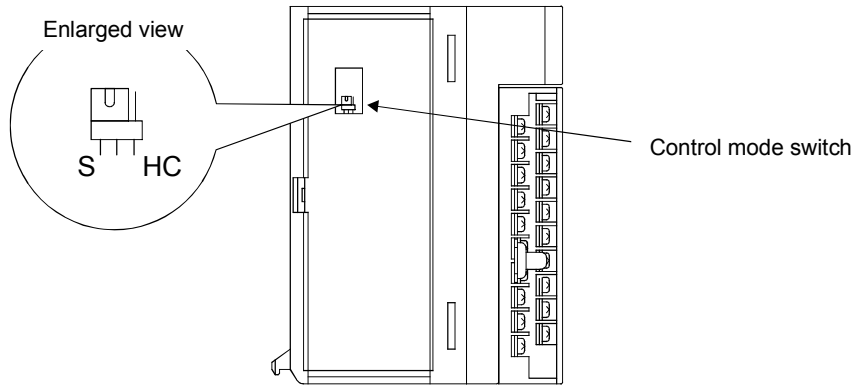
Switch setting	Description
Set to S side	Standard control is selected.
Set to HC side	Heating-cooling control is selected.

3.1.4 Disconnection detector connector

The disconnection detector connector is available for the A1S64TCTRTBW only.

Front view

Disconnection detector connector
installation screw

Cable fixing screws

Terminal No.		Signal name	
		Standard control	Heating-cooling control
1)	1	BW1 (CH1)	BW1 (CH1)
	2		
2)	3	BW2 (CH2)	BW2 (CH2)
	4		
3)	5	BW3 (CH3)	Not used
	6		
4)	7	BW4 (CH4)	Not used
	8		

14

4. LOADING AND INSTALLATION

Precautions when handling the A1S64TCTRT(BW) and installation enviroment are explained.
For details of implementing and setting up this unit, please refer to the User's Manual for the PLC CPU used.

4.1 Handling Instructions

1) The module case and terminal block are made of plastic. Be sure not to drop it or subject it to strong vibration.
2) Do not remove the module printed circuit boards from the case. It may cause trouble.
3) When connecting the wiring, do not allow wire cuttings or other foreign matter to enter from the top of the module. Remove any foreign matter from the module.
4) Tighten the module installation screws within the following tightening torque range.

Screw	Tightening torque range
Module installation screw (M4 screw)	78 to 118N•cm
Terminal block screw (M3.5 screw)	59 to 88N•cm
Terminal block installation screw (M4 screw)	78 to 118N•cm
Disconnection detector connector installation screw (M2.6 screws)*	15 to 30N•cm
Cable fixing screw (M2 screws)*	11 to 14N•cm

*: Use only for A1S64TCTRTBW.

5. WIRING

The precautions for wiring and module connection examples are shown below.

5.1 Precautions for Wiring

In order to have the best result from the A1S64TCTRT(BW) functions and to make the system highly reliable, an external cabling with low noise effects are necessary.

The external wiring precautions are shown below:

1) Use separate cables for the alternating current and A1S64TCTRT(BW) external input signals to avoid A/C surges and induction effects.

2) Do not bunch the cables with the main circuit, high-voltage cable or load cables from other than PLC, or install them close to each other. Install the cables far apart from high-frequency circuits, such as the high-voltage cable and inverter load main circuit, as much as possible.
This increases the noises, surges, and induction.

3) Ground the shield line or shielded cable at one end on the PLC side. However, depending on the external noise condition, it should be grounded externally.
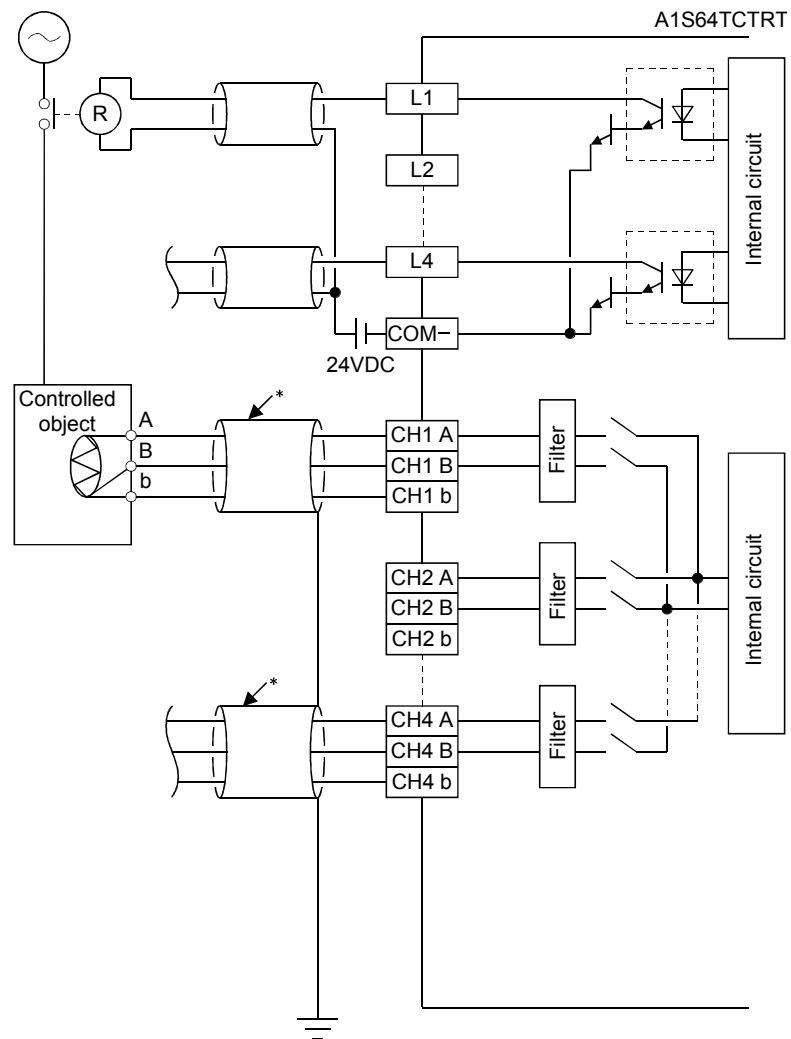
5.2 Module Wiring Example

(1) A1S64TCTRT

(a) When using thermocouples in Standard control mode
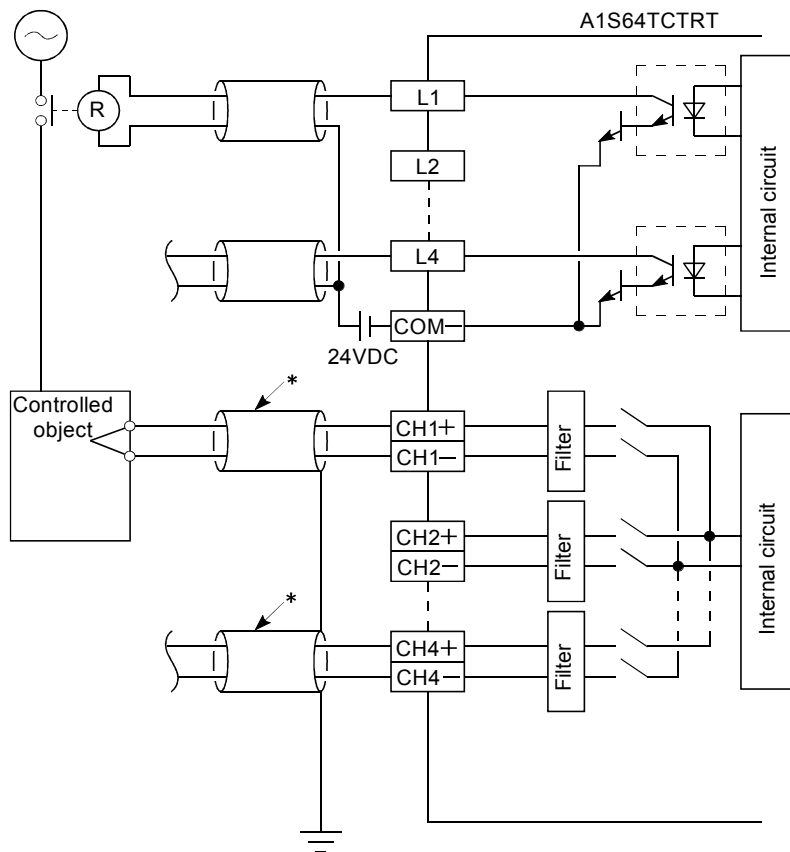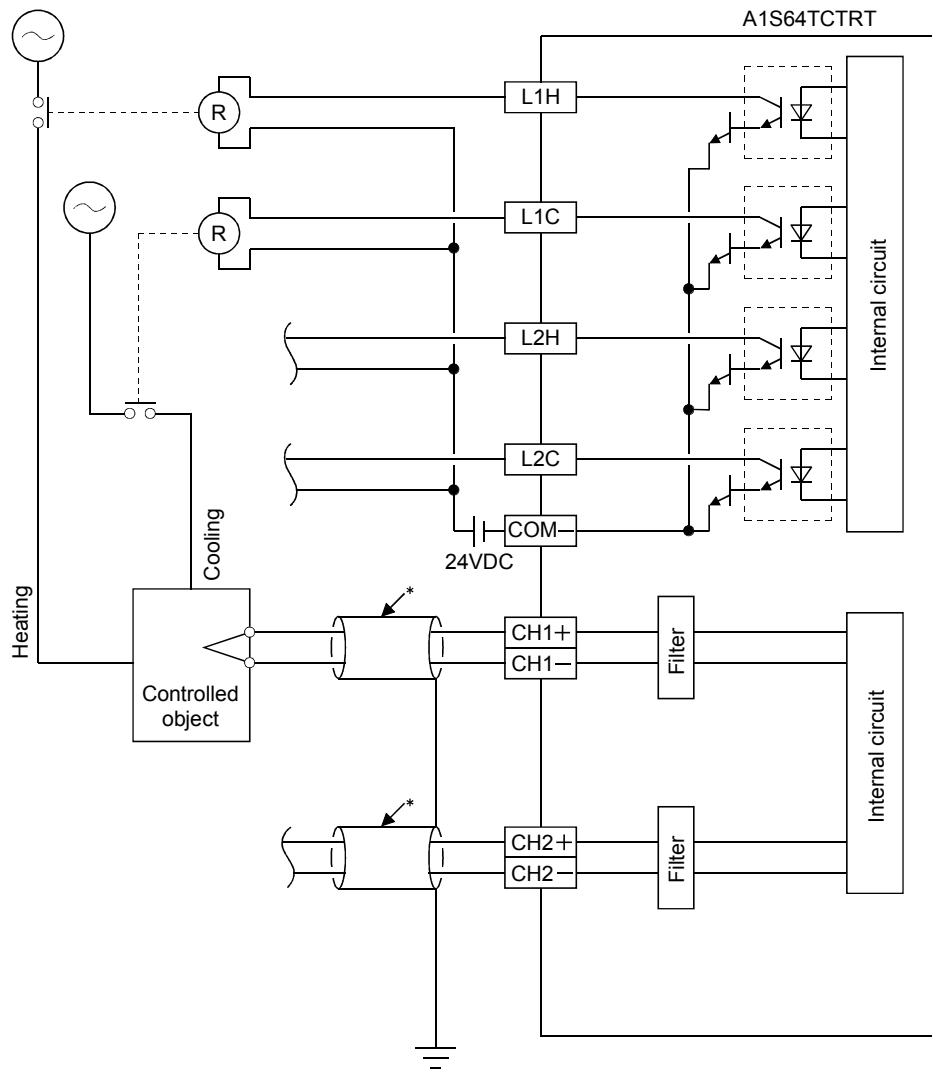

*: Please use shielded compensation conductors.

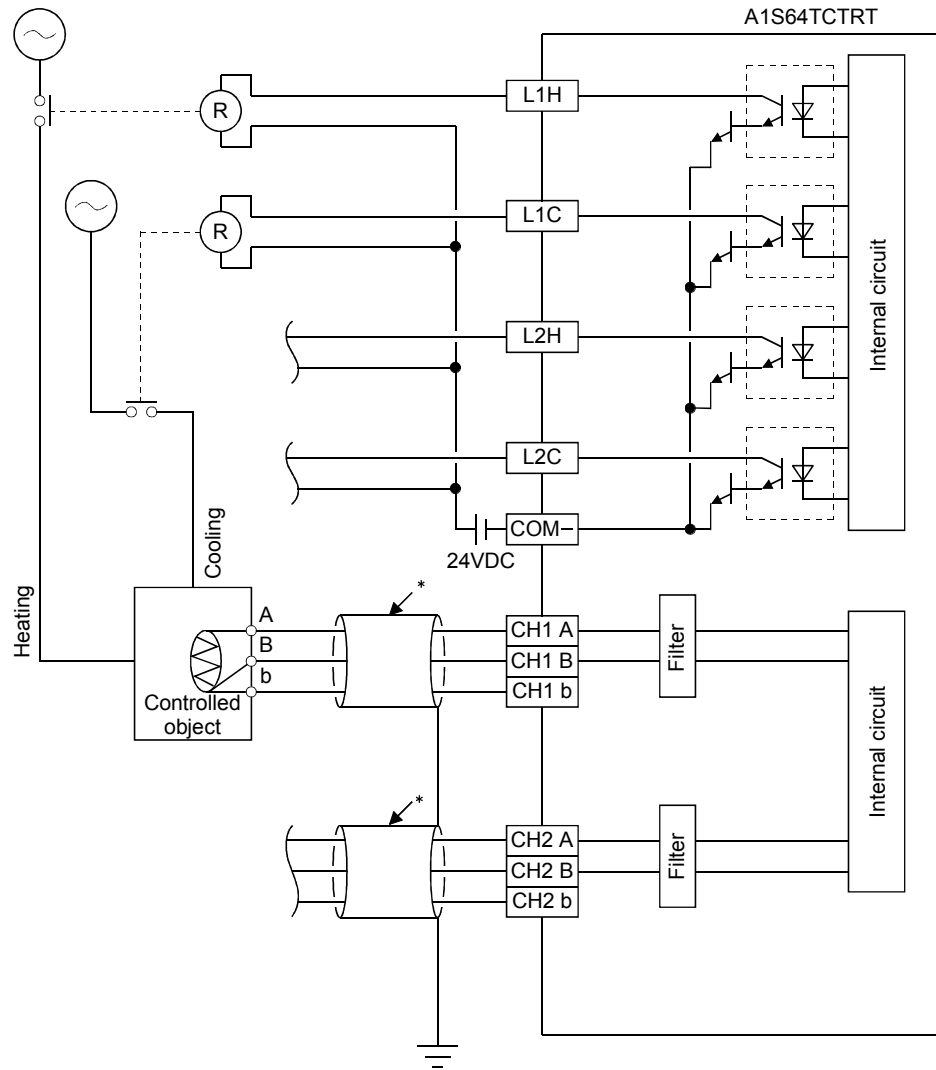## (b) When using platinum RTDs in Standard control mode

*: Please use shielded cables.

(c) When using thermocouples in Heating-cooling control mode

A1S64TCTRT

L1H
L1C
L2H
L2C
COM

24VDC

Internal circuit

R
R

Heating
Cooling

Controlled
object

*
*

CH1+
CH1−

CH2+
CH2−

Filter

Filter

Internal circuit

*: Please use shielded compensation conductors.

(d) When using platinum RTDs in Heating-cooling control mode
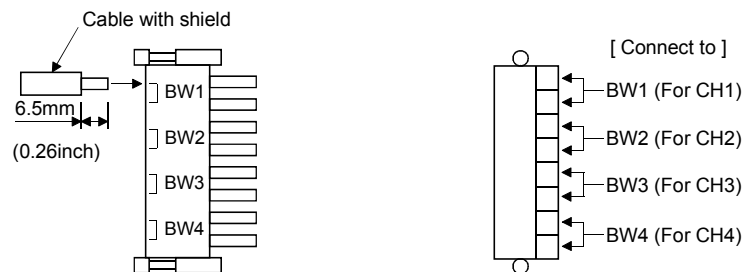

*: Please use shielded cables.

(2) A1S64TCTRTBW
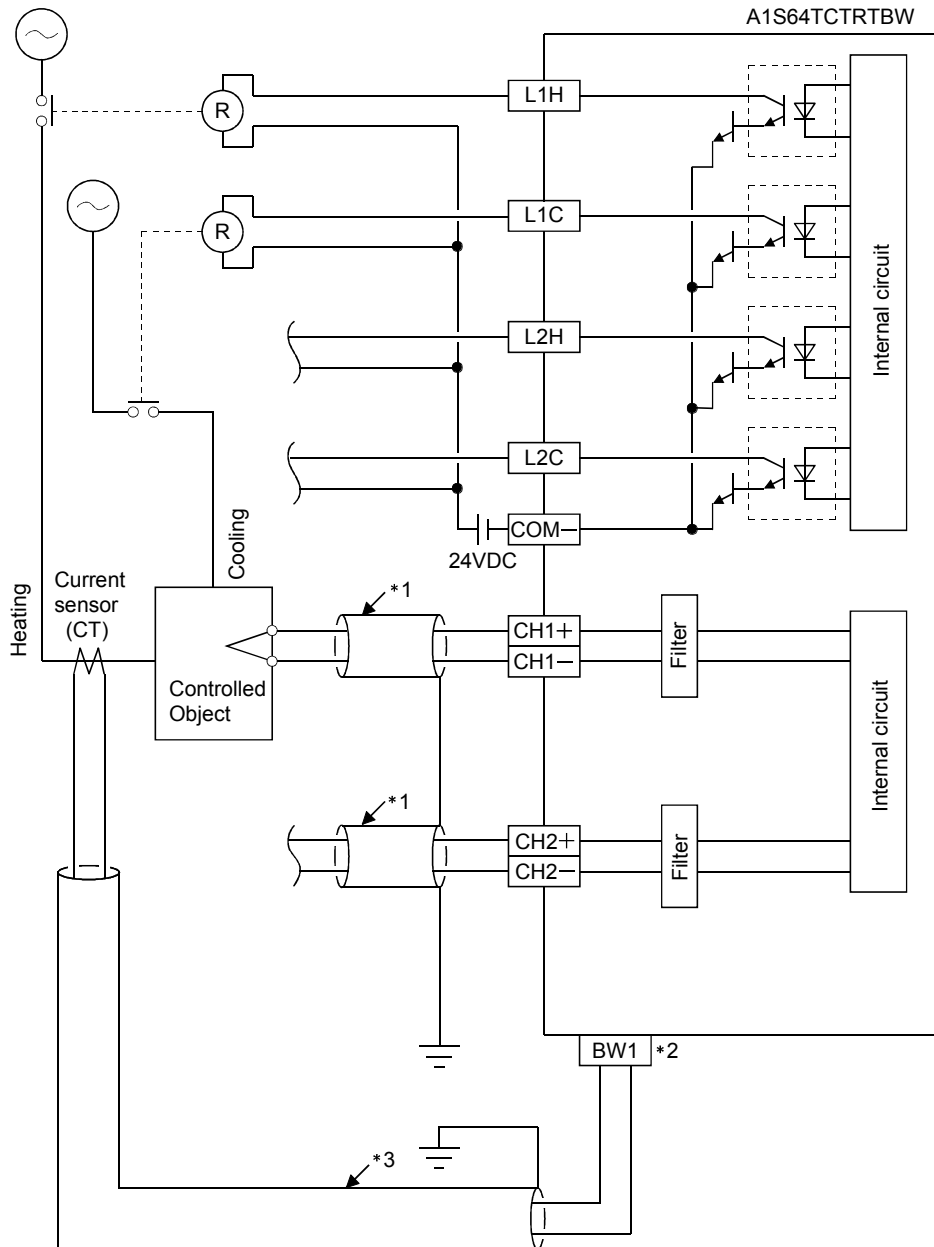### (a) When using thermocouples in Standard control mode

*1:Please use shielded compensation conductors.
*2: Refer to the following for the connection of the disconnection detector connector.
*3: Please use shielded cables.

(b) When using platinum RTDs in Standard control mode

A1S64TCTRTBW

*1: Please use shielded cables.
*2: Refer to the following for the connection of the disconnection detector connector.
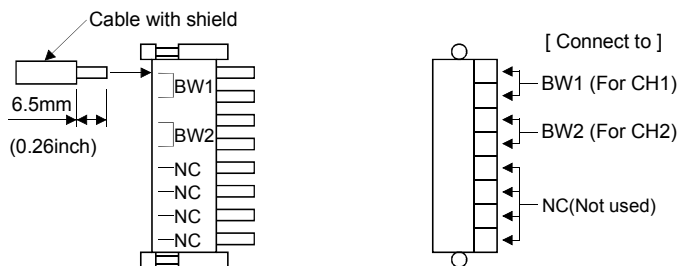*3: Please use shielded cables.

Cable with shield

6.5mm
(0.26inch)

BW1
BW2
BW3
BW4

[Connect to]

BW1 (For CH1)
BW2 (For CH2)
BW3 (For CH3)
BW4 (For CH4)

22

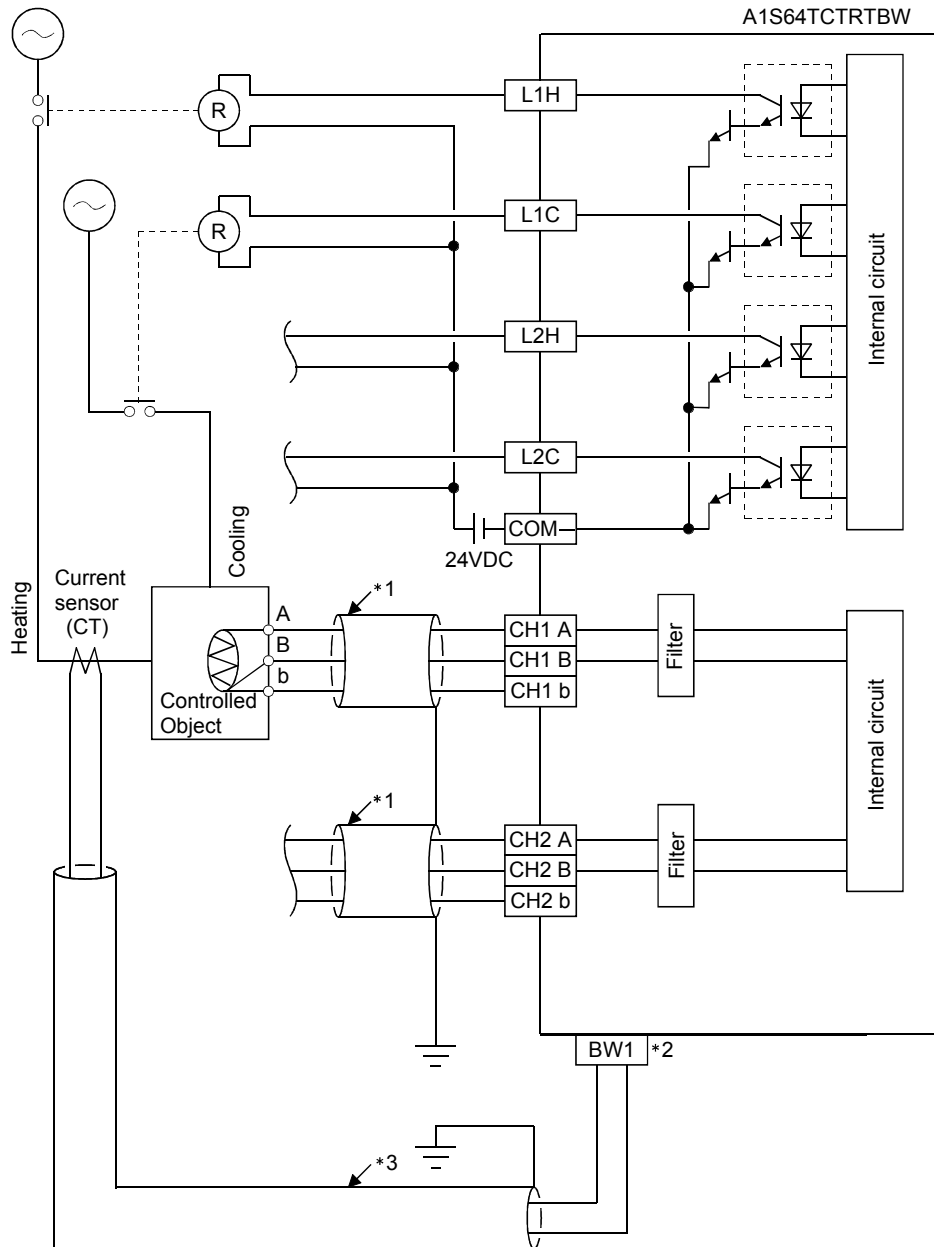## (c) When using thermocouples in Heating-cooling control mode

A1S64TCTRTBW

*1: please use shielded compensation conductors.
*2: Refer to the following for the connection of the disconnection detector connector.
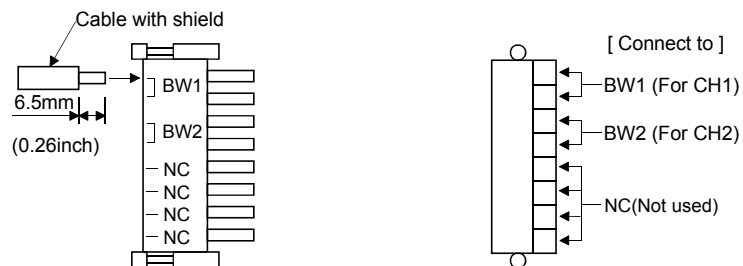*3: Please use shielded cables.

Cable with shield

6.5mm
(0.26inch)

BW1
BW2
NC
NC
NC
NC

[Connect to]

BW1 (For CH1)

BW2 (For CH2)

NC(Not used)
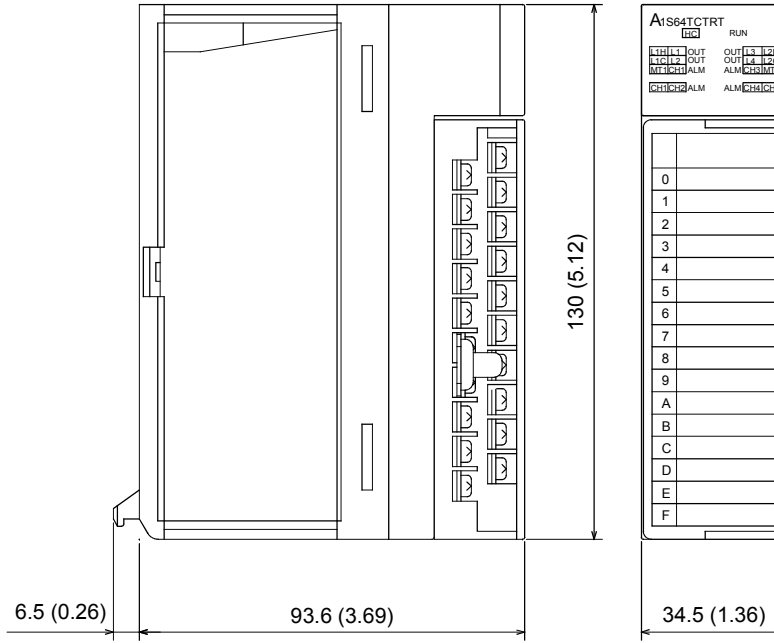
(d) When using platinum RTDs in Heating-cooling control mode

*1: Please use shielded cables.
*2: Refer to the following for the connection of the disconnection detector connector.
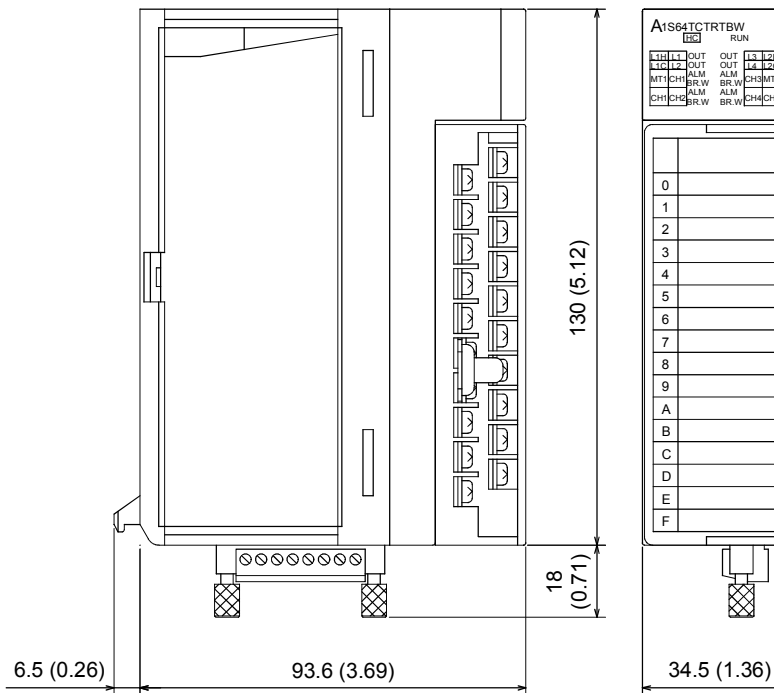*3: Please use shielded cables.

6. EXTERNAL DIMENSIONS

(1) A1S64TCTRT

6.5 (0.26)   93.6 (3.69)   34.5 (1.36)

Unit: mm (inch)

(2) A1S64TCTRTBW

6.5 (0.26)   93.6 (3.69)   34.5 (1.36)

Unit: mm (inch)

Warranty

Mitsubishi will not be held liable for damage caused by factors found not to be the cause of Mitsubishi; machine damage or lost profits caused by faults in the Mitsubishi products; damage, secondary damage, accident compensation caused by special factors unpredictable by Mitsubishi; damages to products other than Mitsubishi products; and to other duties.

⚠ For safe use

- This product has been manufactured as a general-purpose part for general industries, and has not been designed or manufactured to be incorporated in a device or system used in purposes related to human life.
- Before using the product for special purposes such as nuclear power, electric power, aerospace, medicine or passenger movement vehicles, consult with Mitsubishi.
- This product has been manufactured under strict quality control. However, when installing the product where major accidents or losses could occur if the product fails, install appropriate backup or failsafe functions in the system.

Country/Region	Sales office/Tel
U.S.A	Mitsubishi Electric Automation Inc. 500 Corporate Woods Parkway Vernon Hills, IL 60061, U.S.A. Tel : +1-847-478-2100
Brazil	MELCO-TEC Rep. Com.e Assessoria Tecnica Ltda. Rua Correia Dias, 184, Edificio Paraiso Trade Center-8 andar Paraiso, Sao Paulo, SP Brazil Tel : +55-11-5908-8331
Germany	Mitsubishi Electric Europe B.V. German Branch Gothaer Strasse 8 D-40880 Ratingen, GERMANY Tel : +49-2102-486-0
U.K	Mitsubishi Electric Europe B.V. UK Branch Travellers Lane, Hatfield, Hertfordshire., AL10 8XB, U.K. Tel : +44-1707-276100
Italy	Mitsubishi Electric Europe B.V. Italian Branch Centro Dir. Colleoni, Pal. Perseo-Ingr.2 Via Paracelso 12, I-20041 Agrate Brianza., Milano, Italy Tel : +39-039-60531
Spain	Mitsubishi Electric Europe B.V. Spanish Branch Carretera de Rubi 76-80, E-08190 Sant Cugat del Valles, Barcelona, Spain Tel : +34-93-565-3131
France	Mitsubishi Electric Europe B.V. French Branch 25, Boulevard des Bouvets, F-92741 Nanterre Cedex, France TEL: +33-1-5568-5568
South Africa	Circuit Breaker Industries Ltd. Private Bag 2016, ZA-1600 Isando, South Africa Tel : +27-11-928-2000

Country/Region	Sales office/Tel
Hong Kong	Mitsubishi Electric Automation (Hong Kong) Ltd. 10th Floor, Manulife Tower, 169 Electric Road, North Point, Hong Kong Tel : +852-2887-8870
China	Mitsubishi Electric Automation (Shanghai) Ltd. 4/F Zhi Fu Plazz, No.80 Xin Chang Road, Shanghai 200003, China Tel : +86-21-6120-0808
Taiwan	Setsuyo Enterprise Co., Ltd. 6F No.105 Wu-Kung 3rd.Rd, Wu-Ku Hsiang, Taipei Hsine, Taiwan Tel : +886-2-2299-2499
Korea	Mitsubishi Electric Automation Korea Co., Ltd. 1480-6, Gayang-dong, Gangseo-ku Seoul 157-200, Korea Tel : +82-2-3660-9552
Singapore	Mitsubishi Electric Asia Pte, Ltd. 307 Alexandra Road #05-01/02, Mitsubishi Electric Building, Singapore 159943 Tel : +65-6470-2460
Thailand	Mitsubishi Electric Automation (Thailand) Co., Ltd. Bang-Chan Industrial Estate No.111 Moo 4, Serithai Rd, T.Kannayao, A.Kannayao, Bangkok 10230 Thailand Tel : +66-2-517-1326
Indonesia	P.T. Autoteknindo Sumber Makmur Muara Karang Selatan, Block A/Utara No.1 Kav. No.11 Kawasan Industri Pergudangan Jakarta - Utara 14440, P.O.Box 5045 Jakarta, 11050 Indonesia Tel : +62-21-6630833
India	Messung Systems Pvt, Ltd. Electronic Sadan NO:III Unit No15, M.I.D.C Bhosari, Pune-411026, India Tel : +91-20-2712-3130
Australia	Mitsubishi Electric Australia Pty. Ltd. 348 Victoria Road, Rydalmere, N.S.W 2116, Australia Tel : +61-2-9684-7777

▲ MITSUBISHI ELECTRIC CORPORATION

HEAD OFFICE : TOKYO BUILDING, 2-7-3 MARUNOUCHI, CHIYODA-KU, TOKYO 100-8310, JAPAN
NAGOYA WORKS : 1-14, YADA-MINAMI 5-CHOME, HIGASHI-KU, NAGOYA, JAPAN

When exported from Japan, this manual does not require application to the Ministry of Economy, Trade and Industry for service transaction permission.

Specifications subject to change without notice.
Printed in Japan on recycled paper.