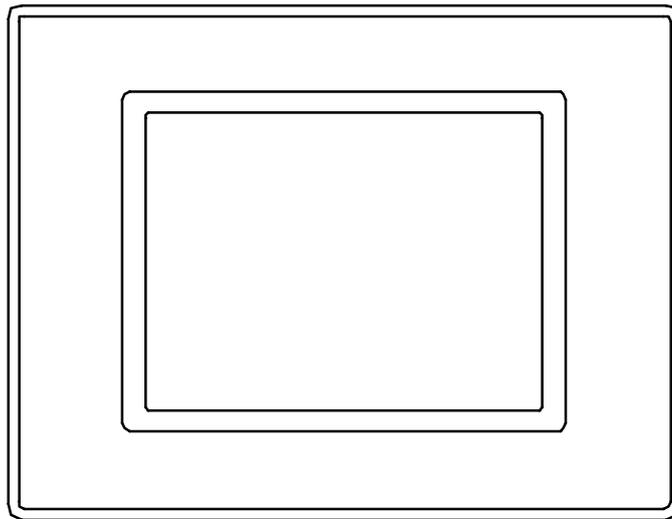


**INSTRUCTION MANUAL
FOR
TOUCH PANEL MONITORING UNIT
CMT-240-K**



PREFACE

Thank you for your purchase of our Touch panel monitoring unit **CMT-240-K**.

This manual contains instructions for the mounting, functions, operations and notes for the operation of **CMT-240-K**.

For model confirmation and unit specifications, please read this instruction manual carefully before starting operation.

To prevent accidents arising from the use of this controller, please ensure the operator using it receives this manual.

Notes

- The contents of this instruction manual are subject to change without notice.
- Care has been taken to assure that the contents of this instruction manual are correct, but if there are any doubts, mistakes or questions, please inform our sales department.
- Any unauthorized transfer or copying of this document, in part or in whole, is prohibited.
- Shinko Technos is not liable for any damages or secondary damages incurred as a result of using this manual, including any indirect damages.

SAFETY PRECAUTIONS

(Be sure to read these precautions before using our products.)

The safety precautions are classified into two categories: "Warning" and "Caution".

Depending on circumstances, procedures indicated by  Caution may be linked to serious results so be sure to follow the directions for usage.



Warning

Procedures which may lead to dangerous conditions and cause death or serious injury if not carried out properly.



Caution

Procedures which may lead to dangerous conditions and cause superficial to medium injury or physical damage or may degrade or damage the product if not carried out properly.

1. Installation precautions

(Be sure to read these precautions before using our products.)



Warning

Turn the power supply to the instrument OFF before installation.

Working or touching the terminal with the power switched ON may result in an Electric Shock which could cause severe injury or death.



Caution

Site selection

Mount the unit in a place with:

- (1) A minimum of dust, and an absence of corrosive gases.
- (2) No flammable, explosive gases
- (3) No mechanical vibrations or shocks.
- (4) No exposure to direct sunlight, an ambient temperature of 0 to 50°C (32 to 122°F) that does not change suddenly.
- (5) An ambient non-condensing humidity of 35 to 85%RH or less.
- (6) The units away from large capacity electromagnetic switches or cables through which large current is flowing.
- (7) No water, oil or chemicals or where the vapors of these substances can come into direct contact with the unit

When mounting the case to the control panel, tighten the screw with the specified torque.

If excessive force is applied to the screw when tightening, the case may be damaged or bent.

Do not install this instrument near flammable material though the case of this instrument is made of flame resisting resin.

Avoid setting this instrument directly on flammable material.

2. Wiring precautions



Warning

Turn the power supply to the instrument OFF before wiring or checking.
Working or touching the terminal with the power switched ON may result in an Electric Shock which could cause severe injury or death.
The instrument must be grounded before the power supply to the instrument is turned on.



Caution

- Do not put wire chips into the instrument, because they could cause fire, malfunction or trouble.
- For the DC power source wiring, do not confuse the polarity as described in this instruction manual.
- For the CMT-240-K ground terminal, use a wire whose thickness is 2mm² or greater. However, avoid grounding in conjunction with the power line.
- Use the solderless terminal with an insulation sleeve that fits to the M3 screw when wiring the CMT-240-K terminals.
- Tighten the terminal screw with the specified torque.
If excessive force is applied to the screw when tightening, the screw or case may be damaged.
- The protective device should be used in environmental conditions which may cause damage to the device or contribute to the deterioration of its parts.

3. Running and maintenance precautions



Warning

- Do not touch live terminals. This may cause electric shock or problems in operation.
- Turn the power off before cleaning the module or retightening the screws.
Doing this work while the power is on may result in an electric shock which could cause severe injury or death.

Revisions

The manual number is noted at the lower right corner of the back cover.

Print date	Manual number	Revision
Jan. 2001	CMT22E1 2001.01	First edition
May, 2001	CMT22E2 2001.05	2nd edition: Spelling, grammar and terminology revision

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1. Overview

1.1 Overview of the CMT-240-K

CMT-240-K reads and writes data of up to 20 units (40 points of temperature control) of the 2-channel temperature control unit (CCT-235) via 2 units of the C series power source host link unit (CPT-20A).

1.2 Units and structure of the CMT-240-K

(1) Touch panel monitoring unit

CMT-240-K : Touch panel monitoring unit to communicate with the CPT-20A

(2) Power source host link unit

CPT-20A : Link unit to supply the power to the CCT-235 and to communicate with the CMT-240-K

(3) 2-channel temperature control unit

CCT-235-2 □ / □ : Independent temperature control unit with 2 channels of which input or output type is the same

(4) Heating/cooling temperature control unit

CCT-235-□ / □ , D□ : Temperature control unit which enables both Heating and Cooling control by 1 channel input

(5) Base unit

CBT-210 : Base unit for mounting the CPT-20A and the CCT-235
For 1 Base unit, one CPT-20A is required.
A maximum of ten CCT-235 units can be mounted.

CBT-205 : Base unit for mounting the CPT-20A and the CCT-235
For 1 Base unit, one CPT-20A is required.
A maximum of five CCT-235 units can be mounted.

(6) Communication cable

CPM : Designated communication cable to connect the CMT-240-K to the CPT-20A

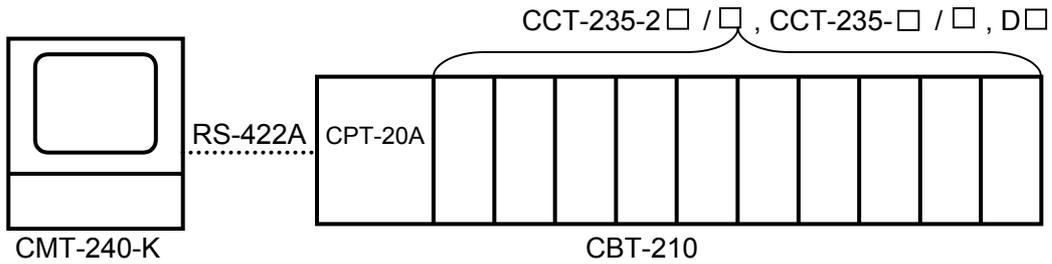
[Note]

2-channel temperature control unit and Heating/cooling temperature control unit can be used together, however, in this case, there can be no more than 40 control points.

(e.g.) 2-channel temperature control unit : 4 units (8 channels)
Heating/cooling temperature control unit : 6 units (6 channels) } A total of 14 channels

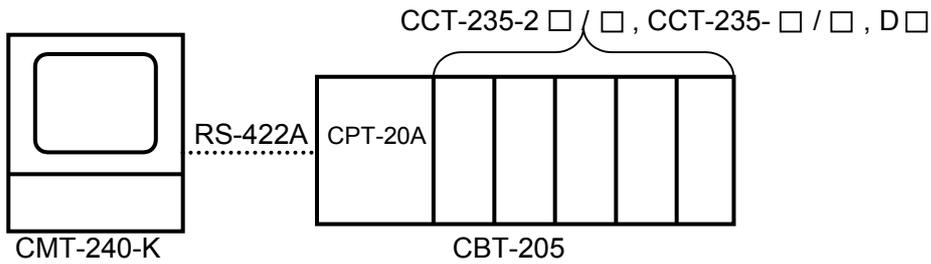
1.3 System configuration

When using CBT-210



[Fig. 1.3-1]

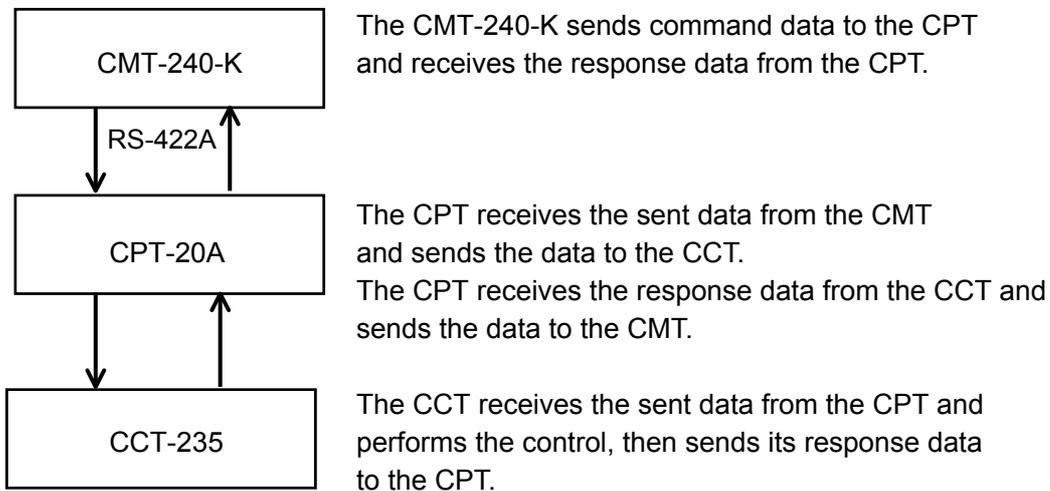
When using CBT-205



[Fig. 1.3-2]

1.4 Parameter exchange

Parameter exchange is shown as follows.



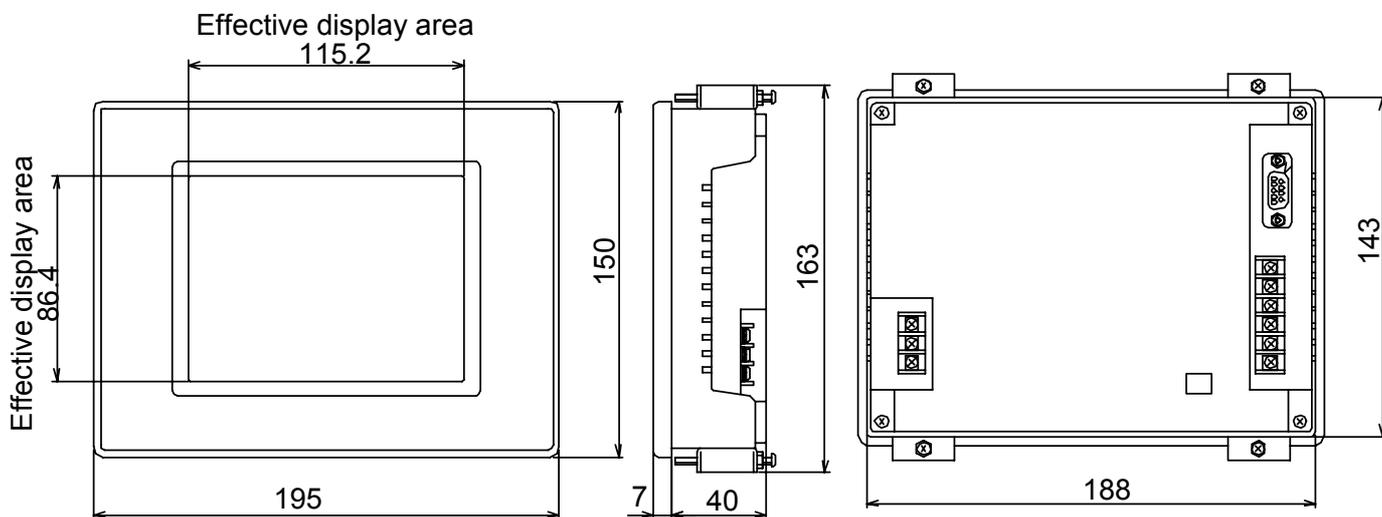
2. Mounting to the control panel

2.1 Site selection

Mount the units in a place with:

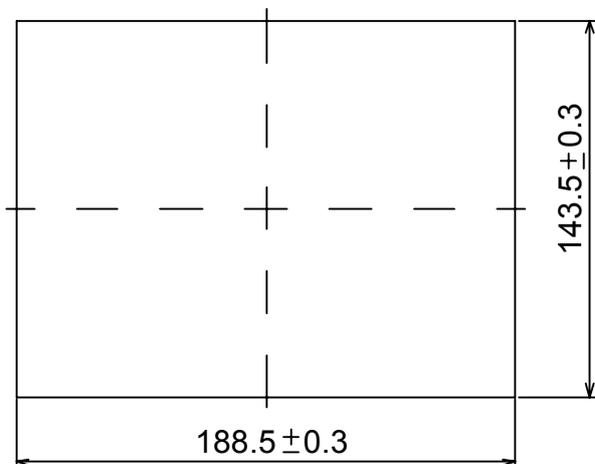
- (1) A minimum of dust, and an absence of corrosive gases.
- (2) No flammable, explosive gases
- (3) No mechanical vibrations or shocks.
- (4) No exposure to direct sunlight, an ambient temperature of 0 to 50°C (32 to 122°F) that does not change suddenly.
- (5) An ambient non-condensing humidity of 35 to 85%RH.
- (6) The units away from large capacity electromagnetic switches or cables through which large current is flowing.
- (7) No water, oil or chemicals or where the vapors of these substances can come into direct contact with the unit.

2.2 External dimension drawing



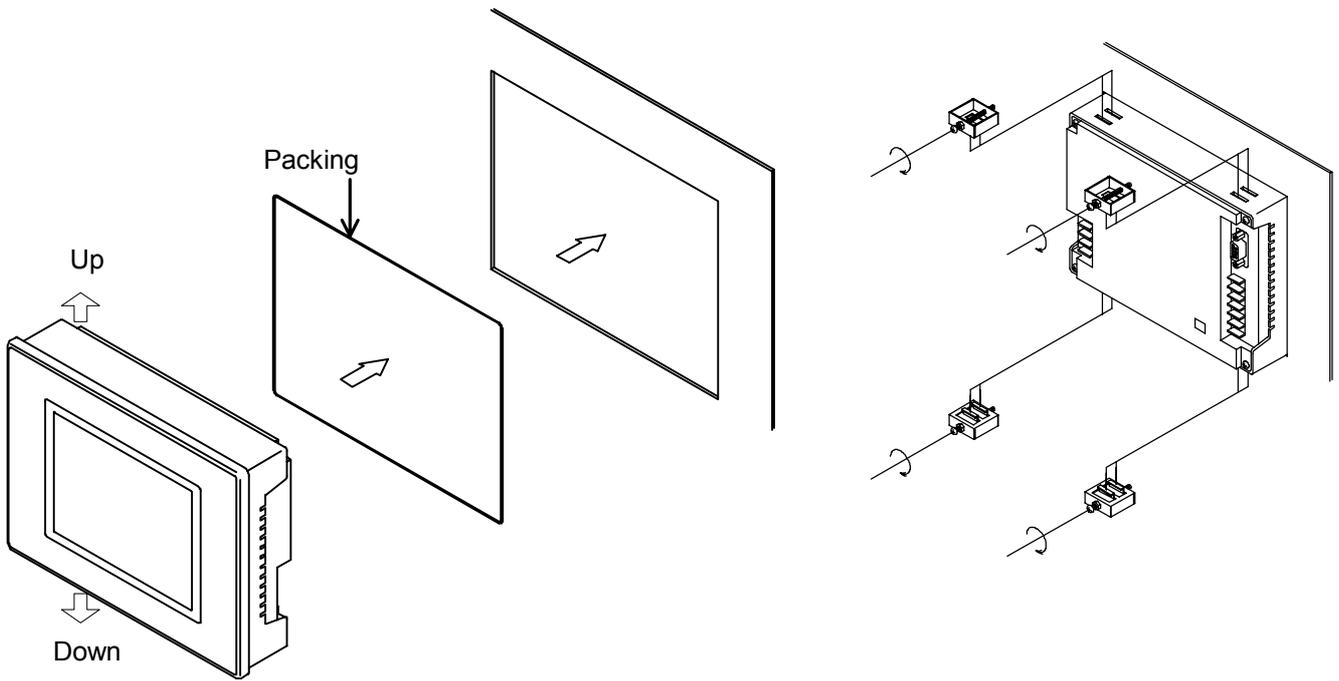
[Fig. 2.2-1]

2.3 Panel cutout



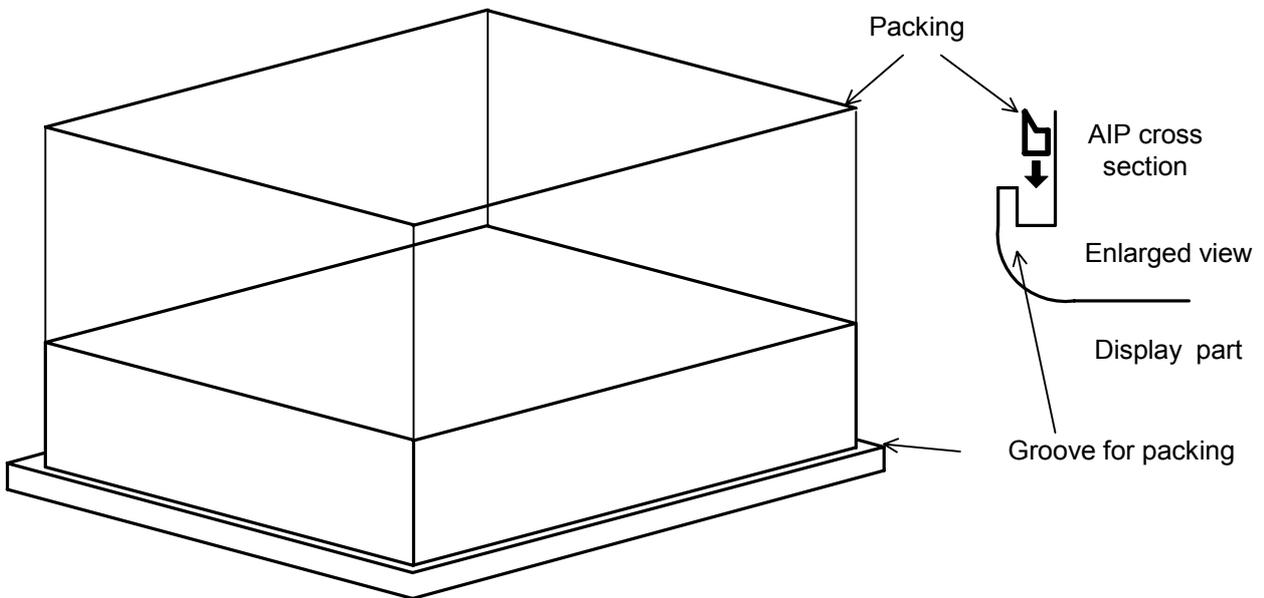
[Fig. 2.3-1]

2.4 Mounting



[Fig. 2.4-1]

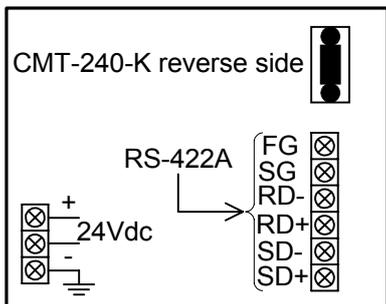
Mounting of the packing



[Fig. 2.4-2]

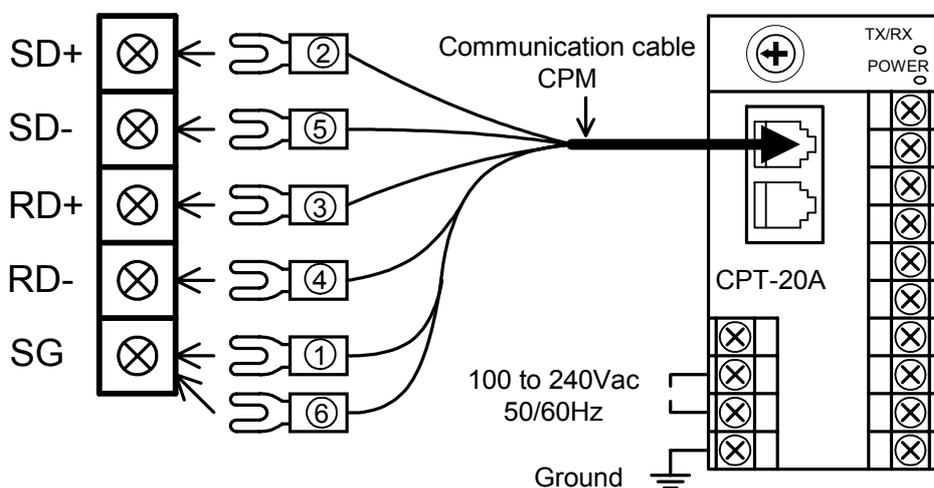
3. Wiring connection

3.1 Terminal arrangement



[Fig. 3.1-1]

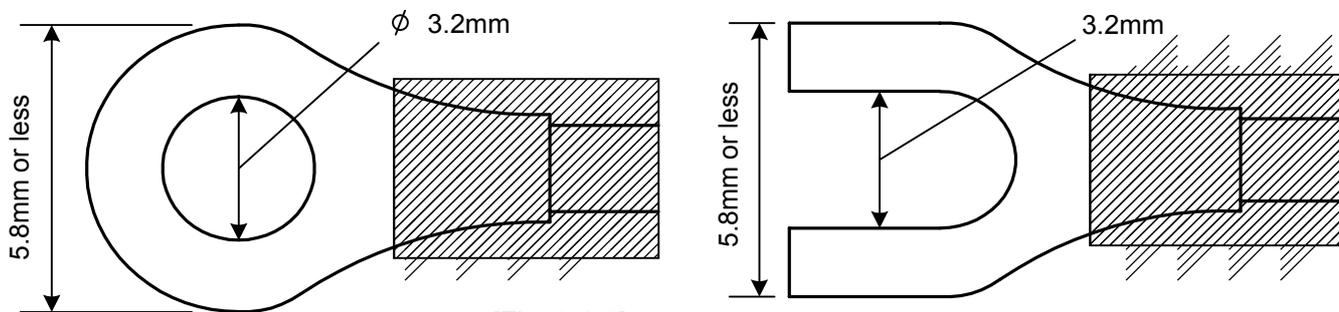
Wiring connection between the CMT-240-K and CPT-20A



[Fig. 3.1-2]

Lead wire solderless terminal

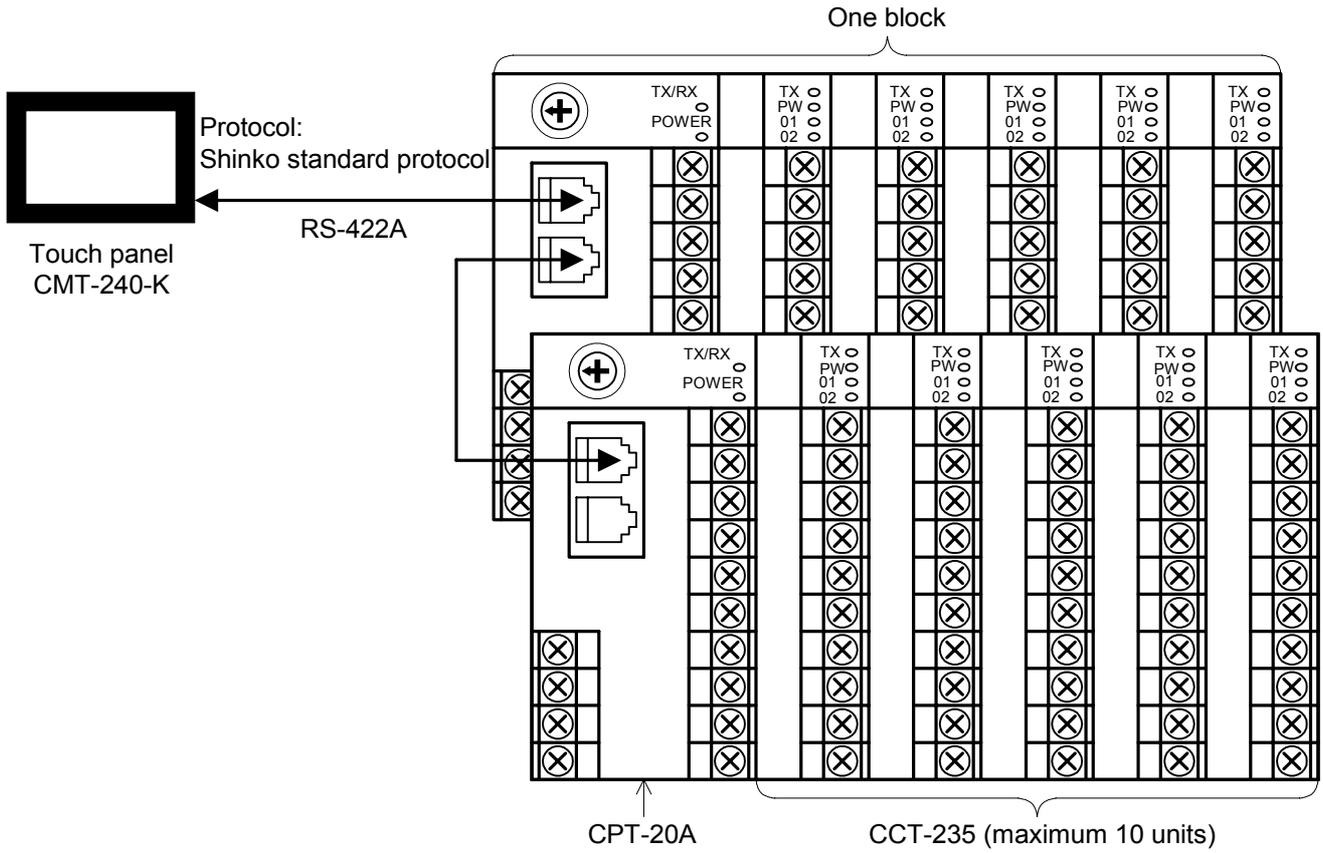
Use a solderless terminal with an insulation sleeve that fits to the M3 screw as shown below.



[Fig. 3.1-3]

Solderless terminal	Manufacturer	Model name	Tightening torque
Y type	Nichifu Terminal Industries CO.,LTD.	1.25Y-3	0.6N·m Max. 1.0N·m
	Japan Solderless Terminal MFG CO.,LTD.	VD1.25-B3A	
Round type	Nichifu Terminal Industries CO.,LTD.	1.25-3	
	Japan Solderless Terminal MFG CO.,LTD.	V1.25-3	

3.2 Wiring connection example



[Fig. 3.2-1]

4. Setup

4.1 How to open System Mode Main Menu display

Press the upper left and lower right corners of the display simultaneously after turning on the Touch panel monitoring unit CMT-240-K [Fig. 4.1-1].

This brings up the System Mode Main Menu [Fig. 4.1-2] of the CMT-240-K.

Note:

From any display, the System Mode Main Menu can be opened by pressing the upper left and lower right corners of the display simultaneously.

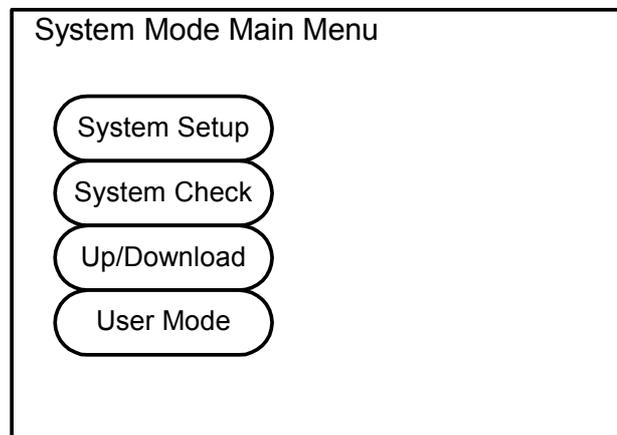


Caution

Press only the “**System Setup**” and “**User Mode**” buttons on the System Mode Main Menu. If this is not done, the unit may not work properly.



[Fig. 4.1-1]



[Fig. 4.1-2]

4.2 System Setup

Pressing the “System Setup” button on the System Mode Main Menu display [Fig. 4.1-2] opens the System Setup display [Fig. 4.2-1].



Caution

- Press only the “**RS485 Setup**” and “**Display Control**” buttons on the “System Setup” display. If this is not done, the unit may not work properly.
- Clock Setup is available on the System Setup display. However, if the power supply to the unit is turned off, the value will return to its initial setting.

• RS485 Setup



Caution

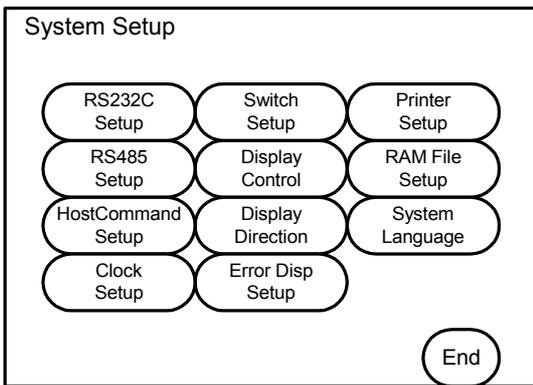
Press only the **Communication Rate** button on the RS485 Setup display.
If this is not done, the unit may not work properly.

Pressing the “RS485 Setup” button on the System Setup opens the “RS485 Setup” display.
See [Fig. 4.2-1] and [Fig. 4.2-2].

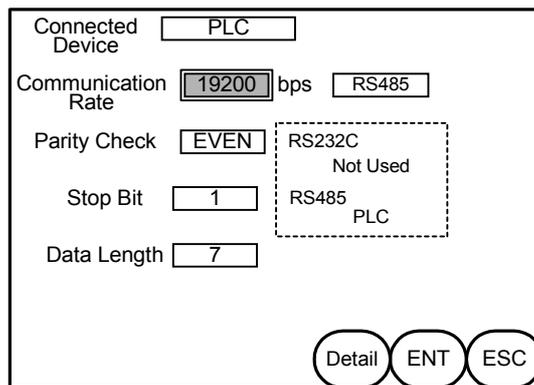
On this display, press the Communication Rate button  .
Each time the button is pressed, communication rate (1200, 2400, 4800, 9600, 19200 or 38400) can be selected.

When the Communication Rate setting is completed, press the ENT button to register the rate [Fig. 4.2-2].
Then the display will revert to the System Setup display [Fig. 4.2-1].

To revert to the System Setup display without setting the transfer rate, press the ESC button [Fig. 4.2-2].



[Fig. 4.2-1].



[Fig. 4.2-2].

Display Control setup

Pressing the “Display Control” button on the System Setup display opens the Display Control setup display. See [Fig. 4.2-1] and [Fig. 4.2-3].

With this display the Brightness adjustment and Display off time can be set.

Brightness Setup

8 grades of brightness can be selected.
The more the * marking moves to the right, the brighter it gets, and the more to the left, the darker it gets.

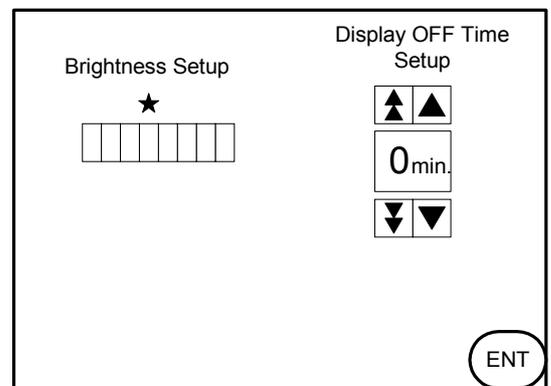
Display OFF Time Setup

This function is to turn the display off when switch input has not been performed for some time.

The time can be set by units of 1 minute up to a maximum of 60 minutes.

If it is required to be turned ON all the time, set it to 0 minutes. After the Display Control setup is finished, press the ENT button to register.

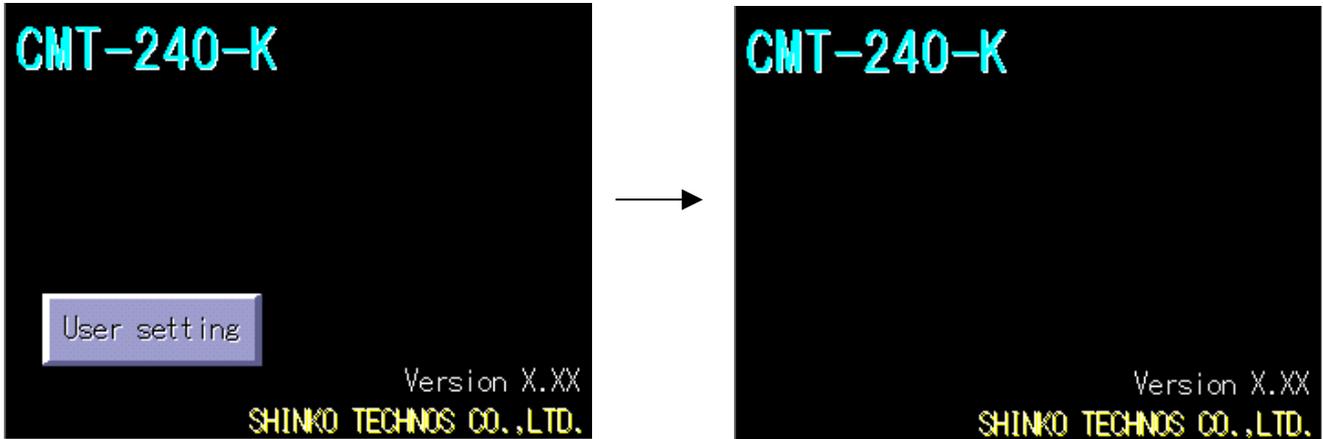
The display will revert to the System Setup [Fig. 4.2-1].



[Fig. 4.2-3]

- **System Setup end**

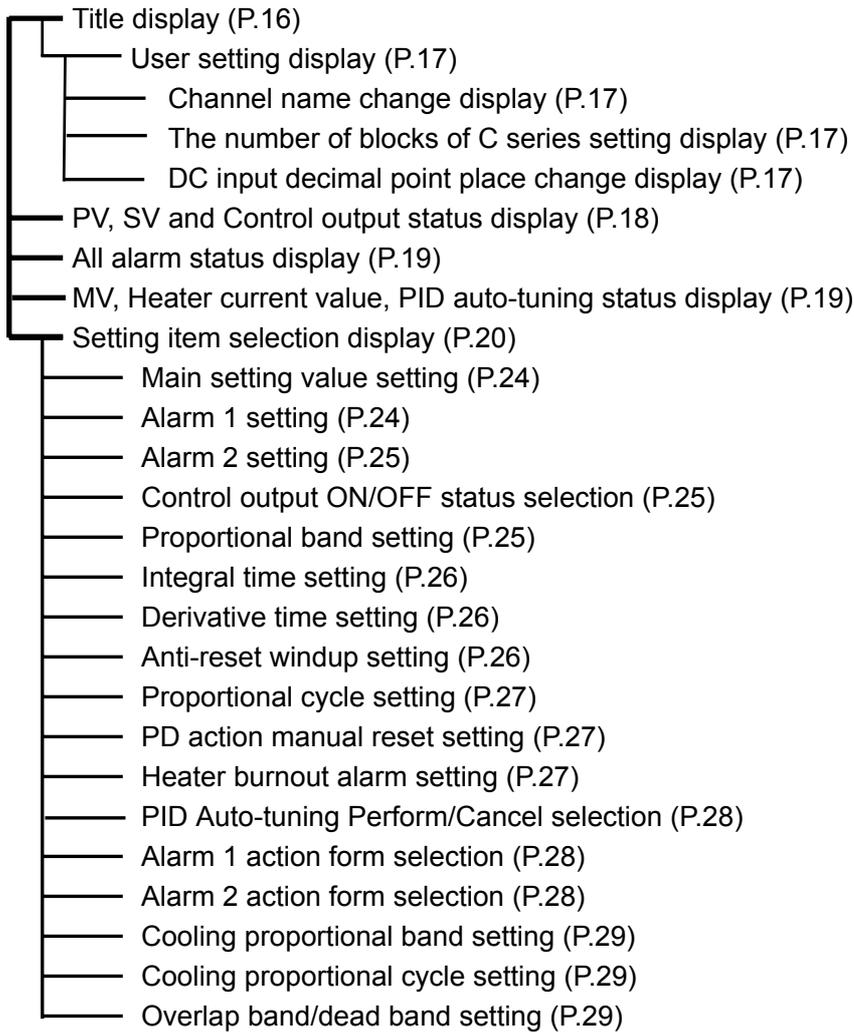
When the “RS485 Setup” and “Display Control” setup are finished, press the END button [Fig. 4.2-1]. The display will revert to the System Mode Main Menu. Then press the User Mode [Fig. 4.1-2]. This brings up the Title display [Fig. 4.2-4], and the control starts.



[Fig. 4.2-4]

5. Operation

5.1 Display configuration



5.2 Display operation

(1) Title display



[Fig. 5.2-1]



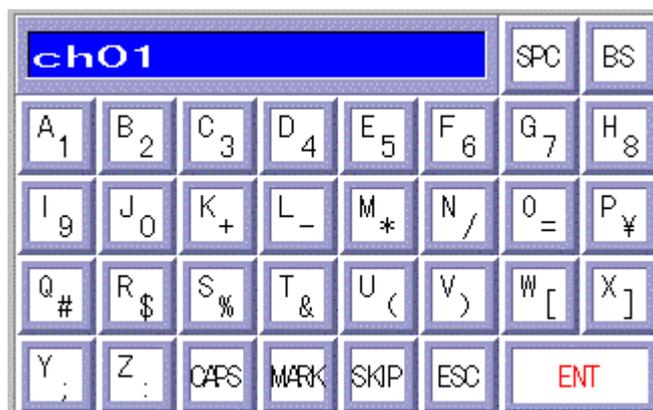
[Fig. 5.2-2]

After the power supply to the CMT-240-K is turned on, the Title display 1 is indicated for approximately 10 seconds [Fig. 5.2-1], and then Title display 2 [Fig. 5.2-2] and PV, SV and Control output status display [Fig. 5.2-5] are indicated respectively, and the control starts.

(2) User setting display



[Fig. 5.2-3]



[Fig. 5.2-4]

Pressing the “User setting” button on the Title display 1 [Fig. 5.2-1] opens User setting display [Fig. 5.2-3].

On this display the following settings ①, ② and ③ can be carried out.

① Channel name change

Pressing the “Channel” button to be changed opens Channel name change display [Fig. 5.2-4] and any channel name (4 letters) can be changed.

[Button explanation]

SPC : Space

BS : Back space

CAPS : Alternates from capitals to lowercase letters.

MARK : Alternates from the alphabet input to numeral and symbol input

SKIP : This button is ineffective.

ESC : Cancels the setting data and reverts to the former display.

ENT : Registers the setting data and reverts to the former display.

Press the “Register” button on the upper right of the User setting display [Fig. 5.2-3] after changing the Channel name.

Title display 2 [Fig. 5.2-2] and PV, SV and Control output status display [Fig. 5.2-5] are displayed respectively and the control starts.

② The number of the blocks of C series setting

Set the number of the blocks by pressing the “Change” button on the lower right of the User setting display [Fig. 5.2-3].

Block 1 and 2 will be displayed alternately if the “Change” button is pressed.

Press the “Register” button on the upper right of the User setting display [Fig. 5.2-3] after the number of blocks of C series has been set.

Title display 2 [Fig. 5.2-2] and PV, SV and Control output status display [Fig. 5.2-5] are displayed respectively and the control starts.

It is impossible to communicate if setting the number of blocks of CMT-220-K does not concur with the number of the C series blocks.

③ DC input decimal point place change (only for the DC input)

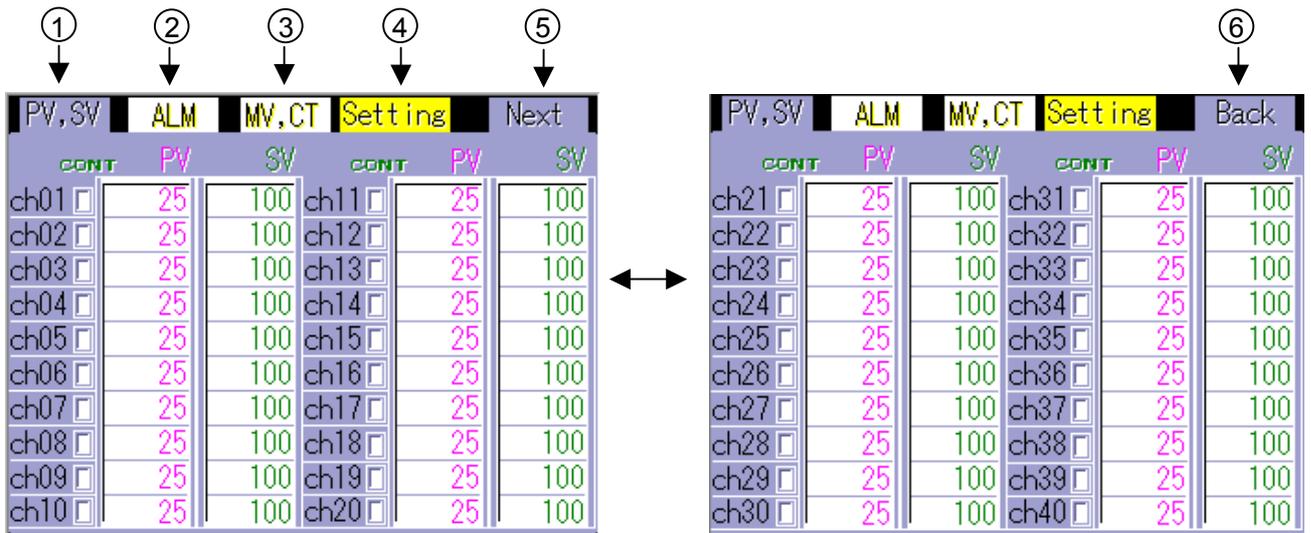
Set the Decimal point place by pressing the “Change” button on the lower left of the User setting display [Fig. 5.2-3]

The decimal point place can be changed by pressing the “Change” button each time.

Press the “Register” button on the upper right of the User setting display [Fig. 5.2-3] after the decimal point place has been changed.

Title display 2 [Fig. 5.2-2] and PV, SV and Control output status display [Fig. 5.2-5] will be displayed respectively and the control starts.

(3) PV, SV and Control output status display



[Fig. 5.2-5]

PV, SV and Control output status are included on this display [Fig. 5.2-5].

The following shows the contents of the display.

- CONT : When the control output is on, a green indicator lights.
- PV : Indicates process variable.
- SV : Indicates setting value.

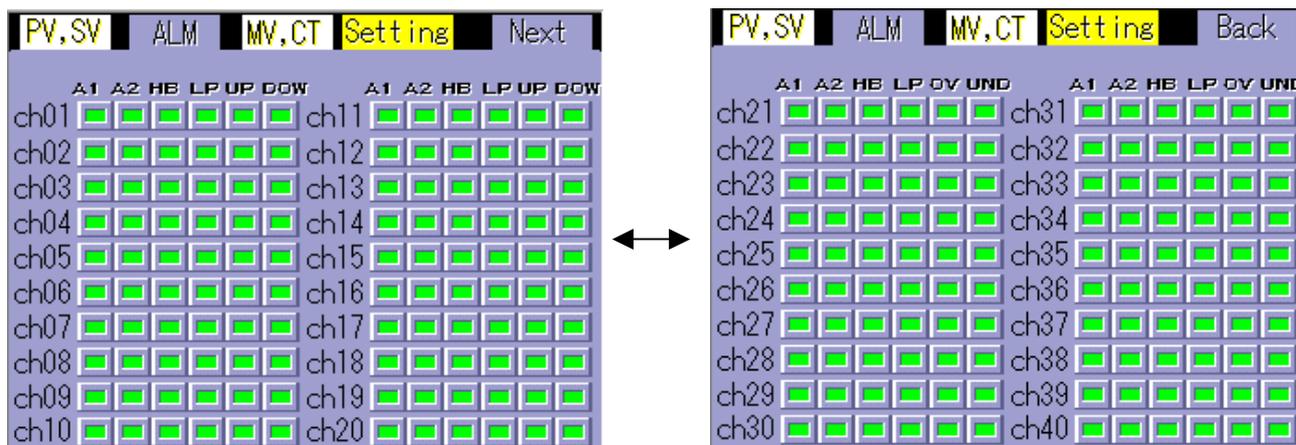
The tags of upper side of the display are buttons for opening following displays [Fig. 5.2-5].

- ① PV, SV: Opens the PV and SV and Control output status display.
- ② ALM : Opens All alarm status display [Fig. 5.2-6].
- ③ MV, CT: Opens MV, Heater current value and PID auto-tuning status display [Fig. 5.2-7].
- ④ Setting: Opens Setting item selection display [Fig. 5.2-8].
- ⑤ Next : Opens the display for CH21 to CH40.

However, when only 1 block has been set when setting the number of blocks of the C series (P.17), the display for CH21 to CH40 will not be indicated even if the Next button is pressed.

- ⑥ Back : Reverts to the display for CH1 to CH20.

(4) All alarm status display



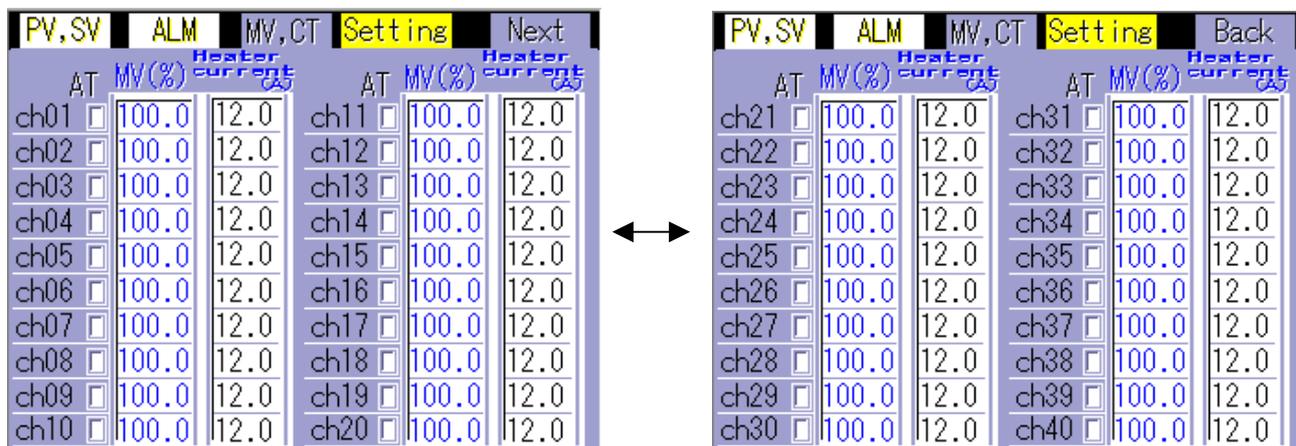
[Fig. 5.2-6]

The status of all alarms is displayed [Fig. 5.2-6].

The contents of the display is as shown below.

- A1 : Alarm 1 is indicated by a red light.
- A2 : Alarm 2 is indicated by a red light.
- HB : Heater burnout alarm is indicated by a red light.
- LP : Loop break alarm is indicated by a red light.
- UP : If the sensor input exceeds the rated scale high limit value, it is indicated by a red light.
- DOW: If the sensor input exceeds the rated scale low limit value, it is indicated by a red light.

(5) MV, Heater current value and PID auto-tuning status display



[Fig. 5.2-7]

MV, heater current value and PID auto-tuning status are indicated on the display [Fig. 5.2-7].

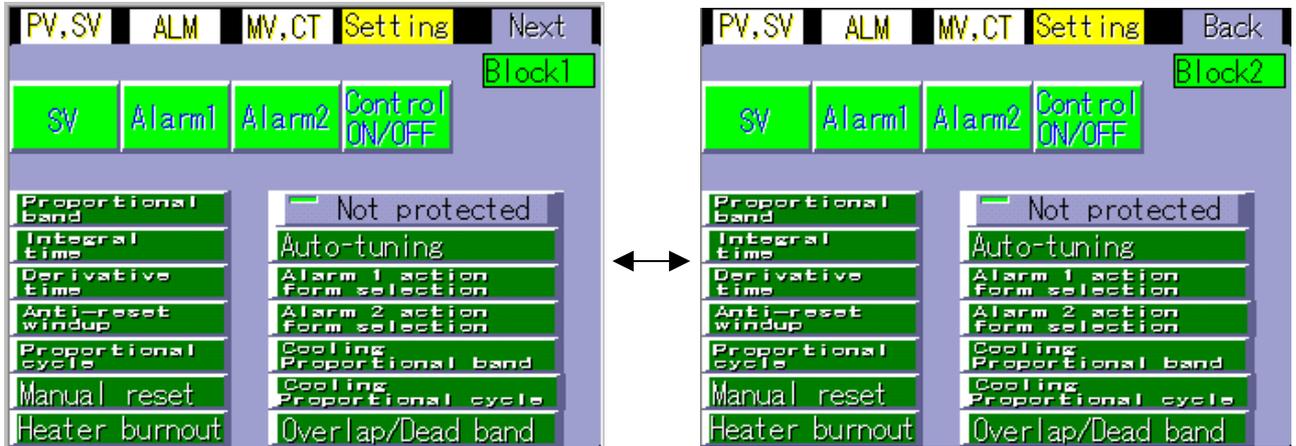
Display details are as follows.

- AT : While PID auto-tuning is performing, a yellow light blinks.
- MV : Indicates control output manipulated variable (%).
- Heater current: Indicates heater current (ampere) value.
0.0 is indicated even if the option Heater burnout alarm [code: W] is not applied.

(6) Setting item selection display

Press the following buttons to open each setting display [Fig. 5.2-8].

- SV : Main setting value setting display
- Alarm 1 : Alarm 1 setting display
- Alarm 2 : Alarm 2 setting display
- Control ON/OFF: Control output status selection display



[Fig. 5.2-8]

If the “Protected” button is pressed, “Not protected” appears.

Pressing the “Not protected” button and one of the other buttons bring up the following setting displays [Fig. 5.2-9].

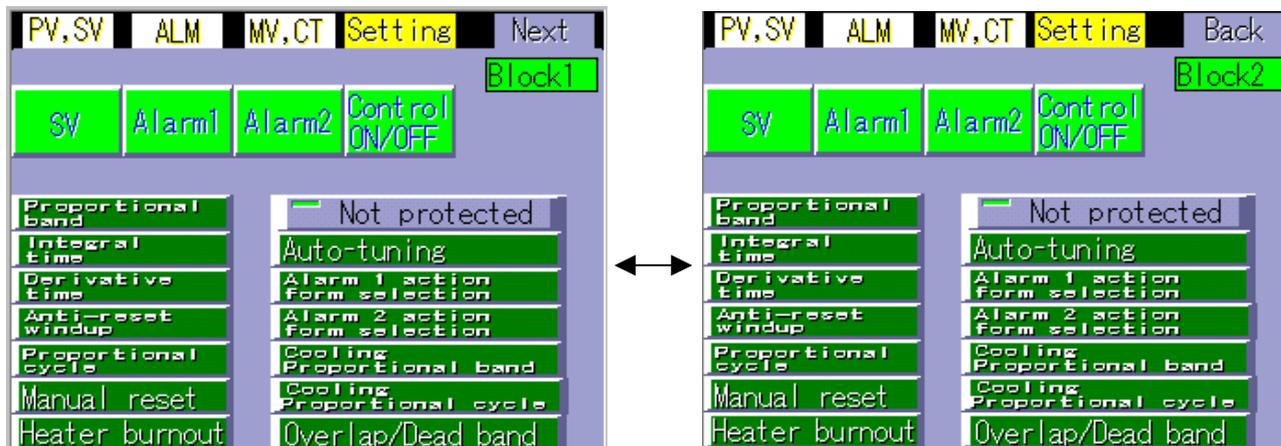
- Proportional band : Proportional band setting display
- Integral time : Integral time setting display
- Derivative time : Derivative time setting display
- Anti-reset windup : Anti-reset windup setting display
- Proportional cycle : Proportional cycle setting display
- Manual reset : PD action manual reset setting display
- Heater burnout : Heater burnout alarm setting display
- Auto-tuning : PID auto-tuning Perform/Cancel selection display
- Alarm 1 action form selection: Alarm 1 action form selection display
- Alarm 2 action form selection: Alarm 2 action form selection display
- Cooling proportional band : Cooling proportional band setting display
- Cooling proportional cycle : Cooling proportional cycle setting display
- Overlap/Dead band : Overlap band/Dead band setting display



[Fig. 5.2-9]

5.3 Setting display

To select the setting item, press the item on the Setting item selection display [Fig. 5.3-1].
 (It will take several seconds for some setting items to be displayed.)

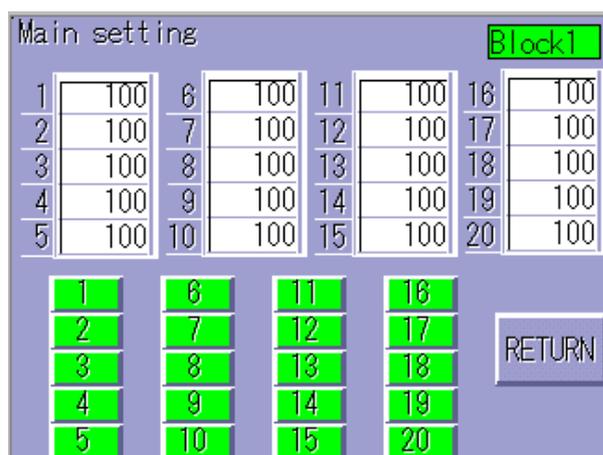


[Fig. 5.3-1]

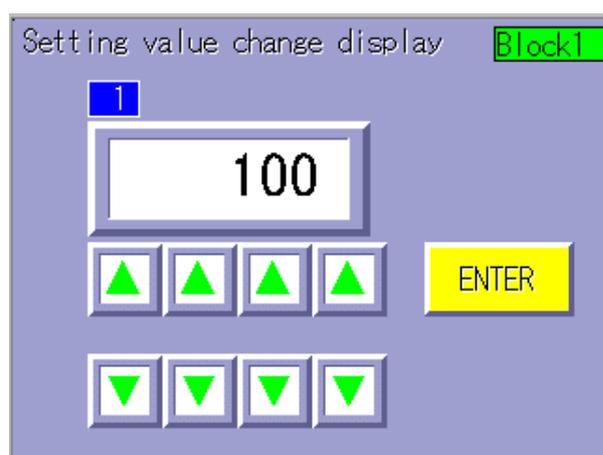
(1) Setting value change procedure

The main setting value will be used as an example to explain the procedure.
 Even if the setting item is different, the operation is the same as that of the main setting value setting.

- ① Press the channel to be changed on the Main setting value display [Fig. 5.3-2].
 The display will be switched to the Setting value change display [Fig. 5.3-3].
- ② Using the ▲ or ▼ key, change the figure of each digit.
 When the change is completed, press the ENTER key [Fig. 5.3-3].
 The setting value will be transferred to the CCT-235, and the display will revert to the Main setting value display [Fig. 5.3-2].
- ③ Repeat procedure ① and ② until the main setting value settings for all channels are finished.
- ④ If the main setting values for all channels are changed, press the RETURN key.
 The display will revert to the Setting item selection display [Fig. 5.3-1].



[Fig. 5.3-2]

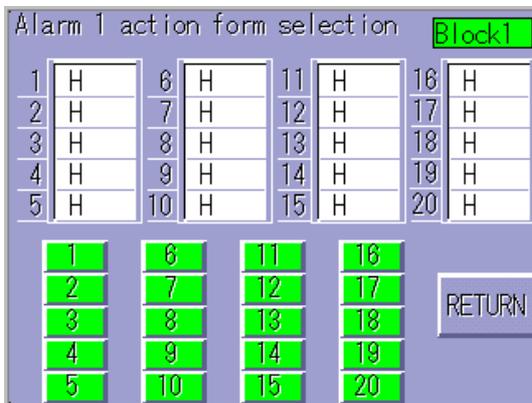


[Fig. 5.3-3]

(2) Alarm action change procedure

Alarm 1 action selection will be used as an example to explain the procedure.
 (For the alarm 2, the operation is the same as that of alarm 1 action selection.)

- ① Press the channel to be changed on the Alarm 1 action form selection display [Fig. 5.3-4].
 The display will be changed to the Alarm action selection display [Fig. 5.3-5].
- ② Using the ▲ or ▼ key, select the alarm actions.
 After selecting the alarm action, press the ENTER key [Fig. 5.3-5].
 The setting value will be transferred to the CCT-235 and the display will revert to the Alarm 1 action form selection display [Fig. 5.3-4].
- ③ Repeat the procedure①and②until alarm action selections for all channels are completed.
- ④ If the setting value of all channels are changed, press the RETURN key.
 The display will revert to the Setting item selection display [Fig. 5.3-1].



[Fig. 5.3-4]

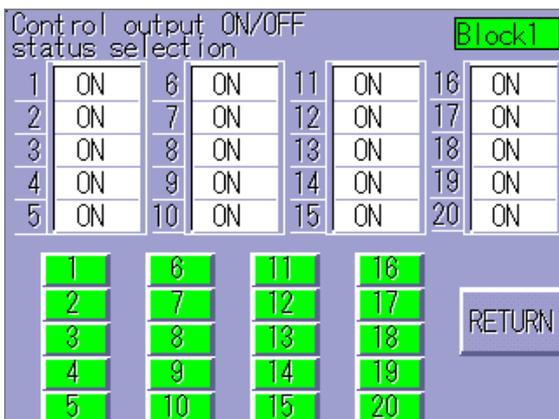


[Fig. 5.3-5]

(3) Control output status selection procedure

When control output status is on, "ON" is indicated in the frame next to the channel number.
 When control output status is off, "OFF" is indicated in the frame next to the channel number [Fig. 5.3-6].

- ① When turning control output status off, just press the button of the channel to be turned off.
 "OFF" will be indicated by turning the control output status off.
- ② To turn the control output status on, just press the button of the channel to be turned on.
 "ON" will be indicated by turning the control output status on.
- ③ If all control output status are set, press the RETURN key.
 The display will revert to the Setting item selection display [Fig. 5.3-1].

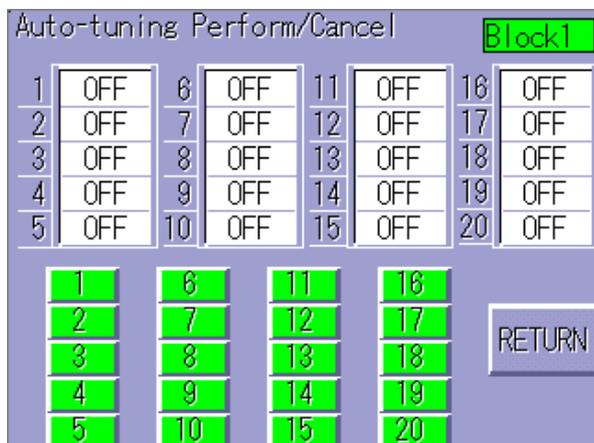


[Fig. 5.3-6]

(4) PID auto-tuning Perform/Cancel selection procedure

When PID auto-tuning is performing, "ON" is indicated in the frame next to the channel number. When PID auto-tuning is canceled, "OFF" is indicated in the frame next to the channel number [Fig. 5.3-7].

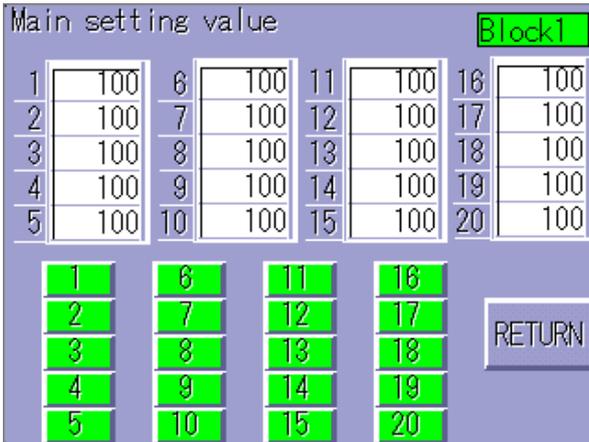
- ① When changing PID auto-tuning status from "OFF" to "ON", press the button of the channel to be turned on.
 "ON" is indicated in the frame next to the channel number and PID auto-tuning starts.
 After that, when PID auto-tuning is completed, "OFF" is automatically indicated in the frame next to the channel number.
- ② When changing PID auto-tuning status from "ON" to "OFF", press the button of the channel to be turned off.
 "OFF" is indicated in the frame next to the channel number and PID auto-tuning status is turned off. However, the values P, I, D and ARW revert to the value before the auto-tuning was performed.
- ③ If all PID auto-tunings are set, press the RETURN key. The display will revert to the Setting item selection display [Fig. 5.3-1].



[Fig. 5.3-7]

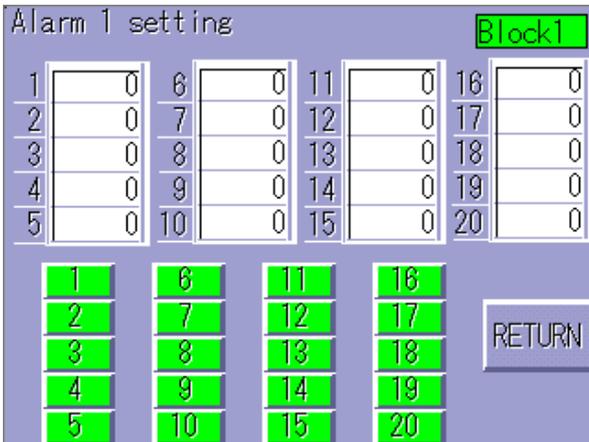
5.4 Explanation of each setting display

• Main setting value setting display



Sets the main setting value for all channels.
 Setting range: Rated scale range of the CCT-235
 Refer to the rated scale of the CCT-235
 in the instruction manual for the C series.

• Alarm 1 setting display



Sets the action point of Alarm 1 output for all channels.
 However, the setting is not available for the channels
 that No alarm is selected on the Alarm 1 action form
 selection display (page 28).
 Setting range: See [Table 5.4-1] below.

[Table 5.4-1]

Alarm action form	Setting range	
	TC	RTD or TC with decimal point
High limit alarm (with standby) *	-200 to 200°C (°F)	-200.0 to 200.0°C (°F)
Low limit alarm (with standby) *	-200 to 200°C (°F)	-200.0 to 200.0°C (°F)
High/Low limits (with standby) *	0 to 200°C (°F)	0.0 to 200.0°C (°F)
High/Low limit range (with standby)*	0 to 200°C (°F)	0.0 to 200.0°C (°F)
Process high alarm (with standby)	Input range minimum to input range maximum value	
Process low alarm (with standby)	Input range minimum to input range maximum value	

Alarm action form	Setting range
	DC voltage, DC current
High limit alarm (with standby) *	-2000 to 2000
Low limit alarm (with standby) *	-2000 to 2000
High/Low limits (with standby) *	0 to 2000
High/Low limit range (with standby)*	0 to 2000
Process high alarm (with standby)	0 to 10000
Process low alarm (with standby)	0 to 10000

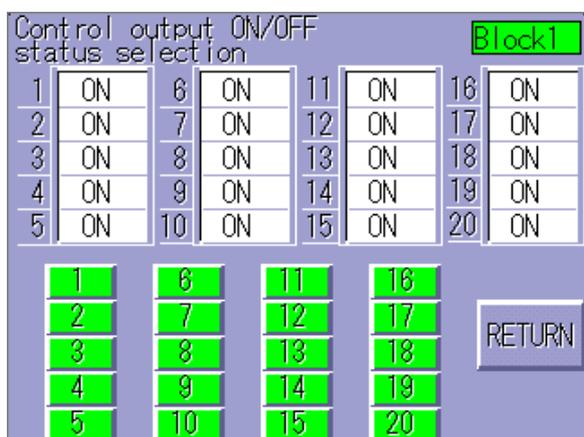
* Setting the value to 0 or 0.0
 disables the alarm action.

• Alarm 2 setting display



Sets the action point of Alarm 2 output for all channels. However, the setting is not available for the channels that No alarm is selected on the Alarm 2 action form selection display (page 28).
Setting range: See [Table 5.4-1] (page 24).

• Control output ON/OFF status selection display



Sets the Control output ON or OFF status for all channels.
Control output OFF function:
A function to turn the control output OFF even if the power to the instrument is supplied. The function is used when required to halt the control action or when the unit is not being used in multiple units.

 **Notice**

Once the Control output OFF function is enabled, the function cannot be released even if the power to the unit is turned OFF and turned ON again.
To cancel the function, go to the Control output ON/OFF status selection display again, and press the button of the channel to be cancelled in order to turn the control output on.

• Proportional band setting display



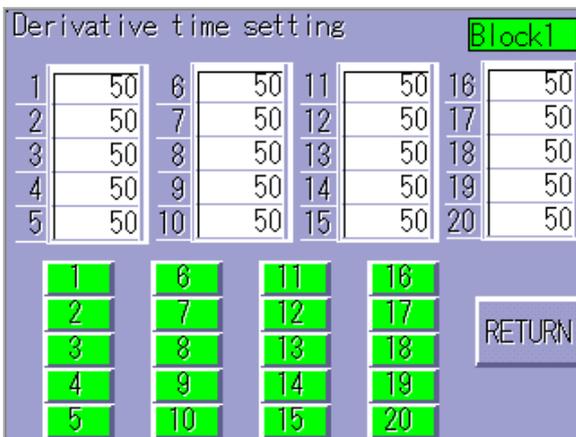
Sets the proportional band for all channels. For details of the proportional band, refer to the instruction manual for the C series.
Setting range: 0.0 to 100.0%
(ON/OFF action when set to 0.0.)

• Integral time setting display



Sets the integral time for all channels.
 For details of the integral time, refer to the instruction manual for the C series.
 Setting range: 0 to 3600 seconds
 (Off when set to 0.)

• Derivative time setting display



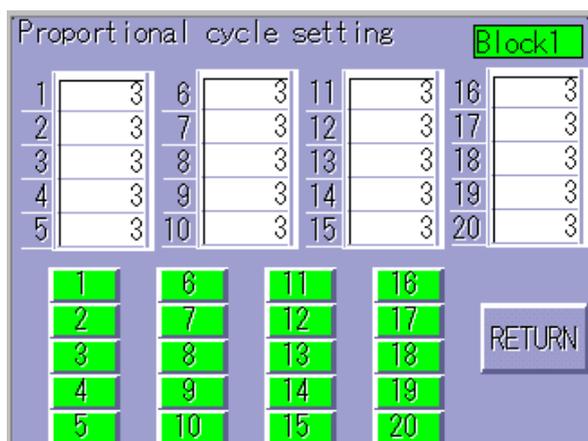
Sets the derivative time for all channels.
 For details of the derivative time, refer to the instruction manual for the C series.
 Setting range: 0 to 3600 seconds
 (Off when set to 0.)

• Anti-reset windup setting display



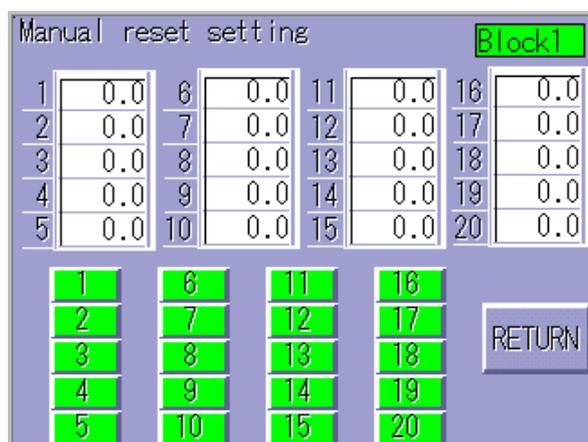
Sets the anti-reset windup for all channels.
 For details of the anti-reset windup, refer to the instruction manual for the C series.
 Setting range: 0 to 100%

• Proportional cycle setting display



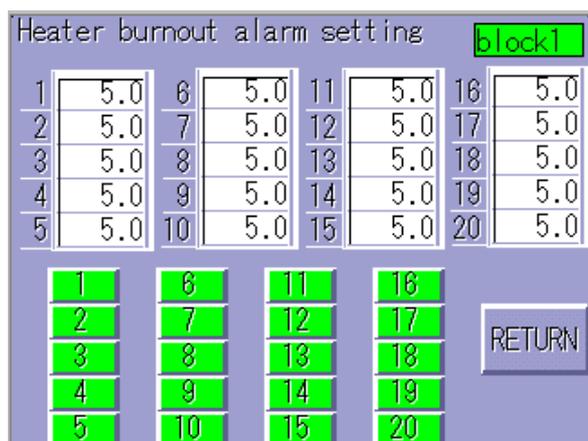
Sets the Proportional cycle for all channels.
Setting range: 1 to 120 seconds

• PD action manual reset setting display



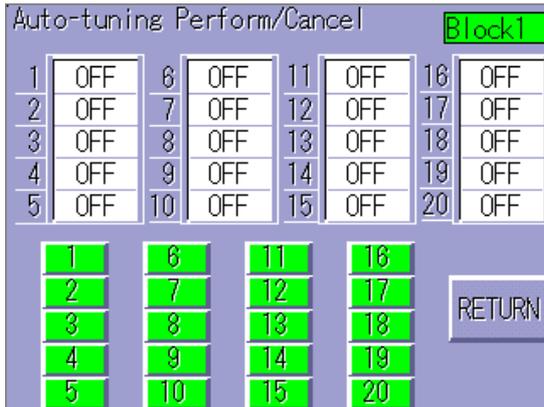
Sets PD reset (offset correction) for all channels.
The setting is available during PD action only.
Setting range: \pm Proportional band converted value
[However, the range for TC and RTD input:
-199.9 to 999.9°C (°F)
The range for DC input: -1999 to 9999]

• Heater burnout alarm setting display



Sets heater current value of Heater burnout alarm for all channels.
The setting is available only when the option [W] is applied to the CCT-235.
For Heater burnout alarm action drawing, refer to the instruction manual for the C series.
Setting range:
Rating 20A: 0.0 to 20.0A
Rating 50A: 0.0 to 50.0A
Off when set to 0.0.
It is recommended to set approx. 80% of the Heater current value (setting value) considering the voltage fluctuation.

• PID Auto-tuning Perform/Cancel selection display



Sets PID Auto-tuning Perform or Cancel for all channels. For the details of PID auto-tuning, refer to the instruction manual for C series. During AT performing, other settings cannot be performed. Do not perform Auto-tuning for the channels whose control is ON/OFF or PD action.

• Alarm 1 action form selection display



Selects Alarm 1 action form for all channels. Action form: See [Table 5.4-2] below. For alarm action drawing, refer to the instruction manual for the C series.

[Table 5.4-2]

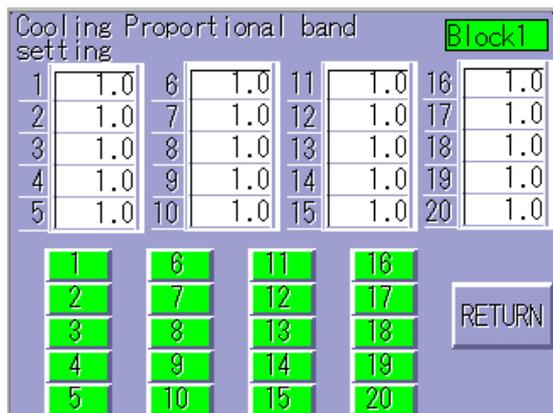
Alarm action form	Character
No alarm	----
High limit alarm	H
High limit alarm with standby	H W
Low limit alarm	L
Low limit alarm with standby	L W
High/Low limits alarm	HL
High/Low limits alarm w/standby	HL W
High/Low limit range alarm	WID
High/Low limit range alarm w/standby	WIDW
Process high alarm	PH
Process high alarm with standby	PH W
Process low alarm	PL
Process low alarm with standby	PL W

• Alarm 2 action form selection display



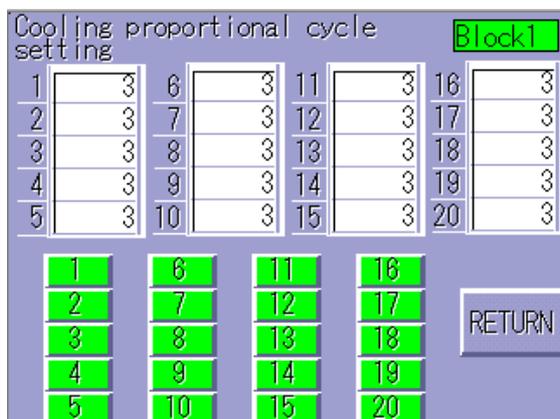
Selects Alarm 2 action form for all channels. Action form: See [Table 5.4-2] above. For alarm action drawing, refer to the instruction manual for the C series.

• Cooling proportional band setting display



Sets the proportional band for cooling side.
 However, this item is available only when the CCT-235 is specified as Heating/Cooling.
 Setting range: 0.0 to 10.0 times the main proportional band
 (ON/OFF action when set to 0.0.)

• Cooling proportional cycle setting display



Sets the cooling proportional cycle.
 However, this item is available only when the CCT-235 is specified as Heating/Cooling.
 Setting range: 1 to 120 seconds

• Overlap band/Dead band setting display



Sets the Overlap band and Dead band for Heating and Cooling control outputs.
 + setting value: Dead band
 - setting value: Overlap band
 However, this item is available only when the CCT-235 is specified as Heating/Cooling.
 Setting range: -100.0 to 100.0°C(°F) (for TC and RTD input)
 -1000 to 1000 (for DC input)

6. Specifications

6.1 Functional specifications

Display function

Display device	Colored LCD
Color	16 out of 512 colors
Resolution	320 x 240 dots
Size	5.7 inches
Effective area	115.2 x 86.4mm (W x H)

Input function

Switch system	Transparent conductive touch switch
Switch type	Momentary, Alternate, Auto-repeat

6.2 General specifications

Electricity specification

Rated voltage	20.5 to 28.8Vdc
Power consumption	24VA or less
Dielectric strength	1.0kVdc for 1 minute between power terminal and ground
Insulation resistance	20M Ω or greater at 500Vdc between power terminal and ground

Environment specification

Ambient temperature	0 to 50°C (32 to 122°F)
Ambient humidity	15 to 85%RH (Non-condensing)
Vibration-proof	Based on JIS-C0911 5 to 55Hz, 2G X, Y, Z each direction for 2 hours
Impact-proof	Based on JIS-C0912 10G 12ms or less X, Y, Z each direction

Noise-proof (power source)

1000V_{P,P} (Pulse width 100ns, 1000ns) common mode

Noise-proof (communication)

500V_{P,P} (Pulse width 100ns, 1000ns) capacity coupling

Using atmosphere No corrosive gases present

Structure specification:

Mounting structure	Panel mounting system
Protecting structure	IP65F (for front panel section when using drip-proof packing)
External dimensions	195 x 150 x 47mm (W x H x D)
Weight	Approx. 850g or less

7. Troubleshooting

If any malfunctions occur, check that the power is supplied to the CMT-240-K and the C series. When the power is supplied to the C series, the green LED Power (PW) indicator lights up. Check the following when the C series does not work even if its indicator lights up.



Warning

Turn the power supply to the instrument OFF before wiring or checking. Working or touching the terminal with the power switched on may result in an Electric Shock which could cause severe injury or death.

Problem: The control output of the CMT-240-K cannot be turned on. (Temperature does not rise.)

Presumed cause	Solution
The setting value has not been set yet.	Set the setting value from the CMT-240-K (P. 24)
Control output status has been turned off.	Turn the control output on from the CMT-240-K (P. 25).

Problem: Setting from the CMT-240-K is impossible.

Presumed cause	Solution
Auto-tuning is performing.	Cancel the auto-tuning (P. 28).

Problem: Communication is impossible. ("Serial COM Error" is indicated on the display.)

Presumed cause	Solution
Data transfer rates of CMT-240-K and CPT-20A do not concur.	Set the same transfer rate to both. (P. 13, 14)
Setting the number of blocks of C series from the CMT-240-K does not concur with the number of blocks actually connected to the C series.	Set the number of blocks of C series of CMT-240-K to the number of blocks actually connected to the C series (P. 17)
The communication cable is disconnected.	Change the communication cable.
Wiring of the communication cables is wrong.	Wire the cable properly (P. 11).

Problem: Display of the CMT-240-K suddenly disappears.

Presumed cause	Solution
"Display OFF Time Setup" of CMT-240-K has been set.	Set the "Display OFF Time" to 0 minutes (P. 13, 14).

If any other problems arise, make inquiries at our agency or the shop where you purchased the unit.

******* Inquiry *******

For any inquiry about this unit, please contact the shop where you purchased the unit or our agency

Please let us know the details of malfunction, if any, and the operating conditions.

**SHINKO TECHNOS CO.,LTD.
OVERSEAS DIVISION**

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