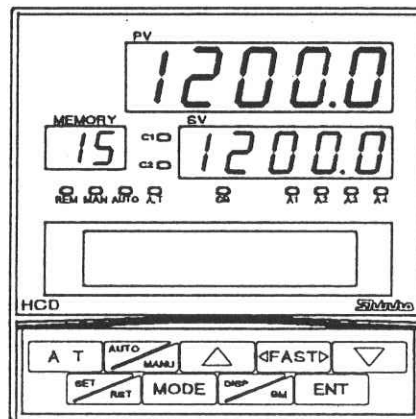


INSTRUCTION MANUAL
FOR
DIGITAL INDICATING CONTROLLER
HCD-130 Series



Thank you for your purchase of our High function, Digital Indicating Controller HCD-130 Series.

This controller is delivered after its production and inspection on the basis of severe quality control in our factory.

Further to your confirmation of the model and specifications of the controller, peruse this instruction manual before starting operation.

Note:

Please arrange to give this manual into the hands of the operator who actually uses our product.

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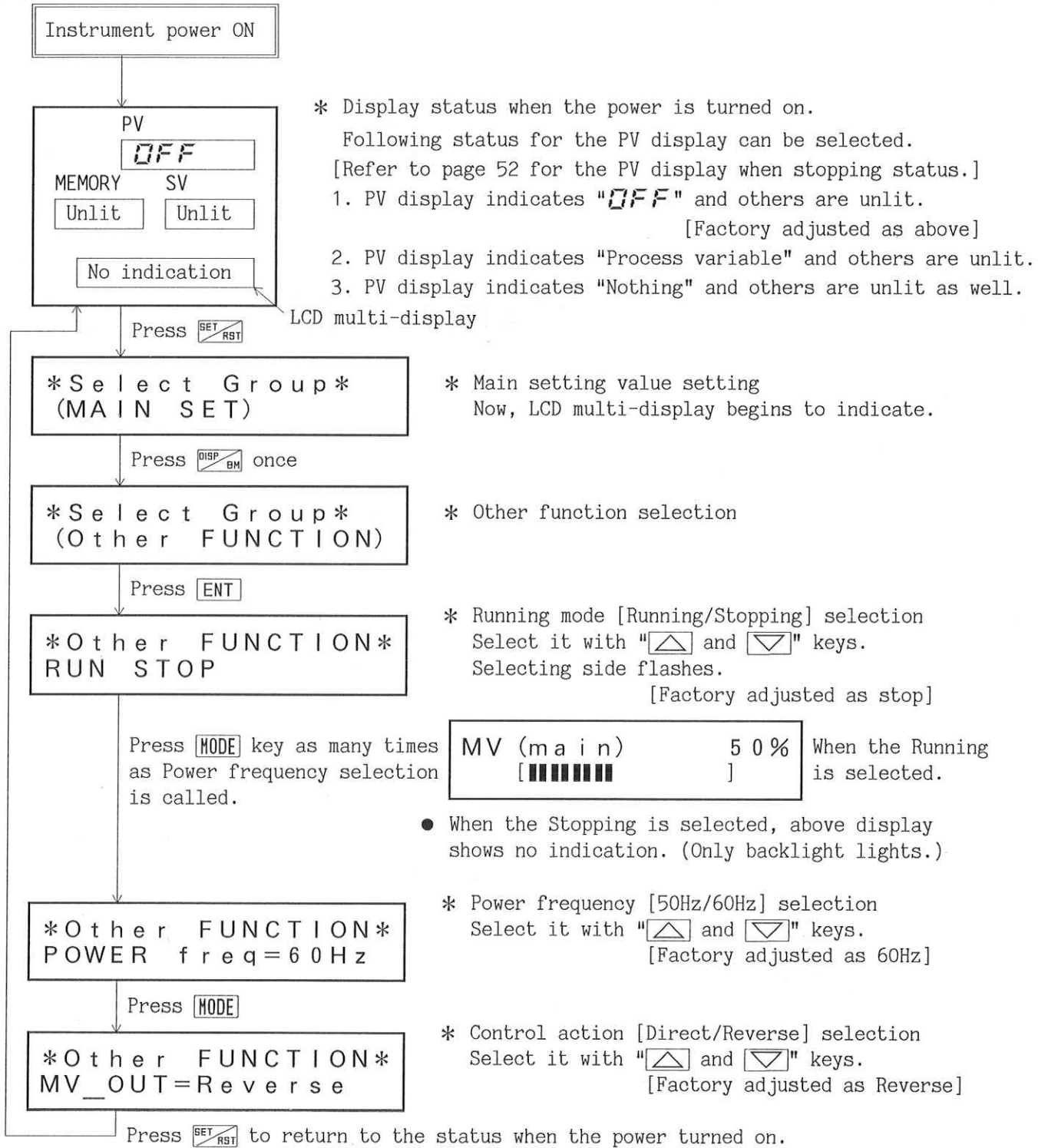
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Notes to users (Setting up)

Setting up is required to use the HCD-130 series.

Set the functions ["Running mode selection", "Instrument supply frequency selection" and "Control action, Direct/Reverse selection"] up before the operation.

Refer to page 51 (1-14 Other functions) for the detail.



1. When unpacking

1.1 Taking the instrument out

Unpack the instrument taking care to avoid excessive shocks.

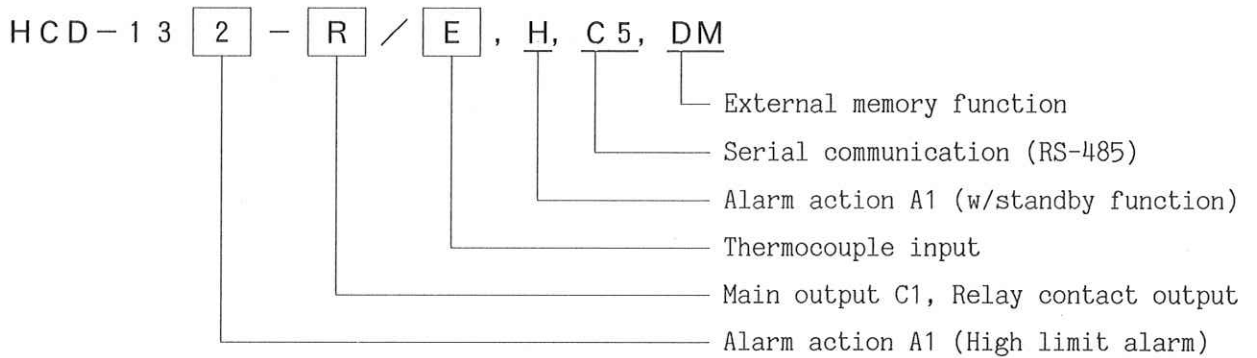
1.2 Checking of accessories

- Mounting bracket 1 set
 - Instruction manual 1 copy
 - Unit nameplate 1 sheet
 - Memory-card 1 sheet [When External memory function (DM) is applied.]
- * Memory-card is equipped with a battery for test, therefore, the battery has to be exchanged to the attached one before use.
(See page 60)

1.3 Confirmation of the specifications

- Before use, confirm whether the instrument is the ordered one.
The model name of this controller is indicated on the model nameplate on the case and internal assembly.
- Described mark " □ " in this manual such as R/□ or □/□ means an alphanumerical character which shows various functions or the kinds.

[Example]



● Model nameplate (on the case)

MODEL	HCD-1302-R/E	← Model name
OPTION	H, C5, DM	← Option codes
RANGE	0 ~ 1370.0°C K	← Rated scale and the input
VOLT.	85 ~ 264V 50/60Hz	← Supply voltage and the frequency

* Indication of the optional specifications

- Optional specifications are specified with the code besides the model name.
- When two or more functions are specified, commas are used between the codes.

1.4 Confirmation of the Input conditions at the DIP switch

■ Before using, confirm the input conditions of the DIP switch.

DIP switch should be operated only when using the controller with the input excepting ordered one.

- ① Draw the inner assembly out from the case using the notches top and bottom of the case unhooking at the bottom notch.
- ② The input kind is selected with DIP-switch SW401 on the printed circuit board (HCD-42). (See Fig.1 and Table 1)

* In case the option Cascade control [CC] or External setting [E□] is applied, the input kind of input 2 side should be selected with DIP-switch SW701 on the PCB (HCD-71).(Fig.2)

< Notes >

- ① When changing the input kind, turn the power off before operating the DIP switch. After the setting is completed, surely return the inner assembly to the case.
- ② When changed the input kind by key operations, operate the setting of this input condition if necessary.

Dip-switch (SW401, 701)	Thermocouple TC	DC voltage (mV)	DC voltage (V)	DC current (mA)	Resistance temperature detector RTD
1	OFF *	OFF *	OFF	OFF	OFF
2	OFF	OFF	OFF	OFF	ON
3	OFF	OFF	OFF	OFF	ON
4	ON	ON	ON	ON	OFF
5	ON	ON	ON	ON	OFF
6	OFF	OFF	OFF	OFF	ON
7	ON	ON	OFF	OFF	ON
8	OFF	OFF	ON	ON	OFF
9	OFF	OFF	OFF	ON	OFF
10	OFF	OFF	OFF	ON	OFF

[Table 1]

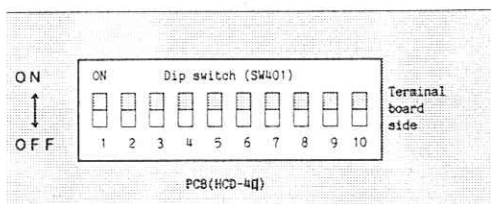
*: When sensor burnout, if downscale is desired, select ON, and for upscale, select OFF. [Factory adjusted as upscale]

Inner instrument bottom

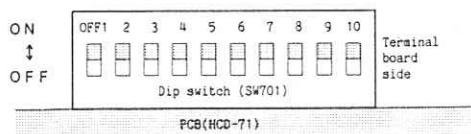


Dip switch (SW401)

Dip switch (SW701)



(Fig. 1)



(Fig. 2)

2. Models referred to in this manual

2.1 Standard models

HCD-130 □-□/□		Series name: HCD-130
Main control action	3	PID action (w/auto-tuning function)
Alarm action Output 1 (A1)	0	No alarm action
	2	High limit alarm
	3	Low limit alarm
	4	High/low limit alarm
	6	High/low limit range alarm
	8	Process value alarm
Main output (C1)	R	Relay contact
	S	Non-contact voltage (for SSR drive)
	A	DC Current
Input	E	Thermocouple
	R	RTD
	A	DC current
	V	DC voltage

* To apply the alarm action (A1), one of the alarm action excepting "0" [No alarm action] should be specified.

2.2 Optional specifications

- ① Alarm output 1 (A1) with standby function: Option code [H]
 Deviation setting by \pm against main setting. Alarm output becomes ON when input exceeds the deviation setting range.
 The alarm output is halted until the deviation reaches in the alarm setting range after power turned on, or when the main setting value is changed in the running, and in the case deviation becomes larger than the alarm set range.
- ② Alarm output 2 (A2): Option code [AL□] (□: [2], [3], [4], [6] or [8])
 It provides the additional temperature alarm besides the alarm output 1 (A1), and the function is the same as alarm output 1 (A1), deviation setting by \pm against the main setting, and when the input value exceeds the setting range, the alarm output turns ON.
- ③ Alarm output 2 (A2) with standby function: Option code [AL□H]
 (□: [2], [3] or [4])
 The same function as the alarm output 1 (A1) with standby is applied to the alarm output 2 (A2).
- ④ Alarm output 3 (A3) and Alarm output 4 (A4): Option code [SA]
 Open collector is used to these alarm outputs, and they are provided the same kinds of alarms as the alarm output 1 (A1) besides the alarm output 1 and 2.
 (The alarm kinds are selectable by key operation.)
- ⑤ Heating and Cooling control output: Option code [DR, DS, DA]
 This option is not applicable together with option Cascade control (option: CC).
 It performs the Heating and Cooling control, Main output (C1) as its Heating control output and Sub-output (C2) as its Cooling control.

- ⑥ Transmission output: Option code [SVT□, PVT□, MVT□]
(□: Output kinds, Current [A] or Voltage [V])

Converting the value whichever Setting value transmission output (current) [Option: SVTA] Setting value transmission output (voltage) [Option: SVTV], Input value transmission output (current) [Option: PVTA], Input value transmission output (voltage) [Option: PVTV], Manipulating value transmission output (current) [Option: MVTA] and Manipulating value transmission output (voltage) [Option: MVTV] in analog value every 0.1 sec., it outputs the value in current or voltage.

- ⑦ Serial communication: Option code [C, C5]

It allows following operation from external computer by the communicating line RS-232C [C] or RS-485 [C5].

- Changing of the functions.
- Reading and setting of all of the setting values.
- Reading of the input value and the action status.

- ⑧ Setting value memory number external change: Option code [SM]

It can change the memory number memorized 14 kinds of data (Main setting value, PID values, ARW value, Alarm setting values, Dead band values, Proportional band offset value, Sub-proportional band value and Sub-derivative time value) in as many as 15 files (Memory No.1 to No.15) to any number by remote operation, and the running is performed with the setting value.

Automatic and Manual control are changeable by remote operation as well. If the option External setting [E□] is applied together with this option [SM], Remote and Local control can be also switched.

- ⑨ External setting: Option code [E□] (□: Current [A] or Voltage [V])

This option is not applicable together with the Cascade control [CC].

During remote setting, the main setting value is settable by external analog signal. External setting input current [EA], External setting input voltage [EV]

- ⑩ External memory function: Option code [DM] (A memory-card is attached.)

Using the Memory-card, it allows to save all setting contents externally and to load all setting contents to other HCD-130.

- ⑪ External memory function: Option code [DMO] (No memory-card is attached.)

Using the Memory-card, it allows to save all setting contents externally and to load all setting contents to other HCD-130. (Memory-card is sold separately.)

- ⑫ Status output: Option code [SO]

It can confirm each status of Sensor burnout, Remote and Manual by the open collector output.

- ⑬ Cascade control: Option code [CC]

This option is not applicable together with Heating and Cooling control output [D□] or External setting (Remote) [E□].

It allows cascade control making the input 1 as the primary controller (Main output C1) and input 2 as the secondary one (Sub-output C2).

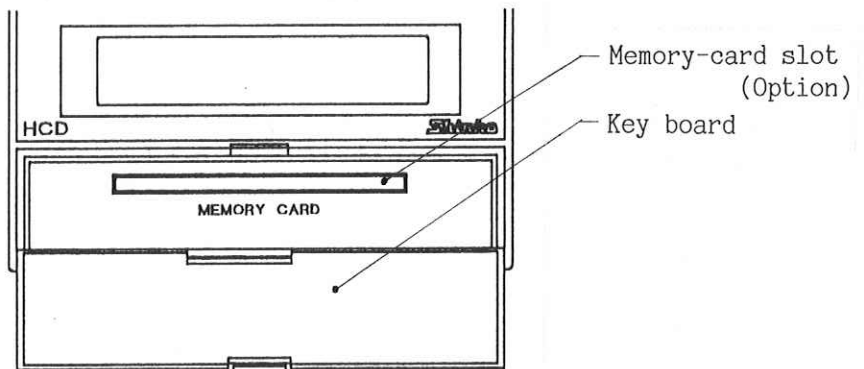
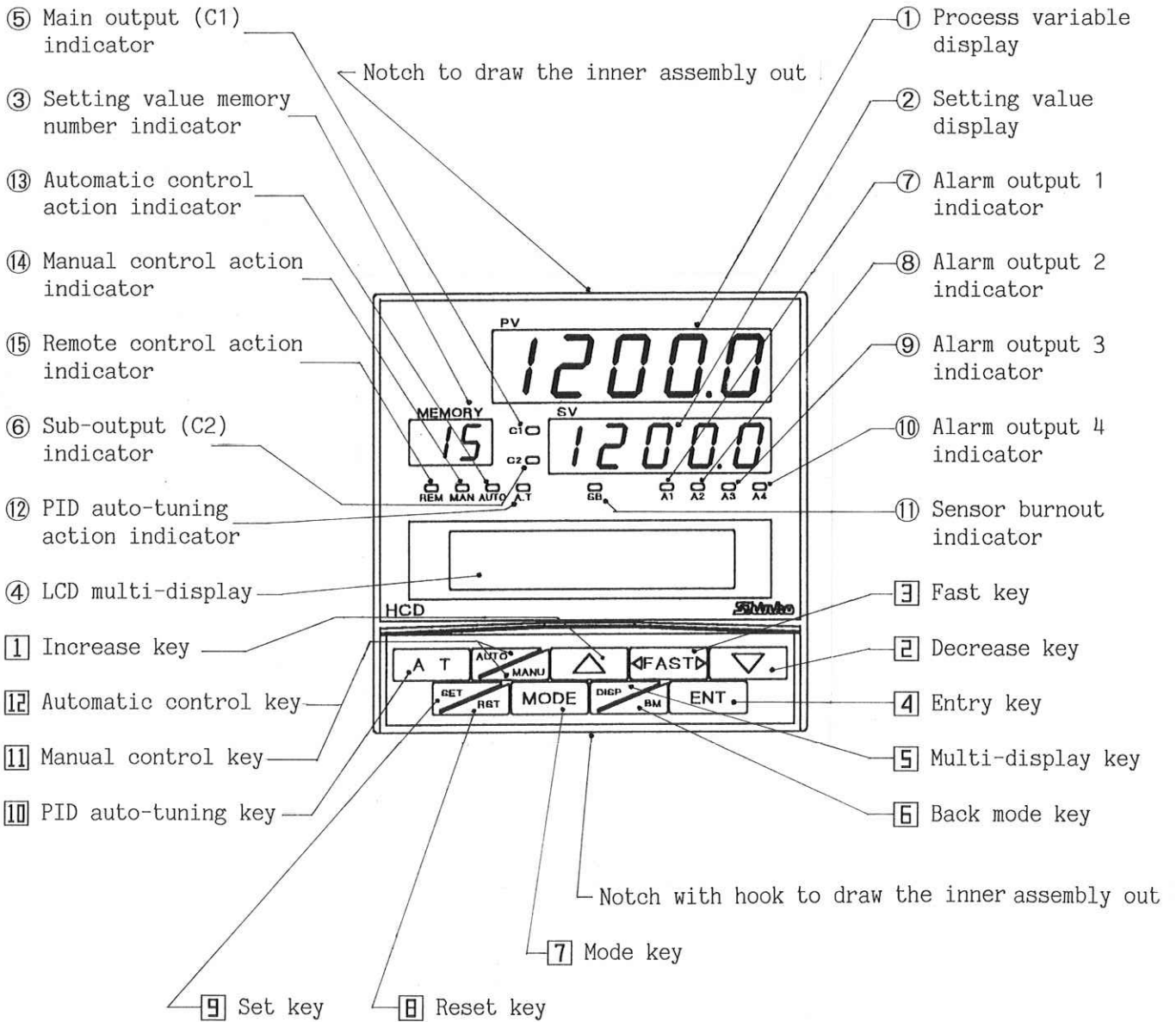
The cascade control can be performed with one unit of HCD-130.

- ⑭ Security setting: Option code [SE]

A lock function in which only the person who has security level registered code can operate the setting.

3. Name and functions of the sections

3.1 Name of the sections



* Open the key board, then Memory-card slot is found at the inner part, however, the slot is provided only when the option [DM or DMO] is specified.


3.2 Functions of the sections

● Displays and Indicators


- ① Process variable display (PV) : It displays the process variable (PV) with red LED.
- ② Setting value display (SV) : It displays the setting value (SV) with green LED.
- ③ Setting value memory number display: It displays the setting value memory number with green LED.
- ④ LCD multi-display : It displays the setting contents (message) when setting, and the manipulating value when running.
- ⑤ Main output (C1) indicator "C1 ○" : Green LED lights when main output (C1) ON. It always lights in case the output type is current.
- ⑥ Sub-output (C2) indicator "C2 ○" : Yellow LED lights when sub-output (C2) ON. It always lights in case the output type is current.
- ⑦ Alarm 1 output indicator "○"
A1 : Red LED lights when alarm 1 output ON.
- ⑧ Alarm 2 output indicator "○"
A2 : Red LED lights when alarm 2 output ON.
- ⑨ Alarm 3 output indicator "○"
A3 : Red LED lights when alarm 3 output ON.
- ⑩ Alarm 4 output indicator "○"
A4 : Red LED lights when alarm 4 output ON.
- ⑪ Sensor burnout indicator "○"
SB : Only in case the input is thermocouple or RTD, red LED lights when it is burnout. For other inputs (sensors), SV display will indicate Upscale or Downscale.
- ⑫ PID auto-tuning action indicator "○"
AT : Yellow LED blinks during PID auto-tuning.
- ⑬ Automatic control action indicator "○"
AUTO : Green LED lights when automatic controlling.
- ⑭ Manual control action indicator "○"
MAN : Red LED lights when manual controlling.
- ⑮ Remote control action indicator "○"
REM : Red LED lights when remote controlling.

● Key function




1 Increase key









"": It increases the setting numeral, or changes the setting item forwardly.

2 Decrease key

"": It decreases the setting numeral, or changes the setting item backwardly.

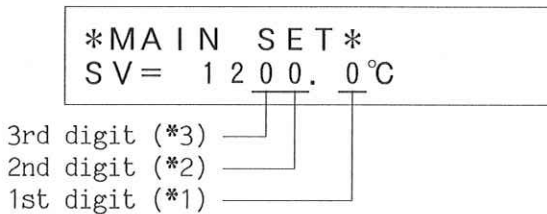
3 Fast key

"": It changes the setting value faster operating together with "" or "" key when setting.

- When operating only "" or "" key, it changes the value from the first digit. (*1)
- If "" key is pressed while "" or "" key is being pressed, the first digit value will not be changed and the second digit value (*2) changes.
- If pressed the "" key first and held it, and then "" or "" key is pressed, the first and the second digit value will not be changed and it changes the value from the third. (*3)


● If both keys are held, it carries the digit to the fourth and the fifth every 10 counts.

[Example] When LCD indicates the Main setting value




- In the example, it has a decimal point. If there is no decimal point the display will be as follows.
- (*1): 1-digit
- (*2): 10-digit
- (*3): 100-digit

4 Entry key

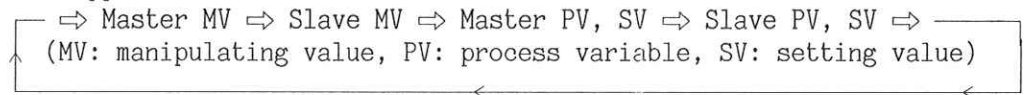
"": It registers the setting value, or fixes the setting item.

5 Display key (DISP)


"": It switches the multi-display (LCD).

• When sub-output (C2) is applied: Main output (C1) manipulating value
 ⇔ Sub-output (C2) manipulating value


• When cascade control (Option: CC) is applied :




6 Back mode key (BM)

"": It moves the setting mode to the reverse.


7 Mode key

"": It selects each setting mode.


8 Reset key (RST)

"": It changes the mode from setting to running.


9 Set key (SET)

"": It changes the mode from running to setting.


10 PID auto-tuning key





"": It performs or cancels the PID auto-tuning.


11 Manual control key (MAN)

"": It switches the control from automatic to manual.

12 Automatic control key (AUTO)

"": It switches the control from manual to automatic.

Notes: 1. In this manual, "" + "" means that the keys "" and "" are pressed simultaneously.

2. Even if the key "" is not pressed after setting, the setting contents will be registered when other key operation is performed.

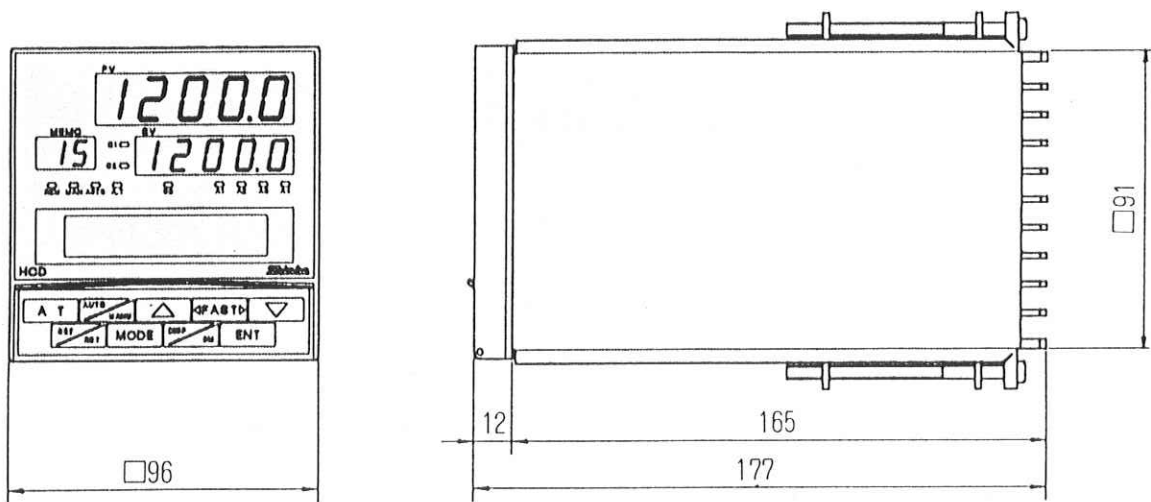
4. Mounting to control panel

4.1 Site selection

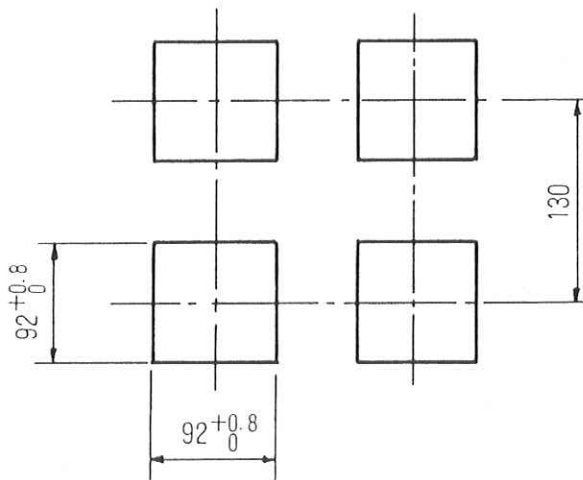
* Mount the controller in a place with:

- ① A minimum of dust.
- ② An absence of corrosive gases.
- ③ No mechanical vibrations or shocks.
- ④ No exposure to direct sunlight, ambient temperature within 0 to 50°C and it does not change suddenly.
- ⑤ Ambient humidity within 35 to 85%RH and non-condensing.
- ⑥ The controller should be away from the electromagnetic switch of large capacity or cables through which large current flows.
- ⑦ No water or oil and their vapor directly splash.

4.2 External dimensions

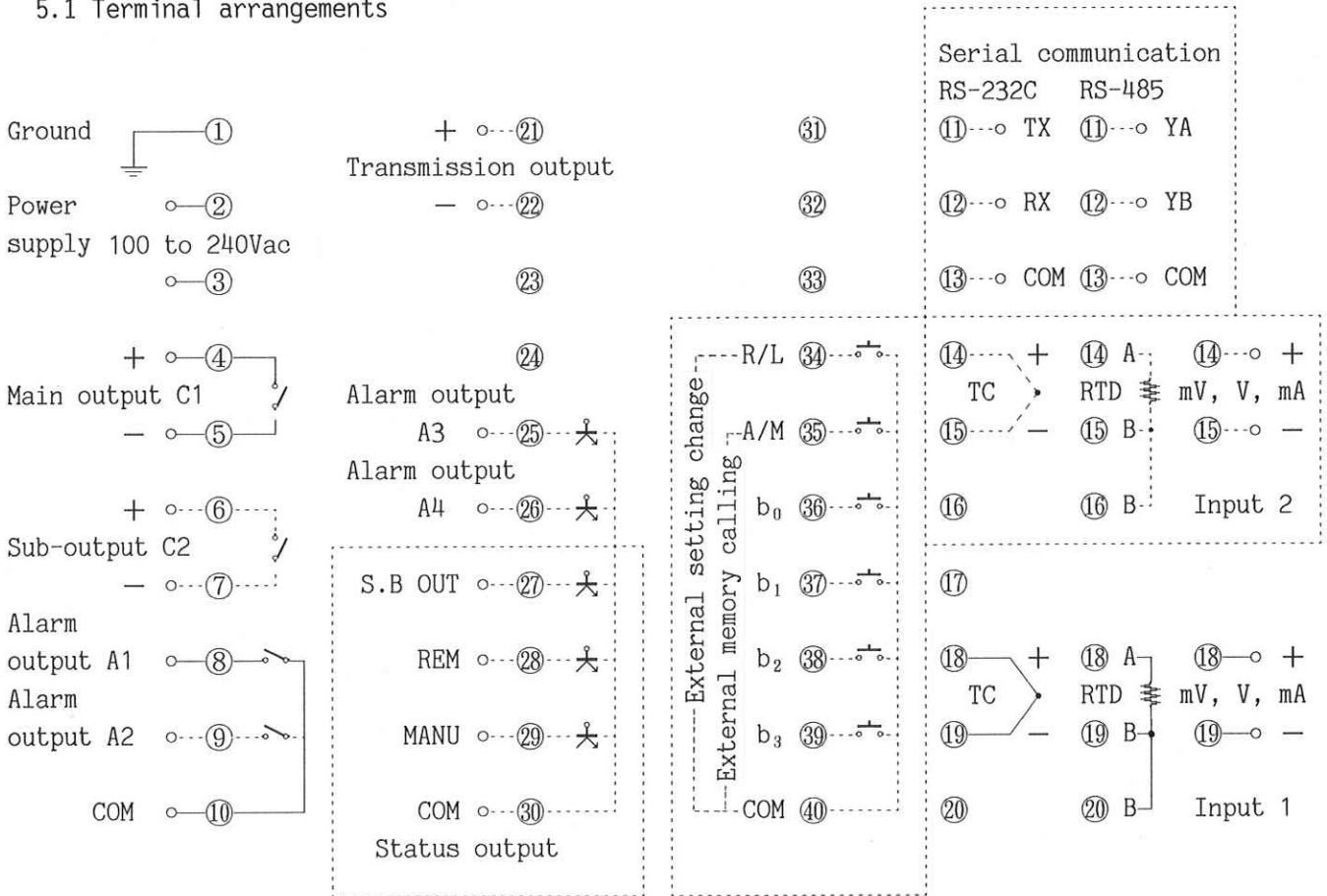


4.3 Panel cutout



5. Wiring connections

5.1 Terminal arrangements

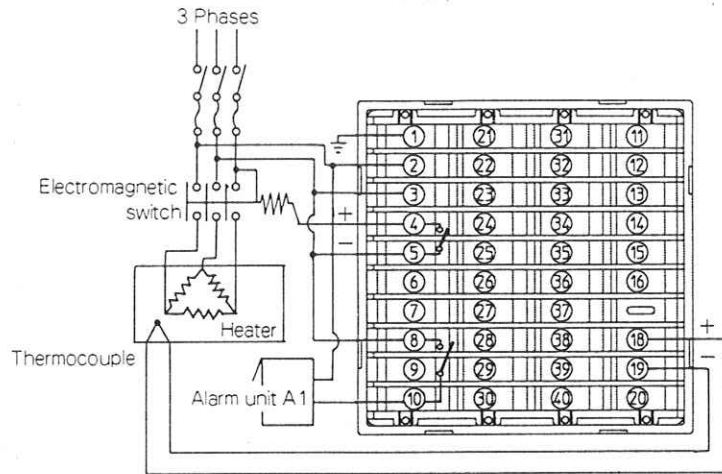


- Dotted lines show the option specifications. No terminals are equipped if the options are not specified.
- For wiring of Remote setting (external setting) analog signal (Option: E□), use terminals between 14 and 15 of Input 2.
- Heat/Cool control output (Option: D□), Remote setting (external setting) (Option: E□) and Cascade control (Option: CC) cannot be added together on a instrument. Only one option is available.

5.2 Notice when wiring

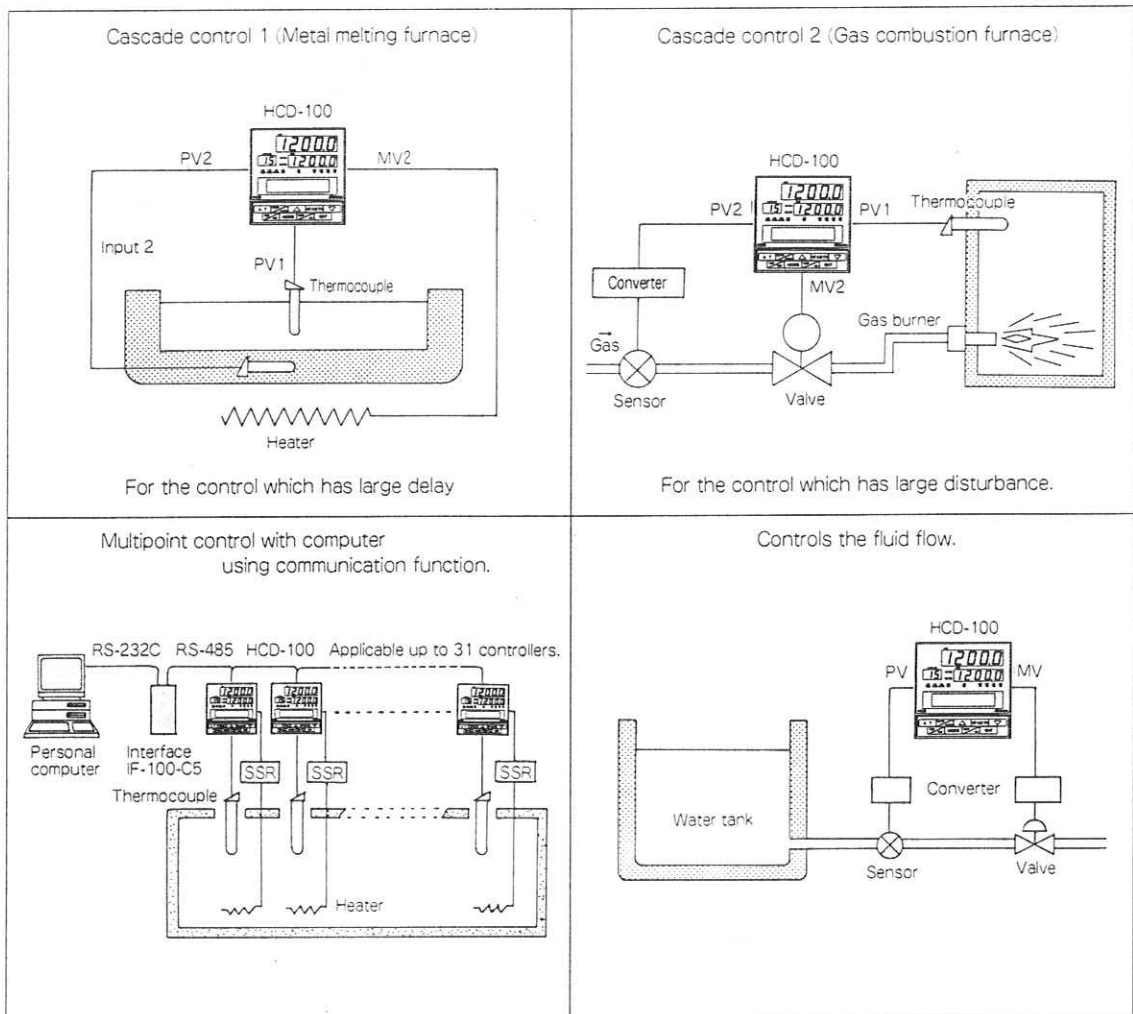
- ① Use a sensor such as thermocouple, RTD or compensating lead wire applicable to the input specifications of this controller.
- ② Mount the sensor at the location where the sensor does not be affected from the side wall and so on (e.g. radiation heat), and the average value can be gotten. Further, avoid the location where the sensor is affected from the shocks or the vibrations. [Mount the sensor keeping the notices.]
- ③ Check the specified voltage indicated on the voltage nameplate. This controller has no built-in power switch nor fuse. It is therefore recommended that these units are to be provided in the circuit near the external controller.
- ④ When wiring, keep input wire (Thermocouple, RTD, etc.) away from AC source and load wire to avoid external interference.
- ⑤ With relay output type of controller, it is suggested to provide auxiliary relay to protect the built-in contact even if the load capacity is smaller than the contact capacity considering the rush current.

5.3 Wiring connection examples



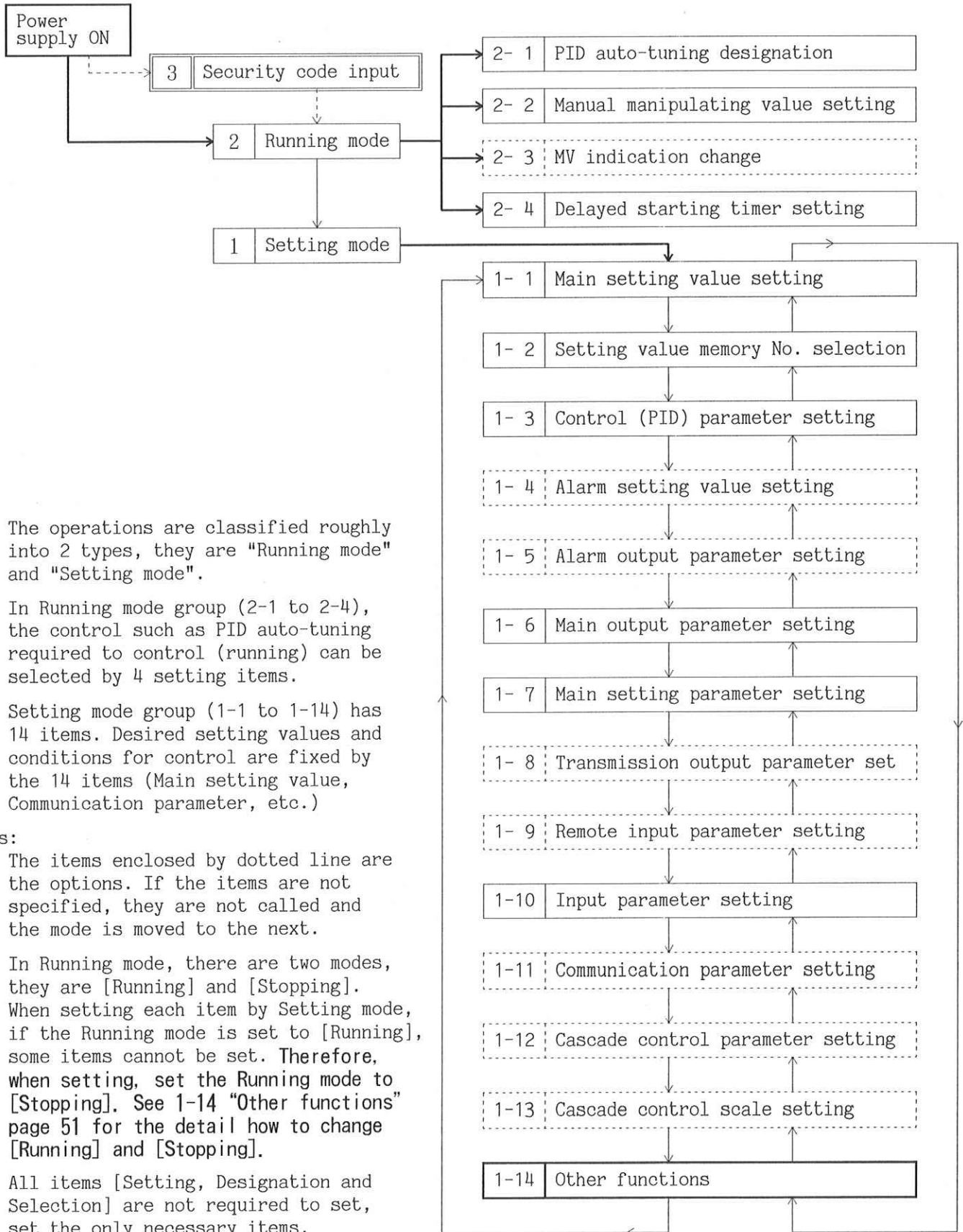
* The terminal block of this instrument is designed to wire from the left side. Lead wire must be inserted from the left side of the terminal, and then fasten by terminal screw. (The terminals ⑪ to ⑳ can be inserted from the right side as well.)

■ Applications



6. Operations

6.1 Basic diagram of the operations



■ The operations are classified roughly into 2 types, they are "Running mode" and "Setting mode".

In Running mode group (2-1 to 2-4), the control such as PID auto-tuning required to control (running) can be selected by 4 setting items.

Setting mode group (1-1 to 1-14) has 14 items. Desired setting values and conditions for control are fixed by the 14 items (Main setting value, Communication parameter, etc.)

Notes:

1. The items enclosed by dotted line are the options. If the items are not specified, they are not called and the mode is moved to the next.
2. In Running mode, there are two modes, they are [Running] and [Stopping]. When setting each item by Setting mode, if the Running mode is set to [Running], some items cannot be set. Therefore, when setting, set the Running mode to [Stopping]. See 1-14 "Other functions" page 51 for the detail how to change [Running] and [Stopping].
3. All items [Setting, Designation and Selection] are not required to set, set the only necessary items.

● Setting mode function

* Call the following setting modes [1-1 through 1-14] with "SET" and "MODE" keys, and then press "ENT" key to set or select each setting value.
 [All items are not required to set or select, set or select the only necessary items.]

1- 1	Main setting value setting	*Running mode: Running or Stopping
------	----------------------------	------------------------------------

(p.18) Set the main setting value (desired controlling value) in this item.

1- 2	Setting value memory number selection	*Running mode: Running or Stopping
------	---------------------------------------	------------------------------------

(p.19) Select the setting value memory number in this item.
 Setting value memory function memorizes 14 kinds of data:
 Main setting value, PID values,
 Anti-reset windup (ARW), Alarm setting values,
 Dead band values, Proportional band offset value,
 Sub-proportional band value (Option), Sub-derivative time value (Option)
 in as many as 15 files (Memory No.1 to No.15), and the memory number is selected by this function.

1- 3	Control parameter (PID) setting	*Running mode: Running or Stopping
------	---------------------------------	------------------------------------

(p.21) Set the control parameter (PID) in this item.
 It is possible to set the control parameters:
 Proportional band (P), Integral time (I),
 Derivative time(D), Anti-reset windup (ARW),
 Proportional band offset.
 If the option (D \square) is applied, Sub-proportional band (D \square) and Sub-derivative time (D \square) can be set in this item as well.
 If the PID auto-tuning is performed, the control parameters are set automatically.
 PID parameters which have been set are registered to the setting value memory number being selected.

1- 4	Alarm setting value setting	*Running mode: Running or Stopping
------	-----------------------------	------------------------------------

(p.23) Set the alarm setting value in this item.
 If the options are specified, it is possible to set the alarms:
 Alarm 1 (required to designate the alarm kind excepting 0),
 Alarm 1 w/standby function (Option: H)
 Alarm 2 (Option: AL \square)
 Alarm 2 w/standby function (Option: AL \square H)
 Alarm 3 and 4 (Option: SA)

1- 5	Alarm output parameter setting	*Running mode: Running or Stopping
------	--------------------------------	------------------------------------

(p.25) Set or select each parameter of the alarm output in this item.
 If the options about the alarms are applied, following items can be set or selected.

Alarm 3 action method selection,	Alarm 4 action method selection,
Alarm 1 OFF action hysteresis,	Alarm 1 ON action hysteresis,
Alarm 2 OFF action hysteresis,	Alarm 2 ON action hysteresis,
Alarm 3 OFF action hysteresis,	Alarm 3 ON action hysteresis,
Alarm 4 OFF action hysteresis,	Alarm 4 ON action hysteresis

Note: To apply the Alarm 1, specify the kind of alarm excepting "0".

1- 6	Main output parameter setting	*Running mode: Running or Stopping
------	-------------------------------	------------------------------------

(p.28) Set each parameter of main output in this item.
 Following functions can be set.
 Main output low limit, Main output high limit,
 Main output changing rate limit, Main output proportional cycle,
 Main output filter time constant,
 Main output ON-OFF action hysteresis low limit,
 Main output ON-OFF action hysteresis high limit,
 Main output dead band
 When option D□ is applied, following functions can be set.
 Sub-output low limit, Sub-output high limit,
 Sub-output changing rate limit, Sub-output proportional cycle,
 Sub-output filter time constant, Sub-output dead band,
 Sub-output ON-OFF action hysteresis low limit,
 Sub-output ON-OFF action hysteresis high limit

1- 7	Main setting parameter setting	*Running mode: Running or Stopping
------	--------------------------------	------------------------------------

(p.32) Set each parameter of main setting in this item.
 Main setting low limit setting, Main setting high limit setting,
 Main setting rising rate setting, Main setting falling rate setting

1- 8	Transmission output parameter setting	*Running mode: Stopping
------	---------------------------------------	-------------------------

Set each parameter of Transmission output in this item.
 (p.33) If the option SVT□, PVT□ or MVT□ is applied, following can be selected or set.
 Transmission output selection SV, PV and MV,
 Transmission output low limit value setting,
 Transmission output high limit value setting

1- 9	Remote setting input parameter setting	*Running mode: Stopping
------	--	-------------------------

(p.35) Set each parameter of remote input in this item.
 If the option E□ is applied, following items can be selected or set.
 Input range low limit value setting, Input range high limit value setting,
 Remote input range selection

1-10	Input parameter setting	*Running mode: Running or Stopping
------	-------------------------	------------------------------------

(p.38) Set or select each parameter of input in this item.
 [When using the controller with the input excepting the value ordered.]
 Scaling low limit value setting, Scaling high limit value setting,
 Decimal point place designation, Input selection,
 Unit selection, Sensor correcting value setting,
 Low level cut off function setting, Square root extraction function,
 PV filter time constant setting

1-11	Communication parameter setting	*Running mode: Stopping
------	---------------------------------	-------------------------

(p.44) Set each parameter of communication in this item.
 If the option C or C5 is applied, following items can be selected or set.
 Data transfer rate selection, Data length selection,
 Parity selection, Stop bit selection,
 Instrument number setting

1-12	Cascade control parameter setting	*Running mode: Running or Stopping
------	-----------------------------------	------------------------------------

(p.47) Set each parameter of cascade control in this item.
 If the option CC is applied, following items can be set.
 Slave Proportional band setting, Slave Integral time setting,
 Slave Derivative time setting, Slave Anti-reset windup (ARW),
 Slave Prop-band offset setting, Slave PID auto-tuning setting,
 Slave PID auto-tuning bias setting,

1-13	Cascade control scale setting	*Running mode: Stopping
------	-------------------------------	-------------------------

(p.49) Set each scale of cascade control in this item.
 If the option CC is applied, following items can be selected or set.
 Slave input (sensor), Slave unit,
 Slave scaling low limit value, Slave scaling high limit value,
 Slave setting value low limit, Slave setting value high limit,

1-14	Other functions	*Running mode: Running or Stopping
------	-----------------	------------------------------------

(p.51) Select, adjust or set the basic functions to use HCD-130 series in this item.
 Control running or stopping, Remote or local,
 Setting value lock function, Contrast of LCD multi-display,
 PID auto-tuning bias value, Remote bias value,
 Process variable display (PV) contents when stopping status,
 Instrument power frequency, Direct action or reverse action,
 Security setting

● Running mode

* When running, following items can be designated, set or selected.

2- 1	PID auto-tuning designation	See page 57
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Performance or cancellation of PID auto-tuning.

2- 2	Manual manipulating value setting	See page 57
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Setting of the manipulating value by manual.

2- 3	Manipulating value indication change	See page 58
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Change of LCD multi-display contents.
 [Changing display contents differ from the option.]

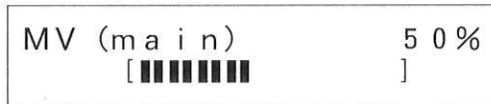
2- 4	Delayed starting timer setting	See page 58
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It delays the start of control.
 In case something inconvenient occurs when starting the control instantly after the power supply is turned on, it does not start the control instantly but start it after the preset time has passed.

Note: See page 61 for the detail of the cascade control (Option code: CC).

6.2 Operations

* The drawings in the explanation are the LCD multi-displays.



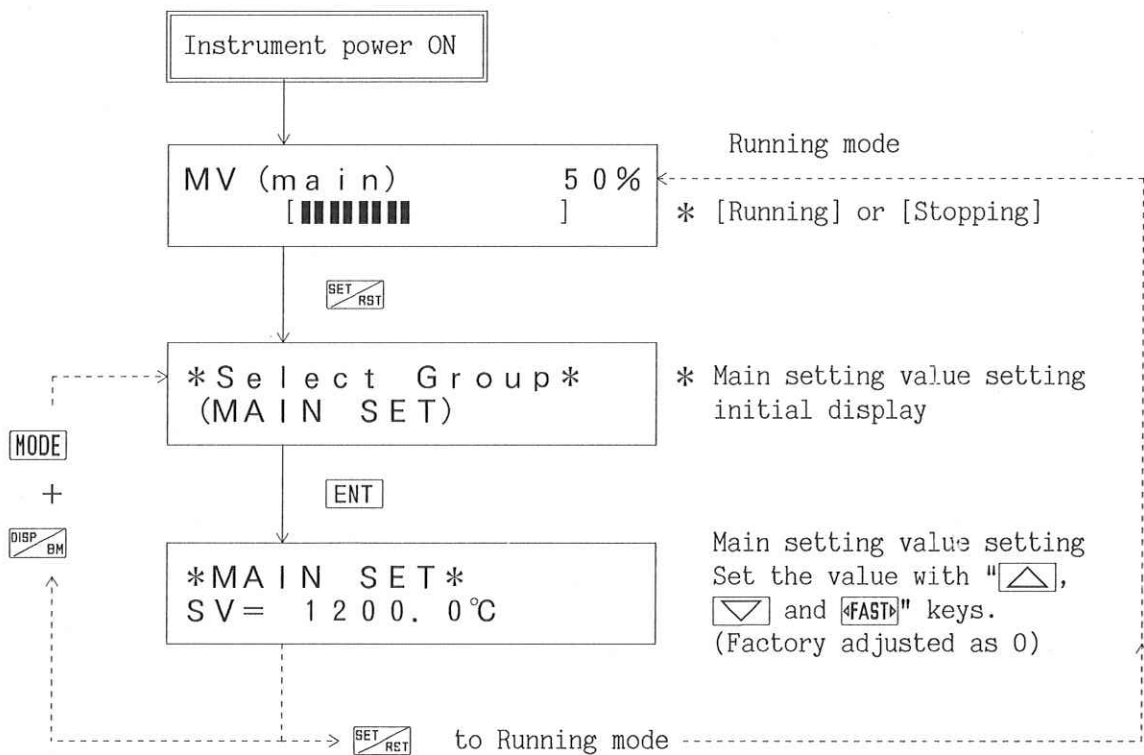
The items enclosed by dotted line are the options. If the items are not specified, they are not called and the mode is moved to the next.

(1) Setting mode

1-1 Main setting value setting

- Set the desired controlling temperature.
- Settable from Setting low limit value to Setting high limit value.
- When the input is thermocouple or RTD, the unit is designated by Input selection. When it is DC current or voltage, the unit is designated by Unit selection. (In this manual, it is explained with °C including other setting item.)
- Refer to "Key function" (page 10) for the key operations such as setting value setting.

● Main setting value setting

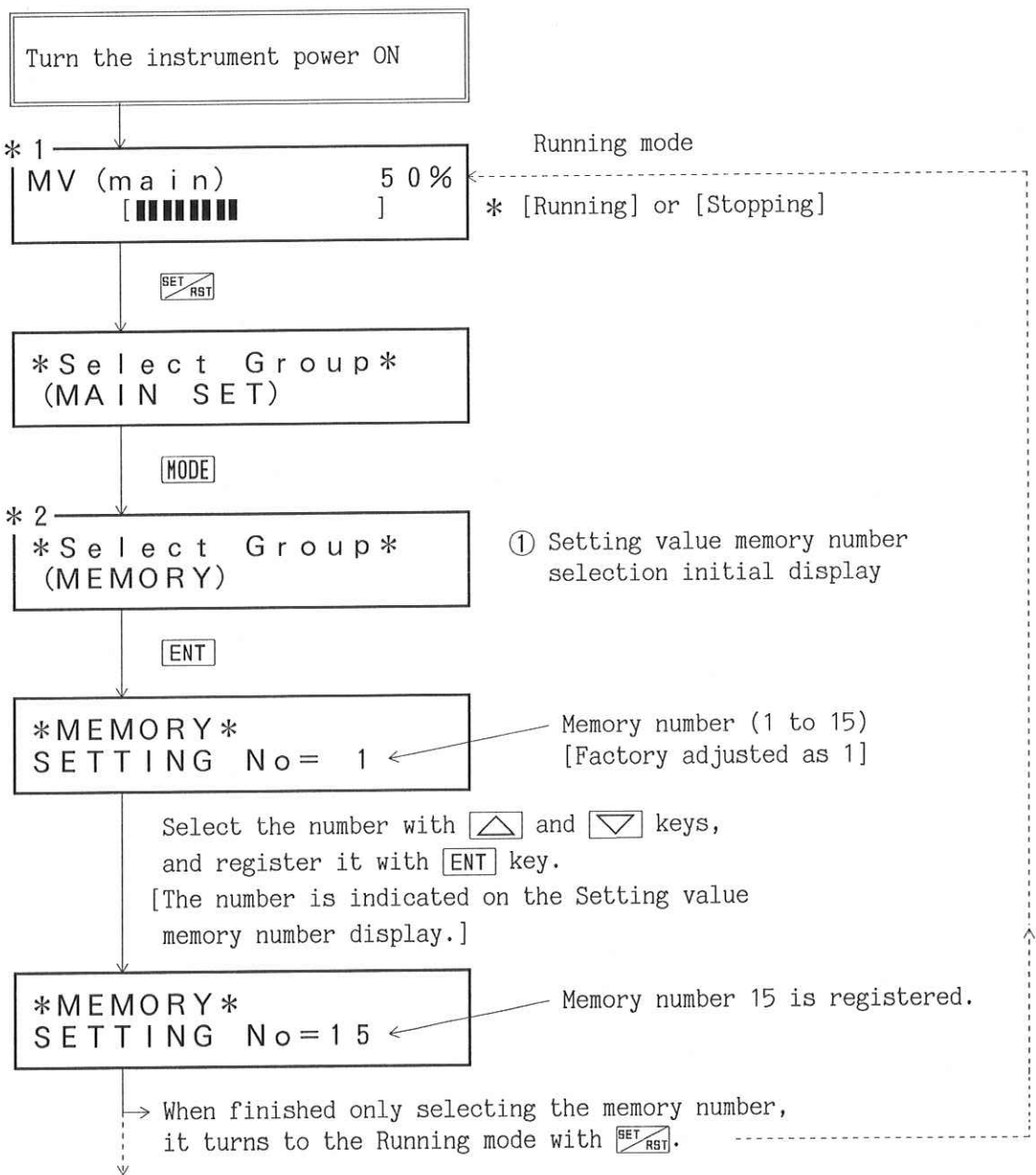


1-2 Setting value memory number selection

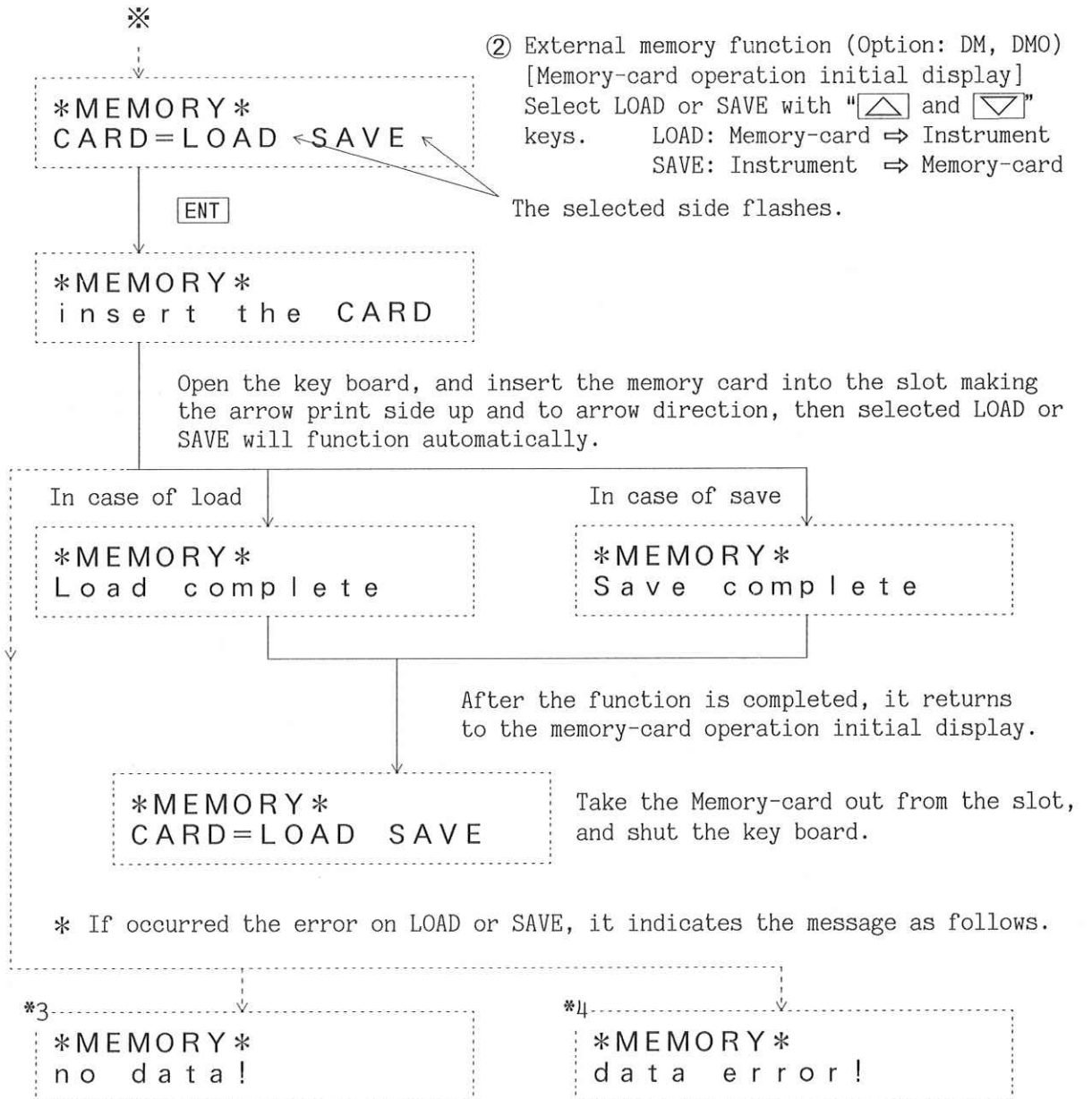
- Setting value memory function memorizes 14 kinds of data (Main setting value, PID values, ARW value, Alarm setting values, Dead band value, Proportional band offset value, Sub-proportional band value and Sub-derivative time value) in as many as 15 files (Memory No.1 to No.15), and the memory number is selected by this function.
- Memorize the only using memory numbers, all of 15 files are not necessary to memorize.
- If External memory function (Option: DM, DMO) is applied, all setting contents can be saved to the memory No.1 to No.15, or can be loaded to other HCD-130 with the Memory-card.

Note: When copying the setting contents by memory-card, use the HCD-130s which has the same specification. If the specification such as applied option differs from each other, sometimes it does not functions well.

- Setting value memory number selection [External memory function (Option: DM, DMO)]



When selecting the External memory function (Option: DM, DMO), press **MODE** key.



▪ When loaded the data from the memory-card not saving the setting value, or different format.

▪ When loaded the data from the memory-card in which the setting contents is destructed.

- Note: 1. "MODE" key feeds the setting item forwardly.
"DISP BH" key feeds the setting item backwardly.
2. "SET RST" key selects the Running mode initial display (*1).
3. "MODE" + "DISP BH" keys select the Setting value memory number selection initial display (*2) from any setting mode.
4. Memory-card is equipped with a battery for test, therefore, it has to be exchanged to the attached one when unpacked. (See page 60)
IF THE BATTERY IS REMOVED FROM THE MEMORY-CARD, ALL OF THE DATA MEMORIZED INTO THE MEMORY-CARD WILL BE GONE OUT, WHEN CHANGING THE BATTERY, THE DATA SHOULD BE MEMORIZED TO THE HCD-130, AND THEN CHANGE THE BATTERY.
- When displayed the error message (*3 or *4) on LCD, check the battery whether it is consumed.
5. To copy the memory with the Memory-card, perform it between HCD-130 series which has the same specification.

1-3 Control (PID) parameters setting

- Control (PID) parameters [Proportional band (P), Integral time (I), Derivative time(D) and Anti-reset windup (ARW)], Proportional band offset, Sub-proportional band (D□) and Sub-derivative time (D□) are set in this item.
(If the PID auto-tuning is performed, the control parameters are set automatically.)
- The set PID parameters are registered to the setting value memory number being selected.
(If the setting value memory number is not set yet, it is set to the number 1.)

- Notes:
- To set the integral time (I) and the derivative time (D), the proportional band (P) must be set.
 - To set the anti-reset windup (ARW) value, the proportional band (P) and the integral time (I) must be set.
 - When the proportional band value is set to 0.0, if "MODE" key is pressed, the mode turns to Sub-proportional band (Option, D□) [P_{sub}].
 - In case of PD control (Proportional and Derivative), the offset (difference between SV and PV) can be adjusted. (*1): next page
 - "----" is displayed when the setting value is 0. [e.g. When setting the proportional band value to 0.0, it indicates as P = ----]
 - All items are not required to set, set the only necessary items.
 - Refer to the "Key functions" (page 10) for the key operation such as the setting value setting.

● Control (PID) parameters setting

