Honeywell

DCP552 Mark Ⅱ
Digital Control Programmer
User's Manual

EN1I-6187
Issue 5 (12/01)

WARRANTY

The Honeywell device described herein has been manufactured and tested for corrent operation and is warranted for a period of one year.

TECHNICAL ASSISTANCE

If you encounter a problem with your unit, please review all the configuration data to verify that your selections are consistent with your application; (i.e. Inputs, Outputs, Alarms, Limits, etc.). If the problem persists after checking the above parameters, you can get technical assistance by calling the following:

In the U.S.A. · · · · · · 1-800-423-9883
In Europe · · · · · · · · Your local branch office

Chapter 8. PROGRAM SETUP

8 - 1 Program Setup

Programming is enabled in the normal display mode. When the **DCP552** is not in the normal mode display, press the **DISP key** to invoke it. Programming is simpler if you set down the objectives of the program on a program work sheet before you start programming.

NOTE

For ease of use, please enlarge the copy of the **DCP551/552 Program Work Sheet** located after page 12-18.

■ Selecting number of program to operate

Numbers can be selected in one of two ways.

- before programming
- during programming

● Selecting program number before programming

Press the **PROG key** in the normal display mode in the READY mode. When the program number starts flashing, use the **PROG key** or the ↑, ↓, ←, or → **key** to select a number.

Handling Precautions

Program numbers cannot be selected during external switch input. See " Section 6-3 Selecting Programs" (page 6-11) for details.

● Selecting program number during programming

Press the **FUNC** and **PROG keys** in program setting state so that the program number starts to flash. Use the ↑, ↓, ←, or → **key** to make the desired changes and press the **ENTER key** to enter them. Note, however, that you must after exiting the registration state (when set values flash) with the **ENTER key**, press the **FUNC** and **PROG keys**. When programs are selected in this way, the pattern items are displayed on the programming map.

This allows you to select a program number of a program other than the one processed in the RUN mode. It also allows you to select the number of another program using the external switches.

■ Selecting channel of program to operate

Channels can be selected in one of two ways.

- before programming
- during programming

● Selecting channel before programming

Press the **FUNC** and **DISP keys** in the normal display mode to change channels.

● Selecting channel during programming

Press the **FUNC** and **DISP keys** in the program setting mode, to change channels. The system is set to the program setting mode for a different channel with the same program number and the pattern item in the first segment is displayed.

■ Starting programming

● Key operations

Start programming by pressing the **FUNC** and **PROG keys** in the normal display mode.

In the program setting state, PRG LED on the console lights and the decimal points in the program number display and the segment number display lights.

Note, however, that the program setting state cannot be entered in the following cases.

- In the fixed command control mode (and the fixed command control data *ConSt* is set to 1)
- When keylock is engaged (and variable parameters *PA01* is set to 2 or 3)

In the following condition changes cannot be made in the program setting state.

- When a program is protected (and variable parameter *PA02* is set to 1, 3 or 5)

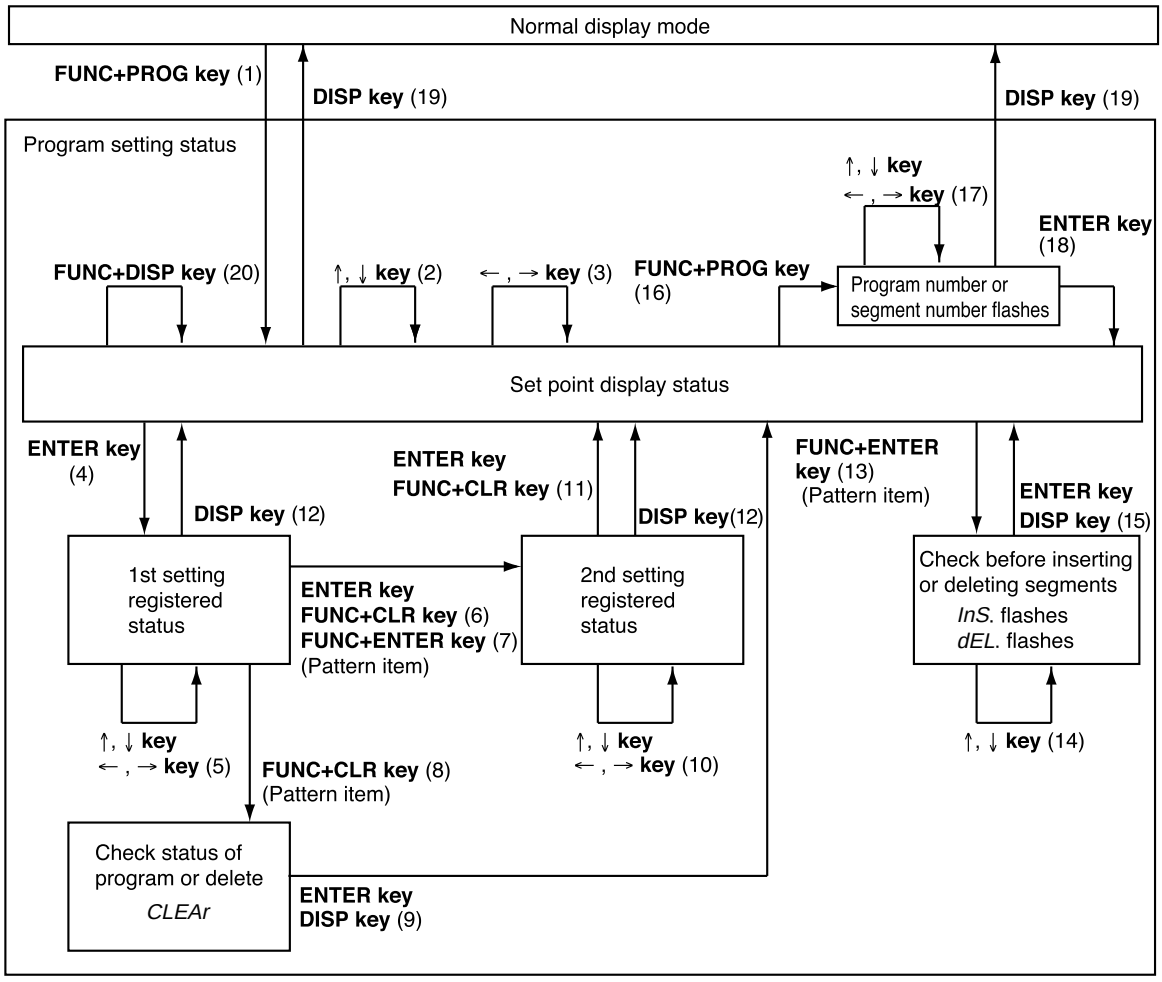
● Start of display items

When programming is started, the number of the started program and its segment are displayed.

■ State transition

The figure below shows the transition of states during programming.

The numbered items (1) to (20) are described on the following page.



● **Description of numbered items in the figure illustrating the program setting state**

(1) Programming is started. Up to about 1 second after the programming state is entered, the remaining number of segments is displayed in display panel 1 and the remaining number of subfunctions is displayed in display panel number 2. The display can be held by pressing the **FUNC key**.

(2) Move the setting items on the programming map.

(3) Move the segments on the programming map.

(4) Register the first setting.

(5) Increase or decrease the values in the first setting and move the flashing digits.

(6) Complete the registration of the first setting.
Pressing the **ENTER key** registers the set value in memory.
For items with a second setting, the registration state for the second item is displayed. The display reverts to display set values for items without a second setting. Pressing the **FUNC** and **CLR keys** returns a segment to its initial state.

(7) Use the **FUNC** and **ENTER keys** in pattern items to go between RAMP-X ⇔ RAMP-T and RAMP-X ⇔ RAMP-E. The setting in setup data *C61* determines the changeover that is actually performed.
Note, however, that a changeover cannot be made when a segment is running.

(8) Use the **FUNC** and **CLR keys** in pattern items to display "*CLEAr* " to delete the program beyond that segment.
Note, however, that the **FUNC** and **CLR keys** are invalid when a program is running.

(9) When the **ENTER keys** is used, the program beyond the point where the key was pressed is deleted. Pressing the **DISP key** does not delete any data but causes the display to show set values.

(10) Increase or decrease the values in the second setting and move the flashing digits.

(11) Complete the registration of the second setting.
Pressing the **ENTER keys** registers the set value in memory.
Pressing the **FUNC** and **CLR keys** returns a segment to its initial state.

(12) Complete the registration without entering the value in memory.

(13) Pressing the **FUNC** and **ENTER keys** in pattern items displays the segment insertion and deletion panel "*InS.*" flashes.
Note, however, that the **FUNC** and **ENTER keys** are invalid when a program is running.

(14) Use the ↓ **key** to delete and the ↑ **key** to insert the flashing item.

(15) Pressing the **ENTER keys** when "*InS.*" is displayed inserts the segment.
Pressing the **ENTER keys** when "*dEL.*" is displayed deletes the segment.
Pressing the **DISP key** neither deletes or inserts the segment.

(16) Press the **FUNC** and **PROG keys** so that the program number starts to flash.

(17) Program numbers and segment numbers can be increased or decreased and the moving digits can be moved.

(18) Pressing the **ENTER keys** completes the registration of program and segment numbers.

(19) The normal display mode appears.

(20) Change chanells.

■ Programming map

As shown below, a programming map consists of columns of segment numbers and rows of program setting items.
In the program setting state, the items in the solid lines indicated by the segment numbers and program setting items are displayed.
← **key**, → **key** : moves segments right and left
↑ **key**, ↓ **key** : moves segments up and down

The figure shows a programming map from the first to the 10th segment.

Programming map example:

Items cannot be moved to the gray area.
Settings in the gray area are shared with segment 1.

Segment number		1	2	·····	10	11	12 to 99	Remarks
Program item	(1) No.1 setting (2) No.2 setting							
Pattern	(1) SP	100	100		100	—————		*1
	(2) Time	0:30	3:00		10:00	—————		
Event 1	(1) Operating point	1100	—————		—————			*2
Event 2	(1) Operating point	—————	30		—————			
Event 3	(1) On Time	0:00	0:00		0:00			
	(2) Off Time	0:01	0:01		0:01			
Event 4	(1) On Time	—————	0:00		—————			
	(2) Off Time	—————	1:00		—————			
Event 5	(1) Code	1	2		3			
Event 7-1	(1) Code	1	—————		2			
	(2) Time	0:10	—————		5:00			
Event 7-2	(1) Code	0	—————		3			
	(2) Time	0:20	—————		9:00			
PIG group, output limiter group	(1) PID group	3	A		1			
	(2) Output limiter group	3	1		7			
G.SOAK	(1) Type	0	2		1			
	(2) G.SOAK width	—————	5		10			
PV shift	(1) Shift value	—————	—————		—————			
Repeat	(1) Return destination segment	0	0		0			
	(2) Count	—————	—————		—————			
PV start	(1) Type	0	0		0			*3
Cycle	(1) Count	0	0		0			
Pattern link	(1) Link destination program	0	0		0			
Tag	(1) 8 character tag	PROG9999	PROG9999		PROG9999			

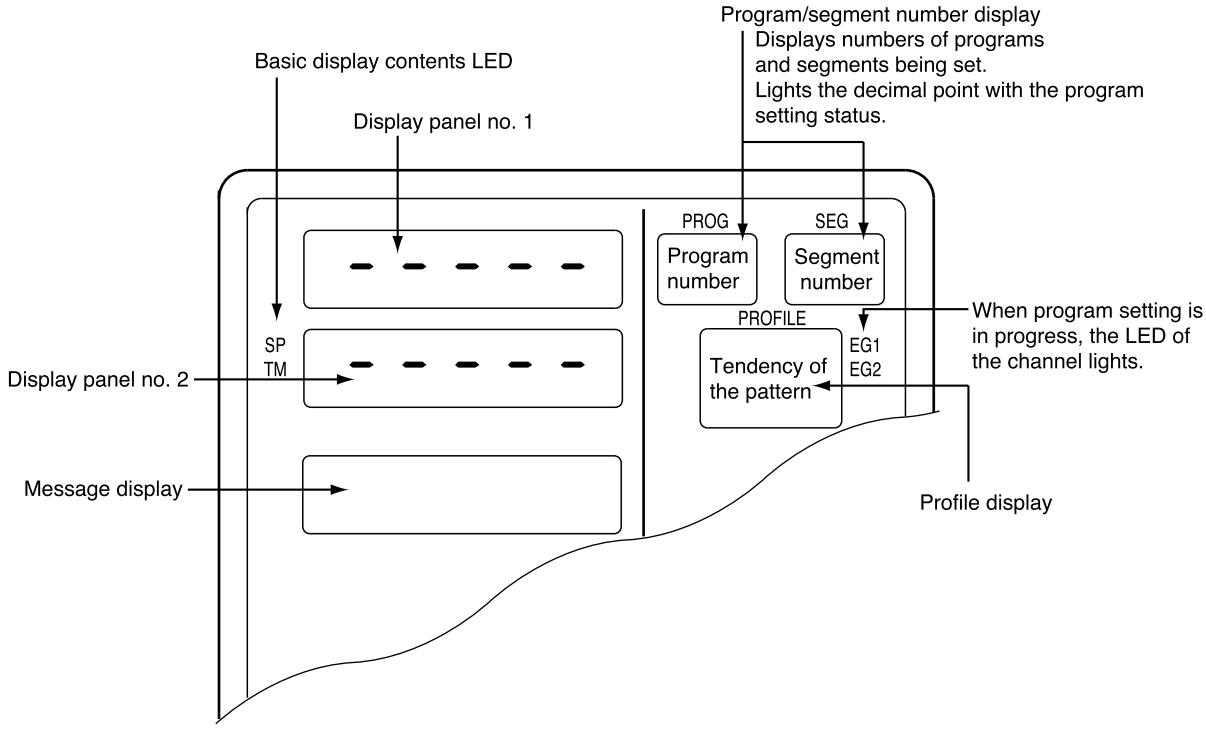
*1 : Items up to segment 10 has been entered.

*2 : The event types of each event are listed below.
Event 1/2 : PV upper limit (event type setting 2)
Event 3/4 : time event (event type setting 1)
Event 5 : code event using two points
(event type setting 18, auxiliary setting 2)
Event 7 : time code event using two points
(event type setting 23, auxiliary setting 2)
Event 9 to 16: assigned to CH2 events (when setup *C64* is set to 9)

*3 : These are settings used in each program and are shared by all segments.

■ Display items

Items displayed are shown in the figure below.



■ Setting pattern items

(1) In the set value display state, move to the segment pattern item to be set on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

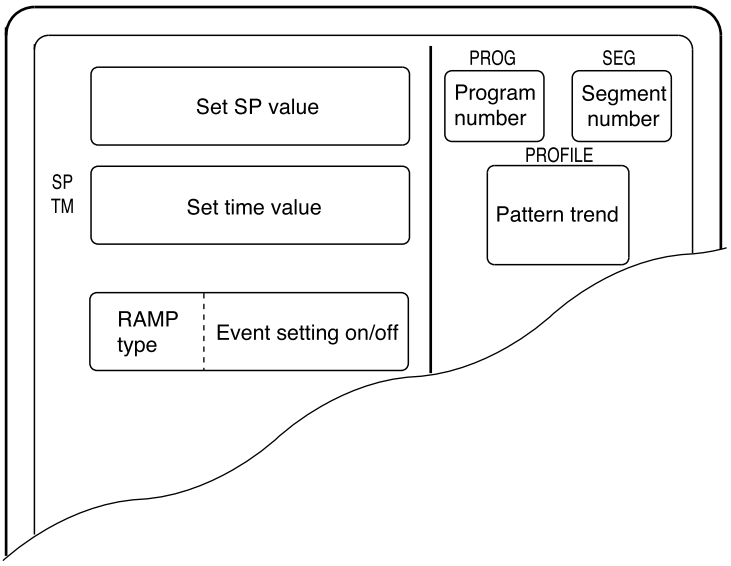
(3) Use the ↑, ↓, ←, and → **keys** to set the first setting (SP).
Setting range: SP limit lower limit to upper limit
(SP limit is set using setup data *C66*, *C67*, *C69* and *C70*.)

(4) Pressing the **ENTER key** stops display panel 1 from flashing and causes display panel 2 to start flashing. (This starts start registration of the second setting.) Instead of pressing the **ENTER key**, press the **FUNC** and **ENTER keys** to switch between RAMP types (selecting RAMP-X ⇔ RAMP-T, or RAMP-X ⇔ RAMP-E is made with setup data *C61*).

(5) Use the ↑, ↓, ←, and → **keys** to make the second setting (time).
Setting range: 0:00 to 500:00, 0.0 to 3000.0
(Time units are selected using setup data *C62* to set Hour/min, Min/sec, 0.1 sec. Since a colon "*:* " cannot be displayed, the decimal point is used instead.)

(6) Press the **ENTER key** to stop display panel 2 from flashing.

● **Display**



Segments that have not been set and unset values for SP and time are indicated by "-----".

🕮 NOTE

Event settings are displayed in the two rows of the message panel. Events 1 to 8 are displayed in the top left row and events 9 to 16 are displayed in the lower left row. The meaning of the codes used are listed below.

– : event off
T : time event
P : PV/PV deviation rate event
D : Deviation/absolute deviation
M : MV event
S : SP event
C : code/time code event

■ Setting event items

Handling Precautions

Events assigned to the selected channel can be displayed.
Note that when setup data *C57* is set to 1, event items on the programming map are skipped and not displayed.

● When the event is a PV event

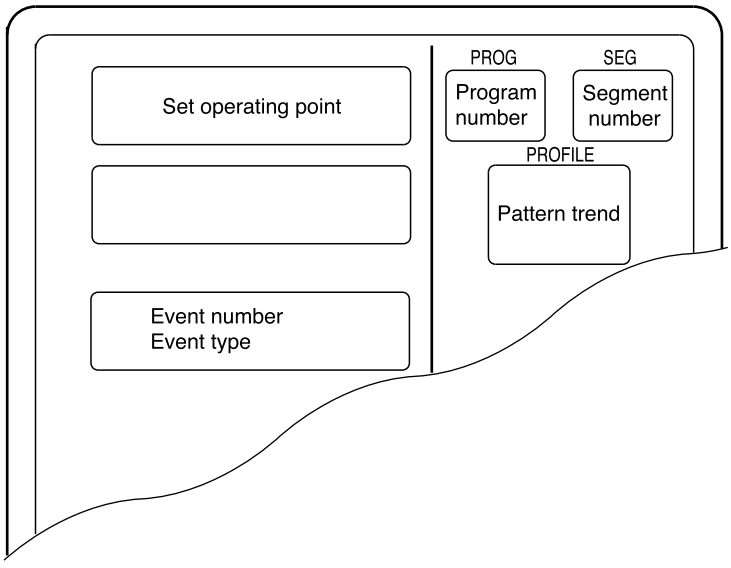
(1) In the set value display state, move to the segement event item to be set on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the event operating point.
Setting range : OFF –19999 to +20000 SPU
: OFF 0 to 20000 SPU (for absolute value deviation events)
: OFF –5.0 to +105.0% (for MV events)

(4) Press the **ENTER key** to stop the flashing on display panel 1. (Pressing the **FUNC** and **CLR keys** causes display panel 1 to return to unset state "-----" and the flashing stops.)

● Display (PV events)



Unset values are indicated as " ----- ".

NOTE

A PV event setting consists of a setting (including OFF) and a subfunction. A subfunction cannot be used when a setting has not been made " ----- ".

● **When the event is a time event**

(1) In the set value display state, move to the event item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

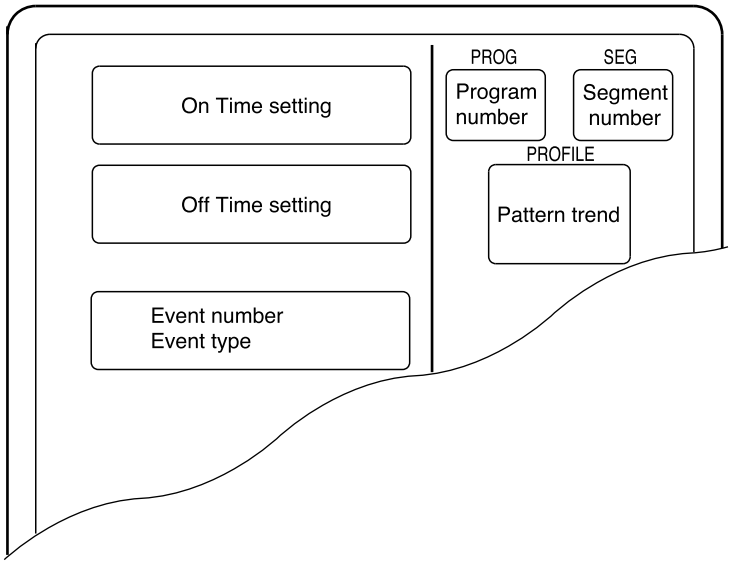
(3) Use the ↑, ↓, ←, and → **keys** to make the first setting (On Time setting).
Setting range: 0:00 to 500:00, 0.0 to 3000.0
(Time units are selected using setup data *C62* to set Hour/min, Min/sec, 0.1 sec. Since a colon ":" cannot be displayed, the decimal point is used instead.)

(4) Press the **ENTER key** to stop the flashing on display panel 1 and display panel 2 starts flashing. (Start of second setting)
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "-----" and the flashing stops.)

(5) Use the ↑, ↓, ←, and → **keys** to make the second setting (Off Time setting).
Setting range: On time setting +0:01 to 500:00, Off time setting +0.1 to 3000.0

(6) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 2 to return to unset state "-----" and the flashing stops.)

● **Display (time event)**



- Unset values are indicated as "-----".
- When the On Time is set to 500:00 or 3000.0, an Off Time cannot be set.

🕮 NOTE

A time event setting consists of one setting, an On Time, or two settings, an On Time and an Off Time. When both settings are made a subfunction can be used. In unset state "-----" a subfunction cannot be used.

[!] Handling Precautions

In a time event, an On Time or Off Time setting that is the same as or exceeds the segment time is invalid.
Note, however, that when there is a G.SOAK wait at the end of a segment or an END mode at the end of a program, an On Time or Off Time setting that is the same as the segment time is valid.

● **When the event is a code event**

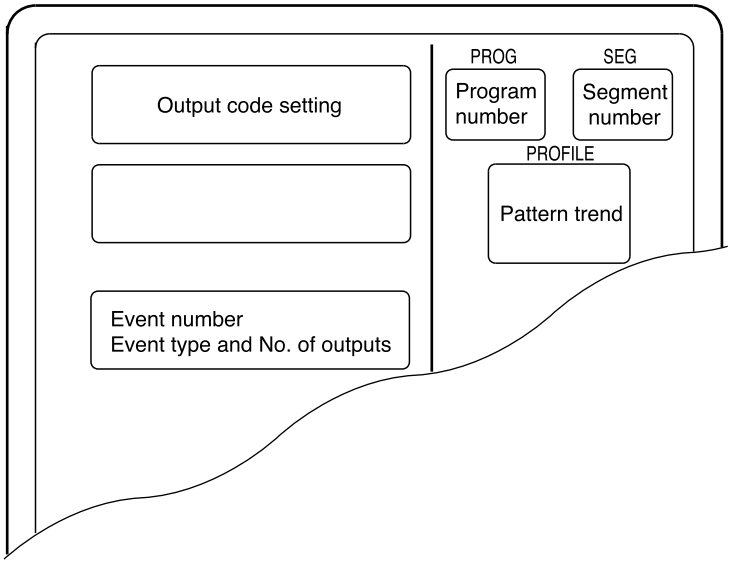
(1) In the set value display state, move to the event item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the event output code.
Setting range : 0 to $2^n - 1$
(n indicates the number of output points set in event configuration 1 auxiliary setting 1.)

(4) Press the **ENTER key** to stop the flashing on display panel 1.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 to return to unset state "-----" and the flashing stops.)

● **Display (code event)**



Unset values are indicated as "-----".

🕮 NOTE

Code events use one subfunction. A subfunction cannot be used when a setting has not been made "-----".
Events that follow the event number of a code event (number of output points less 1) are skipped and not displayed.

● **When the event is a timer code event**

(1) In the set value display state, move to the event item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

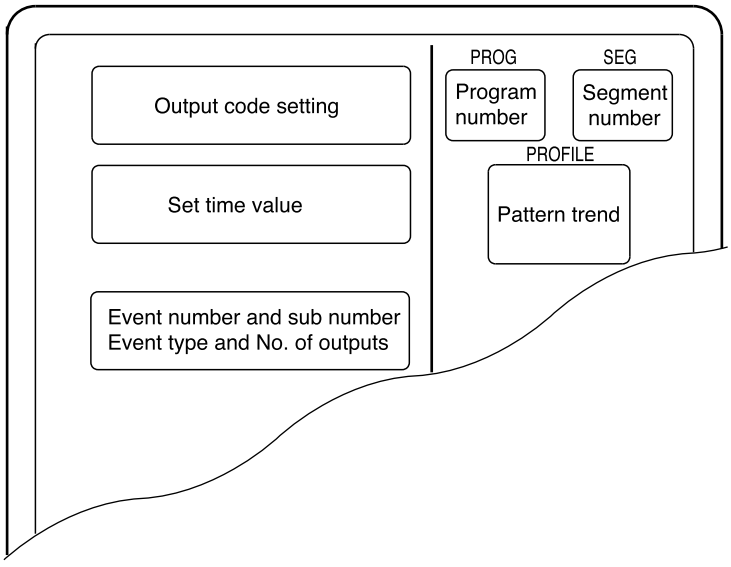
(3) Use the ↑, ↓, ←, and → **keys** to make the first setting (output code).
Setting range: 0 to $2^n - 1$
(n indicates the number of output points set in event configuration 1 auxiliary setting 1.)

(4) Press the **ENTER key** to stop the flashing on display panel 1 and display panel 2 starts flashing. (Start of second setting)
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "-----" and the flashing stops.)

(5) Use the ↑, ↓, ←, and → **keys** to make the second setting (time).
Setting range: 0:00 to 500:00, 0.0 to 3000.0
(Time units are selected using setup data *C64* to set Hour/min, Min/sec, 0.1 sec. Since a colon "*:* " cannot be displayed, the decimal point is used instead.)

(6) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "-----" and the flashing stops.)

● **Display (Code event with a timer function)**



Unset values are indicated as "-----".

🕮 NOTE

Timer code events use one subfunction. A subfunction cannot be used when a setting has not been made "-----".
Events that follow the event number of a timer code event (number of output points less 1) are skipped and not displayed.

Handling Precautions

In a timer code event, an On Time or Off Time setting that is the same as or exceeds the segment time is invalid.
Note, however, that when there is a G.SOAK wait at the end of a segment or an END mode at the end of a program, an On Time or Off Time setting that is the same as the segment time is valid.

- **When the event is an event off**

  Such event items on the programming map are skipped and not displayed.

- **When the event is an instrument event**

  Such event items on the programming map are skipped and not displayed.

■ Setting PID groups and output limiter group number items

(1) In the set value display state, move to the PID group, output limiter group number item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

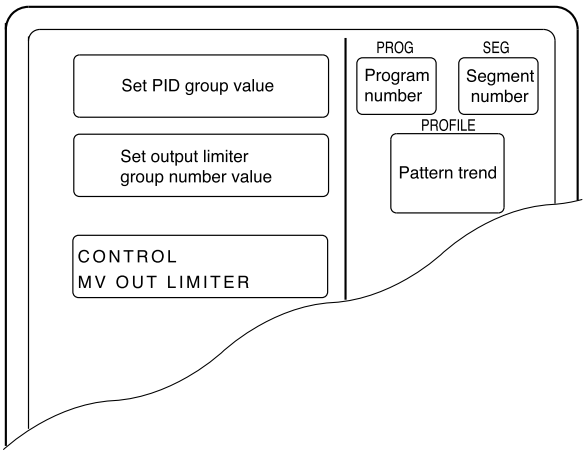
(3) Use the ↑, ↓, ←, and → **keys** to make the first setting (PID group number).
Setting range: ON-OFF, PID 0 to 9, PID A

(4) Press the **ENTER key** to stop the flashing on display panel 1 and display panel 2 starts flashing. (Start of second setting)
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "*Pld 0/otL 0* " and the flashing stops.)

(5) Use the ↑, ↓, ←, and → **keys** to make the second setting (output limiter group number).
Setting range: 0 to 9

(6) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 2 to return to unset state "*Pld 0/otL 0* " and the flashing stops.)

● **Display**



- Unset values are indicated as "*Pld 0/otL 0* ".
- When setup data *C58* is set to 1, PID groups, output limiter group number items are skipped and not displayed.

🕮 NOTE

When a PID group or output limiter group number is not 0 or both are something other than 0, they use a subfunction. A subfunction cannot be used when a setting has not been made "*Pld 0/otL 0* ".

[!] Handling Precautions

- When a set value for a PID group number is 0, it is a sequel to a PID number in a previous segment. When the set value for a PID group number in the first segment is 0, the set value is 1.
- When a set value for an output limiter group number is 0, it is a sequel to an output limiter group number in a previous segment. When the set value for an output limiter group number in the first segment is 0, the set value is 1.

■ Setting G.SOAK (Guarantee soak) items

(1) In the set value display state, move to the G.SOAK item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

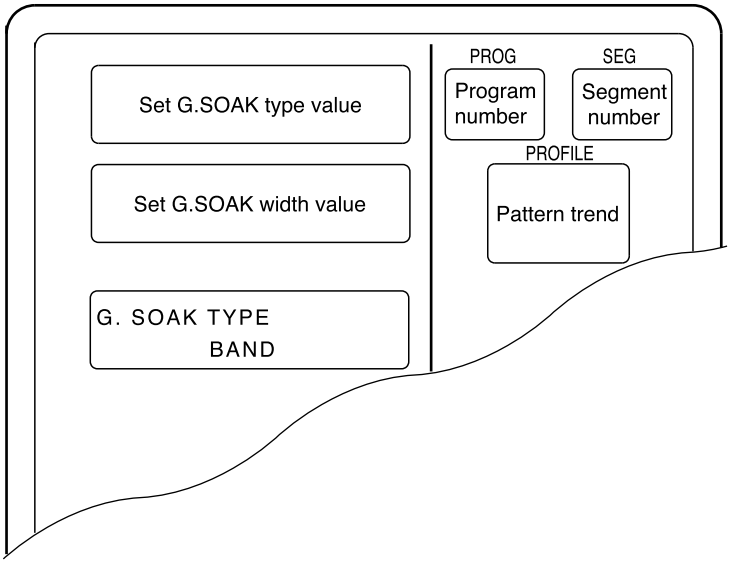
(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the G.SOAK type.
Setting range: 0 to 3
0: No G.SOAK
1: First G.SOAK segment
2: Last G.SOAK segment
3: Entire G.SOAK segment

(4) Press the **ENTER key** to stop the flashing on display panel 1 and display panel 2 starts flashing. (Start of second setting)
Note, however, that when the first setting is 0, "-----" is shown in the second panel which does not flash.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "*g.S.0/*-----" and the flashing stops.)

(5) Use the ↑, ↓, ←, and → **keys** to make the second setting (G.SOAK width).
Setting range: 0 to 1000 SPU

(6) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "*g.S.0/*-----" and the flashing stops.)

● Display



- Unset values are indicated as "*g.S.0/*-----".
- When setup data *C59* is set to 1, a G.SOAK item on the programming map is skipped and not displayed.

🕮 NOTE

When a G.SOAK setting is something other than 0, it uses a subfunction.
A subfunction cannot be used when a setting has not been made "*g.S.0/*-----".

■ Setting PV shift items

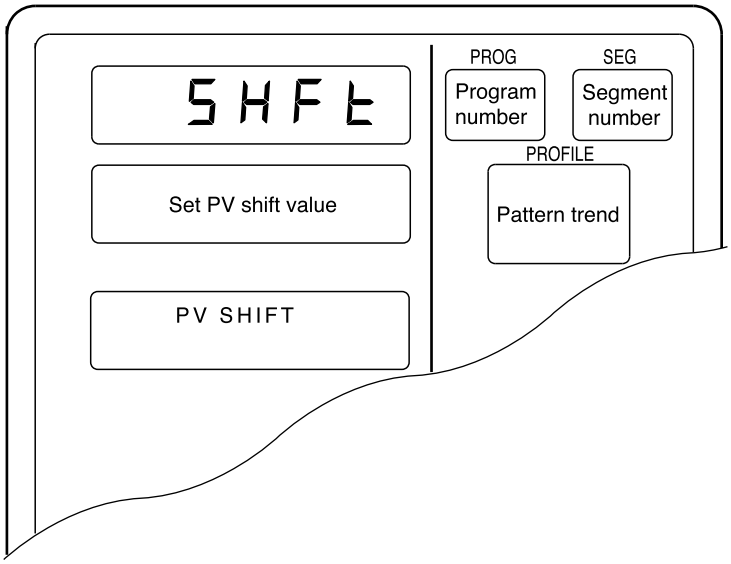
(1) In the set value display state, move to the PV shift item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 2 flash (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the PV shift set value.
Setting range: –10000 to +10000 SPU

(4) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 to return to unset state "-----" and the flashing stops.)

● Display



- Unset values are indicated as "-----".
- When setup data *C59* is set to 1, a PV shift item on the programming map is skipped and not displayed.

🕮 NOTE

PV shift uses a subfunction. A subfunction cannot be used when a setting has not been made "-----".

[!] Handling Precautions

When PV shift is not set, it is a sequel to a PV shift value in a previous segment. When PV shift is not set in the first segment, the set value is 0.

■ Setting repeat items

(1) In the set value display state, move to the repeat item to be set for the segment on the programming map.

(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting).

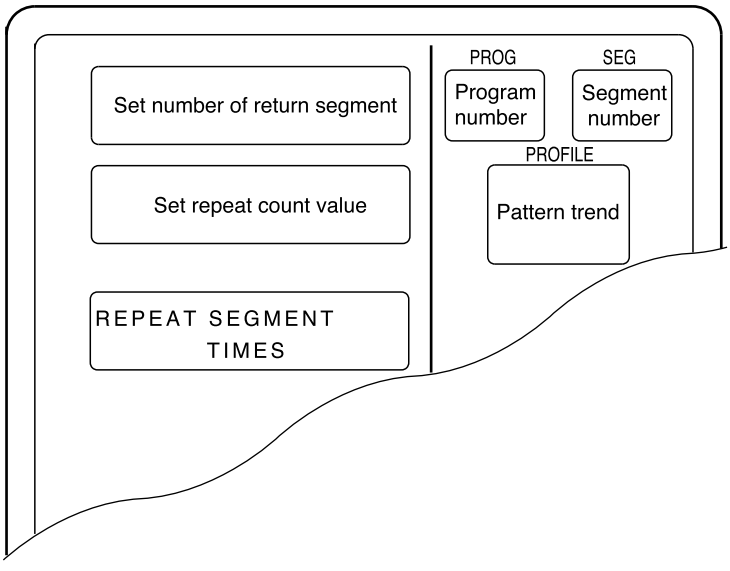
(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the number of the return segment.
Setting range: 0 to segment number in setting

(4) Press the **ENTER key** to stop the flashing on display panel 1 and display panel 2 starts flashing. (Start of second setting)
Note, however, that when the first setting is 0, "-----" is shown in the second panel which does not flash.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "*rP.0/*-----" and the flashing stops.)

(5) Use the ↑, ↓, ←, and → **keys** to make the second setting (repeat segment times).
Setting range: 1 to 10000

(6) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 1 and 2 to return to unset state "*rP.0/*-----" and the flashing stops.)

● Display



- Unset values are indicated as "*rP.0/*-----".
- When setup data *C59* is set to 1, a repeat item on the programming map is skipped and not displayed.

🕮 NOTE

When the number of return segment is something other than 0, it uses a subfunction.
A subfunction cannot be used when a setting has not been made "*rP.0/*-----".

■ Setting PV start items

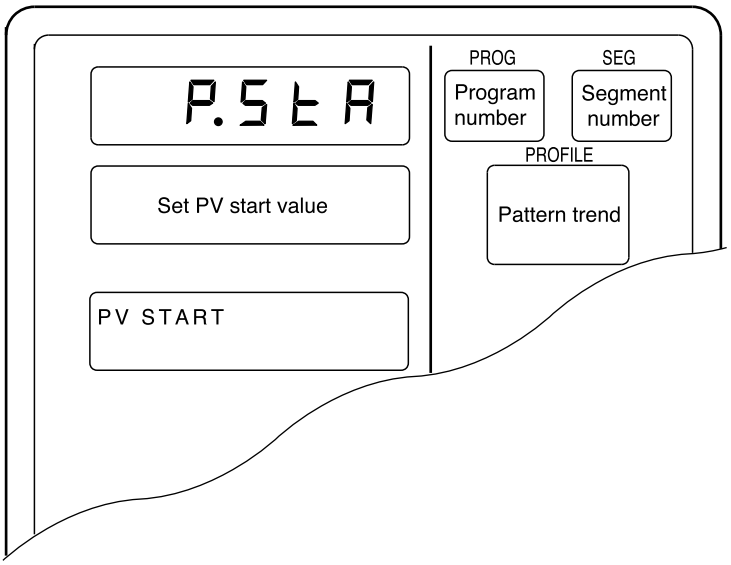
(1) In the set value display state, move to the PV start item to be set for the segment on the programming map.
(A PV start item is a program setting and is the same for each segment.)

(2) Press the **ENTER key** to make display panel 2 flash (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the PV start value.
Setting range: 0 to 3
0: no PV start
1: descending PV start
2: ascending PV start
3: bi-directional PV start

(4) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 2 to return to unset state "*0* " and the flashing stops.)

● **Display**



- A PV start item is a program setting and is the same for each segment.
- When setup data *C60* is set to 1, a PV start item on the programming map is skipped and not displayed.

🕮 NOTE

A PV start item setting does not use subfunctions.

■ Setting cycle items

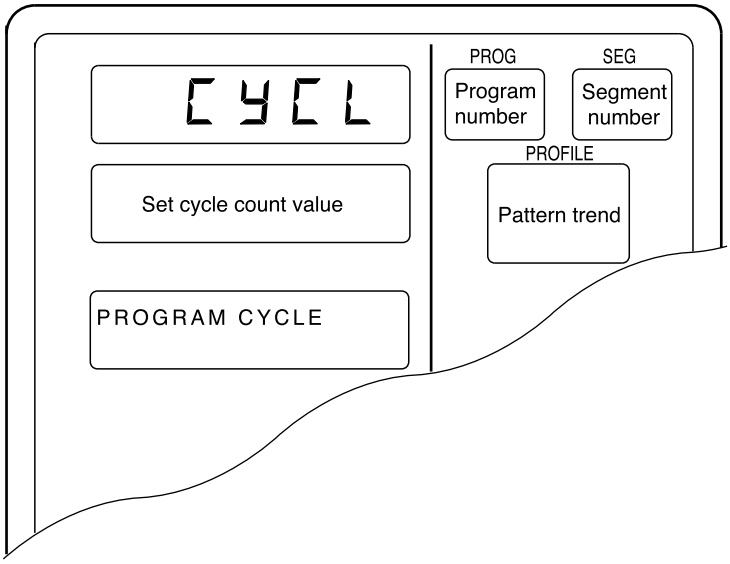
(1) In the set value display state, move to the cycle item to be set for the segment on the programming map.
(A cycle item is a program setting and is the same for each segment.)

(2) Press the **ENTER key** to make display panel 2 flash (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the cycle value.
Setting range: 0 to 10000

(4) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 2 to return to unset state "*0* " and the flashing stops.)

● Display



- A cycle item is a program setting and is the same for each segment.
- When setup data *C60* is set to 1, a cycle item on the programming map is skipped and not displayed.

🕮 NOTE

A cycle item setting does not use subfunctions.

■ Setting pattern link items

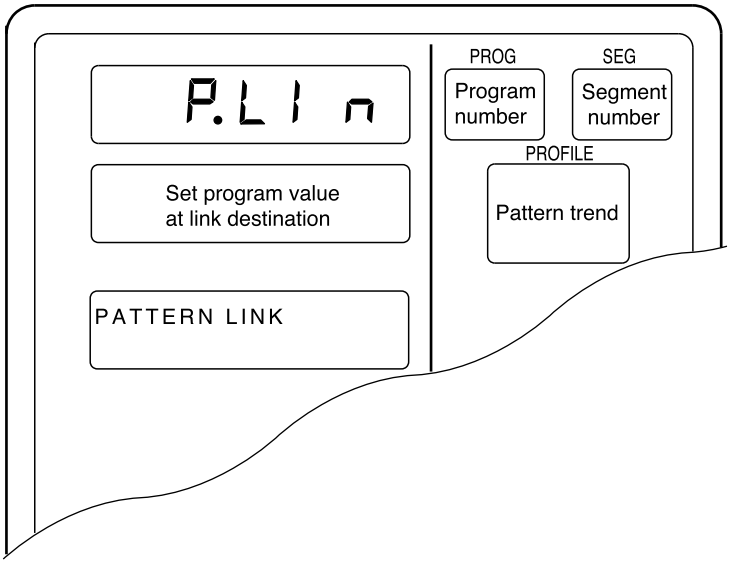
(1) In the set value display state, move to the pattern link item to be set for the segment on the programming map.
(A pattern link item is a program setting and is the same for each segment.)

(2) Press the **ENTER key** to make display panel 2 flash (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – setting the pattern link value.
Setting range: 0 to 49
0 : no pattern link
1 to 49: program number at pattern link destination

(4) Press the **ENTER key** to stop the flashing on display panel 2.
(Pressing the **FUNC** and **CLR keys** causes display panel 2 to return to unset state "*0* "and the flashing stops.)

● **Display**



- A pattern link item is a program setting and is the same for each segment.
- When setup data *C60* is set to 1, a pattern link item on the programming map is skipped and not displayed.

🕮 NOTE

A pattern link item setting does not use subfunctions.

■ Setting tag items

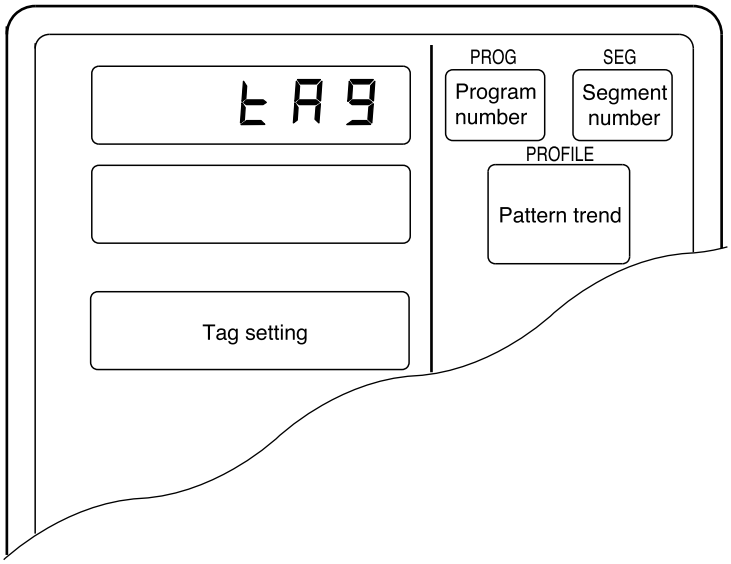
(1) In the set value display state, move to the tag item to be set for the segment on the programming map.
(A tag item is a program setting and is the same for each segment.)

(2) Press the **ENTER key** to display the cursor "__" below the leftmost of the 8 characters in the message panel "[ ]" field (registration of first setting).

(3) Use the ↑, ↓, ←, and → **keys** to make the first setting – selecting the 8 characters for the tag. The table below shows the 128 characters that can be used.

(4) Press the **ENTER key** and the cursor in the message panel disappears. (Pressing the **FUNC** and **CLR keys** causes the message panel return to displaying an 8-character tag consisting of "*PROG* ", a two-digit program number and two space characters. The cursor is turned off.)

● **Display**



↓key

’	/	7	?	G	O	W	_	ァ	ッ	キ	ソ	ヌ	マ	ラ	°
&	.	6	〉	F	N	V	^	ヲ	ョ	カ	セ	ニ	ホ	ヨ	゛
%	-	5	=	E	M	U	]	・	ュ	オ	ス	ナ	ヘ	ユ	ン
$	,	4	〈	D	L	T	¥	、	ャ	エ	シ	ト	フ	ヤ	ワ
#	＋	3	;	C	K	S	[	」	ォ	ウ	サ	テ	ヒ	モ	ロ
”	*	2	:	B	J	R	Z	「	ェ	イ	コ	ツ	ハ	メ	レ
!	)	1	9	A	I	Q	Y	。	ゥ	ア	ケ	チ	ノ	ム	ル
	(	0	8	@	H	P	X		ィ	ー	ク	タ	ネ	ミ	リ

↑key

🕮 NOTE

A tag item setting does not use subfunctions.
The tag of CH1 program and CH2 program with same program number is common.

■ Deleting programs

(1) In the set value display state, move to the start of the segment pattern item to be deleted on the programming map.
Move to the first segment of the program to delete the entire program.

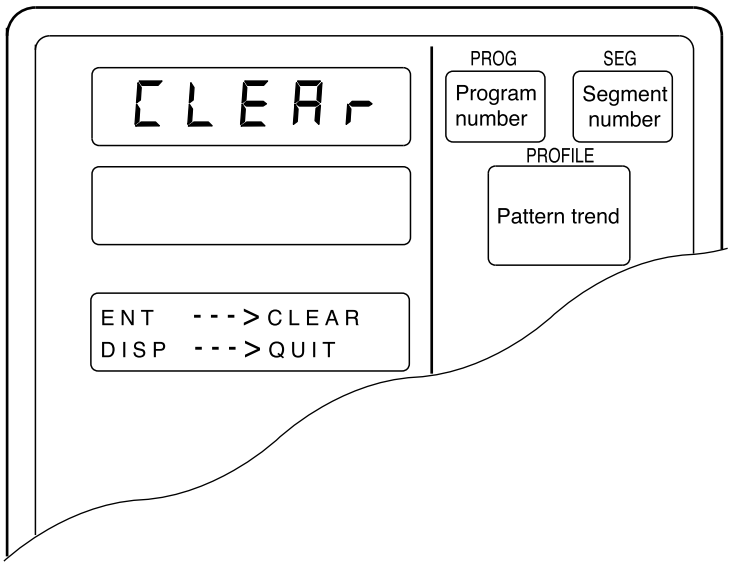
(2) Press the **ENTER key** to make display panel 1 flash (registration of first setting). (This the same as for pattern item settings.)

(3) Press the **FUNC** and **CLR keys** and you are prompted to confirm program deletion. "*CLEAr* " flashes in display panel 1.

(4) Press the **ENTER key** to delete the program.

(5) The set value display state appears and "-----" is shown in both display panel 1 and 2.

● Display



- Segments that have not been set and unset values for SP and time are indicated by "-----".
- A program that is running (in RUN, HOLD, FAST, END or READY FAST mode) cannot be deleted.

■ Inserting and deleting segments

(1) In the set value display state, move to insert segment or delete segment segment pattern item on the programming map.

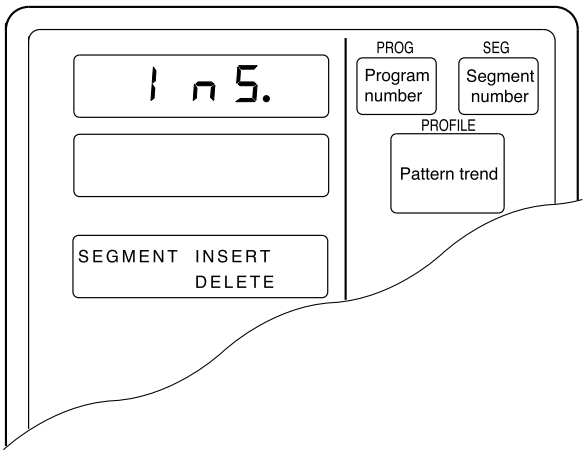
(2) Press the **FUNC** and **ENTER keys** and you are prompted to confirm segment insertion. "*InS*." flashes in display panel 1.

(3) Press the ↑ **key** and you are prompted to confirm segment insertion. "*InS*." flashes in display panel 1. Press the ↓ **key** and you are prompted to confirm segment deletion. "*dEL*." flashes in display panel 1.

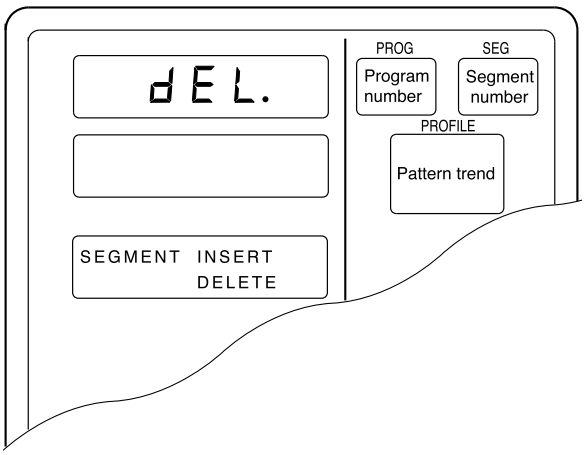
(4) Pressing the **ENTER key** when "*InS*." is displayed in display panel 1 inserts the segment. Pressing the **ENTER key** when "*dEL*." is displayed in display panel 1 deletes the segment.

(5) The set value display state appears.

● **Display (segment insertion)**



● **Display (segment deletion)**



- When a segment is inserted, a new segment is automatically created and the numbers of subsequent segments are incremented by one.

The set value of the inserted segment is as follows:
Set SP value : same value as the original segment before insertion
Set time value : 0:10, 1.0
Event items, PID groups, output limiter group number items, G.SOAK items, PV shift items and repeat items are not set.

- When the 99th segment has already been set, the segment insertion indication "*InS.*" is not displayed.
- When 2000 segments have already been set, pressing the **ENTER key** to execute an insertion cannot be used to insert a segment.
- When segments are deleted, the following segments are moved up and the numbers of subsequent segments are decremented by one. When the final segment is deleted, the displayed segment becomes an unset segment.
- A program that is running (in RUN, HOLD, FAST, END or READY FAST mode) cannot be deleted.

8 - 2 Copying Programs

The **DCP552** allows you to copy programs when it is in the READY program run mode. If not in this mode, press the **DISP key** to invoke the normal display mode.

■ Program copy procedures

(1) Invoke the program run READY program run mode.
Set variable parameter *PA01* to 0 or 1 and set variable parameter *PA02* to 0.

(2) Press the **PROG key** and the ↑, ↓, ←, and → **key keys** in the normal display mode to select the number of the program to be copied.
This is not possible when the program number is selected using external switch inputs.
See " Section 6-3 Selecting Programs" (page 6-11) for details.

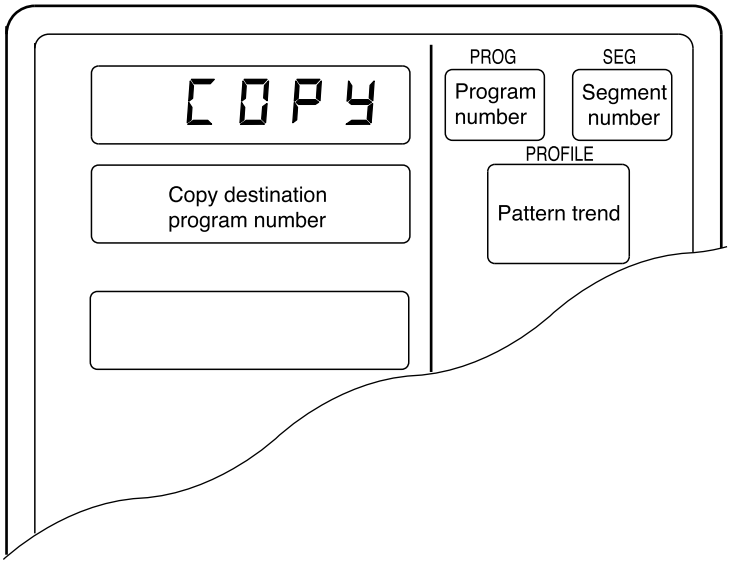
(3) Press the ↑ **key** and the **PROG key** to display "*COPY* " in display panel 1.
The number of the program to be copied starts to flash in display panel 2.

(4) Press the ↑, and ↓ **keys** and currently unset program numbers that can be used as numbers for the program to be copied start to flash.
When there are no unset numbers, "-----" is displayed in display panel 2.

(5) Press the **ENTER key** to start program copy and display panel 2 stops flashing. Programs in CH1 and CH2 are copied simultaneously. Repeat steps r and t to copy more programs.
Repeat steps (4) and (5) to copy more programs.

(6) When a program has been copied, press the **DISP key**.

● **Display**



8 - 3 General Reset

A general reset can be performed when the controller is in the READY AUTO mode in the normal display mode. If not in the normal display mode, press the **DISP key** to invoke it. A general reset has the following functions. Program settings such as program numbers 1 to 49 are all deleted. Parameters are reset to their factory defaults and the READY AUTO program run mode is invoked.

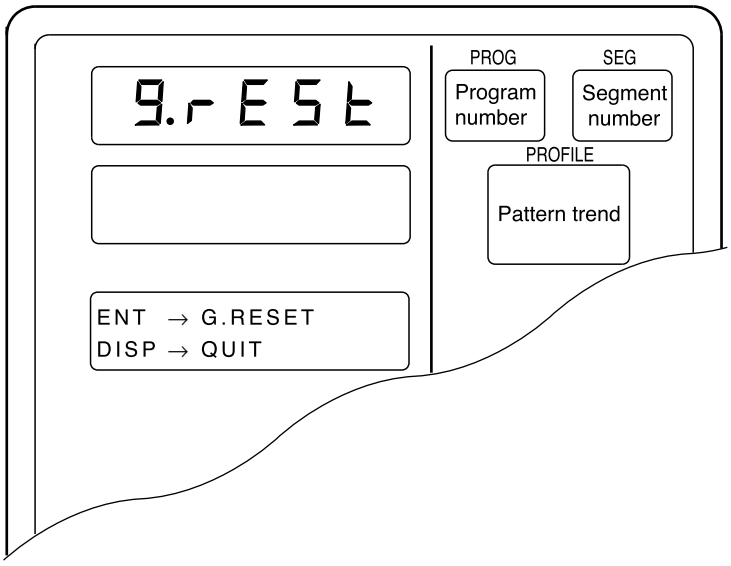
■ General reset procedures

(1) Invoke the READY AUTO mode for both CH1 and CH2. Or set variable parameters *PA01* and *PA02* to 0.

(2) Press the **FUNC**, **CLR** and **MESSAGE keys** and you are prompted to confirm a general reset. "*g.rESt* " is displayed in display panel 1.

(3) Press the **ENTER key** to execute the general reset and start startup operations that occur after a power up.
Press the **DISP key** cancels the general reset and returns the normal display mode.

● Display



In the fixed command control mode, program number, segment number and profile display go off.

- When the RAM backup fails at startup, the controller automatically prompts you to confirm a general reset – no key input is required - and "*g.rESt* " flashes in display panel 1.
  Press the **ENTER key** to execute the general reset. All other keys are invalid.
- A general reset does not return the following settings to factory default values.
  C01, C02, C11, C12, C21 C22: these values are stored.
  Note, however, that a general reset resulting from a RAM failure at startup resets also these settings to factory default values.

Chapter 9. MEMORY CARD OPERATIONS

9 - 1 Memory Card Type and Functions

A memory card can be used to store the setup data, variable parameters, PID parameters (including constant value control data), event configuration data and multiple programs required by one **DCP552**.

- **Memory card types**

The following memory cards can be used by the **DCP552**.

Model No.	Memory type	Battery	Capacity (Byte)	No. of programs
SKM008A	RAM	Not replaceable	7.00K	Max. 10
SKM016A	RAM	Not replaceable	14.50K	Max. 26
SKM064A	RAM	Not replaceable	61.75K	Max. 49
SKM256C	RAM	Replaceable	251.00K	Max. 49
SKM008E	E^2PROM	Not necessity	7.00K	Max. 10
SKM032E	E^2PROM	Not necessity	29.75K	Max. 49

- **Memory card functions**

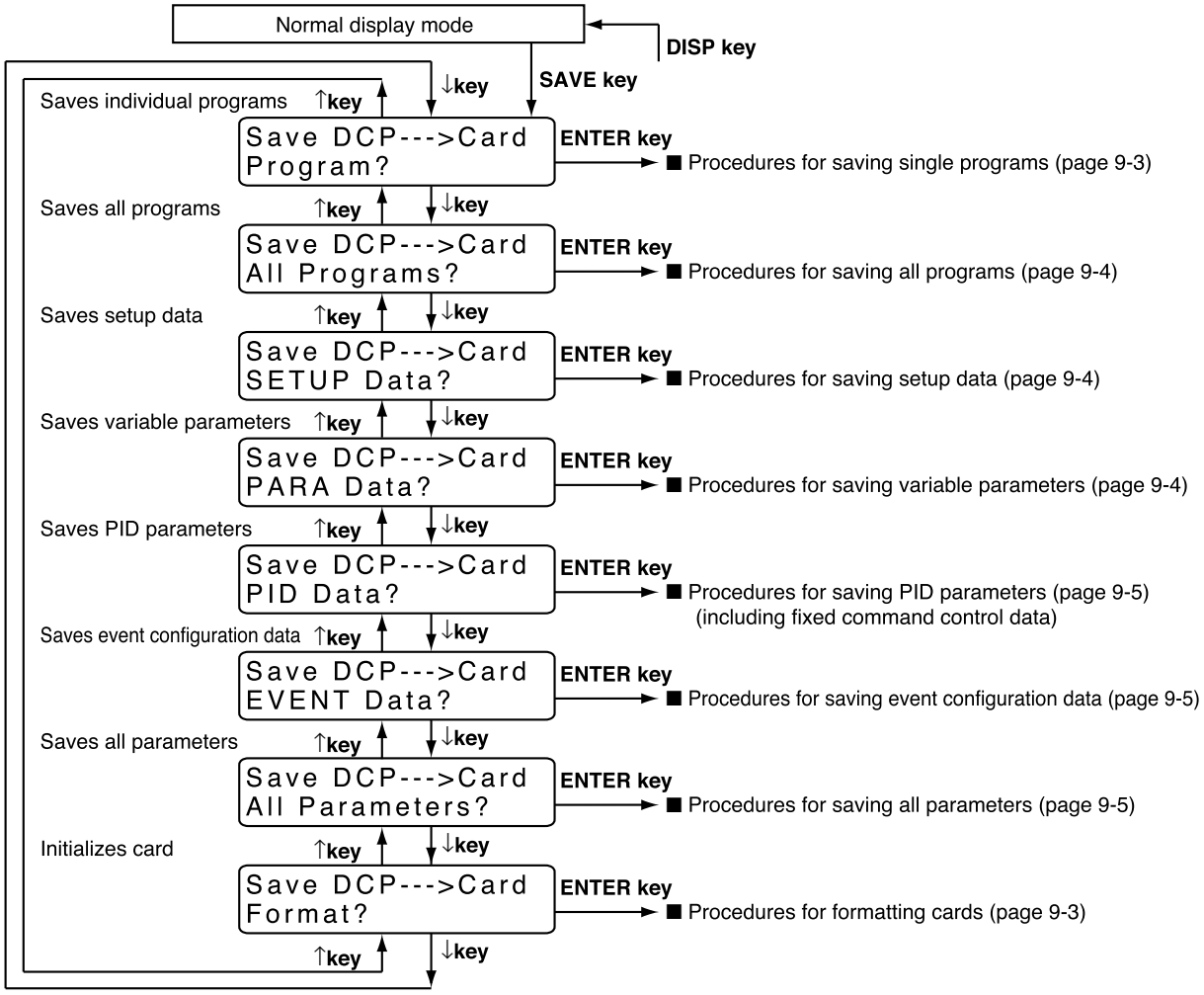
  - Save: (write)
    Saves selected **DCP552** data on the memory card.
  - Load: (read)
    Loads selected memory card data onto the **DCP552**.

9 - 2 Save Procedures

Insert a memory card when the **DCP552** is in the READY mode and the normal display mode. Press the **SAVE key** to start a save operation. "*CArd* " is displayed in display panel 1 and "*SAVE* " is displayed in display panel 2. An error code appears if something should go wrong during the save operation.

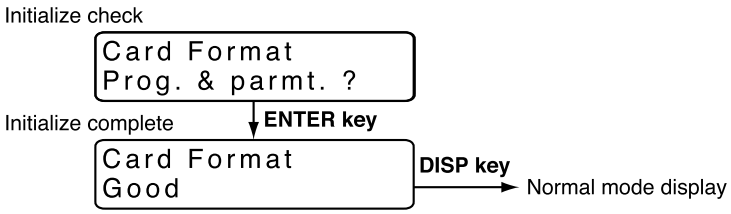
■ Save menu

When the **SAVE key** is pressed in the normal display mode, the save menu panel is displayed. Use the ↑ and ↓ **keys** to select the desired menu.
Press the **ENTER key** to display the desired menu in the message display panel.
The **DISP key** returns you to the normal display mode.



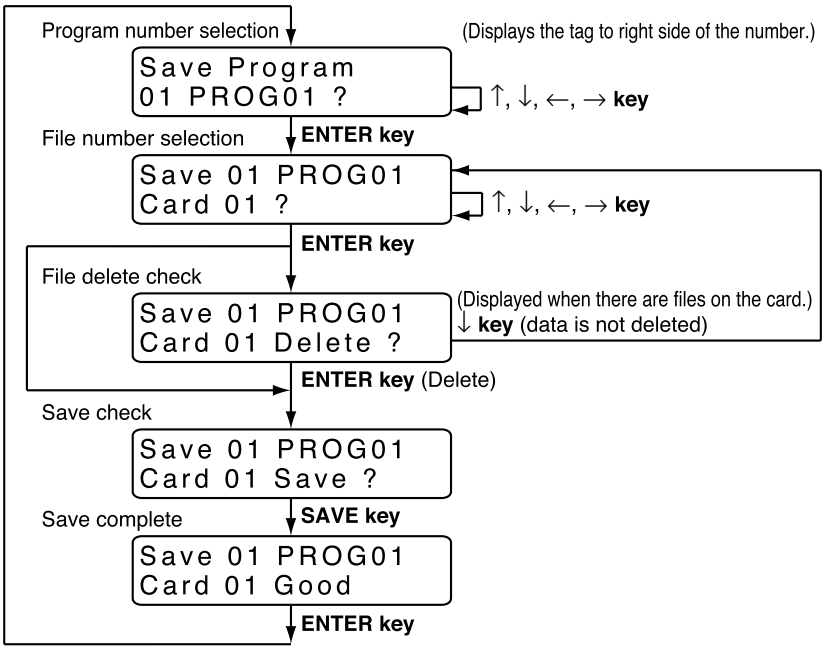
■ Procedures for formatting cards

This procedure is used to format memory cards so that they can be used with the **DCP552**. A card has to be formatted once only. Note that any programs or parameters on a card that is formatted are deleted in this process.



■ Procedures for saving single programs

This procedure is used to save one program on the **DCP552** to a memory card.

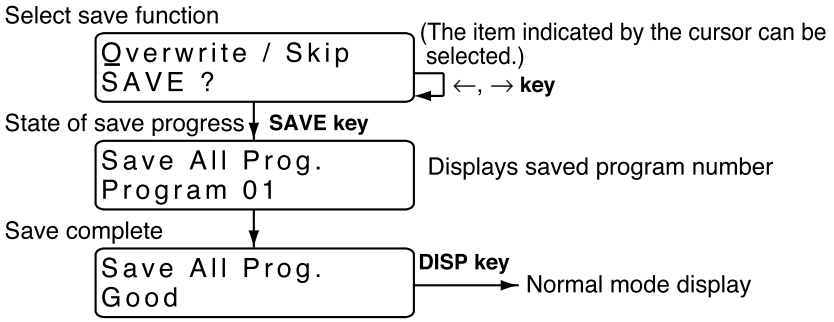


■ Procedures for saving all programs

This procedure saves all programs on the **DCP552** on a memory card. The program numbers used in the **DCP552** are converted to file names on the memory card.

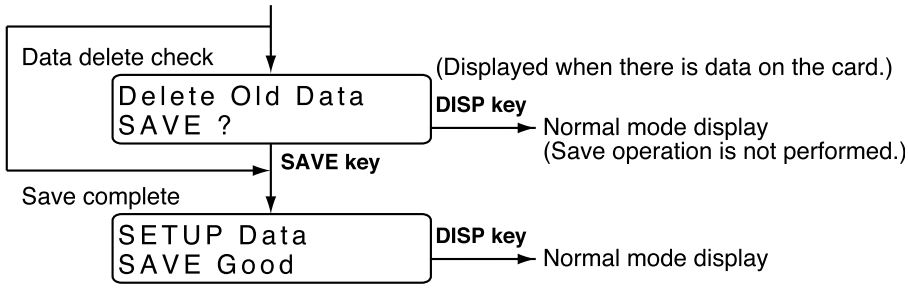
When the "Overwrite" save function is selected, files on the card that have the same number as those in the **DCP552** are overwritten by the **DCP552** files.

When the "Skip" save function is selected, files on the card that have the same number as those in the **DCP552** are left as they are and the next number file is selected for processing.



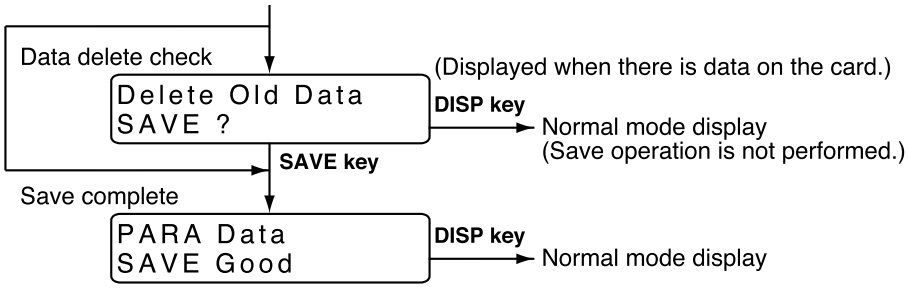
■ Procedures for saving setup data

This procedure saves the **DCP552** setup data on a memory card.



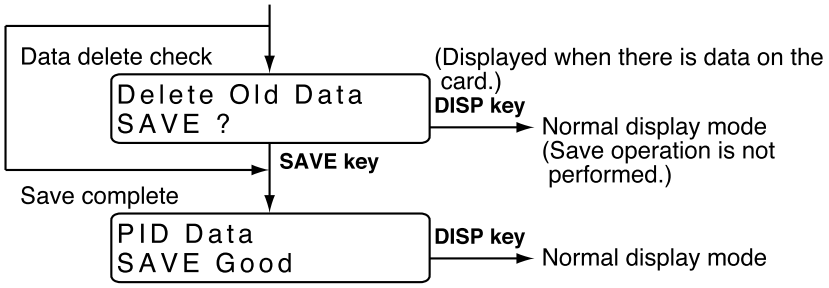
■ Procedures for saving variable parameters

This procedure saves the **DCP552** variable parameter data on a memory card.



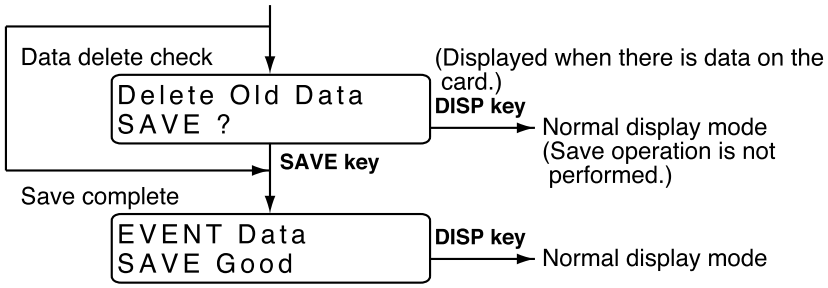
■ Procedures for saving PID parameters

This procedure saves PID parameters and constant value control data on a memory card.



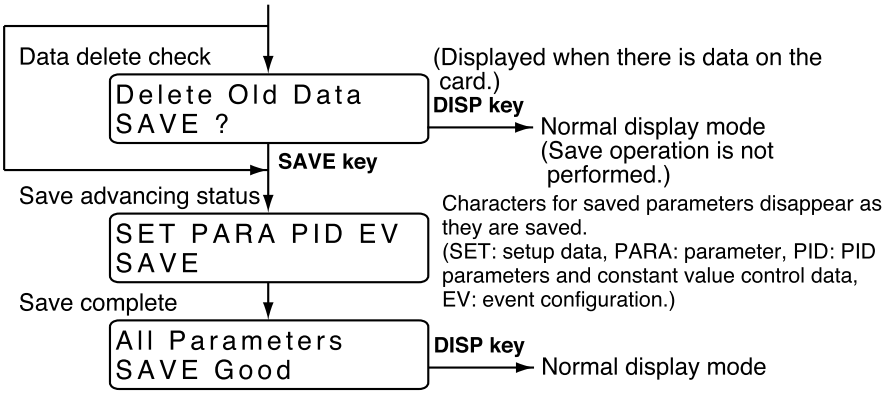
■ Procedures for saving event configuration data

This procedure saves event configuration data on a memory card.



■ Procedures for saving all parameters

This procedure saves all parameters on a memory card.

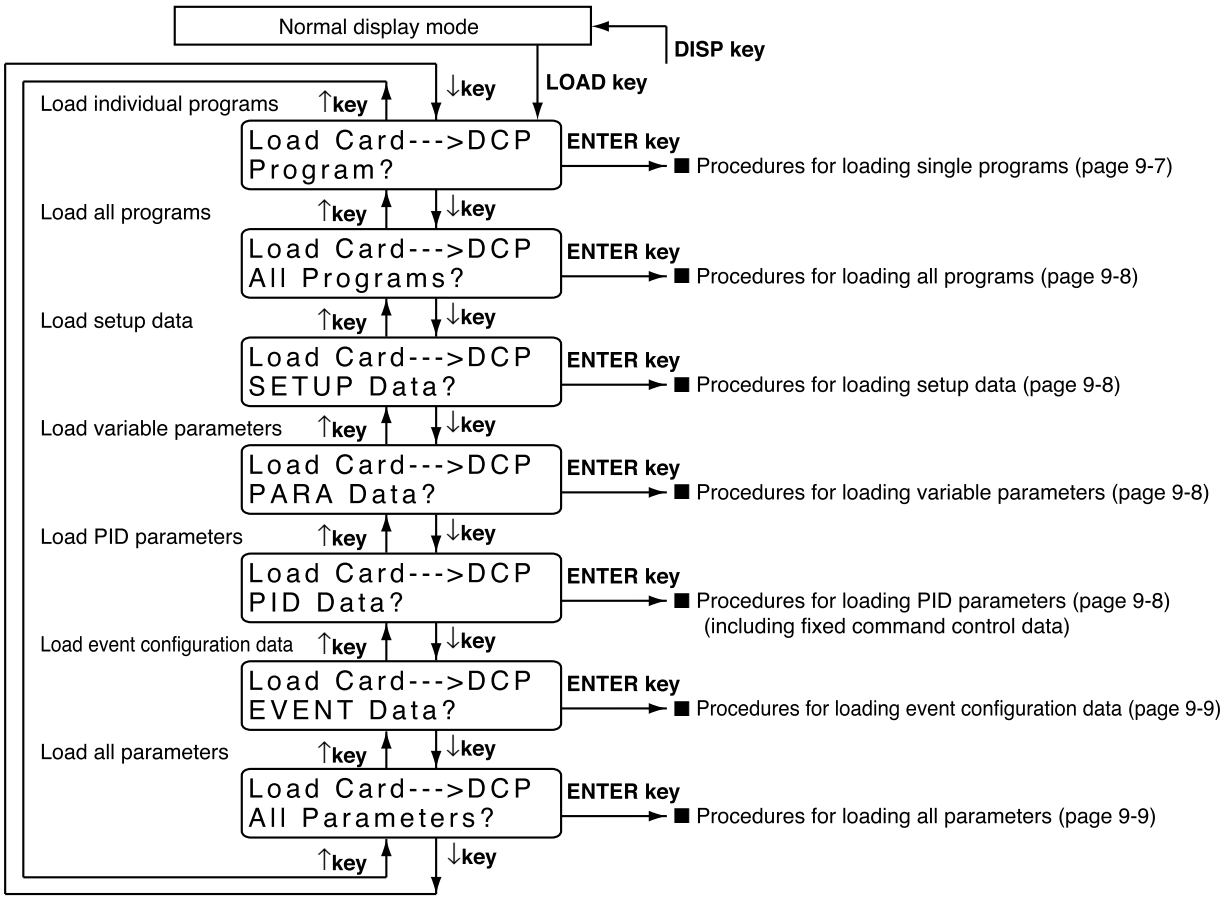


9 - 3 Load Procedures

Insert a memory card when the **DCP552** is in the READY mode and the normal display mode, and variable parameter *PA05* has been set to 0. Press the **LOAD key** to start a load operation. "*CArd* " is displayed in display panel 1 and "*LOAd* " is displayed in display panel 2. An error code appears if something should go wrong during the save operation.

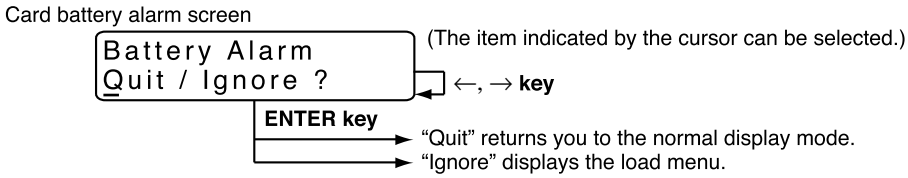
■ Load menu

When the **LOAD key** is pressed in the normal display mode, the load menu panel is displayed. Use the **ENTER key** to select the desired menu.
Press the **ENTER key** to display the desired menu in the message display panel.
The **DISP key** returns you to the normal display mode.
Note, however, that an autoload operation is performed when the **LOAD key** is pressed and variable parameter *PA05* is set to 1.
For details, see " Section 9-4 Autoload" (page 9-10)
A RAM memory card whose internal batteries are too low, cause a card battery alarm panel to be displayed before the Load menu panel is displayed.



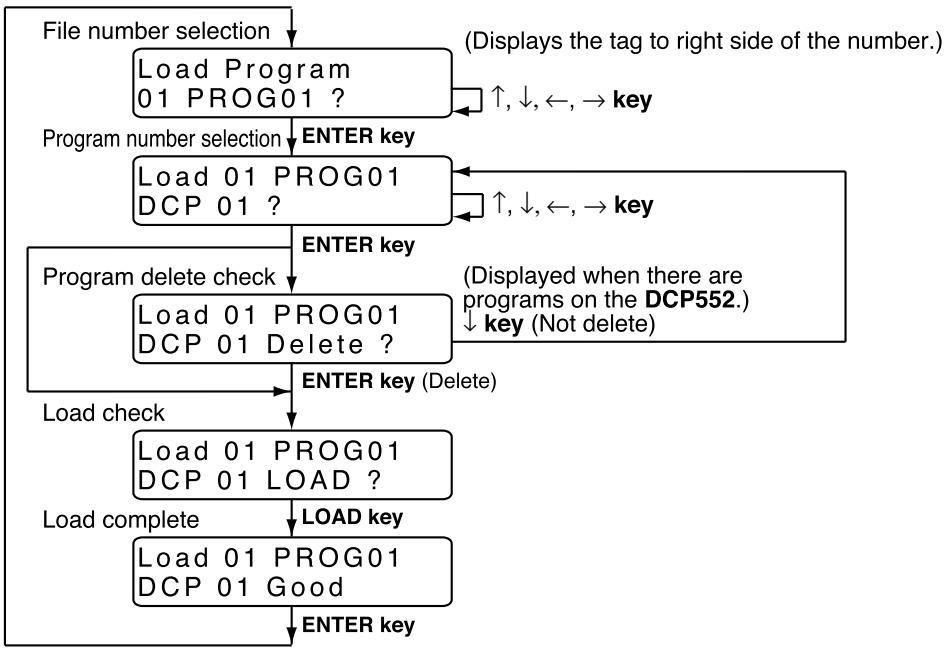
■ Card battery alarm panel

When the voltage of the internal battery in a RAM card is too low, the data saved on the disk may be corrupted. Loading corrupted data onto the **DCP552** will cause maloperation. Do not use a card whose battery voltage is too low. If you want to load the data anyway, select "Ignore" in this panel and press the **ENTER key**. This displays the load menu. To return to the normal display mode, select "Quit" or press the **ENTER key** or the **DISP key**.



■ Procedures for loading individual programs

This procedure loads single memory card files on the **DCP552**.

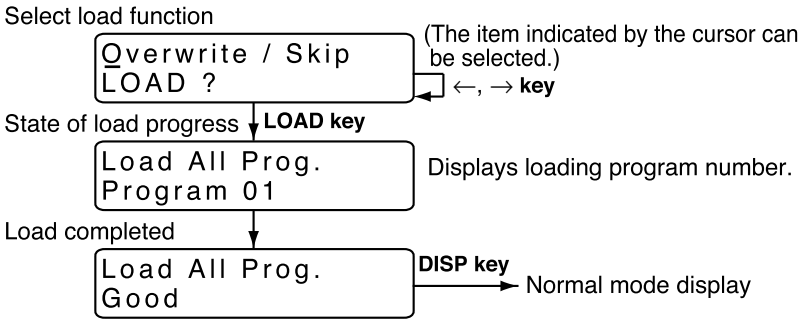


■ Procedures for loading all programs

This procedure loads all programs on the memory card in the **DCP552**. The file numbers used on the memory card are converted to file numbers used in the **DCP552**.

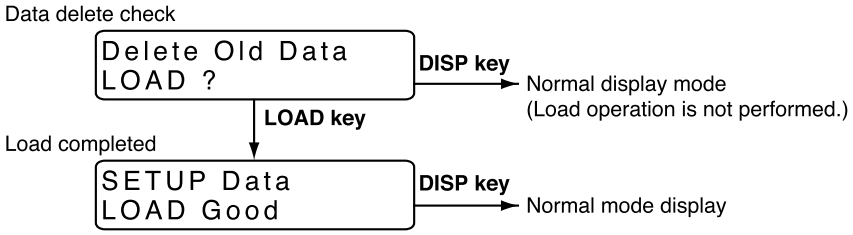
When the "Overwrite" load function is selected, programs in the **DCP552** that have the same number as those on the card are overwritten by the card programs.

When the "Skip" load function is selected, programs in the **DCP552** that have the same number as those on the card are left as they are and the next number is selected for processing.



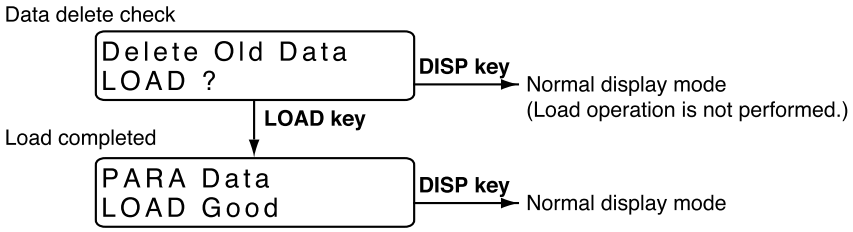
■ Procedures for loading setup data

This procedure loads setup data on the memory card onto the **DCP552**.



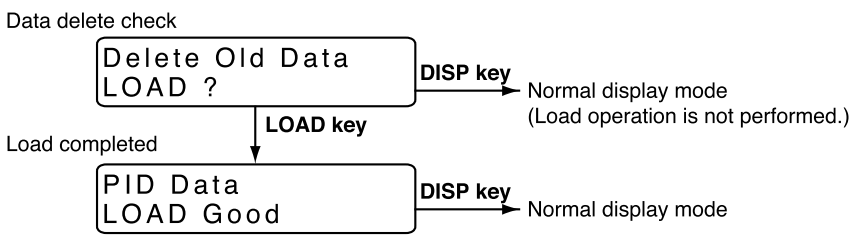
■ Procedures for loading variable parameters

This procedure loads variable parameters on the memory card onto the **DCP552**.



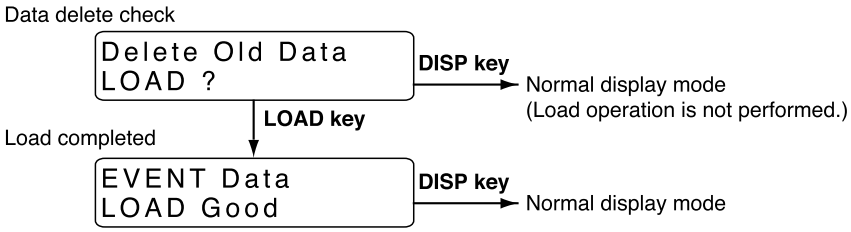
■ Procedures for loading PID parameters

This procedure loads PID parameters and constant value control data on the memory card onto the **DCP552**.



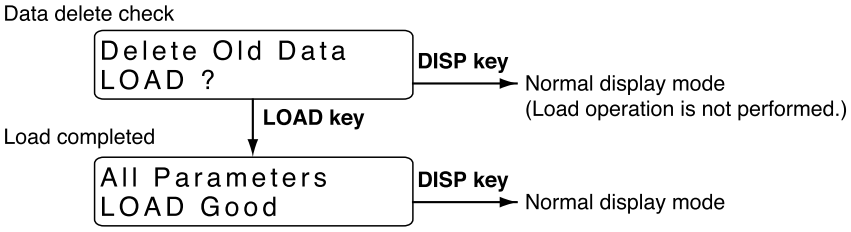
■ Procedures for loading event configuration data

This procedure loads event configuration data on the memory card onto the **DCP552**.



■ Procedures for loading all parameters

This procedure loads all parameters on the memory card onto the **DCP552**.



Handling Precautions

The **DCP552 Mark** Ⅱ and the old model, **DCP552**, differ in how some setup data items are processed and the range of variable parameter *PA15*. Thus the following changes have to be made when setup data, variable parameters or all parameters saved on a **DCP552** are loaded onto a **DCP552 Mark** Ⅱ.

- Setup data : *C21, C22, C45 to C50, C80, C90 to C97*
- Variable parameters : *PA15, PA25*

Setup data and all parameters stored on a **DCP552 Mark** Ⅱ cannot be loaded onto a **DCP552**. (A loading attempt generates card error 16.)

9 - 4 Autoload

Insert a memory card, press the **LOAD key** or use external switch inputs in the READY mode and the normal display mode to load file number 1 in CH1 and CH2 on the memory card as program 1 onto the **DCP552**.

■ Key operated autoload procedure

● Conditions

Memory card : Program has been saved to file number 1
Variable parameter : *PA05* set to 1
Mode : READY mode, normal display mode

● Operation and action

Insert a memory card and press the **LOAD Key**.
The **DCP552** operates as follows.

- "*AUtO* " is displayed in display panel 1 and "*LOAd* " is displayed in display panel 1.
- When program number 1 has been loaded onto the **DCP552**, program number 1 disappears.
- File number 1 on a memory card is loaded onto the **DCP552** as program number 1.
- When a load operation is successful, the "*AUtO* " and "*LOAd* " indications go off and the normal display mode appears.
  Unless the number of a program is selected using external switch inputs, program 1 in segment 1 is selected.
- If the load operation fails, the "*AUtO* " and "*LOAd* " indications stay on and an error code is displayed in the message panel.
  When an error has occurred, press the **DISP key** to return to the normal display mode.

⚠ Handling Precautions

A normal load operation cannot be performed when variable parameter *PA05* is set to 1. A normal load operation requires that parameter *PA05* is set to 0.

■ Auto load using external switch inputs

● Conditions

Memory card : Program saved to file number 1
Setup data : any of *C71* to *C74* is set to 8 (autoload)
Mode : READY mode, normal display mode

● Operation and action

Insert a memory card and turn off the external switch used for autoload and turn it back on again.
The **DCP552** operates as follows.

- "*AUtO* " is displayed in display panel 1 and "*LOAd* " is displayed in display panel 2.
- When program number 1 has been loaded onto the **DCP552**, program number 1 disappears.
- File number 1 on a memory card is loaded onto the **DCP552** as program number 1.
- When a load operation is successful, the "*AUtO* " and "*LOAd* " indications go off and the normal display mode appears.
  Unless the number of a program is selected using external switch inputs, program 1 in segment 1 is selected.
- If the load operation fails, the "*AUtO* " and "*LOAd* " indications stay on and an error code is displayed in the message panel.
  When an error has occurred, press the **DISP key** to return to the normal display mode.

Handling Precautions

Variable parameter *PA05* can be set to 1 or 0.

9 - 5 Error Message List

When an error occurs, error messages such as "Card Error-XX" (XX denotes error code) are displayed on the message panel during memory card operations. The table below lists the error codes and explain their meaning. Memory card operations are aborted when an error occurs.
To return to the normal display mode, press the **DISP key**.

Code	Meaning	Remedial measures
1	Card insertion failure or card removed	Do over.
2	Card write protect	Replace the card, or reset the protect by SLP550.
3	Card read protect	Replace the card, or reset the protect by SLP550.
4	Bad card	Replace the card.
5	Invalid card format	Initialize the card.
6	Card full	Erase unnecessary files, or initialize the card.
7	Card busy	Do over.
8	File write protect	Initialize the card.
9	Card access error	Do over.
11	Card access sequence error	Do over.
12	FAT abnormal	Initialize the card.
14	Card access sequence error (in file control)	Do over.
15	Card battery voltage drop (warning)	Replace the card, replace the card battery (If replaceable).
16	Wrong file version	Create new file, and create new data.
17	Data or file are missing.	Create new file, and create new data.
18	**DCP552** data full (program load)	Delete unnecessary programs in the **DCP552**.
19	**DCP552** hardware error (load error)	Do over.
20	Card data invalid	Do over.
21	Card data check sum error (program data)	Operate the instrument again, or check the program setting of the **DCP552**.
22 to 36	Card data check sum error (parameter data)	Operate the instrument again, or check the parameter setting of the **DCP552**.
37	Memory protect error (loading the data is protected by the variable parameter *PA02*.)	Set **DCP552** variable parameter *PA02* to 0 to cancel protection.
43	No alternate areas remain on the E^2PROM card	Replace the card.
44	Error occurred in writing to alternate area on E^2PROM card	Replace the card.
63	Card battery voltage drop (error)	Replace the card, replace the card battery (If replaceable).
64	File abnormal (card was removed)	Create new file, and create new data.

Chapter 10. TROUBLESHOOTING

10 - 1 Self-Diagnostic Functions and Alarm Code Displays

The **DCP552** is equipped with the self-diagnostic functions described below. Alarm codes and the result of self-diagnostics are listed on the following pages.

■ Power ON self-diagnostic routines

- **RAM backup failures**

  This routine is designed to detect errors in the RAM backup function. When a failure is detected, a general reset is performed. No alarm code is displayed.

- **Board configuration failures**

  This routine detects failures caused when boards (circuit boards) not designed to be used with the **DCP552**. Alarm codes are displayed when errors are detected.

■ Self-diagnostic routines performed each sampling cycle

- **Analog input failures**

  Failures are detected when the analog input signal due to disconnection or other cause lies outside the –10.0 to +110.0% range.
  Alarm codes are displayed when errors are detected.

■ Self-diagnostic routines performed continuously during operation

- **PROM failures**

  This routine is designed to detect errors in system programs stored in the PROM. Not totally infallible, there are cases where errors go undetected and result in measuring device operation failure.
  Alarm codes are displayed when errors are detected.

- **Adjustment data failures**

  This routine detects errors in analog inputs and output adjustment data stored in non-volatile memory. Alarm codes are displayed when errors are detected.

- **Program failures**

  This routine detects failures in program setting data stored in a backup RAM. Alarm codes are displayed when errors are detected.

- **Parameter failures**

  This routine detects failures in parameters stored in a backup RAM. Alarm codes are displayed when errors are detected.

- **Low battery voltage**

  This routine detects low voltage conditions in the battery that backups RAM data. The BAT LED on the console goes on when battery voltage is too low.

■ Alarm code display

The **DCP552** is designed to alternate display of the following alarm codes and normal display items in one-second intervals on display panel 1 when input failures or instrument system failures are detected.
In cases of multiple alarm codes, display of the codes is alternated with normal display items, starting in order from the alarm code with the smallest number.

■ Alarm classification

PV range alarm group : *AL01* to *AL04*
Measuring instrument alarm group : *AL90* to *AL99*, and battery voltage drop (In case of battery voltage drop, BAT LED of the console is flickered.)

Alarm code	Alarm name	Contents	Countermeasure
AL01	PV1 overrange	PV1 is more than 110%FS.	Check PV1.
AL02	PV1 underrange	PV1 is less than –10%FS.	
AL03	PV2 overrange	PV2 is more than 110%FS.	Check PV2
AL04	PV2 underrange	PV2 is less than –10%FS.	
AL90	Board configuration failure	Incorrect board configuration	Request the repair.
AL92	Adj ustment value is abnormal.	Analog input/output adj ustment data were broken.	Request the repair.
AL93	Setup data is abnormal.	Setup data were broken.	Check the setup data, and reset the data.
AL94	Variable parameter is abnormal.	Variable parameter were broken.	Check the variable parameter, and reset the data.
AL95	PID parameter is abnormal. (Fixed command control data is abnormal.)	PID parameter were broken.	Check the PID parameter, and reset the data.
AL96	Program data is abnormal.	Program data were broken.	Check the program data, and reset the data.
AL97	Event configuration data is abnormal.	Event configuration data were broken.	Check the event configuration data, and reset the data.
AL99	PROM is abnormal.	System program were corrupted.	Request the repair.

*1: When *AL90* is generated, the alarm code stays on and continued operation is disabled.

*2: Data checks performed by *AL93* and *AL97* may fail to detect corrupted data. When this happens, the alarm can be turned off by entering normal data.

10 - 2 Key Input Related Problems

Procedures to correct key input related problems are described below.

■ Normal display mode problems

● Modes and channels cannot be changed using keys

Cause	Measure
Normal display mode not on	Press **DISP key** to invoke normal display mode.

● Program number does not start flashing when PROG key is pressed

Cause	Measure
Program selection of external switch input is not 0.	Turn off all external switch inputs SW9 to 14.
Not set to READY mode.	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Set to fixed command control mode.	Set fixed command control data *ConSt* setting to 0.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● RUN mode cannot be invoked with the RUN/HOLD key

Cause	Measure
Program selected in READY mode is unset. It is not possible to change to the RUN mode if CH1 and CH2 programs are not set in synchronous mode (variable parameter *PA04* set to 1)	Select the set program.
Set to END mode.	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● HOLD mode cannot be invoked with the RUN/HOLD key

Cause	Measure
Set to READY or FAST mode.	The HOLD mode is available from READY and FAST modes by pressing the **RUN key**. Press the **RUN/HOLD key** once again.
Set to END mode.	Perform a reset operation (press the **PROG**, **RUN** and **HOLD keys**). Invoke the READY mode and perform a RUN operation (press the **RUN/HOLD key**) to go to the RUN mode.
Set to fixed command control mode.	Set fixed command control data *ConSt* to 0.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● RESET cannot be performed with the PROG, RUN and HOLD keys.

RESET is available in the READY program run mode and returns operations to the first segment.

Cause	Measure
Set to READY mode.	Perform a RUN operation (press the **RUN/HOLD key**) to go to the RUN mode. (A reset operation can also be performed in the READY mode using external switch inputs or transmission.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● ADV cannot be invoked with PROG and DISP keys

Cause	Measure
Set to READY mode.	Perform a RUN operation (press the **RUN/HOLD key**) to go to the RUN mode. (ADV operation can be performed in the READY mode with external switches or through transmission.)
Set to END mode.	Perform a reset operation (press the **PROG**, **RUN** and **HOLD keys**). Invoke the READY mode and perform a RUN operation (press the **RUN/HOLD key**) to go to the RUN mode.
Set to fixed command control mode.	Set fixed command control data *ConSt* setting to 0.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● FAST mode cannot be invoked with FUNC and → keys

Cause	Measure
Set to program time unit as 0.1 sec.	Set 0 or 1 setup data *C62* setting.
Set to END mode.	Perform a reset operation (press the **PROG**, **RUN** and **HOLD keys**). Invoke the READY mode and perform a RUN operation (press the **RUN/HOLD key**) to go to the RUN mode.
Set to fixed command control mode.	Set fixed command control data *ConSt* setting to 0.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● MANUAL mode cannot be invoked with A/M key

Cause	Measure
On-off control is set in *P* setting = 0.0.	Set the *P* setting for a currently used PID group to something other than 0.0 to switch from ON-OFF control to PID control.
On-off control is set with segment PID group number = on-off.	Set the segment PID group number between 1 to 9 or to A to switch to PID control.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● AUTO mode cannot be invoked with A/M key

Cause	Measure
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● Autotuning (AT) cannot be started with AT key

Cause	Measure
Set to READY mode. (With variable parameter *PA08* and *PA93* setting = 1 or 2)	Set RUN mode to execute RUN operation (**RUN/HOLD key**).
Set to except READY mode. (With variable parameter *PA08* and *PA93* setting = 3 or 4)	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Set to MANUAL mode.	Set AUTO mode to execute AUTO operation (**A/M key**).
PV overrange.	Connect PV input correctly to obtain normal input conditions.
AT is set to off	Set variable parameter *PA08* and *PA93* to something other than 0.
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● **Autotuning cannot be canceled with AT key**

Cause	Measure
Set to key lock.	Set variable parameter *PA01* between 0 to 2.

● **PID parameter setting state cannot be invoked with PID key**
● **Event configuration setting state cannot be invoked with FUNC and PARA keys**

Cause	Measure
Normal display mode not on	Press **DISP key** to invoke normal display mode.
Set to key lock.	Set variable parameter *PA01* to 0 or 1.

● **Setup data setting state cannot be invoked with SETUP key**

Cause	Measure
Normal display mode not on	Press **DISP key** to invoke normal display mode.
Mode other than READY	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Set to key lock.	Set variable parameter *PA01* to 0.

● **Fixed command control data setting state cannot be invoked with FUNC and PID keys**

Cause	Measure
Normal display mode not on	Press **DISP key** to invoke normal display mode.
Mode other than READY	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Set to key lock.	Set variable parameter *PA01* to 0 or 1.

● **Program setting state cannot be invoked with FUNC and PROG keys**

Cause	Measure
Normal display mode not on	Press **DISP key** to invoke normal display mode.
Set to fixed command control mode.	Set fixed command control data *ConSt* setting to 0.
Set to key lock.	Set variable parameter *PA01* to 0 or 1.

● **Program copy cannot be performed with ↑ and PROG keys**

Cause	Measure
Mode other than READY	Press **DISP key** to invoke normal display mode.
Set to be except READY mode.	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Program selected in READY mode is unset.	Select number of a set program.
Fixed command control mode is on.	Set fixed command control data *ConSt* to 0.
Program protected	Set variable parameter *PA02* to 0, 2 or 4.
Set to key lock.	Set variable parameter *PA01* to 0.

● **General reset cannot be performed with FUNC, CLR and MESSAGE keys**

Cause	Measure
Normal display mode not on	Press **DISP key** to invoke normal display mode.
Mode other than READY mode	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Set to MANUAL mode.	Set AUTO mode to execute AUTO operation (**A/M key**).
Set to memory protect.	Set variable parameter *PA02* to 0.
Set to key lock.	Set variable parameter *PA01* to 0.

■ Parameter setting related problems

● **Registration state cannot be invoked with ENTER key**

Cause	Measure
"-----" displayed in display panel 2	This item cannot be displayed or set. To change setting connection item, it may be able to change or set.
Data displayed in display panel 2 cannot be changed.	This item is display only.
Set to memory protect.	Set variable parameter *PA02* to 0.

■ Program setting related problems

● **Registration state cannot be invoked with ENTER key**

Cause	Measure
Set to memory protect.	Set variable parameter *PA02* to 0, 2 or 4.

● **Item changes cannot be made with ↑ and ↓ keys**

Cause	Measure
Not pattern item set.	Set SP and time data.

● **SP values in program settings cannot be changed with ↑ and ↓ keys**

Cause	Measure
SP limit sets error value.	Set correct value for setup data *C66*, *C67*, *C69* and *C70*.

● **Event items cannot be displayed with ↑ and ↓ keys**

Cause	Measure
Event type is something other than segment type.	Set the event type in the event configuration data to a value between 1 and 23.
No event has been assigned to selected channel.	Set correct value for setup data *C64*.
Programming item sets no display.	Set setup data *C57* to 0.

● **PID group, output limiter group number items cannot be displayed with ↑ and ↓ keys**

Cause	Measure
Programming item display off	Set setup data *C58* to 0.

● **G.SOAK items, PV shift items and repeat items cannot be displayed with ↑ and ↓ keys**

Cause	Measure
Programming item display off	Set setup data *C59* to 0.

● **PV start items, cycle items and pattern link items cannot be displayed with ↑ and ↓ keys**

Cause	Measure
Programming item display off	Set setup data *C60* to 0.

● **Segment insertion and deletion cannot be confirmed with FUNC and ENTER keys**

Cause	Measure
Set to memory protect.	Set variable parameter *PA02* to 0, 2 or 4.
Program being set is running (in RUN, HOLD, FAST, END, READY FAST).	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).
Not set to pattern item on programming map.	Move to the pattern item on the programming map.
This segment is not set on the programming map.	Move to a set segment or set the segment.

● **Program deletion cannot be confirmed with FUNC and ENTER keys during pattern item registration**

Cause	Measure
Program being set is running (in RUN, HOLD, FAST, END, READY FAST).	Set READY mode to execute RESET operation (**PROG + RUN/HOLD keys**).

10 - 3 When the BAT LED Flashes

Handling Precautions

Batteries that have been stored for long periods have been subj ect to self-discharge and have a short service life. If required, buy new batteries.

■ BAT LED flashes

The BAT LED starts flashing when low battery voltage is detected. The voltage level set in memory that trigger the LED is higher than minimum level required for storing data.
Thus data loss is thus not imminent when the LED starts flashing.
Note, however, that memory data corruption has probably occurred when the BAT LED starts flashing at power up after the **DCP552** has been stored for long periods disconnected from the power line.

■ Replacing the battery

Parameter settings and program settings are stored in RAM memory. The RAM is backed up by a battery and data persist through a power down. When the battery is depleted, turning off the **DCP552** causes the data stored in RAM to be lost.

⚠CAUTION

Be sure to turn off the power supply when you are replacing the batteries. Failure to heed this warning may lead to electric shock.

Be sure not to touch internal components during battery replacement or j ust after the power has been turned. This may result in burn inj uries.

- Make sure that the batteries are inserted with the plus (+) and minus (–) poles correctly oriented.
- Do not use damaged batteries or batteries that leak.
- Do not throw batteries into a fire, recharge, disassemble or expose them to heat.
- Store batteries in a cool, dry place.

Failure to heed these cautions may result in burns or battery leakage.

Batteries should be kept out of reach of children, since they may swallow them. Should a child swallow a battery, contact a doctor immediately.

Do not throw used batteries into a fire or discard them as general garbage, but return them to Honeywell sales/service office or the dealer from whom you purchased the equipment.

Before you touch internal components, be sure to discharge any static electricity on your body by touching a metal ground connector. Failure to heed this caution may lead to equipment damage.

- **Items to be provided by the user**

  - Phillips screwdriver
  - New lithium battery: model number 81446140-001

● **Battery replacement procedures**

Handling Precautions

- Replace the old battery with a lithium battery (model No.:81446140-001). Batteries can be ordered from Honeywell sales or service office.
- Do not use metal tools to remove or attach battery connectors as this could short-circuit electric circuits inside.
- A capacitor backs up the memory during battery replacement. To charge this capacitor, supply power to the **DCP552** for about 10 minutes. Replace the battery less than 24 hours after the power supply has been turned off.

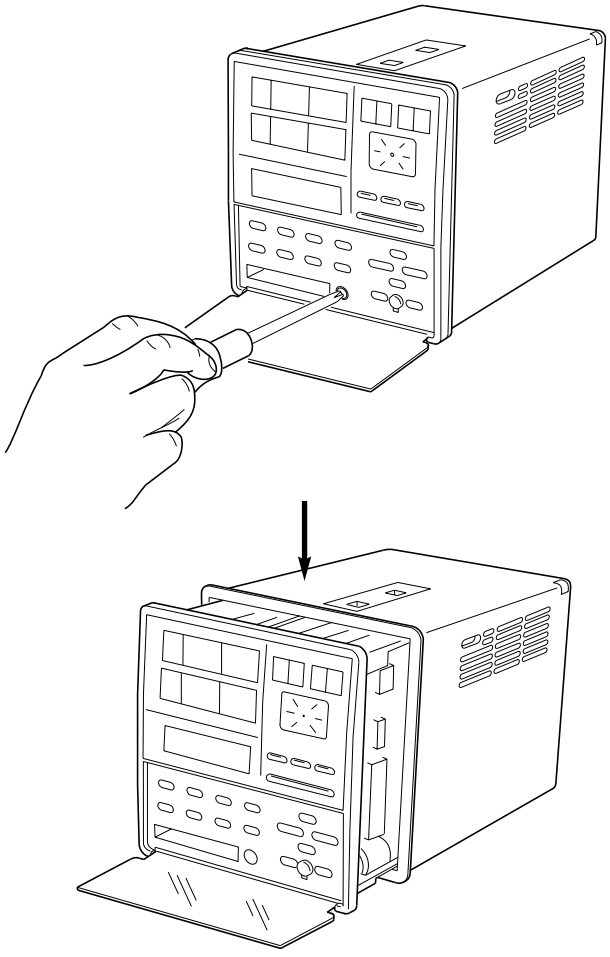
When the BAT LED starts flashing, replace the battery according to the following instructions.

(1) Leave the power on for 10 minutes.

(2) Turn off the power.

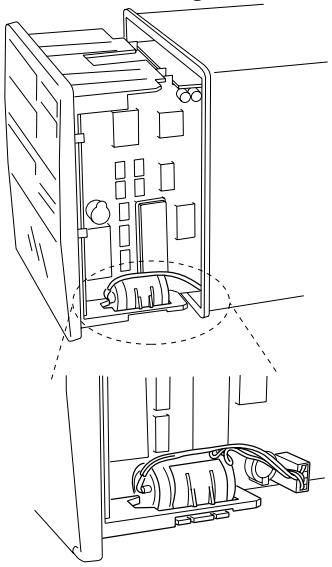
(3) Open the console key cover and remove the lock screw under the **ENTER key** using a Phillips screwdriver.

>>Slide the controller out of the case.



(4) To prevent static discharges, remove all static electricity from your body.

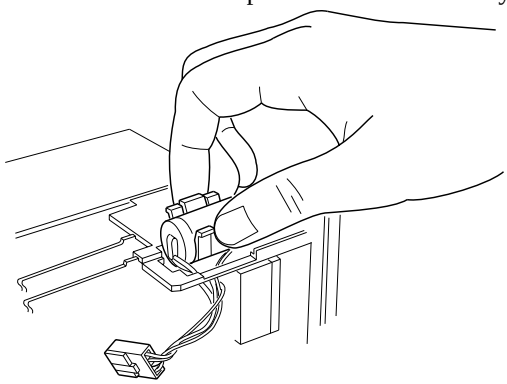
(5) Slide the controller completely out of the case.
>>The battery is located on the right side as seen from the front of the controller.



(6) Place the controller on a desk upside-down so that the battery is easily accessible.

(7) Disconnect the connectors.

(8) Open the tab on the black clip that secures the battery and lift out the battery.



(9) Remove the old battery from the clip.

(10) Insert the new battery in the clip.

(11) Orient the positive pole of the battery forwards and press the clip with the battery into the square opening.

(12) Insert the connectors in the printed circuit board.

(13) Slide the controller back into the case.

(14) Open the key cover and firmly tighten the lock screw under the **ENTER key** using a Phillips screwdriver.

(15) When all procedures have been completed, affix a label giving the date when the battery should be replaced next time in an easy to see location on the controller.

(16) Turn on the power to make sure that the BAT LED does not go on.

🕮 NOTE

- Guidelines for battery service life are given below.
  When the **DCP552** is stored with the power off under standard conditions (ambient temperature 23±2°C): 5 years
  When the **DCP552** is stored with the power on under standard conditions (ambient temperature 23±2°C): 10 years
  Battery life is reduced when stored at higher temperatures.
- When the BAT LED is flashing, memory data is protected if the power is on.
- When the data in memory is corrupted, one of the following two conditions will occur.
  (1) *"g.rESt "* is displayed at power up and normal operation cannot be performed.
  (Press the **ENTER key** to perform a general reset and reset parameters to their factory default values and delete all program settings.)
  (2) Normal operation can be started at power up but one of the alarm codes *AL93* to *AL97* are displayed.

Chapter 11. SPECIFICATIONS

11 - 1 Specifications

Item		Specifications
Program section	No. of programs	49 programs x 2 channels
	No. of segments	99 segments/1 program, or total of 2000 segments
	Segment setting system	RAMP-X: Setting by set points (SP) and time. RAMP-T: Setting by set points (SP) and slope (θ). RAMP-E: Setting by set points (SP) or ΔSP per pulse of external switch input.
	Segment time	0 to 500 hours 00 min, 0 to 500 min 00sec, or 0.0 to 3000.0sec (Time unit is switchable.)
	Segment slope	1 to 10000U/hours, 1 to 10000U/min, or 1 to 10000U/sec (Time unit is switchable.)
	Segment ΔSP	1 to 10000U/1 pulse
	No. of sub-function	4000 settings
	Sub-function function	Event, PID group, output limiter group, G.SOAK, PV shift, repeat
	Event (16 point)	Operating point set as specified by event type.
	PID group setting	Group 0 (continuing from previous segment), groups 1 to 9, group A (automatic changeover) and ON-OFF control settable.
	Output limiter group	Group 0 (continuing from previous segment), groups 1 to 9 settable
	G.SOAK	Type (start point, end point, all) and G.SOAK width 0 to 1000U settable
	PV shift	–10000 to +10000U settable
	Repeat	Return segment number and repeat count settable.
	PV start	Type settable for each program (ascending, descending and bi-directional)
	Cycle	Cycle count number settable for each program
	Pattern link	Program numbers 0 to 49 (program 0 without link) settable for each program
	Tag	8 characters consisting of alphanumerics, and symbols settable for each program
	Basic time accuracy	±0.01% (segment time setting = 0, repeat; each cycle and repeat slows the process by 0.1sec)
Input section	Input type	Multi-range of thermocouple, resistance temperature detector, DC voltage, and DC current (see page 2-8.)
	Input sampling cycle	0.1s
	Input bias current	Thermocouple, DC voltage input: Max. ± 1.3μA (peak value, under standard conditions). The range higher than 1V is Max. –3μA.
	Input impedance	Dc current input: about 50Ω (under the action conditions)
	Measurement current	RTD input: approx. 1mA, Current input on terminal A. (under operating conditions)
	Influence of wiring resistance	Thermocouple, DC voltage input: Thermocouple : 0.5μV/Ω DC voltage (lower than 1V range) : 0.5μV/Ω DC voltage (5V range) : 3μV/Ω DC voltage (10V range) : 6μV/Ω Resistance temperature detector input: Max. ± 0.01% FS/Ω within wire resistor 0 to 10Ω The ranges of F01, F33, P01, and P33 are Max. ± 0.02% FS/Ω.
	Resistance temperature detector input Allowable wiring resistance	• The ranges except F01, F33, P01, and P33 are lower than 85Ω. (Includes the zener barrier resistor value. However, spot adjustment is needed.) • The ranges of F01, F33, P01, and P33 are lower than 10Ω.
	Allowable parallel resistance	Thermocouple disconnection detection allowable parallel resistance : Higher than 1M
	Max. allowable input	Thermocouple, DC voltage input:–5 to +15V DC DC current input : 50mA DC, 2.5V DC
	Burn out	Burnout on/off selectable
	Range over assessment	100% FS or more: upscaled –10% FS or less : downscaled (However, inputs in the F50 range are not downscaled.)
	Cold junction compensation accuracy	± 0.5°C (under standard conditions)

Item		Specifications
Input section	Cold junction compensation system	Internal or external compensation (at 0°C) selectable
	Scaling	–19999 to +20000U (Only linear input settable. Reverse scaling and optional decimal point position settable.)
	Root extraction	Drop out 0.2 to 10.0%. DC current and DC voltage range settable.
	PV equalizer (linearization)	PV1: 9 brend lines (10 settings) PV2: 9 brend lines (10 settings) CP : 9 brend lines (10 settings)
	Input bias	–1000 to +1000U variable
	Digital filter	0.0 to 120.0s variable (0.0: Filter off)
External switch input section	Input count	16 point
	Connectable output type	No-voltage contact (relay contact), and open collector (sink current toward 0V)
	Open terminal voltage	8.5V ± 0.5V during common terminal ((12) and (40) terminals) and every input terminal (under operating conditions)
	Terminal current in case of short circuit	Current to run every terminal is about 6mA (under operating conditions)
	Allowable contact resistance (no-voltage contact)	On decision: Lower than 250Ω (under operating conditions) Off decision: Higher than 100 kΩ (under operating conditions)
	Allowable residual current (open collector ON)	Lower than 2V (under operating conditions)
	Leakage current (open collector OFF)	Lower than 0.1mA (under operating conditions)
	Allocation (fixed)	RUN, HOLD, RESET, ADV, program number, CH1 and CH2 operation canceled
	Allocation (variable)	RAMP-E, FAST, AT, AUTO/MANUAL, G.SOAK reset, auto load, O_2 sensor check
	Input sampling cycle	0.1s
	On detection Min. hold time	0.2s (program number is 0.4s)
Display and setting section	Display panel 1	Digital 5 places, 7 segments, green Indicates PV and other data in basic display status, indicates an item code in parameter setting status.
	Display panel 2	Digital 5 places, 7 segments, orange Indicates SP, output %, and other data in basic display status, indicates a set point of item in parameter setting status.
	Program number display	Digital 2 places, 7 segments, green Indicates a program number in basic display status.
	Segment number display	Digital 2 places, 7 segments, green Indicates a segment number in basic display status, indicates a item number in parameter setting status. Indicates an alarm code number when an alarm occurs.
	Message display panel	Indicates output graph, deviation graph, event status, program tag, and other data in basic display status, Displays reference messages during parameter and program settings. Indicates operations and operation results during memory card operation.
	Profile display	7 plane light-emitting LED, orange Indicates the rising, soaking, and falling tendencies of program pattern.
	Each status display	22 plane light-emitting LED Mode : RUN, HLD, MAN, PRG (green) Display contents: PV, SP, OUT, TM, CYC, SYN, DEV (green), EG1, EG2 (red) Battery voltage : BAT (red) (flickers when the battery voltage has dropped.) Status : AT (green)
	Status displays	18 rubber keys
	Loader connection port	1 (Using exclusive connection cable, stereo pin jack)

Item		Specifications	
Mode	Program run mode	READY : Preparation state (control stop, select of program number is possible.) RUN : Advancing run state HOLD : Hold run state FAST : Fast feed run state END : End point run state READY FAST : Preparation and the fast feed state	
		AUTO : Automatic run state MANUAL : Manual run state (output is operatable to console)	
	Fixed command control mode	READY : Preparation state (control stop) RUN : Run state	
		AUTO : Automatic run state MANUAL : Manual run state (Enables manual output from system console.)	
Control section	PID control	Proportional band (P)	0.0 to 1000.0% (0.0: On-off control)
		Integral time (I)	0 to 3600s (0: PD control)
		Derivative time (D)	0 to 1200s (0: PI control)
		Manipulated variable limit	Low-limit : –5.0 to high-limit% High-limit : Low-limit to +105.0%
		Manual reset	0.0 to 100.0%
		No. of PID groups	16 groups for program operation (9 segment specific and 7 automatic zone selecting)
		PID groups selection	Segment specified, automatic zone selectable during program run
		Manipulated variable change	0.1 to 110.0%/0.1s
		Auto tuning	Automatic setting of PID value by limit cycle method
		On-off control differential	0 to 1000U
	Normal reverse operation selection	Selection is settable	
Output section	Auxiliary output	Type	SP1, PV1, deviation 1, MV1, SP2, PV2, deviation 2, O_2 sensor mV value
		Scaling	Possible
	Current output (5G) CH1,CH2 Auxiliary output CH1, CH2	Output current : 4 to 20mA DC Allowable load resistor : Lower than 600Ω (under operating conditions) Output accuracy : Lower than ± 0.1% FS (under standard conditions) Output resolution : 1/10000 Max. output current : 21.6mA DC Min. output current : 2.4mA DC Output update cycle : 0.1s Open time terminal voltage : Lower than 25V	
	Voltage output (6D) CH1,CH2	Allowable load resistor : Lower than 600Ω (under the action conditions) Load current adjustment : 2 to 22mA variable Open time terminal voltage : Lower than 25V Off time leakage current : Lower than 100∞A Output response time : Lower than 0.5ms on on-off 600Ω load Lower than 0.5ms off-on 600Ω load Output resolution : 1/1000 Time proportional cycle : 1 to 240s variable	

Item		Specifications	
Output section	Open collector output (8D) CH1,CH2	External supply voltage Max. load current Off time leakage current On time residual voltage Output resolution Time proportional cycle	: 12 to 24V DC : 100mA/point : Lower than 0.1mA : Lower than 2V : 1/1000 : 1 to 240s variable
Event output section	Open collector output	External supply voltage Max. load current Max. common current Off time leakage current On time residual voltage	: 12 to 24V DC : 70mA/point : 500mA : Lower than 0.1mA : Lower than 2V
	Event type	PV-based	PV, deviation, deviation with standby, absolute value deviation, absolute value deviation with standby, PV deviation rate, SP, MV, G.SOAK absolute value deviation, G.SOAK absolute value deviation with standby, normal PV1 operation, normal PV2 operation
		Time-based	Time event, RAMP-E time monitoring, segment time, program time
		Code-based	Code event, timer-bearing code event, program number binary code, segment number binary code, program number BCD code, segment number BCD code
		Mode-based	Specified segment, RUN + HOLD + END + FAST, HOLD, READY + READY FAST, END, G.SOAK wait, MANUAL, AT execution, FAST + READY + FAST, console operation, RUN, advance, all alarm, PV range alarm, O_2 sensor error, voltage drop
	Event hysteresis	Set 0 to 1000U with PV-based	
	Event on delay	0.0 to 3000.0 are settable for 4 point event	
Communi-cation	RS-485	Network	Multidrop (**DCP552** provided with only slave node functionality.) 1 to 31 units max.
		Data flow	Half-duplex
		Sync. system	Start-stop sync.
		Transmission system	Balanced type (differential)
		Data line	Bit serial
		Signal line	Transmit and receive 5 lines (3 wires are connectable)
		Communication speed	1200, 2400, 4800, 9600 bps selectable
		Communication distance	Max. 500m (total sum) 300m in case of MA500 DIM connection
		Others	Conforms to RS-485 standard
		Character composition	11 bits/character
		Format	1 start bit, even parity, 1 stop bit or 1 start bit, no parity, 2 stop bit
		Data length	8 bits
		Isolation	All inputs and outputs except external switch inputs are completely isolated.
	RS-485 communications can be performed by connecting to a computer equipped with an RS-485 interface.		

<table>
<tr><th colspan="2">Item</th><th colspan="6">Specifications</th></tr>
<tr><td rowspan="11">Communi-cation</td><td rowspan="11">RS-232C</td><td colspan="2">Network</td><td colspan="3">Point to point; (DCP552 provided with only slave node functionality.)</td></tr>
<tr><td colspan="2">Information direction</td><td colspan="3">Half-duplex</td></tr>
<tr><td colspan="2">Sync. system</td><td colspan="3">Start-stop sync.</td></tr>
<tr><td colspan="2">Transmission system</td><td colspan="3">Not-balanced type</td></tr>
<tr><td colspan="2">Data line</td><td colspan="3">Bit serial</td></tr>
<tr><td colspan="2">Signal line</td><td colspan="3">Transmit and receive 3 lines</td></tr>
<tr><td colspan="2">Communication speed</td><td colspan="3">1200, 2400, 4800, 9600 bps selectable</td></tr>
<tr><td colspan="2">Communication distance</td><td colspan="3">Max. 15 m</td></tr>
<tr><td colspan="2">Others</td><td colspan="3">Conforms to RS-232C standard</td></tr>
<tr><td colspan="2">Character composition</td><td colspan="3">11 bits/character</td></tr>
<tr><td colspan="2">Format</td><td colspan="3">1 start bit, even parity, 1 stop bit or
1 start bit, no parity, 2 stop bit</td></tr>
<tr><td colspan="2">Data length</td><td colspan="3">8 bits</td></tr>
<tr><td rowspan="2">Memory card</td><td colspan="7">Programs, PID, various parameters (SET UP, PARA, events) and other data can be saved or loaded using memory card (optional).</td></tr>
<tr><td colspan="2">Save (SAVE)</td><td colspan="5">Copies DCP552 data into a card</td></tr>
<tr><td colspan="2">Load (LOAD)</td><td colspan="5">Loads data from a card into the DCP552</td></tr>
<tr><td colspan="7">Memory card (optional)</td></tr>
<tr><td colspan="7"><table>
<tr><th>Model No.</th><th>Memory capacity</th><th>Capacity bytes</th><th>No. of programs</th><th>Battery exchange</th><th>Parameters</th></tr>
<tr><td>SKM008A</td><td>RAM</td><td>7.00K</td><td>Max. 10</td><td>Not provided</td><td rowspan="6">Setup data
Variable parameter
PID parameter
Event configuration data
Constant value control data</td></tr>
<tr><td>SKM016A</td><td>RAM</td><td>14.50K</td><td>Max. 26</td><td>Not provided</td></tr>
<tr><td>SKM064A</td><td>RAM</td><td>61.75K</td><td>Max. 49</td><td>Not provided</td></tr>
<tr><td>SKM256C</td><td>RAM</td><td>251K</td><td>Max. 49</td><td>Provided</td></tr>
<tr><td>SKM008E</td><td>E2PROM</td><td>7.00K</td><td>Max. 10</td><td>Not necessity</td></tr>
<tr><td>SKM032E</td><td>E2PROM</td><td>29.75K</td><td>Max. 49</td><td>Not necessity</td></tr>
</table></td></tr>
<tr><td colspan="7">• No. of bytes per program is 26 + (5 × No. of segments) + (5 × No. of sub-functions)
• No. of bytes per parameters is as specified below.
Setup data : 217 bytes (17 + 2 x 100)
Variable parameters : 257 bytes (17 + 2 x 120)
PID parameters + fixed command control data : 565 bytes (17 + 2 x 2 x 8 x 16 + 2 x 2 x 9)
Event configuration data : 209 bytes (17 + 2 x 3 x 32)</td></tr>
<tr><td rowspan="5">General specifications</td><td colspan="2">Memory backup</td><td colspan="5">Memory battery service life
Battery backed up RAM
DCP552 power off: approx. 5 years under standard conditions
DCP552 power on: approx. 10 years under standard conditions</td></tr>
<tr><td colspan="2">Rated power supply voltage</td><td colspan="5">100 to 240V AC 50/60Hz</td></tr>
<tr><td colspan="2">Power consumption</td><td colspan="5">Lower than 25VA</td></tr>
<tr><td colspan="2">Rush current when power supply turns on</td><td colspan="5">Lower than 50A</td></tr>
<tr><td colspan="2">Action when power supply turns on</td><td colspan="5">Reset time: 10s max. (time until normal operation possible under normal operating conditions)</td></tr>
<tr><td colspan="2">Service interruption dead time</td><td colspan="5">Lower than 20ms (under the action conditions)</td></tr>
</table>

Item		Specifications	
General specifications	Insulated resistor	Higher than 50MΩ under DC 500V megger during power supply terminal (39) or (40) and FG terminal ((52) or (53))	
	Withstand voltage	1500V AC 50/60Hz for 1 min across power terminal and frame ground terminal Note: Primary and secondary sides are capacitive coupled inside the **DCP552**. Thus disconnect the ground wire from the secondary side terminal (for example, when using a grounded thermocouple) before performing a withstand voltage test. Failure to do so may result in equipment damage.	
	Standard conditions	Ambient temperature	23 ± 2°C
		Ambient humidity	60 ± 5% RH
		Rated power supply voltage	105V AC ±1%
		Power supply frequency	50 ± 1Hz or 60 ± 1Hz
		Vibration resistance	0m/s^2
		Shock resistance	0m/s^2
		Mounting angle	Reference plane (vertical) ±3°
	Operating conditions	Ambient temperature range	0 to 50°C (the ambient temperature at the bottom of the case when hermetically sealed inside case)
		Ambient humidity range	10 to 90% RH (non-condensing)
		Rated power supply voltage	100 to 240V AC
		Allowable power supply voltage	90 to 264V AC
		Power supply frequency	50 ± 2Hz or 60 ± 2Hz
		Vibration resistance	0 to 1.96m/s^2(10 to 60Hz in X,Y,Z directions for 2 hours each)
		Shock resistance	0 to 9.80m/s^2
		Mounting angle	Reference plane (vertical) ±10°
	Transportation and storage conditions	Ambient temperature range	–20 to 70°C
		Ambient humidity range	10 to +95% RH (non-condensing)
		Vibration resistance	0 to 4.90m/s^2 (10 to 60Hz in x, Y and Z directions, 2hours each)
		Shock resistance	0 to 490m/s^2 (in vertical direction, 3 times)
		Package drop test	Drop height 60cm (Free drop at 1 corner, 3 edges, 6 faces)
	Terminal screw	M3.5 self-up screw	
	Terminal screw tighten torque	0.78 to 0.98N·m	
	Mask and case material	Mask : Multiron Case : Multiron	
	Mask and case color	Musk : Dark gray (Munsell sign 5Y3.5/1) Case : Light gray (Munsell sign 2.5Y7.5/1)	
	Mounting	Panel flush-mount	
	Weight	Approx 1.5kg	

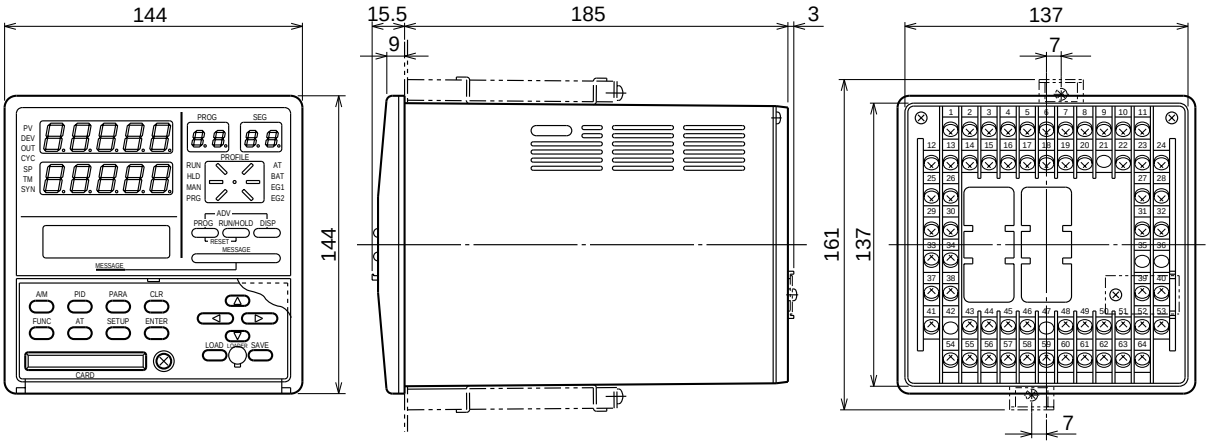
■ Attachment/auxiliary devices list

	Article name	Model No.	Quantity
Standard attachment	Engineering unit indicator label		1
	Mounting bracket	81446044-001	1 group (2 pcs.)
	User's manual	EN1I-6187	1
	Terminal cover	81446176-001	1
Auxiliary devices and others (Optional)	Soft dust-proof cover set	81446141-001	
	Lithium battery set	81446140-001	
	Memory card (RAM, battery not replaceable)	SKM008A SKM016A SKM064A	
	Memory card (RAM, battery replaceable)	SKM256C	
	Memory card (E^2PROM, no battery required)	SKM008E SKM032E	

11 - 2 External Dimensions

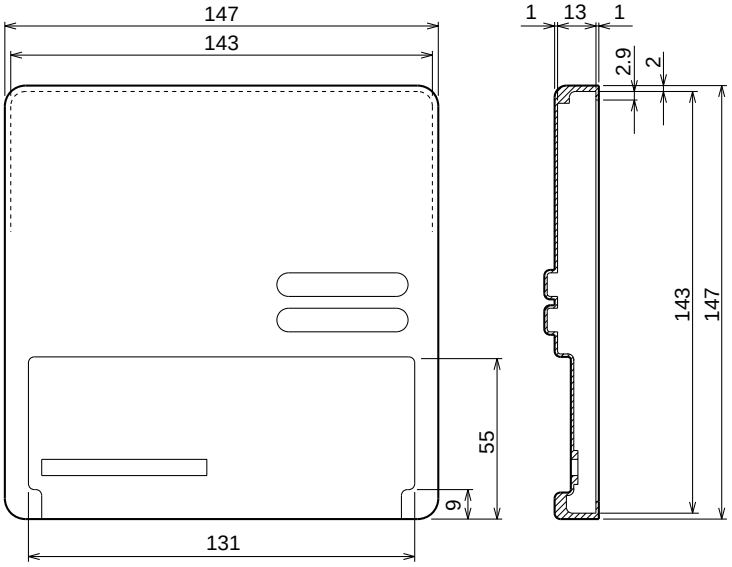
■ DCP552

Unit : mm



■ Soft dust-proof cover set (optional) Model No. : 81446141-001 (silicon rubber, transparent)

Unit : mm



Chapter 12. CALIBRATION

This chapter covers the field calibrations procedures for the inputs, outputs and various functions of the **DCP550** mark II controller after shipment from the factory. When calibration is made in the field, the original factory data is erased, and so the specified input/output accuracies of the controller cannot be assured. This manual is for users who are conversant with **DCP550** mark II use and operation.

■ Precautions before calibration

Apply power and allow the controller to warm up for 2 hours before you calibrate the **DCP550** mark II. Confirm that the test equipment needed for calibration has stabilized.

Factory calibration has been made at a stable temperature of 23.0°C (±2°C). Calibrate the **DCP550** mark II in this range, and where there are no significant fluctuations in air temperature.

You must write newly calibrated data to EEPROM before exiting from calibration mode, otherwise all new data will be lost.

If calibration equipment of a lower grade than specified below is used, calibration results may be unsatisfactory.

■ Equipment needed

(1) Standard input source with ±0.02% accuracy (having more than 5 effective digits and capable of generating both voltage and current outputs)
(2) Decade resistance box with ±0.02% accuracy (having a range of 10 to 300W with a resolution of more than 0.01W)
(3) Digital ammeter with ±0.02% accuracy (measurable in the range of 4 to 20mA with assured resolution of more than 0.01mA)
(4) Thermometer with ±0.1°C accuracy (resolution of more than 0.1°C)

12 - 1 Quick Reference Table for Calibration Items

DCP550 mark Ⅱ controllers are numbered using the following format. Format items may require different calibration procedures, as shown in Table 12-1.

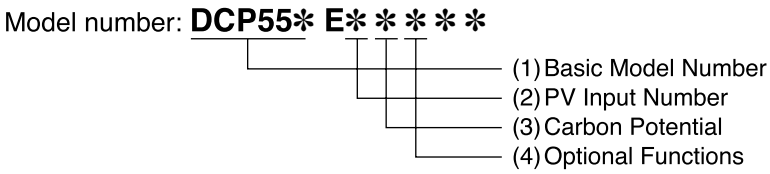


Table 12-1. Calibration Items for Each Model

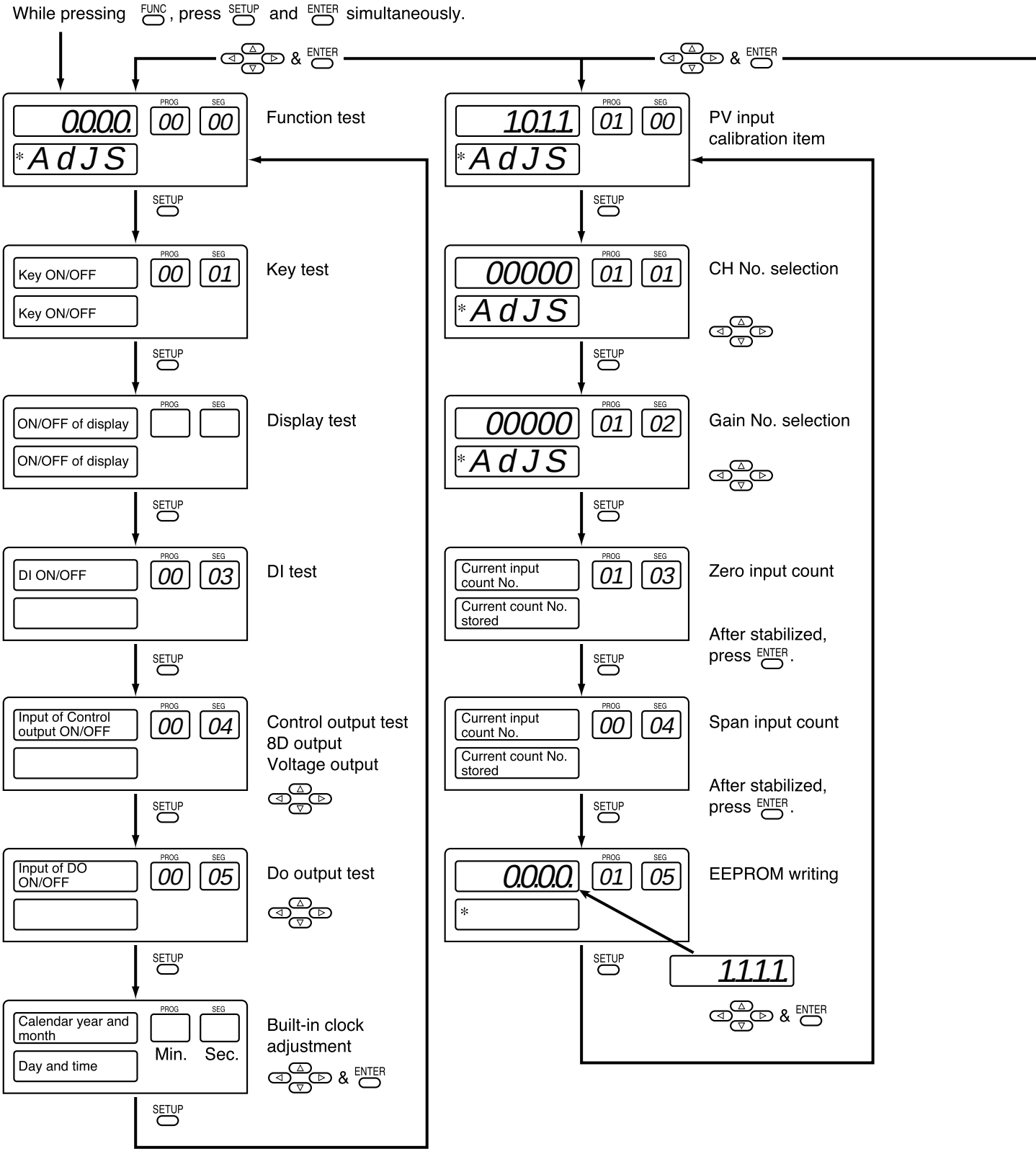
Calibration & Test Item / Model			(1) Basic Model		(2) PV Input Number		(3) Carbon Potential		(4) Optional Functions		
			DCP551	**DCP552**	1	2	0	1	0	1	2
0	Function Test	Key Test	○	○							
		Indicator Test	○	○							
		DI Test	○	○							
		Control Output Test	○	○							
		DO Test	○	○							
		Clock Adjustment	○	○							
1	PV Input Calibration	Ch1			○	○					
		Ch2				○					
2	CJ Sensor Calibration	Ch1			○	○					
		Ch2				○*					
6	Current Output Calibration	Out Ch1	○	○							
		Out Ch2		○							
		AUX Ch1								○	○
		AUX Ch2									○
7	Carbon Potential Model ID							○			

Note: *; If this is Carbon Potential model (Carbon Potential Code = “1”), it isn’t necessary to calibrate these items.

Table 12-2. Item and Sub Item Table for Calibration

Item	Sub Item	Description	Upper Display Shows	Lower Display Shows
0	0	Item change code	*0000*, etc.	*AdJS*
	1	Key test		
	2	Display test		
	3	Digital input test		
	4	Output test (control)		
	5	Output test (digital output)		
	6	Clock adjustment		
1	0	Item change code	*1011*	
	1	Channel No.		
	2	Gain No.		
	3	PV input 0%		
	4	PV input 100%		
	5	Write to EEPROM	*1111*	
2	0	Item change code	*2022*	*AdJS*
	1	CJ ch1 input 0%		Previous adjustment value
	2	CJ ch1 input 100%		
	3	CJ ch1 count		
	4	CJ ch1 temperature		
	5	CJ ch2 input 0%		
	6	CJ ch2 input 100%		
	7	CJ ch2 count		
	8	CJ ch2 temperature		
	9	Write to EEPROM	*1111*	
6	0	Item change code	*6066*	*AdJS*
	1	OUT ch1 4mA output		Previous adjustment value
	2	OUT ch1 20mA output		
	3	OUT ch2 4mA output		
	4	OUT ch2 20mA output		
	5	AUX ch1 4mA output		
	6	AUX ch1 20mA output		
	7	AUX ch2 4mA output		
	8	AUX ch2 20mA output		
	9	Write to EEPROM	*1111*	
7	0	Item change code	*7077*	*AdJS*
	1	Carbon Potential Code		Previous adjustment value
	2	Write to EEPROM	*1111*	—

Notes: 1. Items No. is shown on the PROG display.
2. Sub item No. is shown on the SEG display.
3. Item 0: Function check item except sub item No. 6
4. Items 1, 2, 6 and clock adjustment of item No. 0. : Calibration items



Notes: *; 1. This display shows the digits shown in the previous indication.
2. If wrong key operation is made when moving from one to another item, the display is returned to the initial status of calibration mode. But, the mode is still in the calibration mode.

Figure 12-1. Calibration Flowchart (1/3)

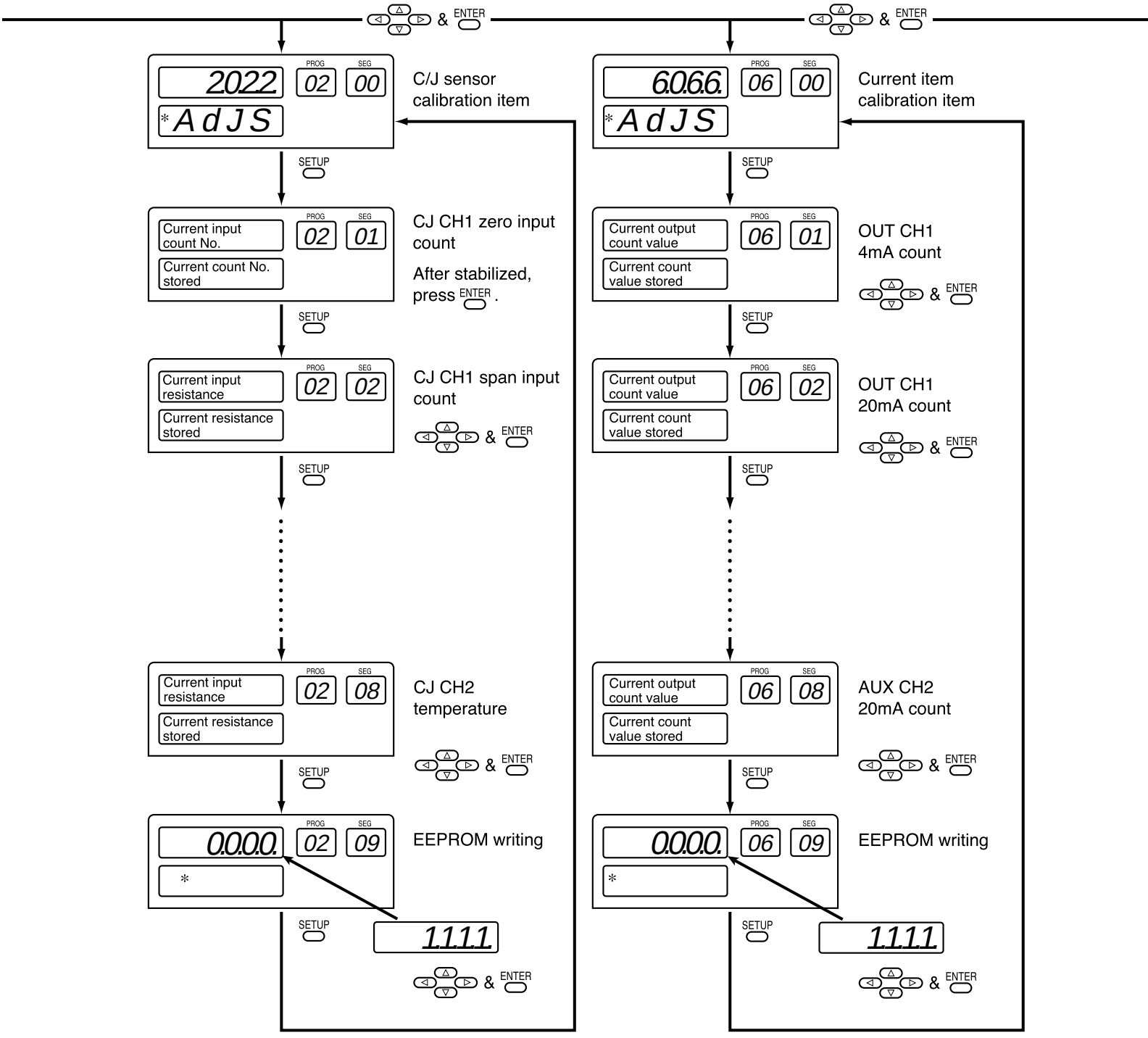


Figure 12-1. Calibration Flowchart (2/3)

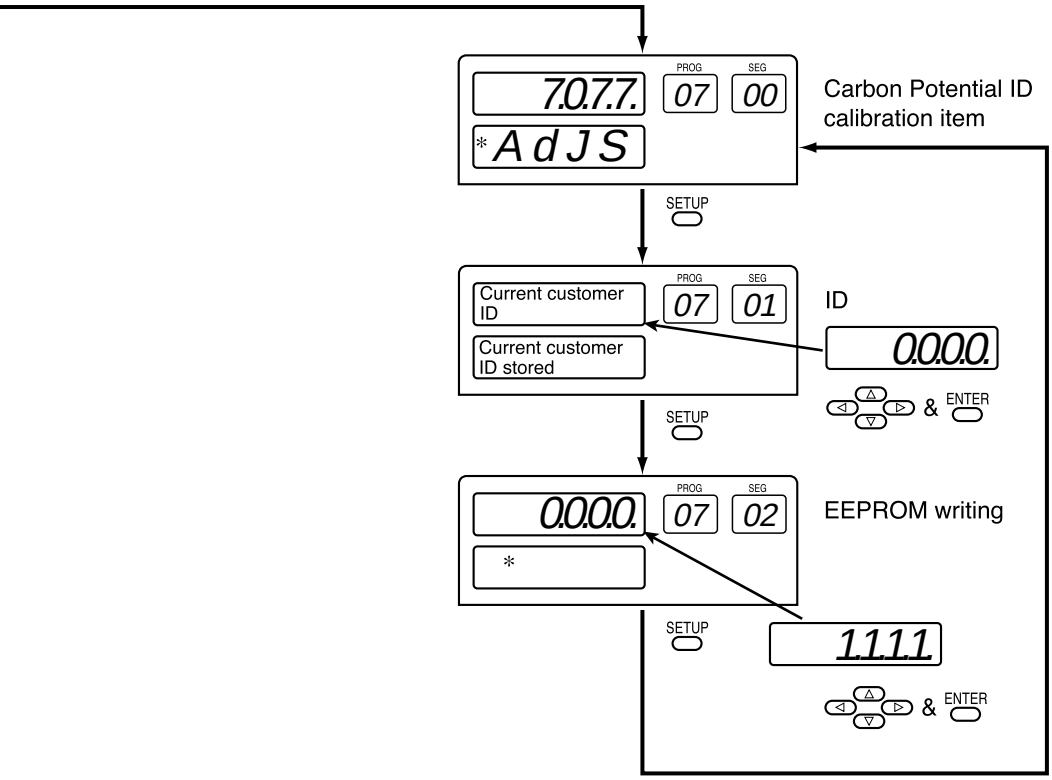


Figure 12-1. Calibration Flowchart (3/3)

12 - 2 Calibration Procedures

■ Enter calibration mode

(1) Release keylock. (*PARA PA01=0*)

(2) Press **DISP key** to permit ordinary indication condition.
Change to READY (**RUN** and **HLD** are off) and AUTO (**MAN** off) modes.
The following LEDs will illuminate after the above operations.
RUN LED is OFF
HLD LED is OFF
MAN LED is OFF

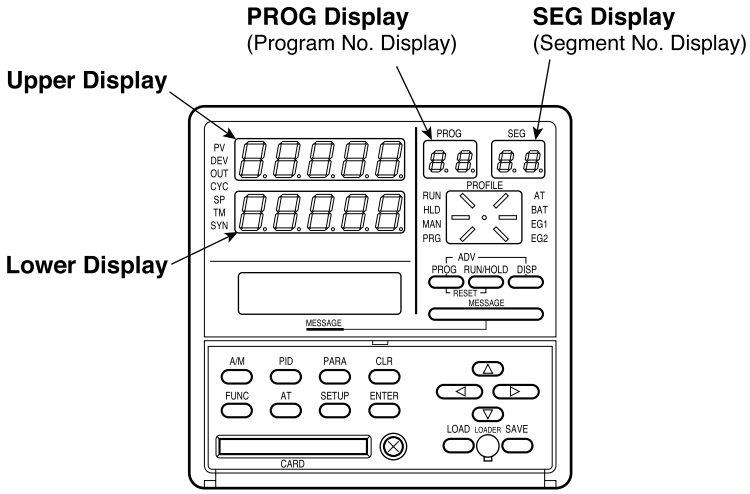


Figure 12-2.

(3) To enter calibration mode, hold down the **FUNC key**, and press **SETUP key** and **ENTER key** simultaneously.
The display will show the symbols described in Figure 12-3. If the indication is different, repeat the above procedure after pushing **DISP key** to refresh the display.

(4) To select individual calibration items, press ↑, ↓, ←, →, **keys** to select the item by scrolling, then **SETUP key**, and **ENTER key**.
The order of calibration items is described in Table 12-2.

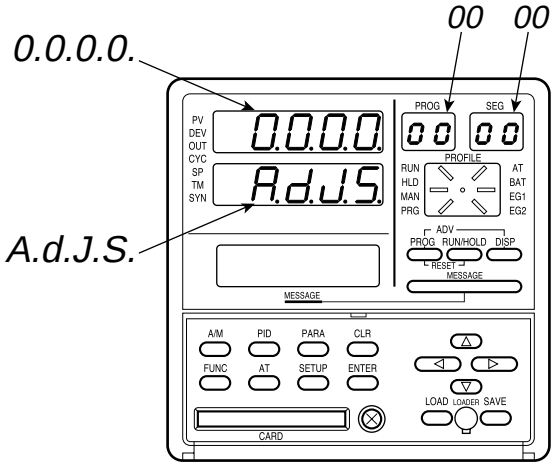


Figure 12-3.

■ Function test

Press ↑, ↓, ←, →, **keys** to show (*0.0.0.0*) on upper display, then press **ENTER key**.

● **Key test** (*00-01*)

Press **SETUP key** until the PROG/SEG display shows (*00-01*).
When you press each key, the data appears in the upper display (shown in Table 12-3) and in the lower display (shown in Table 12-4).

Table 12-3. Upper Display

Key	Data	Key	Data
ENTER	*2.0.0.0*	PID	*1.0.0.0.*
AT	*0.2.0.0.*	A/M	*0.8.0.0.*
FUNC	*0.4.0.0.*	PROG	*0.0.1.0.*
CLR	*0.0.4.0.*	RUN/HOLD	*0.0.0.8.*
PARA	*0.0.2.0*	MESSAGE	*0.0.0.2.*

Table 12-4. Lower Display

Key	Data	Key	Data
◁	*2.0.0.0.*	△	*4.0.0.0.*
▽	*1.0.0.0.*	▷	*0.8.0.0.*
LOAD	*0.4.0.0.*	SAVE	*0.2.0.0.*

! Handling Precautions

1. When you press **DISP key**, calibration mode will be exited.
2. When you press **SETUP key**, the next calibration menu will be entered (Display test).

● **Display test (*00-02*)**

Press **SETUP key** until the PROG/SEG display shows (*00-02*).
Then, each 7-segment LED, LED indicators and LCD illuminates at every 1 sec.
This is to check if each LED/LCD illuminates.

● **Digital input test (*00-03*)**

Press **SETUP key** until the PROG/SEG display shows (*00-03*).
When you turn on or off each remote switch, the upper display will show the data described in Table 12-5.

Table 12-5. DI

DI Terminal Number / Upper Display	(1) ↕ (12)	(2) ↕ (12)	(3) ↕ (12)	(4) ↕ (12)	(13) ↕ (12)	(14) ↕ (12)	(15) ↕ (12)	(16) ↕ (12)	(25) ↕ (41)	(26) ↕ (41)	(29) ↕ (41)	(30) ↕ (41)	(33) ↕ (41)	(34) ↕ (41)	(37) ↕ (41)	(38) ↕ (41)
0.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.1.	ON	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.2.	—	ON	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.4.	—	—	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.8.	—	—	—	ON	—	—	—	—	—	—	—	—	—	—	—	—
0.0.1.0.	—	—	—	—	ON	—	—	—	—	—	—	—	—	—	—	—
0.0.2.0.	—	—	—	—	—	ON	—	—	—	—	—	—	—	—	—	—
0.0.4.0.	—	—	—	—	—	—	ON	—	—	—	—	—	—	—	—	—
0.0.8.0.	—	—	—	—	—	—	—	ON	—	—	—	—	—	—	—	—
0.1.0.0.	—	—	—	—	—	—	—	—	ON	—	—	—	—	—	—	—
0.2.0.0.	—	—	—	—	—	—	—	—	—	ON	—	—	—	—	—	—
0.4.0.0.	—	—	—	—	—	—	—	—	—	—	ON	—	—	—	—	—
0.8.0.0.	—	—	—	—	—	—	—	—	—	—	—	ON	—	—	—	—
1.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	ON	—	—	—
2.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	ON	—	—
4.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	ON	—
8.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	ON

Notes: 1. "ON" means to short the terminals by a jumper.
2. "—" means to open the terminals.

Example:

(1) ↕ (2)
ON

= Short (1) and (2) terminals.

● **Digital output test for control output (*00-04*)**

Press **SETUP key** until the PROG/SEG display shows (*00-04*).
When the digit of upper display is changed by ↑, ↓, ←, →, **keys**, the state of 6D or 8D control output is changed as shown in Table 12-6.
Since the 6D hardware is of current output (8D hardware is of open collector) specification, the ON/OFF check must be performed in meeting with the specification.

Table 12-6.

Upper Display	State	Upper Display	State
0.0.0.0.	All OFF	*0.0.0.4.*	8D output CH1 ON
0.0.0.1.	6D output CH1 ON	*0.0.0.8.*	8D output CH2 ON
0.0.0.2.	6D output CH2 ON	—	—

● **Digital output test for event (*00-05*)**

Press **SETUP key** until the PROG/SEG display shows (*00-05*).

Table 12-7. DO

Upper Display \ DO Terminal Number	(5) ↕ (9)	(6) ↕ (9)	(7) ↕ (9)	(8) ↕ (9)	(17) ↕ (9)	(18) ↕ (9)	(19) ↕ (9)	(20) ↕ (9)	(10) ↕ (24)	(11) ↕ (24)	(22) ↕ (24)	(23) ↕ (24)	(27) ↕ (24)	(28) ↕ (24)	(31) ↕ (24)	(32) ↕ (24)
0.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.1.	ON	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.2.	—	ON	—	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.4.	—	—	ON	—	—	—	—	—	—	—	—	—	—	—	—	—
0.0.0.8.	—	—	—	ON	—	—	—	—	—	—	—	—	—	—	—	—
0.0.1.0.	—	—	—	—	ON	—	—	—	—	—	—	—	—	—	—	—
0.0.2.0.	—	—	—	—	—	ON	—	—	—	—	—	—	—	—	—	—
0.0.4.0.	—	—	—	—	—	—	ON	—	—	—	—	—	—	—	—	—
0.0.8.0.	—	—	—	—	—	—	—	ON	—	—	—	—	—	—	—	—
0.1.0.0.	—	—	—	—	—	—	—	—	ON	—	—	—	—	—	—	—
0.2.0.0.	—	—	—	—	—	—	—	—	—	ON	—	—	—	—	—	—
0.4.0.0.	—	—	—	—	—	—	—	—	—	—	ON	—	—	—	—	—
0.8.0.0.	—	—	—	—	—	—	—	—	—	—	—	ON	—	—	—	—
1.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	ON	—	—	—
2.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	ON	—	—
4.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	ON	—
8.0.0.0.	—	—	—	—	—	—	—	—	—	—	—	—	—	—	—	ON

Notes: 1. "—" in the table means "OFF".
2. Since the DO hardware is of open collector specification, the ON/OFF check must be performed in meeting with the specification.

● **Built-in clock adjustment**

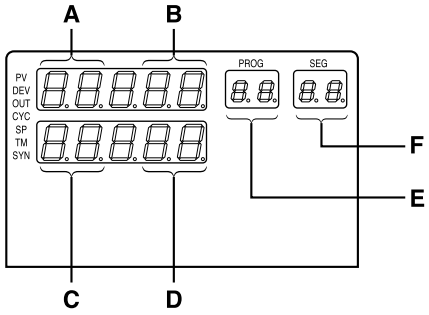


Figure 12-4.

	Example:
A: 2 digits of calendar year	1993 ……93
B: Month	April ……04
C: Day	5th day ……05
D: Hour (24 hour system)	3PM ……15
E: Minute	6 minutes ……06
F: Second	Not changeable

🕮 NOTE

1. ↑, ↓, ←, →, **keys** are used to change the values, and **ENTER key** is used to store the values.
2. Clock is still progressing the operation even after the calibration step is moved to this built-in clock adjustment item. After entering the changing mode by **ENTER key**, the clock stops.
3. After pressing **ENTER key**, the clock starts from 0 second.
4. Writing to EEPROM is not necessary.

■ PV calibration

Scroll ↑, ↓, ←, →, **keys** to show (*1011*) on upper display, then press **ENTER key**.

● **Input CH No. select**

Press **SETUP key** until the PROG/SEG display shows (*01-01*).
Input the channel No. by ↑, ↓, ←, →, **keys** (**ENTER key** not required).

Table 12-8.

CH No.	Upper Display
1	*0 0 0 0 0*
2	*0 0 0 0 1*

● **Gain No. select**

Press **SETUP key** until the PROG/SEG display shows (*01-02*). Connect calibration device (See Section "12-3 Set Up").
Input the gain number (See Table 12-9 and Table 12-10) by scrolling ↑, ↓, ←, →, **keys** the upper display (**ENTER key** not required).

● **PV z ero, span**

(1) PV zero adj ustment

(a) Press **SETUP key** until the PROG/SEG display shows (*01-03*).

(b) Adjust your calibration device to an output signal equal to the 0% range value (See Table 12-9), the signal need to be on the input for 10 to 15 seconds.

(c) Press **ENTER key** after display stabilizes.

(2) PV span adj ustment

(a) Press **SETUP key** until the PROG/SEG display shows (*01-04*).

(b) Adjust your calibration device to an output signal equal to the 100% range value (See Table 12-9).

(c) Press **ENTER key** after display stabilizes.

Table 12-9.

Gain No.	PV Input 0%	PV Input 100%	Connecting Position	Figure
0	–5.000mV	10.000mV	Between A(+) and B(–)	Fig.12-5
1	–10.000mV	18.000mV	Between A(+) and B(–)	
2	0.000mV	36.000mV	Between A(+) and B(–)	
3	0.000mV	52.000mV	Between A(+) and B(–)	
4	0.000mV	100.000mV	Between A(+) and B(–)	Fig.12-8
5	–1.000V	1.000V	Between A(+) and B(–)	
6	0.000V	5.000V	Between A(+) and B(–)	
7	0.000V	10.000V	Between A(+) and B(–)	
8	4.000mA	20.000mA	Between C(+) and B(–)	Fig.12-9
9	20Ω	140Ω	Between A(+) and B(–)	Fig.12-6
10	20Ω	480Ω	Between A(+) and B(–)	
11	1Ω	100Ω	Between C(+) and B(–)	Fig.12-7
12*	0.000V	1.250V	Between C(+) and B(–)	Fig.12-10

Note: *; If model isn't Carbon Potential, it isn't necessary to calibrate this item.

● **Writing into EEPROM**

Press **SETUP key** until the PROG/SEG display shows (*01-05*).
Scroll ↑, ↓, ←, →, **keys** to show (*1.1.1.1.*) on the upper display.
Press **ENTER key**.

Table 12-10.

Range Table of TC

Group	Type	Code	Gain No.
T/C	K (CA)	K09	3
	K (CA)	K08	2
	K (CA)	K04	1
	E (CRC)	E08	4
	J (IC)	J08	3
	T (CC)	T44	1
	B (PR30-6)	B18	1
	R (PR13)	R16	1
	S (PR10)	S16	1
	W (WRe5-26)	W23	2
	W (WRe5-26)	W14	2
	PR40-20	D19	0
	N	U13	3
	PL Ⅱ	Y13	3
	Ni-Ni·Mo	Z13	4
	Gold+0.07% Iron-chromel	Z06	0
	K (CA)	K46	0

Range Table of RTD

Group	Type	Code	Gain No.
RTD	JIS '89 Pt100 (IEC Pt100Ω)	F50	10
		F46	10
		F32	10
		F36	10
		F33	9
		F01	9
		F03	10
		F05	10
	JIS '89 JPt100	P50	10
		P46	10
		P32	10
		P36	10
		P33	9
		P01	9
		P03	10
		P05	10

Range Table of Linear

Group	Type	Code	Gain No.
Linear mA	4 to 20mA	C01	8
Linear V	0 to 1V	L04	5
	–1 to +1V	L08	5
	1 to 5V	V01	6
	0 to 5V	L05	6
	0 to 10V	L07	7
Linear mA	2.4 to 20mV	Z52	8
Linear mV	0 to 10mV	M01	0
	–10 to +10mV	L02	1
	0 to 100mV	L01	4
O_2 Sensor	0 to 1.25V		12

■ Cold junction sensor calibration

Scroll ↑, ↓, ←, →, **keys** to show (*2022*) on upper display, then press **ENTER key**.

- **The cold junction input 0%(CH1)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-01*).
  (2) Connect the millivolt source between (55)(–) and (56)(+), and then input 0.2V (See Figure 12-10).
  (3) Press **ENTER key** after display stabilizes, AD count is shown on lower display.

- **The cold junction input 100%(CH1)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-02*).
  (2) Connect the millivolt source between (55)(–) and (56)(+), and then input 1.0V (See Figure 12-10).
  (3) Press **ENTER key** after display stabilizes, AD count is shown on lower display.

- **The cold junction AD count data (CH1)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-03*).
  (2) Press **ENTER key** after display stabilizes, AD count is shown on lower display.

- **The cold junction temperature data (CH1)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-04*).
  (2) Connect the thermometer (55).
  (3) Scroll ↑, ↓, ←, →, **keys** to set above temperature value.
  (4) Press **ENTER key**.

- **The cold junction input 0%(CH2)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-05*).
  (2) Connect the millivolt source between (58)(–) and (59)(+), and then input 0.2V (See Figure 12-10).
  (3) Press **ENTER key** after display stabilizes, AD count is shown on lower display.

- **The cold junction input 100%(CH2)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-06*).
  (2) Connect the millivolt source between (58)(–) and (59)(+), and then input 1.0V (See Figure 12-10).
  (3) Press **ENTER key** after display stabilizes, AD count is shown on lower display.

- **The cold junction AD count data (CH2)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-07*).
  (2) Press **ENTER key** after display stabilizes, AD count is shown on lower display.

- **The cold junction temperature data (CH2)**
  (1) Press **SETUP key** until the PROG/SEG display shows (*02-08*).
  (2) Connect the thermometer (58).
  (3) Scroll ↑, ↓, ←, →, **keys** to set above temperature value.
  (4) Press **ENTER key**.

● **Writing into EEPROM**

(1) Press **SETUP key** until the PROG/SEG display shows (*02-09*).
(2) Scroll ↑, ↓, ←, →, **keys** to show (*1.1.1.1.*) on upper display.
(3) Press **ENTER key**.

■ Current output calibration

Scroll ↑, ↓, ←, →, **keys** to show (*6.0.6.6.*) on the upper display, then press **ENTER key**.
Connect the digital ammeter across terminals (See Figure 12-9).

● **OUT CH1 output calibration**

(1) Press **SETUP key** until the PROG/SEG display shows (*06-01*).
Scroll ↑, ↓, ←, →, **keys** until meter indicates 4.00mA, then press **ENTER key**.
(2) Press **SETUP key** until the PROG/SEG display shows (*06-02*).
Scroll ↑, ↓, ←, →, **keys** until meter indicates 20.00mA, then press **ENTER key**.

● **OUT CH2 output calibration**

(1) Press **SETUP key** until the PROG/SEG display shows (*06-03*).
Scroll ↑, ↓, ←, →, **keys** until meter indicates 4.00mA, then press **ENTER key**.
(2) Press **SETUP key** until the PROG/SEG display shows (*06-04*).
Scroll ↑, ↓, ←, →, **keys** until meter indicates 20.00mA, then press **ENTER key**.

● **AUX CH1 output calibration**

(1) Press **SETUP key** until the PROG/SEG display shows (*06-05)*.
Scroll ↑, ↓, ←, →, **keys** until meter indicates 4.00mA, then press **ENTER key**.
(2) Press **SETUP key** until the PROG/SEG display shows (*06-06*).
Scroll ↑, ↓, ←, →, **keys** until meter indicates 20.00mA, then press **ENTER key**.

● **AUX CH2 output calibration**

(1) Press **SETUP key** until the PROG/SEG display shows (*06-07)*.
Scroll ↑, ↓, ←, →, **keys** until meter indicates 4.00mA, then press **ENTER key**.
(2) Press **SETUP key** until the PROG/SEG display shows (*06-08*).
Scroll ↑, ↓, ←, →, **keys** until meter indicates 20.00mA, then press **ENTER key**.

● **Writing into EEPROM**

(1) Press **SETUP key** until the PROG/SEG display shows (*06-09*).
Scroll ↑, ↓, ←, →, **keys** to show (*1.1.1.1.*) on upper display.
(2) Press **ENTER key**.

■ Carbon potential code calibration

Scroll ↑, ↓, ←, →, **keys** to show (*7.0.7.7.*) on upper display, then press **ENTER key**.

● **Carbon potential code calibration**

Press **SETUP key** until the PROG/SEG display shows (*07-01*).
Scroll ↑, ↓, ←, →, **keys** to show (*x.x.x.x.*) on upper display, then press **ENTER key** (See Table 12-11).

● **Writing into EEPROM**

(1) Press **SETUP key** until the PROG/SEG display shows (*07-02*).
Scroll ↑, ↓, ←, →, **keys** to show (*1.1.1.1.*) on upper display.
(2) Press **ENTER key**.

Table 12-11. Carbon Potential Code

Upper Display	Function
0.0.0.0.	DCP552 standard model
0.0.0.1.	DCP552 carbon potential for PV ch 2

12 - 3 Set Up

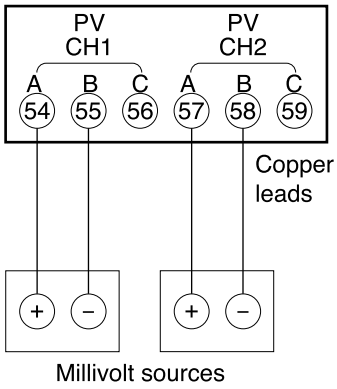


Figure 12-5. Thermocouple Inputs

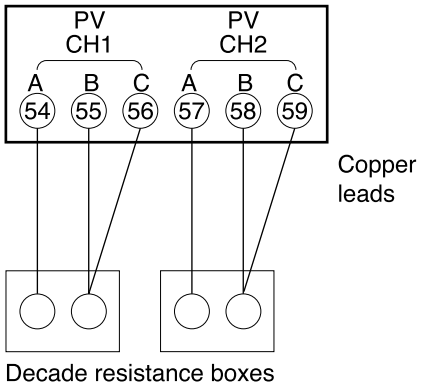


Figure 12-6. RTD Inputs

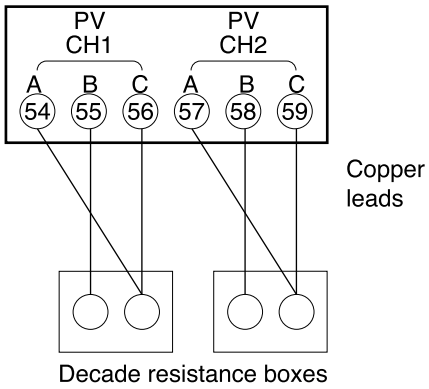


Figure 12-7. RTD Inputs

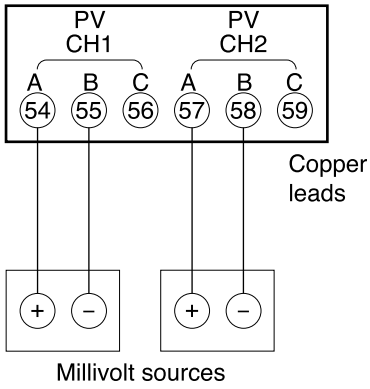


Figure 12-8. mV, V, Inputs

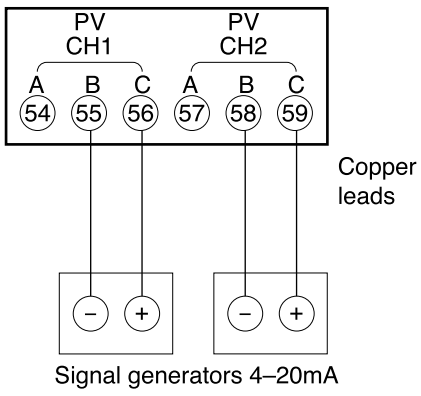


Figure 12-9. mA Inputs

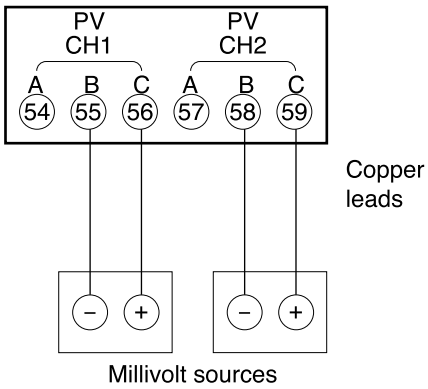


Figure 12-10. CJ , O_2 Sensor

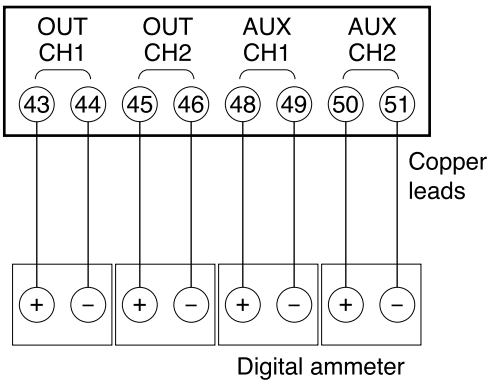


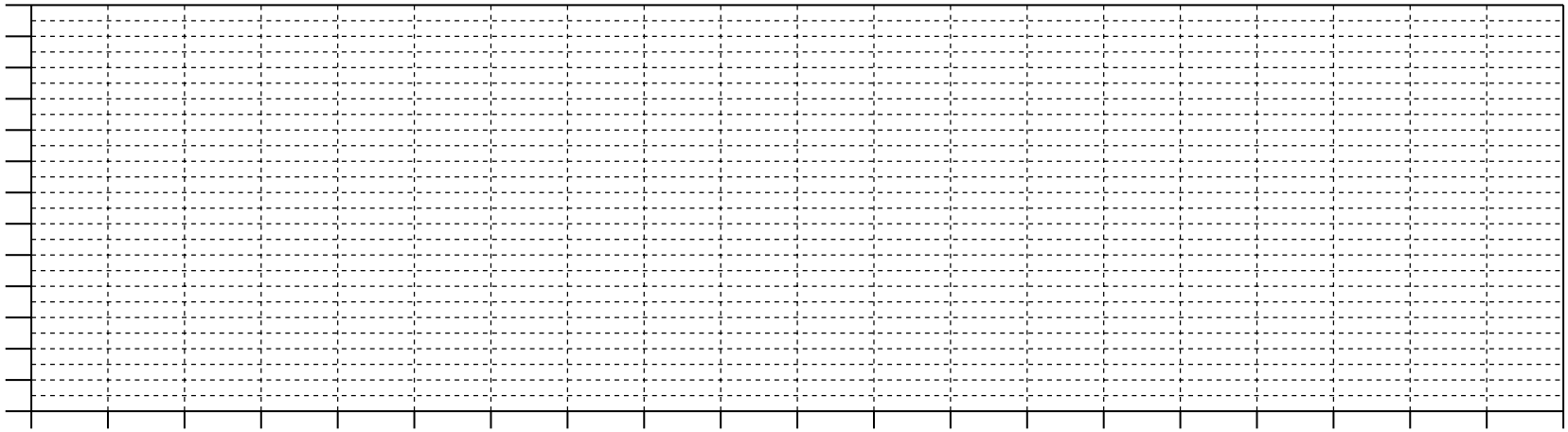
Figure 12-11. Current Outputs

DCP551/552 Program Work Sheet Program No. Preparation date: Equipment name: Product name :

[**Pattern graph**]

SP

(Unit :)



Time (Unit: hr-min, min-sec, 0.1sec)

[**Programming Map**]

Program contents \ Segment item		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20
Pattern	(1)SP (2)Time, θ, ΔSP																				
Event 1 ( )	(1) (2)																				
Event 2 ( )	(1) (2)																				
Event 3 ( )	(1) (2)																				
Event 4 ( )	(1) (2)																				
Event 5 ( )	(1) (2)																				
Event 6 ( )	(1) (2)																				
Event 7 ( )	(1) (2)																				
Event 8 ( )	(1) (2)																				
Event 9 ( )	(1) (2)																				
Event 10 ( )	(1) (2)																				
Event 11 ( )	(1) (2)																				
Event 12 ( )	(1) (2)																				
Event 13 ( )	(1) (2)																				
Event 14 ( )	(1) (2)																				
Event 15 ( )	(1) (2)																				
Event 16 ( )	(1) (2)																				
PID group or Output limiter group	(1)PID group (2)Output limiter group																				
G.SOAK	(1)Type (2)Count																				
PV shift	Shift value																				
Repeat	(1)Return segment (2)Count																				
PV start	Type																				
Cycle	Count																				
Pattern link	Link destination program																				
Tag	8-character tag																				

DCP552 Parameter Work Sheet

User name	:	Preparation date	:
Equipment name	:	Product name	:
Model No.	:**DCP552**	Tag name	:
Instrumentation staffer in charge	:	Business staffer in charge	:

■ Variable parameter setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*PA 01*	Key lock	0		0 : Keylock disabled 1 : Display of setup data settings disabled 2 : Display of all settings disabled 3 : Display of all settings disabled. Operation keys disabled.
2	*PA 02*	Memory protect	0		0 : Disabled 1 : Program settings are protected. 2 : Setup, variable parameters and event configuration settings are protected. 3 : Setup, variable parameters, event configurations and program settings are protected. 4 : Setup, variable parameters, event configurations and PID parameter settings are protected. 5 : Program settings and all parameter settings are protected.
3	*PA 03*	Display channel setting	0		0 : 2 items are displayed for the selected CH 1 : Simultaneous 2CH display of the same item
4	*PA 04*	Synchronous 2 channel operation	0		0 : asynchronous 1 : synchronous
5	*PA 05*	Program auto load	0		0 : OFF 1 : ON
8	*PA 08*	Auto-tuning (CH1)	0		0 : AT not performed 1 : Standard AT performed on currently used PID group in mode other than READY mode 2 : AT writing overshoot-proof PID values to currently used PID groups in mode other than READY mode performed 3 : Standard AT performed on PID groups A1 to A7 in READY mode 4 : AT writing overshoot-proof PID values to PID groups A1 to A7 in READY mode continuously performed
9	*PA 09*	Auto-tuning MV lower limit (CH1)	0.0		–5.0 to upper limit %
10	*PA 10*	Auto-tuning MV higher limit (CH1)	100.0		Lower limit to +105%
11	*PA 11*	SP bias (CH1)	0 SPU		–10000 to +10000 SPU (CH1)
12	*PA 12*	PV digital filter (CH1)	0.0		0.0 to 120.0sec
13	*PA 13*	PV bias (CH1)	0 PVU		–1000 to +1000 PVU(PV1)
14	*PA 14*	Manipulated variable deviation limit (CH1)	110.0		0.1 to 110.0% OUT / 0.1sec
15	*PA 15*	Time proportional output cycle (CH1)	10		1 to 240sec
16	*PA 16*	On-off control differential (CH1)	50 SPU		0 to 1000 SPUm (CH1)
17	*PA 17*	PID computation initialize manipulated variable (CH1)	0.0		–5.0 to +105.0%
21	*PA 21*	SP bias (CH2)	0		-10000 to +10000 SPU (CH2)
22	*PA 22*	PV digital filter (CH2)	0.0		0.0 to 120.0sec
23	*PA 23*	PV bias (CH2)	0 PVU		–1000 to +1000 PVU(PV2)
24	*PA 24*	Manipulated variable deviation limit (CH2)	110.0		0.1 to 110.0% OUT/0.1 sec
25	*PA 25*	Time proportional output cycle (CH2)	10		1 to 240sec
26	*PA 26*	ON-OFF control differential (CH2)	50		0 to 1000 SPU (CH2)
27	*PA 27*	PID computation initialize manipulated variable (CH2)	0.0		-5.0 to +105.0%
31	*PA 31*	Group 1 event number	0		0 to 16 (0: No delay is specified.)
32	*PA 32*	Group 1 delay time	0.0		0.0 to 3000.0sec
33	*PA 33*	Group 2 event number	0		0 to 16 (0: No delay is specified.)
34	*PA 34*	Group 2 delay time	0.0		0.0 to 3000.0sec
35	*PA 35*	Group 3 event number	0		0 to 16 (0: No delay is specified.)

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
36	*PA 36*	Group 3 delay time	0.0		0.0 to 3000.0sec
37	*PA 37*	Group 4 event number	0		0 to 16 (0: No delay is specified.)
38	*PA 38*	Group 4 delay time	0.0		0.0 to 3000.0sec
39	*PA 39*	FAST X	0		0 : 2 X 1 : 10 X 2 : 60 X 3 : 120 X
40	*PA 40*	CP computation for temperature compensation	0		-1000 to +1000 PVU (CH1)
43	*PA 43*	PID operation initialize (CH1)	0		0 : No initialization during advance processing and PID group change 1 : Initializes during advance processing but not during PID group change. 2 : No initialization during advance processing but initializes during PID group change. 3 : Initializes both during advance processing and PID group change.
44	*PA 44*	PV2 message display mode	0		0 : CP or PO_2 display 1 : mV value display 2 : O_2 sensor impedance value display
45	*PA 45*	G.SOAK time (CH1)	2.0		0.1 to 60.0sec
46	*PA 46*	G.SOAK time (CH2)	2.0		0.1 to 60.0sec
51	*PA 51*	PV1 equalizer compensation point No. 1	Range lower limit value		PV1 range lower limit value (tied)
52	*PA 52*	PV1 equalizer compensation amount No. 1	0 PVU		–1000 to +1000 PVU(PV1)
53	*PA 53*	PV1 equalizer compensation point No. 2	500 PVU		–19999 to +20000 PVU(PV1)
54	*PA 54*	PV1 equalizer compensation amount No. 2	0 PVU		–1000 to +1000 PVU(PV1)
55	*PA 55*	PV1 equalizer compensation point No. 3	1000 PVU		–19999 to +20000 PVU(PV1)
56	*PA 56*	PV1 equalizer compensation amount No. 3	0 PVU		–1000 to +1000 PVU(PV1)
57	*PA 57*	PV1 equalizer compensation point No. 4	1500 PVU		–19999 to +20000 PVU(PV1)
58	*PA 58*	PV1 equalizer compensation amount No. 4	0 PVU		–1000 to +1000 PVU(PV1)
59	*PA 59*	PV1 equalizer compensation point No. 5	2000 PVU		–19999 to +20000 PVU(PV1)
60	*PA 60*	PV1 equalizer compensation amount No. 5	0 PVU		–1000 to +1000 PVU(PV1)
61	*PA 61*	PV1 equalizer compensation point No. 6	2500 PVU		–19999 to +20000 PVU(PV1)
62	*PA 62*	PV1 equalizer compensation amount No. 6	0 PVU		–1000 to +1000 PVU(PV1)
63	*PA 63*	PV1 equalizer compensation point No. 7	3000 PVU		–19999 to +20000 PVU(PV1)
64	*PA 64*	PV1 equalizer compensation amount No. 7	0 PVU		–1000 to +1000 PVU(PV1)
65	*PA 65*	PV1 equalizer compensation point No. 8	3500 PVU		–19999 to +20000 PVU(PV1)
66	*PA 66*	PV1 equalizer compensation amount No. 8	0 PVU		–1000 to +1000 PVU(PV1)
67	*PA 67*	PV1 equalizer compensation point No. 9	4000 PVU		–19999 to +20000 PVU(PV1)
68	*PA 68*	PV1 equalizer compensation amount No. 9	0 PVU		–1000 to +1000 PVU(PV1)
69	*PA 69*	PV1 equalizer compensation point No. 10	Range lower limit value		PV1 range upper limit value (tied)
70	*PA 70*	PV1 equalizer compensation amount No. 10	0 PVU		–1000 to +1000 PVU(PV1)
71	*PA 71*	PV2 equalizer compensation point No. 1	Low-limit value of range		PV2 range lower limit value (tied)
72	*PA 72*	PV2 equalizer compensation amount No. 1	0 PVU		–1000 to +1000 PVU(PV2)
73	*PA 73*	PV2 equalizer compensation point No. 2	500 PVU		–19999 to +20000 PVU(PV2)
74	*PA 74*	PV2 equalizer compensation amount No. 2	0 PVU		–1000 to +1000 PVU(PV2)
75	*PA 75*	PV2 equalizer compensation point No. 3	1000 PVU		–19999 to +20000 PVU(PV2)
76	*PA 76*	PV2 equalizer compensation amount No. 3	0 PVU		–1000 to +1000 PVU(PV2)
77	*PA 77*	PV2 equalizer compensation point No. 4	1500 PVU		–19999 to +20000 PVU(PV2)
78	*PA 78*	PV2 equalizer compensation amount No. 4	0 PVU		–1000 to +1000 PVU(PV2)

denotes items settable only on models with CP compensation

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
79	*PA 79*	PV2 equalizer compensation point No. 5	2000 PVU		–19999 to +20000 PVU(PV2)
80	*PA 80*	PV2 equalizer compensation amount No. 5	0 PVU		–1000 to +1000 PVU(PV2)
81	*PA 81*	PV2 equalizer compensation point No. 6	2500 PVU		–19999 to +20000 PVU(PV2)
82	*PA 82*	PV2 equalizer compensation amount No. 6	0 PVU		–1000 to +1000 PVU(PV2)
83	*PA 83*	PV2 equalizer compensation point No. 7	3000 PVU		–19999 to +20000 PVU(PV2)
84	*PA 84*	PV2 equalizer compensation amount No. 7	0 PVU		–1000 to +1000 PVU(PV2)
85	*PA 85*	PV2 equalizer compensation point No. 8	3500 PVU		–19999 to +20000 PVU(PV2)
86	*PA 86*	PV2 equalizer compensation amount No. 8	0 PVU		–1000 to +1000 PVU(PV2)
87	*PA 87*	PV2 equalizer compensation point No. 9	4000 PVU		–19999 to +20000 PVU(PV2)
88	*PA 88*	PV2 equalizer compensation amount No. 9	0 PVU		–1000 to +1000 PVU (PV2)
89	*PA 89*	PV2 equalizer compensation point No. 10	Range upper limit value		PV2 range upper limit value (tied)
90	*PA 90*	PV2 equalizer compensation amount No. 10	0 PVU		–1000 to +1000 PVU(PV2)
93	*PA 93*	Auto-tuning (CH2)	0		0 : AT not performed 1 : standard AT performed on currently used PID group in mode other than READY mode. 2 : AT writing overshoot-proof PID values to currently used PID groups in mode other than READY mode performed. 3 : Standard AT performed on PID groups A1 to A7 in READY mode. 4 : AT writing overshoot-proof PID values to PID groups A1 to A7 in READY mode continuously performed.
94	*PA 94*	Auto-tuning MV lower limit (CH2)	0.0		-5.0 to upper limit %
95	*PA 95*	Auto-tuning MV upper limit (CH2)	100.0		Lower limit to +105%
96	*PA 96*	PID computation initialize (CH2)	0		0 : No initialization during advance processing and PID group change 1 : Initializes during advance processing but not during PID group change 2 : No initialization during advance processing but initializes during PID group change 3 : Initializes both during advance processing and PID group change
97	*PA 97*	CPU computation compensation	0		0 : no compensation 1 : compensates
98	*PA 98*	CP value (PV) display lower limit value	0.000		0 to upper limit SPU (CH2)
99	*PA 99*	CP value (PV) display upper limit value	4.000		lower limit to 4000 SPU (CH2)
100	*PA100*	Gas constant	23.5		10.0 to 50.0
101	*PA101*	CP computation compensation No.1 compensation point	0.000		0 SPU (CH2) (tied)
102	*PA102*	CP computation compensation No.1 compensation amount	0.000		-1000 to +1000 SPU (CH2)
103	*PA103*	CP computation compensation No.2 compensation point	0.200		0 to 2000 SPU (CH2)
104	*PA104*	CP computation compensation No.2 compensation amount	0.000		-1000 to +1000 SPU (CH2)
105	*PA105*	CP computation compensation No.3 compensation point	0.400		0 to 2000 SPU (CH2)
106	*PA106*	CP computation compensation No.3 compensation amount	0.000		-1000 to +1000 SPU (CH2)
107	*PA107*	CP computation compensation No.4 compensation point	0.600		0 to 2000 SPU (CH2)
108	*PA108*	CP computation compensation No.4 compensation amount	0.000		-1000 to +1000 SPU (CH2)
109	*PA109*	CP computation compensation No.5 compensation point	0.800		0 to 2000 SPU (CH2)
110	*PA110*	CP computation compensation No.5 compensation amount	0.000		-1000 to +1000 SPU (CH2)

denotes items settable only on models with CP compensation

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
111	*PA111*	CP computation compensation No.6 compensation point	1.000		0 to 2000 SPU (CH2)
112	*PA112*	CP computation compensation No.6 compensation amount	0.000		-1000 to +1000 SPU (CH2)
113	*PA113*	CP computation compensation No.7 compensation point	1.200		0 to 2000 SPU (CH2)
114	*PA114*	CP computation compensation No.7 compensation amount	0.000		-1000 to +1000 SPU (CH2)
115	*PA115*	CP computation compensation No.8 compensation point	1.400		0 to 2000 SPU (CH2)
116	*PA116*	CP computation compensation No.8 compensation amount	0.000		-1000 to +1000 SPU (CH2)
117	*PA117*	CP computation compensation No.9 compensation point	1.600		0 to 2000 SPU (CH2)
118	*PA118*	CP computation compensation No.9 compensation amount	0.000		-1000 to +1000 SPU (CH2)
119	*PA119*	CP computation compensation No.10 compensation point	2.000		0 to 2000 SPU (CH2) (tied)
120	*PA120*	CP computation compensation No.10 compensation amount	0.000		-1000 to +1000 SPU (CH2)

denotes items settable only on models with CP compensation

■ Event configuration data setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*E01-t*	Event 1 event type	0		0 to 253
2	*E01-1*	Event 1 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
3	*E01-2*	Event 1 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
4	*E02-t*	Event 2 event type	0		0 to 253
5	*E02-1*	Event 2 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
6	*E02-2*	Event 2 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
7	*E03-t*	Event 3 event type	0		0 to 253
8	*E03-1*	Event 3 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
9	*E03-2*	Event 3 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
10	*E04-t*	Event 4 event type	0		0 to 253
11	*E04-1*	Event 4 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
12	*E04-2*	Event 4 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
13	*E05-t*	Event 5 event type	0		0 to 253
14	*E05-1*	Event 5 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
15	*E05-2*	Event 5 auxiliary setting 2	----		–19999 to +20000 (Setting range is variable according to the event types.)
16	*E06-t*	Event 6 event type	0		0 to 253
17	*E06-1*	Event 6 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
18	*E06-2*	Event 6 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
19	*E07-t*	Event 7 event type	0		0 to 253
20	*E07-1*	Event 7 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
21	*E07-2*	Event 7 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
22	*E08-t*	Event 8 event type	0		0 to 253
23	*E08-1*	Event 8 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
24	*E08-2*	Event 8 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
25	*E09-t*	Event 9 event type	0		0 to 253
26	*E09-1*	Event 9 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
27	*E09-2*	Event 9 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
28	*E10-t*	Event 10 event type	0		0 to 253
29	*E10-1*	Event 10 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
30	E10-2	Event 10 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
31	E11-t	Event 11 event type	0		0 to 253
32	E11-1	Event 11 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
33	E11-2	Event 11 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
34	*E12-t*	Event 12 event type	0		0 to 253
35	*E12-1*	Event 12 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
36	*E12-2*	Event 12 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
37	*E13-t*	Event 13 event type	0		0 to 253
38	*E13-1*	Event 13 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
39	*E13-2*	Event 13 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
40	*E14-t*	Event 14 event type	0		0 to 253
41	*E14-1*	Event 14 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
42	*E14-2*	Event 14 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
43	*E15-t*	Event 15 event type	0		0 to 253
44	*E15-1*	Event 15 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
45	*E15-2*	Event 15 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)
46	*E16-t*	Event 16 event type	0		0 to 253
47	*E16-1*	Event 16 auxiliary setting 1	-----		–19999 to +20000 (Setting range is variable according to the event types.)
48	*E16-2*	Event 16 auxiliary setting 2	-----		–19999 to +20000 (Setting range is variable according to the event types.)

● Event type

Event type	Meaning	Setting category	Operation category	Auxiliary settings	
0	Event off	-----	-----	Auxiliary 1 : None	Auxiliary 2 : None
1	Time event	Segment	Time	Auxiliary 1 : None	Auxiliary 2 : None
2	PV upper limit	Segment	PV	Auxiliary 1 : Hysteresis	Auxiliary 2 : None
3	PV lower limit				
4	Deviation upper limit				
5	Deviation lower limit				
6	Deviation upper limit with standby				
7	Deviation lower limit with standby				
8	Absolute value deviation upper limit				
9	Absolute value deviation lower limit				
10	Absolute value deviation upper limit with standby				
11	Absolute value deviation lower limit with standby				
12	PV deviation rate upper limit	Segment	PV	Auxiliary 1 : Sampling cycle	Auxiliary 2 : None
13	PV deviation rate lower limit				
14	SP upper limit	Segment	PV	Auxiliary 1 : Hysteresis	Auxiliary 2 : None
15	SP lower limit				
16	MV upper limit				
17	MV lower limit				
18	Code event	Segment	Code	Auxiliary 1 : No. of output	Auxiliary 2 : None
19	SOAK absolute value deviation upper limit	Segment	PV	Auxiliary 1 : Hysteresis	Auxiliary 2 : None
20	SOAK absolute value deviation lower limit				
21	SOAK absolute value deviation upper limit with standby				
22	SOAK absolute value deviation lower limit with standby				
23	Code event with timer	Segment	Code time	Auxiliary 1 : No. of output	Auxiliary 2 : None

Event type	Meaning	Setting category	Operation category	Auxiliary settings	
24 to 63	Event off	-----	-----	Auxiliary 1 : None	Auxiliary 2 : None
64	Normal PV1 upper limit operation	Measuring instrument	PV	Auxiliary 1 : Hysteresis	Auxiliary 2 : Operating point
65	Normal PV1 lower limit operation				
66	Normal PV2 upper limit operation				
67	Normal PV2 lower limit operation				
68	PV upper limit				
69	PV lower limit				
70	Deviation upper limit				
71	Deviation lower limit				
72	Deviation upper limit with standby				
73	Deviation lower limit with standby				
74	Absolute value deviation upper limit				
75	Absolute value deviation lower limit				
76	Absolute value deviation upper limit with standby				
77	Absolute value deviation lower limit with standby				
78	PV deviation rate upper limit	Measuring instrument	PV	Auxiliary 1 : Sampling cycle	Auxiliary 2 : Operating point
79	PV deviation rate lower limit				
80	SP upper limit	Measuring instrument	PV	Auxiliary 1 : Hysteresis	Auxiliary 2 : Operating point
81	SP lower limit				
82	MV upper limit				
83	MV lower limit				
84	SOAK absolute value deviation upper limit				
85	SOAK absolute value deviation lower limit				
86	SOAK absolute value deviation upper limit with standby				
87	SOAK absolute value deviation lower limit with standby				
88	Program No. binary code	Measuring instrument	Code	Auxiliary 1 : No. of output	Auxiliary 2 : None
89	Segment No. binary code				
90	Program No. BCD code				
91	Segment No. BCD code				
92	Specified segment	Measuring instrument	Mode	Auxiliary 1 : Segment specification	Auxiliary 2 : None
93	RAMP-E monitoring time	Measuring instrument	Time	Auxiliary 1 : Operating point	Auxiliary 2 : None
94	Segment time	Measuring instrument	Time	Auxiliary 1 : On-time	Auxiliary 2 : OFF-time
95	Program time				
96 to 127	Event off	-----	-----	Auxiliary 1 : None	Auxiliary 2 : None
128	RUN, HOLD, END, FAST	Measuring instrument	Mode	Auxiliary 1 : Depends on channel conditions	
129	HOLD			Auxiliary 2 : None	
130	READY, READY FAST				
131	END				
132	G.SOAK wait				
133	MANUAL				
134	AT executing				
135	FAST, READY FAST				
136	Console setting operation	Measuring instrument	Mode	Auxiliary 1 : None	Auxiliary 2 : None
137	RUN	Measuring instrument	Mode	Auxiliary 1 : Depends on channel conditions	
138	Advance			Auxiliary 2 : None	
139	All alarms (logical OR)	Measuring instrument	Mode	Auxiliary 1 : None	Auxiliary 2 : None
140	PV range alarm				
141	Instrument alarm				
142	O_2 sensor error				

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Event type	Meaning	Setting category	Operation category	Auxiliary settings
143	Event off	-----	-----	Auxiliary 1 : None Auxiliary 2 : None
144	Battery voltage drop	Measuring instrument	Mode	
145 to 253	Event off	-----	-----	

■ PID parameter (CH1) setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*P-1*	Proportional band (PID group 1)	100.0		0.0 to 1000.0% (0.0: On-Off controi)
2	*I-1*	Integral time (PID group 1)	0		0 to 3600sec (0: no integral operation)
3	*d-1*	Derivative time (PID group 1)	0		0 to 1200sec (0: no derivative operation)
4	*rE-1*	Manual reset (PID group 1)	50.0		0.0 to 100.0%
5	*oL-1*	Manipulated variable lower limit (Output limiter group 1)	0.0		–5.0 to manipulated variable upper limit %
6	*oH-1*	Manipulated variable upper limit (Output limiter group 1)	100.0		Manipulated variable lower limit to +105.0%
7	*P-2*	Proportional band (PID group 2)	100.0		0.0 to 1000.0% (0.0: On-off control)
8	*I-2*	Integral time (PID group 2)	0		0 to 3600sec (0: no integral operation)
9	*d-2*	Derivative time (PID group 2)	0		0 to 1200sec (0: no derivative operation)
10	*rE-2*	Manual reset (PID group 2)	50.0		0.0 to 100.0%
11	*oL-2*	Manipulated variable lower limit (Output limiter group 2)	0.0		–5.0 to manipulated variable upper limit %
12	*oH-2*	Manipulated variable upper limit (Output limiter group 2)	100.0		Manipulated variable lower limit to +105.0%
13	*P-3*	Proportional band (PID group 3)	100.0		0.0 to 1000.0% (0.0: On-off control)
14	*I-3*	Integral time (PID group 3)	0		0 to 3600sec (0: no integral operation)
15	*d-3*	Derivative time (PID group 3)	0		0 to 1200sec (0: no derivative operation)
16	*rE-3*	Manual reset (PID group 3)	50.0		0.0 to 100.0%
17	*oL-3*	Manipulated variable lower limit (Output limiter group 3)	0.0		–5.0 to manipulated variable upper limit %
18	*oH-3*	Manipulated variable upper limit (Output limiter group 3)	100.0		Manipulated variable lower limit to +105.0%
19	*P-4*	Proportional band (PID group 4)	100.0		0.0 to 1000.0% (0.0: On-off control)
20	*I-4*	Integral time (PID group 4)	0		0 to 3600sec (0: no integral operation)
21	*d-4*	Derivative time (PID group 4)	0		0 to 1200sec (0: no derivative operation)
22	*rE-4*	Manual reset (PID group 4)	50.0		0.0 to 100.0%
23	*oL-4*	Manipulated variable lower limit (Output limiter group 4)	0.0		–5.0 to manipulated variable upper limit %
24	*oH-4*	Manipulated variable upper limit (Output limiter group 4)	100.0		Manipulated variable lower limit to +105.0%
25	*P-5*	Proportional band (PID group 5)	100.0		0.0 to 1000.0% (0.0: On-off control)
26	*I-5*	Integral time (PID group 5)	0		0 to 3600sec (0: no integral operation)
27	*d-5*	Derivative time (PID group 5)	0		0 to 1200sec (0: no derivative operation)
28	*rE-5*	Manual reset (PID group 5)	50.0		0.0 to 100.0%
29	*oL-5*	Manipulated variable lower limit (Output limiter group 5)	0.0		–5.0 to manipulated variable upper limit %
30	*oH-5*	Manipulated variable upper limit (Output limiter group 5)	100.0		Manipulated variable lower limit to +105.0%
31	*P-6*	Proportional band (PID group 6)	100.0		0.0 to 1000.0% (0.0: On-off control)
32	*I-6*	Integral time (PID group 6)	0		0 to 3600sec (0: no integral operation)
33	*d-6*	Derivative time (PID group 6)	0		0 to 1200sec (0: no derivative operation)
34	*rE-6*	Manual reset (PID group 6)	50.0		0.0 to 100.0%
35	*oL-6*	Manipulated variable lower limit (Output limiter group 6)	0.0		–5.0 to manipulated variable upper limit %

The settings on this page are PID parameters for CH1

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No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
36	*oH-6*	Manipulated variable upper limit (Output limiter group 6)	100.0		Manipulated variable lower limit to +105.0%
37	*P-7*	Proportional band (PID group 7)	100.0		0.0 to 1000.0% (0.0: On-off control)
38	*I-7*	Integral time (PID group 7)	0		0 to 3600sec (0: no integral operation)
39	*d-7*	Derivative time (PID group 7)	0		0 to 1200sec (0: no derivative operation)
40	*rE-7*	Manual reset (PID group 7)	50.0		0.0 to 100.0%
41	*oL-7*	Manipulated variable lower limit (Output limiter group 7)	0.0		–5.0 to manipulated variable upper limit %
42	*oH-7*	Manipulated variable upper limit (Output limiter group 7)	100.0		Manipulated variable lower limit to +105.0%
43	*P-8*	Proportional band (PID group 8)	100.0		0.0 to 1000.0% (0.0: On-off control)
44	*I-8*	Integral time (PID group 8)	0		0 to 3600sec (0: no integral operation)
45	*d-8*	Derivative time (PID group 8)	0		0 to 1200sec (0: no derivative operation)
46	*rE-8*	Manual reset (PID group 8)	50.0		0.0 to 100.0%
47	*oL-8*	Manipulated variable lower limit (Output limiter group 8)	0.0		–5.0 to manipulated variable upper limit %
48	*oH-8*	Manipulated variable upper limit (Output limiter group 8)	100.0		Manipulated variable lower limit to +105.0%
49	*P-9*	Proportional band (PID group 9)	100.0		0.0 to 1000.0% (0.0: On-off control)
50	*I-9*	Integral time (PID group 9)	0		0 to 3600sec (0: no integral operation)
51	*d-9*	Derivative time (PID group 9)	0		0 to 1200sec (0: no derivative operation)
52	*rE-9*	Manual reset (PID group 9)	50.0		0.0 to 100.0%
53	*oL-9*	Manipulated variable lower limit (Output limiter group 9)	0.0		–5.0 to manipulated variable upper limit %
54	*oH-9*	Manipulated variable upper limit (Output limiter group 9)	100.0		Manipulated variable lower limit to +105.0%
55	*P-A1*	Proportional band (PID group A1)	100.0		0.0 to 1000.0% (0.0: On-off control)
56	*I-A1*	Integral time (PID group A1)	0		0 to 3600sec (0: no integral operation)
57	*d-A1*	Derivative time (PID group A1)	0		0 to 1200sec (0: no derivative operation)
58	*rE-A1*	Manual reset (PID group A1)	50.0		0.0 to 100.0%
59	*CP-A1*	Switching point (PID group A1)	1000 SPU		–19999 to +20000 SPU
60	*tP-A1*	Tuning point (PID group A1)	500 SPU		–19999 to +20000 SPU
61	*P-A2*	Proportional band (PID group A2)	100.0		0.0 to 1000.0% (0.0: On-off control)
62	*I-A2*	Integral time (PID group A2)	0		0 to 3600sec (0: no integral operation)
63	*d-A2*	Derivative time (PID group A2)	0		0 to 1200sec (0: no derivative operation)
64	*rE-A2*	Manual reset (PID group A2)	50.0		0.0 to 100.0%
65	*CP-A2*	Switching point (PID group A2)	2000 SPU		–19999 to +20000 SPU
66	*tP-A2*	Tuning point (PID group A2)	1500 SPU		–19999 to +20000 SPU
67	*P-A3*	Proportional band (PID group A3)	100.0		0.0 to 1000.0% (0.0: On-off control)
68	*I-A3*	Integral time (PID group A3)	0		0 to 3600sec (0: no integral operation)
69	*d-A3*	Derivative time (PID group A3)	0		0 to 1200sec (0: no derivative operation)
70	*rE-A3*	Manual reset (PID group A3)	50.0		0.0 to 100.0%
71	*CP-A3*	Switching point (PID group A3)	3000 SPU		–19999 to +20000 SPU

The settings on this page are PID parameters for CH1

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
72	*tP-A3*	Tuning point (PID group A3)	2500 SPU		–19999 to +20000 SPU
73	*P-A4*	Proportional band (PID group A4)	100.0		0.0 to 1000.0% (0.0: On-off control)
74	*I-A4*	Integral time (PID group A4)	0		0 to 3600sec (0: no integral operation)
75	*d-A4*	Derivative time (PID group A4)	0		0 to 1200sec (0: no derivative operation)
76	*rE-A4*	Manual reset (PID group A4)	50.0		0.0 to 100.0%
77	*CP-A4*	Switching point (PID group A4)	4000 SPU		–19999 to +20000 SPU
78	*tP-A4*	Tuning point (PID group A4)	3500 SPU		–19999 to +20000 SPU
79	*P-A5*	Proportional band (PID group A5)	100.0		0.0 to 1000.0% (0.0: On-off control)
80	*I-A5*	Integral time (PID group A5)	0		0 to 3600sec (0: no integral operation)
81	*d-A5*	Derivative time (PID group A5)	0		0 to 1200sec (0: no derivative operation)
82	*rE-A5*	Manual reset (PID group A5)	50.0		0.0 to 100.0%
83	*CP-A5*	Switching point (PID group A5)	5000 SPU		–19999 to +20000 SPU
84	*tP-A5*	Tuning point (PID group A5)	4500 SPU		–19999 to +20000 SPU
85	*P-A6*	Proportional band (PID group A6)	100.0		0.0 to 1000.0% (0.0: On-off control)
86	*I-A6*	Integral time (PID group A6)	0		0 to 3600sec (0: no integral operation)
87	*d-A6*	Derivative time (PID group A6)	0		0 to 1200sec (0: no derivative operation)
88	*rE-A6*	Manual reset (PID group A6)	50.0		0.0 to 100.0%
89	*CP-A6*	Switching point (PID group A6)	6000 SPU		–19999 to +20000 SPU
90	*tP-A6*	Tuning point (PID group A6)	5500 SPU		–19999 to +20000 SPU
91	*P-A7*	Proportional band (PID group A7)	100.0		0.0 to 1000.0% (0.0: On-off control)
92	*I-A7*	Integral time (PID group A7)	0		0 to 3600sec (0: no integral operation)
93	*d-A7*	Derivative time (PID group A7)	0		0 to 1200sec (0: no derivative operation)
94	*rE-A7*	Manual reset (PID group A7)	50.0		0.0 to 100.0%
95	*CP-A7*	Switching point (PID group A7)	20000SPU (fixed)		20000 SPU (tied)
96	*tP-A7*	Tuning point (PID group A7)	6500 SPU		–19999 to +20000 SPU

The settings on this page are PID parameters for CH1

■ PID parameter (CH2) setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*P-1*	Proportional band (PID group 1)	100.0		0.0 to 1000.0% (0.0: On-off control)
2	*I-1*	Integral time (PID group 1)	0		0 to 3600sec (0: no integral operation)
3	*d-1*	Derivative time (PID group 1)	0		0 to 1200sec (0: no derivative operation)
4	*rE-1*	Manual reset (PID group 1)	50.0		0.0 to 100.0%
5	*oL-1*	Manipulated variable lower limit (Output limiter group 1)	0.0		–5.0 to manipulated variable upper limit %
6	*oH-1*	Manipulated variable upper limit (Output limiter group 1))	100.0		Manipulated variable lower limit to +105.0%
7	*P-2*	Proportional band (PID group 2)	100.0		0.0 to 1000.0% (0.0: On-off control)
8	*I-2*	Integral time (PID group 2)	0		0 to 3600sec (0: no integral operation)
9	*d-2*	Derivative time (PID group 2)	0		0 to 1200sec (0: no derivative operation)
10	*rE-2*	Manual reset (PID group 2)	50.0		0.0 to 100.0%
11	*oL-2*	Manipulated variable lower limit (Output limiter group 2)	0.0		–5.0 to manipulated variable upper limit %
12	*oH-2*	Manipulated variable upper limit (Output limiter group 2)	100.0		Manipulated variable lower limit to +105.0%
13	*P-3*	Proportional band (PID group 3)	100.0		0.0 to 1000.0% (0.0: On-off control)
14	*I-3*	Integral time (PID group 3)	0		0 to 3600sec (0: no integral operation)
15	*d-3*	Derivative time (PID group 3)	0		0 to 1200sec (0: no derivative operation)
16	*rE-3*	Manual reset (PID group 3)	50.0		0.0 to 100.0%
17	*oL-3*	Manipulated variable lower limit (Output limiter group 3))	0.0		–5.0 to manipulated variable upper limit %
18	*oH-3*	Manipulated variable upper limit (Output limiter group 3)	100.0		Manipulated variable lower limit to +105.0%
19	*P-4*	Proportional band (PID group 4)	100.0		0.0 to 1000.0% (0.0: On-off control)
20	*I-4*	Integral time (PID group 4)	0		0 to 3600sec (0: no integral operation)
21	*d-4*	Derivative time (PID group 4)	0		0 to 1200sec (0: no derivative operation)
22	*rE-4*	Manual reset (PID group 4)	50.0		0.0 to 100.0%
23	*oL-4*	Manipulated variable lower limit (Output limiter group 4))	0.0		–5.0 to manipulated variable upper limit %
24	*oH-4*	Manipulated variable upper limit (Output limiter group 4)	100.0		Manipulated variable lower limit to +105.0%
25	*P-5*	Proportional band (PID group 5)	100.0		0.0 to 1000.0% (0.0: On-off control)
26	*I-5*	Integral time (PID group 5)	0		0 to 3600sec (0: no integral operation)
27	*d-5*	Derivative time (PID group 5)	0		0 to 1200sec (0: no derivative operation)
28	*rE-5*	Manual reset (PID group 5)	50.0		0.0 to 100.0%
29	*oL-5*	Manipulated variable lower limit (Output limiter group 5)	0.0		–5.0 to manipulated variable upper limit %
30	*oH-5*	Manipulated variable upper limit (Output limiter group 5)	100.0		Manipulated variable lower limit to +105.0%
31	*P-6*	Proportional band (PID group 6)	100.0		0.0 to 1000.0% (0.0: On-off control)
32	*I-6*	Integral time (PID group 6)	0		0 to 3600sec (0: no integral operation)
33	*d-6*	Derivative time (PID group 6)	0		0 to 1200sec (0: no derivative operation)
34	*rE-6*	Manual reset (PID group 6)	50.0		0.0 to 100.0%
35	*oL-6*	Manipulated variable lower limit (Output limiter group 6)	0.0		–5.0 to manipulated variable upper limit %

The settings on this page are PID parameters for CH2

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
36	*oH-6*	Manipulated variable upper limit (Output limiter group 6)	100.0		Manipulated variable lower limit to +105.0%
37	*P-7*	Proportional band (PID group 7)	100.0		0.0 to 1000.0% (0.0: On-off control)
38	*I-7*	Integral time (PID group 7)	0		0 to 3600sec (0: no integral operation)
39	*d-7*	Derivative time (PID group 7)	0		0 to 1200sec (0: no derivative operation)
40	*rE-7*	Manual reset (PID group 7)	50.0		0.0 to 100.0%
41	*oL-7*	Manipulated variable lower limit (Output limiter group 7)	0.0		–5.0 to manipulated variable upper limit %
42	*oH-7*	Manipulated variable upper limit (Output limiter group 7)	100.0		Manipulated variable lower limit to +105.0%
43	*P-8*	Proportional band (PID group 8)	100.0		0.0 to 1000.0% (0.0: On-off control)
44	*I-8*	Integral time (PID group 8)	0		0 to 3600sec (0: no integral operation)
45	*d-8*	Derivative time (PID group 8)	0		0 to 1200sec (0: no derivative operation)
46	*rE-8*	Manual reset (PID group 8)	50.0		0.0 to 100.0%
47	*oL-8*	Manipulated variable lower limit (Output limiter group 8)	0.0		–5.0 to manipulated variable upper limit %
48	*oH-8*	Manipulated variable upper limit (Output limiter group 8)	100.0		Manipulated variable lower limit to +105.0%
49	*P-9*	Proportional band (PID group 9)	100.0		0.0 to 1000.0% (0.0: On-off control)
50	*I-9*	Integral time (PID group 9)	0		0 to 3600sec (0: no integral operation)
51	*d-9*	Derivative time (PID group 9)	0		0 to 1200sec (0: no derivative operation)
52	*rE-9*	Manual reset (PID group 9)	50.0		0.0 to 100.0%
53	*oL-9*	Manipulated variable lower limit (Output limiter group 9)	0.0		–5.0 to manipulated variable upper limit %
54	*oH-9*	Manipulated variable upper limit (Output limiter group 9)	100.0		Manipulated variable lower limit to +105.0%
55	*P-A1*	Proportional band (PID group A1)	100.0		0.0 to 1000.0% (0.0: On-off control)
56	*I-A1*	Integral time (PID group A1)	0		0 to 3600sec (0: no integral operation)
57	*d-A1*	Derivative time (PID group A1)	0		0 to 1200sec (0: no derivative operation)
58	*rE-A1*	Manual reset (PID group A1)	50.0		0.0 to 100.0%
59	*CP-A1*	Switching point (PID group A1)	1000 SPU		–19999 to +20000 SPU
60	*tP-A1*	Tuning point (PID group A1)	500 SPU		–19999 to +20000 SPU
61	*P-A2*	Proportional band (PID group A2)	100.0		0.0 to 1000.0% (0.0: On-off control)
62	*I-A2*	Integral time (PID group A2)	0		0 to 3600sec (0: no integral operation)
63	*d-A2*	Derivative time (PID group A2)	0		0 to 1200sec (0: no derivative operation)
64	*rE-A2*	Manual reset (PID group A2)	50.0		0.0 to 100.0%
65	*CP-A2*	Switching point (PID group A2)	2000 SPU		–19999 to +20000 SPU
66	*tP-A2*	Tuning point (PID group A2)	1500 SPU		–19999 to +20000 SPU
67	*P-A3*	Proportional band (PID group A3)	100.0		0.0 to 1000.0% (0.0: On-off control)
68	*I-A3*	Integral time (PID group A3)	0		0 to 3600sec (0: no integral operation)
69	*d-A3*	Derivative time (PID group A3)	0		0 to 1200sec (0: no derivative operation)
70	*rE-A3*	Manual reset (PID group A3)	50.0		0.0 to 100.0%
71	*CP-A3*	Switching point (PID group A3)	3000 SPU		–19999 to +20000 SPU

The settings on this page are PID parameters for CH2

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
72	*tP-A3*	Tuning point (PID group A3)	2500 SPU		–19999 to +20000 SPU
73	*P-A4*	Proportional band (PID group A4)	100.0		0.0 to 1000.0% (0.0: On-off control)
74	*I-A4*	Integral time (PID group A4)	0		0 to 3600sec (0: no integral operation)
75	*d-A4*	Derivative time (PID group A4)	0		0 to 1200sec (0: no derivative operation)
76	*rE-A4*	Manual reset (PID group A4)	50.0		0.0 to 100.0%
77	*CP-A4*	Switching point (PID group A4)	4000 SPU		–19999 to +20000 SPU
78	*tP-A4*	Tuning point (PID group A4)	3500 SPU		–19999 to +20000 SPU
79	*P-A5*	Proportional band (PID group A5)	100.0		0.0 to 1000.0% (0.0: On-off control)
80	*I-A5*	Integral time (PID group A5)	0		0 to 3600sec (0: no integral operation)
81	*d-A5*	Derivative time (PID group A5)	0		0 to 1200sec (0: no derivative operation)
82	*rE-A5*	Manual reset (PID group A5)	50.0		0.0 to 100.0%
83	*CP-A5*	Switching point (PID group A5)	5000 SPU		–19999 to +20000 SPU
84	*tP-A5*	Tuning point (PID group A5)	4500 SPU		–19999 to +20000 SPU
85	*P-A6*	Proportional band (PID group A6)	100.0		0.0 to 1000.0% (0.0: On-off control)
86	*I-A6*	Integral time (PID group A6)	0		0 to 3600sec (0: no integral operation)
87	*d-A6*	Derivative time (PID group A6)	0		0 to 1200sec (0: no derivative operation)
88	*rE-A6*	Manual reset (PID group A6)	50.0		0.0 to 100.0%
89	*CP-A6*	Switching point (PID group A6)	6000 SPU		–19999 to +20000 SPU
90	*tP-A6*	Tuning point (PID group A6)	5500 SPU		–19999 to +20000 SPU
91	*P-A7*	Proportional band (PID group A7)	100.0		0.0 to 1000.0% (0.0: On-off control)
92	*I-A7*	Integral time (PID group A7)	0		0 to 3600sec (0: no integral operation)
93	*d-A7*	Derivative time (PID group A7)	0		0 to 1200sec (0: no derivative operation)
94	*rE-A7*	Manual reset (PID group A7)	50.0		0.0 to 100.0%
95	*CP-A7*	Switching point (PID group A7)	20000SPU (fixed)		20000 SPU (tied)
96	*tP-A7*	Tuning point (PID group A7)	6500 SPU		–19999 to +20000 SPU

The settings on this page are PID parameters for CH2

■ Setup data setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*C 01*	PV1 range number	0		0 to 16 : Thermocouple 48 to 52 : Linear (DC current and DC voltage) 64 to 71 : Resistance temperature detector 96 to 103 : Resistance temperature detector 128 to 134 : Linear (DC current and DC voltage)
2	*C 02*	PV1 temperature unit	0		0 : Celsius (°C) 1 : Fahrenheit (°F)
3	*C 03*	PV1 decimal point position	1		0 to 2
4	*C 04*	PV1 linear decimal point position	1		0 to 4
5	*C 05*	PV1 linear range lower limit	0 PVU		–19999 to +20000 PVU(PV1)
6	*C 06*	PV1 linear range upper limit	10000 PVU		–19999 to +20000 PVU(PV1)
7	*C 07*	PV1 cold junction compensation	0		0 : Provided (Compensated inside the instrument) 1 : Not provided (Compensated outside the instrument)
8	*C 08*	PV1 root extraction	0		0 : Not provided 1 : Provided
9	*C 09*	PV1 root extraction dropout	0.2		0.2 to 10.0% (Ratio to input range)
10	*C 10*	PV1 cold junction bias	0.0		–1.0 to + 1.0°C
11	*C 11*	PV2 range number	0		0 to 16 : Thermocouple 48 to 52 : Linear (DC current and DC voltage) 64 to 71 : Resistance temperature detector 96 to 103 : Resistance temperature detector 128 to 134 : Linear (DC current and DC voltage) 135 : O_2 sensor (CP)
12	*C 12*	PV2 temperature unit	0		0 : Celsius (°C) 1 : Fahrenheit (°F)
13	*C 13*	PV2 decimal point position	1		0 to 2
14	*C 14*	PV2 linear decimal point position	1		0 to 4
15	*C 15*	PV2 linear range lower limit	0 PVU		–19999 to +20000 PVU(PV2)
16	*C 16*	PV2 linear range upper limit	10000 PVU		–19999 to +20000 PVU(PV2)
17	*C 17*	PV2 cold junction compensation	0		0 : Provided (Compensated inside the instrument) 1 : Not provided (Compensated outside the instrument)
18	*C 18*	PV2 root extraction	0		0 : Not provided 1 : Provided
19	*C 19*	PV2 root extraction dropout	0.2		0.2 to 10.0% (Ratio to input range)
20	*C 20*	PV2 cold junction bias	0.0		–1.0 to + 1.0°C
21	C 21	Control output system (CH1)	1		1 : 5G output (Current proportional control output) 2 : 6D output (Voltage time proportional control output) system A 3 : 6D output (Voltage time proportional control output) system B 4 : 8D output (open collector time proportional control output) system A 5 : 8D output (open collector time proportional control output) system B
22	*C 22*	Control output system (CH2)	1		
23	*C 23*	Control action (CH1)	0		0 : PID — A reverse operation 1 : PID — A normal operation 2 : PID — B reverse operation 3 : PID — B normal operation
24	*C 24*	Control action (CH2)	0		
30	*C 30*	PV equalizer	0		0 : None 1 : PV1 only 2 : PV2 only 3 : Both PV1 and PV2
31	*C 31*	End of operation (CH1)	0		0 : READY mode 1 : END mode
32	*C 32*	Manipulated variable in READY mode (CH1)	0.0		–5.0 to +105.0%
33	*C 33*	Manipulated variable setting in PV overrange (CH1)	0		0 : No 1 : Yes

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
34	*C 34*	Manipulated variable in PV overrange (CH1)	0.0		–5.0 to +105.0%
35	*C 35*	MANUAL change mode (CH1)	0		0 : Smooth 1 : Preset
36	*C 36*	Preset MANUAL value (CH1)	0.0		–5.0 to +105.0%
37	*C 37*	End of operation (CH2)	0		0 : READY mode 1 : END mode
38	*C 38*	Manipulated variable in READY mode (CH2)	0.0		-5.0 to +105.0%
39	*C 39*	Manipulated variable setting in PV overrange (CH2)	0		0 : No 1 : Yes
40	*C 40*	Manipulated variable in PV overrange (CH2)	0.0		-5.0 to +105.0%
41	*C 41*	Manual change mode (CH2)	0		0 : smooth 1 : preset
42	*C 42*	Preset MANUAL value (CH2)	0.0		-5.0 to +105.0%
43	*C 43*	Service interruption time when running can be continued	0		0 to 3600sec
44	*C 44*	CP computation type	1		0 : oxygen pressure (PO_2) computation 1 : CP computation for NKG sensor 2 : CP computation for Marathon monitors and Cambridge sensors 3 : CP computation for Corning sensors 4 : CP computation for AACC sensors 5 : CP computation for Barber-Coleman sensors 6 : CP computation for Furnace Control sensors
45	*C 45*	Auxiliary output 1 type	0		0 : SP1 1 : PV1 2 : Deviation1 (DEV1) 3 : Manipulated variable 1 (MV1) 4 : SP2 5 : PV2 6 : Deviation 2 (DEV2) 7 : Manipulated variable 2 (MV2) 8 : O_2 sensor mV input value
46	*C 46*	Auxiliary output 1 lower limit (4mA)	0 SPU		–19999 to +20000 SPU (*C45* not equal to 3) –1999.9 to +2000.0% (*C45* set to 3)
47	*C 47*	Auxiliary output 1 upper limit (20mA)	10000 SPU		–19999 to +20000 SPU (*C45* not equal to 3) –1999.9 to +2000.0% (*C45* set to 3)
48	*C 48*	Auxiliary output 2 type	0		0 : SP1 1 : PV1 2 : Deviation1 (DEV1) 3 : Manipulated variable 1 (MV1) 4 : SP2 5 : PV2 6 : Deviation 2 (DEV2) 7 : Manipulated variable 2 (MV2) 8 : O_2 sensor mV input value
49	*C 49*	Auxiliary output 2 lower limit (4mA)	0 SPU		–19999 to +20000 SPU (*C48* not equal to 3) –1999.9 to +2000.0% (*C48* set to 3)
50	*C 50*	Auxiliary output 2 upper limit (20mA)	10000 SPU		–19999 to +20000 SPU (*C48* not equal to 3) –1999.9 to +2000.0% (*C48* set to 3)
57	*C 57*	Programming item Event	0		0 : Displayed 1 : Not displayed
58	*C 58*	Programming item PID group, output limiter group	0		0 : Displayed 1 : Not displayed
59	*C 59*	Programming item G.SOAK, PV shift, repeat	0		0 : Displayed 1 : Not displayed
60	*C 60*	Programming item PV start, cycle, pattern link	0		0 : Displayed 1 : Not displayed

denotes items settable only on models with CP compensation

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
61	*C 61*	Programming system	0		0 : RAMP-X and RAMP-T (θ) combined 1 : RAMP-X and RAMP-E (ΔSP) combined
62	*C 62*	Program time unit	0		0 : Hours, min (SPU/hour for RAMP-T) 1 : Min, sec (SPU/min for RAMP-T) 2 : 0.1 sec (SPU/sec for RAMP-T)
63	*C 63*	Time display (display panel 1 and 2)	0		0 : Remaining segment time 1 : total operation time (after READY → RUN start)
65	*C 65*	SP decimal point position (CH1)	1		0 to 4
66	*C 66*	SP limit lower limit	PV1 range lower limit		–19999 to +20000 SPU
67	*C 67*	SP limit upper limit	PV1 range upper limit		–19999 to +20000 SPU
68	*C 68*	SP decimal point position (CH2)	1 or 3		0 to 4 on a model without CP compensation. 0 to 3 on a model with CP compensation.
69	*C 69*	SP limit lower limit (CH2)	PV2 range lower limit		-19999 to +20000 SPU (CH2) on a model without CP compensation. 0 to 2000 SPU(CH2) on a model with CP compensation.
70	*C 70*	SP limit upper limit (CH2)	PV2 range upper limit		
71	*C 71*	External switch input RSW5	0		0 : NOP (does not function) 1 : RAMP-E 2 : FAST 3 : G.SOAK is cleared using OR 4 : G.SOAK is cleared using AND 5 : MANUAL/AUTO 6 : AT start/terminate 7 : NOP (does not function) 8 : Auto load 9 : NOP (does not function) 10 : NOP (does not function) 11 : O_2 sensor check
72	*C 72*	External switch input RSW6	0		
73	*C 73*	External switch input RSW7	0		
74	*C 74*	External switch input RSW8	0		
75	*C 75*	External switch input RSW9 to 14 (program selection)	0		0 : BCD4 bit + BCD2 bit 1 : Binary 6 bits
76	*C 76*	Communication address	0		0 to 127
77	*C 77*	Transmission rate	0		0 : 9600bps 1 : 4800bps 2 : 2400bps 3 : 1200bps
78	*C 78*	Transmission code	0		0 : 8 bits, even parity, 1 stop bit 1 : 8 bits, no parity, 2 stop bits
79	*C 79*	Communication protocol	0		0 : CPL 1 : ST221 (no PV trend) 2 : ST221 (PV trend)
80	*C 80*	Communication method	0		0 : RS-485 1 : RS-232C
81	*C 81*	ROM ID	—		< Description > Can only be referenced for mechanical service use.
82	*C 82*	ROM ITEM	—		
83	*C 83*	ROM revision	—		
84	*C 84*	Data version	—		
85	*C 85*	CPU board ID	—		
86	*C 86*	I/O board ID	—		
90	*C 90*	PID type	1		0 : Improved 1 : Compatible with Mark I
91	*C 91*	PV1 burnout	0		0 : Provided 1 : Not provided
92	*C 92*	PV2 burnout	0		0 : Provided 1 : Not provided
93	*C 93*	Time proportional output system (CH1)	0		0 : Does not go on a second time in time proportional cycle. 1 : Goes on a second time in time proportional cycle.
94	*C 94*	Time proportional output system (CH2)	0		0 : Does not go on a second time in time proportional cycle 1 : Goes on a second time in time proportional cycle

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
95	*C 95*	Voltage output tuning (CH1)	15		2 to 22mA
96	*C 96*	Voltage output tuning (CH2)	15		2 to 22mA
97	*C 97*	Communication port	0		0 to 15 Uses back plate terminal to setting 0. Uses loader jack to setting 1 to 15.
98	*C 98*	Special function	0		0 to 255
99	*C 99*	PV1 zener barrier adjustment	—		–20.00 to +20.00
100	*C100*	PV2 zener barrier adjustment	—		–20.00 to +20.00

■ Fixed command control data (CH1) setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*ConSt*	Control mode	0		0 : Program run mode 1 : Fixed command control mode
2	*SP*	Set point	0		Within setup *C66* to *C67* setting (SP limit)
3	*P*	Proportional band	100.0		0.0 to 1000.0% (0.0 : On-off control)
4	*I*	Integral time	0		0 to 3600sec (0: no integral operation)
5	*d*	Derivative time	0		0 to 1200sec (0: no derivative operation)
6	*rE*	Manual reset	50.0		0.0 to 100.0%
7	*oL*	Manipulated variable lower limit	0.0		–5.0 to upper limit %
8	*oH*	Manipulated variable upper limit	100.0		Lower limit to +105.0%

■ Fixed command control data (CH2) setting

No.	Item code	Item	Factory default settings	User settings	Settings and descriptions
1	*ConSt*	Control mode	0		0 : Program run mode 1 : Fixed command control mode
2	*SP*	Set point	0		Within setup *C69* to *C70* setting (SP limit)
3	*P*	Proportional band	100.0		0.0 to 1000.0% (0.0 : On-off control)
4	*I*	Integral time	0		0 to 3600sec (0: no integral operation)
5	*d*	Derivative time	0		0 to 1200sec (0: no derivative operation)
6	*rE*	Manual reset	50.0		0.0 to 100.0%
7	*oL*	Manipulated variable lower limit	0.0		–5.0 to upper limit %
8	*oH*	Manipulated variable upper limit	100.0		Lower limit to +105.0%

SAFETY REQUIREMENTS

EN2I-6026

To reduce risk of electrical shock which could cause personal injury, follow all safety notices in this documentation.

This symbol warms the user of a potential shock hazard where hazardous live voltages may be accessible.

* If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment must be impaired.
* Do not replace any component (or part) not explicitly specified as replaceable by your supplier.
* All wiring must be in accordance with local norms and carried out by authorized experienced personnel.
* The ground terminal must be connected before any other wiring (and disconnect last).
* A switch in the main supply is required near the equipment.
* Mains power supply wiring requires a (T) 2A, 250V fuse(s).

Installation category : Category II (IEC664-1, IEC1010-1)
Specification of common mode voltage : The common mode voltages of all I/O except for main supply are less than 30Vrms, 42.4Vpeak and 60Vdc.

EQUIPMENT RATINGS

Supply voltage	85 - 264 V~
Frequency	50/60Hz
Power or current ratings	25 VA maximum

EQUIPMENT CONDITIONS

Do not operate the instrument in the presence of flammable liquids or vapors. Operation of any electrical instrument in such an environment constitutes a safety hazard.

Temperature	0 to 50℃	
Humidity	10 to 90% RH	
Vibration	Frequency	10 to 60Hz
	Acceleration	$2m/s^2$ maximum

EQUIPMENT INSTALLATION

The controller must be mounted into a panel to limit operator access to the rear terminals.

CAUTION

Danger of explosion if battery is incorrectly replaced.

Replace only with the same or equivalent type
recommended by the manufacturer.
Dispose of used batteries according
to the manufacturer's instructions.

CONSIGNES DE SÉCURITÉ

Pour réduire tout risque de décharge électrique qui pourrait provoquer une lésion corporelle, respectez toutes les consignes de sécurité de cette documentation.

Ce symbole avertit l'utilisateur d'un risque électrique potentiel lorsqu'il peut avoir accès à des éléments sous tension.

* Si l'équipement est utilisé dans un but non spécifié par le constructeur, la protection fournie avec cet équipement peut être affectée.
* Aucun composant (ou pièce) ne doit être remplacé s'il n'est pas explicitement spécifié comme tel par le constructeur.
* Tous les câblages doivent être conformes aux normes locales et doivent être réalisés par un personnel autorisé et expérimenté.
* La borne de masse doit être raccordée avant tout autre câblage (et débranchée en dernier).
* Il est obligatoire de connecter cet appareil sur une ligne possédant un moyen de coupure près de l'appareil, d'un accès facile pour l'utilisateur.
* Le câblage de l'alimentation principale nécessite un ou des fusible(s) 2 A (T), 250 V.

Catégorie d'installation : Catégorie II (IEC664-1, IEC1010-1)
Spécification de tension en mode commun : les tensions en mode commun de toutes les entrées/sorties excepté pour l'alimentation principale et les sorties relais sont inférieures à 30 V eff., 42,4 V en crête et 60 Vcc.

CARACTÉRISTIQUES DE L'ÉQUIPEMENT

Tension d'alimentation	85 - 264 V~
Fréquence	50/60 Hz
Puissance ou courant	25 VA maximum

CONDITIONS AMBIANTES

Ne jamais utiliser cet équipement en présence de liquides ou de vapeurs inflammables. L'utilisation de tout instrument électrique dans un tel environnement pourrait présenter un risque pour la sécurité.

Température	0 à 50°C	
Humidité	10 à 90 %	
Vibration	Fréquence	10 à 60 Hz
	Accélération	$2 m/s^2$ maximum

INSTALLATION DE L'ÉQUIPEMENT

Le contrôleur doit être monté dans un panneau pour limiter l'accès aux bornes arrières par l'opérateur.

Befolgen Sie alle Sicherheitshinweise in diesen Unterlagen, um das Risiko eines Stromschlags zu verringern, der zu Körperverletzung führen kann.

Dieses Symbol warnt den Benutzer vor eventueller Berührungsgefahr, wo lebensgefährliche Spannungen zugänglich sein können.

* Bei Benutzung der Ausrüstungen auf nicht vom Hersteller angegebene Art und Weise kann der von der Ausrüstung gewährleistete Schutz beeinträchtigt werden.
* Ersetzen Sie keine Komponente (oder Teil), die/das nicht ausdrücklich vom Lieferanten als ersetzbar angegeben ist.
* Die gesamte Verkabelung muß den örtlichen Normen entsprechen und von zugelassenem, erfahrenem Personal durchgeführt werden.
* Die Erde muß vor allen anderen Kabeln angeschlossen (und zuletzt abgeklemmt) werden.
* In der Nähe der Ausrüstung muß ein Schalter in der Hauptstromversorgung vorhanden sein. (vom Bediener leicht zu erreichen)
* Für die Hauptstromversorgung sind 2A, 250 V Sicherungen (T) notwendig.

Installationskategorie : Kategorie II (IEC664-1, IEC1010-1)
Spezifikation für Gleichaktspannungen : Die Gleichaktspannungen für alle E/A (Eingänge/Ausgänge) (außer für Spannungsversorgung une Relaisausgänge) sollen 30 V eff bzw, 42,4 V Spitzenspannung und 60 VGS nicht überschreiten.

AUSRÜSTUNGSDATEN

Netzspannung	85 bis 264 V~
Frequenz	50/60 Hz
Nennleistung	25 VA maximal

UMGEBUNGSBEDINGUNGEN

Betreiben Sie das Gerät nicht in Gegenwart entflammbarer Flüssigkeiten oder Dämpfe. Der Betrieb elektrischer Geräte in solchen Umgebungen stellt ein Sicherheitsrisiko dar.

Temperatur	0 bis 50° C	
Feuchtigkeit	10 bis 90 %	
Vibration	Frequenz	10 bis 60 Hz
	Beschleunigung	$2 m/s^2$ maximal

ANBRINGUNG DER AUSRÜSTUNGEN

Der Regler muß in ein Pult eingebaut sein, damit der Bediener nicht zu oft auf die hinteren Anschlüsse zugreifen muß.

Per ridurre il rischio di scossa elettrica con conseguente danno alle persone, seguire le norme di sicurezza indicate nella presente documentazione.

Questo simbolo avverte del pericolo di scossa elettrica nelle aree in cui sono accessibili conduttori sotto tensione.

* Se si utilizza l'apparecchio in modo diverso da quello specificato dalla ditta produttrice, è possibile che venga danneggiata la protezione fornita dall'apparecchio stesso.
* Non sostituire alcun componente, o parte, che non sia stato espressamente definito "sostituibile" dal fornitore.
* Tutti i collegamenti elettrici devono essere conformi alle norme locali ed effettuati da personale autorizzato.
* Il terminale di terra deve essere collegato prima degli altri cavi e scollegato per ultimo.
* È necessario che sia presente un interruttore nell'alimentazione principale accanto all'apparecchio, a portata dell'operatore.
* Il cablaggio di alimentazione rete richiede (T) 2A, fusibili 250 V.

Categoria de installazione : Categoria II (IEC664-1, IEC1010-1)
Specificazione dei voltaggi nel modo comune : I voltaggi nel modo comune de todos los ingressos/uscite eccetto per l'alimentazione principale e le uscite relé sono inferiores a 30 V eff., 42,4 V picco e 60 Vdc.

DATI NOMINALI

Voltaggio	85 a 264 V~
Frequenza	50/60 Hz
Potenza o potenza nominale corrente	25 VA massimo

CONDIZIONI AMBIENTALI

Non far funzionare l'apparecchio in presenza di liquidi o gas infiammabili, in quanto questo potrebbe essere estremamente pericoloso.

Temperatura	Da 10 a 50° C	
Umidità	Dal 10 al 90%	
Vibrazioni	Frequenza	10 a 60 Hz
	Accelerazione	$2 m/s^2$ massimo

INSTALLAZIONE DELL'APPARECCHIO

Il dispositivo di controllo deve essere montato su un pannello per limitare l'accesso ai terminali posteriori.

Teneinde het gevaar voor elektrische schokken die verwondingen kunnen veroorzaken te verminderen, alle instructies van deze documentatie navolgen.

Dit symbool waarschuwt de gebruiker voor een potentieel schokgevaar wanneer toegang bestaat tot onderdelen die onder gevaarlijke spanning staan.

* Wanneer de apparatuur op een manier wordt gebruikt die niet door de fabrikant is aanbevolen kan de beveiliging van de apparatuur haar doeltreffendheid verliezen.
* Geen onderdelen vervangen die niet als vervangbaar zijn aangeduid door onze leverancier.
* Alle bedrading dient conform te zijn aan lokale normen en te worden aangelegd door bevoegd ervaren personeel.
* De beaarding dient vóór elke andere bedrading te worden aangesloten (en als laatste te worden ontkoppeld).
* Een hoofdnetschakelaar, gemakkelijk bereikbaar door de operateur, is in de nabijheid van deze apparatuur vereist.
* Een zekering (T) 2A, 250 V, is vereist voor de bedrading van het voedingsnet.

Installatie Categorie : categorie II (IEC664-1, IEC1010-1)
Specificatie van de spanningen in algemene mode : De algemene mode spanningen voor alle I/O behalve de netvoeding en de relais uitgangen zijn van minder als 30V r.m.s., 42,4V spanningspiek en 60V gelijkstroom.

TECHNISCHE GEGEVENS

Voedingsspanning	85/264 V~
Frequentie	50/60 Hz
Vermogen of stroomvermogen	max. 25 VA

OMGEVING

Gebruik het apparaat niet bij brandbare vloeistoffen of dampen. Het gebruik van elektrische apparatuur in zo'n omgeving is gevaarlijk.

Omgevingstemperatuur	0 tot 50°C	
Vochtigheidsgraad	10 tot 90%	
Trilling	Frequentie	10 tot 60 Hz
	Acceleratie	$2m/s^2$ max.

INSTALLATIE VAN DE APPARATUUR

De controle-eenheid dient op een paneel te worden gemonteerd om toegang door de operateur tot de achteraansluitklemmen te verhinderen.

Para reducir el riesgo de una descarga eléctrica que podría ocasionar daños personales siga atentamente las instrucciones de esta documentación.

Este símbolo previene al usuario de un riesgo potencial de descarga cuando se puede acceder a corrientes de tensión peligrosas.

* Si el equipo se utiliza de manera distinta a la especificada por el fabricante, la protección procurada por el equipo puede verse perturbada.
* No sustituya ningún componente (o parte de él) que no esté señalado como reemplazable de manera específica por su proveedor.
* Todos los cables deben estar en conformidad con las normas locales y ser instalados por un personal autorizado y competente.
* El borne de tierra debe conectarse antes que cualquier otro cable (y ser desconectado en último lugar).
* Debe haber un interruptor en la red principal cerca del equipo. (Fácil acceso para el operador)
* Los cables de suministro de la red eléctrica requieren fusibles (T) 2A, 250 V

Categoría de instalacíon : Categoría II (IEC664-1, IEC1010-1)
Especificacíon de los voltajes en el modo común : los voltajes en el modo común de las entradas/salidas salvo para la red principal y las salidas de relé son inferiores a 30 V eff., 42,4 V pico y 60 Vcc.

CONDICIONES DE FUNCIONAMIENTO DEL EQUIPO

Tensión de suministro : 85 a 264 V~
Frecuencia 50/60 HZ
Potencia o corriente: 25 VA máximo

CONDICIONES DEL ENTORNO

No utilice el instrumento en presencia de líquidos o gases inflamables. La utilización de cualquier instrumento eléctrico en tal entorno constituye un riesgo para la seguridad.

Temperatura:	0 a 50°C	
Humedad :	10 a 90 %	
Vibración	frecuencia	10 a 60 Hz
	aceleración	$2m/s^2$ máximo

INSTALACIÓN DEL EQUIPO

El controlador debe ser montado en un tablero, para limitar el acceso del operador a los bornes traseros.

Para reduzir o risco de choque eléctrico que pode causar danos físicos, siga todas as instruções de segurança contidas nesta documentação.

Este símbolo avisa o utilizador sobre um eventual perigo de choque quando são acessíveis voltagens sob tensão perigosas.

* Se o equipamento for utilizado de uma forma não especificada pelo fabricante, a protecção normalmente facultada pode falhar.
* Não se deve substituir qualquer componente (ou peça) que não seja explicitamente especificado como substituível pelo nosso revendedor.
* Todos os fios devem estar em conformidade com as normas locais e instalados por profissionais autorizados.
* O terminal de terra deve ser ligado antes de qualquer outro fio (e desligado em último lugar).
* É necessário um interruptor na alimentação principal perto do equipamento ao alcance do operador.
* Os fios de alimentação principal necessitam de fusíveis (T) 2 A; 250 V.

Categoria de instalação: categoria II (IEC664-1, IEC1010-1).
Especificação respeitante às tensões ordinárias: as tensões ordinárias de quaisquer entradas/saídas, exceptada a alimentação dos sectores e das saídas relés, são inferiores a 30V r.m.s. (valor eficaz), 42,4V tensão máxima e 60 V dc (corrente contínua).

ESPECIFICAÇÕES DO EQUIPAMENTO

Voltagem	85/264 V~
Frequência	50/60 Hz
Potência	25 VA máximo

CONDIÇÕES DO MEIO AMBIENTE

Não colocar o equipamento em funcionamento na presença de líquidos ou vapores inflamáveis. A utilização de qualquer equipamento eléctrico num ambiente deste tipo comporta riscos de segurança.

Temperatura	0 a 50°C	
Humidade	10 a 90%	
Vibração	Frequéncia	10 a 60 Hz
	Acceleração	$2m/s^2$ máximo

INSTALAÇÃO DO EQUIPAMENTO

O controlador deve ser montado num painel para limitar o acesso do operador aos terminais traseiros.

Για να αποφύγετε τον κίνδυνο ηλεκτροπληξίας που μπορεί να προκαλέσει τραυματισμό ατόμων, ακολουθήστε όλες τις οδηγίες ασφαλείας του φυλλαδίου.

Αυτό το σύμμβολο προειδοποιεί το χρήστη για μία δυνατότητα κινδύνου ηλεκτροπληξίας όταν μπορεί να υπάρχει πρόσβαση σε επικίνδυνες τάσεις.

* Εάν ο εξοπλισμός χρησιμοποιείται κατά τρόπο που δεν περιγράφεται από τον κατασκευαστή, η προστασία που προσφέρεται από το προϊόν μπορεί να αλλοιωθεί.
* Μην αλλάξετε κανένα ανταλλακτικό (ή μέρος) που δεν αναφέρεται καθαρά ότι μπορεί να αντικατασταθεί από τον προμηθευτή μας.
* Όλες οι καλωδιώσεις πρέπει να είναι σύμφωνες με τις τοπικές προδιαγραφές και να γίνονται από ειδικευμένο έμπειρο προσωπικό.
* Η γείωση πρέπει να συνδεθεί πριν από οποιοδήποτε άλλο καλώδιο (και να αποσυνδέεται τελευταίο).
* Ένας διακόπτης στην κεντρική τροφοδοσία είναι απαραίτητος κοντά στον εξοπλισμό, εύκολης πρόσβασης για τον χειριστή.
* Η τροφοδοσία σε ρεύμα απαιτεί μία ασφάλεια (T) 2A, 250 V.

Κατηγορια Εγκαταστασης :Κατηγορια II (IEC664-1, IEC1010-1)

Προδιαγραφη τασεων κοινης διακυμανσης: Οι τασεις κοινης διακυμανσης ολων των εισοδων και εξοδων (I/O), εκτος απο την κυρια τροφοδοσια και τις εξοδους ρελε ειναι λιγοτερο απο τα 30V r.m.s., 42.4V μεγιστη στιγμιαια ταση (peak) και 60V συνεχους τασης (DC).

ΧΑΡΑΚΤΗΡΙΣΤΙΚΑ ΕΞΟΠΛΙΣΜΟΥ

Τάση τροφοδοσίας	85/264 V~
Συχνότητα	50/60 Hz
Ισχύς ρεύματος	25 VA μέγστη

ΣΥΝΘΗΚΕΣ ΠΕΡΙΒΑΛΛΟΝΤΟΣ

Μη βάζετε σε λειτουργία το όργανο σε παρουσία εύφλεκτων υγρών ή ατμών. Λειτουργία σε τέτοιο περιβάλλον είναι επικίνδυνο για την ασφαλεία.

Θερμοκρασία	0 έως 50° C	
Υγρασία	10 έως 90%	
Δονήσεις	Συχνότητα	10 έως 60 Hz
	Επιτάχυνση	$2 m/s^2$ μέγστη

ΕΓΚΑΤΑΣΤΑΣΗ ΕΞΟΠΛΙΣΜΟΥ

Ο ελεγκτής πρέπει να συναρμολογηθεί σε πίνακα για να περιορισθεί η πρόσβαση του χειριστή στους πίσω ακροδέκτες.

For at reducere risikoen for elektrisk stød og dermed forbundet personskade er det nødvendigt at følge sikkerhedsforskrifterne i følgende dokumentation.

Dette symbol advarer brugeren om en potentiel berøringsfare, såfremt der kan være adgang til den livsfarlige netspænding.

* Såfremt udstyret anvendes på anden måde end den, producenten har angivet, kan det betyde en forringelse af udstyrets sikkerhed.
* Udskift ikke nogen komponent (eller del), som leverandøren ikke specifikt har angivet er udskiftelig.
* Al ledningsføring skal være i overensstemmelse med nationale standarder og skal udføres af autoriseret personale med behørig erfaring.
* Jordklemmen skal tilsluttes inden andre ledninger (og skal afmonteres sidst).
* Det er nødvendigt med en afbryder til strømforsyningen nær udstyret og i umiddelbar nærhed af operatøren.
* Tilslutning til strømforsyning kræver en (T) 2A, 250 V sikring.

Installationskategori: kategori II (IEC664-1, IEC1010-1)
Specifikation af almindelige spændinger: De almindelige spændinger over alle I/O undtagen netspændingen og relæudgangene er mindre end 30 V r.m.s., 42,4 V spids og 60 V jævnstrøm.

UDSTYRETS MÆRKEVÆRDIER

Netspænding	85/264 V~
Frekvens	50/60 Hz
Nominel effekt	25 VA maksimum

MILJØFORHOLD

Brug ikke instrumentet i nærheden af brandfarlige væsker eller dampe. Anvendelse af elektriske instrumenter i et sådant miljø udgør en sikkerhedsrisiko.

Temperatur	0 til 50° C	
Fugtighed	10 til 90 %	
Vibration	Frekvens	10 til 60 Hz
	Acceleration	2m/s^2 maksimum

INSTALLATION AF UDSTYR

Styreenheden skal monteres i en plade eller et panel for at begrænse operatørens adgang til de bageste klemmer.

Följ noga handbokens samtliga säkerhetsföreskrifter för att undvika elstötar och åtföljande personskador.

Denna symbol varnar användaren för risk för elchock vid tillfällig åtkomst av spänningsförande del.

* Om utrustningen används på ett sätt som ej förutsetts av tillverkaren kan säkerhetsskyddet visa sig vara otillräckligt.
* Byt inte ut någon komponent (eller del) om denna inte klart angivits som utbytbar av tillverkaren.
* All kabeldragning skall följa de lokala föreskrifterna och utföras av en kompetent och erfaren fackman.
* Jorduttaget måste anslutas innan all annan kabeldragning (och kopplas från sist).
* En nätströmbrytare skall finnas i närheten av utrustningen, inom bekvämt räckhåll för operatören.
* Huvudnätets kabeldragning kräver (T) 2 A, 250 V säkring(ar).

Installationskategori: kategori II, (IEC664-1, IEC1010-1)
Specifikationer för vanliga nätspänningar: De vanliga nätspänningarna för alla I/O utom för huvudströmsförsörjningen och reläuttagen är mindre än 30V sinuseffekt (r.m.s), 42.4V maximibelastning och 60V dc (likström).

UTRUSTNINGENS MÄRKDATA

Nätspänning	85 till 264 V~
Frekvens	50/60 Hz
Effekt eller märkström	25 VA maximum

MILJÖVILLKOR

Använd inte utrustningen i närheten av lättantändliga vätskor eller ångor. Drift av elektriska instrument i en sådan omgivning är att leka med säkerheten.

Temperatur	0 till 50°C	
Fuktighet	10 till 90 %	
Vibration	Frekvens	10 till 60 Hz
	Acceleration	$2 m/s^2$ maximum

INSTALLERING AV UTRUSTNING

Kontrollern skall monteras i en panel för att minska operatörens åtkomst till de bakre terminalerna.

Noudata kaikkia näitä turvaohjeita vammoja aiheuttavien sähköiskujen välttämiseksi

Tämä merkki varoittaa käyttäjää sähköiskun vaarasta paikassa, missä voi koskettaa vaarallisia jännitteitä.

* Laitteeseen kuuluva suojaus voi heikentyä, jos sitä käytetään valmistajan osoittaman tavan vastaisesti
* Älä korvaa mitään komponenttia (tai osaa), ellei jälleenmyyjä ole ilmoittanut sen korvauskelpoisuutta.
* Kaikkien johdotusten on oltava paikallisten standardien mukaiset ja kokeneen, valtuutetun asentajan tekemät.
* Maadoituspiste on kytkettävä ensimmäisenä ennen muita kytkentöjä (ja irrotettava viimeisenä).
* Käyttövirran pääkatkaisijan on oltava laitteen lähellä helposti käyttöhenkilön ulottuvilla.
* Käyttövirralle tarvitaan 2 A (T), 250 V sulakkeet.

Laitosluokka : luokka II (IEC664-1, IEC1010-1)
Yhteismuotojänniteiden määritys : Kaikien syöttöjen ja antojen yhteismuotojännitteet paitsi pääsyötön ja releantojen yhteismuotojännitteet ovat alle 30 V tehollisjännite, alle 42.4 V huippujännite ja alle 60 V tasavirtajännite.

LAITTEEN NIMELLISARVOT

Käyttöjännite	85/264 V~
Taajuus	50/60 Hz
Teho	25 VA maksimi

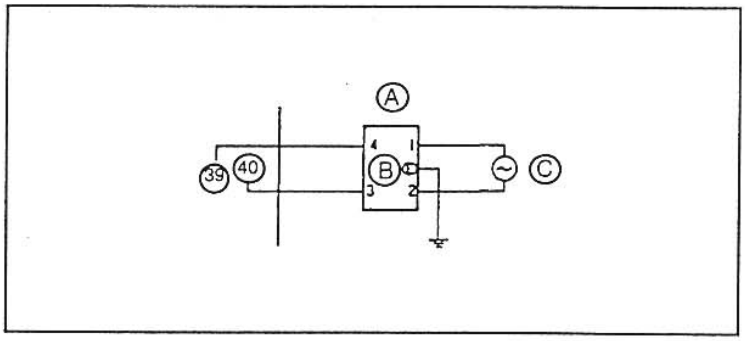
KÄYTTÖOLOSUHTEET

Älä käytä laitetta tulenarkojen nesteiden tai kaasujen lähistöllä. Jokainen sähkölaite muodostaa vaaratekijän sellaisessa ympäristössä.

Lämpötila	0 - +50°C	
Kosteus	10 - 90%	
Tärinä	Taajuus	10 - 60 Hz
	Iihtyvyys	$2m/s^2$ maksimi

LAITTEEN ASENNUS

Säätötoiminnot on asennettava paneelille, jotta käyttäjällä olisi rajoitettu pääsy taustakytkentöihin.



	Ⓐ	Ⓑ	Ⓒ
FR	Filtre antiparasite	Masse	Alimentation de l'appareil 85 à 264 V CA
GE	Störschutzfilter	Erde	Instrumentenstromversorgung 85 bis 264 V Wechselstrom
IT	Filtro rumore	Terra	Alimentazione strumenti 85-264 V CA
SP	Filtro de ruido	Tierra	Tablero suministro de corriente 85 a 264 V corriente alterna
SW	Ljudfilter	Jord	Instrumentkraftuttag 85 till 264 V AC
GR	Φίλτρο θορύβου	Γη	Παροχή Ισχύος για τα Οργανα / 85 με 264 V AC
PO	Filtro de ruído	Terra	Alimentação de instrumento 85 a 264 V AC
DA	Støjfilter	Jord	Strøm til instrumenter 85 - 264 V AC
NL	Geluidsfilter	Aarde	Stroomtoevoer instrumenten Wisselstroom 85 t/m 264 V
FI	Kohinasuodatin	Maadoitus	Instrumentin virtalähde 85 - 264 V vaihtovirtaa
EN	Noise Filter	GND	Instrument power supply 85-264VAC

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Revision History

Printed Date	Manual Number	Edition	Revised pages	Description
97-12	**EN1I-6187**	**1st Edition**		
98-05		**2nd Edition**	Fly leaf i to viii 5-4 5-20 5-27 6-6 6-7, 6-8 7-6 7-8 7-15 7-29 7-35 8-19 11-5 11-6 Parameter Work Sheet P.2	Addition of comment SAFETY PRECAUTIONS deleated Page i, ii, iii deleated 3rd item on NOTE Select Δ SP setting→Select θ setting Pare of explanation changed Pare of Lise changed Drawing and explanation replaced Explanation Handling Precautions (unit:%C)→(unit:%) Section of "PA40 Settings and descriptions" -1000 to +1000 SPU(CH2)→ -1000 to +1000 PVU(CH1) Section of "PA100 Settings and descriptions" Addition of % Section of Event type 89 Meaning Message" Segment number binary SEG-BIN→ Segment number binary code SEG-BIN Section of "C76 Settings and descriptions" Addition of explanation Explanation of "Io required in connecting one PGM" the figure on the right,→the figure below "ミ"and "ネ" replaced in the character Lise Section of "Memory card Parameter" Fixed command control data→ Constant value control data •Ambient humidity range 0 to 90% RH→10 to 90% RH •Vibration resistance Addition of explanation Section of "PA40 Settings and descriptions" -1000 to +1000 SPU(CH2)→ -1000 to +1000 PVU(CH1)
98-11		**3rd Edition**	4-3 8-1 12-8 12-12 12-17	Compensating lead wire specifications was deleted NOTE was changed (CP-SP-1002E was abolished) The table of Key test(00-01) was changed Figure of Table 12-9 was added Fig12-6, 12-7 was changed
00-11		**4th Edition**	1-5 4-16 4-17 5-10 5-11 to 5-36 HONEYWELL SERVICE CENTERS	"D0" of Additional processing item was deleted Wirining diagram of RS-232C connection was changed JIS code of NOTE table was deleted Diagram of other functions was added Old 5-10 to 5-35 pages Company name and Adress of JAPAN were changed
01-12		**5th Edition**	 4-16	fonts changed The 2nd item of "Handling Precautions", 'There are four (RD, SD, SG and FG) • • •' → 'There are three (RD, SD and SG) • • •' changed and the 3rd item of "Handling Precautions" deleted

Printed Date	Manual Number	Edition	Revised pages	Description
01-12	**EN1I-6187**	**5th Edition**	5-10	Diagrams of PV1-PV2 differential upper limit, PV1-PV2 differential lower limit, PV1-PV2 differential upper limit during automatic PV channel selection and PV1-PV2 differential upper limit during automatic PV channel selection deleted
			7-29	No.90 Unused→PID type changed
			7-35	deleted, old 7-36 page
			7-36	Old 7-37 page
			9-9	Set up data C91→C90 changed
			10-9	The 3rd item of "Handling Precautions" changed

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