TEMP2000 SERIES

Operation Manual (Programmable controller)





It is a dual/single loop programmable controller which equips with the general control, heating and cooling function by supporting high definition TFT-LCD touch screen and SD card.

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01. Cautions (Instructions) for safety

:....: Thank you for your choice of our programmable controller (TEMP2000 series). This manual describes the method of operation of the product.

Cautions in this instruction manual

- Please deliver for the end user to possess always and keep it in the place accessible at any time.
- Use the product after full understanding of this operation manual.
- This operation manual does not warrant any other things because it is a description of the details for the function.
- A part or whole of this manual shall not be edited or copied randomly.
- The descriptions in this manual may be changed randomly without pre notice or warning.
- Even though this manual was made with elaboration, it will be appreciated if you inform to the purchasing point (Dealer shop and etc) or sales team in our company in case of deficiency, mistake or omission in the contents.

Cautions for the safety and modification (Change) of the product

- Please use this product after full understanding on the safety cautions in this manual for the protection and safety for this product and the system connected to this system.
- Our company is not responsible to the damages occurred by using or handling or unattended using not relying on this operation manual.
- Please install at the outside of this product when the additional protection and safety circuit is installed separately for the protection and safety for this product and the system connected to this system.
- The internal modification (Change) and addition to this product are prohibited.
- Do not disassemble, repair and modify of this product because it becomes the reasons for electric shock, fire and malfunction.
- In case of changing the part or the consumables of this product, please contact to the sales department of our company.
- Do not contact to the moisture with this product. It may cause the failure on this product,
- Do not apply the strong impact on this product. It may cause the damage and failure on this product.

With regard to the exemption for the responsibility of this product

- We are not responsible for any warranty on this product besides the defined cases in the quality assurance condition of our company.
- We are not responsible for the direct or indirect damages on the user of any third party due to the not expectable defect or the natural disaster in use of this product.

With regard to the quality assurance condition of this product

- The warranty period shall be one year from the purchasing of this product. Free of charge repair is available only for the cases of out of order occurred from normal use conditions,
- The repair due to the out of order occurred after the warranty period shall be repaired at the actual cost according to the defined condition by our company.
- The out of order occurred within the warranty period shall be repaired at the actual cost for the following cases in spite of within the warranty period, (1) Out of order due to the mistake or fault of the user (Ex: Initialization by losing the password and etc.)

(2) Out of order due to the natural disaster (Ex: Fire and flood and etc) (3) Out of order due to the movement of product after installation. (4) Out of order due to the random disassemble, change or damage on the product. (5) Out of order due to the electric power instability (6) Others

Please contact to the purchasing points or sales part of our company when after sales service is necessary because of the failure on the product,

Symbol marks for safety



(A) It means the "Handle with care" or "Cautions" In case of violation of this point, it may cause the death, severe injury or the extreme damage on the product.

 Product: It is marked on the points to be acknowledged certainly to protect the human body and device.

Instruction manual: It describes the cautions to prevent the cases of endangered situation on the life and body of the user due to the electric shock and so on.

(B) It means"Ground terminal"



 Make the earth with the ground in case of product installation and controlling the product.



(C) It means the "supplementary explanation"

 It describes the points to supplement the explanation.



 (D) It describes the "references"
 It describes the information and pages of reference to be referred Part 01

Operation and setting

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01. Operation and setting

This product is programmable controller designed with dialogue style touch screen easy-to-use for the users.

1-1. Basic operation flow chart

- The logo screen and the initial screen are displayed sequentially when the electric power is switched "ON" after installation of the product and it converts to the program stationary screen.
- It takes about 20 seconds for screen loading
- When **HANN** button is touched at the top of the program stationary screen, it converts to the main screen.
- Refer to [13. System initial setting] in [Installation manual] for change in the initial screen.



1-2. Setting button operation

Button type	Button operation
SP SP	The "Set value" is touched in stationary operation/still screen and it is used for setting the set value wanted by the user.
PTN NO	The "Pattern No." is touched in program still screen and it is used for setting the pattern number wanted by the user.
	It is used for inputting the general numbers and name,

Button type	Button operation
	It is used for selection for one out of many types.
0	It is used for selection for one out of more than 2 parameter setting, (ON/OFF/Inactive state)
	It is used for selection of Y/N for the corresponding parameter. (ON/OFF/Inactive state)
← →	It is used for general screen conversion.
	It is used for increasing or decreasing of the page within the same screen.
• •	It is used for the page conversion by the decrease and increase in time axis on the same screen,
CH1 CH2	The explanation for the channel corresponds only to TEMP2*20 (TEMP2*20 series not support this setting.)

1-3. Parameter setting method

- When is selected in [1–2 Setting button operation], the input key of the setting value is shown as followings and the necessary data can be input.
- When the data out of the setting range is input, error message ("LIMIT ERROR") is shown on the input data display window with the error sound ("Beep").

SET	POINT 0 200.0 ~	DF RUNNI 1370.0	NG)	-20	0.0		
1	2	3	4	5	6	H BS	ESC
7	8	9	0	•	+/-	CLEAR	ENTER

▲ Input key for setting only the numbers

Input key for setting the pattern experiment name and DI error name Refer to [11, DI function and operation setting] in [Operation manual] for DI error name input key.

DI9 [AL	ERROR N PHABET	VAME / NUMEF							
Α	В	C	D	E	F	G	H	Ι	J
К	L	Μ	N	0	Р	Q	R	S	Т
U	V	W	X	Y	Z	()	#	_
1	2	3	4	5	6	+	CLR	D E	SC
7	8	9	0	•	-	:	SP	ENT	

TS T	YPE OF O	01 SEGM ~ 20	(ENT	00 (00 00	00	
1	2	3	4	5	6	TS G. CLF	ESC
7	8	9	0	TS1	TS2	TS3 TS4	ENTER

▲ Input key for time signal setting



▲ Input key for sub output setting Refer to sub output in [4, Control & Transmitting output] in [Operation manual] for sub output setting,



▲ Display when it is out of the setting range



▲ Input of SEG alarm setting

► SETT	ING OF	USER TA / NUMER	G NAME					
A	В	C	D	E	F	G	H	ΙͿ
К	L	Μ	N	0	Р	Q	R	ST
U	V	W	X	Y	Z	(#
1	2	3	4	5	6	+	CLR	ESC
7	8	9	0	•	-	:	SP	ENTER

▲ Input key for user tag name in channel 1 and 2



- Input OFF (Lock release state) for key lock because the set value is not input when "Key lock" is "ON."
- Refer to [4. Operation motion setting] for details

(1) Method for effectiveness of setting button and setting value

- This product is designed as follows when the setting data input button is touched or to check the effectiveness of the input setting data by sound.
- "Beep" : When the basic setting button is touched or the setting data is input normally
- "Beep and beep" : When the input data by the setting data input key is out of the input range.
- Do not press with sharp thing (Pencil and etc) or excessive force on the input key for basic setting button or setting value, It may cause the mal operation of the device or damage on the touch panel.

(2) Setting value input method

- Every input data used in this product is set by the set data input key, test name input key and time signal input key.
- The input key for set data is appeared when button is touched in [1-2 Setting button operation] and the value to be set can be input.
- Refer to [6-4 Time signal operation] for time signal input.
- Refer to [11. DI function and operation setting] in [Operation manual] for DI error name input key.



Ex) Set data input method

Press the set data input button in the corresponding screen \rightarrow Press the "ENTER (1)" key finally after pressing the corresponding number in sequence (($@ \rightarrow @ \rightarrow @ \rightarrow @ \rightarrow @)$)

1	It displays "Parameter."
2	It displays "Setting range."
	It displays "setting display window."
3	 It displays "LIMIT ERROR" when it is out of the setting range.
	• It displays "INPUT ERROR" when there is an error in setting unit,
4	It is used to return to original screen after stopping the input.
5	It returns to the original screen by saving the input data.
6	It is used for input the decimal point,
7	It is used for input the symbol (+/-).
8	It is used for erasing the input data by one character.
9	It is used for erasing all input data.
10	It displays the already input setting data.



Main screen







No.	Instruction	Description
1	GRAPH & RECORD	Moving to the screen to set Y/N for using graph display, graph record, SD card recording
2	OPERATION SCREEN	Moving to the operation screen
3	FUNCTION & FIX	Moving to the setting screen for additional function and operation method
4	PROGRAM SET	Moving to the program setting menu screen
5	RESERVE SET	Moving to the screen for setting current time, programmed operation time.

No.	Instruction	Description
6	DISPLAY SET	Move to the screen where user tag, screen switching time, backlight power saving, LCD brightness, and internal memory can be set
7	BUZZER SOUND	It sets Y/N of use buzzer sound. The buzzer sound generated in DI error is operated when it is set for no use.
8	LANGUAGE SET	Set the language to use (English, Korean, Simplified, Traditional, Japanese, Russian languages available)

9



Setting graph display and save

3–1 Pattern graph display		 	12
3–2 Presented value (PV)	graph view · · · · · ·	 	
3-3 Presented value (PV)	graph save setting	 	17
3–4 Memory save setting		 	

Setting graph display and save

► → Flow chart



[Fig. 3-9] Graph & Saving screen 4

[Fig. 3-8] Graph & Saving screen 3





3-1. Pattern graph display

- It converts to [Fig. 3–2 Graph & Save screen 1 (Pattern graph display)] when [Graph & Save] is selected at the left top in [Fig. 2–1 Main screen]
- This screen displays the operation pattern and progress time in program operation.
- The following table is an explanation for channel 1 and channel 2 is same with channel 1.
- It is a screen to display the input pattern in [Fig. 6-2 Pattern editing screen].
- PATTERN NO 1 , VIEW TIME 30 MIN 🔽 can be changed in pattern graph display.





Display the graph setting menu

(1) • Display the parameters related to the pattern graph operation at the bottom depending on ON/OFF operation on the graph menu button Setting the pattern No. to be displayed Display the input key to set the pattern No. when (2) (Pattern No.) is touched. • Refer to [Fig. 3–4 Pattern No. input screen] Setting the time on graph X axis Display of the input key to set the time on X axis when 30 MIN 3 (Display time) is touched. • The time on X axis can be changed during operation 4 Moving from current screen to next screen (5) Moving to channel 1 or 2 Change into the Previous/Next stage on the time axis when 6 is touched on the current page.

[Fig. 3–3] Graph & Save screen 1 (Program operation) 11.04.18 📈 PATTERN GRAPH VIEW 09:59 AM **MAIN** 056-CH1 CH2 42-128-114-2 GRP.SET TODODO, EH O. OH 1.DH 2.OH э.он

② Display in green for the operation ended part	
(3) Display the processing time for the set pattern in	
[6–1 Program pattern setting]	

Sill

NON

PATTERN GRAPH VIEW 20.02.17 12 00 AM										
100 International									:: M	AIN
= tu									+	+
Inter									CH1	CH2
P	ATTERN	NUMBER 1 ~	FOR GRA	APH		1				
1		2	3	4	5	6	← BS		[]ESC	
7		3	9	0	•	+/-	EX CLEAR	T	ENTER	
1	ATTERN	NUMBER 1 ~ 2 3	FOR GRA 40] 3 9	арн 4 0	5	1 6 +/-	← BS		∏esc enter	

[Fig. 3–4] Pattern No. input screen

References

- It is a screen to input the pattern No. to be displayed in graph.
- > The pattern No. can be input even during operation.

Parameter	Setting range	Unit	Initial value
Channel#n PATTERN NO.	1~40	ABS	1
DISPLAY TIME	30 minutes, 1 hour, 3 hours, 6 hours, 12 hours, 24 hours	ABS	30 minutes

∦n:1~2

3-2. Presented value (PV) graph view

- It is a screen to display the data recorded in [4–1(4) Stationary operation 3 operation screen] and [4–2(4) Program operation 3 operation screen].
- The date and time saved into the memory are displayed at the top of the screen. [Reference 1]



- It displays the temperature (Set-data, Indicated-Data) and humidity (Setdata, Indicated-Data)
- When the checked is touched, it is disappeared on the graph screen and when is touched, it is displayed on the graph screen.
 - Refer to [Fig. 3-5 and Fig. 3-6 Graph & Save setting screen 2]
- (2) Key lock / SD card / Storage indicator

(1)

3

Siplay to update the graph screen immediately which is being saved.

4	When Setting copy the recorded PV file in the internal memory to an SD card Send the selected file, Send the whole file,
5	Set storage media display Set storage media display
6	Set graph display direction
7	Moving from current screen to next screen
8	When WITHE is touched, the files saved into the internal memory is displayed. Moving from current screen to next screen
9	The time axis is expanded or reduced.
10	Moving to the beginning and end of the displayed PV graph page
1	Moving of graph screen by one page.
12	Moving the blue line on the graph screen up/down by 1 DOTWhen the screen is touched, the indicated values are displayed while the blue line moves,
13	Copy the recorded PV files into the internal memory to SD card.



[Fig. 3–6] Graph&Save setting screen 2 (Graph display is not selected)

References

- It is a screen when there is not selection item in the set data, measuring data and output volume.
- It is a screen to display the saved file into the internal memory.
- Refer to [4–1(4) Stationary operation 3 operation screen] and [4–2(4) Program operation 3 operation screen] for saving into internal memory.



Graph Screen

[Fig. 3–8] Graph&Save setting screen 2 (Saved file is displayed)						
🗾 HISTORY OF PV GRAPH	IY 20.02.17 12 02 AM					
	FOLDER NAME					
0.0	SR201021					
[2] CH1_SP 🔶	SR201022					
	SR201023					
	SR201030					
	SR201102					
-200.0	SR201111					
5]CH2_SP 👄	SR201112 2					
-200.0	SR201115					
EGICH2 MV 😝	SR201126					
0.0	SR201129					
USE/TOTAL MEMORY: 10.1ME	3 / 3.6GB					

1	Copy the recorded PV files into the internal memory to SD card.
2	Move to the start and end in case of data searching stored in the internal memory
3	When search for the saved file in the internal memory, up / down to the end 10 to the units.
4	Close the PV file
5	Move to the folder

[Fig, 3–9] Graph&Save setting screen 2 (Saved file is displayed)						
📈 HISTORY OF PV GRAPH	20.02.17 12 02 AM					
	SR201021 5R201021					
0.0	SR033401.FDR					
[2] CH1 SP 👄	SR034121.FDR					
	SR035804.FDR					
	SR041634.FDR					
	SR041715.FDR					
-200.0	SR041751.FDR					
[5]CH2 SP 👄	SR041920.FDR					
-200.0	SR042026.FDR					
[6]CH2 MV 👄	SR042206.FDR					
0.0	SR221310.FDR					
LISE/TOTAL MEMORY: 10.1MB	7 3.6GB 🔁 TRANS					

SVINKION

3-3. Presented value (PV) graph save setting

• This screen is to set the display range and sampling time which are necessary for graph recording in [4–1(4) Stationary operation 3 operation screen] and [4–2(4) Program operation 3 operation screen].

[Fig. 3–10] Graph&Save setting screen 3						
🗾 PV GRAPH DRAWING S	GET	20.02.16 11:58 PM				
FECORDING CYCLE SAMPLING TIME 1 SEC FECORDING OPER.	OHI GRAPH DISPLAY HIGH 100.0 I/A DISPLAY LOW 0.0 I/A	∷ MAIN ← →				
AUTO MANUAL	Sh2 GRAPH DISPLAY HIGH 1370.0 ℃					
MEM SD BOTH	DISPLAY LOW -200.0 ℃					

1	Setting the PV graph saving period
	 It is not changeable during PV graph saving
	Saving about 25 days is possible when sampling time is set in
	1 minute in saving into internal memory.
	Setting Y/N for saving the data into the SD card
	• Auto: Saving the data in synchronized with Operation/Stop automatically
Q	Manual: Saving the data by the saving key in the Operation
	screen 2 manually
0	Setting the media for data saving
3	• The saved data into the internal memory is deleted in electricity OFF
4	Setting the display range of channel 1 graph
5	Setting the display range of channel 2 graph
9	Seuling the display range of channel 2 graph

Parameter	Setting range	Unit	Initial value
SAMPLING TIME	00.01~99.59 (Min, Sec)	ABS	00.01
RECORDING OPERATION	AUTO, MANUAL	ABS	AUTO
RECORE MEDIA	MEM, SD, BOTH	ABS	BOTH
Channel1 GRAPH DISPLAY HIGH	Channel1.EU (-2.5 \sim 102.5%)	Channel1.EU	Channel1.EU(100.0%)
Channel1 GRAPH DISPLAY LOW	(Channel1 graph display lower limit < Channel 1 graph display high limit)	Channel1.EU	Channel1.EU(0.0%)
Channel2 GRAPH DISPLAY HIGH	Channel2,EU (–2.5 \sim 102,5%)	Channel2.EU	Channel2.EU(100.0%)
Channel2 GRAPH DISPLAY LOW	(Channel2 graph display lower limit < Channel2 graph display high limit)	Channel2.EU	Channel2.EU(0.0%)

📂 PV GRAPH DRAWING	20.02.17 12 12 AM				
RECORD ING CYCLE	1 SEC	TAPH		-	** MAIN
SAMPLING TIME 1 SEC	2 SEC	OW OW	100.0	kPa kPa	+ +
AUTO MANUAL	5 SEC	IAPH			
	10 SEC	IGH OW	1370.0 -200.0	°C	
SD BOIH	20 SEC				
	30 SEC				
	1 MIN				
	-				

[Fig 3-11] Sampling time of Recoding cycle setting screen

3-4. Memory save setting

- It is a screen to set the transmitting of pattern and parameter to SD card.
- It is a screen displayed in SD card option only.



Parameter	Setting range	Unit	Initial value	
BACKUP ITEM	PTN, PARA, ALL	ABS	PTN	
DIRECTION	DOWNLOAD, UPLOAD	ABS	DOWNLOAD	



Operation state screen setting

[TEMP2020 SERIES]

4-1 Stationary operation ·····24
4–2 Program operation ······32
4-3 Stationary and program operation
[TEMP2000 SERIES]
4–4 Stationary operation ······45
4–5 Program operation ······51
[AUTO TUNING]
4-6 Auto tuning
4-7 Auto tuning and tuning point

Operation state screen setting

TEMP2020 SERIES



[Fig. 4–1] Stationary operation still screen 1 (General non–synchronized operation)



[Fig. 4-7] Stationary operation still screen 2 (General)



[Fig. 4–9] Stationary operation still screen 3 (Channel 1)





11.04.18 09:59 AM

MAIN

CH1 CH2

O RECORD

MEM.CLF

LU-KEY

[Fig. 4–8] Stationary operation still screen 2 (Heating · Cooling)

2



Operation state screen setting

TEMP2000 SERIES



[Fig. 4-30] Stationary operation still screen 1 (General)



[Fig. 4-34] Stationary operation still screen 1 (General)



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[Fig. 4-35] Stationary operation still screen 1 (Heating · Cooling)

CO FIX OPERATION RUN	11.04.18 09:59 AM
	SE MAIN
	+ +
18:05	O RECORD
	K MEM.CLR
THIN/DIV	💄 U-KEY
USE/TOTAL MEMORY: 4KB / 27.5MB	⊖ STOP

[Fig. 4-36] Stationary operation still screen 2





04. Operation state screen setting

Explanation with CHI CHI CHI CONTRESPONDED TO TEMP2*20 ONLY (TEMP2*00 series not support this setting)

TETTELE



4-1. Stationary operation

(1) Stationary operation still screen 1

- When the operation state screen is selected in [Fig. 2-1 Main Screen], it is converted to "Stationary operation still screen 1."
- Select the operation method of channel 1 and 2 with "Stationary" in [5. Operation motion setting]
- Synchronized and non-synchronized operation can be selected in [5. Operation motion setting]
- When but at the right bottom of [Fig. 4–1] Stationary operation still screen 1 is touched by, it converts to [Fig. 4–5] Stationary operation still screen 1.



[Fig. 4–1] Stationary operation still screen 1 (General non–synchronized operation)



 $[\mbox{Fig. 4-2}] \mbox{ Stationary operation still screen 1} \\ (\mbox{Heating } \cdot \mbox{ Cooling synchronized operation})$

S FIX OPERATION STOP								
TOP	SP MV	SE MAIN						
- 01 IS1 TS1 IS2 TS2	🍢 50. 4°	+ +						
IS3 TS3 IS4 TS4	CH1							
🔁 FIX (DPERATION STOP							
BOT	SP 200.0 MV 0.0%							
-01								
IS9 TS1								
IS10 TS2								

[Fig. 4–3] Stationary operation still screen 1 (General synchronized operation)

Parameter	Setting range	Unit	Initial value
Channel1 SP	Channel1.EU(0.0~100.0%)	Channel1.EU	Channel1.EU(0.0%)
Channel2 SP	Channel2.EU(0.0~100.0%)	Channel2.EU	Channel2.EU(0.0%)

% Channel1, Channel 2, EU: Range of sensor input data% Refer to [Engineering units]



[Fig. 4-4] Screen for input key for setting target data of operation

- References
 When SP SP and SP COLO are touched by for inputting the set data for channel 1 and 2, it is activated as shown in [Fig. 4–4] Screen for input key for setting target data of operation
- When the input of set data of channel 1 and 2 is completed, operate the stationary operation by selecting ▶ RUN

(2) Stationary operation #1 operation screen

- It is a screen to display the state display lamps for measuring data, setting data and output volume.
- When the "Setting data" is touched even in operation, the input key setting for operation is activated.
- When the "Output volume" is touched in Heating · Cooling, output volume, Heating volume and Cooling volume are displayed in turn.
- The user can operate and stop channel for operation because the synchronized operation is classified independently for operation/stop of channel 1 and 2,





References

- Setting data > Measuring data is displayed in temperature increase.
- Setting data = Measuring data is displayed in temperature maintaining
 - : Setting data (Measuring data is displayed in temperature decrease.

1	It displays the current operation status.			Setting the state lamp in [13. System initial setting] in [Operation manual]
U	The arrow rotates to the clockwisely during operation			 Setting up to 20 for each state lamp channel in [13. System initial setting]
2	It displays the setting data (SP) to be controlled in channel 1.		0	The state lamps displayed in [Stationary operation #1 operation
	It displays the control output volume (MV) in channel 1. When the		0	screen] are limited to 16.
3	output volume part is touched in controlling the Heating \cdot Cooling, output volume (MV), Heating volume (H.MV) and Cooling volume			 The state lamps are displayed up to 8 units when the user tag is used.
9				20 set state lamps are displayed in [Stationary operation #2 operation screen]
	(C.MV) is displayed in turn.			It displays the current date/time and LCD backlight is off when it is touched.
	It displays the control output volume (MV) in channel 1. The "ON" state		(10)	Red LED lamp at the right top is ON when the backlight is OFF in still state.
	is displayed in red and "OFF" state is displayed in dark grey.		0	Green LED lamp at the right top is ON when the backlight is OFF in
	Setting the state lamp in [13. System initial setting] in [Operation manual]			operation of any channel.
	Setting up to 20 for each state lamp channel in [13. System initial setting]			Moving to [Fig. 2–1 Main screen]
4	The state lamps displayed in [Stationary operation #1 operation		1	• It displays the key pad to input the password when main button restriction is set,
	screen] are limited to 16.			 Refer to [Fig. 5–2 Screen in restriction setting of main button]
	• The state lamps are displayed up to 8 units when the user tag is used.		(12)	Moving from current screen to next screen
	• 20 set state lamps are displayed in [Stationary operation #2 operation screen]		42)	Operation/stop button in channel 1
(5)	It displays the present value (PV)		6	(Independently available for Operation/Stop)
6	It displays the current operation status.			User button
0	The arrow rotates to the clockwisely during operation			Y/N for use in [13. System initial setting] in [Operation manual]
\bigcirc	It displays the setting data (SP) to be controlled in channel 1.			 User uses the wanted relay in [10. DO relay setting] in
	It displays the control output volume (MV) in channel 1. When the		(14)	[Operation manual] when the user button is used.
Ø	output volume part is touched in controlling the Heating \cdot Cooling,			Ex) It is used for light the chamber.
•	output volume (MV), Heating volume (H.MV) and Cooling volume			 The set relay is operated when the "User" button is touched by
	(C.MV) is displayed in turn.			in the stationary and program operation/stop screen.
0	It displays the control output volume (MV) in channel 2. The "ON" state		(15)	Operation/stop button in channel 2 (Independently available for Operation/Stop)
9	is displayed in red and "OFF" state is displayed in dark grey.			It displays the user tag for channel 1 and 2
			16	The setting for use of user tag and name can be made in
		27		[8–1 Screen display setting]

SUMMON

(3) Stationary operation #2 operation screen

- It is a screen to display the display lamps for measuring data, setting data and output volume.
- Channel 1 and 2 is stopped or operated when the stop or operation button is touched by during synchronized operation.
- The following screen is an explanation for channel 1 and screen of channel 2 is same with that of channel 1.

[Fig. 4–7] Stationary operation #2 operation screen (General)							
💽 FIX	S FIX OPERATION RUN						
SP	100.0	PV	# MAIN				
7	EO	°C	+ +				
27	- SU.		CH1 CH2				
MV	TUNING						
191 192							
AL3 AL4	SAL1 SAL2 SAL3 SAL4 T1 T2	T3 RUN					
DINN.PID:	2 (2. N TIME: 00	000H03M54S	LU-KEY				
	0		⊖ ѕтор				

[Fig. 4–8] Stationary operation #2 operation screen (Heating · Cooling)							
FIX OPERATION	RUN			20.02.26 12 51 AM			
SP III.			PV	SEMAIN			
			°Ľ	← →			
°/	5	Ι.		CH1 CH2			
5 HEAT MV	6 COOL I	MV	0.0%	🔎 TUNING			
TOP-01	IS1 IS2	IS3 IS4	TS1 TS2				
	155 154	ALI ALZ	ALD AL4				
RUNN.PID: 2	RUN TIME:	000	OH03M09S	LU-KEY			
				⊖ STOP			

	It displays the currently applied PID group number.
1	 The applied PID group can be checked in
	[8. PID group] in [Operation manual]
2	It displays the total process time of stationary operation,
3	Moving to channel 1 or 2
	A

Execution or releasing the auto tuning with set value (SP).

- Y/N of the tuning button display is set in
 [8. PID group] in [Operation manual]
- (5) It displays the Heating output volume.
- (6) It displays the Cooling output volume.

(4) Stationary operation #3 operation screen

- The following screen is an explanation for channel 1 and screen of channel 2 is same with that of channel 1.
- The left of the screen is to display the measuring data, setting data and output volume of channel 1 and 2.
- () check box sets Y/N for data display.
- Press O RECORD at the right middle to save the data of recording.
- Save the important graph files into the SD card.
- Refer to [3-2 Present value (PV) graph view]



1	It displays the measuring data, setting data and output volume of currently operated channel 1 and 2,
2	It displays the capacity of internal memory.About 25 days of saving is available when the sampling time is set in 1 second,
3	Moving to channel 1 or 2
4	Set graph display direction Image: Vertical (Y-AXIS) Image: Horizontal (X-AXIS)
5	It is a button to save the measuring data, setting data and output volume of currently recorded channel 1 and 2 into the memory (Internal memory, SD card).

💽 FIX		20. 12	02.26 42 AM				
CH1 PV 9	CHI SP 👄		CH2 PV •	CH2 SP 👄	CH2 MV 😖	:: M	AIN
1MIN/DIV						+	+
						CH1	CH2
						X	FY
						O RE	CORD
					u n		
20.02.26 20:34:01	20.02.20	20.0	22.26 38:01	20.02.26 C0:02		💄 U-	KEY
	0	ISE/TOTAL ME	EMORY: 2.1	IMB / 64.0M	IB	θs	ТОР

[Fig. 4–10] X–AXIS setting screen of Stationary operation

(5) Termination screen for operation of stationary time setting

- The stationary operation is terminated while it shows the message, "The time setting operation is terminated," when the operation is terminated by the elapse of setting time in channel 1 and 2 in [5, Operation motion setting]
- The "Time setting operation" can be set in same time because channel 1 and 2 operate independently, but the terminating timing can be differed.
- The message is not appeared on the screen when it is forcibly terminated by pressing "Stop" button during operation.
- The message is disappeared by touching the corresponding part when the operation termination message is display in case of operation termination, (It is same with the program operation termination.)



[Fig. 4–11] Termination screen for operation of stationary time setting (Non synchronized operation)

References

- It is a screen of termination for time setting operation in channel 1 and 2.
- The timing of termination of channel 1 and 2 can be differed depending on the time setting operation,



[Fig. 4–12] Termination screen for operation of stationary time setting (Synchronized operation) SUMMON

4-2. Program operation(1) Program operation still screen 1

- It converts to "Program operation still screen 1" when the operation state screen is selected in [Fig. 2.1 Main screen].
- Select the operation method in channel 1 and 2 with "Pattern" in [5. Operation motion setting].
- The synchronized and non-synchronized operation can be selected in [5. Operation motion setting].
- Refer to [6–1 Program pattern setting] for pattern setting method.
- It converts to [Fig. 4–15 Program operation #1 operation screen] when brown is touched by on the right bottom in [Fig. 4–12 Program operation #1 still screen]



[Fig. 4–13] Program operation #1 still screen (Non–synchronized operation)



32

C PROGRAM STOP: EXPERIMENT OF PATTERN 1									
IS1 IS2	AL1 AL2	PTN NO	D.			SEG NO	p. 📔		** MAIN
IS3 IS4 TS1	AL3 AL4	20					12) 'C	+ +
TS2 TS3	SAL2 SAL3	E						-	▶ RUN
TS4	SAL4	CH1							
P	► PATTERN NUMBER FOR OPER.								
1		2	3	4	5	6	← BS		ESC
7	8	3	9	0	•	+/-	CLEAR		ENTER

[Fig. 4–15] Screen for pattern number setting input key to be operated

References When the button PTN N0 and PTN N0 are touched by for inputting the pattern number setting to be operated, it is activated as shown in [Fig. 4–15] Screen for pattern number setting input key to be operated. Execute the program by selecting button when the input for the pattern number setting to be operated is completed.

Parameter	Setting range	Unit	Initial value
Channel#n PATTERN NO.	1~40	ABS	1

∦m:1~2

CAUTION Cautions in operation

- It is not operated when the program is not input into the pattern number on the screen,
- Refer to [6-1 Program pattern setting]

(2) Program operation #1 operation screen

- It is a screen to display the state display lamps for measuring data, setting data and output volume.
- The pattern number cannot be set during operation.
- When the "Output volume" is touched in Heating · Cooling, output volume, Heating volume and Cooling volume are displayed in turn.
- The user can operate and stop channel for operation because the non-synchronized operation is classified independently for operation/stop of channel 1 and 2.





References

- It displays the direction of current pattern processing.
 - , 📶 : Setting data)Measuring data is displayed in temperature increase.
 - Setting data=Measuring data is displayed in temperature maintaining
 - : Setting data (Measuring data is displayed in temperature decrease.
| 1 | It displays the current operation status, | | Setting the state lamp in [13, System initial setting] in [Operation manual] |
|----------|--|------|---|
| U | The arrow rotates to the clockwisely during operation | | Setting up to 20 for each state lamp channel in [13, System initial setting] |
| 2 | It displays the setting data (SP) to be controlled in channel 1. | 0 | The state lamps displayed in [Program operation #1 operation |
| | It displays the control output volume (MV) in channel 1. When the | 9 | screen] are limited to 16. |
| 3 | output volume part is touched in controlling the Heating \cdot Cooling, | | • The state lamps are displayed up to 8 units when the user tag is used. |
| 9 | output volume (MV), Heating volume (H.MV) and Cooling volume | | 20 set state lamps are displayed in [Program operation #2 operation screen] |
| | (C.MV) is displayed in turn. | | It displays the current date/time and LCD backlight is off when it is touched. |
| | It displays the control output volume (MV) in channel 1. The "ON" state | 10 | \bullet Red LED lamp at the right top is ON when the backlight is OFF in still state. |
| | is displayed in red and "OFF" state is displayed in dark grey. | 00 | • Green LED lamp at the right top is ON when the backlight is OFF in |
| | Setting the state lamp in [13. System initial setting] in [Operation manual] | | operation of any channel. |
| | Setting up to 20 for each state lamp channel in | - | Moving to [Fig. 2–1 Main screen] |
| 4 | [13. System initial setting] The state lamps displayed in | 1 | • It displays the key pad to input the password when main button restriction is set. |
| | [Program operation #1 operation screen] are limited to 16. | | Refer to [Fig. 5–2 Screen in restriction setting of main button] |
| | • The state lamps are displayed up to 8 units when the user tag is used. | (12) | Moving from current screen to next screen |
| | 20 set state lamps are displayed in [Program operation #2 operation screen] | 13 | Operation/stop button in channel 1 (Independently available for Operation/Stop) |
| 5 | It displays the present value (PV). | | User button |
| 6 | It displays the current operation status. | | Y/N for use in [13. System initial setting] in [Operation manual] |
| 0 | The arrow rotates to the clockwisely during operation | | User uses the wanted relay in [10. DO relay setting] in |
| 7 | It displays the setting data (SP) to be controlled in channel 1. | 14 | [Operation manual] when the user button is used. |
| | It displays the control output volume (MV) in channel 1. When the | | Ex) It is used for light the chamber. |
| Ø | output volume part is touched in controlling the Heating \cdot Cooling, | | \bullet The set relay is operated when the "User" button is touched by $\!$ |
| 0 | output volume (MV), Heating volume (H,MV) and Cooling volume | _ | in the stationary and program operation/stop screen. |
| | (C.MV) is displayed in turn. | 15 | Operation/stop button in channel 2 (Independently available for Operation/Stop) |
| @ | It displays the control output volume (MV) in channel 2, The "ON" state | | It displays the user tag for channel 1 and 2 |
| ٢ | is displayed in red and "OFF" state is displayed in dark grey. | 16 | The setting for use of user tag and name can be made in |
| | | | [8–1 Screen display setting] |

04. Operation state screen setting

SVINKION

(3) Program operation #2 operation screen

- It is a screen to display the display lamps for measuring data, setting data and output volume.
- Channel 1 and 2 is stopped or operated when the stop or operation button is touched by during synchronized operation.
- The following screen is an explanation for channel 1 and screen of channel 2 is same with that of channel 1.

EPR0	GRAM RUN]	EXPERIMEN	T OF PAT	TERN 1	20. 12	02.26 51 AM
SP	200	.0		Р	V :: M	AIN
1				°C	+	+
		2			CH1	CH2
				and the second		and the second se
					Γ π	NING
MV	100.0	1%			∧ π	NING
MV 1 1S2 3 AL4	IS3 IS4 SAL1 SAL2 NO.: 01/01	TS1 TS2	TS3 TS4 RUN LOG8	AL1 A LOG9 LO	→ TL ₩ H → E	INING OLD
MV 1 IS2 3 AL4 1 NO./SEG ATTERN RE	IS3 IS4 SAL1 SAL2 A NO.: 01/01 PEAT: 000/001 PEAT: 000/00	TS1 TS2 TS1 TS2 AL3 SAL4 AUNNING PIE SEG TIME: C TOTAL PROCE	TS3 TS4 RUN LOG8 NUMBER: 1 00H00M31S/0 ISS TIME: 00	AL1 A LOG9 LO DOH30MOOS DOH00M31S	2 310 ~ S ▲ U-	INING OLD STEP KEY

[Fig. 4–19] Program operation #2 operation screen (Heating · Cooling)								
[PROGRAM RUN]:	[PROGRAM RUN]: EXPERIMENT OF PATTERN 1 20.02.26 12.52 AM							
SP 200.				PV	SEMAIN			
7				°⊏	+ +			
2	C				CH1 CH2			
7	8				F TUNING			
	% COOL I	NV	0.0	%	HOLD			
TOP-01	IS1 IS2 TS3 TS4 /	S3 IS4 L1 AL2	TS1 AL3	TS2 AL4	STEP			
PT NO./SEG NO.: 01/01 PATTERN REPEAT: 000/001	RUNNING PID	NUMBER: 1		20	_			
SEGMENT REPEAT: 00/00	TOTAL PROCES	STIME: 00	00H01M0	5S	LU-KEY			
1 ≅ 0 2020/02	2/26 12:51AM ~	2020/02/26	01:21AM		⊖ STOP			

		5	3	
	Ē			
1	Ş	2	1	
ļ			١	١
		-		
	-			

(1)	It displays the currently operated program pattern number and				
U	segment number.				
	It displays the pattern repetition state.				
Ø	The figure in the front in PTN RPT.: 000/001 shows				
0	the frequency of repetition and the figure at the end shows the set				
	repetition frequency.				
	It displays the partial repetition state.				
3	The figure in the front of SEG RPT.: 00/00 shows				
	the frequency of repetition and the figure at the end shows the set				
	repetition frequency.				
	It displays the currently applied PID ground number.				
4	The applied PID group can be checked in [8, PID group]				
	in [Operation manual].				
	It displays the segment process time and setting time of currently				
Ē	processing segment.				
9	The time in the front of SEG_TIME: 000H00M15S/002H00M00S				
	shows the segment processing time and the time at the end				
	shows the set time in [6–1 Program pattern setting]				
6	It displays the total process time of program operation.				

\bigcirc	It displays the Heating output volume.
8	It displays the Cooling output volume.
9	Moving to channel 1 or 2
	Execution or releasing the auto tuning with set value (SP).
10	 Y/N of the tuning button display is set in [8, PID group] in
	[Operation manual]
(H)	Maintaining (Hold On) or Release (Hold Off) the currently operating
\mathbb{U}	temperature set value.
(12)	Terminating the currently processing segment and forced moving to
	the next segment.

(4) Program operation #3 operation screen

- The following screen is an explanation for channel 1 and screen of channel 2 is same with that of channel 1.
- The left of the screen is to display the measuring data, setting data and output volume of channel 1 and 2.
- () check box sets Y/N for data display.
- Press ORECORD at the right middle to save the data of recording.
- Save the important graph files into the SD card.
- Refer to [3-2 Present value (PV) graph view]



A	It displays the measuring data, setting data and output volume of
U	currently operated channel 1 and 2.
	It displays the capacity of internal memory.
2	About 25 days of saving is available when the sampling time is
	set in 1 second.
3	Moving to channel 1 or 2
	Set graph display direction
4	Fr : Vertical (Y-AXIS)
	Horizontal (X-AXIS)
	It is a button to save the measuring data, setting data and output
5	volume of currently recorded channel 1 and 2 into the memory
	(Internal memory, SD card).

CO [PROGRAM RUN]: EXPERIMENT OF PATTERN 1 20.02.26 12 42 AM							
CH1 PV) () 27.	CH1 SP ⊖ 200,0	CHI MV 😜	CH2 PV •	CH2 SP 👄 200.0	CH2 MV 😔	:: M	AIN
1MIN/DIV						+	→
						CH1	CH2
						¥.	FY
					15.0	O RE	CORD
					(unu		
20.02.26)D:34:33	20.02.26	20.0	2.26 8:33	20.02.26 00:40:33		L U-	KEY
	0 0	ISE/TOTAL ME	:MORY: 2.1	MB / 64.0	ЭМВ	θs	тор

[Fig. 4-21] X-AXIS setting screen of Program operation

(5) Termination screen for operation of program

- The program operation is terminated while it shows the message, "The program operation is terminated," when the operation for segment setting range saved into the pattern is terminated in channel 1 and 2 in.
- The "Program pattern operation" can be set in same time because channel 1 and 2 operate independently, but the terminating timing can be differed.
- The message is not appeared on the screen when it is forcibly terminated by pressing "Stop" button during operation.
- The message is disappeared by touching the corresponding part when the operation termination message is display in case of operation termination, (It is same with the stationary operation termination.)



[Fig. 4–22] Termination screen for operation of program (Non synchronized operation)



It is a screen of termination for time setting operation in channel 1 and 2.

The timing of termination of channel 1 and 2 can be differed depending on the time setting operation,



[Fig. 4–23] Termination screen for operation of program (Synchronized operation)

SUMMON

4-3. Stationary and Program operation

(1) Stationary and Program operation still screen 1

- Select the operation method in channel 1 and 2 with "Stationary" or "Pattern" in [5. Operation motion setting].
- The synchronized and non-synchronized operation can be selected in [5. Operation motion setting].
- Refer to [6-1 Program pattern setting] for pattern setting method.
- It converts to [Fig. 4–28 Program/Stationary operation #1 operation screen] when site to use the right bottom in [Fig. 4–12 Program operation #1 still screen]



[Fig. 4–24] Program/Stationary operation still screen (Non-synchronized operation)



[Fig. 4–25] Program/Stationary operation still screen (Synchronized operation)

0	PROGE	RAM STOP	P: EXPE	RIMEN	T OF I	PATTERN	1	20.02.26 12 47 AM
IS1	AL1	PTN NO.		s	EG NO.			•• MAIN
152	AL2						_	
153	AL3	7					°C	
154	AL4	-0						$\leftarrow \rightarrow$
151	SALT	17						
152	SALZ							RUN
153	SALJ	CH1						Contraction of the local division of the loc
134	JAL4						_	
							and the second second	
P	ATTERN	NUMBER FOR	OPER					
I I	STICIN	1~ 40			1			
1	I •	2 2		5	6	A RC	I	CIESC
	-		-			4-00		Цезо
7	8	3 9	0		+/-	CLEAR		ENTER
			-					

[Fig. 4-26] Screen for pattern number setting input key of program to be operated in program/stationary operation still screen (Non synchronized operation)

6

0	C FIX OPERATION RUN 20.02.26 12 21 AM									
IS1 IS2	AL1 AL2	SP	100	J.O	MV	101.5%	a 👬 MAIN			
1S3 1S4	AL3 AL4	2			DE	5 6	` ← →			
TS1 TS2	SAL 1 SAL 2	12				J.U	⊳ RUN			
TS4	SAL4	CH1								
S	ET POIN -200.	IT OF RUN 0 ~ 137	NING 0.0]	10	0.0					
1	2	2 3	4	5	6	H BS	DESC			
7	3	8 9	0	•	+/-	CLEAR	ENTER			

[Fig. 4-27] Screen for target value setting input key of program for stationary operation in program/stationary operation still screen (Non synchronized operation)

References ▶ When the button PTN NO is touched by for inputting the pattern number in channel 1, it is activated as shown in [Fig. 4–26]. ▶ When the button SP 200.0 is touched by for inputting the set value in channel 2, it is activated as shown in [Fig. 4–27].

Parameter	Setting range	Unit	Initial value
Channel 1 PATTERN NO.	1~40	ABS	1
Channel 2 SP	Channel2.EU(0.0 \sim 100.0%)	Channel2.EU	Channel2.EU(0.0%)

3	S PROGRAM STOP: EXPERIMENT OF PATTERN 1								
T (J P	PTN NO.	l		SEG NC).		:: M	AIN
- [31	20)-	ק ר		+	+
1S1	TS2	2			_		_	Þ B	UN
1S3 1S4	TS3 TS4	СН1							
► SI	ET POIN -200.	IT OF RUNNIN 0 ~ 1370.0	G]	10	0.0				
1	:	2 3	4	5	6	← BS		ESC	
7	8	8 9	0	•	+/-		AR	ENTER	

[Fig. 4–28] Screen for target value setting input key for stationary operation program/stationary operation still screen (Synchronized operation)

0	C FIX OPERATION RUN 20.02.26 12 21 AM							.26 AM
TC] P	SP	SP MV					
- 6	31	2				5 6	° 🔶	→
IS1 IS2	TS1 TS2	Z				J.U	⊳ RU	N
1S3 1S4	TS3 TS4	CH1						
► P/	ATTERN	NUMBER FOR 1 ~ 4	OPER.		1			
1		2 3	4	5	6	← BS	ESC	
7	8	3 9	0	•	+/-	CLEAR	ENTER	

[Fig. 4–29] Screen for pattern number setting input key for program operation in program/stationary operation still screen (Synchronized operation)

References When the button SP is touched by for inputting the set value in channel 1, it is activated as shown in [Fig. 4–28]. When the button PTN NO is touched by for inputting the pattern number in channel 2, it is activated as shown in [Fig. 4–29].

Parameter	Setting range	Unit	Initial value
Channel 1 setting value (SP)	Channel1.EU(0.0 \sim 100.0%)	Channel'.EU	Channel1.EU(0.0%
Channel 2 #n pattern No.	1~40	ABS	1

SUNAD

(2) Stationary and program operation #1 operation screen

- It is a screen to display the state display lamps for measuring data, setting data and output volume.
- The operation method of channel 1 and 2 can be selected with "Stationary" and "Pattern" in [5. Operation motion setting].
- The synchronized and non-synchronized operation can be selected in [5. Operation motion setting].
- Refer to [4–1(2) Stationary operation #1 operation screen] and [4–2(2) Program operation #1 operation screen] for stationary/program operation #1 operation screen.
- Refer to [4–1(3) Stationary operation #2 operation screen] and [4–2(3) Program operation #2 operation screen] for stationary/program operation #2 operation screen.
- Refer to [4–1(4) Stationary operation #3 operation screen] and [4–2(4) Program operation #3 operation screen] for stationary/program operation #1 operation screen.
- Refer to [4–1(5) Termination screen for stationary time setting] and [4–2(5) Termination screen for program time setting] for termination screen of stationary/program operation #1 operation.
- The operator can operate/stop the channel for operation as the operation/stop button is classified independently in channel 1 and 2 for non-synchronized operation.
- The operation/stop of channel 1 and 2 can be made with one button as single button for the operation/stop is configured in channel 1 and 2 for synchronized operation,



[Fig. 4–30] Program/stationary operation #1 operation screen (Non-synchronized operation)



[Fig. 4–31] Stationary/Program operation #1 operation screen (Synchronized operation)

TEMP2000 SERIES

4-4. Stationary operation

(1) Stationary operation still screen 1

- It converts to "Stationary operation still screen 1" when the operation state screen is selected in [Fig. 2.1 Main screen].
- Select the operation method in channel 1 and 2 with "Stationary" in [5. Operation motion setting].
- It converts to [Fig. 4–32 Stationary operation #1 operation screen] when 🕨 🖤 is touched on the right bottom in [Fig. 4–36 Stationary operation #1 still screen]



[Fig. 4–32] Stationary operation #1 still screen (General)



[Fig. 4–33] Stationary operation #1 still screen (Heating \cdot Cooling)

>>

🔁 FIX	OPERATION S	ST0P						20.02.26 12 47 AM
SP	100.0					I	۶V	:: MAIN
Nor							°C	+ +
HEAT MV	0.0%		COOL	MV		0.0	%	
TO	P-01	IS1 TS3	IS2 TS4	IS3 AL1	IS4 AL2	TS1 AL3	TS2 AL4	
1 23	0							▶ RUN

[Fig. 4–34] Stationary operation still screen 1 (User tag display)

Parameter	Setting range	Unit	Initial value
SP	EU(0.0 \sim 100.0%)	EU	EU(0.0%)

* EU : Range of sensor input data

* Refer to [Engineering units]



[Fig. 4-35] Screen for input key for setting target data of operation

References

- When SP 200.0 is touched by for inputting the set data it is activated as shown in [Fig. 4–35] Screen for input key for setting target data of operation
- When the input of set data of completed, operate the stationary operation by selecting .

(2) Stationary operation #1 operation screen

- It is a screen to display the state display lamps for measuring data, setting data and output volume.
- When the "Setting data" is touched even in operation, the input key setting for operation is activated.





References

: Setting data)Measuring data is displayed in temperature increase.

- : Setting data=Measuring data is displayed in temperature maintaining.
- Setting data (Measuring data is displayed in temperature decrease.

SUMMON

	It displays the current operation status	10	Moving from a grant screen to payt screen					
1	The arrow rates to the clockwisely during operation		Even tion or releasing the auto tuning with set value (SP)					
0	It displays the setting data (SP) to be controlled	(11)	• V/N of the tuning button display is set in [8, PID groun]					
3	It displays the control output volume (MV)	Ŵ	in [Operation manual]					
	It displays the state lamp and the "ON" state is displayed in red and		User button					
-	"OFF" state is displayed in dark grev		Y/N for use in [13 System initial setting] in [Operation matrix]					
(4)	Setting the state lamp in [13 System initial setting screen]		User uses the wanted relay in [10 DO relay setting] in					
	in [Installation manual]	(12)	[Operation manual] when the user button is used.					
	It displays the currently applied PID group number.	0	Ex) It is used for light the chamber.					
5	The applied PID group can be checked in [8. PID group]		The set relay is operated when the "User" button is touc					
	in [Operation manual]		in the stationary and program operation/stop screen.					
6	It displays the total process time of stationary operation,	13	Operation/stop button					
7	It displays the present value (PV).	14	It displays the Heating output volume (H.MV).					
	It displays the current date/time and LCD backlight is off when it is touched.	15	It displays the Cooling output volume (C.MV).					
Ø	• Red LED lamp at the right top is ON when the backlight is OFF in still state.		It displays the user tag.					
0	Green LED lamp at the right top is ON when the backlight is OFF	16	• The setting for use of user tag and name can be made					
	in operation of any channel.		[8–1 Screen display setting]					
	Moving to [Fig. 2–1 Main screen]							
9	 It displays the key pad to input the password when main button 							
٢	restriction is set.							
	Refer to [Fig. 5–2 Screen in restriction setting of main button]							

stem initial setting] in [Operation manual] d relay in [10. DO relay setting] in when the user button is used. the chamber. ated when the "User" button is touched by program operation/stop screen. output volume (H.MV). output volume (C.MV). user tag and name can be made in setting]

(3) Stationary operation #2 operation screen

- The left of the screen is to display the measuring data, setting data and output volume of channel 1 and 2,
- () check box sets Y/N for data display.
- Press ORECORD at the right middle to save the data of recording.
- The saved data into the internal memory are erased when the electric power is "OFF."
- Save the important graph files into the SD card.
- Refer to [3-2 Present value (PV) graph view]



1	It displays the measuring data, setting data and output volume of currently operated channel 1 and 2,
2	It displays the capacity of internal memory.About 25 days of saving is available when the sampling time is set in 1 second,
3	Set graph display direction
4	It is a button to save the measuring data, setting data and output volume of currently recorded channel 1 and 2 into the memory (Internal memory, SD card).

SAMMON

(4) Termination screen for operation of stationary time setting

- The stationary operation is terminated while it shows the message, "The time setting operation is terminated," as follows when the operation is terminated by the elapse of setting time in channel 1 and 2 in [5, Operation motion setting]
- The message is not appeared on the screen when it is forcibly terminated by pressing "Stop" button during operation.
- The message is disappeared by touching the corresponding part when the operation termination message is display in case of operation termination, (It is same with the program operation termination,)



[Fig. 4–39] Termination screen for operation of stationary time setting (General)

🔁 FIX	OPERATION S	ST0P						20.02.26 12 47 AM
SP	100.0					F	٧٧	SE MAIN
7							°C	+ +
			000	MV				
	U . U %		COOL			u.u	%	
TOI	P-01	IS1	IS2	153	IS4	TS1	TS2	
		123	154	ALI	AL2	AL 3	AL4	
								LU-KEY
	0 TIME	e opi	ERATI	ON E	IND			▶ RUN
[[]	~ 4 40] Tormin	otion	ooroo	n for	onoro	lion of	ototio	2024

Fig. 4–40] Termination screen for operation of stationary time setting (Heating · Cooling)

SAMAION

4-5. Program operation (1) Program operation still screen 1

- It converts to "Program operation still screen 1" when the operation state screen is selected in [Fig. 2.1 Main screen].
- Select the operation method "Pattern" in [5. Operation motion setting].
- Refer to [6-1 Program pattern setting] for pattern setting method.

• It converts to [Fig. 4–42 Program operation #1 operation screen] when but to use of the right bottom in [Fig. 4–39 Program operation #1 still screen]



[Fig. 4-41] Program operation #1 still screen



[Fig. 4–42] Program operation #1 still screen (User tag display)

🔁 PROGRAM STOP: EXPERIMENT OF PATTERN	1 11.04.18 09:59 AM
PTN NO	MAIN
~ C I.J	
SEG NO	
1 2 3 4 5 6 + BS	ESC
7 8 9 0 . +/- 🕄 CLEAR	ENTER

[Fig. 4–43] Screen for pattern number setting input key to be operated



Parameter	Setting range	Unit	Initial value
PATTERN NO.	1~80	ABS	1

Cautions in operation

- It is not operated when the program is not input into the pattern number on the screen,
- Refer to [6-1 Program pattern setting]

(2) Program operation #1 operation screen

- It is a screen to display the state display lamps for measuring data, setting data and output volume.
- The pattern number cannot be set during operation.

[Fig. 4	44] F	Program	n oper	ation #	1 oper	ation s	creen	(Gene	ral)	
13	[PR00	GRAM	RUN]	EXPE	ERIME	ENT O	F PAT	TERN	11	20.10.23 03:48 AM
🕗 SI	>	- I	00.						PV	SEMAIN
7	1			1					°⊏	+ +
	-									F TUNING
M	V	10	۵.۵	%						
IS1	IS2	1S3	IS4	TS1	TS2	TS3	TS4	AL 1	AL2	ight Hold
AL3	AL4	SAL1	SAL2	SAL3	SAL4	T1	T2	T3	RUN	C CTED
PT N	D./SEG	NO.:	01/03	RU	NNING F	PID NUM	BER: 1	4 r	nA	SIEP
PATT	ERN REP	EAT: 0	00/001	SEI	G TIME:	000H0	DMO4S/C	NOOHOOM	305	
SEGM	ENT REP	EAT:	00/00	TO TO	TAL PRO	DCESS T	IME: OC	NOOHOOM	07S	- U ILI
	22 C	2	2020/	0/23 0	3:48AM	~ 2020	/10/23	03:56A	м	⊖ STOP



References

►

- It displays the direction of current pattern processing.
 - 🚺 : It displays the increase of the set value.
 - : It displays the maintaining of the set value.
- It displays the decrease of the set value.

SANKION

	It displays the current operation status,								
\bigcirc	The arrow rotates to the clockwisely during operation								
2	It displays the setting data (SP) to be controlled.								
3	It displays the control output volume (MV).								
	It displays the state lamp and the "ON" state is displayed in red and								
	"OFF" state is displayed in dark grey.								
4	Setting the state lamp in [13. System initial setting screen]								
	in [Installation manual]								
(5)	It displays the currently operated program pattern number and								
	segment number.								
	It displays the pattern repetition state.								
ര	The figure in the front in PATTERN REPEAT: 000/001 shows								
0	the frequency of repetition and the figure at the end shows the								
	set repetition frequency.								
	It displays the partial repetition state.								
\bigcirc	The figure in the front of SEGMENT REPEAT: 00/00 shows								
	the frequency of repetition and the figure at the end shows the								
	set repetition frequency.								
	It displays the currently applied PID ground number.								
8	The applied PID group can be checked in [8, PID group]								
	in [Operation manual].								
	It displays the segment process time and setting time of currently								
	processing segment.								
9	The time in the front of SEG TIME: 000H00M04S/000H00M30S								
	shows the segment processing time and the time at the end								
	shows the set time in [6–1 Program pattern setting]								

10	It displays the total process time of program operation.					
1	It displays the present value (PV).					
12	It displays the Heating output volume (H.MV).					
(13)	It displays the Cooling output volume (C.MV).					
A	It displays the user tag.					
(H)	The setting for use of user tag and name can be made in [8–1 Screen display setting]					
	It displays the current date/time and LCD backlight is off when it is touched.					
(F)	\bullet Red LED lamp at the right top is ON when the backlight is OFF in still state.					
0	Green LED lamp at the right top is ON when the backlight is OFF					
	in operation of any channel.					
	Moving to [Fig. 2–1 Main screen]					
16	 It displays the key pad to input the password when main button restriction is set. 					
	 Refer to [Fig. 5–2 Screen in restriction setting of main button] 					
\bigcirc	Moving from current screen to next screen					
	Execution or releasing the auto tuning with set value (SP).					
(18)	\bullet Y/N of the tuning button display is set in [8. PID group] in [Operation manual]					
(19)	Maintaining (Hold On) or Release (Hold Off) the currently operating temperature set value,					
20	Terminating the currently processing segment and forced moving to the next segment.					
	User button					
	Y/N for use in [13. System initial setting] in [Operation manual]					
	 User uses the wanted relay in [10. DO relay setting] in 					
21	[Operation manual] when the user button is used.					
	Ex) It is used for light the chamber.					
	• The set relay is operated when the "User" button is touched by					
	in the stationary and program operation/stop screen.					
22	Operation/stop button					

(3) Program operation #2 operation screen

- The left of the screen is to display the measuring data, setting data and output volume of channel 1 and 2.
- () check box sets Y/N for data display.
- Press ORECORD at the right middle to save the data of recording.
- The saved data into the internal memory are erased when the electric power is "OFF."
- Save the important graph files into the SD card.
- Refer to [3-2 Present value (PV) graph view]



1	It displays the measuring data, setting data and output volume of currently operated channel 1 and 2,
2	It displays the capacity of internal memory. • About 25 days of saving is available when the sampling time is set in 1 second.
3	Set graph display direction
4	It is a button to save the measuring data, setting data and output volume of currently recorded channel 1 and 2 into the memory (Internal memory, SD card).

(4) Termination screen for operation of program

- The program operation is terminated while it shows the message, "The program operation is terminated," when the operation for segment setting range saved into the pattern is terminated.
- The message is not appeared on the screen when it is forcibly terminated by pressing "Stop" button during operation.
- The message is disappeared by touching the corresponding part when the operation termination message is display in case of operation termination.

(It is same with the stationary operation termination.)

9	PROGI	RAM S	STOP:	EXPI	ERIME	NT O	F PA	TERN	11	11. 09:	04.18 59 AM
PTN	NO								PV	:: N	IAIN
7									°C	+	+
		_									
SEG	NO		5								
IS1	1S2	153	IS4	TS1	TS2	TS3	TS4	AL 1	AL2		
AL 3	AL4	SAL 1	SAL2	SAL 3	SAL4	T1	T2	T3	RUN		
_											
		PA	TTER	N OPI	ERATI	ON E	ND			⊳	RUN

[Fig. 4-47] Termination screen for operation of program

🔁 PROG	GRAM	ST0P:	EXPER	RIMEN	IT OF	PAT	TERN	1	11.04.18 09:59 AM
PTN NO							F	٧٧	SE MAIN
Not								٦°	+ +
SEG NO		5							
TOI	<u> </u>	01	IS1 TS3	IS2 TS4	IS3 AL1	IS4 AL2	TS1 AL3	TS2 AL4	
	F	PATTERI	N OPEF	RATIO	N EN	D			▶ RUN
[F	ig. 4–	48] Tem	nination (Use	scree er tag	en for displa	opera av)	tion c	f prog	Iram

(6) Other operation screen

• It is a screen to display warning in operation screen,



[[]Fig. 4-49] Screen for warning of shortage of memory capacity

References

▶ It is a screen when internal memory capacity is up to 60.8 megabytes.



[Fig. 4-50] Warning screen for no extra space in memory

E References

Screen for no extra space in intenal memory.

SVINKION

3										20.03.23 09 52 AM
PTN	NO.								PV	SE MAIN
20-						5			°C	← →
SEG	NO.		10							
IS1 AL3	IS2 AL4	IS3 SAL1	IS4 SAL2	TS1 SAL3	TS2 SAL4	TS3 RUN	TS4 LOG8	AL 1 LOG9	AL2 LOG10	
	8 C	2								▶ 운전

[Fig. 4-51] Warning screen for lack of saved file number

References

It is a screen when the number of saved files is over 240 in internal memory.



[Fig. 4-52] Warning screen for full of saved file number

References

It is a screen when the number of saved files is fulled up to 256.

RUTO TUNING

4-6. Auto tuning

- Auto tuning is classified into SEG PID method and zone PID method.
- The Hold and Step key shall not be used during program operation and auto tuning.

(1) Auto tuning (SEG PID method)

- The auto tuning is made based on the set value (SP) in SEG PID method and the tuning data is saved into "PID number" set in the auto tuning parameter.
- The segment is held during program operation and the segment is processed when the auto tuning is terminated.
- It is operated in set value (SP) at the termination of auto tuning in the stationary operation.
- The following screen is an explanation for channel 1 and channel 2 screen is same with channel 1.



	It sets the PID number.
1	• The tuning data are saved in selected number at the moment
	of auto tuning termination.
2	Moving to channel 1 or 2

Parameter	Setting range	Unit	Initial value
AUTO TUNING	OFF, 1~6	ABS	OFF

SAMAION



Stationary operation auto tuning (SEG)



Program operation auto tuning (SEG)

References

- Stationary/program operation auto tuning (SEG)
- Upper limt, Lower limit : It displays the range of input sensor.
- Boundary value 1 \sim 4 : It displays the boundary value of PID number.
- Auto tuning : It displays the PID number selected in auto tuning.
- Set data for auto tuning : It displays the currently operating set data,
- PID number to be saved : It displays the PID number to be saved after finishing the auto tuning.

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(2) Auto tuning (Zone PID method)

- The tuning is made at the center point of the PID group boundary value set in the auto tuning parameter not with the set value (SP) in zone PID method,
- The segment is held during program operation and the segment is processed when the auto tuning is terminated.
- The set value (SP) at the termination of auto tuning is changed to the set value before auto tuning in the stationary operation.
- The following screen is an explanation for channel 2 and channel 1 screen is same with channel 2.





- The tuning data are saved in selected number at the moment of auto tuning termination,
- ② Moving to channel 1 or 2

Parameter	Setting range	Unit	Initial value
AUTO TUNING	OFF, 1 \sim 6, AUTO	ABS	OFF



- Any number is not saved as PID number when the auto tuning is forcibly stopped with Auto
- Any number is not saved as PID number in black out,



Stationary operation auto tuning (Zone)



References

 Stationary/program operation auto tuning (Zone) 				
 Upper limit, Lower limit: It displays the range of input sensor. 				
– Boundary value 1 \sim 4: It displays the boundary value of PID number.				
 Auto tuning: It displays the PID number selected in auto tuning. 				
- Set data for auto tuning: It displays the currently operating set data.				
 PID number to be saved: It displays the PID number to be saved 				
after finishing the auto tuning.				
The calculation for tuning point is made as follows.				
① Tuning point: 1 (It executes the PID 1 range auto tuning.)				
- PID1 auto tuning set value = Lower limit + 2				
② Tuning point: 2 (It executes the PID 2 range auto tuning.)				
- PID2 auto tuning set value = Boundary value1 + $\frac{\text{Boundary value2-Boundary value1}}{2}$				
③ Tuning point: 3 (It executes the PID 3 range auto tuning.)				
- PID3 auto tuning set value = Boundary value2 + $\frac{Boundary value3 - Boundary value2}{2}$				
④ Tuning point: 4 (It executes the PID 4 range auto tuning.)				
- PID4 auto tuning set value = Boundary value3 + $\frac{Boundary value4-Boundary value3}{2}$				
⑤ Tuning point: 5 (It executes the PID 5 range auto tuning.)				
- PID5 auto tuning set value = Boundary value4 + <u>Upper limit- Boundary value1</u> 2				

Program operation auto tuning (Zone)

References

(6) Tuning point: 6 (It executes the PID 6 range auto tuning.) Boundary value1-lower limit - PID6 auto tuning set value = Lower limit + 2 ⑦ Tuning point: Automatic The auto tuning for PID 1~6 ranges are executed in sequence. . The auto tuned PID values are saved into PID 1~6 ranges. Boundary value1-lower limit --PID1 auto tuning set value = Lower limit + 2 Boundary value2- Boundary value1 -PID2 auto tuning set value = Boundary value1 + Boundary value3- Boundary value2 - PID3 auto tuning set value = Boundary value2 + Boundary value4- Boundary value3 --PID4 auto tuning set value = Boundary value3 + Upper limit- Boundary value4 -PID5 auto tuning set value = Boundary value4 + Upper limit-Lower limit --PID6 auto tuning set value = Lower limit + 2

4-7. Auto tuning and tuning point

- Auto tuning is a function to set the optimal PID integer automatically by measuring and calculating the object of control with controller.
- The controller generates the ON/OFF control output during "25 periods" during auto tuning and it calculates the PID data automatically. based on the period and oscillation magnitude using the limit cycle to the object to be controlled.
- Auto tuning is available in the stationary and program operation.
- When the "Auto" is selected in auto tuning parameter, auto tuning is made in sequence and it is saved into the PID memory in sequence.



- An example of auto tuning depending on the set value.
- Operation method: Stationary operation/Sensor input: Temperature (k2)
- Temperature auto tuning point : 0.25% → EUS 0.25% = 2.5°C
- Output lower limit (OL): 0.0% / Output upper limit (OH): 100.0%

52,5°C 747,5°C : Auto tuning point

Cautions in operation

- Any change in set value (SP) in auto tuning does not change the tuning point. And the tuning is started with changed set value (SP) for target set value (TSP) after auto tuning termination.
- The auto tuning is stopped in case of "Sensor short" in input during auto tuning. At this time, the PID data is kept with the previous set value.
- When auto tuning is processed beyond 27 hours, the auto tuning is stopped.
- The PID set value can be changed during auto tuning, but the obtained PID data from calculating in auto tuning termination is reset with the obtained PID data
- The PID set value is maintained with previous set value when the auto tuning is forcibly terminated.



Operation motion setting

5–1 Operation method setting	60
5–2 Fuzzy operation	
5-3 Setting value change rate (SLOPE) operation	6



05. Operation motion setting

Explanation with OHI OHI CHI CHI CONTEXPORTS ONLY (TEMP2*00 series not support this setting) It is a screen for general additional functions and additional setting in stationary operation,

5-1. Operation method setting

• It converts to the "Setting screen for operation related motion" when the operation motion setting is selected in [Fig. 2–1 Main screen]

66 ...

• The following screen is an explanation for channel 1 and screen of channel 2 is same with that of channel 1.

[Fig. 5–1] Setting screen for oper	ation related motion (Channe	1)
들 FUNCTION & FIX OP	ERATION	20.02.17 07 33 PM
OPERATION MODE	5 TIME OPERATION	# MAIN
PROG FIX		
STOP COLD HOT	MIN O M	CH1 CH2
3 FUZZY SELECT	6 RESTRICT OF MAIN	8
OFF ON		ASYNC
SP SLOPE 0.0 °C/M		
		9
		KEYLOCK

	Setting with selection either of pattern or stationary operation
1	for operation mode.(It cannot be changed during operation.)
	Pattern : Setting in program operation
	Stationary : Setting in stationary operation
	Setting the recovery motion in black out
	Stop : A motion to return to the operation stop state after
	power on from the black out.
2	Re-start : An operation from the beginning after power on from
	the black out.
	Continue : A motion to return to the previous operation state
	after power on from the black out.
	The overshoot is prevented in case of set value change.
3	No operation : No use of fuzzy function
	Operation : Use of fuzzy function
\bigcirc	Automatic increase or decreased with the set rate in case of set value change
4	 It is adopted in stationary operation only.
	Total operation in set time and in [4-1(3) Stationary operation #2 operation screen
5	The operation stops when the process time is coincided with the set time.
	 It is adopted in stationary operation only.

	The key pad to input the password is displayed when the main button is
6	touched by in the operation screen for setting the main button restriction setting.
	Refer to [Fig. 5–2 Screen for main button restriction setting]
\bigcirc	Moving to channel 1 or 2
	A button to select the operation method for "Synchronized
	operation" and "Non-synchronized operation"
	Synchronized operation : The operation/stop can be operated
Ø	concurrently as single button for "Operation/Stop" was
0	configured in "Stationary/program" operation screen.
	Non-synchronized operation : he operation/stop can be operated
	independently as buttons for "Operation/Stop" were configured
	independently in "Stationary/program" operation screen.
	The parameter setting is impossible when Arevuox button is touched by
9	• Screen rolling and key block releasing is possible.

Return motion in black out	Program operation	Stationary operation						
Stop	Program stop	Stop						
Re-start	Operation from the first segment	Operation						
Continue	Operation from the segment before black out	Operation						

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Parameter	Setting range	Unit	Initial value						
OPERATION MODE	PROG, FIX	ABS	PROG						
POWER STOP MODE	STOP, COLD, HOT	ABS	STOP						
FUZZY SELECT	OFF, ON	ABS	OFF						
Channel#n set data change rate	Channel#n.EUS(0.00~100.00%)/Min	Channel#n.EUS/Min	Channel#n.EUS(00.00%)/Min						
TIME OPERATION	UNUSE, USE	ABS	UNUSE						
HOUR	0~9999 HOURS	ABS	0						
MINUTE	0~59 MIN	ABS	0						
RESTRICT OF MAIN	UNUSE, USE	ABS	UNUSE						
RUN/STOP OPERATION METHOD	SYNC, ASYNC	ABS	ASYNC						
KEY LOCK	UNUSE, USE	ABS	UNUSE						

S FIX OPERATION STOP											
IS1 AL1 IS2 AL2	SP	100]. 🗆	MV	a 🕄 MAIN						
IS3 AL3 IS4 AL4	20_			DC	54	€ + +					
TS2 SAL2 TS3 SAL3						▶ RUN					
TS4 SAL4	CHI										
► USER PASSWOPD ****											
1	2 3	4	5	6	← BS	ESC					
7	89	0	•	+/-	CLEAR	ENTER					

[Fig. 5-2] Main button restriction setting screen

5-2. Fuzzy operation

- The overshoot may be taken place in case of severe change in operation or frequent changes in present value (SP). More effective control can be made when the fussy function is operated at this time.
- Internal operation sequence of fuzzy function: It controls the overshoot by calculating the control output value (MV) with sub target value (Super SP) instead of present value (PV) from the overshoot control start time,



5-3. Setting value change rate (SLOPE) operation

• The set value is changed by fixed changing rate from the now present value (PV) to set value when the set value is changed.



E References

- Operation method: Stationary operation
- ▶ Temperature change rate: 20.0°C/Min
- Change [Changed SP(TSP) PV at the SP changing point] with slope of 20,0°C per minute: (70,0–30,0)°C = Change 40,0°C with the slope of 20°C
- Increase the current set value (SP) from 30.0°C to 70.0°C with uniform increasing rate for 2 minutes.



Program setting

6–1 Program pattern setting			 • •		 	 	 • •	 • •	• •	 • •	 	• •	.73
6–2 Pattern repetition setting			 • •		 	 	 • •	 • •	• •	 • •	 	• •	·81
6–3 File editing · · · · · ·			 • •		 	 	 • •	 • •	• •	 • •	 	• •	.83
6–4 Time signal operation · ·			 • •		 	 	 • •	 • •	• •	 • •	 	• •	·86
6-5 Standby operation	•••	•••	 	 • • •	 	 	 • •	 • •	• •	 • •	 	• •	.90
6-6 Experiment name setting	g .		 	 	 	 	 	 	• •	 	 		 .92
Program setting

PATTERN SET 20.02.17 05:18 PM					
> PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	# MAIN
					CH1 CH2
					D^{II}D INSERT
TARGET(°C)	300.0	300.0	700.0	700.0	DELETE
TIME(H.M.S)	000.30.00	000.30.00	000.30.00	000.30.00	
TIME SIGNAL					
SEG ALARM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0	
SEG PID	0	0	0	0	
SOAK USE					PROG

[Fig. 6–2] Pattern editing screen

REPEAT SE	т				20.02.17 05:28 Ph
PATTERN SELEC	1	SEG.	REPEAT SP 💓 STA	MCCE	** MAIN
PATTERN REFEA		END MOD	ERN END	NCCE RESET	СН1 СН2
-> SEGMENT REPEA	NO. 1	N0.2	NO.3	SEG HOLD	
START SEGMENT	0	0	0	LINK RUN	
REPEAT COUNT	0	0	0	0	E PROG

[Fig. 6–3] Pattern and segment repetition setting screen

PATIEN NO. 0 START PATIEN 0 END PATIEN 0 DFILE INCOMMICU USED PATIEN 1/20 START PATIEN 0 TENTEN 0 START PATIEN 0 TENTEN	N NO. 0 STATE PATTERN 0 BIO PATTERN 0 E INGRAMINIA ATTERN 1/99 ESHENT 4/120 BIO PATTERN 0 BIO PATTERN 0 BIO PATTERN 0 BIO PATTERN 0	-> COPY SOURCE		OUPY TARGET		:: M/
BID PATTERN 0 CH SFILE INFORMATION USED PATTERN 1/80 START PATTERN 0 T	E INGRAVATION E INGRAVATION ATTERN 1/80 ESPENT 4/1200 ED PATTERN 0 ED PATTERN 0	PATTERN NO.	0	START PATTERN	0	
SFILE INFORMATION DELETE PATTERN CH	E INFORMATION DELETIE PATTERN O TATTERN 1/80 EXAMPLE ATTERN O EDIO PATTERN O FALLE			END PATTERN	0	45 00
USED PATTERN 1/80 START PATTERN 0	ATTERN 1/80 START PATTERN 0 EGMENT 4/1200 END PATTERN 0	FILE INFORMATION		DELETE PATTERN		CH1
	EGMENT 4/1200 END PATTERN 0	USED PATTERN	1/80	START PATTERN	0	🖻 SEL
USED SEGMENT 4/1200 END PATTERN 0		USED SEGMENT	4/1200	END PATTERN	0	T ALL

[Fig. 6–4] File editing screen #1

🏪 TIME SIGNAL SET		20.02.17 05:30 PM
TIME SIGNAL O	TS3(HOUR.MIN.SEC)	** MAIN
DELAY TIME NONE	DELAY TIME 000.00.00	
OPER. TIME NONE	0PER. TIME 000.00.00	
TIME SIGNAL 1	TS4(HOUR.MIN.SEC)	
DELAY TIME NONE	DELAY TIME 000.00.00	
OPER. TIME SEG TIME	0PER. TIME 000.00.00	
TS2(HOUR.MIN.SEC)	TS5(HOUR.MIN.SEC)	
DELAY TIME 000.00.00	DELAY TIME 000.00.00	
000.00.00	0PER. TIME 000.00.00	T
		E PROG

[Fig. 6-6] Time signal setting #1



[Fig. 6–10] Standby operation setting screen

> PATTER	N NAME 3	ET			1	::	M	AIN
PATTERN	Ð	PERIMENT	OF PATTERN	11				-
PATTERN 2	E D	PERIMENT	OF PATTERN	12				
PATTERN 3	B	PERIMENT	OF PATTERN	13		CH	1	CH2
PATTERN 4	Ð	PERIMENT	OF PATTERN	4				
PATTERN S	5 E	PERIMENT	OF PATTERN	15				
PATTERN 6	E E	PERIMENT	OF PATTERN	16				
PATTERN 7	Đ	PERIMENT	OF PATTERN	17				
PATTERN 8	E	PERIMENT	OF PATTERN	18				

[Fig. 6-2] Experiment name setting screen

Part 06





06. Program setting

Explanation with CH1 CH2 corresponds to TEMP2*20 ONLY (TEMP2*00 series not support this setting)

- It converts to [Fig. 6–1 Program setting screen] when the program setting button is touched by in [Fig. 2–1 Main screen].
- It is a screen group to set the parameters related to the program operation.

[Fig. 6–1] Program setting	screen		
PROGRAM SET		•	20.02.17 05 18 PM
2 PATTERN SET	3 LEPEAT SET	4 File edit	
5 000-00-10 TIME SIGNAL	6 WAIT SET	PATTERN NAME	

1	Moving to [Fig. 2–1 Main screen]
2	Moving to the pattern editing screen
3	Moving to the screen for repetitive setting of pattern and segment
4	Moving to the screen for setting pattern copy and deletion
5	Moving to the screen for time signal setting
6	Moving to the screen for setting the standby screen
7	Moving to the screen for experiment name

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6-1. Program pattern setting

- It is a screen to set the segment depending on the pattern number.
- Refer to [6-4 Time signal operation] for time signal setting.
- The following screen is an explanation for channel 1 and the screen of channel 1 is same with that of channel 1.

[Fig. 6–2] Patt	[Fig. 6–2] Pattern editing screen					
	20.02.17 05:18 PM					
1 PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	SEMAIN	
					CH1 CH2	
					9 0 INSERT	
TARGET(°⊂)	300.0	300.0	700.0	700.0	DELETE	
TIME(H.M.S)	000.30.00	000.30.00	000.30.00	000.30.00		
TIME SIGNAL						
SEG ALARM 🧕	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0		
SEG PID 6	0	0	0	0	12	
SOAK USE 7					E PROG	

1	Input the pattern number for segment setting
	Setting the start condition for program operation,
	• TPV : The set value (SP) is processed to the set time (TM1) from
	present value (PV) to the present value (SP1) set in segment 1 (SEG1)
	regardless of the slope or the start set value (SSP) in starting of the
	program operation.
	• SPV : The set value (SP) is processed to the set value (SP1) set in
2	segment 1(SEG1) from present value (PV) in starting of the program
	operation. At this time, the residual time of operation time is
	calculated by regarding of time elapse to the program operation
	starting point by referring the set program pattern.
	• SSP : The set value (SP) is processed to the set value (SP1) set in
	segment 1(SEG1) from start set value (SSP) in starting of the
	program operation during the set time (TM1).
3	Setting the segment set data to be operated.
4	Setting the time of segment to be operated.
	Setting the time signal and sub output of the segment to be operated.
	• 8 time signals can be set for each segment and each time signal
(5)	is set by selection from 20 types of time signal.
9	Refer to [6-4 Time signal operation]
	- 1 sub output can be set for each segment and 4 $\sim\!\!20\text{mA}$ DC is
	output by inputting $4\sim$ 20. Refer to [page 70].

6	Setting the SEG alarm of the segment to be operated.
7	Setting the SEG PID of the segment to be operated.
8	Moving to channel 1 or 2
	When one of the buttons SEGMENT 01 (Segment 01~99) is touched by
	for segment insertion, the selected button SEGMENT 01 (Segment 01~99)
9	and dounsent button are activated and the selected segment can be
	inserted when D INSERT is touched by
	When one of the buttons SEGMENT 01 (Segment 01~99) is touched by
	for segment deletion, the selected button SEGMENT 01 (Segment 01~99)
	and THEFE button are activated and the selected segment can be
	inserted when TOPLETE is touched by
1	Moving to left/right on the screen by 4 segment units,
12	Moving to [Fig. 6–1 Program setting screen] when 🔳 PROG is touched by

NOTE Program operation start

- The start of the program is processed depending on the starting condition (STC : Start code) setting.
- Set data priority program operation (STC = SSP)
- : The set value (SP) is processed for the set time ITM1) to the set value (SP1) set in segment 1(SEG1) from start set value (SSP) in starting of the program operation.



- Slope priority program operation (STC = SPV)
 - : The set value (SP) is processed to the set value (SP1) set in segment 1(SEG1) from present value (PV) in starting of the program operation. At this time, the residual time of operation time is calculated by regarding of time elapse to the program operation starting point by referring the set program pattern.

① When the segment 2 is the first maintaining range



Now present value	Program operating starting point
а	С
b	С
С	С
d	D
е	E(SSP)

O When the segment 3 is the first maintaining range



Now present value	Program operating starting point
а	A
b	В
С	С
d	D
е	E(SSP)

③ When there is no maintaining range



Now present value	Program operating starting point
а	A
b	В
С	С
d	D
е	E(SSP)

④ When there is only maintaining range without maintaining



No pres valu	w ent Je	Program operating starting point
a		No operation
b		В
С		С
d		D
e		E(SSP)

⑤ When the maintaining range is started from segment 1



Now present value	Program operating starting point
а	В
b	В
С	A(SSP)

(d 🗕 D	(i 1)	
		^	
	- 17		
6	e – E		

С

Now present value	Program operating starting point
а	A
b	В
С	С
d	D
е	E

: The set value (SP) is processed to the set time (TM1) from present value (PV) to the present value (SP1) set in segment 1 (SEG1) regardless of the slope of set value (SP) or the start set value (SSP) in starting of the program operation.



resent	starting point	
а	A	
b	B	
С	Ċ	
d	D	
е	E	

PATTERN SET 20.02.17 05:18 PM										
> PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	: MAIN					
					CH1 CH2					
					0 ¹ 0 INSERT					
TARGET(°⊂)	300.0	300.0	700.0	700.0	DELETE					
TIME(H.M.S)	000.30.00	000.30.00	000.30.00	000.30.00						
TIME SIGNAL										
SEG ALARM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0						
SEG PID	0	0	0	0						
SOAK USE					📼 PROG					

It is a screen for sub output setting. Select the sub output in [4, Control & Transmitting output] in [Installation manual], It is displayed in red in pattern edition screen and the sub output can be set.



▲ The input key to set the pattern number is displayed when the "Pattern number" button is touched by.



PATTERN SET 20.02.17 05 19 PM										02.17 19 PM								
> PTN NO.	SEGMENT 01		SE	GME	INT	02	SE	GME	INT	03	SE	GME	NT	04	:: N	IAIN		
1	_																	
TPV V	_	TP	V														CH1	CH2
	-	SPI	<i>v</i>															ISERT
TARGET(°⊂)	_	0.				3	00.1	0		7	00.	0		70	0.00)	m DF	LETE
TIME(H.M.S)		SSP 000.30.00			00	000.30.00			000.30.00									
TIME SIGNAL		00														00		
SEG ALARM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	
SEG PID		0			0		0		0			-						
SOAK USE						E				Ē				E			E	ROG

When the "Starting condition" button is touched by, the input key to set the starting condition is displayed

20.02.17 05:20 PM										
> PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	SEMAIN					
1										
START CODE					CH1 CH2					
					D INSERT					
TARGET(°⊂)	300.0	300.0	700.0	700.0	DELETE					
TIME(H.M.S)	000.30.00	000.30.00	000.30.00	000.30.00						
TIME SIGNAL										
SEG ALARM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0						
SEG PID	0	0	0	0						
SOAK USE					E PROG					

▲ It is a screen set with "SPV" for starting condition.

20.02.17 05 21 PM										
> PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	SEMAIN					
SSP V					CH1 CH2					
-200.0 °c					0 ¹ 0 INSERT					
TARGET(°⊂)	300.0	300.0	700.0	700.0	TH DELETE					
TIME(H.M.S)	000.30.00	000.30.00	000.30.00	000.30.00						
TIME SIGNAL										
SEG ALARM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0						
SEG PID	0	0	0	0						
SOAK USE					📼 PROG					

▲ It is a screen set with "SSP" for starting condition.

20.02.17 05:22 PM									
> PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	SEMAIN				
1									
START CODE					_				
TPV V					CH1 CH2				
					D INSERT				
TARGET(°⊂)	300.0	300.0	700.0	700.0	T DELETE				
TIME(H.M.S)	000.30.00	000.30.00	000.30.00	000.30.00					
TIME SIGNAL									
SEG ALARM	0 0 0 0	0 0 0 0	0 0 0 0	0 0 0 0					
SEG PID	0	0	0	0					
SOAK USE					E PROG				

Image: second sec

SUMMON



▲ The input key to set the set value is displayed when ______ (Set value) button is touched by.

PATTERN SET 20.02.17 05 26 PM										
> PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	SEMAIN					
					CH1 CH2					
► RUN TIME OF 01 SEGMENT [000.00.00 - 999.59.59] 000H 30M 00S										
1 2	3	4 5	6	- BS	ESC					
78	9	0.	+/- 🔍	CLEAR	ENTER					

▲ The input key to set the segment time is displayed when ^{(022.00.00} (Time) button is touched by.



References

- ▶ Input by pressing ENTER_ for time signal and SEG alarm input.
- The wanted time signal group can be input by pressing TSetting~TS8 for the set value in [6–4 Time signal operation].
- Time signal #8 cannot be used in sub output use in OUT1~4 control output terminal.



▲ The input key is displayed when (0.000 mm signal) is touched by. The button (meal to set the sub output is appeared when (0.000 mm button on the right top is touched by.

	PATTERN SET 05.02.17 05.26 PM					
PTN NO.	SEGMENT 01	SEGMENT 02	SEGMENT 03	SEGMENT 04	SEMAIN	
TPV V					CH1 CH2	
					0 ¹⁰ INSERT	
SEG ALARM	TYPE OF 01 SI ~ 8]	G 0 0	0 0			
1 2	3	4 5	6 🔶	CLR	DESC	
78	9	0 AL1	AL2 AL3	AL4	ENTER	





▲ This is the screen set to use segment soak.

SUMMON

Parameter	Setting range	Unit	Initial value
Channel#n PATTERN NO.	1∼40 (TEMP2*00 : 1∼80)	ABS	1
START CODE	TPV, SPV, SSP	ABS	TPV
START CODE(SSP)	#m.EU(0.0~100.0%)	#m.EU	#m.EU(0.0%)
SEGMENT #m TARGET	#m.EU(0.0~100.0%)	#m.EU	#m.EU(0.0%)
SEGMENT #m TIME(T.M.S)	-00.00.01(OFF)~999.59.59 (Hour, Min, Sec)	ABS	-00.00.01
SEGMENT #m TIME SIGNAL 1~8	0~20	ABS	0
SEGMENT #m SUB OUTPUT	4~20	ABS	0
SEGMENT #m SEG ALARM 1~4	0~8	ABS	0
SEGMENT #m SEG PID	0~6	ABS	0
SEGMENT #m SOAK USE	UNUSE, USE	ABS	UNUSE

% #n:1~2 % #m:1~99

6-2. Pattern repetition setting

- It is a screen to set the function for entire or partial repetition of set pattern.
- The operation method in pattern operation termination can be set.
- The following screen is an explanation for channel 1 and the screen of channel 1 is same with that of channel 1.

[Fig. 6–3] Pattern a	nd segme	ent repetitior	n Setting :	screen	
REPEAT SET					20.02.17 05:28 PM
PATTERN SELECT	1	SEG.END S	REPEAT MOD P 🔵 START	SP	# MAIN
PATTERN REPEAT PREPEAT COUNT COUNT	1	END MODE	RN END MOD	SET	CH1 CH2
SEGMENT REPEAT	N0.1	N0.2	N0.3	SEG HOLD	
START SEGMENT	0	0	0 L	.INK RUN	
SEGMENT	0	0	0	0	
REPEAT COUNT	0	0	0	0	E PROG

1	It sets the pattern number to perform the repetitive operation.
2	It sets the repetition operation frequency of the set pattern.
3	It sets the pattern number for repetitive operation in termination of set pattern operation,
4	 It sets the segment to start the partial repetitive operation out of the set patterns. It starts from start set value (SSP) in partial repetitive operation regardless of the start time condition (STC) when the start segment is "1."
5	It sets the segment to terminate the partial repetitive operation out of the set patterns,
6	It sets the repetition frequency of the partial repetitive operation out of the set patterns,
7	 When operations to segment repeat, determines the start SP value, END SP : From the late operation END SP, SP value proceed, START SP : From the start SP of segment, the SP value proceed.
8	 It decides the next operation when the set pattern operation is finished, Operation stop : The pattern termination signal is generated and the operation state is in program stop. SEG hold : It is operated in last operation set value and hold state is maintained. Connection operation : The pattern set in the connection pattern is operated.
9	Moving to channel 1 or 2

06. Program setting

Parameter	Setting range	Unit	Initial value
Channel#n PATTERN NO.	1∼40 (TEMP2*00 : 1∼80)	ABS	1
SEG. REPEAT MODE	END SP, START SP	ABS	END SP
REPEAT COUNT	0(Indefinite repetition)~999	ABS	1
Channel#n LINK PATTERN	1~40 (TEMP2*00 : 1~80)	ABS	1
PATTERN END MODE	RESET, SEG HOLD, LINK RUN	ABS	RESET
START SEGMENT NO. 1~4	0~99	ABS	0
END SEGMENT NO. 1~4	0~99	ABS	0
REPEAT COUNT NO. 1~4	0~99	ABS	0

% #n:1~2

6-3. File editing

- It is a screen to copy or delete the input segment values in [Fig. 6-1 Program pattern setting].
- The following screen is an explanation for channel 1 and the screen of channel 1 is same with that of channel 1.
- The pattern cannot be copied between the channels.
- The pattern number in operation cannot be deleted.
- The deleted pattern cannot be recovere.

1	It sets the original pattern number to be copied.
0	It sets the first and last pattern number to be copied.
C	• The first pattern is copied only when the last pattern is "0."
3	It deletes the first and last pattern number to be copied.
	• The first pattern is deleted only when the last pattern is "0.".
	It displays the total patterns set in [Fig. 6–1 Program pattern setting].
4	The change is impossible as it is only for reading.
ē	It displays the total segments set in [Fig. 6-1 Program pattern setting].
5	• The change is impossible as it is only for reading.
6	It copies the set pattern $\textcircled{1}$ to the set pattern $\textcircled{2}$.
\bigcirc	Moving to channel 1 or 2
8	It initializes the set value of the pattern set in 3.
9	It initializes the set value of every pattern.

[Fig. 6-5] File editing screen #2

References

The message like "It is a parameter setting error," is displayed at the bottom of the screen when the copy or deletion is made without inputting the pattern number.

	Parameter	Setting range	Unit	Initial value
Chanr	el#n PATTERN NUMBER	1∼40 (TEMP2*00 : 1∼80)	ABS	0
COPY : C	hannel#n START PATTERN	0~40 (TEMP2*00 : 0~80)	ABS	0
COPY :	Channel#n END PATTERN	0~40 (TEMP2*00: 0~80)	ABS	0
•	COPY	UNUSE, USE	ABS	UNUSE
SEL.DEL :	Channel#n START PATTERN	0∼40 (TEMP2*00 : 0~80)	ABS	0
SEL.DEL	: Channel#n END PATTERN	0~40 (TEMP2*00 : 0~80)	ABS	0
SE	ELECTIVE DELETION	UNUSE, USE	ABS	UNUSE
	ALL DELETION	UNUSE, USE	ABS	UNUSE

∦ #n:1~2

Message display	Explanation
"There is no saved information in the selected pattern."	It is displayed in case of copy when there is nothing saved in pattern number.
"The copy is completed in the selected pattern."	It is displayed in completion of selected pattern copy.
"The deletion is completed in the selected pattern."	It is displayed in completion of selected pattern deletion.
"The copy is completed in every pattern."	It is displayed in completion of every pattern deletion.
"The pattern to be copies is being used."	It is displayed in use of pattern,

6-4. Time signal operation

• The time signal operation is classified into ON/OFF operation, time setting operation and the set time signal is used for setting the time signal No. in segment setting in [6–1 Program pattern setting]

(1) Time signal ON/OFF operation

(2) Time signal time setting operation

• The time signal 2~20 (TS2~20) operate depending on delay time and operation time.

[Fig. 6–7] Time signal setting #2

🏪 TIME SI	GNAL SET			20.02.17 05:31 PM
TS12(HOUR.	MIN.SEC)	TS15(HOUR	.MIN.SEC)	SEMAIN
DELAY TIME	000.00.00	DELAY TIME	000.00.00	
OPER. TIME	000.00.00	OPER. TIME	000.00.00	
TS13(HOUR.	MIN.SEC)	TS16(HOUR	.MIN.SEC)	
DELAY TIME	000.00.00	DELAY TIME	000.00.00	
OPER. TIME	000.00.00	OPER. TIME	000.00.00	
TS14(HOUR.	MIN.SEC)	TS17(HOUR	.MIN.SEC)	
DELAY TIME	000.00.00	DELAY TIME	000.00.00	
OPER. TIME	000.00.00	OPER. TIME	000.00.00	▼ ▲
				📼 PROG

[Fig. 6-8] Time signal setting #3

000.00.10	TIME SIG	NAL SET	20.02 05:31	.17 PM
	TS18(HOUR.MI	N.SEC)	: MA	N
DE	ELAY TIME	000.00.00		
OF	ER. TIME	000.00.00		
	TS19(HOUR.MI	N.SEC)		
DE	ELAY TIME	000.00.00		
OF	ER. TIME	000.00.00		
	TS20(HOUR.MI	N.SEC)		
DE	ELAY TIME	000.00.00		
OF	PER. TIME	000.00.00	-	
			📼 PR	DG

[Fig. 6–9] Time signal setting #4

Parameter	Setting range	Unit	Initial value
DELAY TIME	000.00.00(OFF)~999.59.59 (Hour, Min, Sec)	ABS	000.00.00
OPERATION TIME	000.00.00(OFF)~999.59.59 (Hour, Min, Sec)	ABS	000.00.00

(3) Example of operation in time signal input

Setting		Time signal operation
	1. Delay time = 000.00,00	ON Operation time
Sogmont NI timo		OFF
≥ Delav time +		Segment (n-1)segment time n segment time (n+1)segment time
Operation time		Operation time
	2. Delay time ≠ 000,00.00	Time signal Delay time
		OFF
		Segment (n-1)segment time n segment time (n+1)segment time
		ON Operation time
Segment N time(Delay time +	3. Delay time = 000.00.00	Time signal
Operation time		OFF
☞ It does not make influence on the next segment,		Segment (n-1)segment time n segment time (n+1)segment time
		ON Operation time
	4. Delay time ≠ 000.00.00	Time signal Delay time 🗞
		OFF
		Segment (n-1)segment time n segment time (n+1)segment time

SVINKION

06. Program setting

6-5. Standby operation

- It is a screen to set the range and time for standby operation during program operation.
- The set standby operation here is applied to [Fig. 6-1 Program pattern setting].
- The following screen is an explanation for channel 1 and the screen of channel 1 is same with that of channel 1.
- Definition of standby operation
- Standby operation entry condition : When the measure data is not in the standby operation setting range
- Standby operation releasing condition : When the measure data is in the standby operation setting range
- The standby time has indefinite value when the standby time is not set (Initial value).

[Fig. 6–10] Standby operation setting screen	
🔀 WAIT USE SET	20.02.17 05 32 PM
WAIT USE	** MAIN
<mark>∕2 WAIT ZONE</mark> WAIT ZONE 0.0 ℃	CH1 CH2
WAIT TIME	
4 WAIT USE METHOO	
	🖭 PROG

1	It sets Y/N of standby operation.
0	It sets the operation range to be applied for standby operation.
Ø	• The standby motion is not operated when the range is set in "0.0."
	The standby time to be applied is set when the measuring data is
3	not in the standby operation range.
	• It standbys indefinitely for entry to the standby operation range when
	the standby operation time is set in "00.00."
	It decides either of "Entire" and "Maintain SEG" for standby
	operation method.
	• Entire : The standby operation is applied to the set entire segment in
Ð	[6–1 Program pattern setting]
	Maintain SEG : The standby operation is applied only to the set
	maintain range segment in [6-1 Program pattern setting]
5	Moving to channel 1 or 2

Parameter	Setting range	Unit	Initial value
WAIT USE	UNUSE, USE	ABS	UNUSE
Channel#n WAIT ZONE	Channel#n.EUS(0.00~100.00%)	Channel#n.EUS	Channel#n.EUS(0.00%)
WAIT TIME	00.00~99.59(Hour, Min)	ABS	00.00
WAIT USE METHOD	ALL, SOAK SEG	ABS	ALL

% #n:1~2

In case of standby operation release within standby time (Wait time)

E References

- It is a graph for interactive relation between standby operation and standby time.
- Standby operation range : It displays the temperature range with adoption of standby operation,

In case of no entry of the measuring data into standby operation range within the standby time (Wait time)

6-6. Experiment name setting

- The experiment name can be set for each pattern, Refer to [4-2(2) Program operation #1 operation screen]
- The following screen is an explanation for channel 1 and the screen of channel 1 is same with that of channel 1.

[Fig	[Fig. 6–11] Experiment name setting screen							
	🚝 PATTERN NAME SET							
Г	1 PATTE	RN N	VAME SET	: MAIN				
	PATTERN	1	EXPERIMENT OF PATTERN 1					
	PATTERN	2	EXPERIMENT OF PATTERN 2					
	PATTERN	3	EXPERIMENT OF PATTERN 3	CH1 CH2				
	PATTERN	4	EXPERIMENT OF PATTERN 4					
	PATTERN	5	EXPERIMENT OF PATTERN 5					
	PATTERN	6	EXPERIMENT OF PATTERN 6					
	PATTERN	7	EXPERIMENT OF PATTERN 7					
	PATTERN	8	EXPERIMENT OF PATTERN 8	▼ ▲ ²				
				🖭 PROG				

Input the experiment name of each pattern.
 Converting to the next or previous experiment name screen.

ΜΔΙΝ				
J				
Т				
_				
SC				
· · · · SP ENTER_				

[Fig. 6-12] Experiment name setting screen

References

The input key to set the experiment name is displayed when EXPERIMENT OF PATTERN 1 is touched by.

Parameter	Setting range	Unit	Initial value
Channel1 PATTERN NAME SET 1~40	0~9. A~Z, Special letter (Maximum 24 letters)	ABS	EXPERIMENT OF PATTERN 1 \sim 40
Channel2 PATTERN NAME SET 1~40	0~9. A~Z, Special letter (Maximum 24 letters)	ABS	EXPERIMENT OF PATTERN 1 \sim 40

07. Appointed operation setting

Explanation with CHI CH2 corresponds to TEMP2*20 ONLY (TEMP2*00 series not support this setting)

- It converts to [Fig. 7–1 Time setting screen] when the appointed operation setting button is touched by in [Fig. 2–1 Main screen].
- It is a screen to set the current time and appointed operation time.
- The following screen is an explanation for channel 1 and the screen of channel 1 is same with that of channel 1.

[F	[Fig. 7–1] Time setting screen								
		TIME	& RE	SERVE TIME :	SET		20 12	.02.18 :34 AM	
	CURRENT TIM	IE I		RESERVE TI	ME		:: 1		
	YEAR	2020	Y	YEAR	2020	Y			
	MONTH	2	М	MONTH	2	М		3	
	DATE	18	D	DATE	17	D	CH1	CH2	
	AM/PM	АМ		AM/PM	PM		C RI	ESERVE	
	HOUR	12	Н	HOUR	5	Н			
	MIN	34	М	MIN	40	М			

	It sets the year, month, day and hour.
1	The current time is not changeable during recording the measured
	data and operating.
2	It sets the year, month, day and hour for appointed operation.
3	Moving to channel 1 or 2
	The operation is possible in the set appointed time when ORESERVE
	is touched by.
4	The appointed time is displayed on the operation screen as shown
	in [Fig. 7–2 Operation appointed setting screen] when ORESERVE
	is touched by.

[Fig. 7–2] Operation appointed setting screen (Non–synchronized operation)

[Fig. 7–3] Operation appointed setting screen (Synchronized operation)

Parar	neter	Setting range	Unit	Initial value
	YEAR	2000~2009	ABS	_
	MONTH	1~12	ABS	_
CI IRRENT TIME	DATE	1~31	ABS	_
	AM/PM	AM, PM	ABS	_
	HOUR	1~12	ABS	_
	MIN	0~59	ABS	_
	YEAR	2000~2009	ABS	2020
	MONTH	1~12	ABS	1
	DATE	1~31	ABS	1
RESERVE HIVIE	AM/PM	AM, PM	ABS	AM
	HOUR	1~12	ABS	12
	MIN	0~59	ABS	0
APPOINTMENT		Clic	k for appointment.	

* AM12:00: Night 00:00 / PM12:00: PM 12:00

Screen display setting

8–1 Screen display setting ·	• • • • • • •	 	 •••••	 •••••	93
8–2 DI error creation history	view··	 	 	 	.95

Setting display setting

[Fig. 8–1] Screen display setting screen

[Fig. 8–3] DI error creation history screen

08. Screen display setting

08. Screen display setting

Explanation with CH1 CH2 corresponds to TEMP2*20 ONLY (TEMP2*00 series not support this setting)

8-1. Screen display setting

• It converts to [Fig. 8–1 Screen display setting screen] when the screen display setting button is touched by in [Fig. 2–1 Main screen].

1	It sets Y/N for user tag display.
2	 It sets the tag name of channel 1 and 2. Maximum 6 digits can be input and the set tag is displayed on the operation screen, Refer to [Fig. 4–6 Stationary operation #1 operation screen]
3	 It sets the conversion of operation screen in channel 1 and 2, When the screen conversion time is set and Channel 1 and 2 operation screen is converted repeatedly with "Beep" sound after 1 minute of set time is elapsed without any touch in operation screen 2, When the screen is converted, every touch is key blocked and key block can be released by touching anywhere on the screen, It is operated in the screen 2 in operation screen,
4	It sets the backlight electricity saving time. • The electricity saving time sets the operation timing of backlight OFF when there is not key operation.
5	The brightness of LCD is controlled by 🛑 , 🛨 button.
6	 Total capacity of internal memory, used capacity, total files to be saved and display of saved files Warning : set to the usage of warning (shortage of memory capacity, excess of saved files) using the button ()
7	Moving from current screen to next screen
8	Touch screen calibration
9	It deletes every file saved in the internal memory.

20.02. 11:17										
	P. OF U	SER TAG			BACKL I GH	T SAVING	i 	י ר י	ΜΔΙΝ	
► SETT	ing of l Lphabet	JSER TAG 7 NUMER	NAME IC]							
A	В	C	D	E	F	G	H	Ι	J	
K	L	М	N	0	Р	Q	R	S	Т	
U	V	W	X	Y	Z	()	#	-	
1	2	3	4	5	6	+	CLR	ESC		
7	8	9	0		-	:	SP	EN	ENTER	

[Fig. 8–2] User tag name setting screen in channel1 and 2

Parameter	Setting range		Initial value
DISPLAY OF USER TAG	UNUSE, USE	ABS	UNUSE
Channel1 TAG NAME	0~9, A~Z, Special letter (Maximum 6 letters)	ABS	TOP-01
Channel2 TAG NAME	0~9, A~Z, Special letter (Maximum 6 letters)	ABS	BOT-01
INTERVAL TIME	$0 \sim 99 \; \mathrm{SEC}$	ABS	0
OFF TIME	$0 \sim 99$ Min	ABS	0
LED BRIGHTNESS	1~8	ABS	8 steps
TOUCH SCREEN CALIBRATION When you calibrate the touch screen, click,			

8-2. Touch screen calibration Seting

- Press 💑 the red dot at the left / right upper, left / right bottom and center of the touch screen calibration screen, you can calibrate the touch screen.
- Press 🔊 🏧 on the touch screen calibration screen is not touch screen calibration is stored and stops will move to [Figure 8–1 Screen display setting screen]

[Fig.8–2] Touch screen calibration #1

[Fig.8–3] Touch screen calibration #2

8-2. DI error creation history view

- It is a screen to display the type, date and time of error created DI.
- The error history is saved up to 30 cases and the later history is saved after deletion of the saved history.

[Fig. 8–10] DI error creation history screen	
DI ERROR HISTORY	20.03.23 05:23 PM
ERROR HISTORY	SEMAIN
NO. 1 2020/03/18 02:13PM THE DI1 ERROR OCCURRED	
NO. 2 2020/03/18 02:13PM THE DI3 ERROR OCCURRED	
NO. 3 2020/03/18 02:14PM THE DI5 ERROR OCCURRED	
NO. 4 2020/03/18 02:14PM THE DIT ERROR OCCURRED	ALL CLR
NO. 5 2020/03/18 02:14PM THE DI9 ERROR OCCURRED	
NO. 6 2020/03/18 02:14PM THE DI11 ERROR OCCURRED	
NO. 7 2020/03/18 02:14PM THE DI13 ERROR OCCURRED	
NO. 8 2020/03/18 02: 14PM THE DI 15 ERROR OCCURRED	▼ ▲
NO. 9 2020/03/18 02: 14PM THE DI 16 ERROR OCCURRED	

	It displays the history of DI error creation.
1	• The name set in [11-2 Error name] in [Operation manual] is displayed.
	• The change is impossible as it is only for reading.
2	It deletes the entire DI error creation,
3	It checks the previous or next error history.

Parameter	Setting range	Unit	Initial value
ALL CLR	UNUSE, USE	ABS	UNUSE

[Fig. 8-4] Screen for DI error display method by letter

[Fig. 8-5] Screen for DI error display method by photo

References

- It is a screen in case of DI error creation.
- > The setting for letter and photo screen setting can be set in [11. DI function and operation setting] in [Installation manual].
- ▶ It is converted to the operation screen after escaping from the DI error screen when 5 ENT is touched by.
- The same DI error creation is neglected for 1 minute when the screen is changed by pressing button after DI creation. (Here, the neglecting means the DI error screen.)
 Ex) It neglects even DI1 is created by escaping with "Return" in the stat of DI1 creation and the DI error screen is displayed when DI1 has been created even after 1 minute.
- BUZOFF button is to block the alarming sound when DI error is created.
 - EX) Explanation depending on lamp state
 - DI error no creation ("OFF" state) (
 - DI error creation ("OFF" state) (
 - Release after DI error creation ("OFF" state after "ON") (

Communication error105

09. Communication error

	PROGF	RAM STOP: EXPERIMENT OF PATTERN 1	11.04.18 09:59 AM		
IS1 IS2	AL1 AL2	PTN NO	: MAIN		
1S3 1S4	AL3 AL4		+ +		
TS2 TS3	SAL I SAL 2		▶ RUN		
TS4	SAL4	CH1 CONTROL PART WAS DISCONNECTED!			
C PROGRAM STOP: EXPERIMENT OF PATTERN 1					
159 1510	AL5 AL6	PTN NO			
IS11 IS12	AL7 AL8				
TS1 TS2	SAL1	JU.J	LU-KEY		
TS3 TS4	SAL3 SAL4	CH2 CONTROL PART WAS DISCONNECTED!	▶ RUN		

[Fig. 9–1] Control unit communication error screen

[Fig. 9-2] I/O board communication error screen

E References

- When there is an error between display and control unit The message, 'The control part is not connected." is displayed at the bottom of the screen as shown in [Fig. 9–1] Control unit communication error screen.
- When there is an error between control unit and I/O board communication The message, 'The I/O board is not connected," is displayed at the bottom of the screen as shown in [Fig. 9–2] I/O board communication error screen.
- Communication failure : Communication cable defect
 Communication cable connection defect
Engineering Units - EU, EUS

:..... When the sensor type (IN-T) or the upper limit, lower limit of input range is changed, the parameters expressed in EU(), EUS() are changed in

proportion to current data. (However, the upper and lower range setting data is initialized.)

- :.... Download the instruction manual and communication manual from the homepage.
- :.... EU() : Value of engineering unit depending on the range of instrument
 - EUS(): Value of engineering unit depending on the span of instrument



▶ Range of EU() and EUS()

		Range	Center point
	EU(0 \sim 100%)	$RL \sim RH$	RH – RL /2 + RL
	EU(-100 \sim 100%)	–(RH – RL + RL) \sim RH	RL
	EUS(0 \sim 100%)	0 ~ RH - RL	RH – RL /2
	EUS(-100 \sim 100%)	$-$ RH $-$ RL \sim RH $-$ RL	0

(Example)

► INPUT = T/C(K2)

▶ RANGE = -200.0°C(RL) ~ 1370.0°C(RH)

	Range	Center point
EU(0 \sim 100%)	$-200.0 \sim 1370.0^\circ \mathrm{C}$	585.0°C
EU(-100 \sim 100%)	$-$ 1770.0 \sim 1370.0 °C	− 200.0°C
EUS(0 \sim 100%)	0∼1570.0°C	785.0°C
EUS(-100 \sim 100%)	$-$ 1570.0 \sim 1570.0 $^{\circ}\mathrm{C}$	0.0°C

RL: Lower limit of input range RL: Upper limit of input range

MEMO	

B Queries related with after sales service for TEMP2000 series

Please inform the TEMP2000 model name, failure condition and contact point for queries of after sales service.

T : 82-32-326-9120 F : 82-32-326-9119



Customer contact for TEMP2000 series

Quotation request / Product request

Specification request / Data request/ Other request

- Internet www.samwontech.com
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