

TEMI2000 - SERIES



OPERATION MANUAL

TEMPERATURE & HUMIDITY
PROGRAMMABLE CONTROLLER

※ This manual applies to TEMI2300, TEMI2500 and TEMI2700.
The model stated the manual content is TEMI2500.

Contents

1. Safety Precautions	
2. Handling overview	
2.1 Initial operation flow	3
2.2 Setting Buttons	4
2.3 Input Keypad	5
3. OPERATION setting	
3.1 MAIN MENU screen	8
3.2 FIX Operation	9
3.3 PROGRAM Operation	15
3.4 AUTO TUNING and TUNING POINT	20
4. FUNCTION & FIX OPERATION setting	
4.1 Operation mode & Functions	21
4.2 FUZZY function	23
4.3 SP SLOPE function	24
5. PROGRAM setting	
5.1 Program PATTERN	26
5.2 REPEAT operation	31
5.3 Pattern FILE EDIT	32
5.4 TIME SIGNAL	34
5.5 WAIT function	37
5.6 PATTERN NAME input	39
6. GRAPH & REC. setting	
6.1 PATTERN GRAPH VIEW	40
6.2 TREND GRAPH view & DATA processing	43
6.3 Recording TREND GRAPH on Internal Memory	45
6.4 DATA Transmission with SD memory card	46

7. SCREEN DISPLAY setting	
7.1 Screen display setting	47
7.2 DI ERROR HISTORY	48
8. RESERVE OPERATION setting	50
9. USER SCREEN setting	
9.1 USER SCREEN viewer	52
9.2 Creating BMP File for USER SCREEN image	53
10. Communication Errors message	54
* Engineering Units	

1 Safety Precautions

Thank you for purchasing TEMI2500, programmable temperature & humidity controller.
This Operation Manual describes operating procedures of the TEMI2500 controller.



SAFETY SYMBOL MARKS

A. Symbolizes 'Caution' and 'Warning'. The information with this symbol is especially important for preventing from user injury and protecting the product and system.



(1) Product : This symbol indicates an imminently hazardous situation which if not avoided, will result in serious injury or system damage.

(2) Operation Manual : This symbol indicates potential hazard that may cause personal injury by electrical shock.

B. Symbolizes 'Protective Earth (PE) Terminal.'



This symbol indicates that the terminal must be connected to the Ground prior to operating.

C. Symbolizes 'Supplementary Explanation.'



The information with this symbol describes additional explanation for features.

D. Symbolizes 'Reference.'



This symbol indicates further information and page to refer.



Precautionary Remarks on this Operation Manual

- A. This manual should be passed on the End- User and kept at a suitable place for easy review in time.
- B. Read and understand this Operation Manual carefully before using the product.
- C. This Operation Manual describes functions and features of the product in detail, and SAMWONTECH can not guarantee against over applications would suit a customer's particular purpose which is not described in this manual.
- D. Unauthorized duplication and modification of this Operation Manual are strongly prohibited.
- E. The contents of this manual may be modified without prior notice.
- F. If any errors or omissions in this manual should come to the attention of the user, feel free to contact our sales representatives or our sales office.



Precautions for Safety and Unauthorized Modification

- A. For protecting and ensuring the safety of this product and relevant system, all of the safety instructions and precautions should be well recognized and strictly observed by all users.
- B. SAMWONTECH does not guarantee against damage resulting from unauthorized alteration, misuse, or abuse.
- C. When using additional safety circuit or part such as Noise Filter to protect this product and relevant system, it is strongly required to install that to outside of this product. Additional installation and modification inside of this product are prohibited.
- D. Do not try to disassemble, repair, or modify the product. It may become the cause of a trouble such as malfunction, electric shock, fire.
- E. Contact our sales dept. for part replacement or consumables.
- F. Keep the product away from water inflowing. This may become a critical cause of trouble.
- G. External shock on the product may lead to damage and malfunction.



Limitation of Liability

- A. SAMWONTECH does not guarantee or accept responsibility for this product other than the clauses stated in our warranty policy.
- B. SAMWONTECH assumes no liability to any party for any loss or damage, direct or indirect, caused by the use or any unpredictable defect of the product.




Warranty Policy

- A. Warranty term of this TEMI2500 is one year after delivery to the first purchaser for being free of defects in materials and faulty workmanship under the condition that the product has been applied according to this manual.
- B. The repairing cost will be charged for defective product out of warranty period. This charge will be the actual cost estimated by SAMWONTECH.
- C. Repairing cost may be charged even if within warranty period for following cases.
 - (1) Damage due to USER FAULT (Ex.: Product initialization by password loss)
 - (2) Damage due to natural disaster (Ex.: fire, flood)
 - (3) Damage due to additional removal and re-installation after the first one.
 - (4) Damage due to unauthorized disassemble, modification and alternation.
 - (5) Damage due to unexpected power failure caused unstable power supply.
 - (6) Others
- D. If any A/S is required, feel free to contact our sales office or a representative.

2 Handling overview

- ▶ This product is programmable controller for temperature and humidity, designed with Touch Screen interface for user friendly easy access.

2.1 Initial operation flow

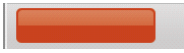








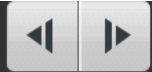


- ▶ Supplying the power after completing installation correctly, loading screen will appear for loading time then Initial Logo screen will be displayed. The screen will automatically progress to the STOP screen.
 - ☞ It takes around 18 seconds for loading.
- ▶ Press the  (MAIN) button at the top right hand corner on PROGRAM STOP screen, to move to the MAIN MENU where the general parameter group located.
- ▶ Initial Logo screen can be changed as user want. Refer to the [13. INITIAL SETTING] on [Installation Manual] for how to change initial logo.




2.2 Setting Buttons

► [Table2-1] describes Basic Setting Buttons

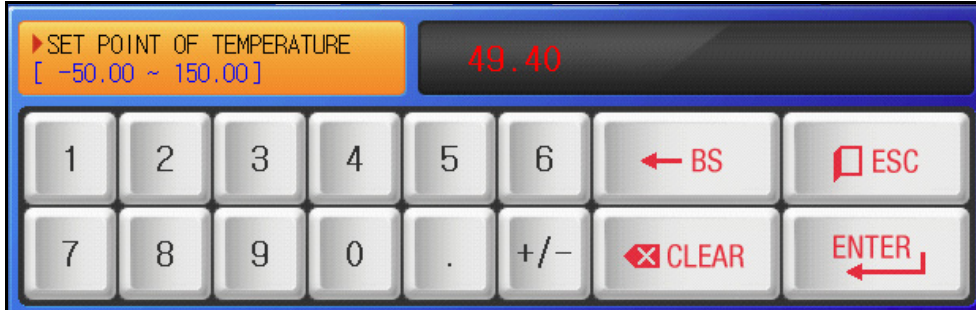
Table 2-1. Basic Setting Buttons

Button Type	Description
	Button to set target Set Point of temperature and pattern number to run, located at the upper left side of OPERATION screen. Input Keypad will appear
	Button to set target Set Point of humidity, located at the lower left side of OPERATRION screen. Input Keypad will appear
	Button to set general numerical and alphabetical value. Input Keypad will appear.
	Button to set on multiple options.
	Button to set target Set Point of temperature and humidity, and process time for each segment on [5.1 Program PATTERN]. Input Keypad will appear.
	Button to select on of several modes or options. (ON / OFF / INACTIVE)
	Button to set whether or not to use each parameter. (ON / OFF / INACTIVE)
	Screen move button to move to the next / previous Screen in the same group.
	Page move button to move to the next / previous Page in the same screen.
	Paragraph move button to move to the next / previous Paragraph by time base in the same page.
	Button to display first / last section of recorded trend data graph on [6.2 TREND GRAPH view & DATA processing].
	Button to move the view point up / down by 1 dot point of recorded trend data graph on [6.2 TREND GRAPH view & DATA processing].

2.3 Input Keypad

- ▶ When you pressing the  button, the following Input Keypad appears and the required data value can be set by using this Input Keypad.
- ▶ If the setting value is out of the available range, 'LIMIT ERROR' message will appear with a 'BEEP' sound and input will be rejected.

① Numeric Keypad to input numerical values

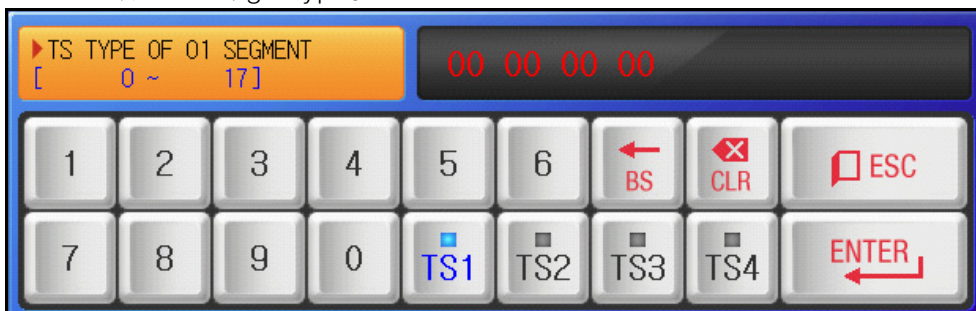


② Alpha-Numeric Keypad to input Pattern name or DI error name.

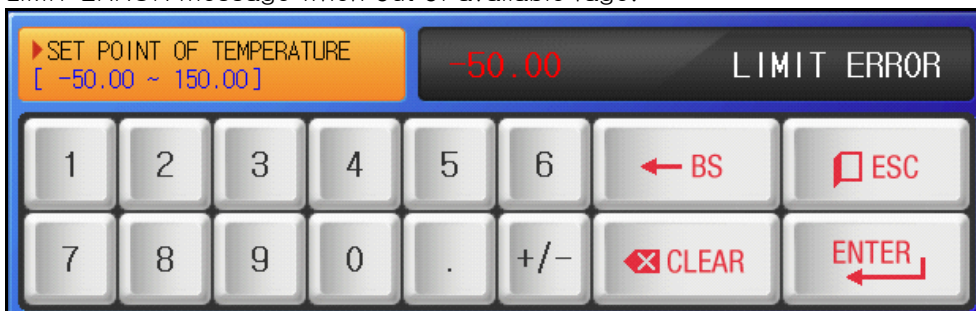


☞ For DI ERROR name, refer to the [11.2 DI ERROR NAME] on [Installation Manual]

③ TIME SIGNAL setting Keypad



④ LIMIT ERROR message when out of available range.



KEY LOCK Release



- ▶ Setting operation through Input Keypad can be performed after releasing KEY LOCK function switch ON to OFF
- ☞ For further information, refer to [4. FUNCTION & FIX OPERATION setting].

2.3.1 Setting input validity test


- ▶ TEMI2500 confirms key input process and its validity of value by sound.
 - ☞ 'Beep' : indicates key input accessed normally within available range.
 - ☞ 'Three Beeps' : indicates key input denied.

Precautions in Operation



- ▶ Do not press the setting buttons with a sharp object (ex. pencil). This may lead to damage or malfunction of the touch panel.

2.3.2 Set Point input


- ▶ All Set Points can be set by using above mentioned numeric, alpha-numeric and Time Signal setting Keypad.
- ▶ Numeric Input Keypad will appear with pressing  button to input Set Point.
- ▶ For the TIME SIGNAL setting Keypad, refer to [5.4 TIME SIGNAL].
- ▶ For DI ERROR name, refer to the [11.2 DI ERROR NAME] on [Installation Manual]
- ▶ Description of Numeric Input Keypad.



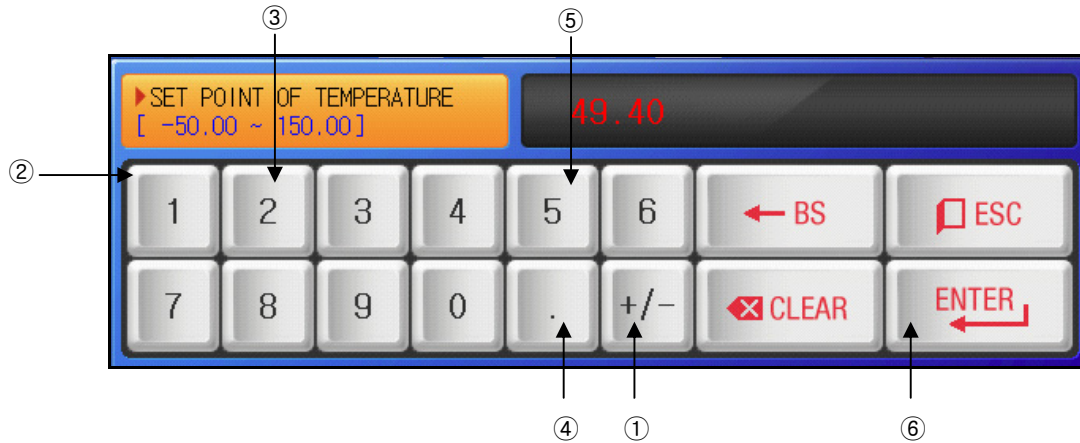
- ① Displays 'Parameter Name' of Input Keypad.
- ② Displays available range.
- ③ Displays new Set Point. If the Set Point is out of range, 'LIMIT ERROR' message will appear.
- ④ Escape button to cancel and disappear Input Keypad.
- ⑤ Enter button to accept new set point and disappear Input Keypad.
- ⑥ Button to input decimal point.
- ⑦ Button to input negative or positive number. (+/-).
- ⑧ BackSpace button to delete one numeral of Set Point at a time.
- ⑨ Clear button to delete the entire Set Point.
- ⑩ Displays original Set Point.

Ex.) How to input Set Point

► The following describes how to change Set Point 49.40 to 12.5.


→ Press the  button to pop up Numeric Input Keypad.

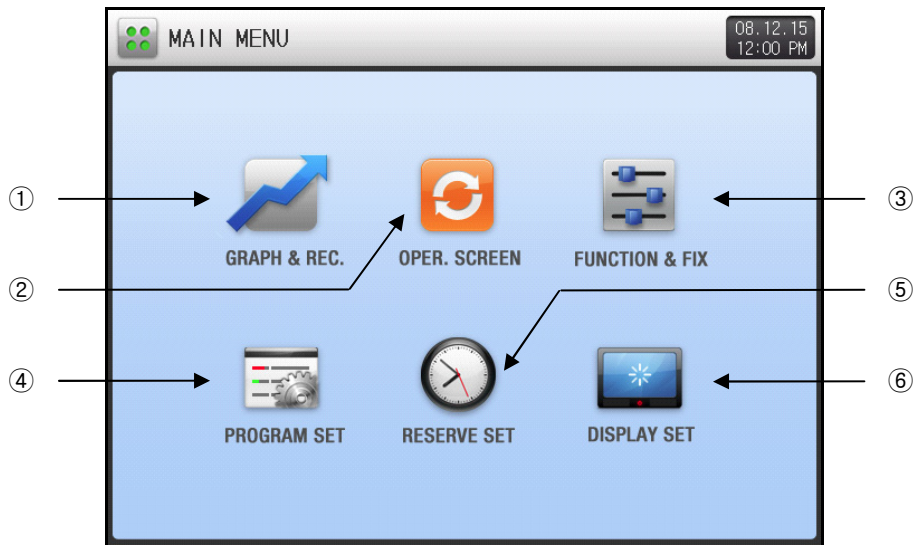
→ Press the numbers by the order (①→②→③→④→⑤). If setting is OK, press ENTER key(⑥).



3. OPERATION setting

3.1 MAIN MENU screen

- ▶ MAIN MENU screen is organized into six sections. This MAIN MENU screen is the central gate way screen to move into lower parameter section.
- ▶ Press the  (MAIN) button to move to this MAIN MENU screen



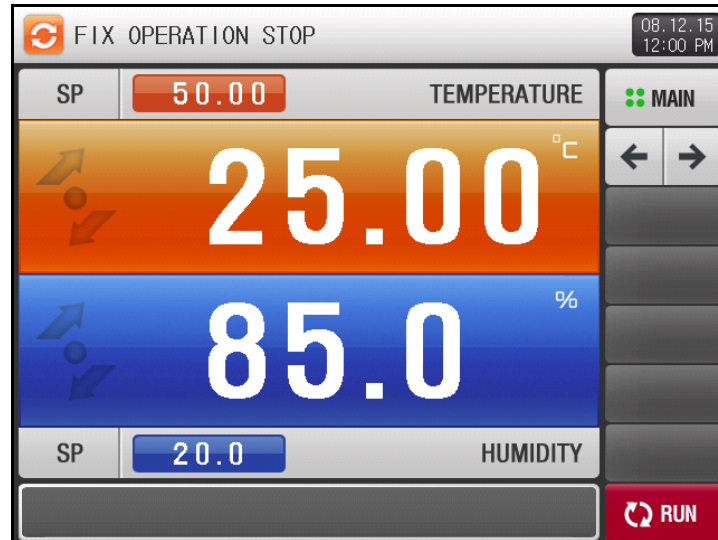
[Figure 3-1] MAIN MENU screen

No.	Instructions	Description
①	GRAPH & REC.	Section for display recoding data graph and its setting for SD card operation.
②	OPER. SCREEN	Operation status section to start, display and set main operation parameters.
③	FUNCTION&FIX	Function section to set parameters for additional operation function and mode
④	PROGRAM SET	Program setting section organized into 6 groups
⑤	RESERVE SET	Time section to set current time and scheduled operation.
⑥	DISPLAY SET	Display section to set screen and sound concerned parameters.

3.2 FIX Operation

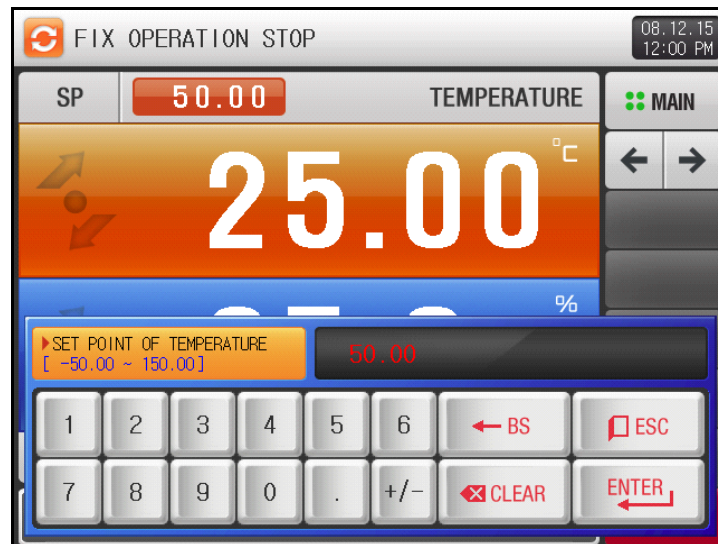
3.2.1 FIX STOP screen

- ▶ Under setting 'FIX' operation for 'OPERATION MODE' on [4. FUNCTION & FIX OPERATION setting], when you press [OPER. SCREEN] button on the MAIN MENU screen, this FIX STOP screen will appear.



[Figure 3-2] FIX STOP screen

- ▶ Target Set Point of temperature for FIX operation can be set through below.



[Figure 3-3] Input Keypad for temperature Set Point

- ▶ Press the red button on the left upper hand corner to pop up numeric Input Keypad [Figure 3-3]

- ▶ Target Set Point of humidity for FIX operation can be set through below.



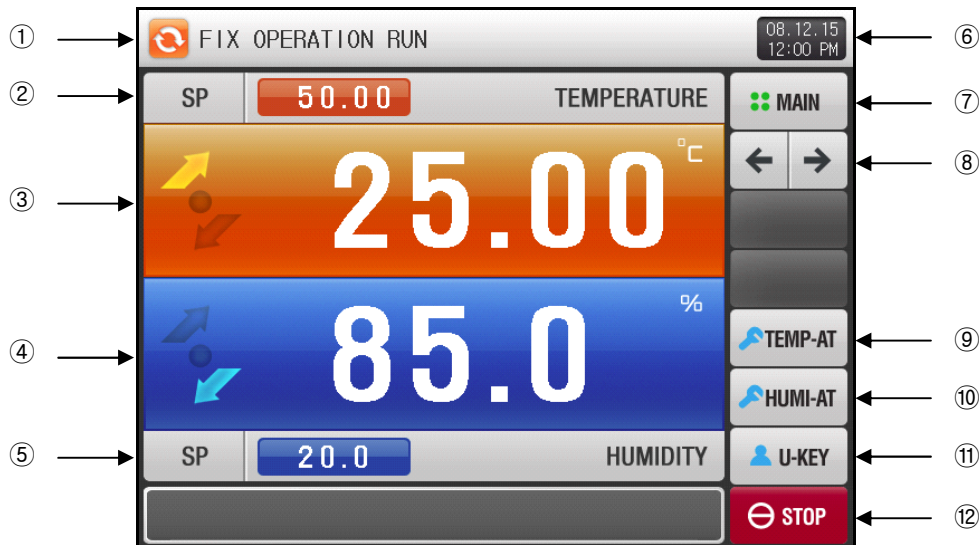
[Figure 3-4] Input Keypad for humidity Set Point





- ▶ Press the blue button on the left lowerhand corner to pop up numeric Input Keypad [Figure 3-4].
- ▶ Press the **RUN** button at the lower right corner to start operation, after complete to input Set Point for temperature and humidity.

Table 3-1. Temperature, Humidity SP Parameters

Parameter	Range	Unit	Default
Temperature SP	T.EU(0.00 ~ 100.00%)	T.EU	T.EU(0.00%)
Humidity SP	H.EU(0.0 ~ 100.0%)	H.EU	H.EU(0.0%)

- ※ T.EU : Range of Temperature Sensor
- ※ H.EU : Range of Humidity Sensor
- ☞ Refer to [Engineering Units]

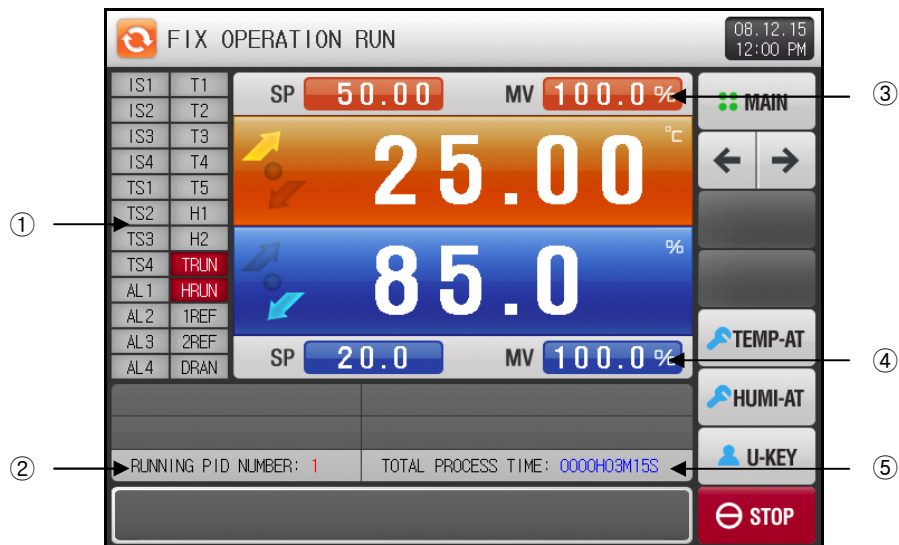
3.2.2 The 1st FIX RUN screen[Figure 3-5] The 1st FIX RUN screen

- ① Displays current operation status (FIX operation RUN)
- ② Displays and Setting button for target Set Point of temperature.
- ③ Displays Present Value of temperature.
- ④ Displays Present Value of humidity.
- ⑤ Displays and Setting button for target Set Point of humidity.
- ⑥ Displays current date/time and button to turn off LCD light for power-saving mode
 - ☞ Red Lamp on Display part will turn on under operation STOP state during power-saving mode by  key.
 - ☞ Green Lamp on Display part will turn on under operation RUN state during power-saving mode by  key
- ⑦ Button to move to the MAIN MENU screen.
- ⑧ Button to move to the next / previous screen.
- ⑨ Button to carry out Auto-Tuning process for temperature by target Set Point at ②.
 - ☞ To remove this tuning button from this screen, refer to [10. PID GROUP] on [Installation Manual].
- ⑩ Button to carry out Auto-Tuning process for humidity by target Set Point at ⑤.
 - ☞ To remove this tuning button from this screen, refer to [10. PID GROUP] on [Installation Manual].
- ⑪ USER-KEY button.
 - ☞ To remove this U-KEY button from this screen, refer to [13. INITIAL SETTING] on [Installation Manual].
 - ☞ For using this U-KEY, set available relay number at 'USER KEY SIGNAL' on [DO CONFIG] in [SYSTEM SETTING].
 - ☞ If USER KEY has been set, appointed relay will be ON by pressing the  (U-KEY) button on FIX / PROGRAM operations screen regardless RUN or STOP state.
- ⑫ STOP button to stop FIX RUN operation.
 - ☞  (RUN) button is displayed, when FIX STOP state.

※ The ⑨, ⑩ buttons are inactive in the FIX stop screen.


3.2.3 The 2nd FIX RUN screen

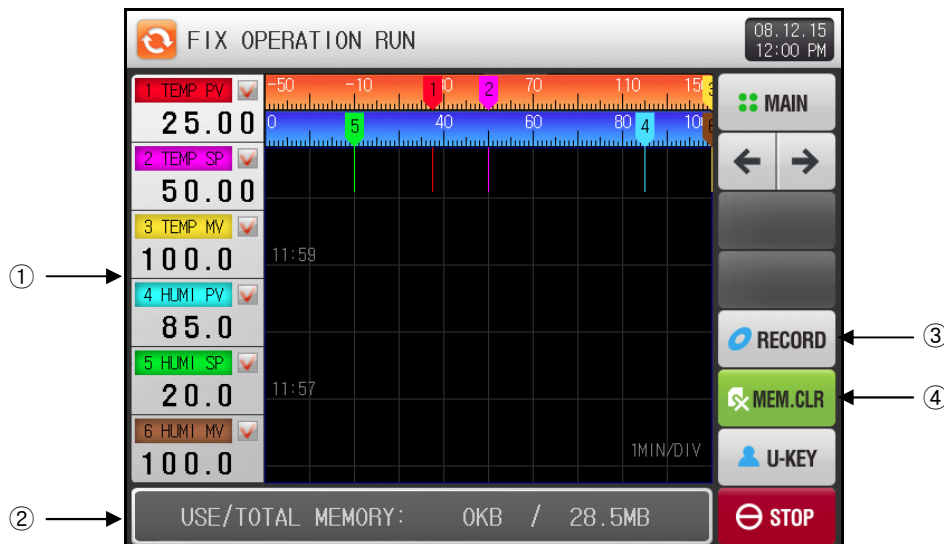
- ▶ Additional information of FIX operation status will be displayed in this screen, including PV, SP, control output MV (Manipulate Value) and activating state of other Digital Outputs.

[Figure 3-6] The 2nd FIX RUN screen

- ① Displays DO signal status. Active RED Lamp indicates activating signal and relay ON state.
 ☞ To select different DO signal display list on this screen, refer to [13.2 Status Display Lamp] on [Installations Manual].
- ② Displays the current running PID ZONE number.
 ☞ Refer to [PID GROUP] in [SYSTEM SETTING] for more information of current PID ZONE.
- ③ Displays percentage control output, Manipulate Value (MV) of temperature.
- ④ Displays percentage control output, Manipulate Value (MV) of humidity.
- ⑤ Displays total process time.

3.2.4 The 3rd FIX Operations screen

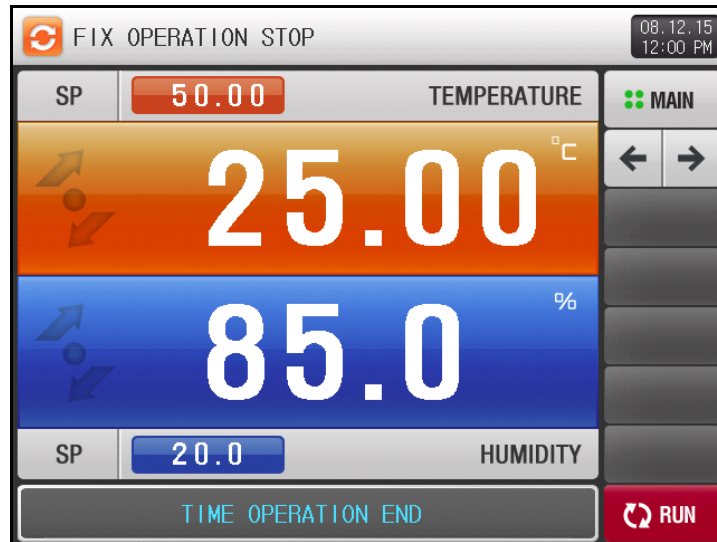
- ▶ This screen is for viewing and recording data by trend graph.
- ▶ You can set items to display data by trend graph among 6 parameters – SP, PV, MV of temperature and humidity – shown at the left hand side of this screen by using each check box (☐).
- ▶ Press the  (RECORD) button on the right hand side to store the recording data in the internal memory.
- ▶ All data saved in internal memory will be wiped out by POWER OFF.
- ☞ Store all important recorded data to SD card before POWER OFF
- ☞ Refer to [6.2 TREND GRAPH view & DATA processing].
 - ※ While the data is recording into internal memory, that can not be downloaded to SD card.

[Figure 3-7] The 3rd FIX RUN Screen

- ① Displays the PV, SP, MV of temperature and humidity and its check box button.
- ② Displays available internal memory volume.
 - ☞ About 25days can be saving on 1 second of sampling time.
- ③ Button to start recording data selected by check box on the internal memory.
- ④ Clear button to wipe out all data stored to internal memory.

3.2.5 FIX operation STOP screen


- ▶ Once the operation has completed normally as the time at 'TIME OPERATION' on [4. FUNCTION & FIX OPERATION setting], FIX operation will stop and 'TIME OPERATION END' message appears shown as [Figure3-8]
- ▶ However, this message will not appear if the operation is stopped by force pressing 'STOP' button.
- ▶ That message will disappear with pressing any part of touch screen.
 - ☞ This also applies to PROGRAM STOP.

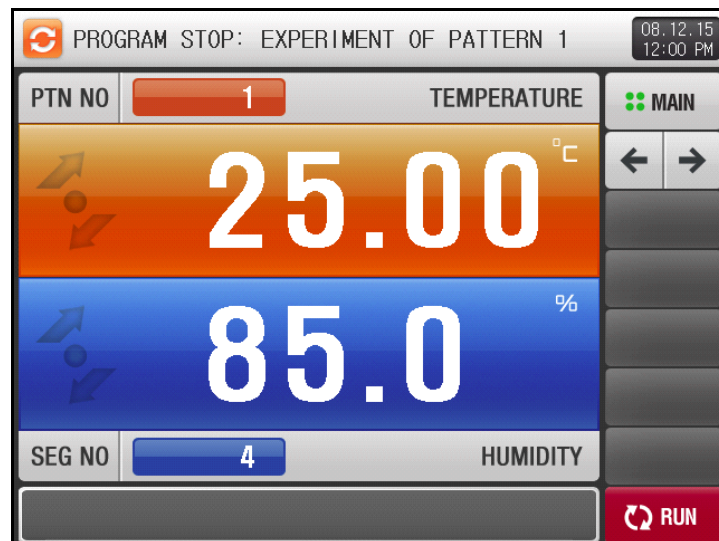


[Figure 3-8] FIX Operations STOP screen

3.3 PROGRAM Operation

3.3.1 PROGRAM STOP screen

- ▶ Under setting 'PROG' operation at 'OPERATION MODE' on [4. FUNCTION & FIX OPERATION setting], when you press [OPER. SCREEN] section on the MAIN MENU screen, this PROGRAM STOP screen will appear.
- ▶ For program settings, refer to [5. Program PATTERN].
- ▶ Press the  (RUN) button on [Figure 3-9 PROGRAM STOP screen] to start running operation and move to [Figure 3-10 The 1st PROGRAM Screen].



[Figure 3-9] PROGRAM STOP Screen

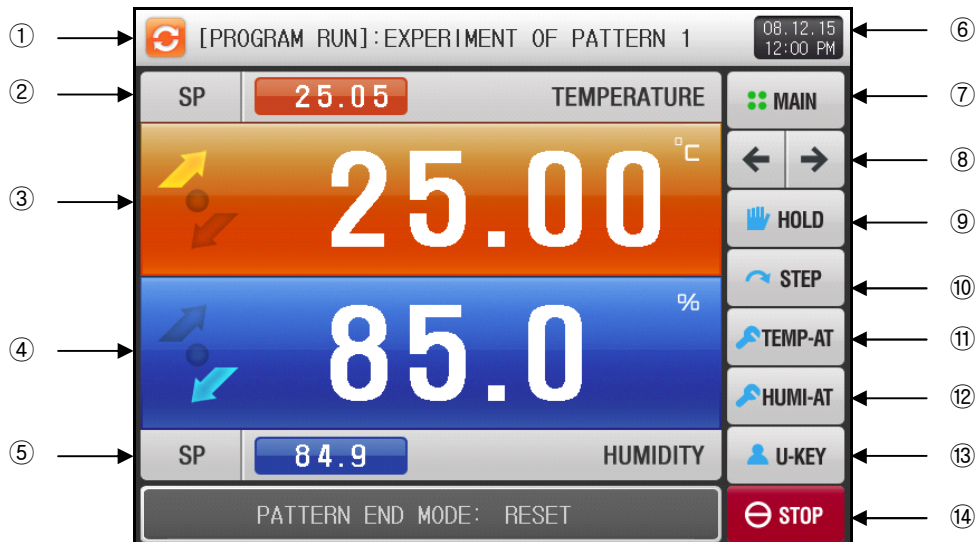
Table 3-2. PROGRAM STOP Screen Parameters

Parameter	Range	Units	Default
Pattern No.	1~120	ABS	1

※ Operation Precautions



- ▶ Operation will not start running without setting program input at displayed pattern number.
 👁 Refer to [5.1 Program PATTERN]

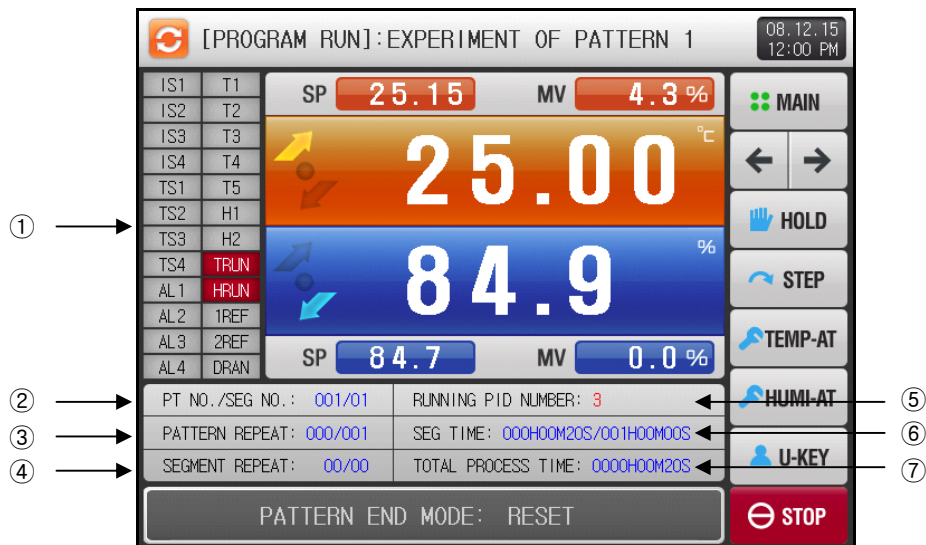
3.3.2 The 1st PROGRAM RUN screen[Figure 3-10] The 1st PROGRAM RUN Screen

- ① Displays current operation status (PROG operation RUN)
- ② Displays current Set Point of temperature that will be reaching the target SP of current segment.
- ③ Displays Present Value of temperature.
- ④ Displays Present Value of humidity.
- ⑤ Displays current Set Point of humidity that will be reaching the target SP of current segment.
- ⑥ Displays current date/time and button to turn off LCD light for power-saving mode
 - ☞ Red Lamp on Display part will turn on under operation STOP state during power-saving mode by key.
 - ☞ Green Lamp on Display part will turn on under operation RUN state during power-saving mode by key.
- ⑦ Button to move to the MAIN MENU screen.
- ⑧ Button to move to the next / previous screen.
- ⑨ HOLD button to keep control with staying current Set Point of temperature and humidity.
- ⑩ Button to step forward to next segment by skip current operating segment by force.
- ⑪ Button to carry out Auto-Tuning process for temperature by current Set Point at ②
 - ☞ To remove this tuning button from this screen, refer to [10. PID group] on [Installation Manual].
- ⑫ Button to carry out Auto-Tuning process for humidity by current Set Point at ⑤
 - ☞ To remove this tuning button from this screen, refer to [10. PID group] on [Installation Manual].
- ⑬ USER-KEY button.
 - ☞ To remove this U-KEY button from this screen, refer to [13. INITIAL SETTING] on [Installation Manual].
 - ☞ For using this U-KEY, set available relay number at 'USER KEY SIGNAL' on [DO CONFIG] group in [SYSTEM SETTING].
 - ☞ If USER KEY has been set, appointed relay will be ON by pressing the U-KEY (U-KEY) button on FIX / PROGRAM operations screen regardless RUN or STOP state.
- ⑭ STOP button to stop PROGRAM operation.
 - ☞ (RUN) button is displayed, when FIX STOP state.

※ The ⑨ ~ ⑫ buttons are disappeared in the PROGRAM STOP screen.




3.3.3 The 2nd PROGRAM RUN Screen

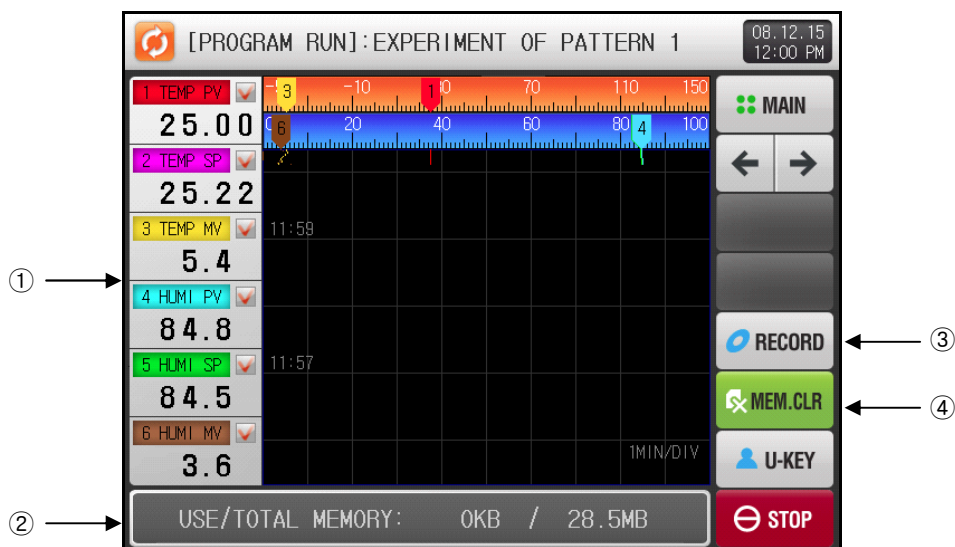
- ▶ Additional information of PROGRAM operation status will be displayed in this screen, including PV, SP, control output MV (Manipulate Value) and activating state of other Digital Outputs.

[Figure 3-11] The 2nd PROGRAM RUN screen

- ① Displays DO signal status. Active RED Lamp indicates activating signal and relay ON state.
☞ To select different DO signal display list on this screen, refer to [13.2 Status Display Lamp] on [Installations Manual].
- ② Displays the current operating pattern / segment number.
- ③ Displays pattern repeat status.
☞ [Pattern Repeat status : 000/000] The front number indicates total number for repeat process and the back number indicates completed repeat process number.
- ④ Displays segment repeat status.
☞ [Segment Repeat status : 000/000] The front number indicates total number for repeat process and the back number indicates completed repeat process number.
- ⑤ Displays the current running PID ZONE number.
- ⑥ Displays the running process time / total process time.
☞ [Segment time : 000H00M00S/000H00M00S] The front number indicates the time has processed of segment and the back number indicates total process time for current segment on [5.1 Program PATTERN setting].
- ⑦ Displays total process time.

3.3.4 The 3rd PROGRAM RUN Screen

- ▶ This screen is for viewing trend graph and recording and saving the data.
- ▶ You can set items to display by graph and record trend data among 6 parameters – SP, PV, MV of temperature and humidity–shown at the left hand side of this screen by using each check box ().
- ▶ Press the  (RECORD) button on the right hand side to record trend data established at ① of current program operation, and it starts recording with activating  (RECORD) button.
- ▶ Press the activated  (RECORD) button to stop recording, and recorded data will be stored in internal memory as a file. New file will be created by every single turning ON /OFF recording.
- ▶ All data stored in internal memory will be wiped out by POWER OFF.
- ☞ Store all important recorded data to SD card before POWER OFF
- ☞ Refer to [6.2 TREND GRAPH view & DATA processing].
 - ※ While the data is recording into internal memory, that can not be downloaded to SD card.



[Figure 3–12] The 3rd PROGRAM RUN Screen

- ① Displays the PV, SP, MV of temperature and humidity and its check box button.
- ② Displays available internal memory volume.
- ☞ About 25days can be saving on 1 second of sampling time.
- ③ Button to start recording data selected by check box on the internal memory.
- ④ Clear button to wipe out all data stored to internal memory.

3.3.5 PROGRAM operation STOP Screen

- ▶ Once the operation has completed normally as all setting on processed pattern, PROGRAM operation will stop and 'PATTERN OPERATION END' message appears show as [Figure3-13]
- ▶ However, this message will not appear if the operation is stopped by force pressing 'STOP' button.
- ▶ That message will disappear with pressing any part of touch screen.
 - ☞ This also applies to FIX STOP.

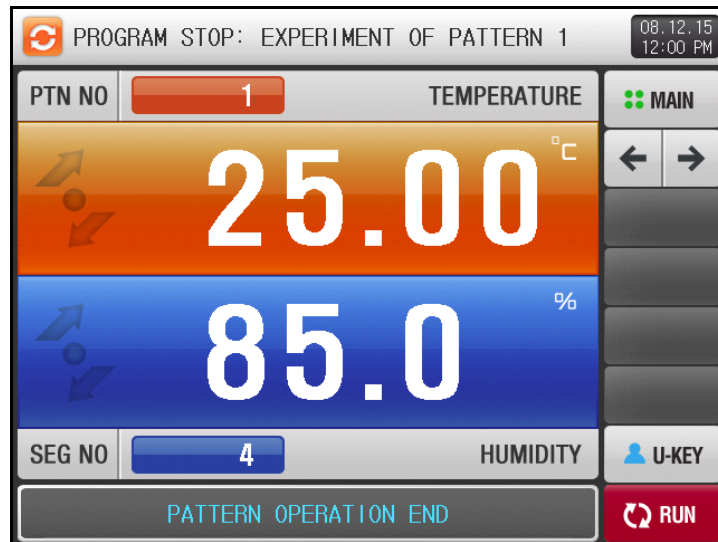
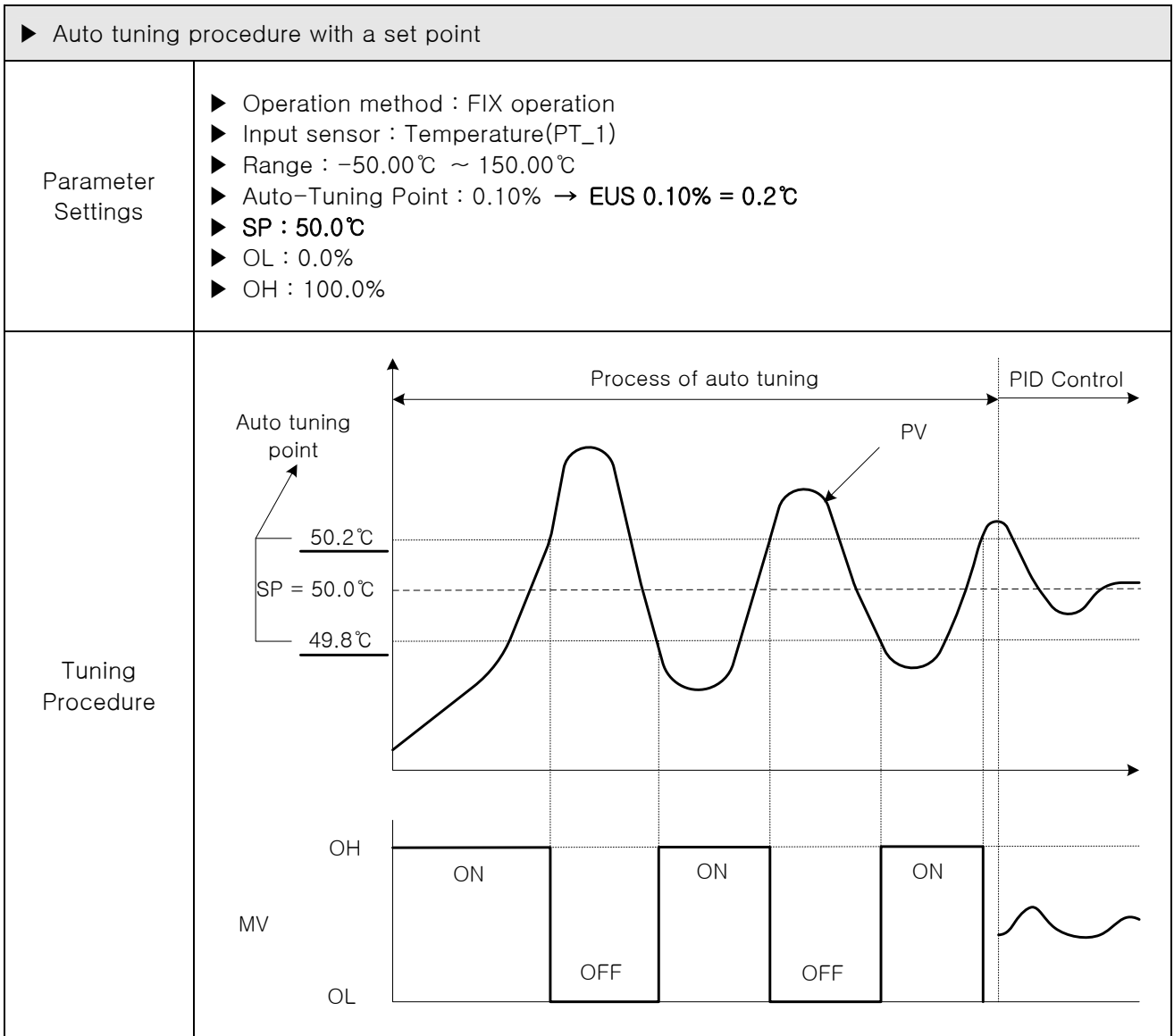


Figure 3-13 PROGRAM operation STOP Screen

3.4 AUTO TUNING and TUNING POINT

- ▶ The Hold and Step keys cannot be used while the program is in running with auto-tuning.
- ▶ Auto-Tuning is a strong function to establish optimal P.I.D value automatically by calculating the characteristics of the control system.
- ▶ While generating ON/OFF control output signal for 2.5 cycles, the controller measures the PV response of the control system with a limit cycle method and calculate the optimal P.I.D value with the oscillation data.
- ▶ Auto-Tuning process can be carried out on FIX / PRORGAM RUN state, and after completion of Auto-Tuning process, calculated P.I.D value with SP will be automatically stored on P.I.D parameters of corresponding zone.



▶ Auto Tuning Precautions

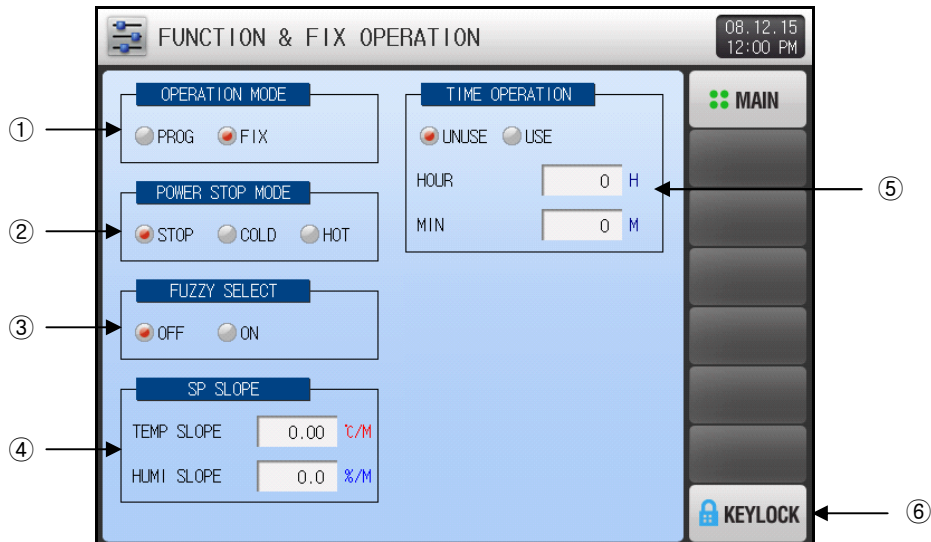
- ① The tuning point does not change even if the SP is changed during auto tuning. When auto tuning has completed, operation continues again with the changed SP.
- ② If 'S.OPN' occurs during auto tuning, the process stops. PID stays the same before auto tuning.
- ③ Auto tuning stops automatically, if the second cycle is operated longer for 27 hours.
- ④ PID may change during auto tuning, but when the process is finished, the PID will be reset to new calculated value from auto tuning process.
- ⑤ If auto tuning is terminated by force, the PID is the same value as it was before auto tuning began.

☞ A more accurate PID can be obtained if temperature is auto tuned in a stable temperature before auto tuning humidity.

4. FUNCTION & FIX OPEARTION setting

- ▶ Press [FUNCTION&FIX] button on MAIN MENU screen to enter into this function section.
- ▶ This screen is to set parameters concerned additional function for general operation and FIX operation.

4.1 Operation mode & Functions



[Image 4-1] Operation Settings Screen


- ① Setup box to set Operation Mode. (PROGRAM / FIX Operation)
- ② Setup box to set Power Stop Mode.
 - ☞ Power Stop Mode is the function to set how to operate after power recovery from failure.
 - ☞ STOP : Operation will stay STOP state after power recovery, and 'OPERATION STOP' will display.
 - ☞ COLD : Same operation before power failure will re-start after recovery power recovery.
For FIX run state, operation will re-start from the beginning (of TIME OPERATION)
For PROG run state, operation will re-start from the first segment of processed pattern.
 - ☞ HOT : Operation will resume from the running state right before power failure.
- ③ Setup box to set whether or not using FUZZY function. Refer to [4.2 FUZZY function]
 - ☞ OFF : Not using FUZZY function.
 - ☞ ON : Using FUZZY function.
- ④ Setup box to set SP SLOPE for ramping rate on FIX operation. Refer to [4.3 SP SLOPE function]
- ⑤ Setup box to set whether or not using TIME OPERATION for total process time on FIX Operation.
- ⑥ KEYLOCK button to prevent from any of unauthorized parameter setting. Every setting operation will be denied if the  (KEY LOCK) button is currently being activated
 - ☞ Screen transition and key unlock are still active.

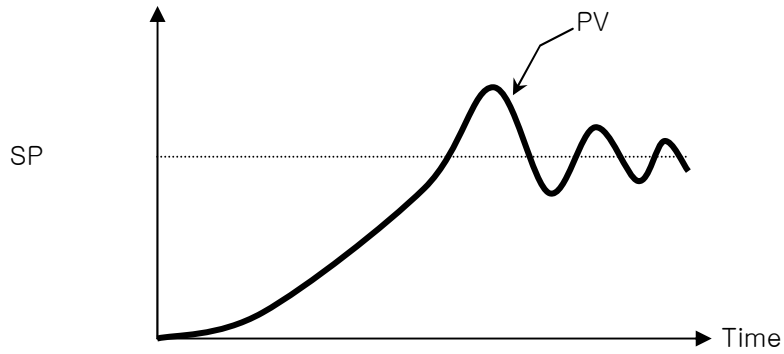
Table 4-1. PROGRAM STOP Screen Parameters

Parameters	Range	Units	Default
OPERATION MODE	PROG, FIX	ABS	Pattern
POWER STOP MODE	STOP, COLD, HOT	ABS	STOP
FUZZY SELECT	OFF, ON	ABS	Non-function
KEY LOCK	OFF, ON	ABS	OFF
TEMP. SP SLOPE	T.EUS(0.00 ~ 100.00%) / MIN	T.EUS / MIN	T.EUS(0.00%) /MIN
HUMI. SP SLOPE	H.EUS(0.0 ~ 100.0%) / MIN	H.EUS / MIN	H.EUS(0.0%) /MIN
TIME OPERATION	USE, UNUSE	ABS	Do not use
HOUR	0 ~ 9999 HOUR	ABS	0
MIN	0 ~ 59 MIN	ABS	0

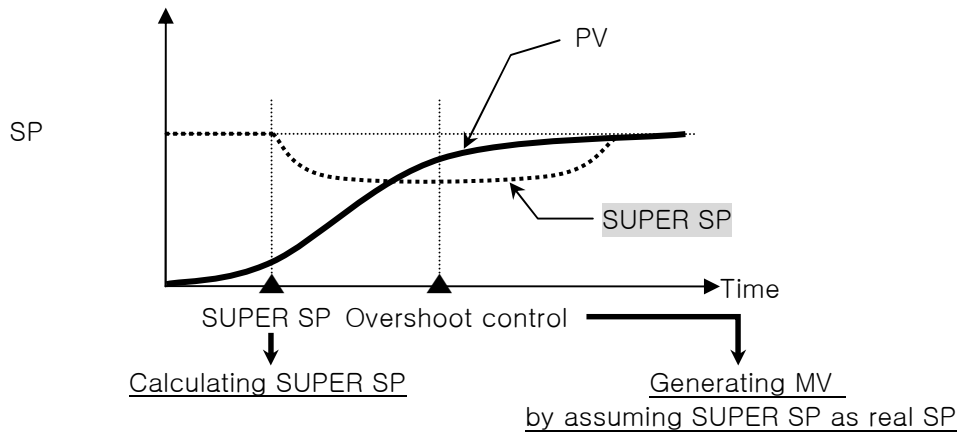
4.2 FUZZY function

- ▶ FUZZY function can effectively control the overshoot that may occur when intense fluctuating load or frequent Set Point changing
- ▶ Before PV approaches to SP, automatically calculated SUPER SP can restrain overshoot.

- FUZZY 'OFF'

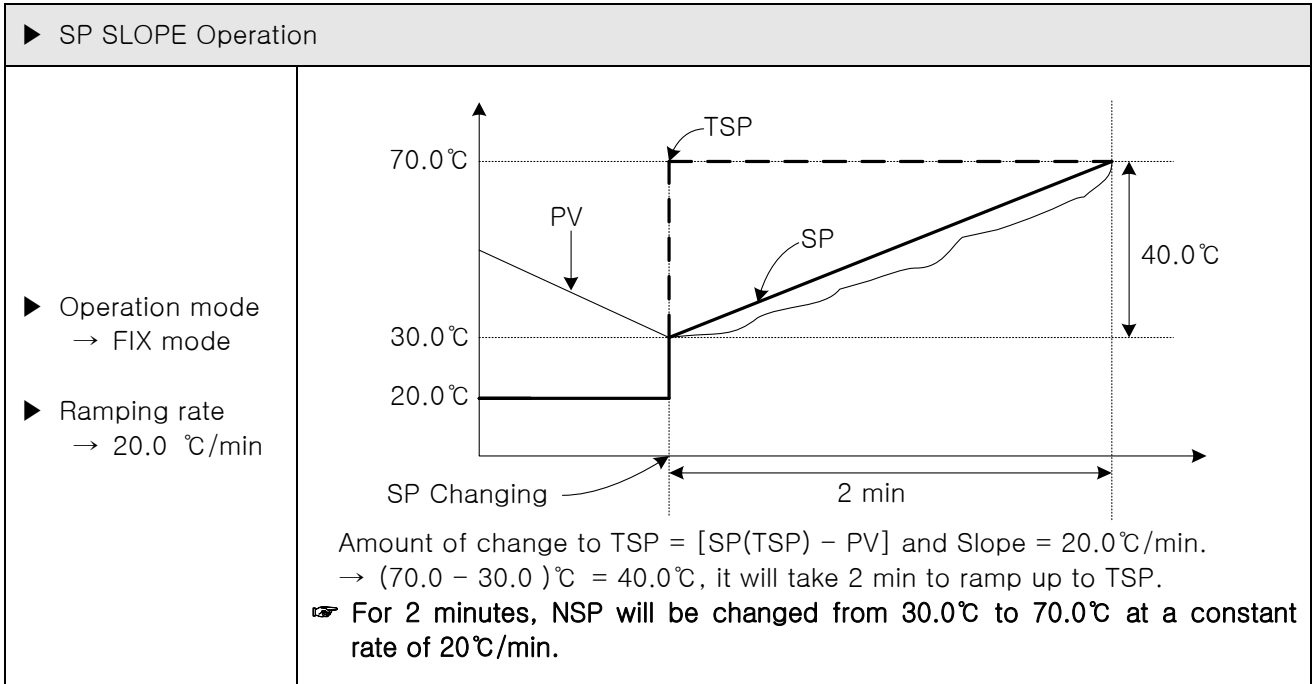


- FUZZY 'ON'



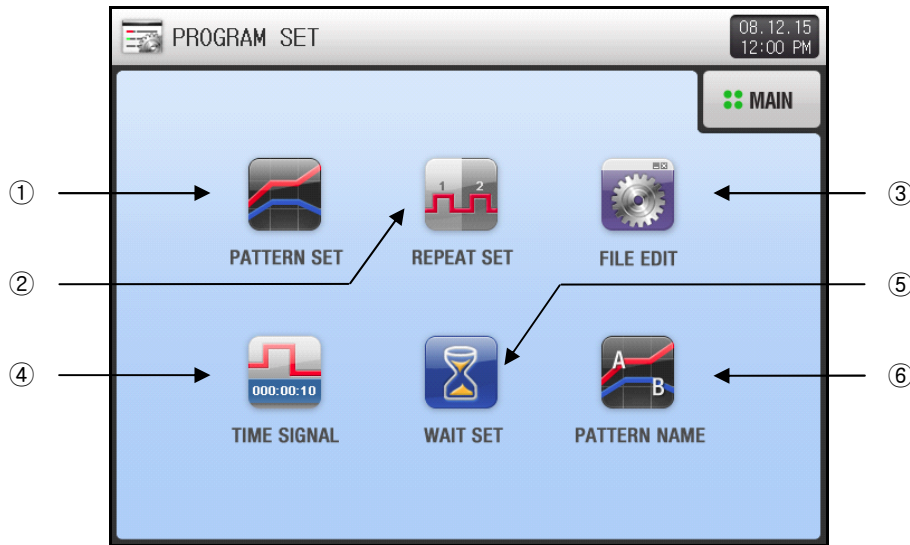
4.3 SP SLOPE function

- ▶ SP SLOPE function to make the Set Point ascend or descent gradually overtime.
- ▶ When changing the Target SP during FIX run operation, NSP (current SP) will be changed from current PV to Target SP gradually by assigned ramping rate



5. PROGRAM SETTING

- ▶ Press [PROGRAM SET] on MAIN MENU screen to enter into program setting section [Figure 5-1 PROGRAM SET screen].
- ▶ This PROGRAM SET menu is composed with 6 groups concerned program operation setting.

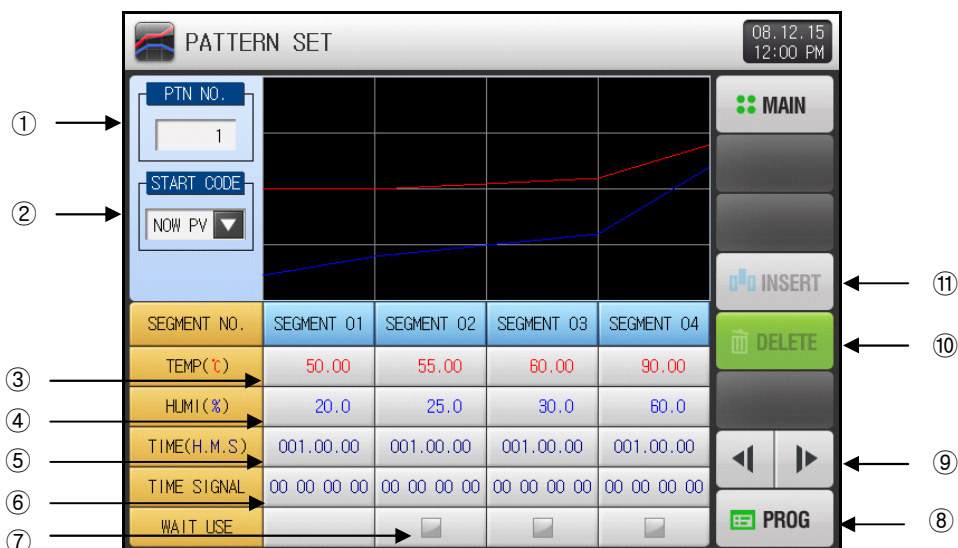


[Figure 5-1] PROGRAM SET screen

No.	Instructions	Description
①	PATTERN SET	Pattern / Segment setting group.
②	REPEAT SET	Pattern / Segment repeat operation setting group
③	FILE EDIT	Pattern editing by copy and delete.
④	TIME SIGNAL	TIME SIGNAL setting group
⑤	WAIT SET	Group to set WAIT function settings
⑥	PATTERN NAME	Group to input the name of each pattern.


5.1 Program PATTERN setting

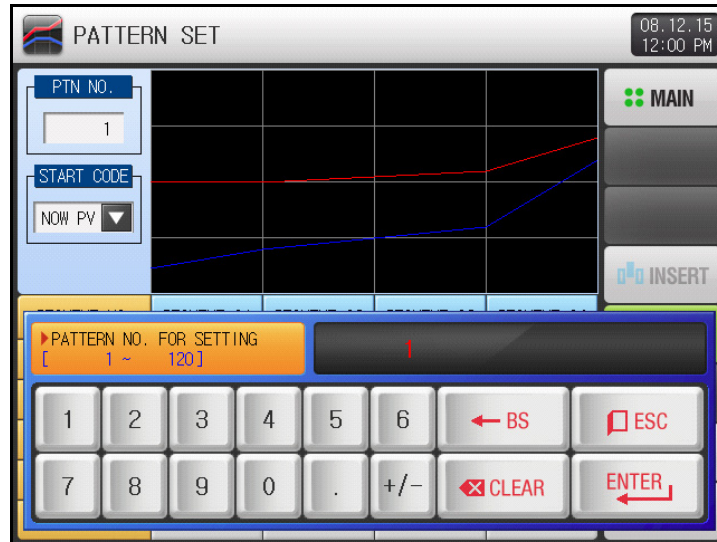
- ▶ This screen is to set programming segments of each pattern.
- ▶ Press [PATTERN SET] button on PROGRAM SET menu to enter into this screen
- ▶ Refer to [5.4 TIME SIGNAL] for how to use TIME SIGNAL.
- ▶ Refer to [5.5 WAIT function].




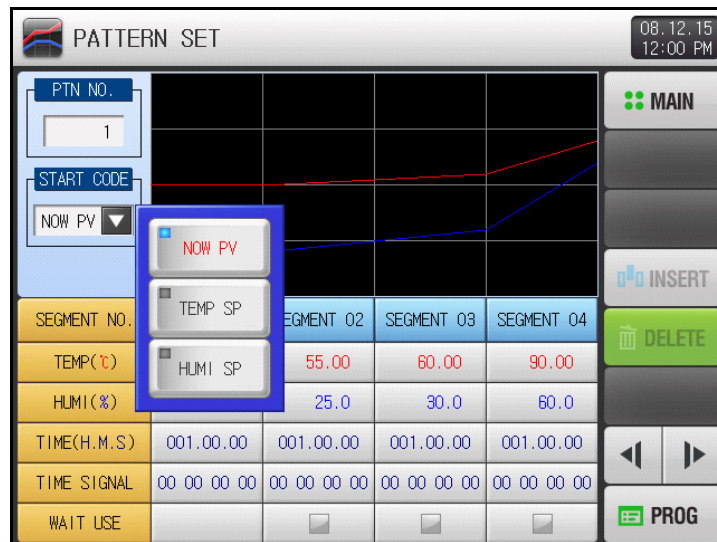
[Figure 5-2] PATTERN SET screen

- ① Setup box to input pattern number for setting.
- ② Setup box for START CODE among 'NOW PV', 'TEMP SP' and 'HUMI SP' of starting SP condition. This parameter determines starting SP condition at the first time of running operation, and SP trend of the first segment.
 - ☞ NOW PV (PV start)
 - : The program will immediately start at the point in the pattern where the current SP is equal to the current PV when the program starts running. In the case where the PV is beyond any current SP in the pattern, the program will immediately start at beginning of the first SOAK segment. If no SAOK segment is present in the pattern, it will start at the point closest to the PV.
 - If the starting point of the program, based on the PV at the start of the program, would occur during a ramp segment, the program will recalculate the time left in the ramp segment.
 - ☞ TEMP SP / HUMI SP (SSP start)
 - : The program will begin operating from the assigned Start Set Point (SSP) of temperature / humidity in the program and ramp to Target Set Point of segment 01 over time designated in segment 01.
 - Start Set Point (SSP) of temperature / humidity can be established at the START CODE setup box when setting TEMP SP / HUMI SP of START CODE.
- ③ Setup box to input Target Set Point for each segment of temperature.
- ④ Setup box to input Target Set Point for each segment of humidity.
- ⑤ Setup box to input process time for each segment.
- ⑥ Setup box to input Time Signal number to use for each segment.
 - ☞ Four TIME SIGNALs can be set for each segment among 18 different types.
 - ☞ Refer to [5.4 TIME SIGNAL]
- ⑦ Button to set whether or not using WAIT function.
 - ☞ Refer to [5.5 WAIT function]
- ⑧ Button to move back to PROGRAM SET menu screen, [Figure 5-1 PROGRAM SET screen].
- ⑨ Button to display next / previous paragraph of four segments.
- ⑩ Segment delete button. When you press specific segment number SEGMENT 01 (Segment 01 ~ 99), that segment number SEGMENT 01 (Segment 01 ~ 99) and DELETE (DELETE) button will become active. Press the DELETE (DELETE) button, and activated segment SEGMENT 01 will be deleted.
- ⑪ Segment insert button. When you press specific segment number SEGMENT 01 (Segment 01 ~ 99), that segment number SEGMENT 01 (Segment 01 ~ 99) and INSERT (INSERT) button will become active. Press the INSERT (INSERT) button, and the activated segment SEGMENT 01 will be inserted into the pattern.

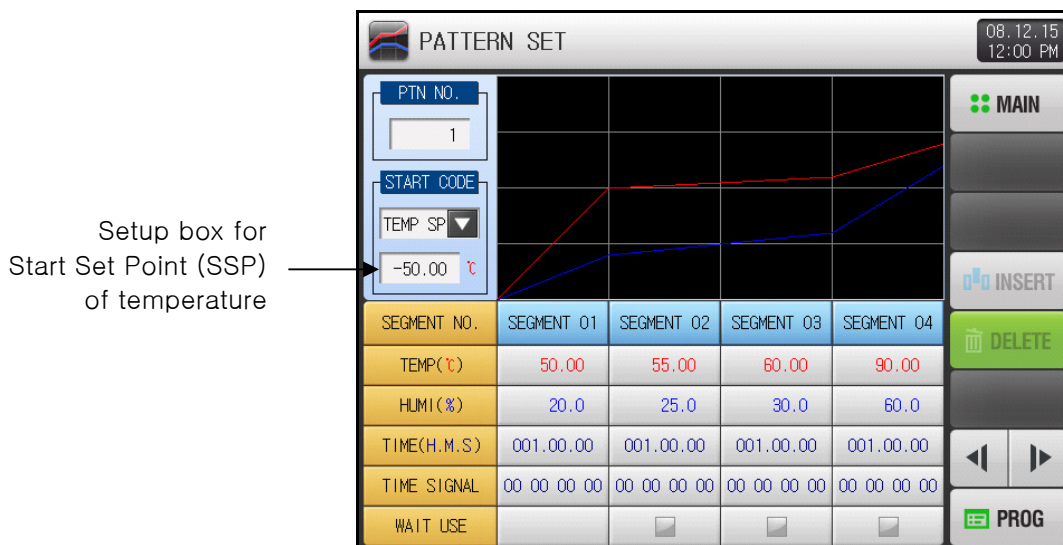
- ▶ Press the  setup box, and Input Keypad will appear.



- ▶ Press the  setup box, and Option Keypad will appear.

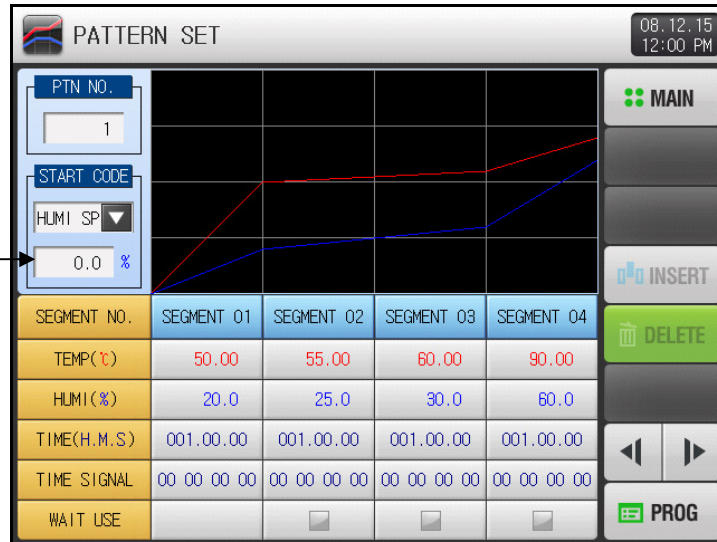


- ▶ Screen when 'TEMP SP' setting of START CODE.

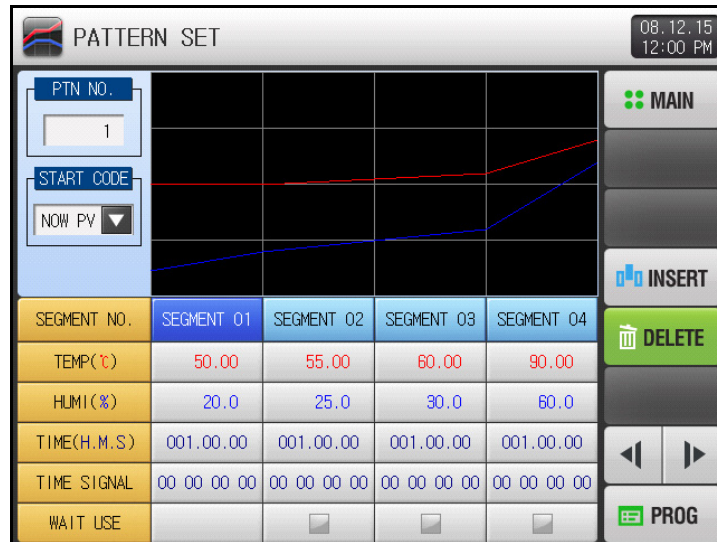


- ▶ Screen when 'HUMI SP' setting of START CODE.

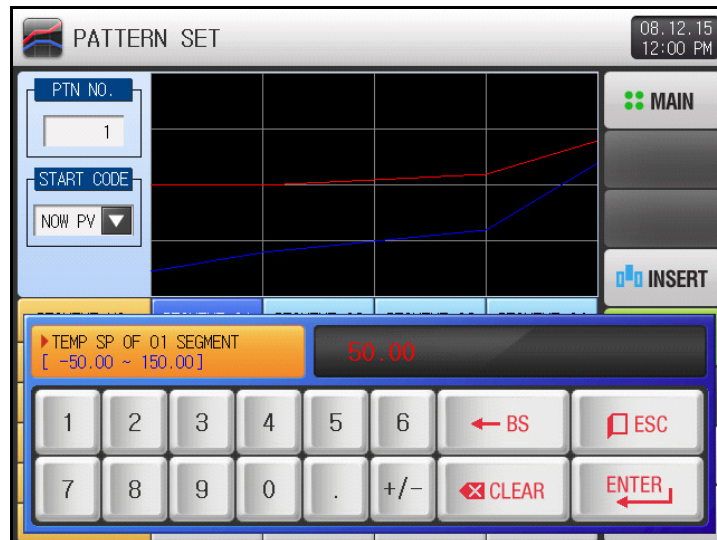
Setup box for Start Set Point (SSP) of humidity



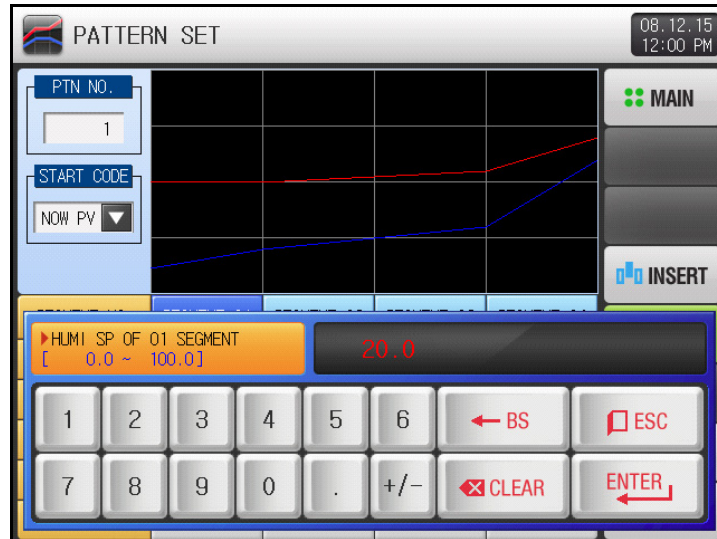
- ▶ (INSERT) and (DELETE) buttons become active after activating specific segment by pressing



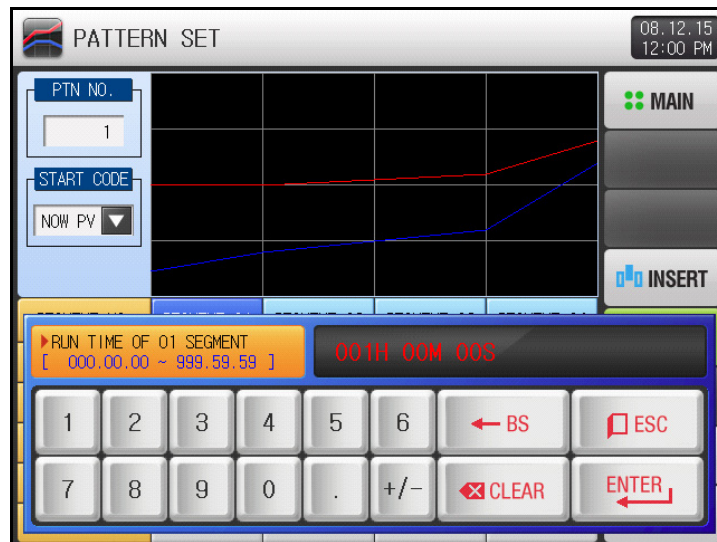
- ▶ Press the (TEMP) setup box, and Input Keypad for TEMP SP will appear.



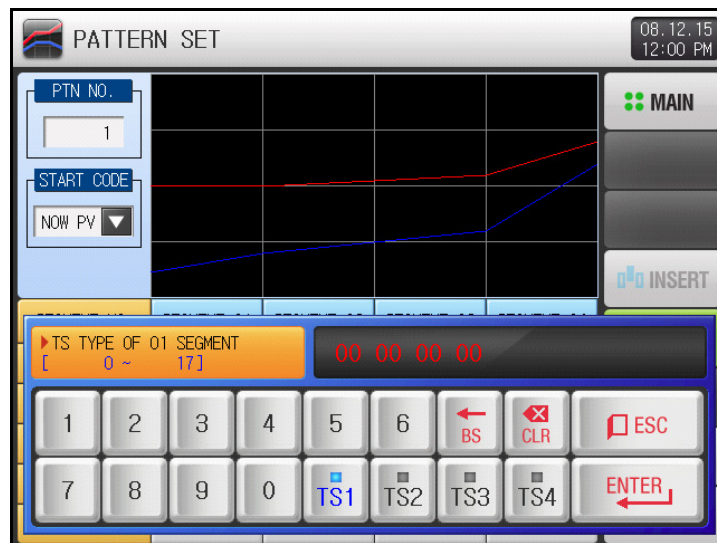
- ▶ Press the (HUMI) setup box, and Input Keypad for HUMI SP will appear.



- ▶ Press the (SEGMENT) setup box, and Input Keypad for TIME will appear.



- ▶ Press the (TIME SIGNAL) setup box, and Input Keypad for TS will appear.





- ☞ Press  (Enter) button to complete time signal setting.
- ☞ Press  (ESC) button to cancel input and disappear Input Keypad.
- ※ Four TIME SIGNALs, TS1 to TS4 can be set among 18 types from [5.4 TIME SIGNAL] by pressing TS1~TS4 button.

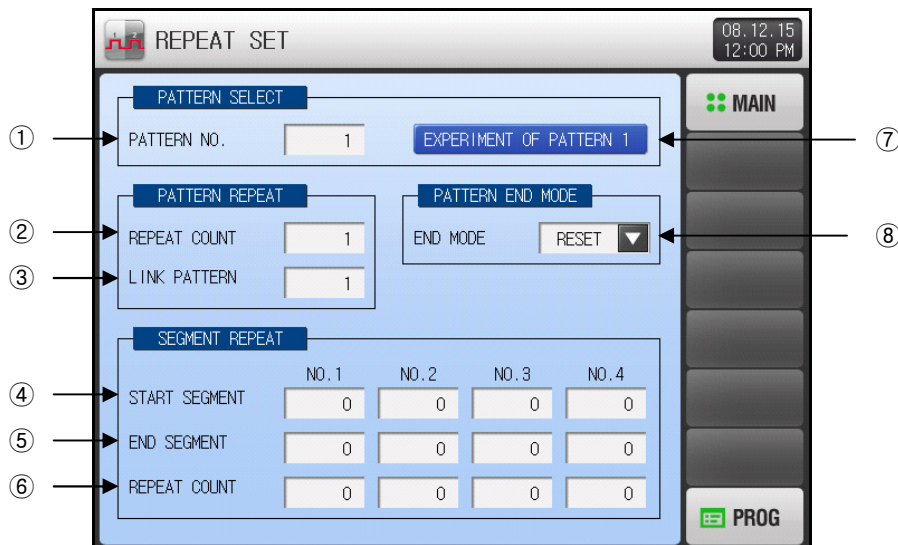
Table 5-1. PATTERN SET Parameters

Parameter	Range	Unit	Default
PATTERN NUMBER	1~120	ABS	1
START CODE	NOW PV, TEMP SP, HUMI SP	ABS	NOW PV
TEMP SP of Segment #n	T.EU(0.00~100.00%)	T.EU	T.EU(0.00%)
HUMI SP of Segment #n	H.EU(0.0~100.0%)	H.EU	H.EU(0.0%)
Process Time of Segment #n	-00.00.01(OFF) ~ 999.59.59(H.M.S)	ABS	-00.00.01
TIME SIGNAL 1 to 4 of Segment #n	0 ~ 17	ABS	0
WAIT function of Segment #n	USE, UNUSE	ABS	UNUSE

* #n : 1 ~ 99

5.2 REPEAT function

- ▶ Press [REPEAT SET] button on PROGRAM SET menu screen to enter into this screen.
- ▶ This screen is to set repeat operation of entire current pattern and partial segment operation after complete of current operation.



[Figure 5-3] REPEAT SET screen

- ① Setup box to input pattern number for repeat operation.
- ② Setup box to input count number for current entire pattern repeat.
- ③ Setup box to input next pattern number to run continually after complete of current operation.
- ④ Setup box to input start segment number for partial repeat operation.
- ⑤ Setup box to input end segment number for partial repeat operation.
- ⑥ Setup box to input count number for partial repeat operation.
- ⑦ Displays of experiment name for current pattern.
 - ☞ The experiment name can be set at [5.6 PATTERN NAME].
 - ☞ This Displays is just READ ONLY and cannot be changed on this screen.
- ⑧ Button to set PATTERN END MODE for operation state after complete of operation.
 - ☞ RESET : Make program operation STOP with generating PTEND signal.
 - ☞ SEG HOLD : Stay operation run with holding SP at last segment.
 - ☞ LINK RUN : Resume pattern operation number set as LINK PATTERN.

Table 5-2. REPEAT SET Parameters

Parameter	Range	Unit	Default
PATTERN NUMBER	1~120	ABS	1
REPEAT COUNT	0(infinite)~999	ABS	1
LINK PATTERN	1~120	ABS	1
PATTERN END MODE	STOP, SEG HOLD, LINK RUN	ABS	STOP
START SEG. for Partial repeat	0~99	ABS	0
END SEG. for Partial repeat	0~99	ABS	0
REPEAT COUNT for Partial repeat	0~99	ABS	0

5.3 Pattern FILE EDIT

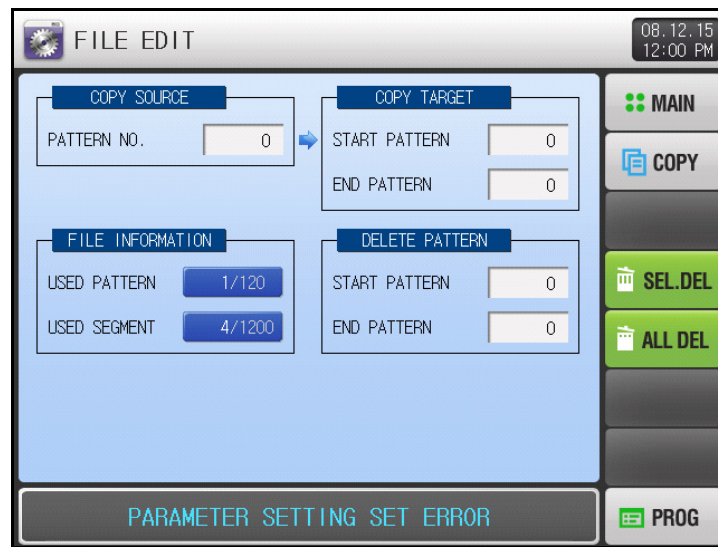
- ▶ Press [FILE EDIT] button on PROGRAM SET menu screen to enter into this screen.
- ▶ This screen is to edit program by copy or delete pattern set on [5.1 Program PATTERN].
- ▶ Currently processing pattern can not be deleted.
- ▶ Deleted pattern can not be restored.



[Figure 5-4] FILE EDIT screen

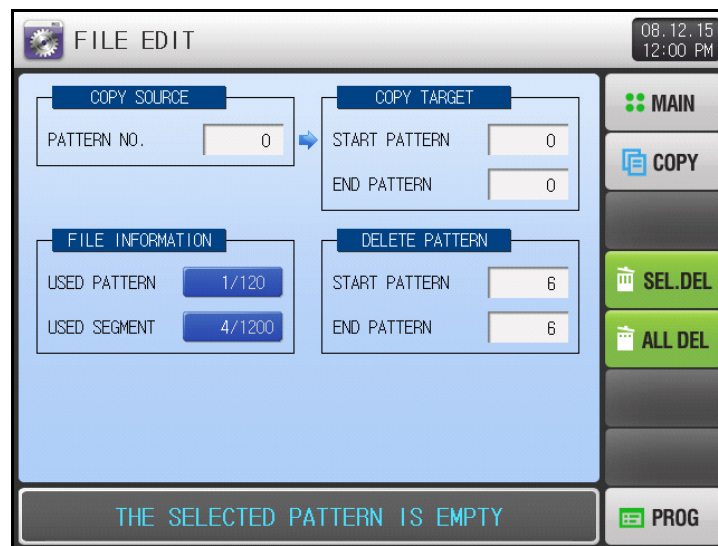
- ① Setup box to input number of original pattern.
- ② Setup box to input number of the first / last target pattern to paste.
 - ☞ If setting '0' at END PATTERN, only START PATTERN will be copied.
- ③ Displays total number of pattern set on [5.1 Program PATTERN].
 - ☞ This Displays is just READ ONLY and cannot be changed by itself.
- ④ Displays total number of segment set on [5.1 Program PATTERN].
 - ☞ This Displays is just READ ONLY and cannot be changed by itself.
- ⑤ Setup box to input number of the first / last target pattern to delete
 - ☞ If setting '0' at END PATTERN, only START PATTERN will be delete
- ⑥ Button to paste the original pattern at ① to the target pattern at ②.
- ⑦ Button to delete patterns at ⑤.
- ⑧ Button to delete all patterns.

- ▶ 'PARAMETER SETTING SET ERROR' message will appear when editing with input error at original pattern number.



[Figure 5-5] FILE EDIT screen – Error

- ▶ 'THE SELECTED PATTERN IS EMPTY' message will appear with no segment information at original pattern.



[Figure 5-6] FILE EDIT screen – Empty

Table 5-3. FILE EDIT setting Parameters

Parameter		Range	Units	Default
PATTERN NUMBER		1~120	ABS	0
COPY TARGET	START PATTERN	0~120	ABS	0
	END PATTERN	0~120	ABS	0
COPY		USE, UNUSE	ABS	UNUSE
SEL. DEL	START PATTERN	0~120	ABS	0
	END PATTERN	0~120	ABS	0
ALL DEL		USE, UNUSE	ABS	UNUSE

5.4 TIME SIGNAL

- ▶ Press [TIME SIGNAL] button on PROTRAM SET menu screen to enter into this screen.
- ▶ This screen is to establish each 18 types of TIME SIGNAL setting. Refer to the [5.4.3 Description of TIME SIGNAL operation]
- ▶ TIME SIGNAL will be operating among 3 subset, ON / OFF / TIMER.
- ▶ Established TIME SIGNAL can be designated into segment setting on [5.1 Program PATTERN].

5.4.1 ON / OFF Mode TIME SIGNAL operation

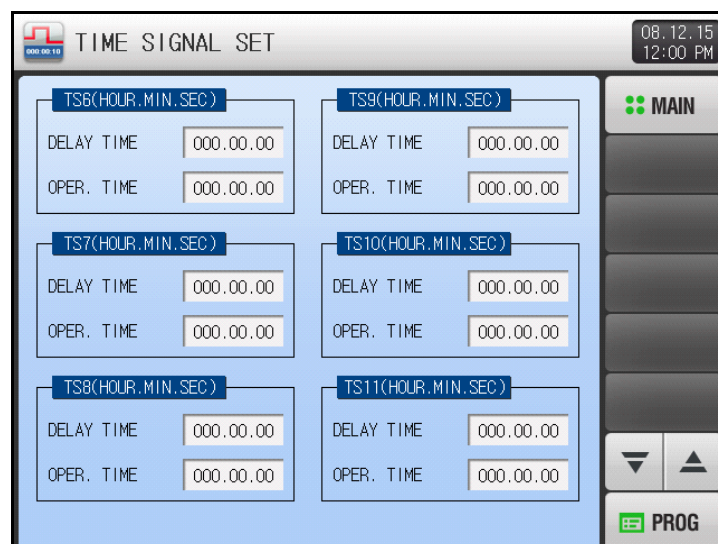


[Figure 5-7] TIME SIGNAL SET screen – TS0 to TS5

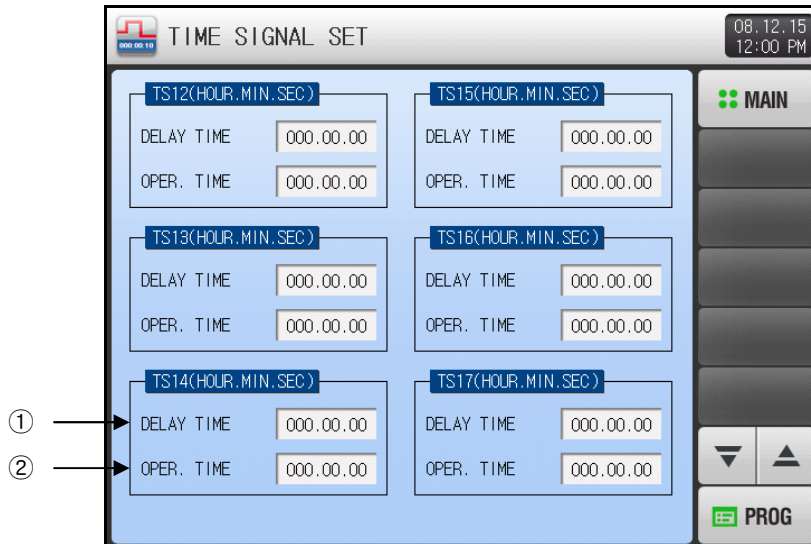
- ① 'TIME SIGNAL 0' is used for 'OFF', not generating TS output duration of the program segment.
 ⚠ This is fixed READ ONLY and cannot be changed.
- ② 'TIME SIGNAL 1' is used for 'ON', generating TS output duration of the program segment.
 ⚠ This is fixed READ ONLY and cannot be changed.
- ③ Button to display next / previous 6 TIME SIGNALs page.

5.4.2 Timer mode TIME SIGNAL operation

- ▶ TIME SIGNAL 2~17(TS2~17) operation is based on each time setting of DEALY and OPER. TIME.



[Figure 5-8] TIME SIGNAL SET screen – TS6 to TS11



[Figure 5-9] TIME SIGNAL SET screen – TS12 to TS17

- ① DELAY TIME is to set the start time of TIME SIGNAL activating 'ON' at segment. TS event output will become 'ON' right after the DELAY TIME elapses.
 - ☞ When DELAY TIME > Segment time, TIME SIGNAL output will not become 'ON'.
- ② OPER. TIME is to set the time to keep generating TIME SIGNAL 'ON' at segment. TS event output will be generating 'ON' signal for OPER.TIME.
 - ☞ When DELAY TIME+OPER.TIME > Segment time, TIME SIGNAL output will be generating on just concerned segment and will not affect next segment.

Table 5-4. TIME SIGNAL setting Parameters

Parameter	Range	Units	Default
DELAY TIME	000.00.00(OFF) ~999.59.59(H.M.S)	ABS	000.00.00
OPER. TIME	000.00.00(OFF) ~999.59.59(H.M.S)	ABS	000.00.00

5.4.3 Description of TIME SIGNAL operation

Setting		TIME SIGNAL Operation	
<p>$N \text{ SEG TIME} \geq \text{DELAY TIME} + \text{OPER.TIME}$</p>	<p>1. DELAY TIME = 000.00.00 TIME SIGNAL 2</p>	<p>ON TS1 OFF</p> <p>SEGMENT (N-1) SEG TIME N SEG TIME (N+1) SEG TIME</p>	<p>OPER.TIME</p>
	<p>2. DELAY TIME \neq 000.00.00 TIME SIGNAL 3</p>	<p>ON TS2 OFF</p> <p>SEGMENT (N-1) SEG TIME N SEG TIME (N+1) SEG TIME</p>	<p>OPER.TIME</p> <p>DELAY TIME</p>
<p>$N \text{ SEG TIME} < \text{DELAY TIME} + \text{OPER.TIME}$</p> <p>👁 Does not affect the next segment.</p>	<p>3. DELAY TIME = 000.00.00 TIME SIGNAL 4</p>	<p>ON TS3 OFF</p> <p>SEGMENT (N-1) SEG TIME N SEG TIME (N+1) SEG TIME</p>	<p>OPER.TIME</p>
	<p>4. DELAY TIME \neq 000.00.00 TIME SIGNAL 5</p>	<p>ON TS4 OFF</p> <p>SEGMENT (N-1) SEG TIME N SEG TIME (N+1) SEG TIME</p>	<p>OPER.TIME</p> <p>DELAY TIME</p>

5.5 WAIT function

- ▶ Press [WAIT SET] button on PROTRAM SET menu screen to enter into this screen.
- ▶ This screen is to set WAIT Function parameter.
- ▶ WAIT Function established on this screen can be applied to program segment setting on [5.1 Program PATTERN].

※ Description of WAIT Function

① Operating condition for WAIT Function ('OR' logic)

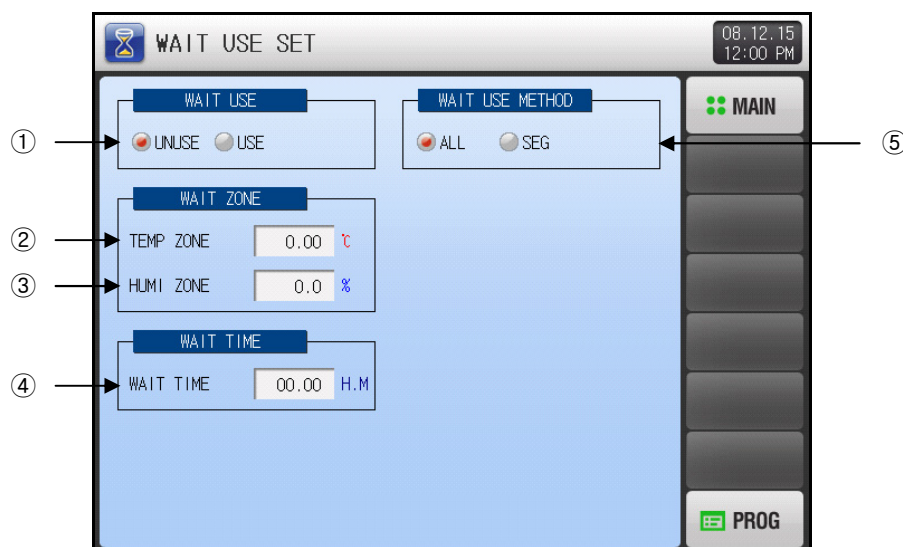
- ☞ When the PV of Temperature or Humidity does not enter into the specified deviation at WAIT ZONE from the Target SP within segment time, WAIT operation will be starting and pending for WAIT TIME or until it meets release condition.

② Release condition for WAIT Function

- ☞ When the PV of Temperature and Humidity reaches within the WAIT ZONE, ('AND' logic)

- ☞ When the WAIT TIME has expired,

WAIT operation will be released and program operation will step to the next segment (N+1)



[Figure 5-10] WAIT SET screen

① Setup box to set whether or not using WAIT Function.

② Setup box to establish temperature WAIT ZONE to release WAIT Operation.

③ Setup box to establish humidity WAIT ZONE to release WAIT Operation.

④ WAIT TIME setup box to establish the time the program will wait for the PV of temperature and humidity to enter the WAIT ZONE before starting the next program segment.

- ☞ When 00.00 default value of WAIT TIME, WAIT operation will be pending infinitely until released.

⑤ Setup box for applicable range of WAIT Function.

- ☞ ALL : WAIT Function will operate on entire segment on [5.1 Program PATTERN].

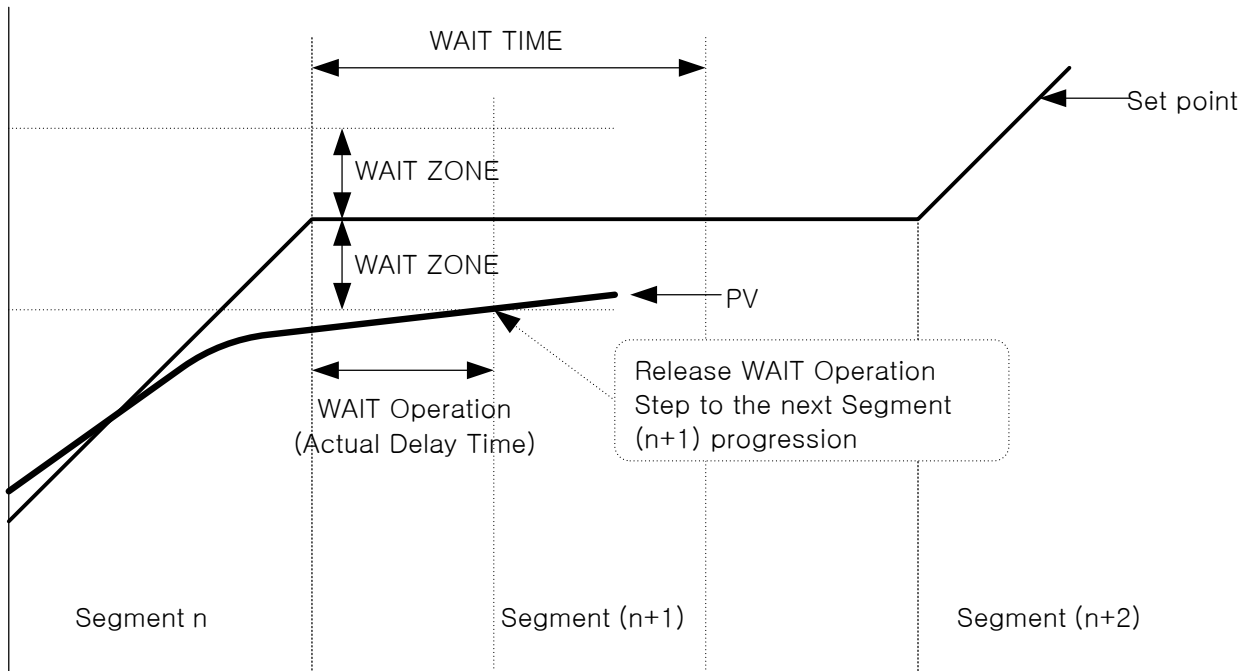
- ☞ SEG : Every single segment can be applied WAIT Function individually.

Table 5-5. WAIT USE setting Parameters

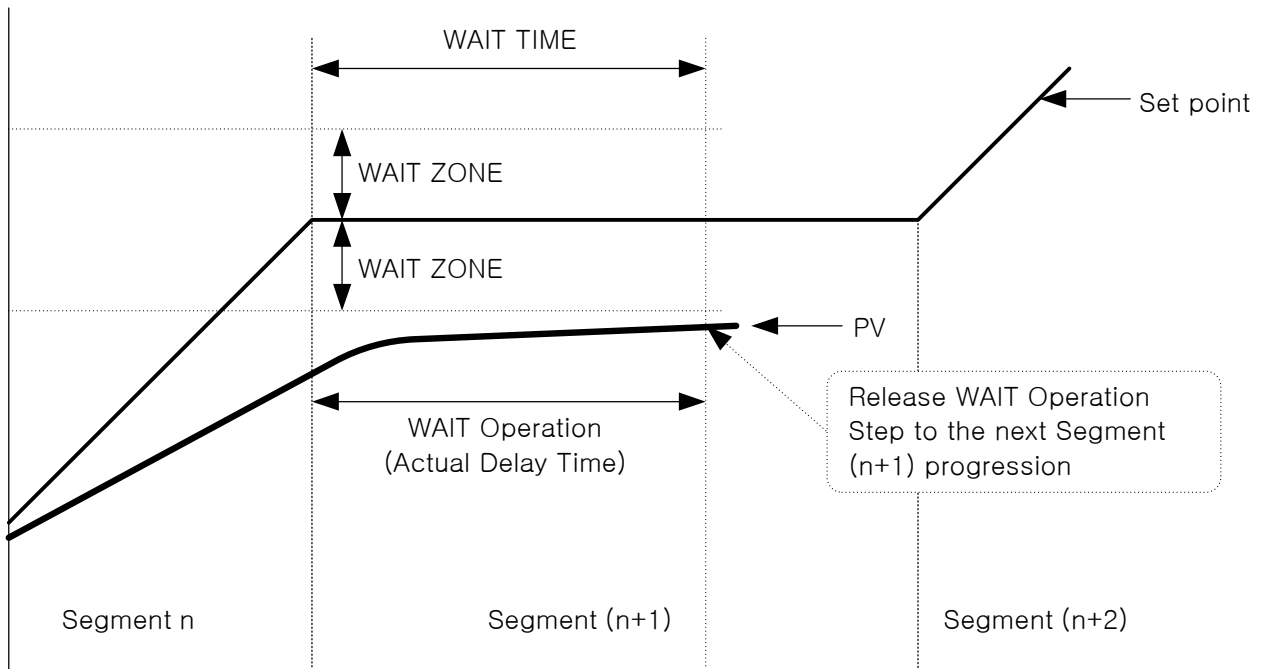
Parameter	Range	Units	Default
WAIT USE	UNUSE, USE	ABS	UNUSE
WAIT TEMP ZONE	T.EUS(0.00~100.00%)	T.EUS	T.EUS(0.00%)
WAIT HUMI ZONE	H.EUS(0.0~100.0%)	H.EUS	H.EUS(0.0%)
WAIT TIME	00.00~99.59 (H,M)	ABS	00.00
WAIT USE METHOD	ALL, SEG	ABS	ALL

► The interaction between WAIT Operation and WAIT TIME is shown as below.

① Release WAIT Operation within WAIT TIME

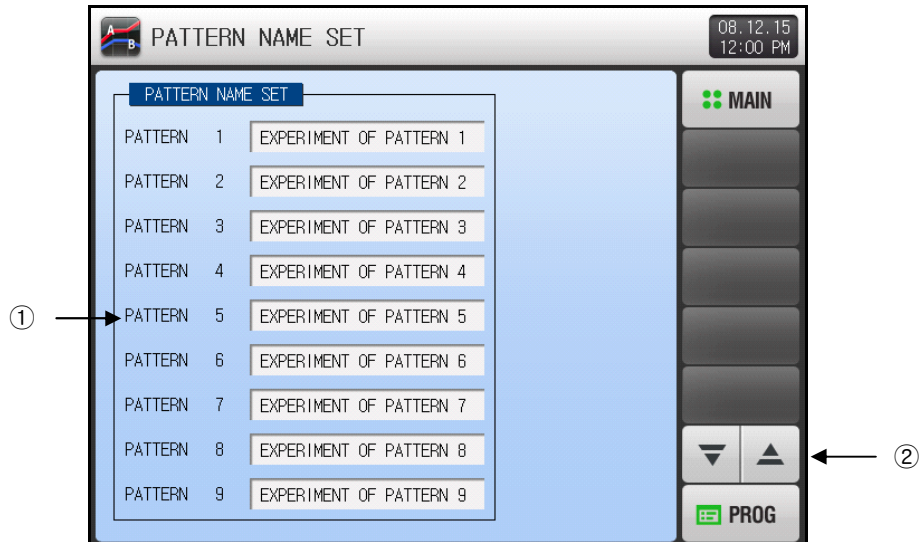


② Release WAIT Operation by elapsed WAIT TIME



5.6 PATTERN NAME input

- ▶ Press [PATTERN NAME] button on PROTRAM SET menu screen to enter into this screen.
- ▶ This screen is to input the experiment name of each pattern.
- ▶ Refer to [Figure 3-10 The 1st PROGRAM RUN Screen].



[Figure 5-11] PATTERN NAME SET screen

- ① To input experiment name of each pattern. Alpha-numeric Input Keypad will pop-up
- ② Button to move to the previous / next 9 PATTERN SET page.

- ▶ Press the button, and the Alpha-numeric Input Keypad will appear.



[Figure 5-12] PATTERN NAME Keypad

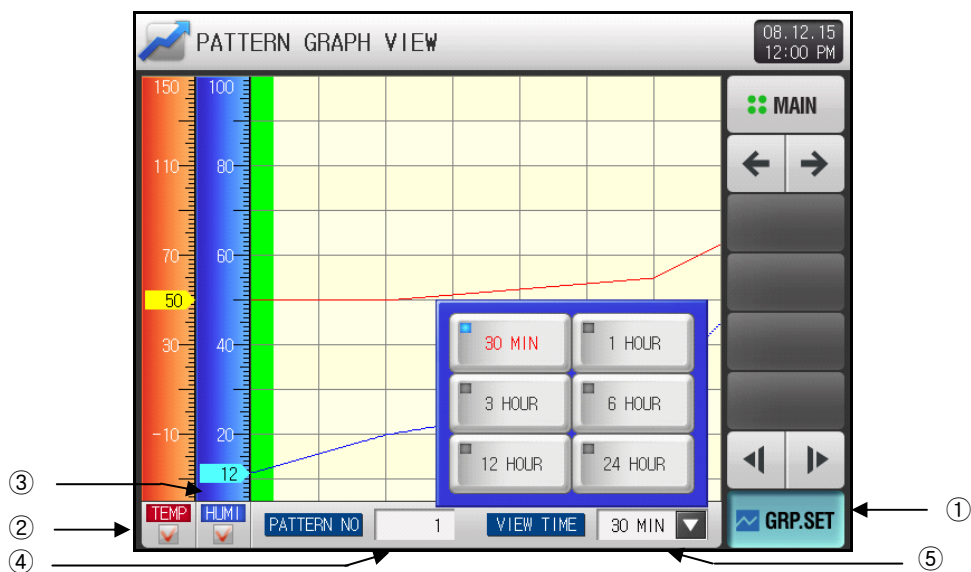
Table 5-6. PATTERN NAME setting Parameter

Parameter	Range	Units	Default
PATTERN NAME SET 1~120	0~9, A~Z, Special character (max. 24)	ABS	EXPERIMENT OF PATTERN 1~ 120

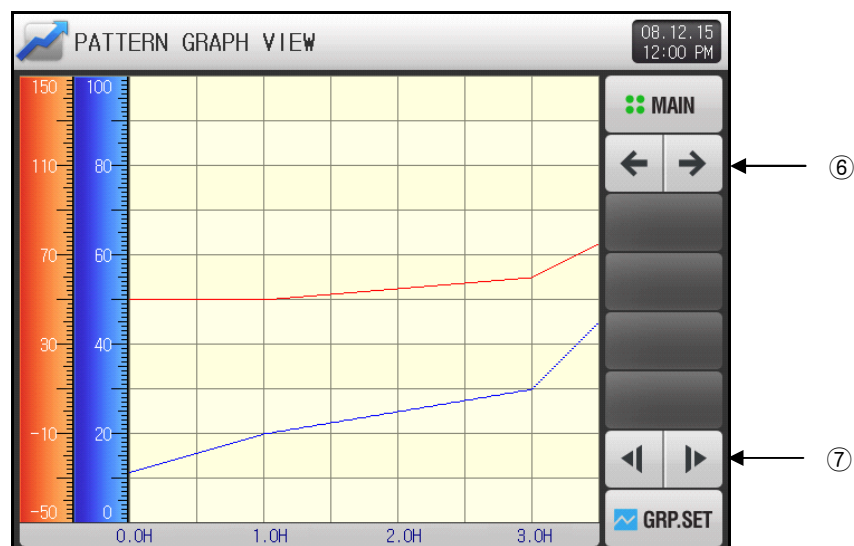
6. GRAPH & REC. setting

6.1 PATTERN GRAPH VIEW

- ▶ The following screens show the temperature/humidity pattern profile by graph when program operation.
- ▶ Press [GRAPH&REC.] on MAIN MENU screen to enter into this trend graph and data logging section, and [Figure 6-2 PATTERN GRAPH VIEW-Profile] will be displayed.
- ▶ This screen displays the pattern profiles established in [Figure 5-2 PATTERN SET screen] by trend graph.
- ▶ Even during processing operation, it is adjustable to use Checkbox for Temperature/Humidity (☑) and change pattern number (PATTERN NO 1), and time unit for view (VIEW TIME 30 MIN)(display time)



[Figure 6-1] PATTERN GRAPH VIEW-GRP.SET

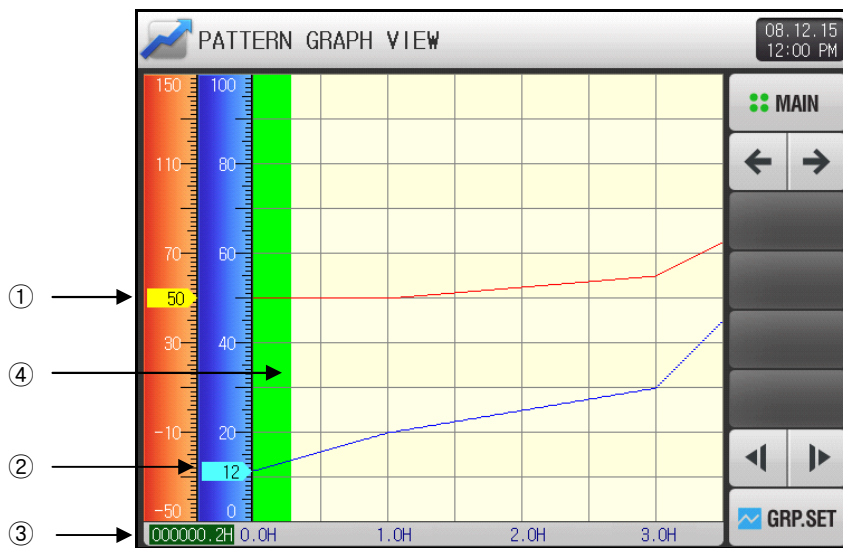


[Figure 6-2] PATTERN GRAPH VIEW - Profile

- ① Button to activate Graph Setting Menu.
☞ Graph Setting Menu will popup at the bottom of the screen depending on ON/OFF state of GRP.SET button.
- ② Check box to display pattern SP profile of temperature (red color).
If checking ☑, temperature pattern SP profile will be display by trend graph.
☞ Even during processing operation, Check box ☑, ☐ buttons are available.

- ③ Check box to display pattern SP profile of humidity (blue color).
If checking , Humidity pattern SP profile will be display by trend graph.
☞ Even during processing operation, Check box , buttons are available.
- ④ Setup box to input the pattern number to display by trend graph
☞ Press the setup box , and Input Keypad will popup on the screen.
☞ Refer to [Figure 6-4 Pattern number input keypad for graph]
- ⑤ Time interval for X-axis can be adjusted as you want. This is the Setup box for time interval.
☞ Press the setup box , and Option Keypad will popup on the screen.
☞ This time interval can be adjusted even during processing operation.
- ⑥ Button to move to the next / previous screen
- ⑦ Button to move to the next / previous paragraph by time interval.

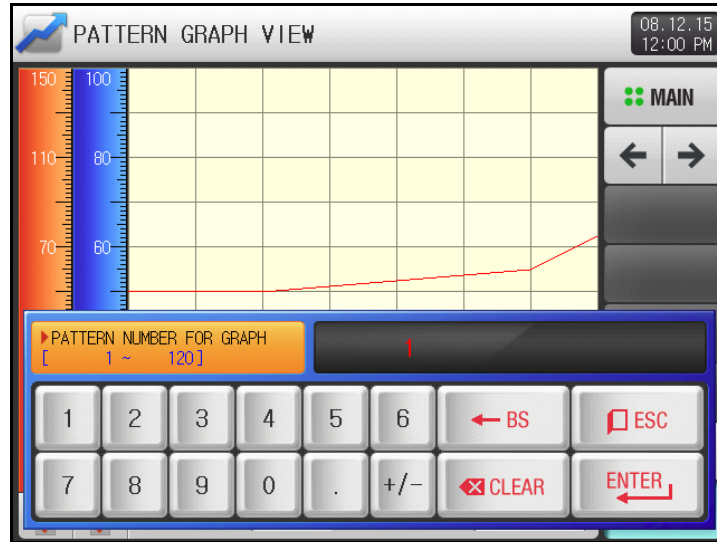
▶ This is the PATTERN GRAPH VIEW screen when displaying process time of current pattern operation.



[Figure 6-3] PATTERN GRAPH VIEW – PROG Operation

- ① Indicates PV of temperature.
- ② Indicates PV of humidity.
- ③ Indicates process time of current operating pattern
- ④ Green part indicates completed process of current operating pattern.

- ▶ Input Keypad for pattern number to display by trend graph.



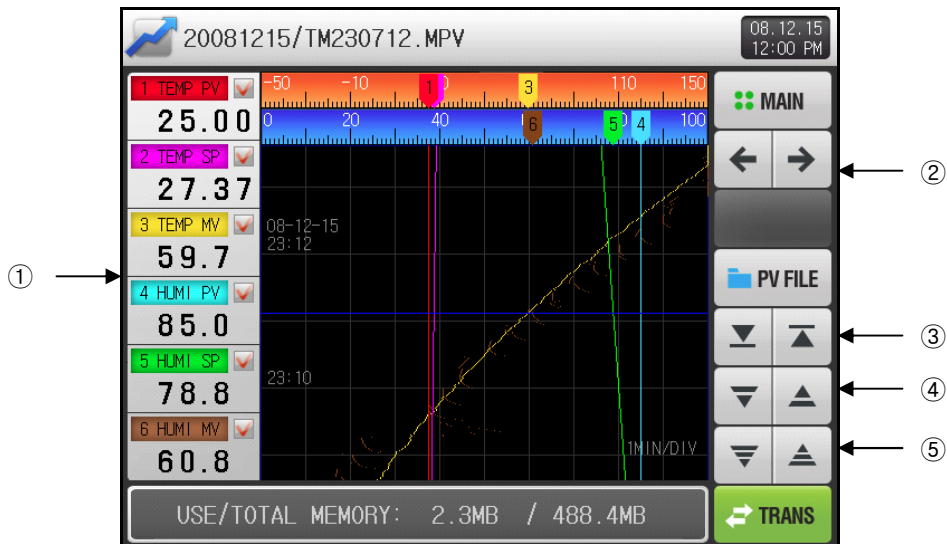
[Figure 6-4 Pattern number input keypad for graph]

Table 6-1. PATTERN GRAPH VIEW setting Parameters

Parameter	Range	Units	Default
PATTERN NUMBER	1 ~ 120	ABS	1
VIEW TIME	30 mins, 1 hour, 3 hours, 6 hours, 12 hours, 24 hours	ABS	30 mins

6.2 TREND GRAPH view & DATA processing

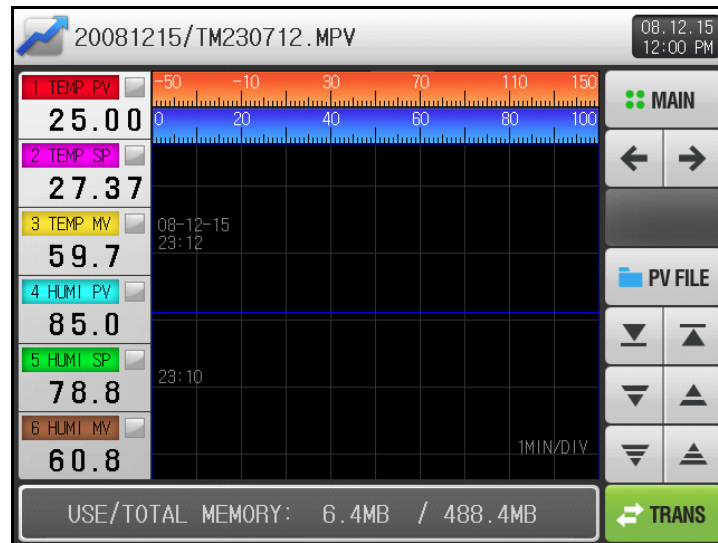
- ▶ This screen is to open specific recorded trend data file at the [3.3.4 The 3rd PROGRAM RUN screen] or [3.2.4 The 3rd FIX RUN screen] and show that trend data by graph.
- ▶ The title of this screen on the top of the window shows the open file name, indicating record date and time.



[Figure 6-5] Trend Graph screen

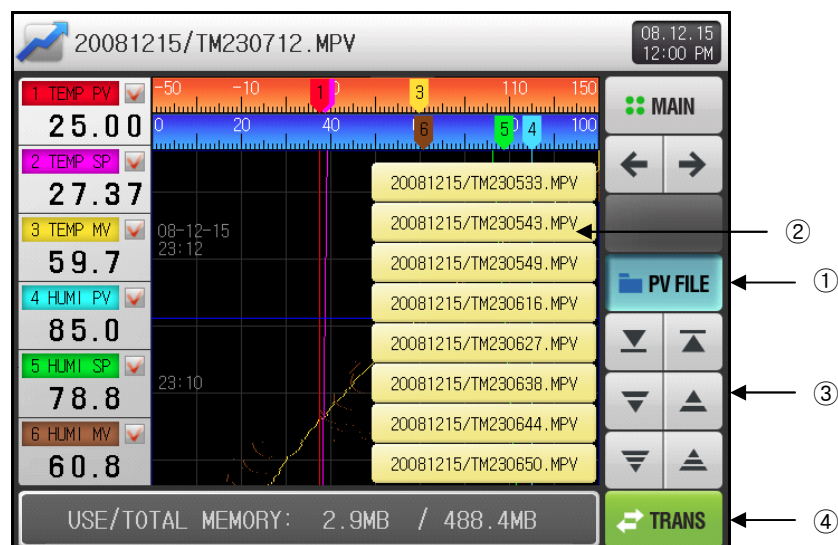
- ① Displays the PV, SP, MV of temperature/humidity and its check box button whether or not to display.
 - Display recorded trend data by graph. - Remove recorded trend graph.
- ② Button to move to the previous / next screen.
- ③ Button to display the first / last section of current trend data graph.
- ④ Page move button to the next / previous page of current trend data graph.
- ⑤ Button to move the view point (Blue line) up / down by 1 dot point of current trend data graph.
 The value where the view point (Blue line) is indicating of each item will be displayed at ① box, and the view point can move along with ⑤ button or as user touch black part of this screen.

- ▶ [Figure 6–6 Trend Graph screen – No item] is the screen when there is no checked item to display among 6 parameters.



[Figure 6–6] Trend Graph screen – No item

- ▶ [Figure 6–7 Trend Graph screen – PV FILE list] shows how to open the trend data file in internal memory stored at [3.3.4 The 3rd PROGRAM RUN screen] or [3.2.3 The 2nd FIX RUN screen]
- ▶ Refer to [3.3.4 The 3rd PROGRAM RUN screen] or [3.2.3 The 2nd FIX RUN screen] for stored trend data file.

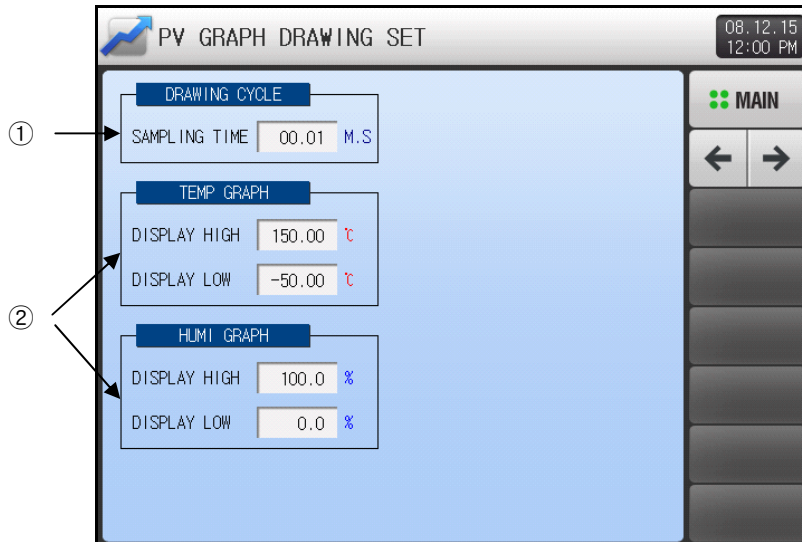


[Figure 6–7] Trend Graph screen – PV FILE list

- ① Files list stored in internal memory will popup with pressing the **PV FILE** (PV FILE) button to be active.
- ② Displays file list by 8 units at once. You can select one specific file to open and display by graph.
- ③ Up/Down button **▼▲** to list up and down for previous / next 8 files.
- ④ Button to store all PV FILES on internal memory into SD card.
 - ☞ Not available to use without SD CARD option, or while recording data at OPERATION screen.
 - ☞ Saved data as a file in internal memory can be transferred and stored in SD card.

6.3 Recording TREND GRAPH on internal memory

- ▶ This screen is to establish parameters for recording data on [3.3.4 The 3rd PROGRAM RUN screen] or [3.2.3 The 2nd FIX RUN screen].



[Figure 6-3] Trend Graph setting screen

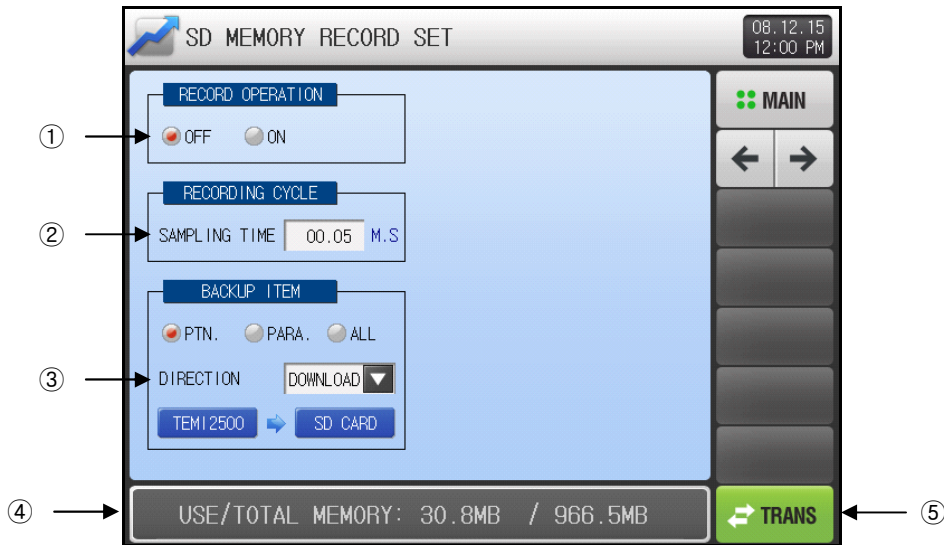
- ① Setup box to establish sampling time for recording on internal memory.
 - ☞ Cannot be adjusted when the PV graph is being saved.
 - ☞ About 37days can be saving on 1 second of sampling time.
- ② Setup box for display range of temperature/humidity.

Table 6-2. Trend Graph setting screen Parameters

Parameter	Set Range	Units	Primary Value
DRAWING CYCLE	0.01 ~ 99.99 (min,sec)	ABS	00.01
TEMP DISPLAY HIGH	T.EU(-2.50 ~ 102.50%) (TEMP DISPLAY LOW < TEMP DISPLAY HIGH)	T.EU	T.EU(100.00%)
TEMP DISPLAY LOW		T.EU	T.EU(0.00%)
HUMI DISPLAY HIGH	H.EU(0.0 ~ 100.0%) (HUMI DISPLAY LOW < HUMI DISPLAY HIGH)	H.EU	H.EU(100.0%)
HUMI DISPLAY LOW		H.EU	H.EU(0.0%)

6.4 Data Transmission setting with SD memory card

- ▶ This screen is to set the parameters concern data logging and up / download with SD memory card.
 - ☞ This screen will be hidden without SD card option.



[Figure 6-9] SD memory record setting screen


- Option box to set whether or not recording the data of current PV, SP, MV on SD card.
 - ☞ OFF : Not recording the data onto the SD card.
 - ☞ ON : Recording the data onto the SD card.
- Setup box to establish sampling time for recording on SD card.
- Setup box to establish item and direction to transfer with SD card.
 - ☞ Transfer Direction
 - DOWNLOAD : Transfer internal data of TEMI2500 to the SD card.
 - UPLOAD : Transfer data in SD CARD to TEMI2500.
 - ☞ Transfer Item
 - PTN : Program pattern profile information established on [5.1 Program PATTERN].
 - PARA : Established all parameter information.
 - ALL : Patterns and parameters information.
- Displays current memory status of SD card.
 - ☞ Only shows when the SD card has been inserted.
- Data transmission will be activated by pressing  (TRANS) button that is available under active state when operation STOP.

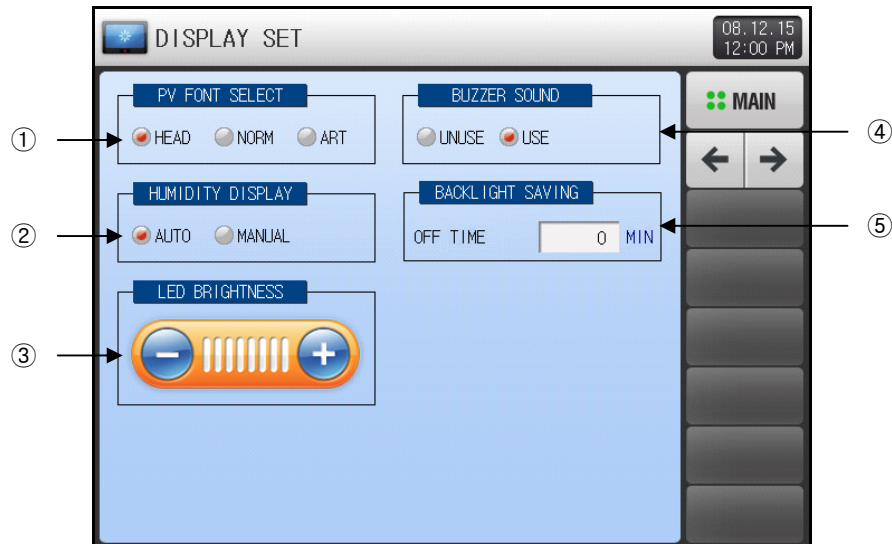
Table 6-3. SD memory record setting screen Parameters

Parameters	Range	Units	Default
RECORD OPERATION	OFF, ON	ABS	OFF
RECORDING CYCLE	00.01 ~ 99.59 (min,sec)	ABS	00.05
ITEM	PTN, PARA, ALL	ABS	PTN
DIRECTION	DOWNLOAD, UPLOAD	ABS	DOWNLOAD

7 SCREEN DISPLAY setting

7.1 Screen Display settings

- ▶ Press the DISPLAY SET on MAIN MENU screen to enter this display setting section.
- ▶ This screen is to set parameters concerned screen display such as character font, LED brightness, Buzzer and Backlight off time.



[Figure 7-1] DISPLAY SET Screen

- ① TEMI2500 provides 3 kind of PV font on Operation Screen. This is the checkbox for display PV font.
- ② Checkbox to set the Humidity PV display mode on Operation Screen.
 - ☞ TEMI2500 provides Humidity Control operation based on Relative Humpty.
 - ☞ AUTO : The Humidity PV will be displayed if settings meet DRY LIMIT condition for Relative Humidity. Otherwise, '---.-' will be displayed. (When humidity SP(HSP) ≠ 0)
 - ☞ MANUAL : Same to automatic except SP(HSP) = 0, Humidity PV will be displayed.
- ③ Adjustable LCD brightness by the and buttons.
- ④ Checkbox to set whether or not using BUZZER SOUND.
 - ☞ Even if the buzzer has been turned off, it will sound in cases of DI error.
- ⑤ Setup box for Backlight OFF time.
 - ☞ Backlight OFF time starting from no Key input.

Table 7-1. DISPLAY setting Parameters

Parameter	Range	Units	Default
PV PONT SELECT	HEAD, NORM, ART	ABS	HEAD
HUMIDITY DISPLAY	AUTO, MANUAL	ABS	AUTO
BUZZER SOUND	UNUSE, USE	ABS	USE
LED BRIGHTNESS	1 ~ 8	ABS	8 units
BACKLIGHT SAVING	0 ~ 99 MIN	ABS	10

7.2 DI ERROR HISTORY.

- ▶ This screen shows the history of date and time on DI ERROR occur.
- ▶ Max. recent 30 DI ERROR history recording displayed.
 - ☞ If more than 30 errors, recent 30 data will be displayed.











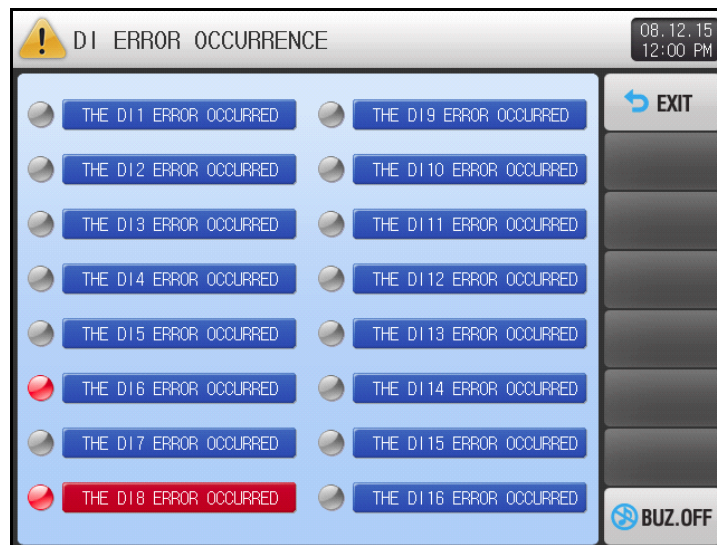
[Figure 7-2] DI ERROR HISTORY screen

- ① Displays DI ERROR history.
 - ☞ Name of settings are displayed within the [11.2 Error Name] section of the [Installation Manual].
 - ☞ This is READ ONLY and cannot be changed.
- ② Button to delete entire history of DI error recorded.
- ③ Button to move to the next / previous page for DI error history.

Table 7-2. DI ERROR HISTORY Parameters

Parameter	Range	Units	Default
ALL CLR	OFF, ON	ABS	OFF

- ▶ [Figure 7-3] and [Figure 7-4] are screens when occurring DI ERROR.
 - ▶ DISPLAY METHOD for DI ERROR occur between TEXT and PICTURE can be set on [11. DI CONFIG] of the [Instruction Manual].
 - ▶ The  (EXIT) button is used to return to the Operation screen.
 - ☞ The  (EXIT) button after DI ERROR occurring makes system ignores same DI ERROR for one minute.
- Ex.)
- The same DI 1 ERROR will be ignored for one minute, even if DI 1 ERROR occurs once again during that time, by the  (EXIT) button while DI 1 ERROR.
 - However, after one minute, DI ERROR screen will be displayed by the same DI 1 ERROR.
 - ※ 'Ignore' means the DI ERROR screen is not shown.
- ▶ The  (BUZ.OFF) button stops the BUZZER SOUND under DI ERROR.
- Ex.) This will be explained according to the lamp situation
- ※ While DI ERROR, the related DI lamp will be 'ON' with red. ( THE D16 ERROR OCCURRED (TEXT),  (PICTURE))
 - ※ After release the DI ERROE, this lamp will become 'OFF.' ( THE D16 ERROR OCCURRED (TEXT),  (PICTURE))



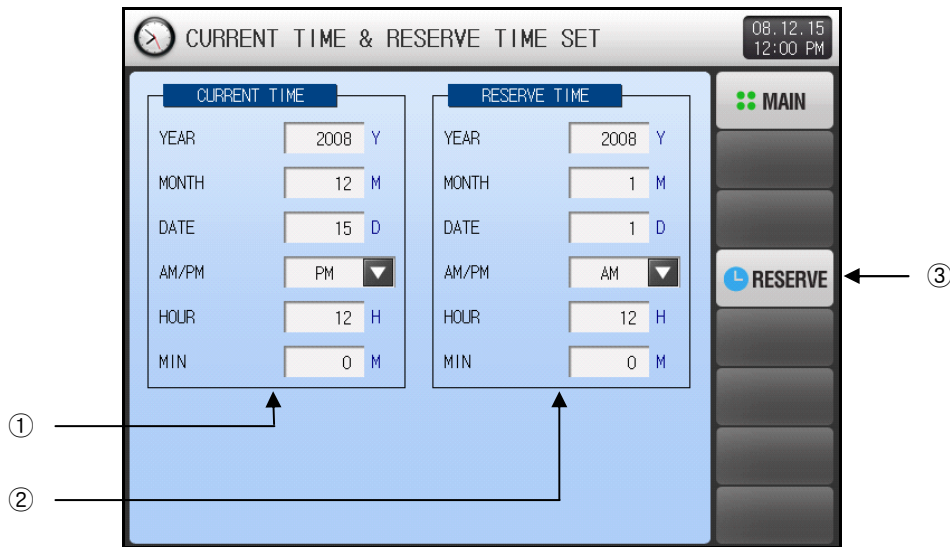
[Figure 7-3] DI ERROR screen on TEXT mode





[Figure 7-4] DI ERROR screen on PICTURE mode

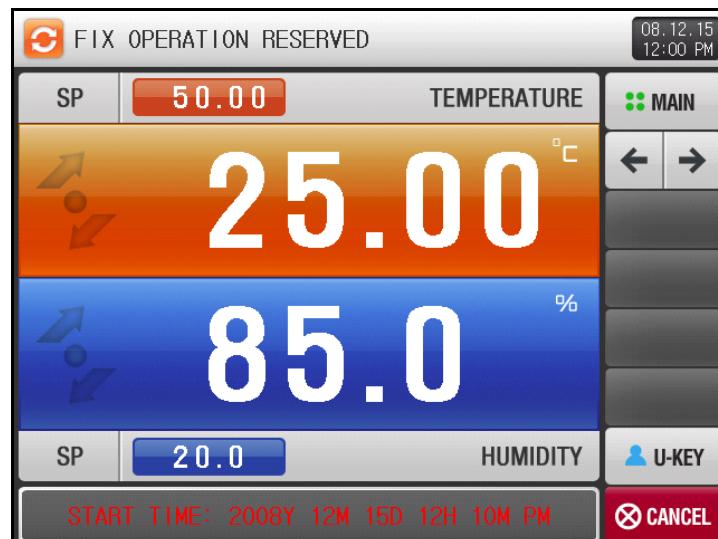
8 RESERVE OPERATION setting

- ▶ Press [RESERVE SET] on MAIN MENU screen to enter into this time setting section.
- ▶ This screen is to adjust the current time and set the time for RESERVE Operation.



[Figure 8-1] RESERVE SET Screen

- ① Setup box to adjust the current year, month, date and time.
 - ☞ The time cannot be changed when the measured values are being recorded.
- ② Setup box for the starting time of RESERVE Operation.
- ③ Button to activate RESEVER Operation based on RESEVE TIME setting.
 - ☞ The  (RESERVE) button will be active to  (RESERVE) and notice message for RESERVE Operation will display on the Operation screen same as [Figure 8-2 FIX Operation screen on RESERVE].



[Figure 8-2] FIX Operation screen on RESERVE

Table 8-1. RESERVE OPERATION setting Parameters


Parameter		Range	Units	Default
CURRENT TIME	YEAR	2000~2099	ABS	-
	MONTH	1~12	ABS	-
	DAY	1~31	ABS	-
	AM/PM	AM, PM	ABS	-
	HOUR	1~12	ABS	-
	MIN	0~59	ABS	-
RESERVE TIME	YEAR	2000~2099	ABS	2008
	MONTH	1~12	ABS	1
	DAY	1~31	ABS	1
	AM/PM	AM, PM	ABS	AM
	HOUR	1~12	ABS	12
	MIN	0~59	ABS	0
RESERVE		Press to activate RESERVE Operation		

* AM12:00 : Midnight 00:00

* PM12:00 : Noon 12:00







9 USER SCREEN

9.1 USER SCREEN viewer

- ▶ 16 individual images can be used as USER SCREEN.
- ▶ USER SCREEN viewer will be activated by no key input for established [START TIME] on [12. PICTURES VIEW setting] of [Installation Manual], and USER SCREEN images will display with rotating by [INTERVAL TIME], when using that function with more than one picture.
- ▶ DI ERROR screen will display if DI ERROR occurs while USER SCREEN viewing.
- ▶ This  button group will be popup on the screen by pressing touch screen during USER SCREEN viewing.



[Figure 9-1] Sample image of USER SCREEN

- ①  : STOP button of USER SCREEN viewer and return to the Operation screen.
 ⚠ After passing the START TIME with no key input, the USER SCREEN viewer will be activated again.
- ②  : Move button to the previous USER SCREEN image.
 ⚠ Not available when using only one USER SCREEN image.
- ③  : PAUSE button of USER SCREEN viewer at current image.
- ④  : Move button to the next USER SCREEN image.
 ⚠ Not available when using only one USER SCREEN image.
- ⑤  : Button to disappear the  button group.



[Figure 9-2] USER SCREEN viewer button

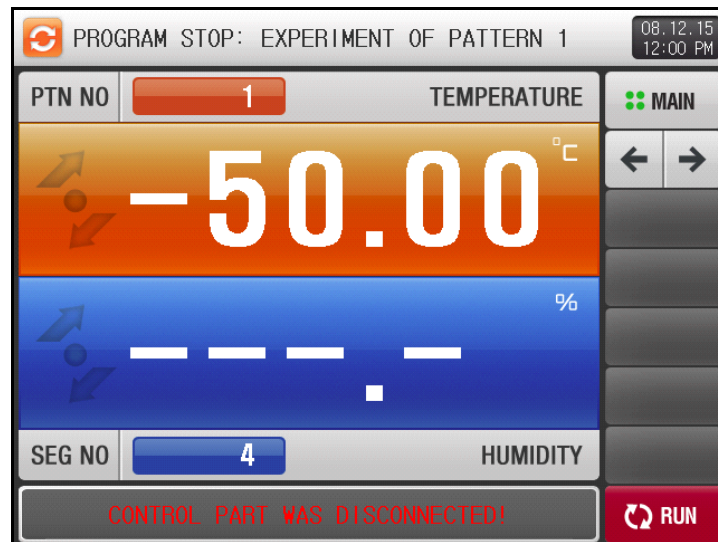
9.2 Creating BMP File for USER SCREEN image

- ▶ Required to use the **[Photoshop]** to create a BMP file.
 - ☞ The 'Paint' in Accessories cannot create a 16BIT BMP image.
- ▶ BMP File Structure
 - ☞ 16BIT(X1 R5 G5 B5) BMP
- ▶ Required Pixels
 - ☞ USER SCREEN : 640 X 480 pixels
 - ☞ INITIAL SCREEN : 640 X 480 pixels
 - ☞ DI ERRIR PICTURE : 520 X 422 pixels
- ▶ Required File Name
 - ☞ USER SCREEN : CS1.BMP, CS2.BMP, CS3.BMP ~ CS14.BMP, CS15.BMP, CS16.BMP(16 in total)
 - ☞ INITIAL SCREEN : INIT.BMP
 - ☞ DI ERROR PICTURE : DI1.BMP, DI2.BMP, DI3.BMP ~ DI14.BMP, DI15.BMP, DI16.BMP(16 in total)
 - File name for each image should be fixed as mentioned above. USER SCREEN, INITIAL SCREEN and DI ERROR PICTURE cannot be replaced by files with names other than the specified ones above.
 - When saving your image in **[Photoshop]** save as BMP.
 - ☞ Name the folder inside the SD CARD as BMP.

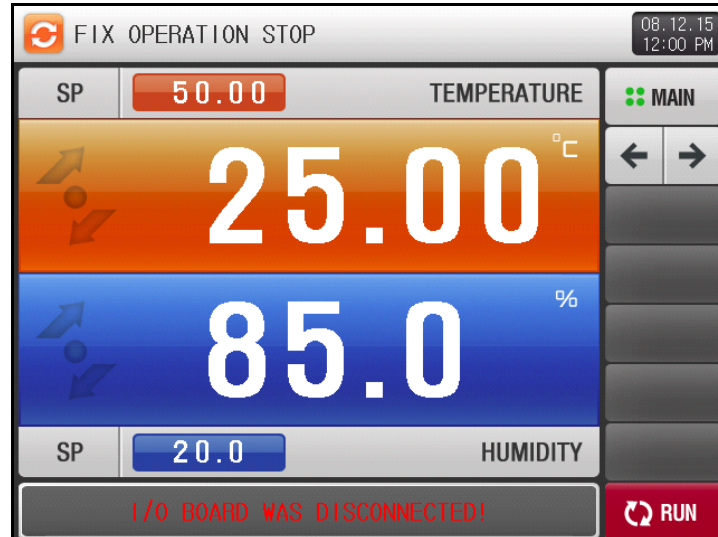
※ More information on making a BMP file can be downloaded of SAMWONTECH's website.

10 COMMUNICATION ERROR message

- ▶ 'CONTROL PART WAS DISCONNECTED!' message will appear on Operation screen shown as [Figure 10-1 Communication Error with CONTROL UNIT] when communication error between the CONTROL UNIT and the DISPLAY PANEL occurs.
- ▶ 'I/O BOARD WAS DISCONNECTED!' message will appear on Operation screen shown as [Figure 10-2 Communication Error with I/O BOARD] when communication error between the I/O BOARD and the DISPLAY PANEL occurs.



[Figure 10-1] Communication Error with CONTROL UNIT



[Figure 10-2] Communication Error with CONTROL UNIT

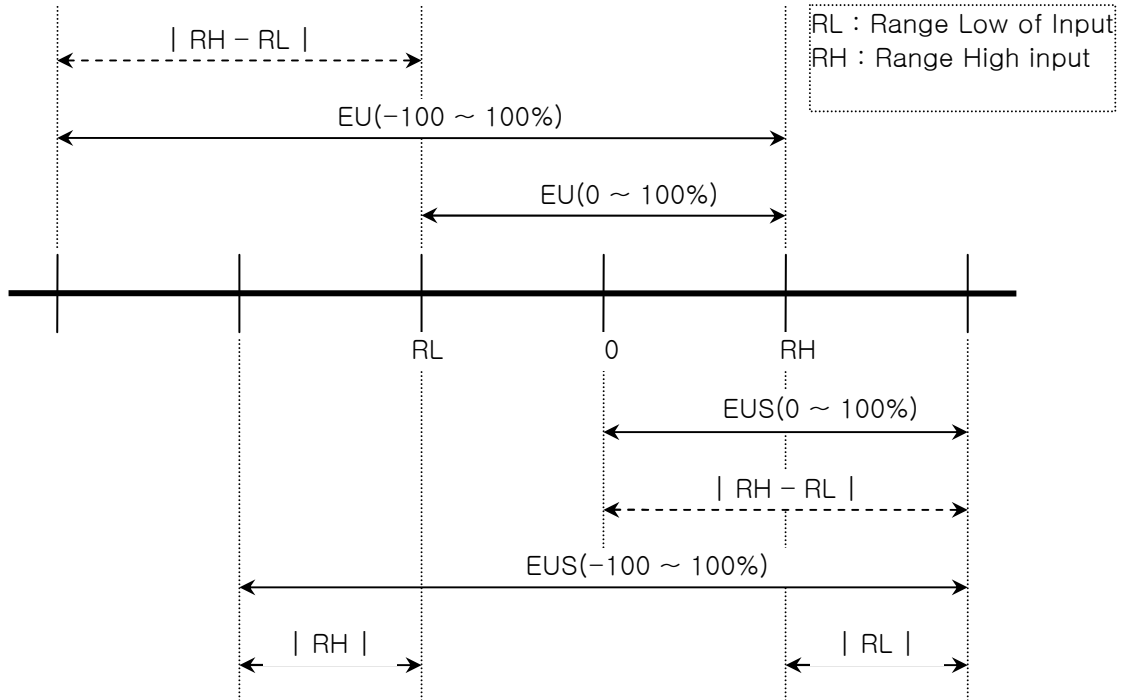
※ Factors for Communication Error

- ① Defect Communication Cable
- ② Connection error with communication cable

(ENGINEERING UNITS) - EU, EUS	EU and EUS are used for the scaling of the parameters of the controller.
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► If the sensor type or minimum/maximum input range (INRH, INRL) is adjusted, the EU(), EUS() parameters also change proportionally (minimum and maximum input ranges are reset).

- EU() : The Engineering unit value based on the range of instrument.
- EUS() : The Engineering unit range based on the span of instrument.



► EU(), EUS() Range

	Range	Central Point
EU(0 ~ 100%)	RL ~ RH	$ RH - RL / 2 + RL$
EU(-100 ~ 100%)	$- (RH - RL + RL) \sim RH$	RL
EUS(0 ~ 100%)	0 ~ $ RH - RL $	$ RH - RL / 2$
EUS(-100 ~ 100%)	$- RH - RL \sim RH - RL $	0

(Example)

- INPUT = PT_1
- RANGE = -90.00°C(RL) ~ 200.00°C(RH)

	Range	Central Point
EU(0 ~ 100%)	- 90.00 ~ 200.00°C	55.00°C
EU(-100 ~ 100%)	- 380.00 ~ 200.00°C	- 90.00°C
EUS(0 ~ 100%)	0 ~ 290.00°C	145.00°C
EUS(-100 ~ 100%)	- 290.00 ~ 290.00°C	0.00°C

* Installation and Communication manuals can be downloaded off our website.