TEMI880



INSTRUCTION MANUAL

Temperature · Humidity Programmable Controller

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Attention

Thank you for purchasing our controller, this manual explains situation effective way of using and installing this production.

- 1. Please keep the manual for the last user who can get easy access for the manual.
- 2. Make sure read this manual carefully and fully understand how to operate this product before operation.
- 3. This manual is intended to describe the functions and the operate way of this product.
- 4. Redistribution & use this manual, with or without modification, are prohibited.
- 5. The contents of this manual are subjected to change without prior notice.
- Every effort has been made to ensure accuracy in the preparation of this manual. However, if any errors are found in this manual. Thank you for your understanding.

1. Notice for Use

1.1. Limited Warranty

- We make no warranties regarding the product except these mentioned in the Warranty.
- ② In cases where the use of this product results in damage or loss to the user or a third party, we will not be responsible for any incidental or consequential damage or loss, or any damage or loss suffered by the user or third party resulting from a defect or defects in this product which could not be foreseen by us.

1.2. Warranty Policy

- Warranty term is 1 year parts and labor. We make warranties regarding the product only these mentioned in the WARRANTY.
- 2 A/S (After Sales Service) is needed actual expenses, after warranty period.
- ③ This warranty does not cover damage due to loss password, accident fire, flood and/or other acts of God; misuse, instability, improper installation, improper or unauthorized repairs, commercial adjustments which are explained in the instruction manual are not covered under the terms of this warranty. This warranty automatically will be voided for any unit found with a missing or altered serial number.
- ④ All warranty repairs must be performed by our authorized service center.

1.3. Install Location Require

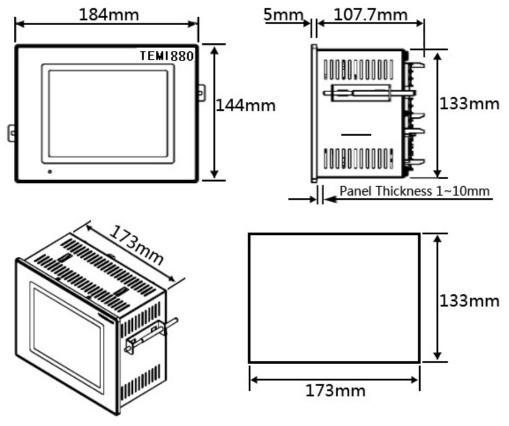
- ① No one may accidentally touch the terminals.
- 2 Mechanical vibrations are minimal.
- ③ Corrosive gas is minimal.
- (4) Temp. can be maintained between 10° C to 50° C and fluctuation is minimal.
- 5 Indoor use only.
- 6 Altitude is up to 2,000m.
- \bigcirc No direct radiant heat or ultraviolet rays is present.

- 8 No magnetic disturbances are caused.
- 9 No wind blows against the terminal board. Also no dust or salt content.
- 10 No flammable materials are around.

1.4. Install Notice

- ① There is little influence for electromagnetic fields and noise.
- 2 No moisture can get into the system.
- ③ Ambient temp. and humi. : 10~50°C, 20~90%RH. (At non-freezing status).
 Storage temp. and hum. : -25~70°C, 5~95%RH. (At non-freezing status).
- ④ If you want to use it after keeping it under 0°C, you need to warm it up for 2 hours at room temperature before plugging it in and warm it up for 30 minutes after plugging it in. Otherwise, it may not function normally and the product may be damaged.
- ⑤ Do not use around any machine, which heat up. Avoid installing it with the front facing slant.
- ⑥ Transient over voltage category is category II .. Applicable rated pollution degree is pollution degree II.
- Before starting wiring, be sure to turn off the system or else you will get an electrical shock.
- Install the guard panel under the controllers for your safety and installation with easy.
- 9 The I/O relay board must be installed inside of temp. & humi. Chamber.
- ① The I/O relay board must be tied up with 4 pieces of bolt and nut at the 4 holes on the I/O relay board.

2. Appearance Dimension



TEMI880 Temperature · Humidity Programmable Controller

Figure 2

Appearance and Mounting dimension:

- ① Appearance dimension: 184×144×107.7(mm) (L×H×W).
- 2 Mounting dimension: 173×133(mm) (L×H).

- Before install & wiring, be sure to turn off the system or else you will get an electrical shock.
- Do not tighten the mounting screw excessively; the unit case or bracket may be damaged.
- Make sure ground with Temp. and Humi. Chamber case when install power injection.

3. Installation

3.1.Body Terminal

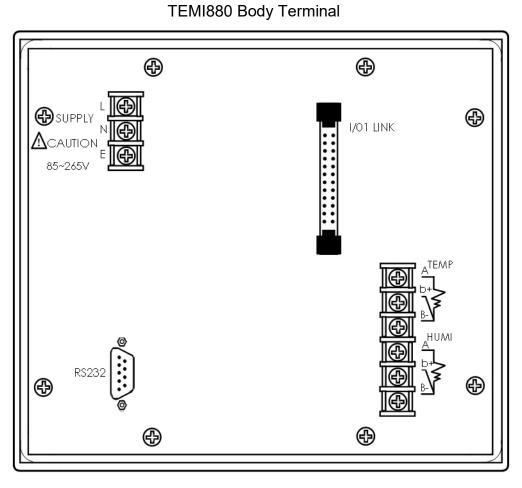
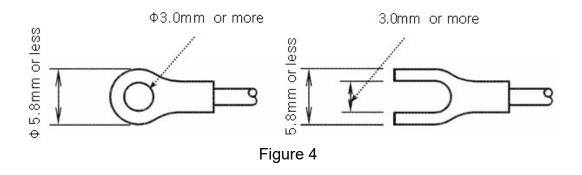


Figure 3

3.2. Applicable Tightening terminal

Please use-tightening terminal with insulating sleeve for M3.5 screws as following.

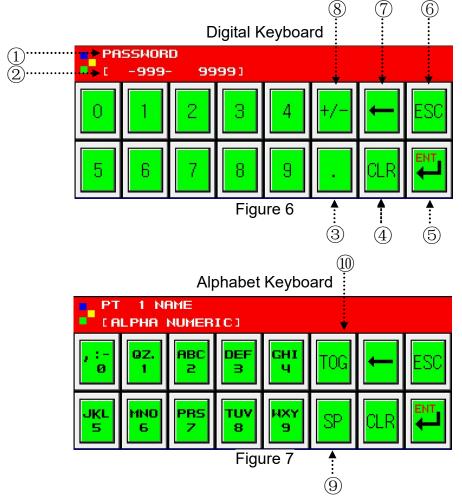


3.3. I/O Relay Board

TEMI880 I/O Relay Board

4. Input Keyboard

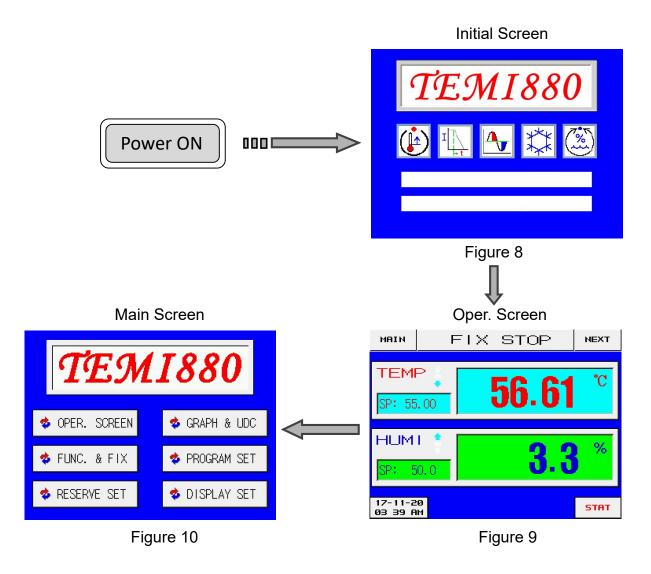
Digital keyboard use for input setting value, alphabet keyboard use for edit the PROGRAM or DI name.



- ① Title: notice the subject.
- 2 Data range: valid data range.
- ③ .: decimal point.
- ④ CLR: clear all input data.
- ⑤ Enter: save input data and close the keyboard.
- 6 Esc: cancel input setting value.
- \bigcirc -: modify the input data, delete one by one.
- 8 +/-: input sign (+ or -).
- 9 SP: space button.
- 10 TOG: escape character.

E.g.: click on "2" button, and click the "TOG" button shift to A or B, C.

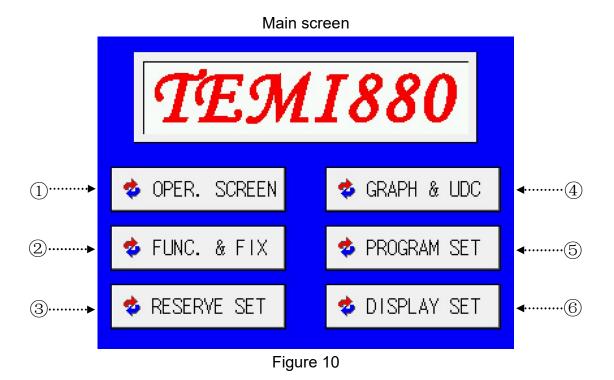
5. Block Diagram of the Basic Processing



CAUTION When connection, do not mix up the input polarity. Connection with the wrong polarity can cause the unit to malfunction. Please do not use any pen/pencil, nail or any other sharp material to touch screen. Otherwise, the touch screen might be broken or out of order. The run mode and test value cannot be modified during the test running.

6. Main Screen

Main screen is the center of other screens; other screen can be entered through it. Click on "MAIN" button in any screen can return to the main screen.



- Oper. screen: click on the "OPER. SCREEN" button to enter the Operation Screen.▶ <u>See 7 Operation Screen</u>
- ② Func. & Fix: click on the "FUNC. & FIX" button to enter the Function and FIX
 Set Screen.▶ See 8 Function and FIX Set Screen
- ③ Reserve set: click on the "RESERVE SET" button to enter the Reserve Set
 Screen.▶ See 9 Reserve Set Screen
- ④ Graph & UDC: click on the "GRAPH" button to enter the Graph Show Screen.
 ▶ See 10 Graph Show Screen
- ⑤ Program set: click on the "PROGRAM SET" button to enter the Program Set
 Screen.▶ See 11 Program Set Screen
- ⑥ Display set: click on the "DISPLAY SET" button to enter the Display Set
 Screen.▶ See 12 Display Set Screen

7. Operation Screen

Click on "OPER. SCREEN" button in Figure 10 to enter Operation Screen.

7.1. Stop Screen

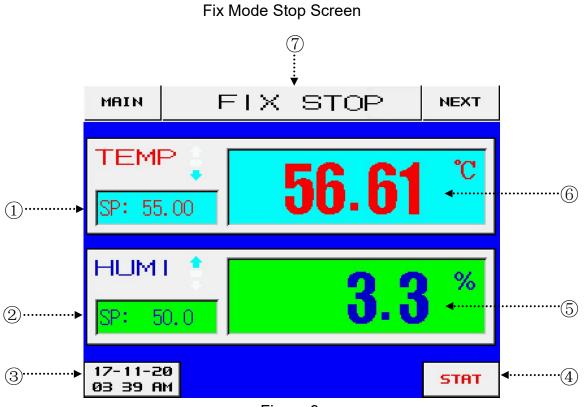
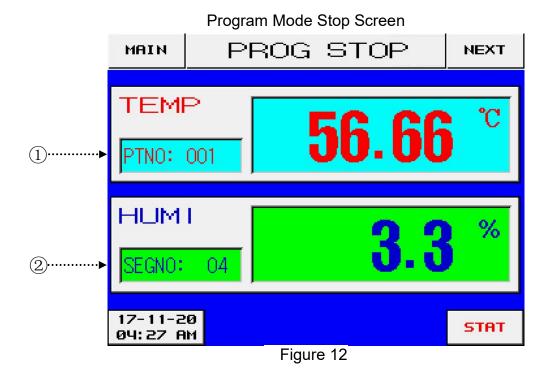


Figure 9



- SV/PTNO: in FIX Mode click on it to setting the test value, in PROGRAM Mode displays the current running program number.
- SV/SEGNO: in FIX Mode click on it to setting the test value, in PROGRAM
 Mode displays the current running segment number.
- ③ Time key: display the current time. click on this button, LCD screen will turn off, even if turn off the light automatically, but controller still running. Click any point on the touch screen then LCD screen will turn on again.
- ④ Start/Stop: click on this button, will pop up the Confirmation Window to selecting start or stop the test. ► <u>See 7.2 Confirmation Window</u>
- (5) Humi. status display : display the current experiment humidity value.
- 6 Temp. status display : display the current experiment temperature value.
- ⑦ Title: notice the content of current display screen.

7.2. Confirmation Window

Click on "START/STOP" button in Figure 9/12 will pop up Confirmation Window as Figure 13.

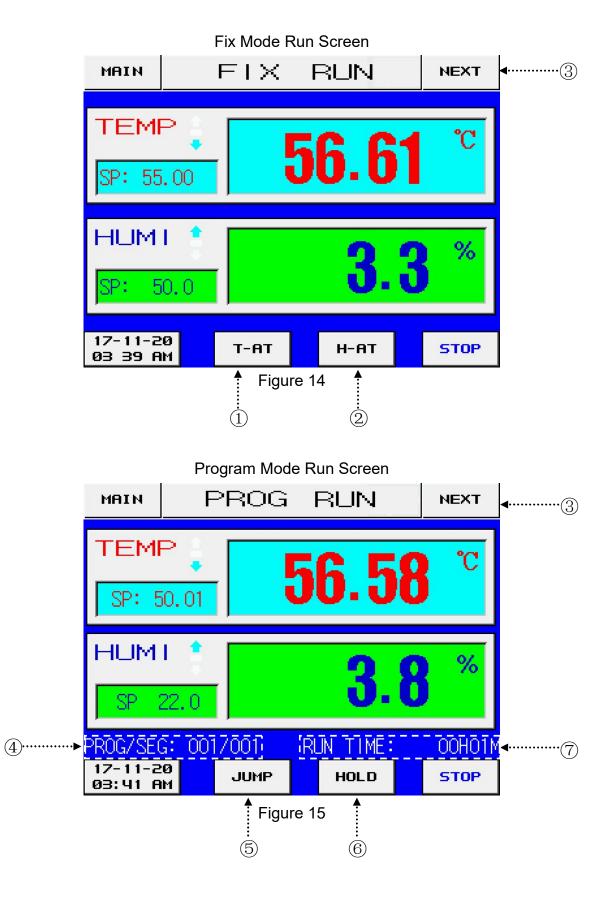


Confirmation Window

Figure 13

Click on the "YES" button to confirm the running order, start the test.

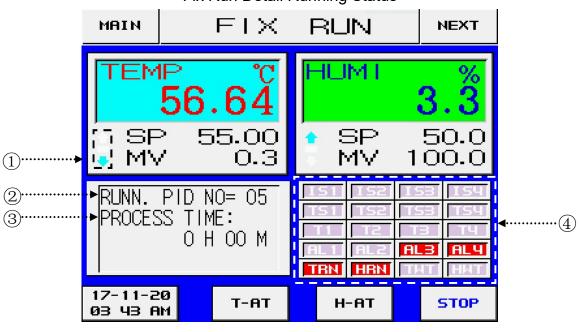
7.3. Run Screen



- ① T-AT: auto-tuning of temperature side, after auto-tuning the value of tuning is saved on correspond PID number.
- ② H-AT: auto-tuning of humidity side, after auto-tuning the value of tuning is saved on correspond PID number.
- ③ Next: click on it to review the test detail. <u>See 7.4 Detail Running Status</u>
- PROG/SEG: display the program/segment number of current running Program.
- ⑤ Jump: stop the current running segment and jump to next segment.
- 6 Hold: hold on or off the current setting point.
- \bigcirc Run time: display the test total running time.

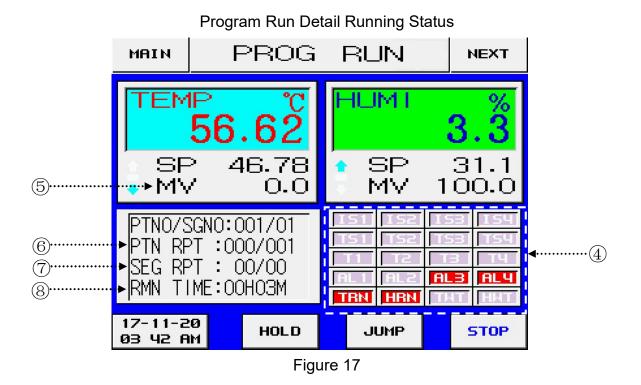
- ► T-AT & H-AT function is available on FIX Mode only.
- Jump & Hold function is available on PROGRAM Mode only

7.4. Detail Running Status



Fix Run Detail Running Status

Figure 16



- ① Status display arrow: display current test subject's status, up or down.
- 2 Runn. PID NO: display the FIX Mode running PID group number.
- ③ Process time: display the total running time of FIX Mode.
- ④ Status display lamp: each of them represent a relay running signal, when the relay is running, a corresponding lamp will turn red.

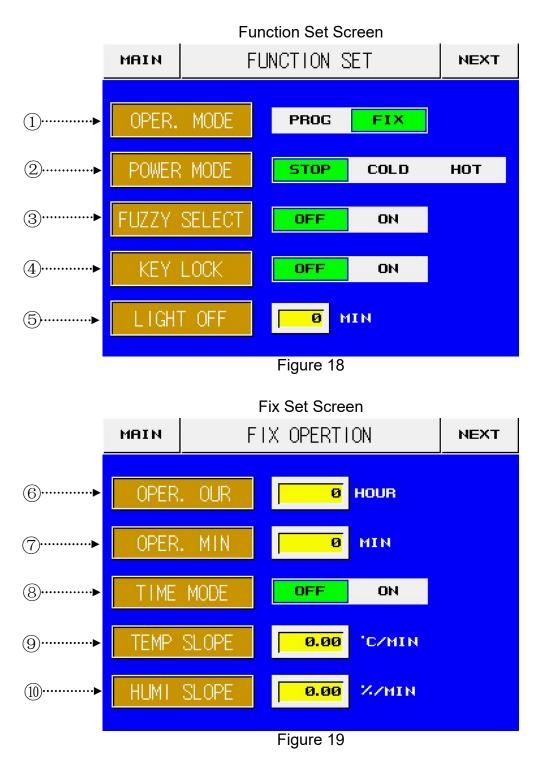
E.g.: Temperature value is rising up, then "TRN" lamp turns red.

- 5 MV: display the test subject MVOUT.
- ⑥ PTN RPT: display the program cycle set value, the number before forward slash (/) is the cycled count, and the number behind is the cycle set count.
- SEG RPT: display the segment cycle set value, the number before forward slash (/) is the cycled count, and the number behind is the cycle set count.
- 8 RMN time: display the remaining time of current segment setting time.

- SP: the setting value of FIX Mode or PROGRAM Mode.
- PV: the present/current value of current running test real-time data.

8. Function and Fix Set Screen

Click on "FUNC & FIX" button in Figure 10 to enter Function Set Screen as Figure 18, click on the "NEXT" button shift to Fix Set Screen as Figure 19.



- ① OPER. mode: selecting the test mode, FIX or PROGRAM Mode
- 2 Power mode: selecting the restore status after power off during test.

Stop: after power off, restore to the SV of current running PROGRAM or FIX Mode. But test is stop running, need to re-start by manual.

Cold: after power off, restore to the first segment of current running program, or the SV of FIX Mode which was running before power off. And test is auto-running.

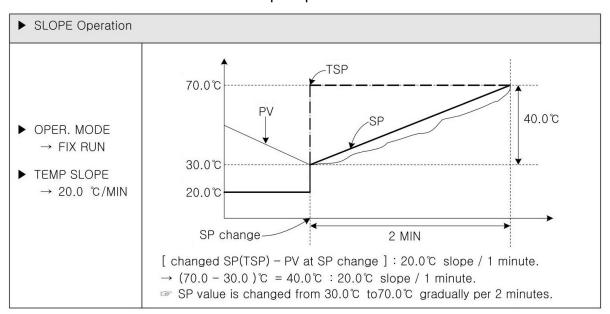
Hot: after power off, restore to the segment which is current running when the power off, or the SV of FIX Mode. And test is auto-running.

- ③ Fuzzy select: turn on or off the fuzzy function.
- ④ Key lock: turn on the lock function can lock the keyboard.
- 5 Light off: setting the auto-lock time of controller's backlight.
- 6 OPER. OUR: setting the FIX Mode timed test running time (hour).
- ⑦ OPER. MIN: setting the FIX Mode timed test running time (minute).
- 8 Time mode: turn on or off FIX Mode timed test function, and setting 6 & 7.
- (9) Temp slope: setting the FIX Mode temperature slope. And temperature PV goes to the SP gradually both up and down, according to the slope setting value. ► See 8.1 Slope Operation
- Image: Book of the state of
 - See 8.1 Slope Operation

- Time Mode ("⑧") of FIX Mode. Turn on the Time Mode function test will stop after finished running time automatically. If don not turn on, then FIX Mode test will stop by manual or power off.
- Temperature/Humidity slope is available on FIX Mode only.

8.1. Slope Operation

For example, where temperature SP is changed, SP value is changed gradually from PV to temperature SP as Figure 20.

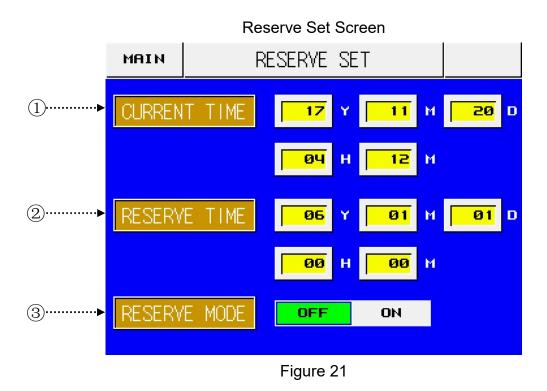


Slope Operation

Figure 20

9. Reserve Set Screen

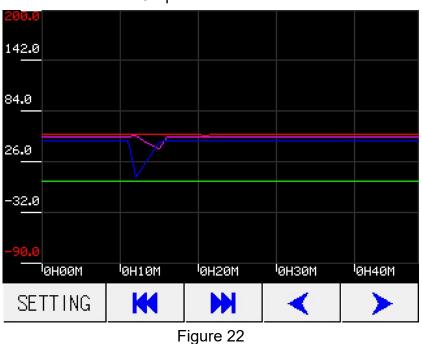
Click on "RESERVE SET" button in Figure 10 to enter Reserve Set Screen as Figure 21.

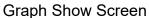


- ① Current time: adjustment the controller's current date & time.
- 2 Reserve time: setting the reservation date & time.
- ③ Reserve set: turn on or off the reserve function.

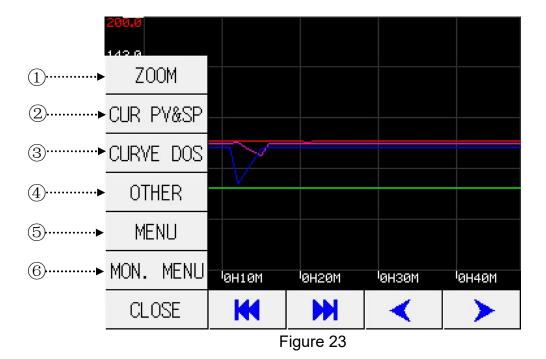
10. Graph Show Screen

Click on "GRAPH & UDC" button in Figure 10 to enter Graph Show Screen as Figure 22.





Click on the "SETTING" button to pop up Graph Setting Window as Figure 23.



- ① Zoom: click on it to select the time scale.▶ <u>See 10.1 Time Scale Select</u>
- ② CUR PV & SP: click on it to select the display curve. ► See 10.2 Curve Select
- ③ Curve DOS: click on it to edit curve historical files.
 ▶ See 10.3 Curve Historical Files
- ④ Other: click on it to enter curve setting function. ► See 10.4 Curve Setting
- (5) Menu: click on it shift to Main Screen Figure 10.
- 6 MON. menu: click on it shift to Operation Screen as Figure 12
- 10.1. Time Scale Select

Click on "ZOOM" button in Figure 23 to enter Time Scale Select Screen as Figure 24.

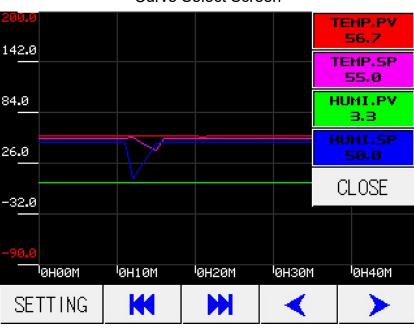
1MIN		CLOSE		
5MIN				
10MIN				
30MIN	1			
1HOUR				
6HOUR				
12HOUR		ЮН20М	¹ 0НЗ0М	¹ 0H40M
24HOUR		₹	- 🔨	×

Time Scale Select Screen

Figure 24

10.2. Curve Select

Click on "CUR PV & SP" button in Figure 23 to enter Curve Select Screen as Figure 25.



Curve Select Screen

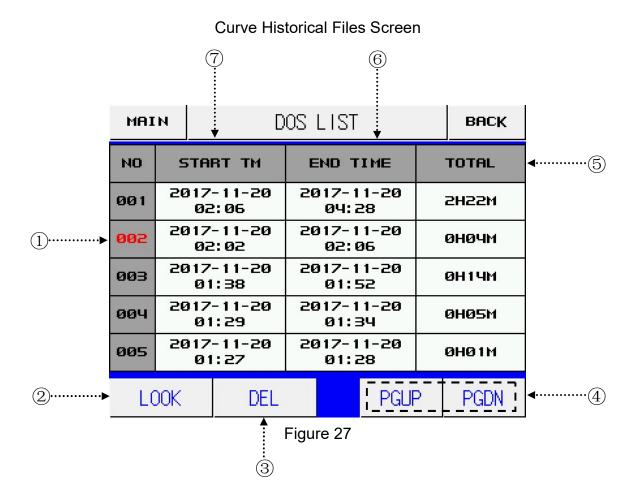
10.3. Curve Historical Files

Click on "CURVE DOS"" button in Figure 23 to enter Curve Historical Files Screen as Figure 26 & 27.

MAIN		DOS LIST				BACK		
Ю	S	START TM		END T	IME	TOTAL		
001	2017-11-20 02:06		2017-1 04:5			2H28M		
002	20	2017-11-20 02:02		2017-11-20 02:06			өнөчм	
003	20	017-11-20 01:38		2017-11-20 01:52			0Н1ЧМ	
004	20	2017-11-20 01:29		2017-11-20 01:34			0H05M	
005	20	17-11 01:2		2017-11-20 01:28			ØHØ 1 M	
LOOK				PGUF	þ	PGDN		

Curve Historical Files Screen

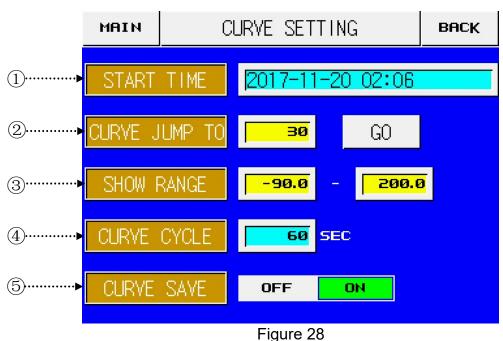
Figure 26

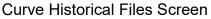


- NO: selecting a curve file to review its curve display screen(2) or delete this file (3).
- 2 Look: selecting a file and click on it to review its curve display screen.
- ③ Del: delete the file.
- ④ PG UP/DN: page up or down.
- 5 Total: the total record time length of curve.
- 6 End time: the ending record time of curve.
- \bigcirc Start time: the beginning record time of curve.

10.4. Curve Setting

Click on "OTHER"" button in Figure 23 to enter Curve Setting Screen as Figure 28.

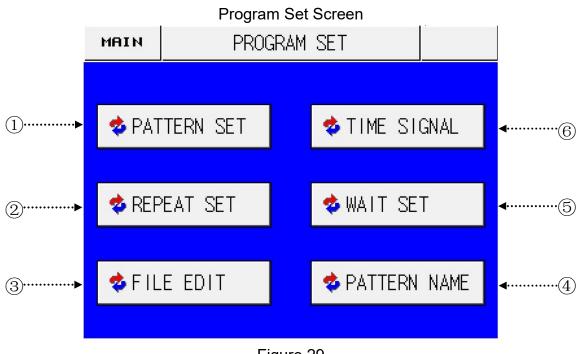




- ① Start time: display the starting record time of current display curve.
- ② Jump to (hour): setting a time point of current display curve, and jump to this point on the curve to view.
- ③ Show range: setting the display value range of test.
- ④ Curve cycle: setting sampling time (second).
- ⑤ Curve save: selecting turn on or off the curve save function. Turn on this function the test curve will save as a file in Curve Historical Files Screen.

11. Program Set Screen

Click on the "PROGRAM SET" button in Figure 10 to enter Program Set screen as Figure 29.





① Pattern set: setting the program detail.► <u>See 11.1 Pattern Set</u>

② Repeat set: setting the program cycle.▶ See 11.2 Repeat Set

③ File edit: edit the program file. ► See 11.3 File Edit

④ Pattern name: edit program's name.► See 11.4 Pattern Name

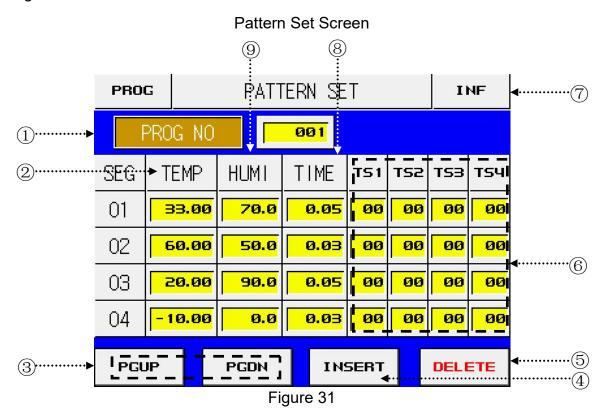
⑤ Wait set: setting the standby function.► See 11.5 Wait Set

⑥ Time signal: setting the time signal detail.► <u>See 11.6 TS Set</u>

- ► TEMI 880 with 120 group programs and each program has 100 segments. .
- If segment value is equaled initial value, you are not able to insert or delete. On the other hand, it is not able to insert or delete segment at the running status.

11.1. Pattern Set

Click on the "PATTERN SET" button in Figure 30 to enter Pattern Set screen as Figure 31.



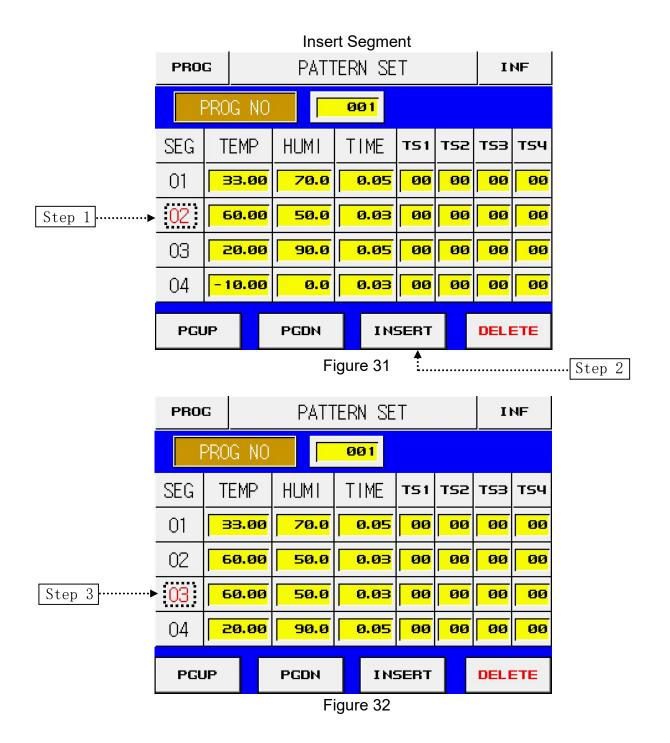
- ① PROG NO: selecting the program number to edit program detail.
- ② Temp: setting the segment temperature value.
- ③ PGUP/ PGDN: page up/down.
- ④ Insert: insert a segment. ► See 11.1.1 Insert Method of Segment
- (5) Delete: selecting the segment and delete it.
- ⑥ TS: setting time signal.► <u>See 11.6 TS Set</u>
- ⑦ INF: review program and segment used storage.► See 11.1.2 File Information
- 8 Time: setting the segment running time.
- 9 Humi: setting the segment humidity value.

In time set function which doesn't have Time Unit such as HH.MM.SS, then the setting value 0.01 means 1 min.

E.g. 0.30 means 30 mins, 1.00 means 1 hour; -0.01 means "OFF".

11.1.1. Insert Method of Segment

Select a segment in Figure 30 to insert segment as following Figure 31 & 32.



- ① Step 1: selecting "02" segment, click on its number and its color charged red.
- 2 Step 2: click on the "INSERT" button.
- ③ Step 3: a new segment that has the same setting value as "02" segment will insert behind "02" to be "03" segment, as Figure 32.

11.1.2. File Information

Click on the "INF" button in Figure 30 to enter File Information screen as Figure 33.

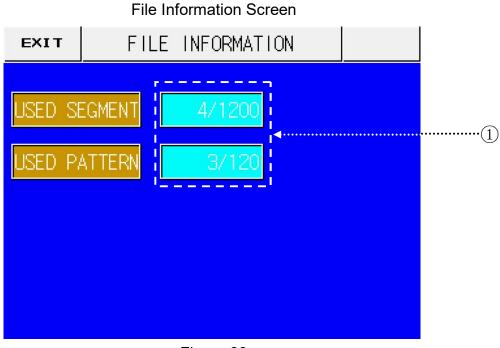
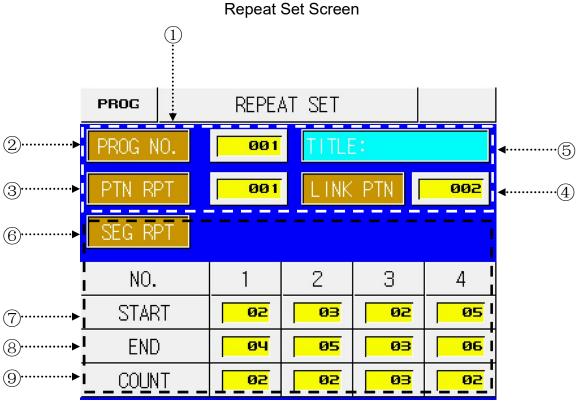


Figure 33

① Used storage: display the segment and program storage, the number before forward slash (/) is the used count, and the number behind is the total count.

11.2. Repeat Set

Click on the "REPEAT SET" button in Figure 29 to enter the Repeat Set screen as Figure 34.





- (1) (2), (3), (4), (5) are Program cycle.
- 2 PROG. NO.: selecting the cycle program number.
- ③ PEN PRT: selecting a program to cycle all its segments.
- Link PTN: Setting the linking program number to continue to run, after last program was finished.
- 5 Title: display the program name
- (6) (4), (5), (6) are Segment cycle.
- \bigcirc Start: setting the segment cycle's beginning segment number.
- 8 End: setting the segment cycle's ending segment number.
- 9 Count: setting the segment cycle-index.

11.2.1. Segment Repeat Explanation

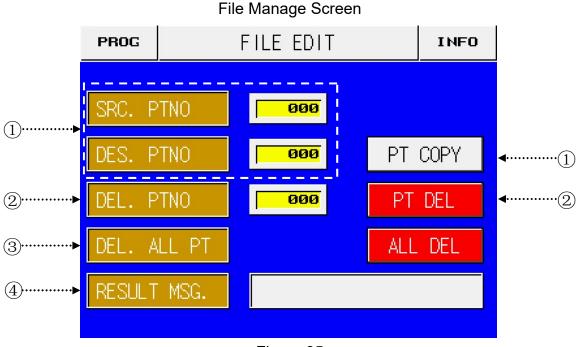
Segment Repeat, please read the table as following:

E.g.	Set Value				Repeat Process
1	SEG RPT 1 2	START 02 03	END 04 05	COUNT 02 02	1. $01 \rightarrow 02 \rightarrow 03 \rightarrow 04$ 2. $\rightarrow 02 \rightarrow 03 \rightarrow 04$ 3. $03 \rightarrow 04 \rightarrow 05$ 4. $03 \rightarrow 04 \rightarrow 05 \rightarrow 06 \rightarrow 07 \rightarrow 08$
2	SEG RPT 1 2	START 03 02	END 05 04	COUNT 02 02	$\begin{array}{cccccccccccccccccccccccccccccccccccc$
3	SEG RPT 1 2	START 02 05	END 03 06	COUNT 02 02	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
4	SEG RPT 1 2	START 05 02	END 06 03	COUNT 02 02	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$
5	SEG RPT 1 2	START 02 03	END 06 04	COUNT 02 02	1. $01 \rightarrow 02 \rightarrow 03 \rightarrow 04 \rightarrow 05 \rightarrow 06$ 2. $\rightarrow 02 \rightarrow 03 \rightarrow 04 \rightarrow 05 \rightarrow 06$ 3. $03 \rightarrow 04$ 4. $03 \rightarrow 04 \rightarrow 05 \rightarrow 06 \rightarrow 07 \rightarrow 08$
6	SEG RPT 1 2	START 03 02	END 04 06	COUNT 02 02	$ \begin{array}{cccccccccccccccccccccccccccccccccccc$

Segment Repeat Process

11.3. File Edit

Click on the "FILE EDIT" button in Figure 29 to enter the File Manage screen as Figure 35.





 Copy program: setting the copy source program number in "SRC. PTNO", and selecting the copy target program number in "DES. PTNO", click on the "PT COPY" button begin to copy the program.

E.g.:

Step 1: input "001" in "SRC. PTNO".

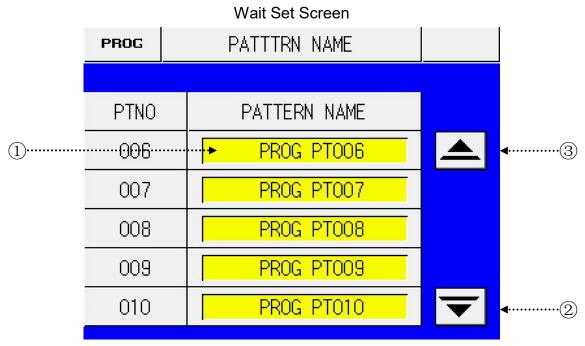
Step 2: input "002" in "DES. PTNO".

Step 3: click on the "PT COPY" button. Then "Prog PT002" has the same setting value as "Prog PT001".

- ② Del. PTNO: selecting a program number and click on the "PT DEL" button to delete this program.
- ③ Del. all PT: delete all the programs.
- ④ Result MSG.: review the Copy/Delete result.

11.4. Pattern Name

Click on the "PATTERN NAME" button in Figure 29 to enter the Pattern Name screen as Figure 36.



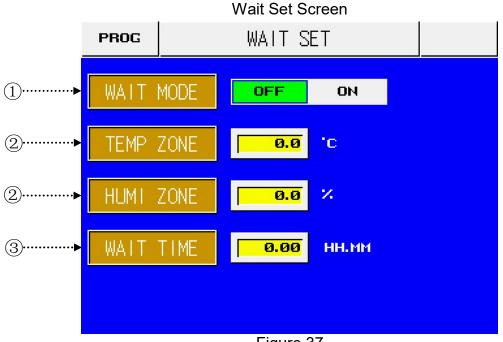


① Pattern name: click on the name column to edit the program name.



11.5. Wait Set

Click on the "WAIT SET" button in Figure 29 to enter the Wait Set screen as Figure 37.





- ① Wait mode: selecting turn on or off the Standby function.
- 2 Temp zone: Setting a temperature standby range.

Humi zone: Setting a humidity standby range.

"OR" Condition

Temp. or Humi. PV does not reach the wait area before Wait Time.

- "AND" Condition
 Temp. and Humi. PV reach the wait area before Wait Time.
- See 11.5.1 Wait Function Operation
- ③ Wait time: setting the Standby time.

11.5.1. Wait Function Operation

The relation of the wait operation and wait time please read Figure 38.

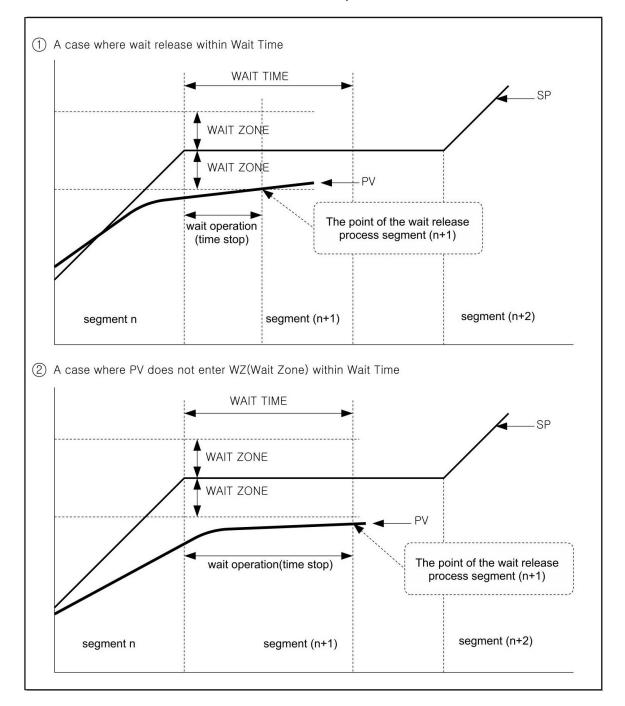
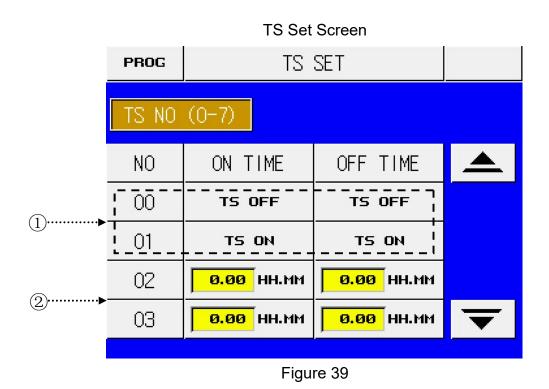




Figure 38

11.6. TS Set

Click on the "TIME SIGNAL" button in Figure 29 to enter the TS Set screen as Figure 39.



- ① TS 00 means always OFF, TS 01 means always ON.
- \bigcirc Click on yellow column to setting TS 02 TS 07's ON/OFF time.

11.6.1. TS Operation within Segment

The Time Signal operation within segment please read Figure 40.

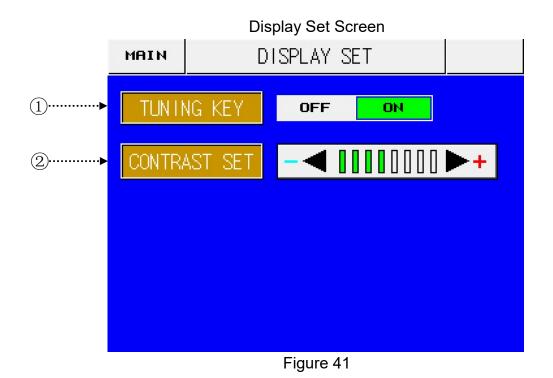
Set value of the program pattern Set value of the time signal SEG TEMP HUMI TIME TS 1 TSZ тзэ тзч NO ON TIME OFF TIME 4.00 HH.MM 40.00 90.0 00 00 01 8.00 00 00 04 0.00 HH.MM 02 40.00 90.0 8.00 04 07 05 2.00 HH.MM 2.00 HH.MM 05 06 03 50.00 90.0 00 00 10.00 HH.MM 8.00 00 00 06 0.00 HH.MM 04 - 50.00 0.0 -0.00 00 00 00 00 07 4.00 HH.MM 6.00 HH.MM Time signal operation within segment Setting Time signal operation OFF TIME ON 1. ON TIME = 00.00 TIME (Time Signal SIGNAL1 NO:04) N SEG TIME OFF >= ON TIME + OFF TIME (N-1) SEG TIME N SEG TIME SEGMENT (N+1) SEG TIME It has not OFF 2.0N TIME≠00.00 TIME influence on ON T (TIME SIGNALS ON TIME next segment. NO: 05) TIME SIGNAL2 OFF SEGMENT (N-1) SEG TIME N SEG TIME (N+1) SEG TIME ON OFF TIME TIME k 3.ON TIME=00.00 SIGNAL3 T (TIME SIGNALS NO: 06) OFF (N-1) SEG TIME SEGMENT N SEG TIME (N+1) SEG TIME N SEG TIME OFF TIME + OFF TIME ON ON TIME 4. ON TIME ≠ 00.00 TIME (Time Signal SIGNAL4 __OFF (N-1) SEG TIME N SEG TIME (N+1) SEG TIME SEGMENT

TS Operation

Figure 40

12. Display Set Screen

Click on the "PDIAPLAY SET" button in Figure 10 to enter Display Set screen as Figure 41.



- ① Tuning key: display or hide T-AT, H-AT function button.
- 2 Contrast set: adjustment the LCD Brightness function.