SDR100E SERIES

Instruction manual (Digital recorder)

Various

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It is a digital recorder without paper. It supports the high screen quality TFT_LCD touch screen and SD card. It is a product with rapid graph searching function.

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CE IP65 CRS MSIP-REM-S31-SDRSERIES

This manual is commonly used for SDR102E, SDR104E, SDR106E and SDR112E and SDR100E is written inside.

Contents

1st Edition of SDR100E IM : May. 04. 2022

01. Cautions (Instructions) for safety

Thank you for your choice of out digital recorder (SDR100E). This manual describes the method of installation and use of the product.

Cautions in this instruction manual

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

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

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

With regard to the exemption of this product

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

With regard to the quality assurance condition of this product

- The warranty period shall be one year from the purchasing of this product. Free of charge repair is available only for the cases of out of order occurred from normal use conditions.
- The repair due to the out of order occurred after the warranty period shall be repaired according to the defined condition by our company.
- The out of order occurred within the warranty period shall be repaired with payment for the following cases in spite of with in the warranty period.

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

- Please contact to the purchasing points or sales part of our company in case of necessity for after sales service due to the failure on the product.

Symbol marks for safety

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

- Product : It is marked on the points to be acknowledged certainly to protect the human body and device.
- Instruction manual : It describes the cautions to prevent the cases of endangered situation on the life and body of the user due to the electric shock and so on.

(B) It means "Ground terminal".

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

(C) It means the "supplementary " explanation.

- It describes the points to supplement the explanation.

(D) It describes the"references".

- It describes the information and pages of reference to be referred.

Part 01

Cautions (Instructions) for safety

01. Cautions (Instructions) for safety

1-1. Checking the product

- When the product is purchased, please check the damaged on the product by checking the exterior of the product.

(1) Checking the specification of the ordered product

- Check whether the purchased product is identical with the ordered specification.
- How to check : Check the model name specification code marked on the right of the packing box and on the left label of product case.

SDR 1 * * E - N * * / *
① ② ③ ④

① **Number of channel**
02 : 2channels | 04 : 4channels | 06 : 6channels | 12 : 12channels

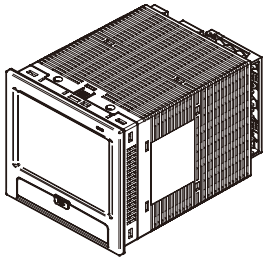
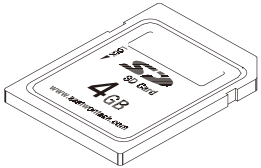
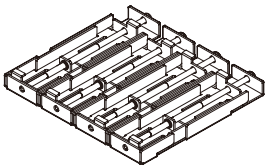
② **Alarm output**
N : None | A1 : 6points | A2 : 12points

③ **Remote input**
N : None | R1 : 2points

④ **Others**
M1 : Arithmetic function | P1 : Portable type

(2) Check the parts inside the package

- Please check whether the following parts are included.

SDR100E Series main body	SD card	Mount for fixing (Left : 2, Right : 2)	Instruction manual
			SDR SERIES User Manual

(3) How to treat the damaged parts

- In case of product damage after checking the exterior of the product as shown in the above or the accessories are missed, please contact to the purchasing point or the sales part of our company.

CAUTION Period of exchange for the part of expiration date

- Please check the corresponding replacing period as shown below and replace prior to the expiration if it is necessary.
- Only parts that meet the following specifications should be used.
  - FUSE 2A/250VAC Equivalent : Semi permanent
  - RELAY ALD105(5V) Equivalent : Under 300,000 times of ON/OFF
  - BATTERY CR2030 3V Equivalent : Under 200,000
- The exchange of the product with expiration date, please contact to the purchasing point (Dealer shop) or the sales part of our company.

1-2. Exterior and how to install

(1) Installation location and environment

CAUTION

Cautions for the installation location and environment

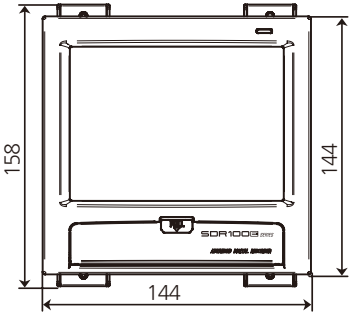
- This product is an industrial product.
- Please manipulate in electricity on state at the installation of this product on the panel because of the electric shock risk. (Caution for electric shock)
- Do not install the product in the following location or environment.
  - A place for contacting the terminal by the human without recognition
  - A place directly exposed for mechanical vibration or impact
  - A place exposed for the corrosive gas or flammable gas
  - A place of temperature fluctuation
  - A place of extremely high (Over 50℃) and low (Under 10℃) temperature
  - A place exposed to the direct sunlight
  - A place influenced with electromagnetic wave
  - A place of moisture (A place with more than 85% of humidity)
  - A place where there are the flammable stuffs at the surrounding
  - A place of dusty and salty
  - A place of receiving the ultra violet light
- Do not use sharp thing or excessive pressure to manipulate the touch screen.
- Please pay attention to the handling of the product because the product is weak to the organic solvent (Chemical substances) as the exterior of the product is made of plastic. (Do not contact the front side of the product to the organic solvent especially.)
- Even though the case of this product is made of non flammable material such as ABS/PC, but do not install in the place where there are the stuffs of easy flammability.

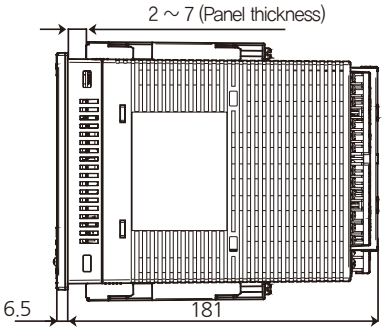
CAUTION

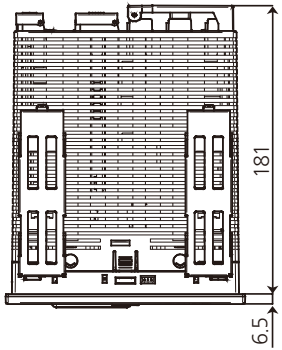
Installation Precautions

- Don't put the device or the wiring which cause the noise near to this product.
- Use the product in 10~50℃, in 20~90% RH (It shall not be dewing.) Don't put the heat radiant device closely.
- Don't install the product in declined position.
- Keep the product in -5~70℃ (It shall not be dewing.). Especially, use after full warming up (Switch on) when you use the product under 10 ℃.
- The wiring work shall be made after switching off electric power on the machine.
- This product operates in 24V DC, 22V max without special manipulation. There is a risk of the electric shock or fire when the electric power other than the specification.
- Don't work with wet hands. It has the risk of electric shock.
- Follow up the basic cautions to reduce risk of fire, electric shock and injury during using.
- The installation and the use shall be made according to the specified methods in instruction manual.
- Refer to the installation procedure regarding to the description for ground. However, do not make the ground on the water supply pipe, gas pipe, phone line and lightening rod.
  There is a risk of explosion and fire.
- Do not switch on before finishing the connection of the devices. It may cause the failure.
- Do not close the heat radiating hole on this product. It may cause the failure.
- This product can be used under the following environmental conditions.
  - Indoor
  - Altitude up to 2000m
  - Pollution degree II
  - The level of excessive voltage protection category II

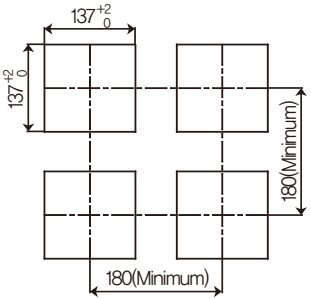
(2) External dimension (Unit:mm)





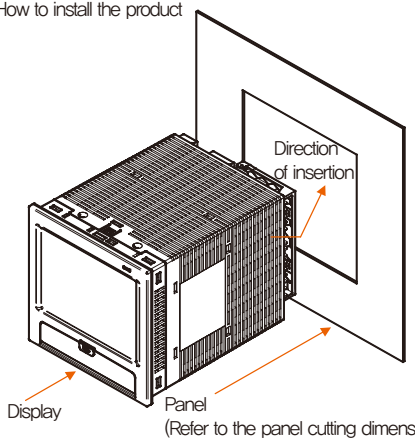


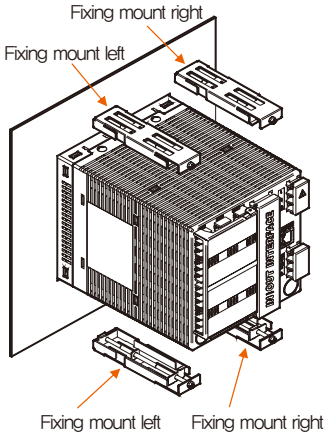
(3) Panel cutting dimension (Unit:mm)



(4) How to attach on the panel mount

*How to install the product





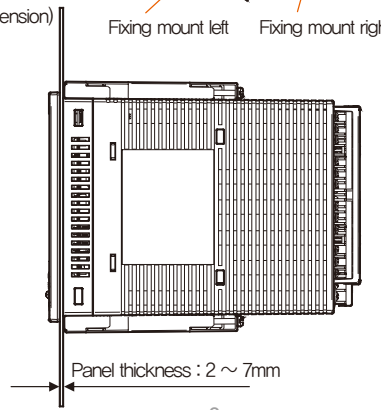
References

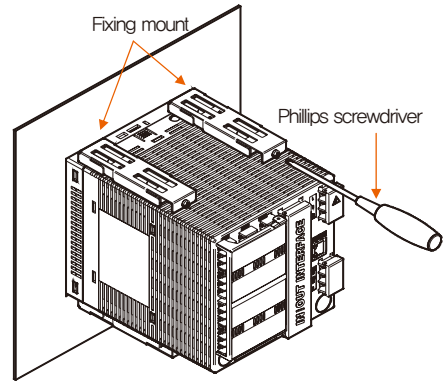
- Cut the panel to be installed. Refer to the [1-2(3) Panel cutting dimension]
- Insert into the hole from the rear side of the product as shown in the above figure.
- Fix this product using in fixing mount at the upper/lower part of the product (As shown in the figure) Apply 0.2Nm~0.4Nm of torque in case of assembling the fixing mount (Use the Phillips driver)

Cautions

CAUTION

The clamping screw is too tightened, the panel surface is deformed. It can cause touch not working normally, or likely to decrease waterproof.





1-3. Wiring

Cautions

- Make the wiring after checking whether the wiring cable is applied for current with tester by switching off the main electric power in every supplied instrument.
- Never contact to the terminal because of the risk of electric shock during application of the current (Electric power on).
- Make the wiring after switching off the main electric power certainly.

(1) How to make the wiring

- Recommended specification for electric cable: Vinyl insulated electric cable KSC3304 0.9~2.0mm2
- Recommended specification for terminal: Use the pressed terminal with insulation sleeve which is proper to the M3 screw as shown in [Fig. 1].
- Source of noise
  (A) Relay and contact point
  (B) Solenoid coil and solenoid valve
  (C) Electric power line
  (D) Induced load
  (E) Inverter
  (F) Commutator in motor
  (G) SCR for controlling the phase angle
  (H) Wireless communication device
  (I) Welding machine
  (J) High pressure ignition device and etc

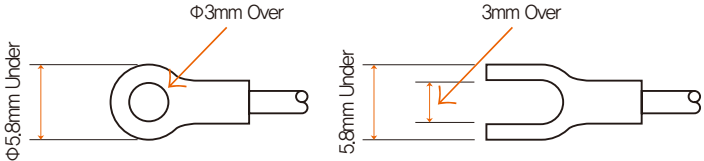
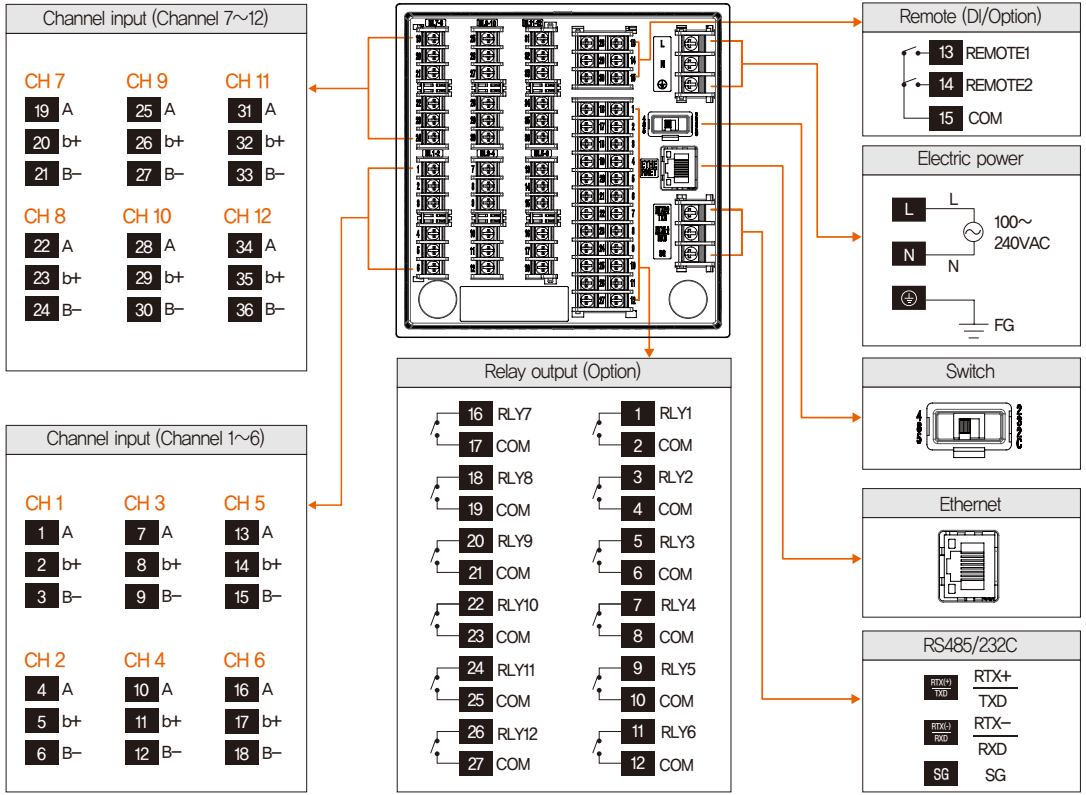


Fig.1

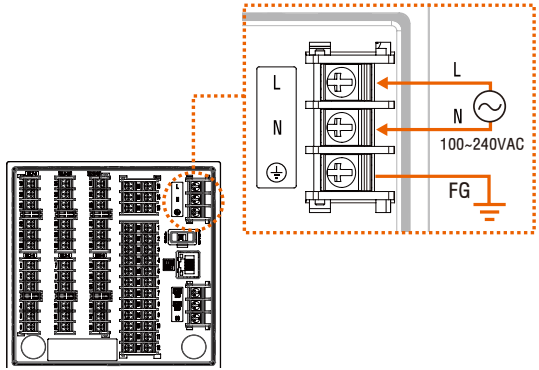
- Solution for noise
  (A) Make the wiring with caution for the following points from the noise creation source.
  (B) Make the wiring for the input circuit with placing the gap from the power circuit and ground circuit.
  (C) Use the shield line for the noise from the electrostatic induction.
  (D) Connect the shield line to the ground terminal according to the necessity not to make the 2 point ground.
  (E) Make the wiring in tight twisting for the noise from the electric induction.

(2) Terminal layout



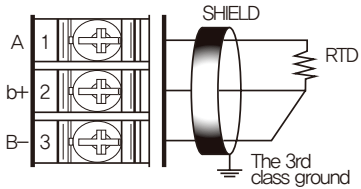
(3) Electric power circuit

- Use the cable with equivalent or above the vinyl insulated cable (KSC3340) or electric cable for electric power circuit.
- Make the circuit for ground with the electric cable over 2mm and above the third class ground (Unver100Ω of ground resistance)
- Make 1 point ground from the ground terminal and the wiring cross the ground terminal shall not be made.

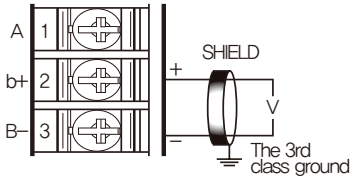


(4) Measurement (Sensor) input circuit

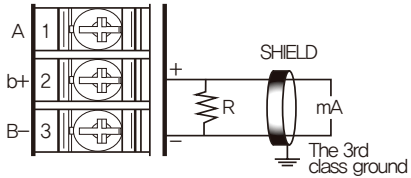
- Switch off the electric power to SDR100E main body and external power supply when the measurement (Sensor) input circuit is made because of the electric shock risk.
- Use the cable with shield for the input circuit. In addition, make 1 point ground for the shield.
- Make the circuit off from the electric power circuit or ground circuit for the signal line for measuring input.
- Use the electric cable with small cable resistance and no difference in resistance among 3 cables.



▶ Resistance Temperature Detector(RTD) Input



▶ DC Voltage input



▶ DC Current input

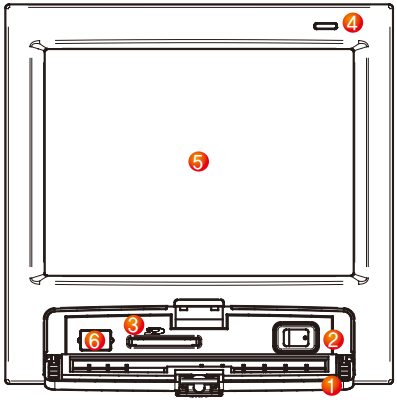
Part 02

Operation and setting

02. Operation and setting

2-1. Function and name of the display

- This product is a digital recorder designed in dialogue type touch screen for easy use.



①	Cover (There are electric power switch, SD card insertion part, Mini USB when the cover is opened.)
②	SDR100E electric switch
③	SD card insertion part
④	Lamp (The yellow lamp is on when the electric power is ON firstly.)
⑤	Screen display
⑥	Mini USB (For after sales service: User cannot use it.)

2-2. Menu flow chart

System setup	Setting the sensor input	1. Sensor type 2. Unit of display 3. Tag name 4. Dot position 5. Sensor range 6. PV when S.OPN 7. Measurement method
	Alarm signal	1. Alarm Operation 2. 4 for each channel ● Type : PV upper limit, PV lower limit, within PV range, Out of PV range, Over PV ascending change ratio, under PV descending change ratio, within the deviation between channels, out of the deviation error between channels, sensor circuit short ● Setting the delay time
	Setting the user screen	Setting the user screen display
	DI function and operation (Option)	1. Buzzer time setting 2. DI detection delay time 3. DI operation method 4. Relay output in DI detection
	Communication environment setting	1. Ethernet communication ● Communication protocol, communication port setting, network setting, communication setting lock ● IP, Subnet mask, Gateway setting 2. Serial communication ● Communication protocol, communication speed, parity, stop bit, data length, other parameters
	System initial setting	1. Language set 2. Display method 3. Internal memory 4. System password 5. Paramerer password

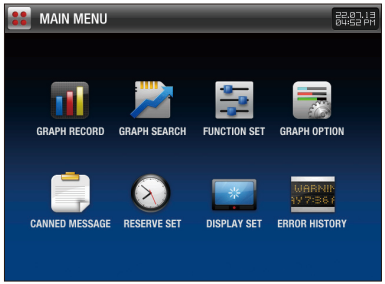
2-3. Basic operation flow chart

- The logo displaying screen and the initial screen are displayed sequentially when the electric power is switched ON after installation of the product and it converts to the graph recording screen automatically.
- It takes about 20 seconds in screen loading
- When button is pressed at the top of the graph recording screen, the sub menu bar is displayed and when MAIN is pressed, it converts to the main screen.

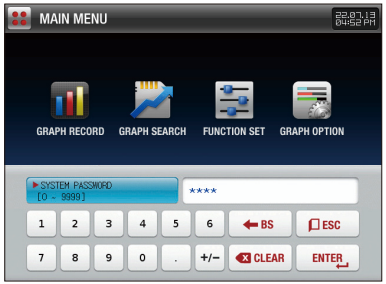
Loading screen

Initial screen

Graph recording screen



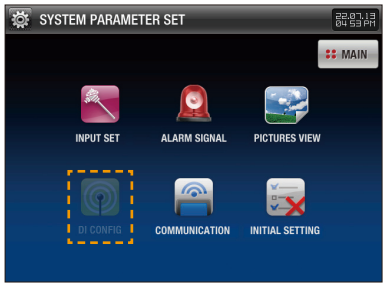
Main screen



Password input screen

System parameter setting screen

Password input screen



Screen without DI option

Screen with DI option

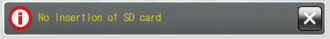
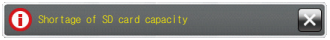
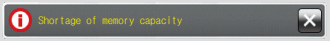
2-4. Setting button operation

[Table 2–1]

Button type	Button operation
	It is used for inputting the general numbers and name.
	It is used for selection for one out of many types.
	It is used for selection for one out of more than 2 parameter setting. (ON / OFF state)
	It is used for selection of Y/N for the corresponding parameter. (ON / OFF state)
	It is used for screen conversion of different function.
	It is used for increasing or decreasing of the page within the screen of same function.

2-5. Warning message display

[Table 2–2]

Display type	Description		Action
	No insertion of SD card	In case of no insertion of SD card or error creation	SD card checking
	Shortage of SD card capacity	In case of shortage of SD card saving capacity	SD card deletion
	Shortage of memory capacity	In case of internal memory saving capacity shortage	Internal memory deletion
	Recording by DI1	In case of setting the D11 operation method in saving	DI1 operation method checking
	Time setting error	In case of error in setting the saving of appointed time	Checking the saved appointment time
	It is being saved	In case of operation of appointment saving during saving	Appointment is available after saving

2-6. Parameter setting method

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

▲ Input key for setting the numerics

▲ Input key for setting the password

▲ Display out of the setting range

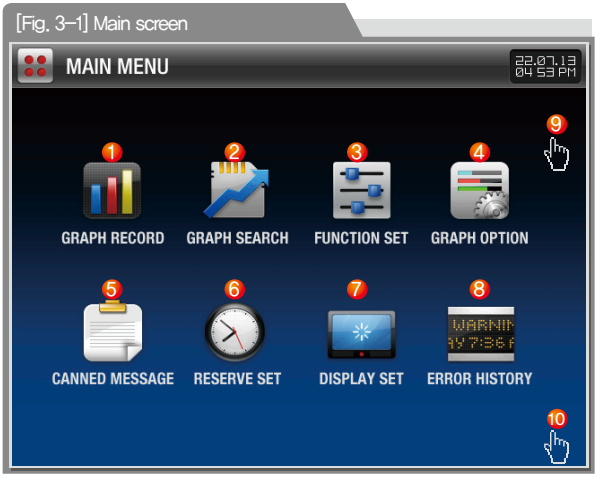
▲ Input key for setting the experiment name and message

Part 03

Main screen

03. Main screen

[Fig. 3–1] Main screen



No.	Main menu	Description
①	GRAPH RECORD	Move to the Start/Stop for graph saving screen
②	GRAPH SERACH	Move to the data (Graph) searching screen stored in the internal memory/SD card
③	FUNCTION SET	Move to the function and operation setting screen
④	GRAPH OPTION	Move to the graph display option (Graph recording and searching screen)
⑤	CANNED MESSAGE	Move to the message setting screen
⑥	RESERVE SET	Move to the present time and reserve operation setting (Start and Finish)
⑦	DISPLAY SET	Move to the screen display setting and internal memory/SD card capacity display screen
⑧	ERROR HISTORY	Move to the error and event history related screen
⑨, ⑩	SYSTEM SETTING	When ⑨, ⑩ is pressed in sequence, the password box is activated to move to the system parameter setting screen.

Part 04

Graph recording setting

04. Graph recording

4-1. Graph recording screen

(1) Graph recording screen

- When the "Graph Record" is selected from [Fig. 3–1 Main screen], it is converted to "Graph recording screen."
- Any button is not operated during the screen capture.

[Fig. 4–1] Screen when the graph is not saved (Black screen)

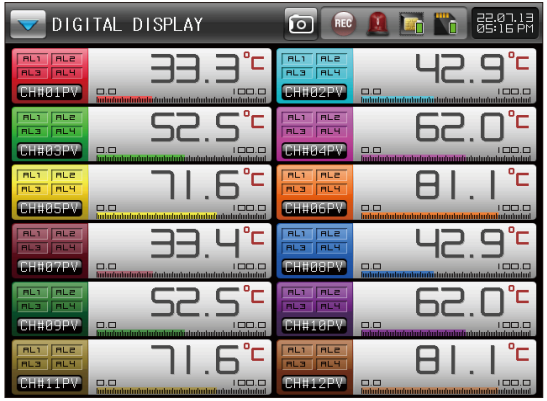
Symbol	Description
	The currently saving graph is searched as [Fig 4–13] ● Icon is not displayed in stopping
	Button to capture the currently displayed screen
	Display for the condition in screen capturing
	Icon for display the internal memory capacity
	Icon for display in case of no storage space in internal memory
	Icon to display the SD card capacity
	Icon to display no storage space in the card
	Icon to display of no card insertion or no recognition
	Display/Non–display the sub menu bar
	• Button for converting from (Channel 1~6) screen to Channel (7~12) screen ● Display in SDR112E only
	The icon is blinking during graph saving
	The warning lamp is blinking in case of alarming.
22.07.13 05:04 PM	It displays the current time and date. It is converted to the power saving mode when it is touched and the lamp on the top of the product is on. ● Red : State of non saving the graph ● Green : state of saving the graph

[Fig. 4–2] Screen in case of non saving the graph
(Display of sub menu bar)

Symbol	Description
MAIN	Convert to [Fig. 3–1 Main screen]
TREND	Convert to [Fig. 4–2 Screen in case of non saving the graph]
BAR.TYPE	Convert to [Fig. 4–4 Bar graph screen]
DIGI.TYPE	Convert to [Fig. 4–5 Digital graph screen]
MESSAGE	[Fig. 4–6 Message input screen] is appeared and the input or set image is shown
RECORD	[Fig. 4–9 PV graph storage screen] is appeared and the storage is started.

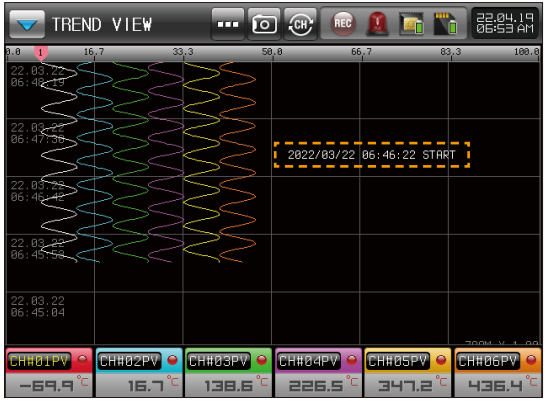
[Fig. 4–3] Screen in case of saving the graph (White screen)

[Fig. 4–4] Bar graph screen



[Fig. 4–5] Digital graph screen

[Fig. 4–6] The message input screen



[Fig. 4–7] The screen selected with EDIT in message input

[Fig. 4–8] The screen selected with EDIT NEW MESSAGE in message input

[Fig. 4–9] PV graph saving screen

[Fig. 4–11] The screen for setting the file name in graph saving

Reference

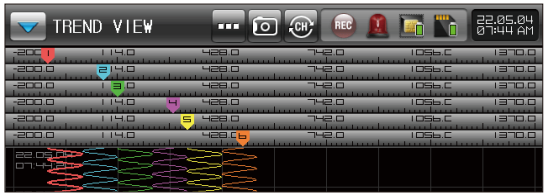
- The file name in saving the PV graph use maximum 8 character combination.
- The file name is not set separately in case of PV graph saving. In case of using the input name as it is, the figures at the suffix are set as current time.

(2) Graph recording saving screen

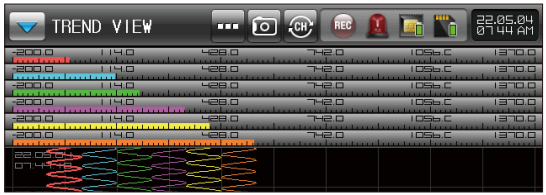
- The screen for saving the graph record is composed of 3 screens.
- Each channel is displayed with unique color.
- The name of each channel can be set.

[Fig. 4-12] Operation screen in case of saving graph (Vertical)

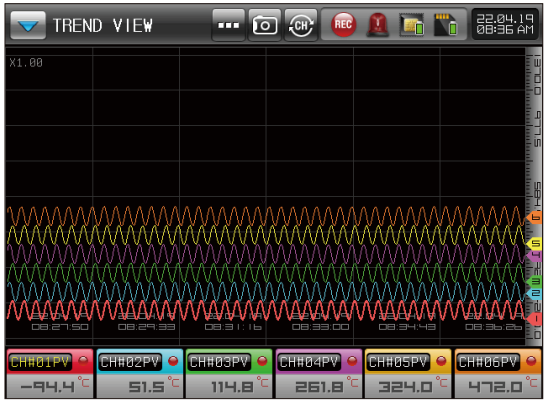
①	The current PV is displayed on the scale bar. The PV display method is set with tag or bar in [Motion setting] [Refer to 1]
②	Display the corresponding time (Date/time) to each axis
③	display screen magnification
④	The channel No. and unit, measure data are displayed for each channel • The corresponding channel is not displayed for each channel when (Activation box) is pressed. • The corresponding channel is displayed when it is pressed again.



[Reference 1] PV display method screen (Tag)



[Reference 1] PV display method screen (Bar)



[Fig 4–13] Operation screen for PV graph (Horizontal) storing

Reference

- The back ground color is changeable into black or white
- The direction of the graph is changeable into vertical or horizontal
- The message can be input.
- The storage period can be changed
- The measured data for the corresponding channel is displayed in alarming and the warning lamp is operated

(3) Graph navigation screen

- If the button is selected, the graph currently being saved is stopped and [Fig. 4–13].
- Select the button to switch to the currently saved graph screen.

[Fig. 4–13] Current saved graph navigation screen

①	Create navigation lines and navigation button bars
②	Blue navigation line on the graph • Displays the measurement value for each channel with the current position of the search line • It can move freely up and down after selecting the navigation line
③	Go to the beginning (time) and the end (time) of the recorded graph
④	Move up and down one page at a time
⑤	② Move the search line up and down by 1 dot
⑥	Zoom in or out on the time axis
⑦	View All Recorded Graph / View Section
⑧	User notes

[Fig. 4–14] Section view button screen

[Fig. 4–15] All view button screen

References

- : View all button / : View section button
- When this button is pressed, it switches to button
  It switches from [Fig. 4–14] Section view button screen
  to [Fig. 4–15] All view button screen
- When this button is pressed, it switches to button
  It switches from [Fig. 4–15] All view button screen
  to [Fig. 4–15] All view button screen

View section

• Able to enlarge and analyze desired data section in view all data

[Fig. 4-16] Memo mode button screen

Reference

- : Note mode button / : Button in running note mode
- Note mode does not work when in full view
- When you want to delete a created note, you can delete it by discontinuing note mode and then executing note mode again
- Note mode can be applied by opening the saved file or saving file pressing OPEN button

Note mode (Write note)

• ① (Button) ⇨ ② (Choose color) ⇨ ③ Write (Note)

Note mode (Delete note)

• ① (Button) ⇨ ② (Button) delete

When not in a note mode after writing a note (View section)

• It displays note created when viewing section on trend screen

When not in a note mode after writing a note (View all)

• It displays note created in full view on trend screen
  – Marked with a red line(M1 ~ M?) on written note

Part 05

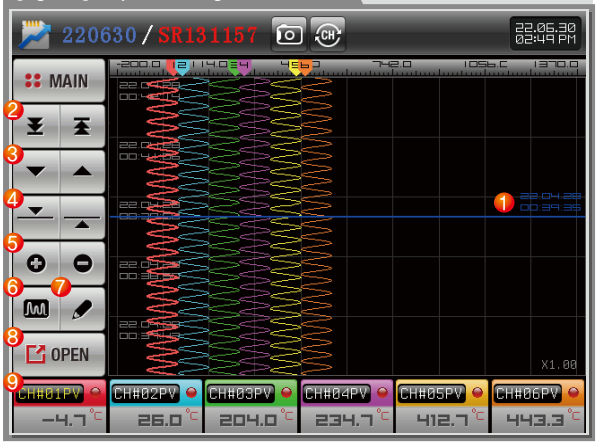
Graph searching

05. Graph searching

5-1. Graph view

- When the “Graph search” is selected from the [Fig.3–1 Main screen], it converted to ‘Graph searching screen.”
- It is a screen to search the file stored in the internal memory and SD card.
- The function of [⊕ ⊖], [⏬ ⏫] is not operated in case of 1 page for recorded data.
- The searching scroll bar is not displayed in case of smaller recorded data.

[Fig. 5–1] Graph searching screen



①	Blue navigation line on the graph • Displays the measurement value for each channel with the current position of the search line • You can freely move up and down after selecting the navigation line
②	Go to the beginning (time) and the end (time) of the recorded graph
③	Move to up and down by one page
④	① is moved up and down by 1 dot
⑤	The time axis is expanded or reduced.
⑥	View All Recorded Graph / View Section
⑦	User memo
⑧	It displays the file stored into the internal memory and SD card
⑨	Channel name / unit / measurement value displayed for each channel • If you press (active box) on each channel, the corresponding channel is not displayed, and if you press it once more, the corresponding channel is displayed. • When selecting the measurement value of each channel, the corresponding graph is selected

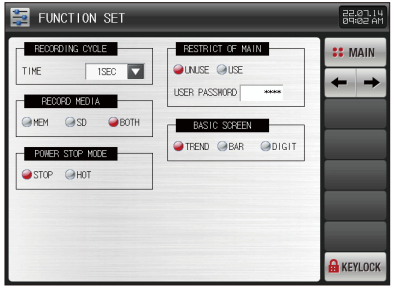
5-2. Data searching

[Fig. 5-2] Opening the PV file

①	Press the OPEN button to display the files stored in the internal memory.
②	Internal memory / SD card file selection • : Internal memory • : SD card
③	Used to open the selected PV file. • Select the desired file and press the OPEN button to open it.
④	Used to return to the original screen.

Part 06

Function setting

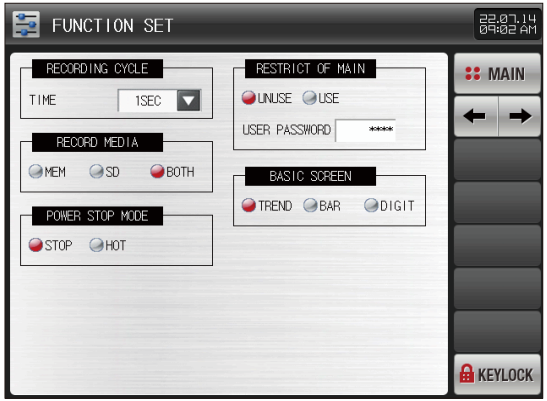


[Fig. 6-1] Function setting screen #1

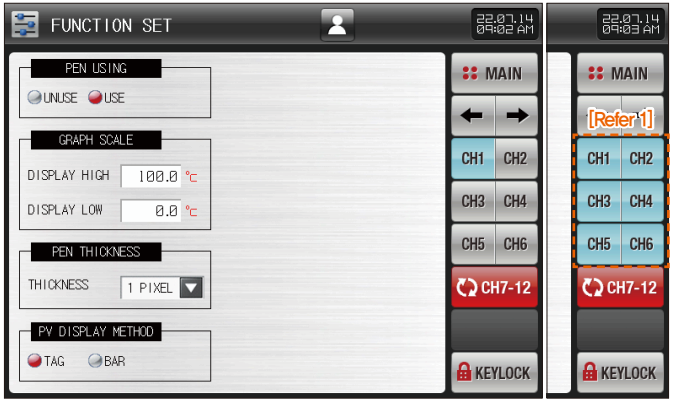
[Fig. 6-2] Function setting screen #2

06. Function setting

- When “Function set” is selected from [fig. 3–1 Main screen], it is converted to “Function setting screen.”
- It is the screen for setting the additional function of the product.



[Fig. 6–1] Function setting screen #1



[Fig. 6–2] Function setting screen #2

Symbol	Description	Symbol	Description
← →	Converting to the current screen to the next screen	CH7-12	Move to channel (7~12)
KEYLOCK	Setting the key lock in the parameter • The screen movement and key lock release are available		Change of parameter in the currently selected channel
			Change of every parameter as same [Refer 1]
CH1 CH2	Converting to the setting screen for corresponding channel		

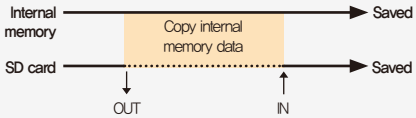
Instruction	Description
RECORDING CYCLE	Setting the saving period
TIME	Saving period adopted to the INTERVAL
RECORD MEDIA	Setting the place to save the recorded graph
MEM	Saving into the internal memory
SD	Saving into the SD card
BOTH	Saving into the internal memory and SD card simultaneously
POWER STOP MODE	Setting the recovery operation in case of blackout
STOP	Pause the saving operation
HOT	Saving by creating new file ● The history is saved in recovering after motion for blackout and display the message on the graph
RESTRICT OF MAIN	The keypad for password input is displayed when the main button is pressed in the recording screen in case of setting the main button restriction. Refer to [Fig. 6–7]
BASIC SCREEN	Set the record screen displayed when entering the 'graph record' screen
TREND	Display the trend screen
BAR	Display the bar graph screen
DIGIT	Display the digital graph screen
PEN USING	Setting the Y/N for the pen (PV graph display) in the corresponding channel of the recording screen ● When the pen is set not for use, it is not displayed and not saved in the graph recording screen
GRAPH SCALE	Setting the upper and lower limit of the scale bar in the recording screen
PEN THICKNESS	Setting of the pen thickness (PV graph display) ● Set line thickness to 1 pixel or 3 pixels
PV DISPLAY METHOD	Setting the PV display type displayed in the scale bar of the recording screen
TAG	Display in tag type of the PV display method for scale bar. Refer to [Fig. 6–5]
BAR	Display in bar type of the PV display method for scale bar. Refer to [Fig. 6–6]

[Fig. 6-3] The screen not available for saving in case of no insertion of the card

[Fig. 6-4] The screen not available for saving due to no space in memory on the card

Reference

- The graph is not saved when the SD card is not inserted after setting the saving media with SD card or both of them.
- The graph is not saved when the memory on the SD card is full.
- After setting the storage medium to 'Both', the graph is continuously saved even if the SD card is removed and reinserted while saving the graph.
  - When the SD card is removed, the data in the section that cannot be saved is saved when the SD card is inserted. After copying the data stored in the internal memory, it is saved continuously.



[Fig. 6-5] PV display type screen (Tag)

[Fig. 6-6] PV display type screen (Bar)

[Fig. 6-7] Screen for setting the main button restriction

Reference

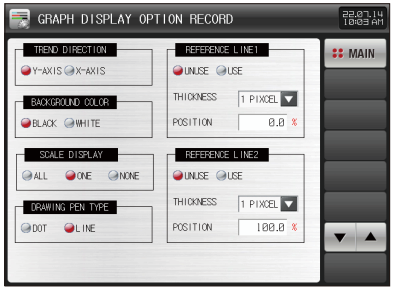
- [Fig. 6-7] is the screen for setting the main button restriction
- The password setting keypad is displayed when the main button is pressed in recording screen
- After setting the password, if the password is wrong, "beep beep" is displayed and you cannot go to the main page.

Parameter	Setting range	Unit	Initial value
RECORDING CYCLE	0.5 sec, 1 sec, 2 sec, 5 sec, 10 sec, 20 sec, 30 sec, 1 min	ABS	1 sec
RECORD MEDIA	MEM, SD, BOTH	ABS	MEM
POWER STOP MODE	STOP, HOT	ABS	STOP
RESTRICT OF MAIN	UNUSE, USE	ABS	UNUSE
BASIC SCREEN	TREND, BAR, DIGIT	ABS	TREND
USER PASSWORD	0~9999	ABS	0
Channel #n PEN USING	UNUSE, USE	ABS	Use
Channel #n GRAPH DISPLAY HIGH	Channel #n.EU (–5.0~105.0%)	Channel #n.EU	Channel #n.EU(100%)
Channel #n GRAPH DISPLAY LOW	Channel #n.DISPLAY 〈 Channel #n.DISPLAY	Channel #n.EU	Channel #n.EU(0%)
Channel #n PEN THICKNESS	1 PIXEL, 3 PIXEL	ABS	1 PIXEL
Channel #n PV DISPLAY METHOD	TAG, BAR	ABS	TAG

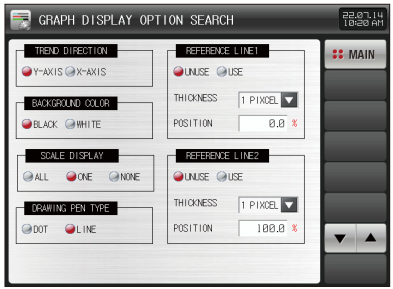
※ #n : 1 ~ 12

Part 07

Graph option



[Fig. 7-1] Graph display option
(Graph recording screen)

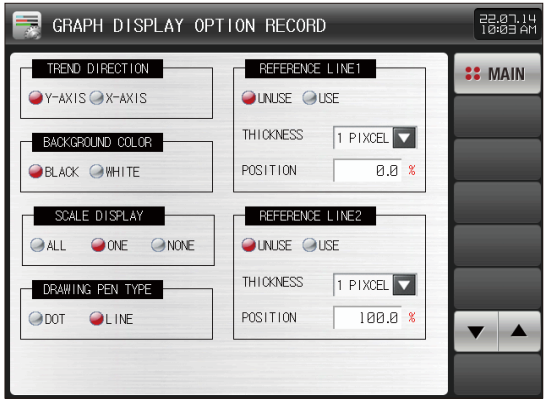


[Fig. 7-2] Graph display option
(Graph searching screen)

07. Graph option

7-1. Graph display option (Graph recording screen)

- When “Graph option” is selected from [Fig. 3–1 Main screen], it is converted to “Graph display option screen.”
- It is the screen for setting the parameter adopted for the graph recording screen.

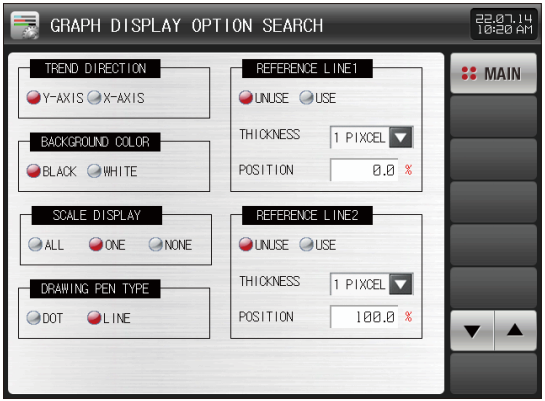


[Fig. 7–1] Graph display option (Graph recording screen)

Instruction	Description
TREND DIRETION	Setting of the direction of graph recording screen
Y–AXIS	The direction of the graph recording screen is displayed vertically. Refer to [Fig. 4–13]
X–AXIS	The direction of the graph recording screen is displayed horizontally. Refer to [Fig. 4–12]
BACKGROUND COLOR	Setting of the background color of graph recording screen
BLACK	Setting of the background color of graph recording screen in black. Refer to [Fig. 4–1]
WHITE	Setting of the background color of graph recording screen in white. Refer to [Fig. 4–3]
SCALE DISPLAY	Setting of the scale bar display
ALL	Setting of scale bar
ONE	Display of scale bar and data for each channel
NONE	No display for the scale bar and range • When it is set “One” it is operated as “Tag” regardless of the set data of “PV display type” in each channel
DRAWING PEN TYPE	PV graph display type setting
DOT	PV is displayed in dot
LINE	PV is displayed in line
REFERENCE LINE1 REFERENCE LINE2	Setting of Y/N and location of the display at the basic line at the ends of the left, right, upper and lower of the graph. Refer to [Fig. 7–3]

7-2. Graph display option (Graph searching screen)

● It is the screen for setting the parameter adopted for the graph recording screen.



[Fig. 7-2] Graph display option (Graph searching screen)

Instruction	Description
TREND DIRETION	Setting of the direction of graph searching screen
Y-AXIS	The direction of the graph searching screen is displayed vertically.
X-AXIS	The direction of the graph searching screen is displayed horizontally.
BACKGROUND COLOR	Setting of the background color of graph searching screen
BLACK	Setting of the background color of graph searching screen in black
WHITE	Setting of the background color of graph searching screen in white
SCALE DISPLAY	Setting of the scale bar display
ALL	Setting of scale bar
ONE	Display of scale bar and data for each channel
NONE	No display for the scale bar and range • When it is set "One" it is operated as "Tag" regardless of the set data of "PV display type" in each channel
DRAWING PEN TYPE	PV graph display type setting
DOT	PV is displayed in dot
LINE	PV is displayed in line
REFERENCE LINE1 REFERENCE LINE2	Setting of Y/N and location of the display at the basic line at the ends of the left, right, upper and lower of the graph. Refer to [Fig. 7-4]

[Fig. 7–3] Screen for setting the reference line in graph recording screen

[Fig. 7–4] Screen for setting the reference line in graph searching screen

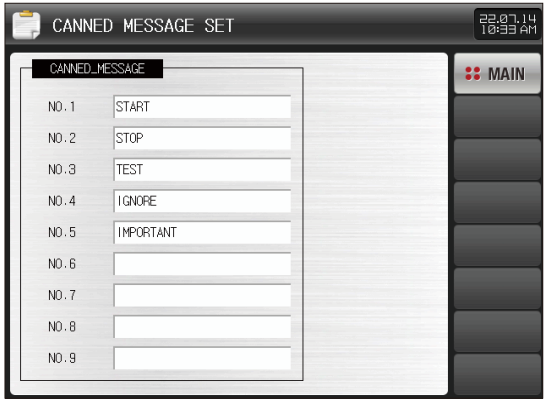
Parameter	Setting range	Unit	Initial value
TREND DIRECTION	Y–AXIS, X–AXIS	ABS	Y–AXIS
BACKGROUND COLOR	BLACK, WHITE	ABS	BLACK
SCALE DISPLAY	ALL, ONE, NONE	ABS	ALL
DRAWING PEN TYPE	DOT, LINE	ABS	LINE
REFERENCE LINE 1	UNUSE, USE	ABS	UNUSE
REFERENCE LINE THICKNESS 1	1 PIXEL, 3 PIXEL	ABS	1 PIXEL
REFERENCE LINE POSITION 1	0.0~100%	%	0.0
REFERENCE LINE 2	UNUSE, USE	ABS	UNUSE
REFERENCE LINE THICKNESS 2	1 PIXEL, 3 PIXEL	ABS	1 PIXEL
REFERENCE LINE POSITION 2	0.0~100%	%	100.0

Part 08

Setting canned message

08. Setting canned message

● When “Canned message” is selected from [Fig. 3-1 Main screen], it is converted to “Setting canned message.”



[Fig. 8-1] Message input screen

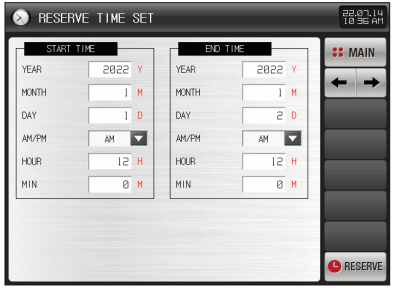
Instruction	Description
CANNED MESSAGE	Setting the frequently used message in message input in recording screen

Parameter	Setting range	Unit	Initial value
Graph display message 1	0~9 A~Z Special character (Maximum 24 characters)	ABS	START
Graph display message 2		ABS	STOP
Graph display message 3		ABS	TEST
Graph display message 4		ABS	IGNORE
Graph display message 5		ABS	IMPORTANT
Graph display message 6		ABS	–
Graph display message 7		ABS	–
Graph display message 8		ABS	–
Graph display message 9		ABS	–

Part 09

Setting reserve operation

Flow chart for setting reserve operation

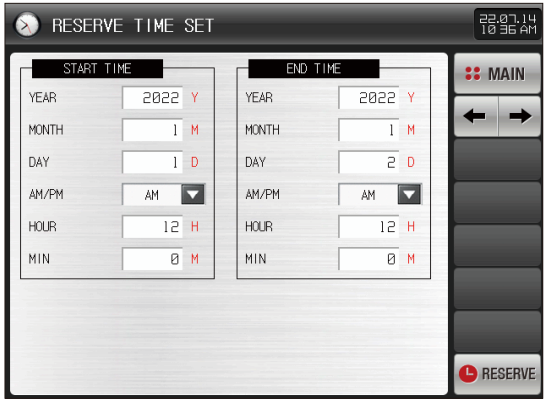


[Fig. 9–1] Screen for current time setting

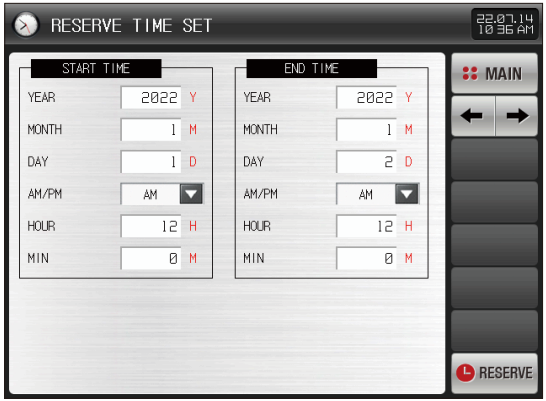
[Fig. 9–2] Screen for reserve time setting

09. Setting reserve operation

- When “Reserve set operation” is selected from [Fig. 3–1 Main screen], it is converted to “Screen for setting current time, reserve storing time.”
- The current time, reserve operation time (Start/End) can be set.
- The reserve time is not changed during reserve and reserve operation.
- It is not operated when the starting time is earlier than current time.
- The ending time is not operated when the ending time is earlier than start time.
- The ending time is operated in spite of setting in continuity of recovery motion in blackout. However, the saving is not made in electric power recovery after the ending time.



[Fig. 9–1] Screen for current time setting



[Fig. 9–2] Screen for reserve time setting

Instruction	Description
CURRENT TIME	Setting of the current time
START TIME	Setting of the saving for reserve time start
END TIME	Setting of the saving for reserve time end

Symbol	Description
RESERVE	Button for starting the reserve operation

Parameter	Setting range	Unit	Initial value
CURRENT TIME(YEAR)	2000~2099	ABS	–
CURRENT TIME(MONTH)	1~12	ABS	–
CURRENT TIME(DATE)	1~31	ABS	–
CURRENT TIME(AM/PM)	AM/PM	ABS	–
CURRENT TIME(HOUR)	1~12	ABS	–
CURRENT TIME(MIN)	0~59	ABS	–
RESERVE START TIME(YEAR)	2000~2099	ABS	2011
RESERVE START TIME(MONTH)	1~12	ABS	1
RESERVE START TIME(DATE)	1~31	ABS	1
RESERVE START TIME(AM/PM)	AM/PM	ABS	AM
RESERVE START TIME(HOUR)	1~12	ABS	1
RESERVE START TIME(MIN)	0~59	ABS	0
RESERVE END TIME(YEAR)	AM/PM	ABS	2011
RESERVE START TIME(MONTH)	1~12	ABS	1
RESERVE START TIME(DATE)	1~31	ABS	1
RESERVE START TIME(AM/PM)	AM/PM	ABS	AM
RESERVE START TIME(HOUR)	1~12	ABS	1
RESERVE START TIME(MIN)	0~59	ABS	0
RESERVE MODE	OFF, ON	ABS	OFF

Part 10

Setting screen display

10. Setting screen display

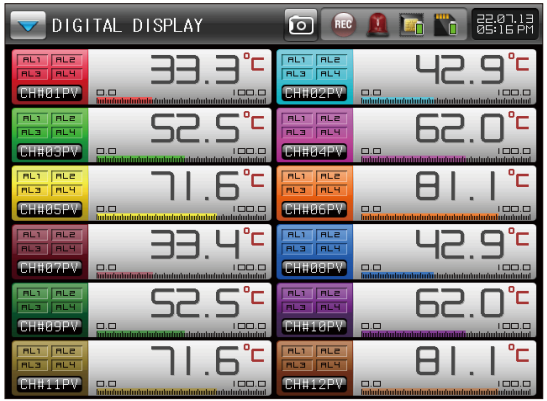
10-1. Setting screen display

- When “Screen Display set” is selected from [Fig. 3–1 Main screen], it is converted to “Screen display setting.”
- It is a screen to set the screen brightness and electricity saving time.

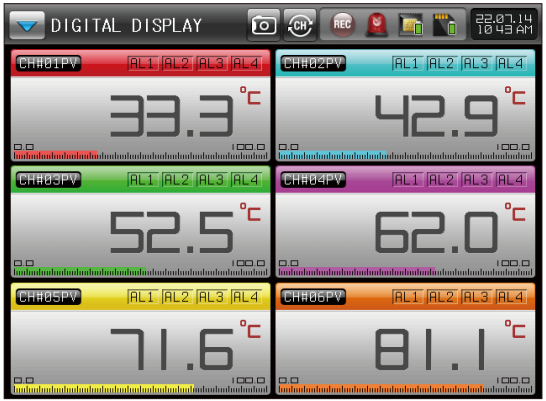
[Fig. 10–1] Screen for setting screen display

Instruction	Description
BUZZER SOUND	Setting the Y/N for using buzzer sound
BACKLIGHT SAVING	Setting the electricity saving in back light
LCD BRIGHTNESS	Adjust the brightness of LCD
GRAPH ROTATION	Automatic converting to the screen of channel (1~6) and channel (7~12) when there is no key action for the set time. Refer to [Fig. 10–4.5] • Operation in SDR112E only
INTERNAL MEMORY	Total capacity of internal memory, used capacity, total files to be saved and display of saved files
SD CARD MEMORY	Display of total capacity of SD card and use capacity
DIGITAL DISPLAAY	Setting the display method of digital recording screen. • Operation in SDR112E only
ALL	Display of all channels in one screen. Refer to [Fig. 10–2]
GROUP	It displays the group channel for each screen and screen conversion to channel (1~6) and channel (7~12) with channel conversion key

Symbol	Description
-:-	Touch screen



[Fig. 10–2] Display of all digital graphs



[Fig. 10–3] Display of digital graph group (Channel 1~6)

[Fig. 10–3] Display of all digital groups (Channel 7~12)

[Fig. 10–4] Graph automatic conversion screen (Channel 1~6)

[Fig. 10–5] Graph automatic conversion screen (Channel 7~12)

Reference

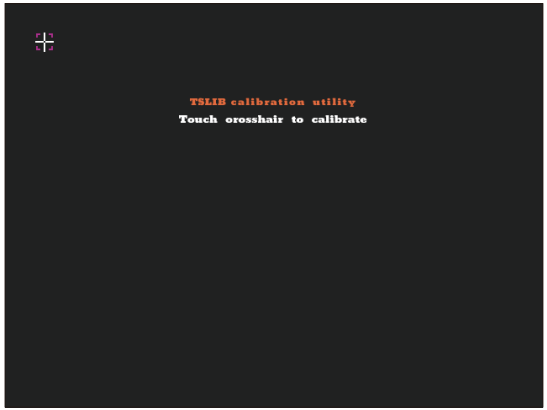
- It is operated when there is no key action for a certain period of time (1 min) in recording screen.
- It is not operated when the automatic conversion is “0” in recording screen.
- The screen is automatically converted to channel (1~6) and channel (7~12) in set period from the graph automatic conversion.

Parameter	Setting range	Unit	Initial value
BUZZER SOUND	UNUSE, USE	ABS	Use
BACKLIGHT SAVING	0~99 Min	ABS	10
LCD BRIGHTNESS	1~7	ABS	7 column
GRAPH ROTATION	0~99 Sec	ABS	0
DIGITAL DISPLAY	ALL, GROUP	ABS	ALL

10-2. Touch screen calibration Seting

- Press the red dot at the left / right upper, left / right bottom and center of the touch screen calibration screen, you can calibrate the touch screen.

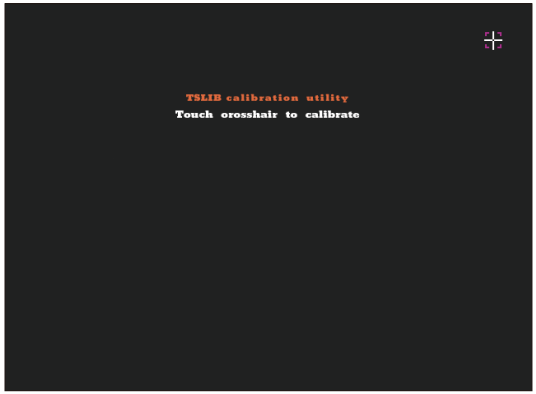
[Fig. 10-6] Touch screen calibration #1



[Fig. 10-7] Touch screen calibration #2

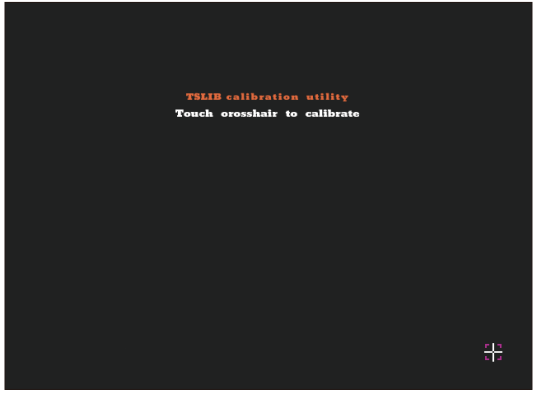
Reference

- Top left/right, bottom left/right. Please select all in the center in order.
- After calibration is complete, be sure to turn the power OFF ⇨ ON.
- If calibration fails because you cannot touch on the screen correctly, the calibration work is restarted from the beginning, and if it fails more than 5 times, the calibration work is stopped.



[Fig. 10–8] Touch screen calibration #3

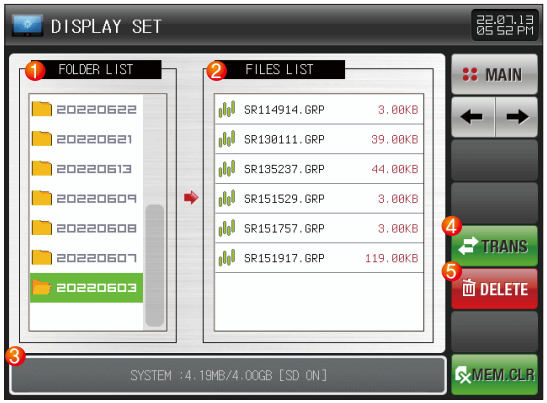
[Fig. 10–9] Touch screen calibration #5



[Fig. 10–10] Touch screen calibration #4

[Fig. 10–11] Touch screen calibration #6

10-3. Internal memory management



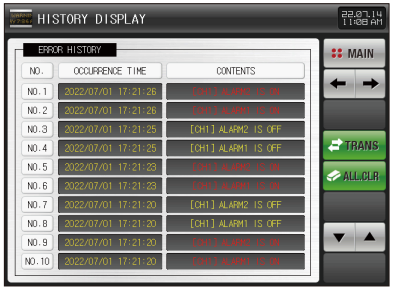
[Fig. 10-12] Internal memory

①	PV graph folder list
②	PV graph file list
③	Display of internal system memory capacity
④	Copy the PV graph file selected from the file list to the SD card • If there is no SD card option or while saving the PV graph on the operation screen, the file selected in the file list cannot be copied to the SD card.
⑤	Delete selected PV graph file from file list

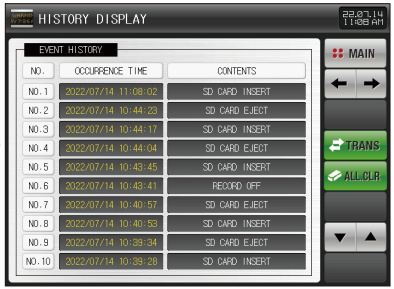
Part 11

Error history display

[Fig. 11-1] 저장형식 화면



[Fig. 11-2] Screen for error history



[Fig. 11-3] Screen for event history

11. Error history display

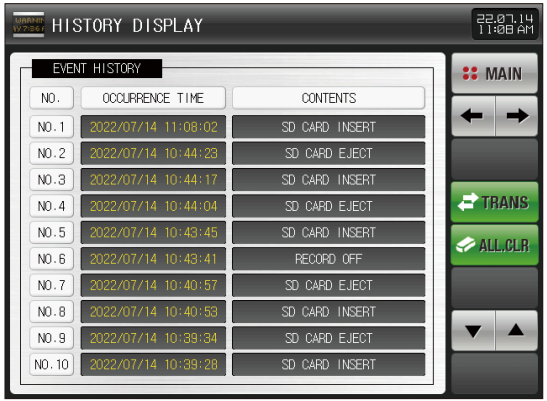
- When “History display” is selected from [Fig. 3–1 Main screen], it is converted to “Screen for history display setting.”
- It is a screen for displaying the error, alarm and event history.
- It saves 100 errors, alarm and event history and the occurred history later are saved after deletion of the first saved history.

[Fig. 11–1] Screen for save format

①	이력 표시화면을 저장하는 형식 설정

[Fig. 11–2] Screen for error history

①	All stored error, alarm, event, system history is transmitted to the SD card.
②	It deletes all stored error, alarm, event, system history.



[Fig. 11-2] Screen for event history

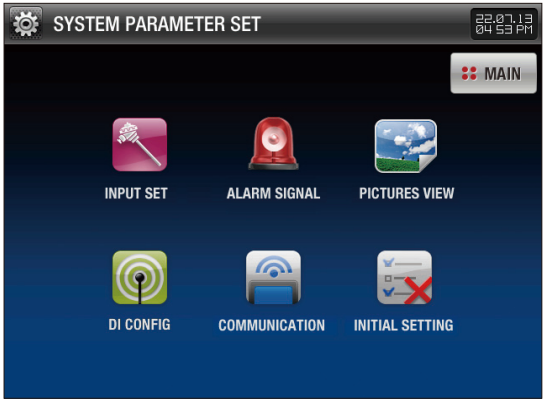
Message contents	Screen display	Lettering color
In power ON (Hot)	POWER ON(HOT)	White
In record ON	RECORD ON	White
In record OFF	RECORD OFF	White
In record ON (Appointment)	RECORD ON(RESERVE)	White
In record OFF (Appointment)	RECORD OFF(RESERVE)	White
In record ON (Remote D11)	RECORD ON(DI1)	White
In record OFF (Remote D11)	RECORD OFF(DI1)	White
In setting key lock	KEYLOCK ON	White
In releasing key lock	KEYLOCK OFF	White
In SD card insertion	SD CARD INSERT	White
In SD card release	SD CARD EJECT	White
In internal memory deletion	INTERNAL MEMORY CLEAR	White
In initializing the parameter	PARAMETERS ARE INITIALIZED	White

Part 12

Setting system parameter

12. Setting system parameter

- Refer to [Fig. 3–1 Main Screen] for process of entering into the system parameter setting screen.
- Refer to [Fig. 2–3 Basic operation flow chart] system setting screen depending on DI and communication option selection.
- It is a screen for initial setting which is necessary for the recording of device.



[Fig. 12–1] System parameter screen

SYMBOL	Item	Function
	INPUT SET	Setting the parameter related with the type of input sensor and sensor input.
	ALARM SIGNAL	Setting the parameter related with alarm signal
	PICTURE VIEW	Setting the parameter related with the user picture file setting screen.
	DI CONFIG	Setting the parameter related with the external contact point input signal.
	COMMUNICATION	Setting the parameter related with communication
	INITIAL SETTING	Setting the parameter related with the basic setting for up/down of parameter and screen configuration.

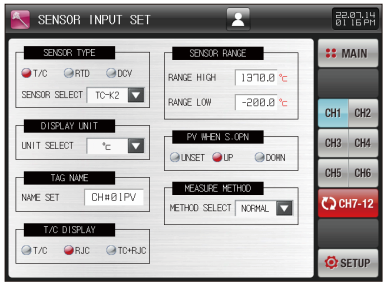
Part 13

Screen for setting the sensor input

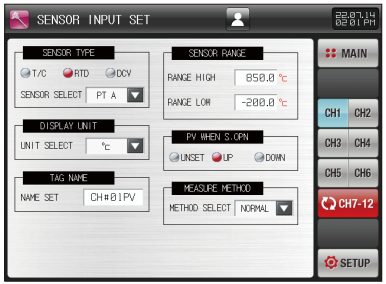
13. Screen for setting the sensor input

13-1. Sensor input screen

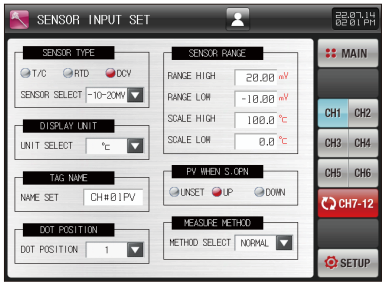
- When the “Input set” is selected in the [Fig. 12–1 System parameter screen], the parameters related in sensor input can be set.



[Fig. 13–1] Sensor setting screen (T/C)



[Fig. 13–2] Sensor setting screen (RTD)



[Fig. 13–3] Sensor setting screen (DCV)

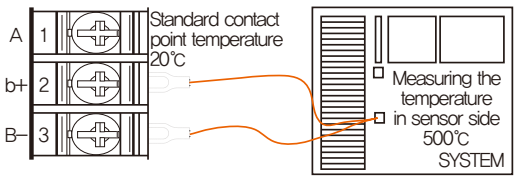
Reference

- Select the input (T/C, RTD, DCV) sensor for channel)1~12).
- Set the sensor first because the parameters related with the selected sensor are initialized in sensor change.
- The above screen is the explanation for the channel (1~6) and screen of channel (7~12) is same with channel (1~6).
- The sensor group, censor type, range upper limit/lower limit, display unit, scale upper limit/lower limit cannot be changed during graph saving.

Symbol	Description
SETUP	When the set up button is pressed, it is converted into [Fig. 12–1 System parameter screen]

Instruction	Description
SENSOR TYPE	Set the input sensor type
DISPLAY UNIT	Set the tag name of the graph recording screen
TAG NAME	Input maximum 8 characters using the 0~9, A~Z and special character.
T/C DISPLAY	Set the Y/N for the basic contact point compensation for the terminal connected with sensor. Refer to [Table 13-1] • Selection of Y/N for using RJC in case of T/C sensor type.
T/C	It does not compensate the temperature of terminal and displays the current measured data [Measured temperature in sensor side – Standard contact point temperature].
T/C + RJC	The currently measured data displays the temperature measured from sensor side with compensation to the standard contact point temperature.
RJC	Display the standard contact point temperature.
SENSOR RANGE	Setting the upper and lower limit of the input sensor. Refer to [Table 13-3]
PV WHEN S.OPN	Set the operation direction of the current data in case of sensor open
NO	Display the unpredictable random data when sensor is open
UP	Display of "+S.Open" while PV increases when sensor is open
DOWN	Display of "+S.Open" while PV decreases when sensor is open
MEASURE METHOD	Set the data measurement method. Refer to [Table 13-2]
DOT POSITION	Set the number of digit in case of DCV sensor type.

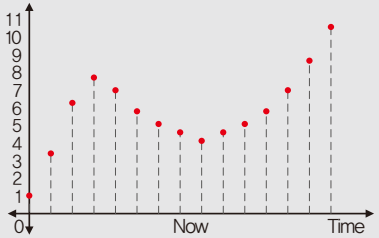
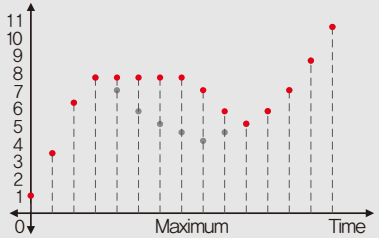
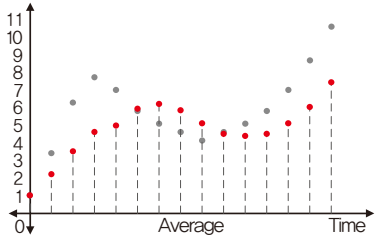
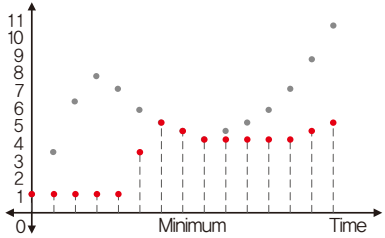
[Table 13-1] Display method for thermocouple



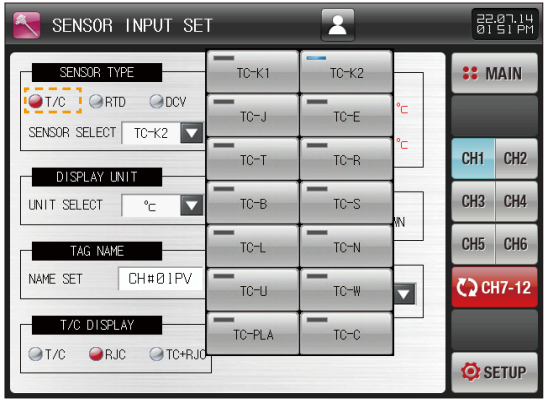
Thermocouple	Measured data	Formula
T/C	480℃	500–20
T/C + RJC	500℃	(500–20)+20
RJC	20℃	20

[Table 13–2] Data measuring method

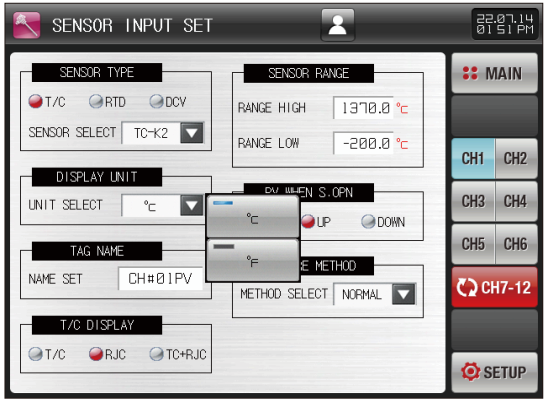
※ Time set 5 second, Current value Measured value

Current value	 ▶ Use the real time data for the measured data	Maximum value	 ▶ Use the biggest data during the set time for the current measured value
Average value	 ▶ Use the average value as the measured value during the set time	Minimum value	 ▶ Use the smallest data during the set time for the current measured value

Screen for T/C sensor >>>>

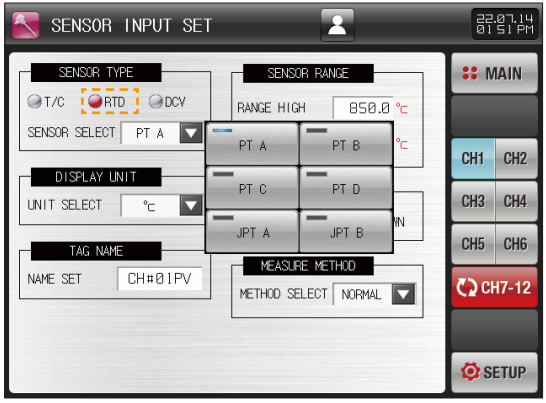


[Fig. 13-4] Screen for selecting the T/C sensor type

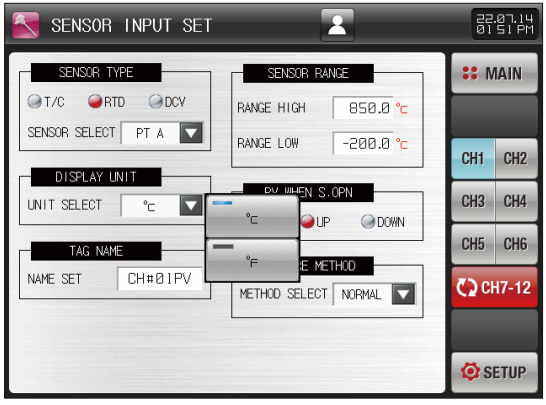


[Fig. 13-5] Screen for setting the T/C sensor display unit

Screen for RTD sensor >>>>

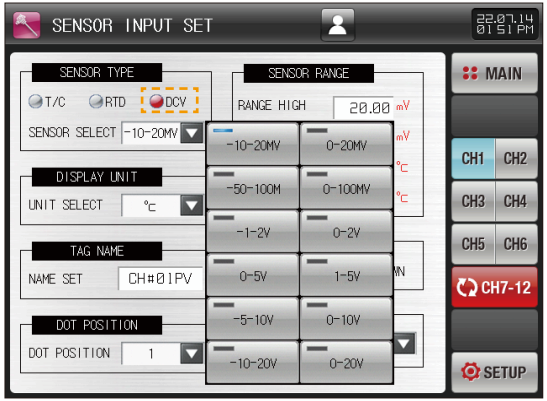


[Fig. 13-6] Screen for selecting the RTD sensor type

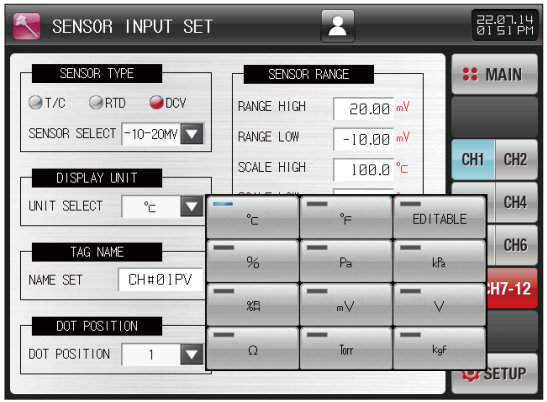


[Fig. 13-7] Screen for setting the sensor display unit

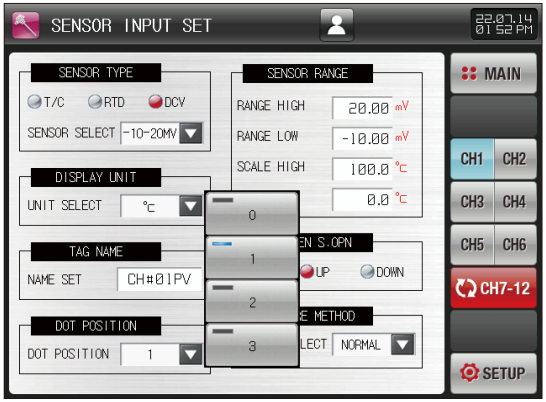
Screen for DCV sensor >>>>



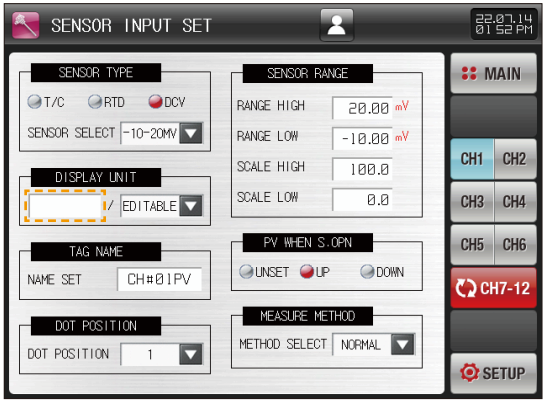
[Fig. 13–8] Screen for selecting the DVC sensor type



[Fig. 13–9] Screen for setting the DVC sensor display unit



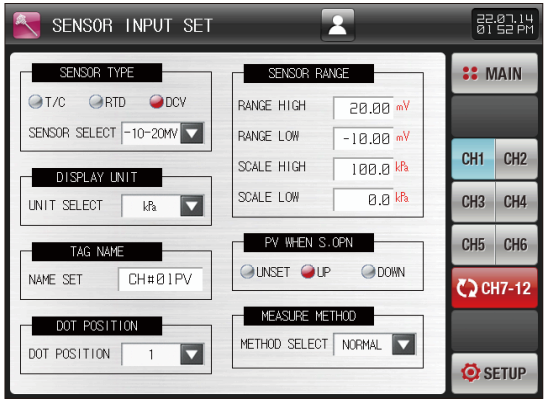
[Fig. 13–10] Screen for selecting the decimal point of DCV sensor



[Fig. 13–11] Screen of setting the DCV sensor display unit with editing
The unit name can be set when [ ] input button is pressed

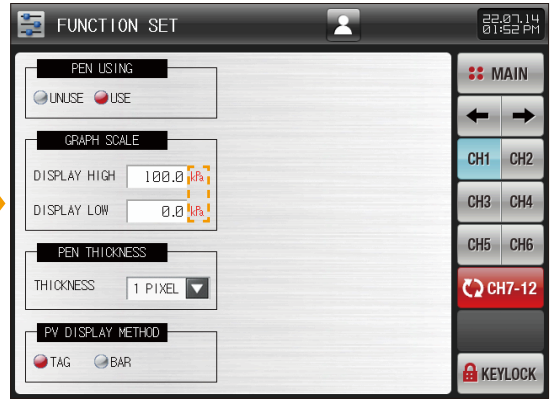
[Fig. 13-12] Screen for name setting by setting he display unit with editing

Screen in case of kPa of unit in DCV sensor type >>>>



[Fig. 13-13] Screen for setting the display unit (In case of kPa setting)

[Fig. 13-14] When the graph screen is kPa setting



[Fig. 13-15] When the scale of function setting is kPa setting

Parameter	Setting range	Unit	Initial value
Channel #n SENSOR GROUP	T/C, RTD, DCV	ABS	T/C
Channel #n SENSOR TYPE	TC-K1, TC-K2, TC-J, TC-E, TC-T, TC-R, TC-B, TC-S, TC-L, TC-N, TC-U, TC-W, TC-PLA, TC-C	ABS	TC-K2 (When sensor group is T/C)
	PT A, PT B, PT C, PT D, JPT A, JPT B	ABS	PT A(When sensor group it RTD)
	-10 ~ 20MV, 0 ~ 20MV, -50 ~ 100M, 0 ~ 100MV, -1 ~ 2V, 0 ~ 2V, 0 ~ 5V, 1 ~ 5V, -5 ~ 10V, 0 ~ 10V, -10 ~ 20V, 0 ~ 20V	ABS	-10 ~ 20MV (When sensor group is DCV)
Channel #n DISPLAY UNIT	℃, ℉	ABS	℃
	℃, ℉, EDITABLE, %, Pa, kPa, %RH, mV, V, Ω, Torr, Kgf	ABS	℃
UNIT NAME OF CHANNEL	0~9 , A~Z, Special character (8 characters)	ABS	
Channel #n TAG NAME	0~9 , A~Z, Special character (8 characters)	ABS	Channel #n PV
Channel #n T/C DISPLAY	T/C, TC+RJC, RJC	ABS	TC+RJC
Channel #n SENSOR RANGE HIGH	Channel #n.EU (0.0~100%)	Channel #n.EU	Channel #n.EU(100.0%)
Channel #n SENSOR RANGE LOW	Channel #n.RANGE LOW< Channel #n.RANGE HIGH	Channel #n.EU	Channel #n.EU(0.0%)
Channel #n PV WHEN S.OPN	UNSET, UP, DOWN	ABS	UP
Channel #n MEASURE METHOD	NORMAL, MINIMUM, MAXIMUM, AVERAGE	ABS	NORMAL
TIME SET	1~10sec	ABS	1
Channel #n DOT POSITION	0~4	ABS	1
Channel #n SCALE HIGH	-3000.0~3000.0	℃	100.0
Channel #n SCALE LOW	Channel #n.SCALE LOW< Channel #n.SCALE HIGH	℃	0.0

※ #n : 1 ~ 12

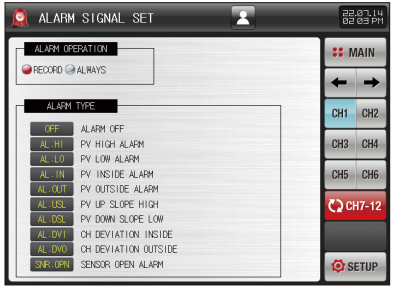
[Table 13–3] Type of sensor input

No	Sensor type	Temperature range (℃)	Temperature range (℉)	Sensor group	DISP
1	K1	–200 ~ 1370	–300 ~ 2500	T/C	TC–K1
2	K2	–200.0 ~ 1370.0	–300.0 ~ 1900.0		TC–K2
3	J	–200.0 ~ 1200.0	–300.0 ~ 1900.0		TC–J
4	E	–200.0 ~ 1000.0	–300.0 ~ 1800.0		TC–E
5	T	–200.0 ~ 400.0	–300.0 ~ 750.0		TC–T
6	R	0.0 ~ 1700.0	32 ~ 3100		TC–R
7	B	0.0 ~ 1800.0	32 ~ 3300		TC–B
8	S	0.0 ~ 1700.0	32 ~ 3100		TC–S
9	L	–200.0 ~ 900.0	–300 ~ 1600		TC–L
10	N	–200.0 ~ 1300.0	–300 ~ 2400		TC–N
11	U	–200.0 ~ 400.0	–300.0 ~ 750.0		TC–U
12	W	0 ~ 2300	32 ~ 4200		TC–W
13	Platinel Ⅱ	0.0 ~ 1390.0	32 ~ 2500		TC–PLA
14	C	0 ~ 2320	32 ~ 4200		TC–C
15	PT A	–200.0 ~ 850.0	–300.0 ~ 1560.0	RTD	PT A
16	PT B	–200.0 ~ 500.0	–300.0 ~ 1000.0		PT B
17	PT C	–50.00 ~ 150.00	–148.0 ~ 300.0		PT C
18	PT D	–200 ~ 850	–300 ~ 1560		PT D
19	JPT A	–200.0 ~ 500.0	–300.0 ~ 1000.0		JPT A
20	JPT B	–50.00 ~ 150.00	–148.0 ~ 300.0		JPT B

No	Sensor type	Input range	SCALE range	Sensor group	DISP
21	–10 ~ 20mV	–10.00 ~ 20.00mV	–3000.0 ~ 3000.0℃	DCV	–10 ~ 20MV
22	0 ~ 20mV	0.00 ~ 20.00mV			0 ~ 20MV
23	–50 ~ 100mV	–50.00 ~ 100.00mV			–50 ~ 100M
24	0 ~ 100mV	0.00 ~ 100.00mV			0 ~ 100MV
25	–1 ~ 2V	–1.000 ~ 2.000V			–1 ~ 2V
26	0 ~ 2V	0.000 ~ 2.000V			0 ~ 2V
27	0 ~ 5V	0.000 ~ 5.000V			0 ~ 5V
28	1 ~ 5V	1.000 ~ 5.000V			1 ~ 5V
29	–5 ~ 10V	–5.000 ~ 10.000V			–5 ~ 10V
30	0 ~ 10V	0.000 ~ 10.000V			0 ~ 10V
31	–10 ~ 20V	–10.000 ~ 20.000V			–10 ~ 20V
32	0 ~ 20V	0.000 ~ 20.000V			0 ~ 20V

Part 14

Alarm signal



[Fig. 14–1] Alarm signal setting screen 1

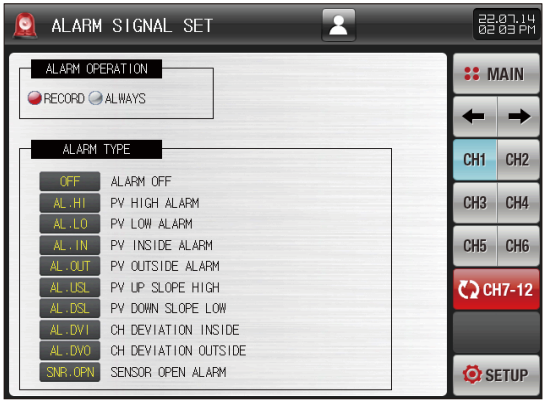
[Fig. 14–2] Alarm signal setting screen 2 #1

[Fig. 14–3] Alarm signal setting screen 2 #2

14. Alarm signal

14-1. Alarm signal setting screen 1

- When the “Alarm signal” is selected in the [Fig. 12–1 System parameter screen], the parameters related in alarm signal can be set.
- The following table is explanation for channel (1~6) and the screen for channel (7~12) is same with channel (1~6).



[Fig. 14–1] Alarm signal setting screen 1

Instruction	Description
ALARM OPERATION	Setting the alarm motion
RECORD	The alarming motion is performed in case of saving
ALWAYS	The alarming motion is performed always regardless of save/pause

Parameter	Setting range	Unit	Initial value
Channel #n ALARM OPERATION	RECORD, ALWAYS	ABS	ALWAYS

※ #n : 1 ~ 12

14-2. Alarm signal setting screen 2

- It is the screen to set the alarm for each channel.
- The following table is explanation for channel (1~6) and the screen for channel (7~12) is same with channel (1~6).
- There are 4 channels for alarm signal.
- There are 9 types for alarm signal

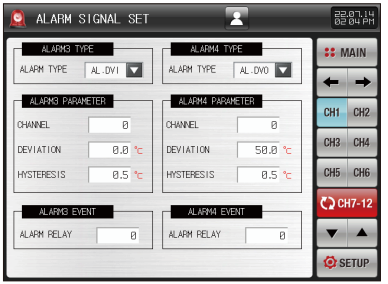
[Fig. 14–2] Alarm signal setting screen 2 #1

[Fig. 14–3] Alarm signal setting screen 2 #2

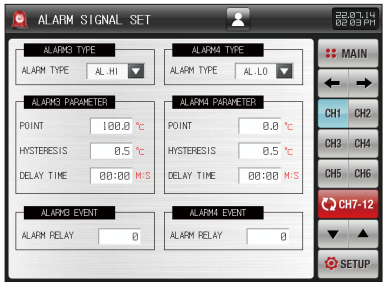
Instruction	Description
Alarm type 1 Alarm type 2 Alarm type 3 Alarm type 4	The type of the alarm signal is set.

[Fig. 14-4] Alarm signal selection signal

[Fig. 14-6] Screen for setting the internal/external limit of PV

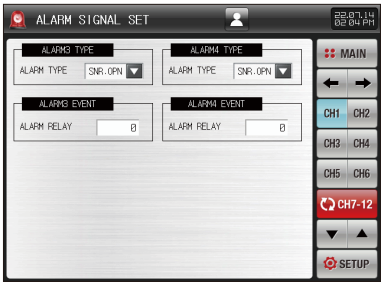


[Fig. 14-8] Screen for setting the internal/ external deviation between channels



[Fig. 14-5] Screen for setting the upper/lower limit of PV

[Fig. 14-7] Screen for setting the increase/ decrease change ratio of PV



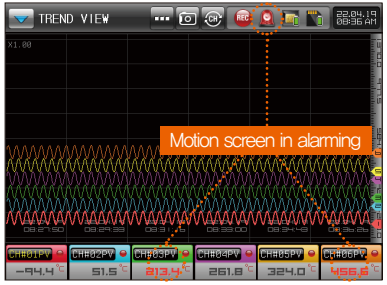
[Fig. 14-9] Screen for setting the sensor open

Parameter	Setting range	Unit	Initial value
Channel #n ALARM#m TYPE	OFF, AL.HI, AL.LO, AL.IN, AL.OUT, AL.USL, AL.DSL, AL.DVI, AL.DVO, SNR.OPN	ABS	OFF
Channel #n ALARM#m POINT	CHANNEL #n.EU(−5.0~105.0%)	CHANNEL #n.EU	CHANNEL#n.EU(100.0%) / CHANNEL#n.EU(0.0%)
Channel #n ALARM#m HIGH POINT	CHANNEL #n.EU(−5.0~105.0%)	CHANNEL #n.EU	CHANNEL #n.EU(0.0%)
Channel #n ALARM#m LOW POINT			
Channel #n ALARM#m HYSTERESIS	CHANNEL #n.EUS(0.0~50.0%)	CHANNEL #n.EUS	CHANNEL #n.EUS(0.5%)
Channel #n ALARM#m DELAY TIME	0.00~99.59 (MIN.SEC)	ABS	00.00
Channel #n ALARM#m RELAY	0 ~ 12	ABS	0
Channel #n ALARM#m RELAY	CHANNEL #n.EUS(0.0~50.0%)	CHANNEL #n.EUS	CHANNEL #n.EUS(0.0%)
Channel #n ALARM#m UP SLOPE HIGH	CHANNEL #n.EUS(0.0~50.0%)	CHANNEL #n.EUS	CHANNEL #n.EUS(0.0%)
Channel #n ALARM#m DOWN SLOPE LOW	1MIN, 1HOUR	ABS	1MIN
Channel #n ALARM#m SAMPLE NUMBER	0 ~ 32	ABS	1
Channel #n ALARM#m CHANNEL	0 ~ 12	ABS	0
Channel #n ALARM#m DEVIATION	CHANNEL #n.EUS(0.0~50.0%)	CHANNEL #n.EUS	CHANNEL #n.EUS(0.0%)

※ #n : 1 ~ 12
※ #m : 1 ~ 4

[Fig. 14–10] Operation screen for vertical axis alarm creation

[Fig. 14–12] Operation screen for bar alarm creation



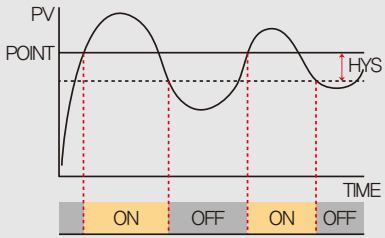
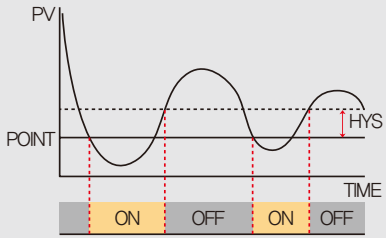
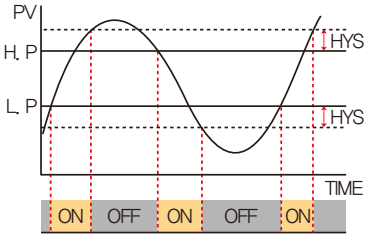
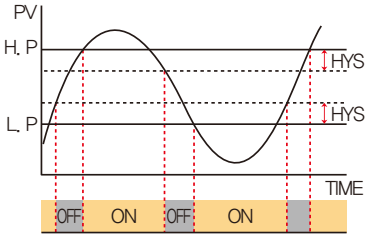
[Fig. 14–11] Operation screen for horizontal axis alarm creation

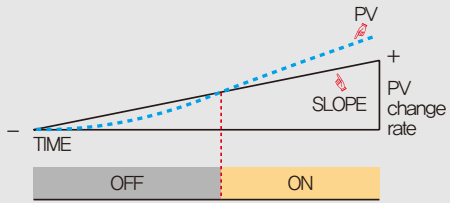
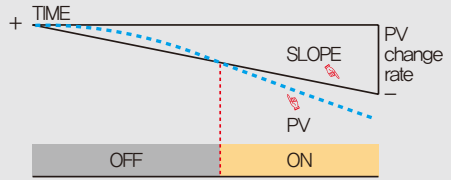
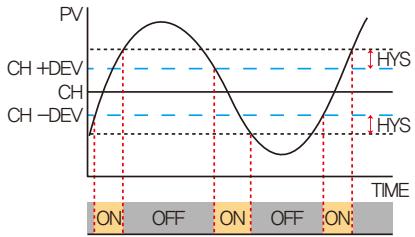
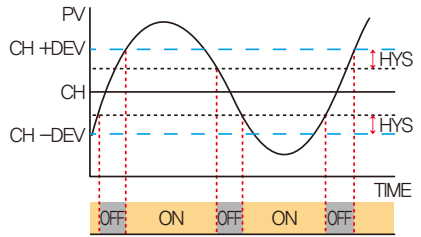
[Fig. 14–13] Operation screen for digital alarm creation

Reference

- The current value of the corresponding channel is display in red when alarm is operated and the warning lamp is lighted on the right upper corner of the screen.

14-3. Alarm signal motion

PV upper limit	 • POINT : Alarm set value	PV lower limit	 • POINT : Alarm set value
Within PV range	 • L. P : Lower limit deviation setting • H. P : Upper limit deviation setting	Out of PV range	 • L. P : Lower limit deviation setting • H. P : Upper limit deviation setting

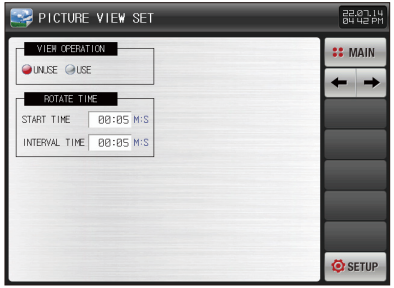
PV increase change rate upper limit	 • SLOPE : Set PV increase change rate	PV decrease change rate lower limit	 • SLOPE : Set PV increase change rate
Within deviation between channels	 • CH : Channel • DEV : Deviation	Out of PV deviation between channels	 • CH : Channel • DEV : Deviation
Sensor short	Alarming in case of sensor short		

Reference

▶ HYS(HYSTERESIS) : It is a deviation applied in recovery(Off) after alarming (On). The initial value is EUS (0.5%) and it is not operated during setting.

Part 15

User screen



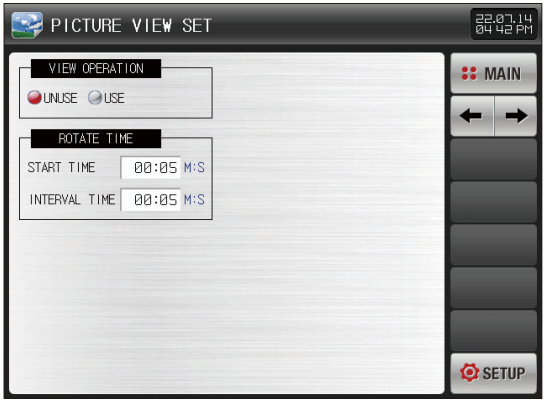
[Fig. 15–1] User screen motion setting

[Fig. 15–2] Photo setting for user screen
the 2nd screen #1

15. User screen

15-1. User screen setting

● When the “User screen setting” is selected in the [Fig. 12–1 System parameter screen], the parameters related in User screen setting can be set.



[Fig. 15–1] User screen motion setting

Instruction	Description
VIEW OPERATION	Setting the Y/N for use of user screen • The user screen is operated when more than 1 photo file is selected in the internal memory.
ROTATE TIME	Setting the motion and conversion time of user screen
START TIME	Motion is started when there is no key input during set time
INTERVAL TIME	The photo saved in set time period is converted.

Parameter	Setting range	Unit	Initial value
VIEW OPERATION	UNUSE, USE	ABS	UNUSE
ROTATE TIME	00.05 ~ 99.59(MIN,SEC)	ABS	00.05
INTERVAL TIME	00.01 ~ 99.59(MIN,SEC)	ABS	00.05

15-2. Setting user screen upload

- It is a screen to show the saved photo file (JPG/BMP/PNG) into the internal memory and SD card.
- SD card without file cannot be selected or uploaded as it is not activated.

[Fig. 15–2] Photo setting for user screen the 2nd screen #1

①	Display photo files stored on SD card • ( ) Upload only selected files to internal memory
②	Among the photo files stored in the internal memory, the photo file whose file name is CS** is displayed.
③	Whether or not to use the user screen, only the selected file is displayed on the user screen
④	Move the number of the currently set user screen image
⑤	Displays the current SD card capacity • Displayed only when an SD card is inserted
⑥	Transfer the saved photo files from the SD card to the internal memory
⑦	Change all parameters to factory default state

Reference

- When the upload button [UPLOAD] is pressed in [Fig. 15–2 Photo setting for user screen the 2nd screen #1], the only selected Photo files on SD card memory is uploaded ( ) to the internal memory.
- The message of "The upload is processing now" is displayed at the lower part of the screen during uploading.

15-3. Operation of user screen

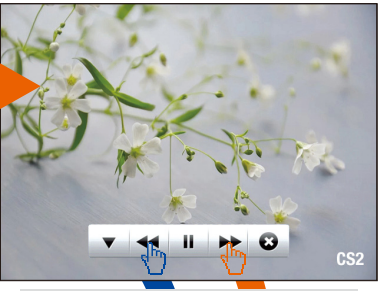
- Maximum 16 photos can be used in user screen.
- It is operated when there is no key action in case of using the user screen.
- The screen is converted and displayed when there are many photos saved in the internal memory.
- ▼ ◀◀ ❚❚ ▶▶ ⊗ is appeared when anywhere is touched on the screen during the process of user screen.

[Fig. 15-6] User screen

①	▼	There is not this ▼ ◀◀ ❚❚ ▶▶ ⊗ button in the user screen
②	◀◀	Move to the previous user screen from the current user screen • When the user screen file is one, it is not operated
③	❚❚	Stop of the user screen for a while
④	▶▶	Move to the previous user screen from the current user screen • When the user screen file is one, it is not operated
⑤	⊗	The user screen is terminated and returned to the operation screen • The user screen is operated again when the time is elapsed

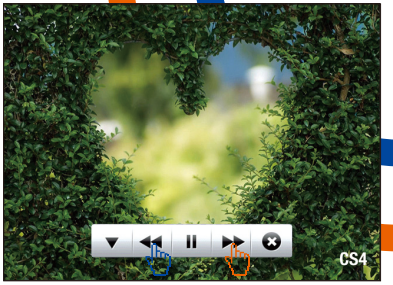
No button in the user screen

Use screen CS01

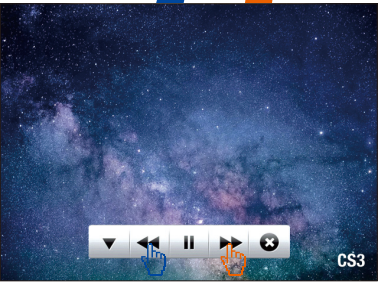


Use screen CS02

The user screen is terminated and returned to the operation screen.



Use screen CS04



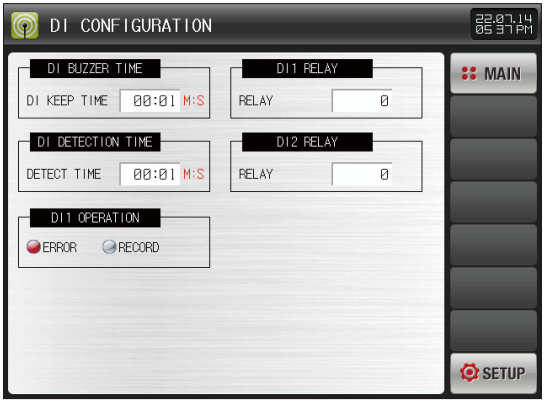
Use screen CS03

Part 16

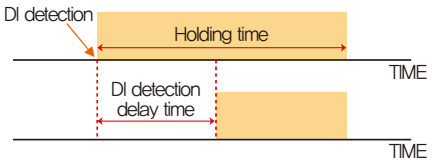
DI function and operation

16. DI function and operation

- When the "DI config and operation" is selected in the [Fig. 12–1 System parameter screen], the parameters related in DI function and operation can be set.
- It can be set when the DI option is selected in product purchasing.
- Please refer to [2–3 Basic operation flow chart]



[Fig. 16–1] DI function and operation setting screen



DI function operation setting

Instruction	Description
BUZZER TIME	The buzzer operating time is set in DI occurrence.
DI DETECTION TIME	Set the DI detection delay time is set.
DI 1 OPERATION	DI1 operation method is set.
ERROR	Buzzer is ringing and recording into the error history
RECORD	Use ON/OFF operation for graph saving
DI 1 RELAY	The relay output in DI1 creation is set.
DI 2 RELAY	The relay output in DI2 creation is set.

Parameter	Setting range	Unit	Initial value
BUZZER TIME	00.00 ~ 99.59(MIN.SEC)	ABS	00.01
DI DETECTION TIME	00.00 ~ 99.59(MIN.SEC)	ABS	00.01
DI1 OPERATION	ERROR, RECORD	ABS	ERROR
DI1 RELAY	0 ~ 12	ABS	0
DI2 RELAY	0 ~ 12	ABS	0

Part 17

Communication environment setting

17. Communication environment setting

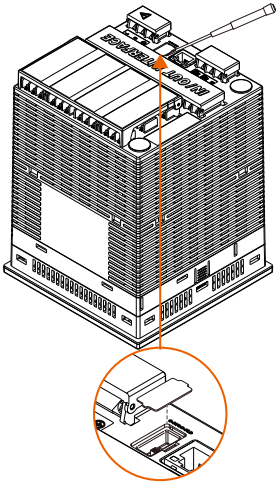
17-1. RS232C/485 Communication setting

- When SDR100E is not selected as Ethernet communication option, the default is RS232C/485 communication.
- It is set as RS232C at factory shipments.
- In case of the followings, shift to RS485 is required.

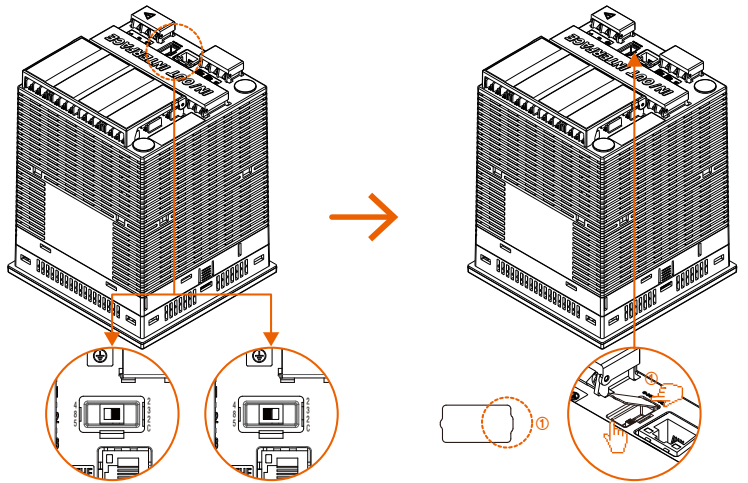
① [Fig. 17–1 SDR100E main body], slide a small flat–head screwdriver into the groove at the bottom of the communication unit cover to remove the cover.

② [Fig. 17–2 Serial communication setting], move the communication switch to "RS485".

③ Lastly, insert the projection (①) on the wide side of the communication cover into the groove on the "RS232C" side and close the cover by pressing the opposite side.



[Fig. 17–1] SDR main body



[Fig. 17–2] Serial communication setting

17-2. Ethernet communication environment setting screen

- This is the screen to set the relevant parameters for Ethernet communication(TCP/IP).
- Ethernet communication is provided as standard.

[Fig. 17-3] Ethernet communication environment setting screen

①	Communication protocol setting
②	Communication port setting
③	IP settings for the network
④	Setting lock action for communication-related COMMAND sending/ receiving • Parameter cannot be changed through communication when set to action
⑤	Message box • When the APPLY button is operated after changing the address, the message "Ethernet address has been modified" is displayed.
⑥	Used to apply the contents after changing Ethernet related parameters • Press the button to display the system restart selection screen Refer to [Fig. 17-6]

Reference

- Serial and Ethernet can be used simultaneously.
- The settings changed in serial/Ethernet communication are applied only after resetting the power of the display unit.

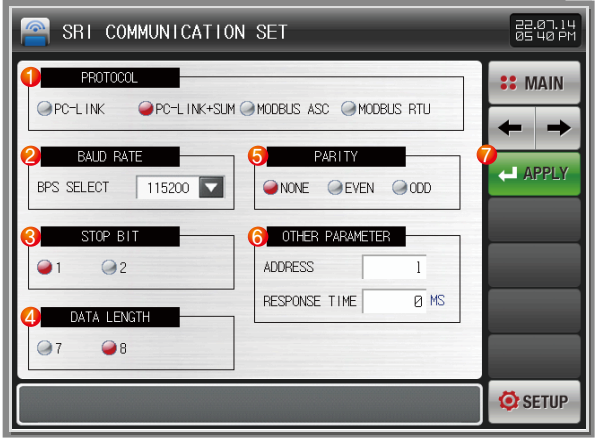
Cautions

- If not pushing APPLY the button after changing network setting, parameter will not be changed.
- After changing the parameter, be sure to turn the power "OFF" → "ON".

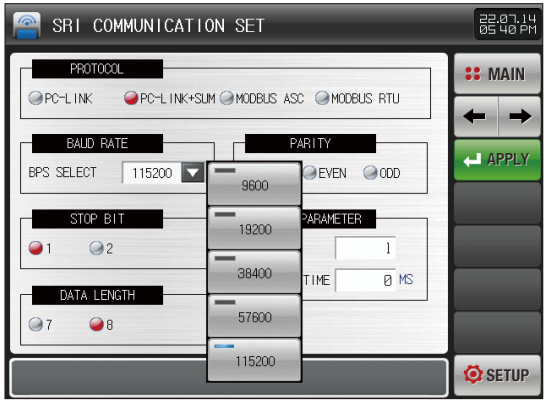
17-3. Serial communication environment setting

- This is the screen where you can set the communication conditions such as communication protocol and speed.

[Fig. 17-4] Communication environment setting screen(RS232C/485)



①	Setting the communication protocol.
②	Setting the communication speed • Refer to [Fig. 17-5]
③	Setting the stop bit
④	Setting the data length • The data length is fixed in 7 when the communication protocol is set in MODBUS ASC. • The data length is fixed in 8 when the communication protocol is set in MODBUS RTU.
⑤	Setting the parity • NONE : No parity • EVEN : Even number parity • ODD : Odd number parity
⑥	Other parameter settings • Communication address : In case of RS485 communication, up to 99 addresses can be assigned differently. • Response time : Set the response time
⑦	Used to apply the contents after changing serial communication settings • Press the button to display the system restart selection screen Refer to [Fig. 17-6]



[Fig. 17-5] Communication speed setting screen in communication environment

[Fig. 17-6] When the Apply button is clicked, the system restart selection screen

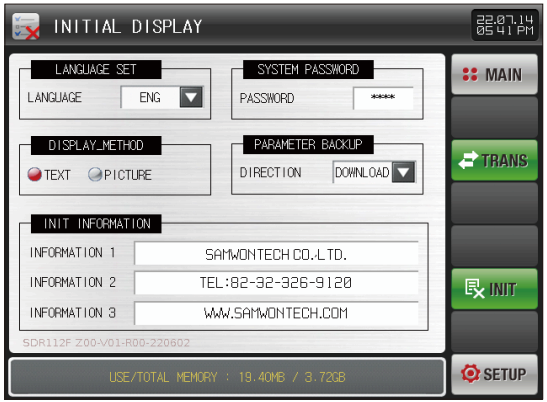
Parameter	Setting range	Unit	Initial value
PROTOCOL	PCLINK, PCLINK+SUM, MODBUS ASC, MODBUS RTU	ABS	PCLINK+SUM
BAUD RATE	9600, 19200, 38400, 57600, 115200	ABS	115200
PARITY	NONE, EVEN, ODD	ABS	NONE
STOP BIT	1, 2	ABS	1
DATA LENGTH	7, 8	ABS	8
ADDRESS	1 ~ 99	ABS	1
RESPONSE TIME	0 ~ 10	ABS	0

Part 18

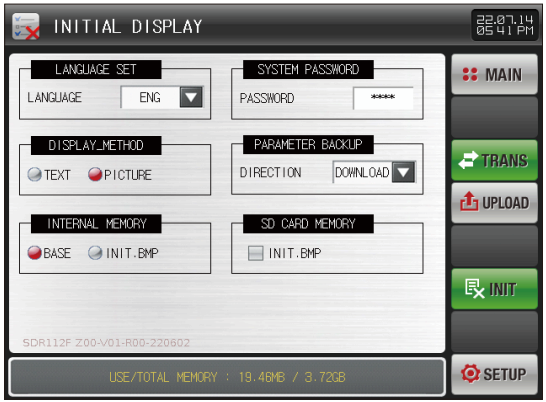
System initial setting

18. System initial setting

- When the “System Initial display setting” is selected in the [Fig. 12–1 System parameter screen], the parameters related in System initial setting can be set.



[Fig. 18–1] The screen set with letter for display method



[Fig. 18–2] The screen set with photo for display method

Symbol	Description
TRANS	Upload and download the parameter backup.
UPLOAD	Upload the INIT(JPG/BMP/PNG) saved in SD card into internal memory.
INIT	Change the every parameter into factory initialization state

[Fig. 18-3] The screen set with letter in power ON

[Fig. 18-4] The screen set with photo in power ON

[Fig. 18-5] Upload the file saved in SD card into internal memory

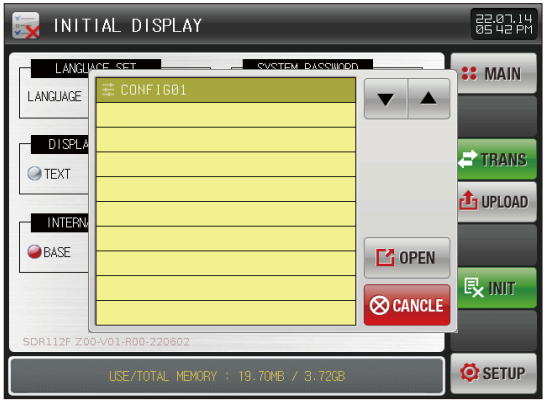
Reference

- INIT.BMP 파일은 SD 카드에 폴더 생성없이 위치하며, INIT.JPG/BMP/PNG 파일로 적용이 가능합니다.

[Fig. 18-6] Screen setting for sending to SD cards (Download)

[Fig. 18-7] File name setting for transmission to SD cards

[Fig. 18-8] Screen setting for sending to SDR100 (Upload)



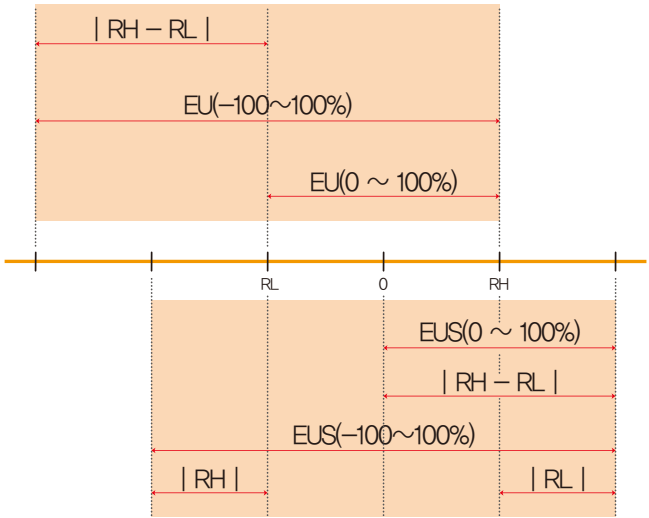
[Fig. 18-9] Screen for parameter file selection to send to SDR100

Instruction	Description
LANGUAGE SET	Setting the language for use
DISPLAY METHOD	Setting the display in initial screen
TEXT	The information set in the initial screen information is displayed in electricity is ON. Refer to [Fig. 18–2]
PICTURE	The screen in the internal memory is displayed in electricity is ON. Refer to [Fig. 18–4]
INIT INFORMATION	The sentence displayed in the initial screen is displayed in power ON. • The information display 1,2,3 sentence can be set and maximum 24 characters input is available. • The setting is available when the display method is set in letter.
SYSTEM PASSWORD	Setting the password used in entering to the system screen • The password was set in '0' in delivery from factory
PARAMETER BACKUP	Setting the data sending direction between SDR100E and SD card
DOWNLOAD	Sending the SDR100E parameter to SD card. Refer to [Fig. 18–5]
UPLOAD	Sending the parameter saved in SD card to SDR. Refer to [Fig. 18–6]
INTERNAL MEMORY	Selection of the photo displayed in the initial screen in power ON
SD CARD MEMORY	Display the Y/N of the INIT(JPG/BMP/PNG) file saved in SD card.

Parameter		Setting range	Unit	Initial value
LANGUAGE SET		ENG, KOR, CHT, CHS, JPN, POL	ABS	ENG
DISPLAY METHOD		TEXT, PICTURE	ABS	TEXT
SYSTEM PASSWORD		0 ~ 9999	ABS	0
PARAMETER BACKUP		DOWNLOAD, UPLOAD	ABS	DOWNLOAD
INIT INFORMATION	INFORMATION1	0~9, A~Z, Special character (Maximum 24 characters)	ABS	SAMWONTECH CO.,LTD.
	INFORMATION2	0~9 A~Z, Special character (Maximum 24 characters)	ABS	TEL : 82–32–326–9120
	INFORMATION3	0~9 A~Z, Special character (Maximum 24 characters)	ABS	HTTP://WWW.SAMWONTECH.COM.
INTERNAL MEMORY		Entire capacity 4GB (About 11 years saving is available for 1 sec of saving period)		

Engineering Units - EU, EUS

- When the sensor type (IN–T) or the upper limit,lower limit of input range is changed, the parameters expressed in EU( ), EUS( ) are changed in proportion to current data. (However, the upper and lower range setting data is initialized.)
- Download the instruction manual and communication manual from the homepage.
- EU( ) : Value of engineering unit depending on the range of instrument
  EUS( ) : Value of engineering unit depending on the span of instrument



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

▶ Range of EU( ) and EUS( )

	Range	Center point
EU(0 ~ 100%)	RL ~ RH	| RH – RL |/2 + RL
EU(–100 ~ 100%)	–(| RH – RL | + | RL |) ~ RH	RL
EUS(0 ~ 100%)	0 ~ | RH – RL |	| RH – RL |/2
EUS(–100 ~ 100%)	– | RH – RL | ~ | RH – RL |	0

(Example)
▶ INPUT = T/C(K2)
▶ RANGE = –200.0℃(RL) ~ 1370.0℃(RH)

	Range	Center point
EU(0 ~ 100%)	– 200.0 ~ 1370.0℃	585.0℃
EU(–100 ~ 100%)	– 1770.0 ~ 1370.0℃	– 200.0℃
EUS(0 ~ 100%)	0 ~ 1570.0℃	785.0℃
EUS(–100 ~ 100%)	– 1570.0 ~ 1570.0℃	0.0℃

Queries related with after sales service for SDR 100E series

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

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

Customer contact for SDR 100E series

Quotation request / Product request
Specification request / Data request/ Other request

■ Internet
www.samwontech.com

■ E-mail
management : webmaster@samwontech.com
sales : sales@samwontech.com

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