SAMWON TECH

SDR100 - SERIES

SDR102, SDR104, SDR106, SDR112

User Manual

Digital Recorder

※ This Manual applies to SDR102, SDR104, SDR106, SDR112.
The model stated the manual content is SDR112.

Contents

1. SAFETY PRECAUTIONS

Thank you for purchasing SDR112, Digital Recorder.
This User Manual describes installing and operating procedures of the SDR112.

Safety Symbol Mark

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

(1) Product : This symbol indicates an imminently hazardous situation which if not avoided, will result in serious injury or system damage.
(2) Operation Manual : This symbol indicates potential hazard that may cause personal injury by electrical shock.

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

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

(C) Symbolizes 'Supplementary Explanation.'

The information with this symbol describes additional explanation for features.

(D) Symbolizes 'Reference.'

☞ This symbol indicates further information and page to refer.

Precautionary Remarks on this User Manual

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

Precautions for Safety and Unauthorized Modification

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

Limitation of Liability

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

Warranty Policy

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

1.1 PACKAGE CHECKPOINT

▶ Please check any damage to the product by inspecting the appearance of the delivered product first. In addition, check the following items.

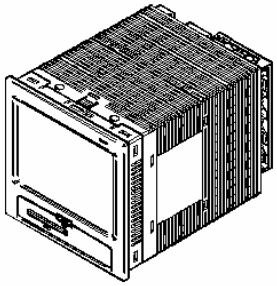
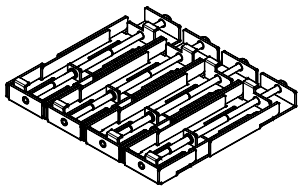
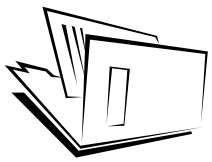
1.1.1 VERIFY THE MODEL SUFFIX CODE

▶ Check to see if specifications of the delivered product are the same as those of your order. Verify model suffix code printed on labels at the right of packing box and the left of product case

Model	Spec Code	Additional Code 1	Additional Code 2	Additional Code 3	Additional Code 4	Description
SDR1□□	02					2 Channel
	04					4 Channel
	06					6 Channel
	12					12 Channel
		- N				Not used
		- C2				RS-232C(Option)
		- C4				RS-485(Option
		- CE				Ethernet(Option)
			N			Not used
			A1			Relay Output 6 point (Option)
			A2			Relay Output 12 point (Option)
				N		Not used
				R1		Remote (DI) Input 2 point (Option)
					/M1	Arithmetic Function
					/P1	Portable Type

1.1.2 HOW TO CHECK COMPONENTS IN THE PACKAGE

▶ Check to see if the following components are included.

SDR100_SERIES Main Body	SD CARD	Fixing Mount(L:2, R:2)	Manual
			

1.1.3 HOW TO HANDLE ANY DAMAGED PRODUCT

▶ Contact your product supplier or our sales representative for assistance in case of any damage to the product or any missing parts as a result of check in the appearance of products as described above.

Exchange Cycle for Parts with Limited Lifetime

▶ Check the exchange cycle of the following parts with limited lifetime and replace them before their exchange cycle if necessary.

■ FUSE	2A/250VAC Equivalent	: Semi-permanent
■ RELAY	ALD105, ALD5V Equivalent	: Under ON/OFF 300,000 Times
■ BATTERY	CR2030 3V Equivalent	: Under 200,000 HOUR

☞ **Contact your product supplier (agents) or our sales representative for the exchange of parts with limited lifetime.**

1.2 DIMENSION AND INSTALLATION

1.2.1 ENVIRONMENTS FOR INSTALLATION

Environmental Precautions

(A) Be sure to power on and operate the product after installation on a panel to prevent electric shock)

(B) Do not install the product at following places or environment.

- ■ Anybody may touch the terminal inadvertently
- ■ Mechanical vibration or shock
- ■ Corrosive gas or combustible gas
- ■ Temperature fluctuation
- ■ Too hot (> 50℃) or Cold (< 10℃)
- ■ Direct rays of light or heat radiation
- ■ Magnetic or electromagnetic noise
- ■ High humidity (> 85%)
- ■ Flammable materials
- ■ Wind blow, Dust with salt
- ■ Ultra violet rays

(C) Do not use sharp material or press with excessive force when operating touch-screen.

(D) Please be careful in handling the product because the product's external case is composed of plastics which is weak to organic solvent (chemical). (Especially be careful not to contact front panel with organic solvent.)

☞ Avoid installing the product in such places with combustible objects upon fire although the case of this product is made from fire retardant materials with ABS/PC.

Precautions before Installation

(A) Keep the product away from possible noise sources.

(B) Keep the product in 10～50℃, 20～90%RH (non condensing) and be careful not to expose heat generating sources.

(C) Do not mount with a position that the front panel facing downward.

(D) Storage should be within -25～70℃, 5～95%RH (non condensing). At a cold condition below 10℃, sufficient warming-up should be preceded by the control operation.

(E) Turn off the main power of the product before wiring to prevent electric shock

(F) The power rating of the product is 100~240VAC, 50/60Hz, 15VAmax. Be sure to use suitable power source to prevent overheating or electric shock.

(G) Do not work with wet hands to prevent electric shock.

(H) The precautions and procedures in the manual should be kept to avoid a hazard such as fire, injury, and electric shock.

(I) Installation and Operation procedures should be done just as in this manual.

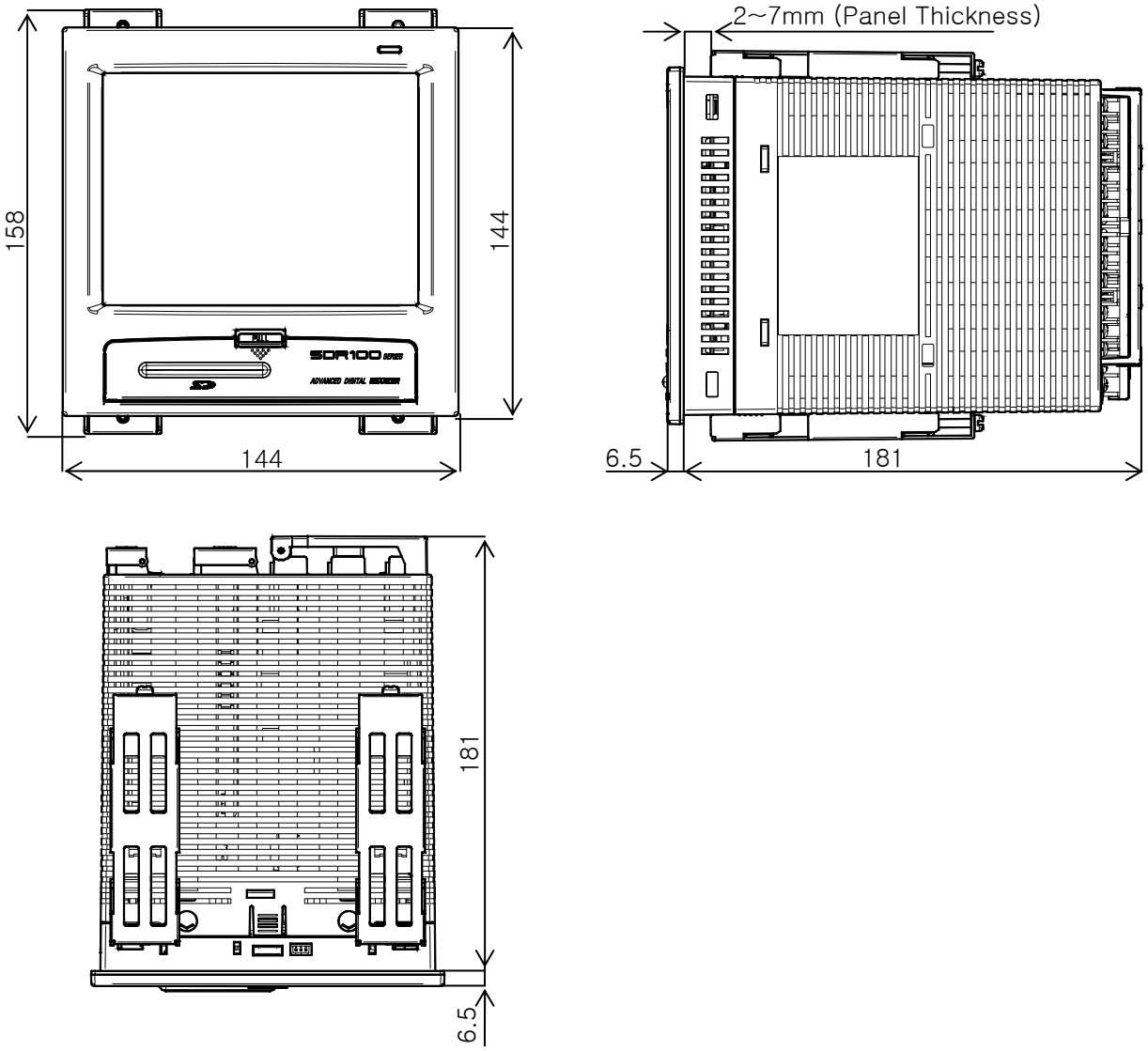
(J) Make the grounding connection according to the way in manual. Do not use a tap water piping, a gas pipe, a telephone line, a lightning rod to avoid possible accidents such as explosion or inflammation.

(K) Do not power on the product before the wiring procedure is not completed..

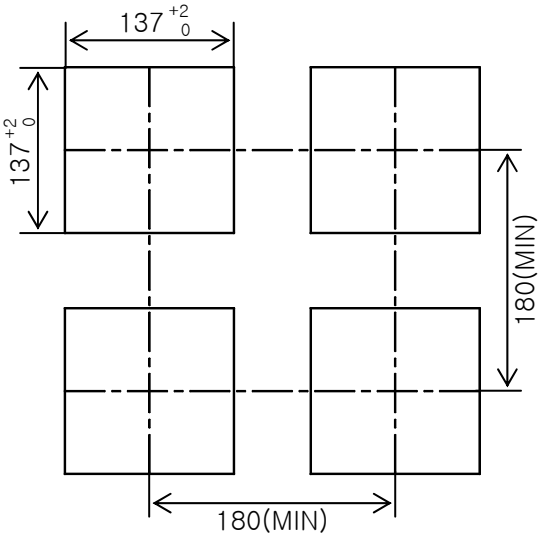
(L) Do not block or wrap the heat vent holes in the case of the product. That may cause a failure.

(M) Over-voltage protection category II and Pollution Degree II are rated for the product.

1.2.2 EXTERNAL DIMENSION (UNIT: mm)

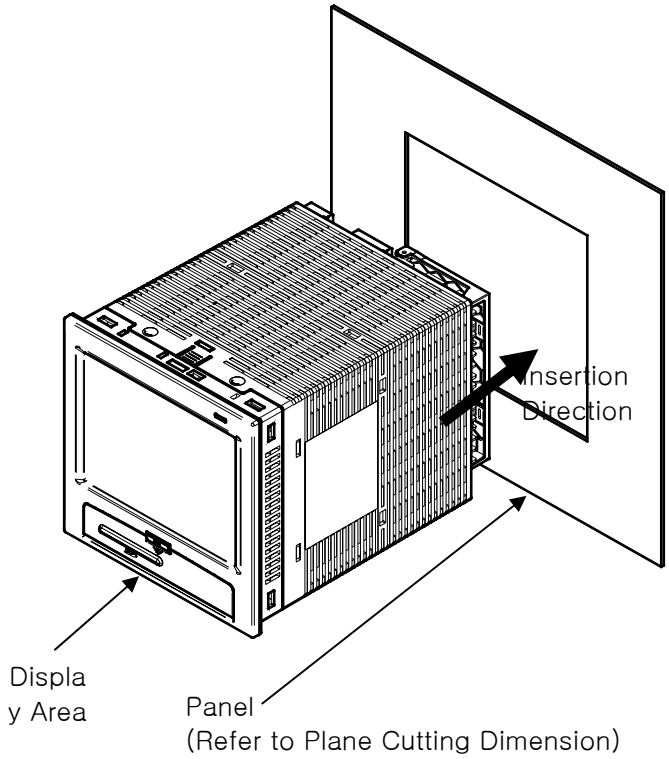


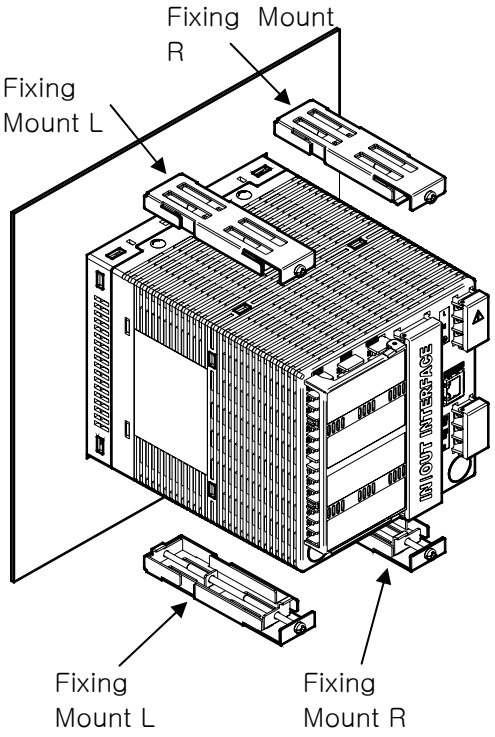
1.2.3 PANEL CUT DIMENSION

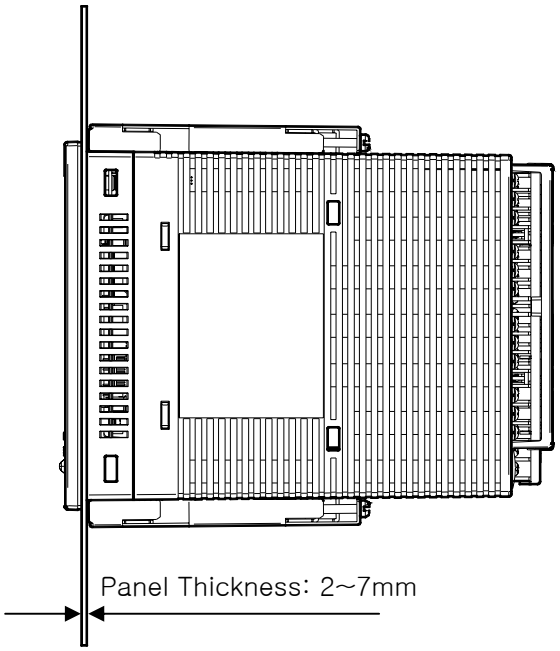


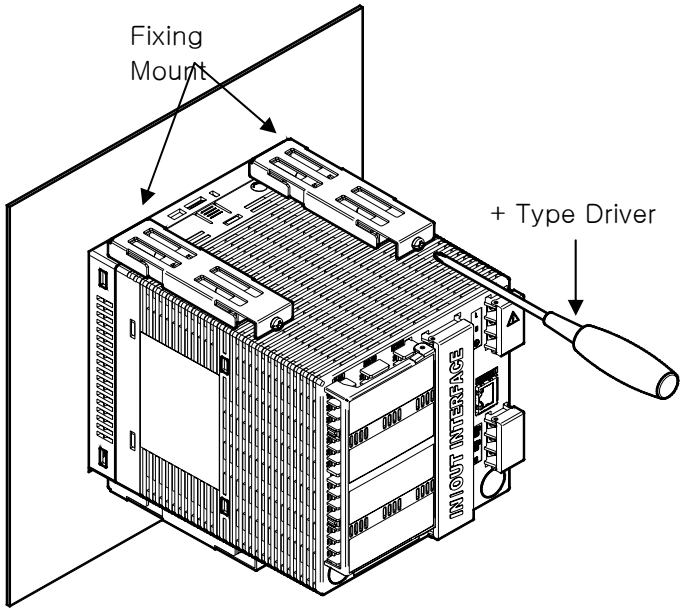
1.2.4 MOUNT INSTALLATION

▶ Product Installation









① Cut the panel according to the table at [1.2.3 Panel Cutouts]
② Put the DISPLAY UNIT into the panel from the back shown as above picture.
③ Tie-up the main body of DISPLAY UNIT on the panel with Fixing Mount shown as above picture.

CAUTION

Case distortion or mount damage may occur when it is too much tightened.
Tighten with under 0.5N·m torque when mounting product to panel.
.

1.3 Wiring

Precaution

CAUTION

- ▶ Switch off the main power supply and make sure that no current flows in all the circuits before the wiring work.
- ▶ Do not touch the real terminal part while the power is on.
- ▶ Main circuit breaker must be kept in OFF state until all the wiring work is done.

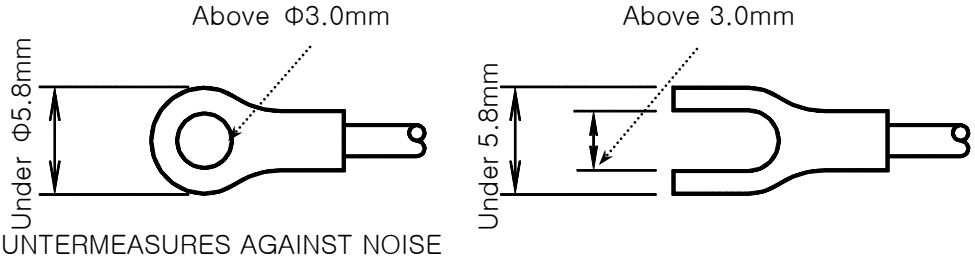
1.3.1 WIRING SPECIFICATION

1.3.1.1 POWER CABLE SPECIFICATION

- ▶ Vinyl insulated shielding cable KSC3304 0.9 ~ 2.0mm^2

1.3.1.2 TERMINAL CONNECTOR SPECIFICATION

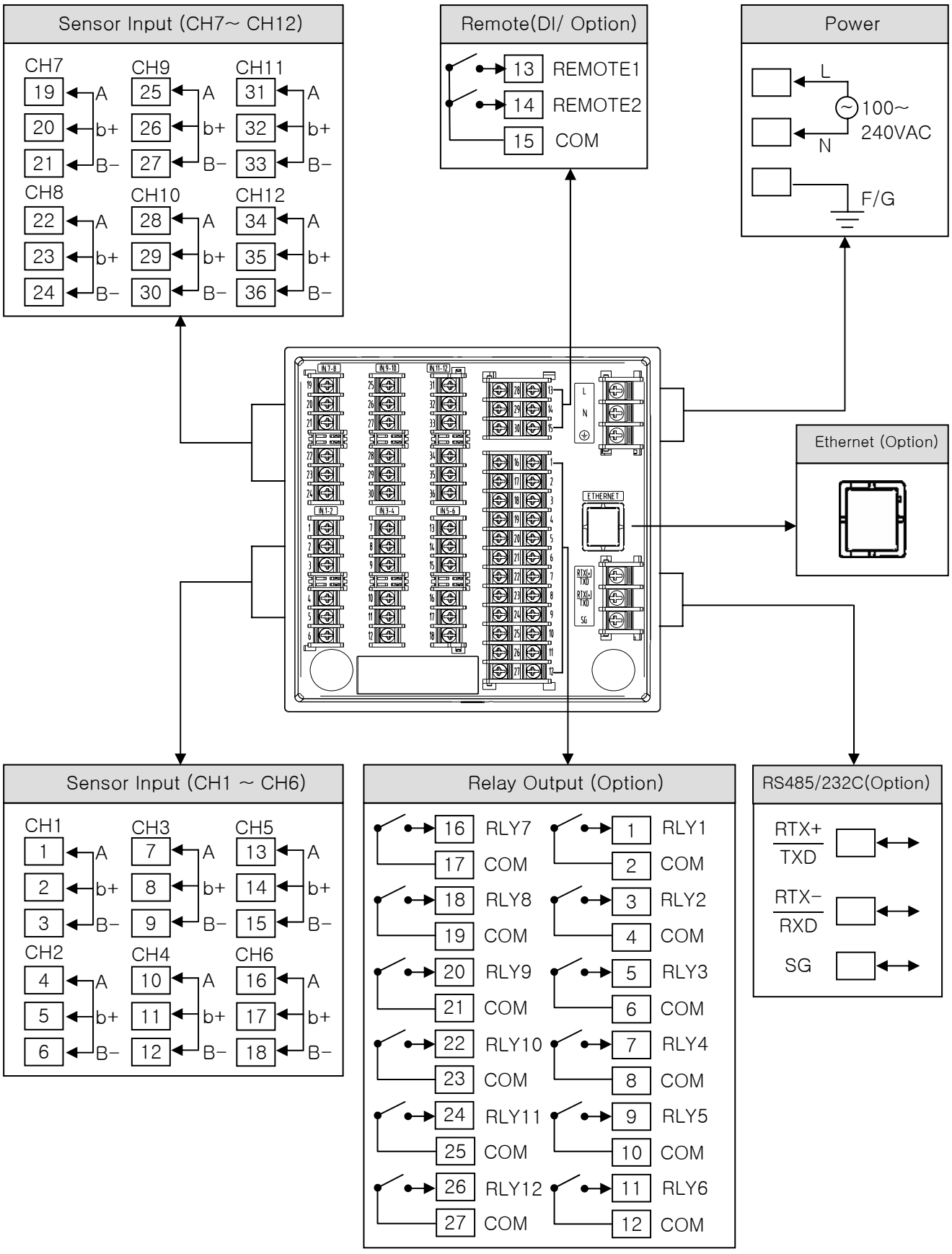
- ▶ A terminal with PVC insulating sleeve for M3 screw as shown in the following figure.



1.3.1.3 COUNTERMEASURES AGAINST NOISE

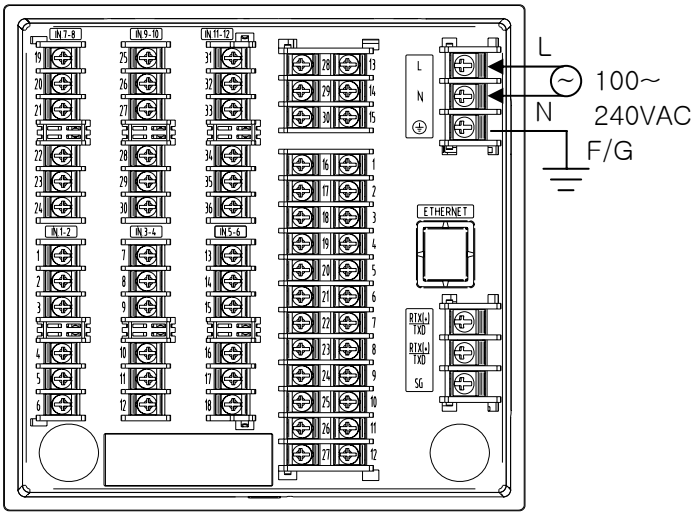
- ▶ Noise source
  - (1) Relay and Electrical contacts
    Solenoid Coil, Solenoid Valve
  - (2) Power Line
  - (3) Inductive Load
  - (4) Inverter
  - (5) Rectifier of a Motor
  - (6) Phase-angle controlled SCR
  - (7) Wireless communication devices
  - (8) Welding Machine
  - (9) High-tension magneto-Ignition system
- ▶ Countermeasures against noise
  Notice following guide while wiring work.
  - (1) The wires of input signal should be apart from power line and grounding line.
  - (2) Use a shielded wire to guard against a noise from electrostatic induction. Multi-point grounding should be avoided and connect the shield wire to ground terminal if necessary.
  - (3) It is effective to make the input wires as a twisted pair to prevent an electromagnetic noise.

1.3.2 TERMINAL ASSIGNMENT



1.3.3 POWER SOURCE WIRING

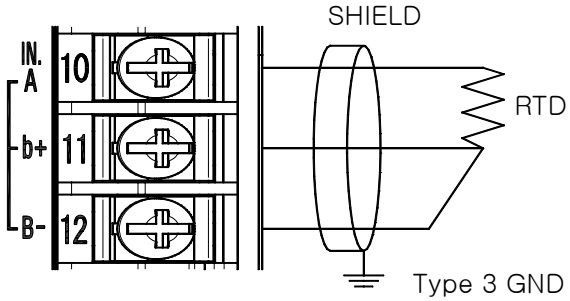
- ▶ For power source wiring, use a vinyl-insulated wire (KSC 3304 or better).
- ▶ Use more than 2mm^2 thickness cable, and higher than Type 3 Grounding (under 100Ω ground resistance) for grounding.
- ▶ Make 1 point ground from ground terminal, and avoid wiring over ground terminal.



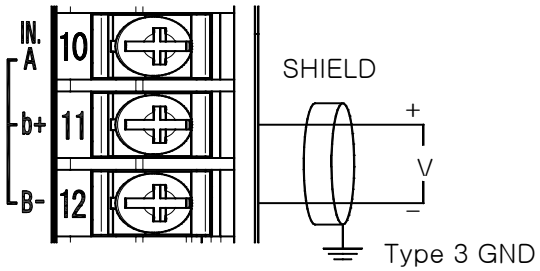
1.3.4 ANALOG INPUT WIRING

- ▶ SDR112 main power and external power supply should be turned off during remote input wiring since there is danger of electric shock.
- ▶ Use shielded cable for input wiring. Also, make 1-point grounding for the shield.
- ▶ Signal line of Analog Input wiring should have gap from power line or ground line.
- ▶ Use cable with low resistance and have no resistance difference between 3 wires.

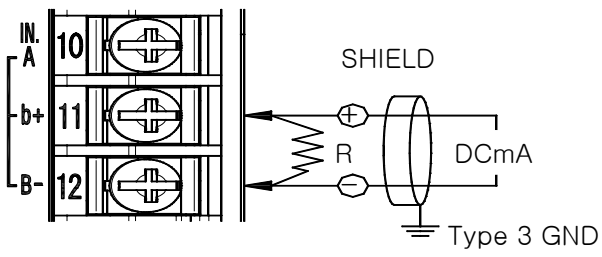
(A) RESISTANCE TEMPERATURE DETECTOR INPUT (RTD INPUT)



(B) DC VOLTAGE INPUT



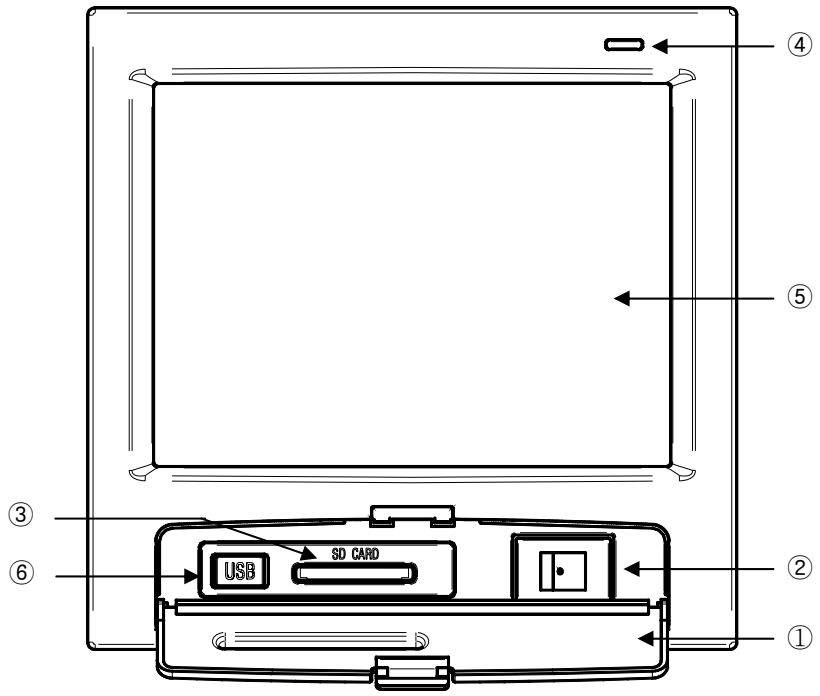
(C) DC CURRENT INPUT



2. OPERATION AND SETUP

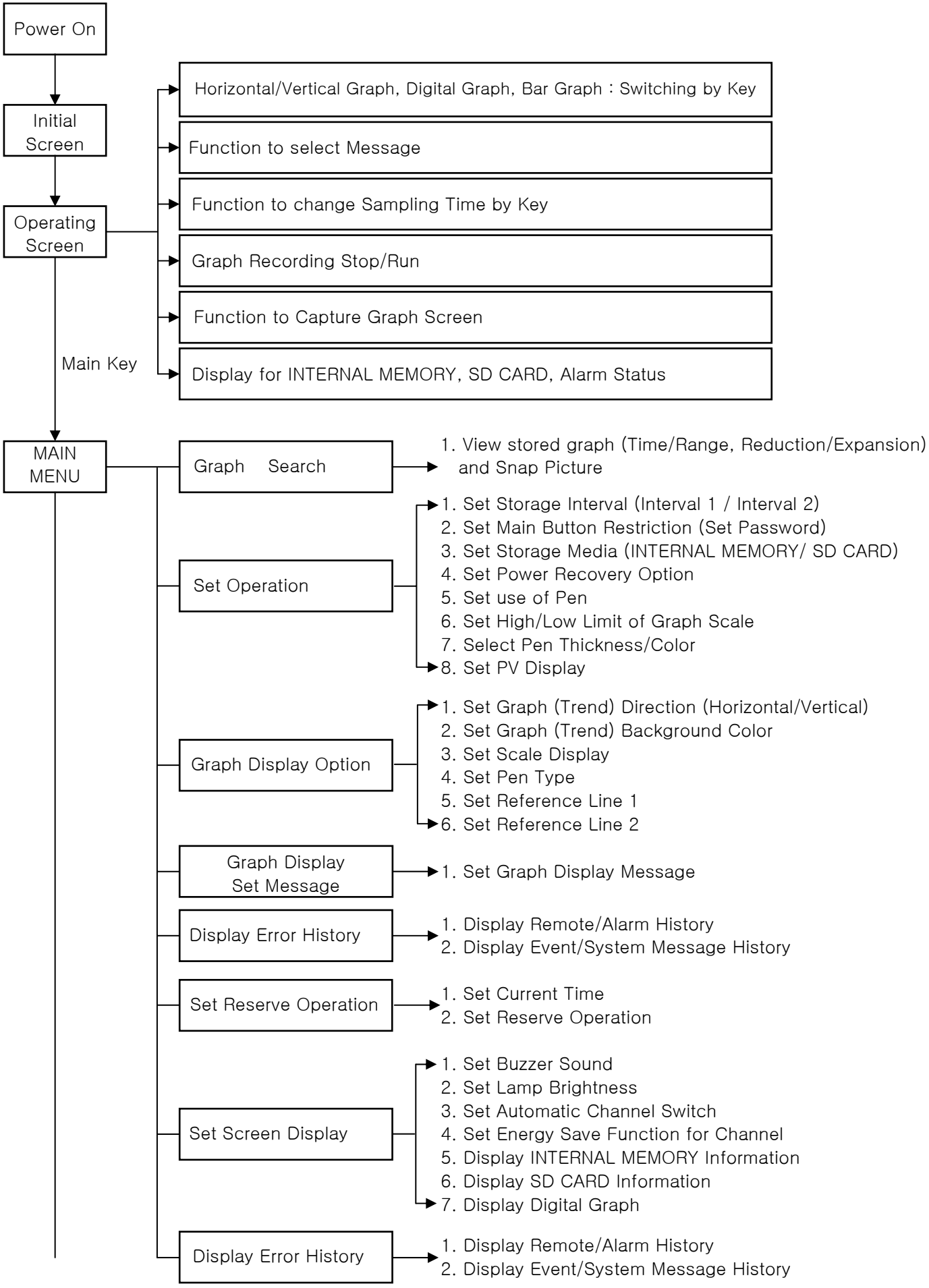
▶ This product is Digital Recorder designed with Touch Screen interactive display for convenience of the customer.

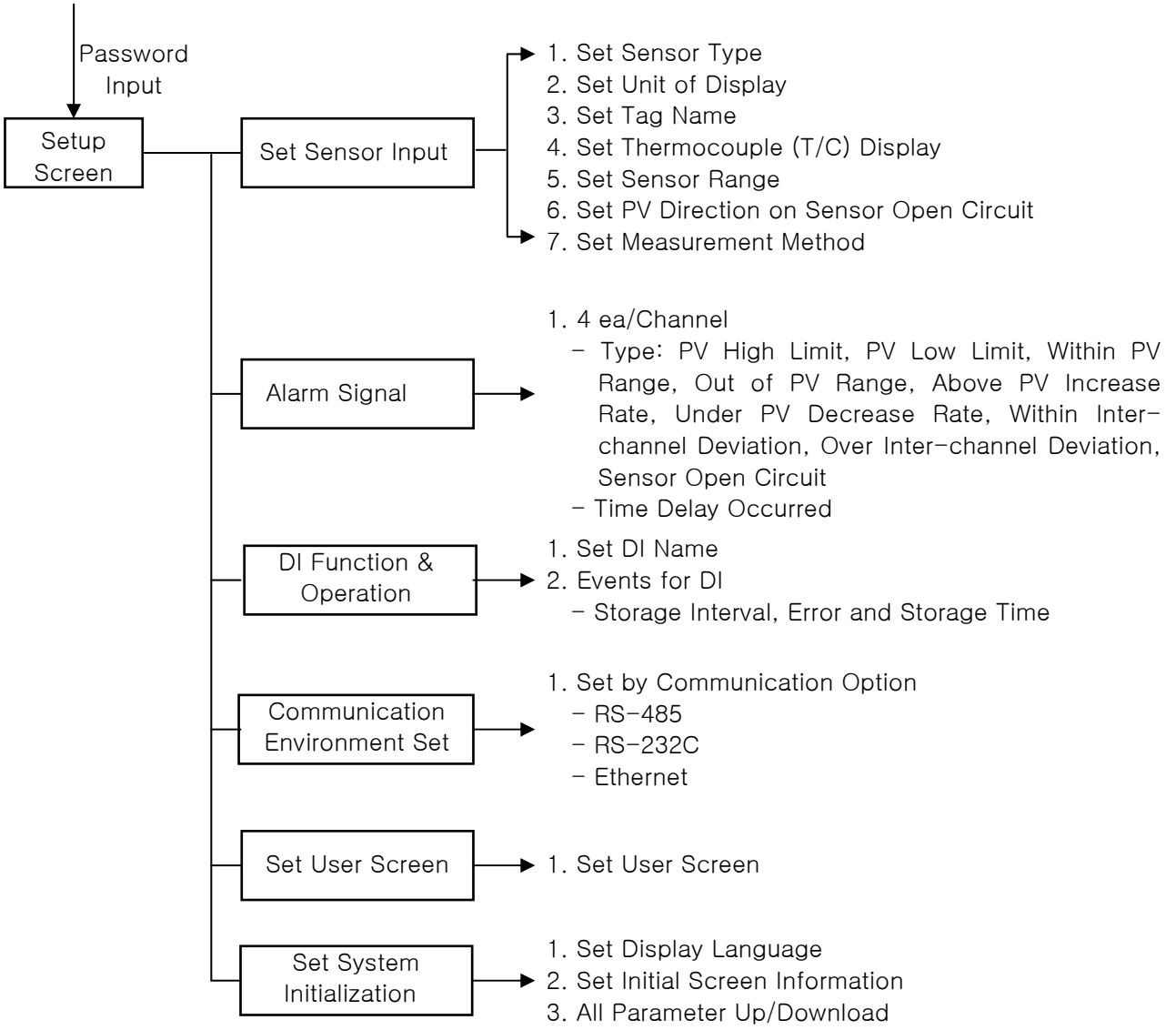
2.1 FUNCTION AND NAME OF DISPLAY PART



① Cover (Power Switch, SD CARD Port, Mini USB Ports appears when open the cover.)
② SDR112 Power Switch
③ SD CARD Port
④ Lamp (Turning on yellow lamp when supplying power.)
⑤ Screed Display Area
⑥ MINI USB(For A/S: Not available for user)

2.2 MENU FLOW CHART




Password Input
Setup Screen
Set Sensor Input
1. Set Sensor Type
2. Set Unit of Display
3. Set Tag Name
4. Set Thermocouple (T/C) Display
5. Set Sensor Range
6. Set PV Direction on Sensor Open Circuit
7. Set Measurement Method
Alarm Signal
1. 4 ea/Channel
- Type: PV High Limit, PV Low Limit, Within PV Range, Out of PV Range, Above PV Increase Rate, Under PV Decrease Rate, Within Inter-channel Deviation, Over Inter-channel Deviation, Sensor Open Circuit
- Time Delay Occurred
DI Function & Operation
1. Set DI Name
2. Events for DI
- Storage Interval, Error and Storage Time
Communication Environment Set
1. Set by Communication Option
- RS-485
- RS-232C
- Ethernet
Set User Screen
1. Set User Screen
Set System Initialization
1. Set Display Language
2. Set Initial Screen Information
3. All Parameter Up/Download

2.3 INITIAL OPERATION FLOW

▶ Supplying the power after completing installation correctly, loading screen will appear for loading time then Initial Logo screen will be displayed. The screen will automatically progress to the Recording Stop screen

☞ It takes around 18 seconds for loading.

▶ MENU BAR is displayed when pressing button at the top right hand corner on Graph Recording Stop Screen, and screen switches to MAIN MENU when pressing (MAIN) button.

▶ Initial screen can be changed as user want. Refer to the [System Initialize Set] for how to change initial Screen

<LOADING SCREEN>

<INITIAL SCREEN>

<RECORDING STOP SCREEN>

<SYSTEM PARAMETER SET SCREEN>

<PASSWORD ENTER SCREEN>

<MAIN MENU SCREEN>

< SYSTEM PARAMETER SET SCREEN WITHOUT DI OPTION>

< SYSTEM PARAMETER SET SCREEN WITHOUT COMMUNICATION OPTION>

< SYSTEM PARAMETER SET SCREEN WITHOUT DI/ COMMUNICATION OPTION>

2.4 SETTING BUTTONS

▶ [Table2-1] describes BASIC SETTING BUTTONS.

Table 2-1. BASIC SETTING BUTTONS

Button Type	Description
	Button to set general numerical and alphabetical value.
	Button to set on multiple options.
	Button to select on of several modes or options. (ON / OFF / INACTIVE)
	Button to set whether or not to use each parameter. (ON / OFF / INACTIVE)
	Screen move button to move to the next / previous Screen in the same group.
	Page move button to move to the next / previous Page in the same screen.

2.5 PARAMETER SETTING

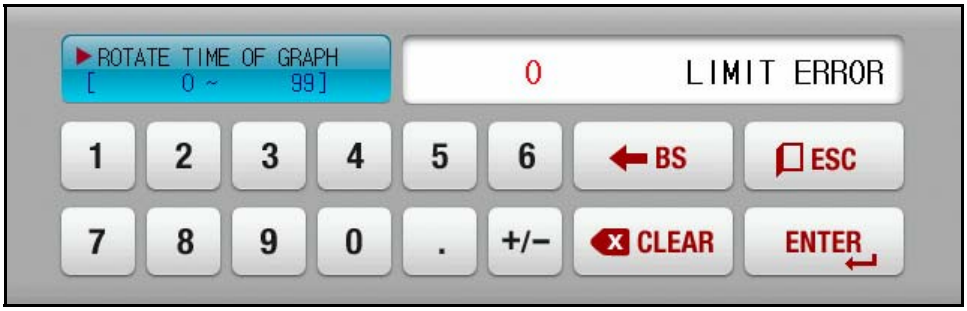
▶ When you pressing the [ ] button, the following Input Keypad appears and the required data value can be set by using this Input Keypad.

▶ If the setting value is out of the available range, 'LIMIT ERROR' message will appear with a 'BEEP' sound and input will be rejected.

① Numeric keypad to input numerical values

② Alpha- numeric keypad to input PASSWORD

③ LIMIT ERROR message when out of available rage



④ Alpha- numeric keypad to input PATTERN NME or MESSAGE

3. OPERATION SETTING

3.1 MAIN MENU SCREEN

[Fig. 3-1] MAIN MENU

Number	Indication	Description
①	GRAPH RECORD	Move to STOP/RECORD SCREEN
②	GRAPH SEARCH	Move to DATA (GRAPH) SEARCH SCREEN stored to INTERNAL MEMORY/SD CARD.
③	FUNCTION SET	Move to FUNCTION AND OPERATION TYPE SET SCREEN
④	GRAPH OPTION	Move to GRAPH DISPLAY OPTION (GRAPH RECORD & SEARCH) SCREEN.
⑤	CANNED MESSAGE	Move to MESSAGE SETUP SCREEN.
⑥	RESERVE SET	Move to CURRENT TIME & RESERVE OPERATION SET (START/END) SCREEN.
⑦	DISPLAY SET	Move to DISPLAY SET and INTERNAL MEMORY/SD CARD CAPACITY DISPLAY SCREEN
⑧	ERROR HISTORY	Move to ERROR AND EVENT HISTORY related screen.
⑨, ⑩	HIDDEN KEY	Move to SYSTEM PARAMETER SET SCREEN

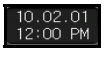
3.2 GRAPH RECORD SCREEN

3.2.1 GRAPH RECORD STOP SCREEN

- ▶ Press “GRAPH RECORD” on [3.1 MAIN MENU] screen to enter into this screen, and “GRAPH RECORD STOP SCREEN” will be displayed
- ▶ All buttons do not operate during screen capture.

[Fig. 3-2] GRAPH RECORD STOP SCREEN-1

[Fig. 3-3] GRAPH RECORD STOP SCREEN -2

Symbol	Description	Symbol	Description
	Screen capture button that user wants to capture.		Icon indication during captured screen storage.
	Icon to indicate INTERNAL MEMORY Capacity.		Icon to indicate that there is no space in INTERNAL MEMORY.
	Icon to indicate SD CARD capacity		Icon to indicate that SD CARD is not inserted or not recognized.
	Menu bar on/off button at the top of graph.		
	Button to switch from 1 ~ 6 CH. SCREEN to 7 ~ 12 CH. SCREEN. (Displayed only at SDR112)		
	This icon blinks during recording.		
	The light rotates clockwise when ALARM is generated.		
	Display current time and date. Touching this area will switch to BACKLIGHT SAVE MODE, and yellow lamp is on at the top of product. (Red : Record stop state, Yellow : Recording state)		

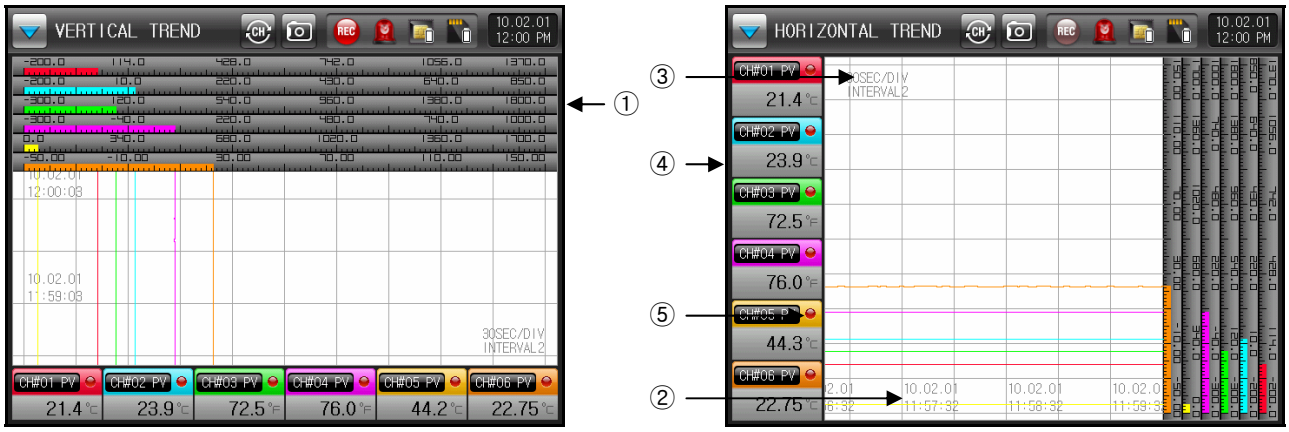
Symbol	Description
	Pressing MAIN button will switch to [Fig. 3-1 MAIN MENU].
	Switch to BAR GRAPH SCREEN from TREND SCREEN.
	Switch to DIGITAL SCREEN from TREND SCREEN.
	Can enter message or display setup message when pressing MESSAGE button.
	Pressing STORAGE INTERVAL button will switch INTERVAL 1 → INTERVAL 2 or INTERVAL 2→ INTERVAL 1.
	Pressing RECORD button will start storage according to storage media setup of [OPERATION SET].

3.2.2 GRAPH RECORD OPERATION SCREEN

- ▶ Operation screen is consisted of 4 screens.
- ▶ Each channel is indicated with specific color.
- ▶ Can set the name of each channel.

3.2.2.1 TREND RECORD SCREEN

- ▶ Background color of TREND (Vertical/Horizontal) RECORD SCREEN can be either black or white.
- ▶ Error and event history message are displayed only at TREND (VERTICAL/HORIZONTAL) RECORD STOP and RECORDING SCREEN.
- ▶ When ALARM is generated, measured value of that channel becomes red color, and the light rotates to clockwise direction.

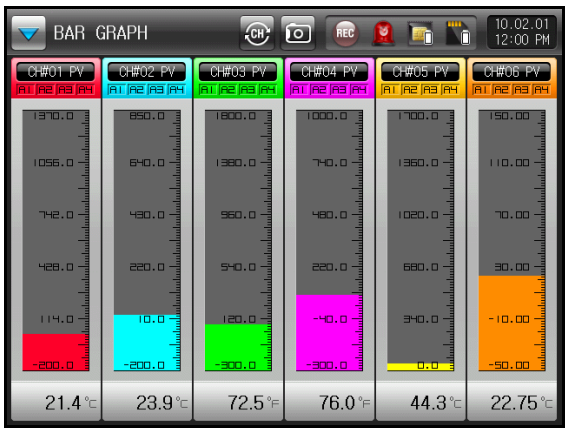


[Fig. 3-4] TREND (VERTICAL/HORIZONTAL) SCREEN

No.	Description
①	Display current PV to scale bar, and can set PV DISPLAY as TAG or BAR at [Operation Set].
②	Display TIME (DATE/TIME) that corresponds to current time frame.
③	[1MIN/DIV] indicates the period (minute) per scale (division) at time frame of screen.
④	Indicates CH No., unit, measured value for each channel.
⑤	Pressing ☑(Check Box) of each channel toggles the display of the corresponding Channel.

- ▶ This is DIGITAL and BAR RECORD SCREEN.

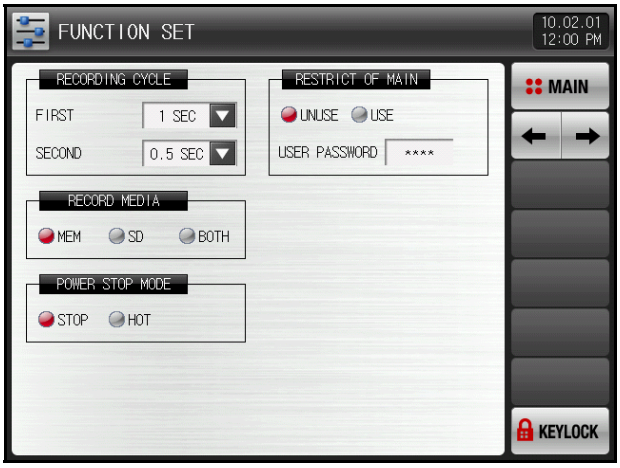
[Fig. 3-5] DIGITAL DISPLAY SCREEN



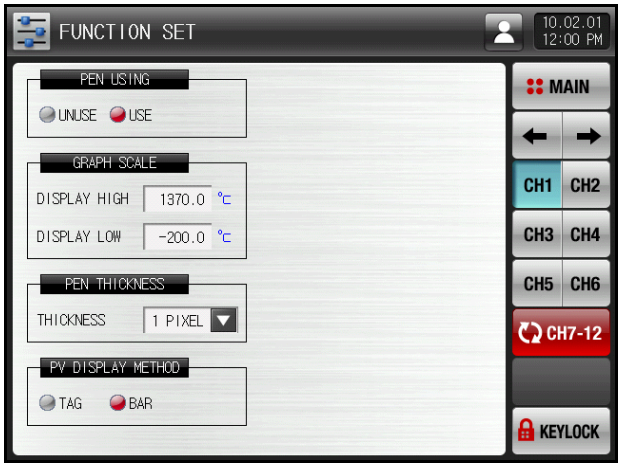
[Fig. 3-6] BAR GRAPH SCREEN

4. FUNCTION SET

▶ This screen is to set additional functions of the product.



[Fig. 4-1] RECORDING METHOD SET SCREEN-1



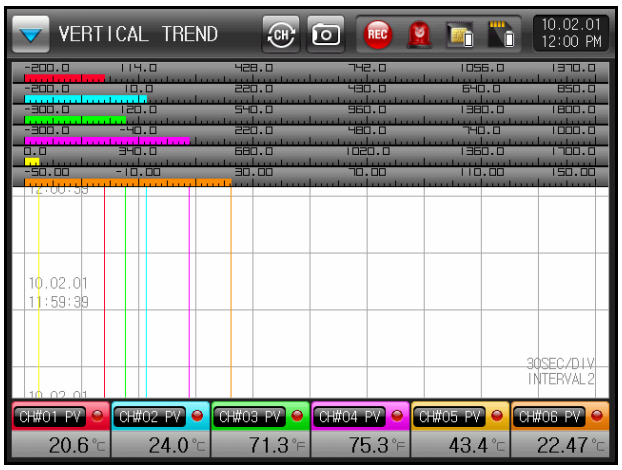
[Fig.4-2] RECORDING METHOD SET

Symbol	Description
← →	Switch from current screen to next screen.
KEYLOCK	Set all parameters as KEY LOCK.
☞ It is able to release the state of Screen Switch and Key Lock.	
CH1 CH2	Move to corresponding channel during PARAMETER SETUP.
CH7-12	Switch to CH. 7 ~ 12 group.
	Change current selected channel parameter. / Apply the parameter to all channels.

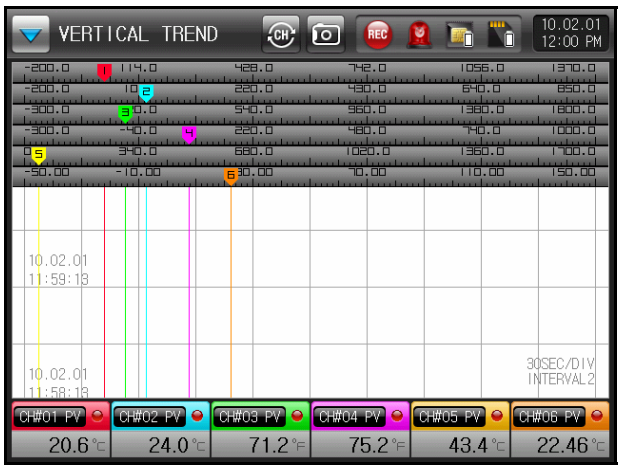
Instruction	Description	Remark
RECORDING CYCLE	Set RECORDING CYCLE.	
FIRST	RECORDING CYCLE corresponding to INTERVAL 1 at recording screen.	
SECOND	RECORDING CYCLE corresponding to INTERVAL 2 at recording screen.	
☞	Changed by RECORDING CYCLE key from recording screen or REMOTE2 operation.	
RECORD MEDIA	Set RECORD MEDIA according to RECORD button.	
MEM	Store record data to INTERNAL MEMORY.	
SD	Store record data to SD CARD.	
BOTH	Store record data to INTERNAL MEMORY and SD CARD.	
POWER STOP MODE	Set recovery action from power outage.	
STOP	Stop storage action.	
HOT	Store to new file.	

	☞ Store record to history and display message to graph when recovering from power outage.	
RESTRICT OF MAIN	When set to MAIN BUTTON RESTRICTION, keypad to enter password appears when pressing MAIN button at FUNCTION SET SCREEN.	Refer to [Fig. 4-5]
PEN USING	Set whether to use PEN (PV GRAPH DISPLAY) at recording screen.	
	☞ It is not displayed and stored to recording screen when PEN USING is set to UNUSE.	
GRAPH SCALE	Set high/low limit value of scale bar in recording screen.	
PEN THICKNESS	Set PEN (PV GRAPH DISPLAY) thickness.	
	☞ Set current line thickness to 1 pixel or 3 pixels.	
PV DISPLAY METHOD	Set PV DISPLAY indicated to scale bar of recording screen.	
TAG	Display scale bar as TAG shape.	Refer to [Fig. 4-4]
BAR	Display scale bar as BAR shape.	Refer to [Fig. 4-3]

▶ Followings are the PV DISPLAY TYPE SCREEN.



[Fig. 4-3] PV DISPLAY TYPE SET SCREEN (BAR)



[Fig. 4-4] PV DISPLAY TYPE SET SCREEN (TAG)

▶ Following screen shows the MAIN BUTTON RESTRICTION SET SCREEN.
▶ Password setup keypad is displayed when pressing MAIN button from recording screen.

[Fig. 4-5] MAIN BUTTON RESTRICTION SET SCREEN

Table 4-1. Function Set Parameter

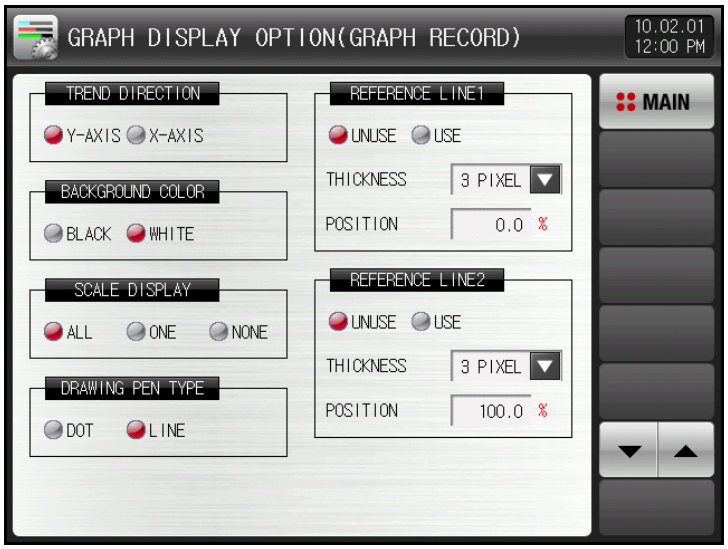
Parameter	Set Range	Unit	Default Value
FIRST SAMPLING CYCLE	0.5Sec, 1Sec, 2Sec, 5Sec, 10Sec, 20Sec, 30Sec, 1Min	ABS	1sec
SECOND SAMPLING CYCLE	0.5Sec, 1Sec, 2Sec, 5Sec, 10Sec, 20Sec, 30Sec, 1Min	ABS	0.5sec
STORAGE MEDIA	MEM, SD, BOTH	ABS	MEM
RECOVERY FROM POWER OUTAGE	STOP, HOT	ABS	STOP
MAIN BUTTON RESTRICTION	UNUSE, USE	ABS	UNUSE
MAIN BUTTON PASSWORD SET	0 ~ 9999	ABS	0
CH#n PEN SET	UNUSE, USE	ABS	USE
CH#n GRAPH SCREEN HIGH LIMIT	CH#n.EU(-5.0 ~ 105.0%) CH#n.DISPLAY < CH#n.DISPLAY	CH#n.EU	CH#n.EU(100%)
CH#n GRAPH SCREEN LOW LIMIT		CH#n.EU	CH#n.EU(0%)
CH#n PEN THICKNESS SET	1 PIXEL, 3 PIXEL	ABS	1 PIXEL
CH#n PV SCREEN SET	TAG, BAR	ABS	TAG

#n : CH1 ~ 12

5. GRAPH OPTION

5.1 GRAPH DISPLAY OPTION (GRAPH RECORD OPTION)

▶ It is the screen to set parameter that is applied to GRAPH RECORD SCREEN.

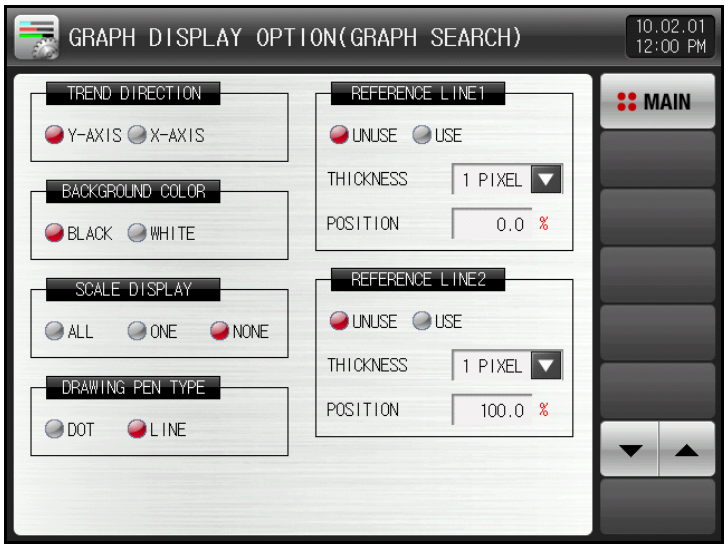


[Fig. 5-1] GRAPH DISPLAY OPTION SCREEN (GRAPH RECORD)

Instruction	Description	Remark
TREND DIRECTION	Set TREND DIRECTION of record screen.	
Y-AXIS	Display TREND RECORD SCREEN DIRECTION to Y-AXIS.	Refer to [Fig. 4-3]
X-AXIS	Display TREND RECORD SCREEN DIRECTION to X-AXIS.	Refer to [Fig. 4-4]
BACKGROUND COLOR	Set background color of TREND RECORD SCREEN.	
BLACK	Display background of TREND RECORD SCREEN as black.	Refer to [Fig. 4-3]
WHITE	Display background of TREND RECORD SCREEN as white.	Refer to [Fig. 4-4]
SCALE DISPLAY	Set whether to use SCALE DISPLAY.	
ALL	Display SCALE BAR and SCALE RANGE by channel.	
ONE	Display SCALE BAR and SCALE RANGE of CHANNEL 1.	
NONE	Both SCALE BAR and SCALE RANGE are not displayed.	
☞	When set to “ONE”, all operates as “TAG” regardless of each channel “PV DISPLAY” set value.	
DRAWING PEN TYPE	Set PV GRAPH DISPLAY TYPE.	
DOT	DOT type data recording.	
LINE	LINE type data recording.	
REFERENCE LINE1 REFERENCE LINE2	Set REFERENCE LINE display and position of left end, right end, top end, bottom end of GRAPH(VERTICAL/HORIZONTAL) GRAPH.	Refer to [Fig. 5-3]

5.2 GRAPH DISPLAY OPTION (GRAPH SEARCH SCREEN)

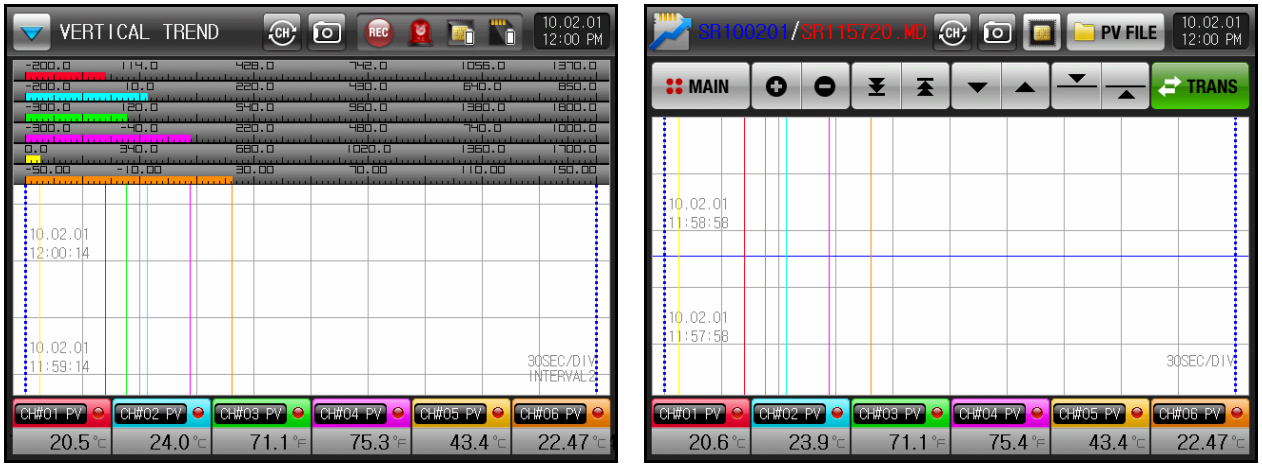
▶ It is the screen to set parameter that is applied to GRAPH SEARCH SCREEN.



[Fig. 5-2] GRAPH DISPLAY OPTION SCREEN (GRAPH SEARCH)

Instruction	Description	Remark
TREND DIRECTION	Set direction of TREND SEARCH SCREEN.	
Y-AXIS	Display TREND SEARCH SCREEN direction to Y-AXIS.	
X-AXIS	Display TREND SEARCH SCREEN direction to X-AXIS.	
BACKGROUND COLOR	Set background color of TREND SEARCH SCREEN.	
BLACK	Display background of TREND SEARCH SCREEN as black.	
WHITE	Display background of TREND SEARCH SCREEN as white.	
SCALE DISPLAY	Set whether to use SCALE BAR DISPLAY.	
ALL	Display SCALE BAR and SCALE RANGE by channel.	
ONE	Display only one SCALE BAR, and SCALE RANGE is not displayed.	
NONE	Both SCALE BAR and SCALE RANGE are not displayed.	
☞	When set to “ONE”, all operates as “TAG” regardless of each channel “PV DISPLAY” set value.	
DRAWING PEN TYPE	Set PV GRAPH DISPLAY TYPE.	
DOT	DOT type data recording.	
LINE	LINE type data recording.	
REFERENCE LINE1 REFERENCE LINE2	Set REFERENCE LINE DISPLAY and position of left end, right end, top end, bottom end of TREND (VERTICAL/HORIZONTAL) GRAPH.	Refer to [Fig. 5-3]

▶ Followings are the RECORD AND SEARCH SCREEN with REFERENCE LINE 1, 2.



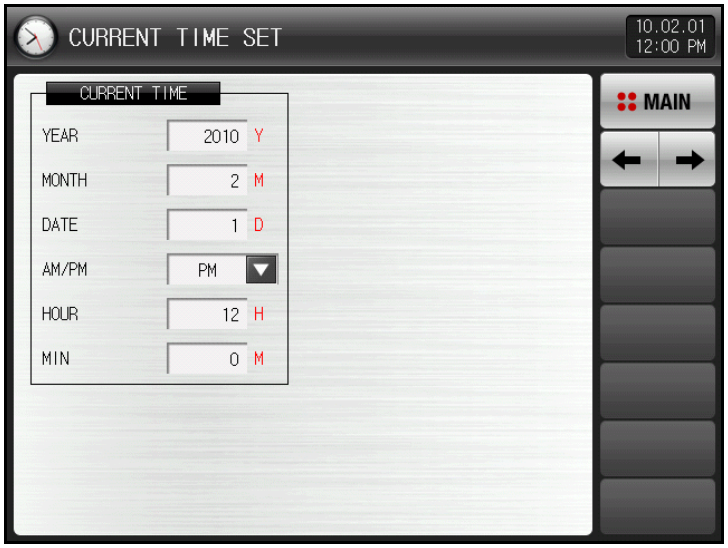
[Fig. 5-3] RECORD AND SEARCH SCREEN (REFERENCE LINE 1, 2)

Table 5-1. GRAPH OPTION (RECORD & SEARCH) SET PARAMETER

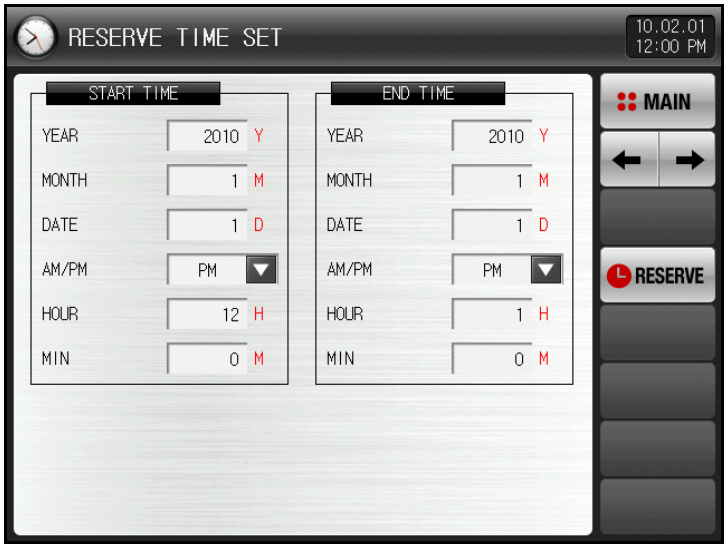
Parameter	Set Range	Unit	Default Value
GRAPH DIRECTION	Y-AXIS, X-AXIS	ABS	Y-AXIS
GRAPH BACKGROUND	BLACK, WHITE	ABS	BLACK
SCALE DISPLAY	ALL, ONE, NONE	ABS	ALL
PEN TYPE	DOT, LINE	ABS	LINE
SET REFERENCE LINE 1	UNUSE, USE	ABS	UNUSE
SET REFERENCE LINE 1 THICKNESS	1 PIXEL, 3 PIXEL	ABS	1 PIXEL
SET REFERENCE LINE 1 POSITION	0.0 ~ 100%	%	0.0
SET REFERENCE LINE 2	UNUSE, USE	ABS	UNUSE
SET REFERENCE LINE 2 THICKNESS	1 PIXEL, 3 PIXEL	ABS	1 PIXEL
SET REFERENCE LINE 2 POSITION	0.0 ~ 100%	%	100.0

6. SET RESERVE OPERATION

- ▶ Able to set CURRENT TIME and RESERVE TIME (START/END).
- ▶ RESERVE TIME can not be changed during RESERVE Operation.
- ▶ It does not operate if START TIME is earlier than CURRENT TIME.
- ▶ END TIME does not operate if it is earlier than START TIME.
- ▶ END TIME is applied even when RECOVERY FROM POWER OUTAGE is set to CONTINUOUS. However, it does not store when power is recovered after END TIME.



[Fig. 6-1] CURRENT TIME SET SCREEN



[Fig. 6-2] RESERVE TIME SET SCREEN

Symbol	Description
RESERVE	Button to start RESERVE OPERATION

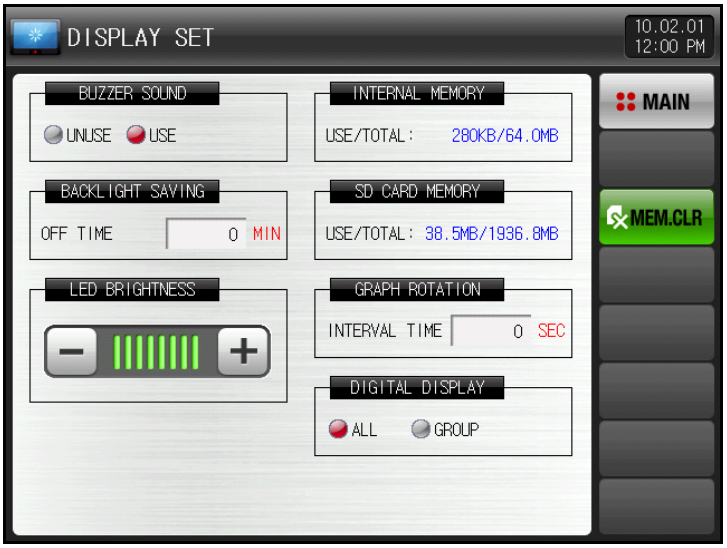
Instruction	Description	Remark
CURRENT TIME	Set CURRENT TIME.	
START TIME	Set START TIME from RESERVE TIME SET SCREEN.	
END TIME	Set END TIME from RESERVE TIME SET SCREEN.	

Table 6-1. RESERVE OPERATION SET PARAMETER

Parameter	Set Range	Unit	Default Value
CURRENT TIME (YEAR)	2000 ~ 2099	ABS	2010
CURRENT TIME (MONTH)	1 ~ 12	ABS	1
CURRENT TIME (DATE)	1 ~ 31	ABS	1
CURRENT TIME (AM/PM)	AM, PM	ABS	AM
CURRENT TIME (HOUR)	1 ~ 12	ABS	1
CURRENT TIME (MIN)	0 ~ 59	ABS	0
RESERVE START TIME (YEAR)	2000 ~ 2099	ABS	2010
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)	2000 ~ 2099	ABS	2010
RESERVE END TIME (MONTH)	1 ~ 12	ABS	1
RESERVE END TIME (DATE)	1 ~ 31	ABS	1
RESERVE END TIME (AM/PM)	AM, PM	ABS	AM
RESERVE END TIME (HOUR)	1 ~ 12	ABS	1
RESERVE END TIME (MIN)	0 ~ 59	ABS	0
RESERVE MODE	OFF, ON	ABS	OFF

7. DISPLAY SET

▶ This screen is to set BRIGHTNESS and BACKLIGHT SAVING TIEM of recording screen.
▶ SD CARD memory can not be deleted.

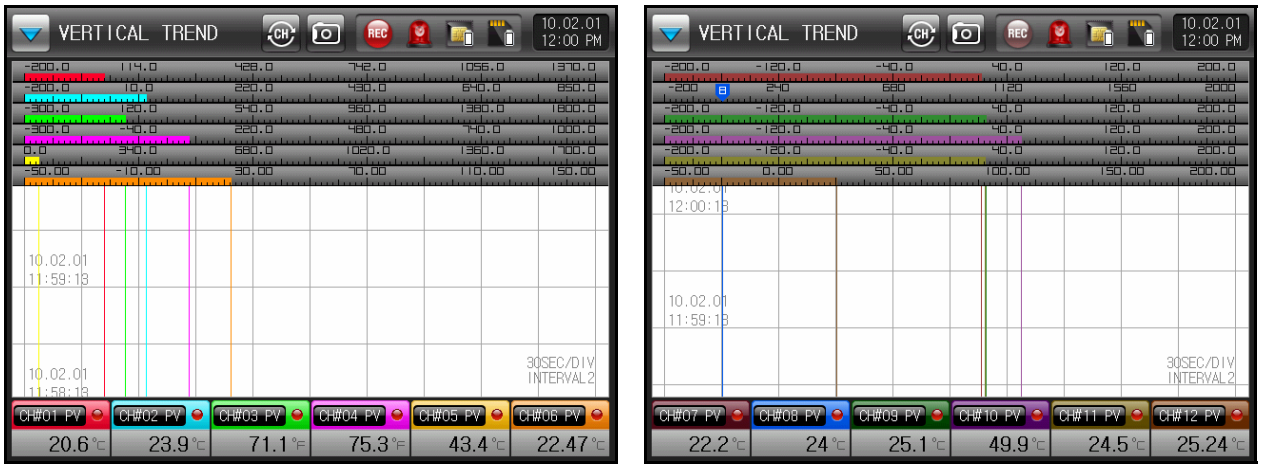


[Fig. 7-1] DISPLAY SET SCREEN

Symbol	Description
MEM.CLR	Delete contents of INTERNAL MEMORY

	Description	Remark
BUZZER SOUND	Set whether to use BUZZER SOUND or not.	
BACKLIGHT SAVING	Set OFF TIME at BACKLIGHT SAVING.	
LED BRIGHTNESS	Adjust LED BRIGHTNESS using +, - button.	
GRAPH ROTATION	Switch between CH1~6 and CH7~12 recording screen.	Available only for SDR112
INTERNAL MEMORY	Display USE/TOTAL INTERNAL MEMORY capacity.	
SD CARD MEMORY	Display USE/TOTAL SD CARD MEMORY capacity.	
DIGITAL DISPLAY	Set DIGITAL DISPLAY METHOD of recording screen.	Available only for SDR112
ALL	Display all PV windows (DIGITAL DISPLAY) of 12 channels.	
GROUP	Display 1~6 channel per group, and can check 7~12 channel using channel switch Key.	

- ▶ It switches when there is no key activity for specified time (1MIN)from recording screen.
- ▶ It automatically changes between GROUP (1~6 CHANNEL) and GROUP (7~12 CHANNEL) as set by GROUP ROTATION INTERVAL TIME.



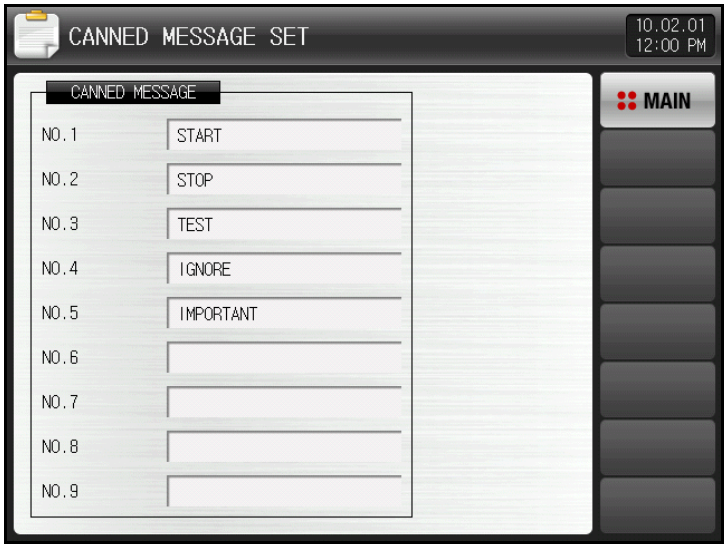
[Fig. 7-2] AUTOMATIC GRAPH SWITCHING SCREEN

Table 7-1. SCREEN DISPLAY SET PARAMETER

Parameter	Set Range	Unit	Default Value
BUZZER SOUND	UNUSE, USE	ABS	USE
BACKLIGHT SAVING	0 ~ 99 MIN	ABS	10
LED BRIGHTNESS	1 ~ 8	ABS	8 Scale
GRAPH ROTATION	0 ~ 99 SEC	ABS	0
DIGITAL DISPLAY	ALL, GROUP	ABS	ALL

8. CANNED MESSAGE SET

▶ CANNED MESSAGES are entered here to be used for graph recording screen.



[Fig. 8-1] CANNED MESSAGE SET SCREEN

Instruction	Description	Remark
CANNED MESSAGE	Set frequently used messages for recording screen.	

Table 8-1. CANNED MESSAGE SET PARAMETER

Parameter	Set Range	Unit	Default Value
CANNED MESSAGE 1	0 ~ 9 A ~ Z Special Character (Max. 24 Characters)	ABS	START
CANNED MESSAGE 2		ABS	STOP
CANNED MESSAGE 3		ABS	TEST
CANNED MESSAGE 4		ABS	IGNORE
CANNED MESSAGE 5		ABS	IMPORTANT
CANNED MESSAGE 6		ABS	-
CANNED MESSAGE 7		ABS	-
CANNED MESSAGE 8		ABS	-
CANNED MESSAGE 9		ABS	-

9. ERROR HISTORY DISPLAY

- ▶ This screen displays ERROR HISTORY and ALARM, EVENT.
- ▶ It stores total 100 records of ERROR HISTORY and ALARM, EVENT. When the record is full, then it removes the oldest record and store newly generated record.

[Fig. 9-1] ERROR HISTORY DISPLAY SCREEN

Symbol	Description
TRANS	Transfer all ERROR HISTORY and ALARM, EVENT, SYSTEM HISTORY to SD CARD.
☞	It overwrites to same file name, and change original file's extension to "BAK".
ALL CLR	Delete (Clear) all stored ERROR HISTORY and ALARM, EVENT, SYSTEM HISTORY.

Table 9-1. ERROR HISTORY SET PARAMETER

Parameter	Set Range	Unit	Default Value
TRANS	OFF, ON	ABS	OFF
ALL CLR	OFF, ON	ABS	OFF

※ EVENT MESSAGE CODE

Contents of Message	Screen Display	Character Color
-	-	-
CHANGE SAMPLING INTERVAL (1 -> 2)	INTERVAL CHANGED(1 -> 2)	White
CHANGE SAMPLING INTERVAL (2 -> 1)	INTERVAL CHANGED(2 -> 1)	White
CHANGE SAMPLING INTERVAL (DI2)	INTERVAL CHANGED(DI2 : 1 -> 2)	White
CHANGE SAMPLING INTERVAL (DI2)	INTERVAL CHANGED(DI2 : 2 -> 1)	White
POWER ON (STOP)	POWER ON(STOP)	White
POWER ON (HOT)	POWER ON(HOT)	White
RECORN ON	RECORD ON	White
RECORD OFF	RECORD OFF	White
RECORD ON (RESERVE)	RECORD ON(RESERVE)	White
RECORD OFF (RESERVE)	RECORD OFF(RESERVE)	White
RECORN ON (DI1)	RECORD ON(DI1)	White
RECORD OFF (DI1)	RECORD OFF(DI1)	White
KEY LOCK ON	KEYLOCK ON	White
KEY LOCK OFF	KEYLOCK OFF	White
SD CARD Insert	SD CARD INSERT	White
SD CARD Eject	SD CARD EJECT	White
INTERNAL MEMORY CLEAR	INTERNAL MEMORY CLEAR	White
PARAMETER INITIALIZE	PARAMETERS ARE INITIALIZED	White

10. SEARCH GRAPH

10.1 GRAPH VIEW

- ▶ This is the FILE SEARCH SCREEN for files stored in INTERNAL MEMORY and SD CARD.
- ▶ When touch the green part at the right side of screen, it move the page to corresponding touched Y-Axis value.
- ▶  ,  function does not work when recorded page is only one page.
- ▶ Search scroll function does not work when recorded data is small.

[Fig. 10-1] GRAPH SEARCH SCREEN

Symbol	Description
	Zoom-in or zoom out the time frame.
	Move to the first (time) or last (time) of recorded graph.
	Move the page up, down by 1 page.
	Move the blue line up, down by 1 dot which displays current value in graph.
	Indicate file stored to INTERNAL MEMORY or SD CARD.
	Transfer data stored in INTERNAL MEMORY to SD CARD.

10.2 DATA SEARCH

▶ This screen shows the folder stored in INTERNAL MEMORY and SD CARD.

[Fig. 10-2] GRAPH SEARCH SCREEN-2

Symbol	Description
	Move to the first or last during searching data in INTERNAL MEMORY and SD CARD.
	Move up, down by 10 units during searching data in INTERNAL MEMORY and SD CARD.
	Cancel file loading.

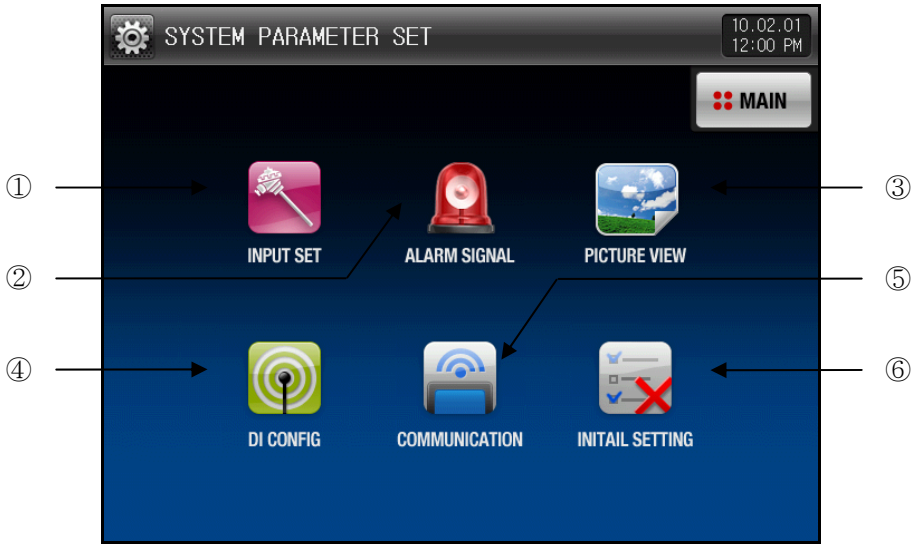
▶ This screen shows files inside the folder stored in INTERNAL MEMORY and SD CARD.

[Fig. 10-3] GRAPH SEARCH SCREEN -3

Symbol	Description
	Move to upper folder.

11. SYSTEM PARAMETER SET SCREEN

- ▶ This screen is related with initial setup for equipment recording.
- ▶ Refer to [Fig. 3-1 MAIN MENU] regarding to enter SYSTEM PARAMETER SET SCREEN
- ▶ Refer to [2.3 INITIAL OPERATION FLOW] regarding SYSTEM SET SCREEN for DI and COMMUNICATION OPTION SELECTION.



[Fig. 11-1] SYSTEM PARAMETER SET SCREEN

Number	Instruction	Description
①	INPUT SET	Set input sensor type and sensor input related parameter.
②	ALARM SIGNAL	Set alarm signal related parameter.
③	PICTURE VIEW	Set PICTURE VIEW SET SCREEN related parameter.
④	DI CONFIG	Set DI FUNCTION (External contact) input signal related parameter.
⑤	COMMUNICATION	Set communication related parameter.
⑥	INITIAL SETTING	Set parameter up/down and basic screen configuration setup related parameter.

11.1 SENSOR INPUT SET SCREEN

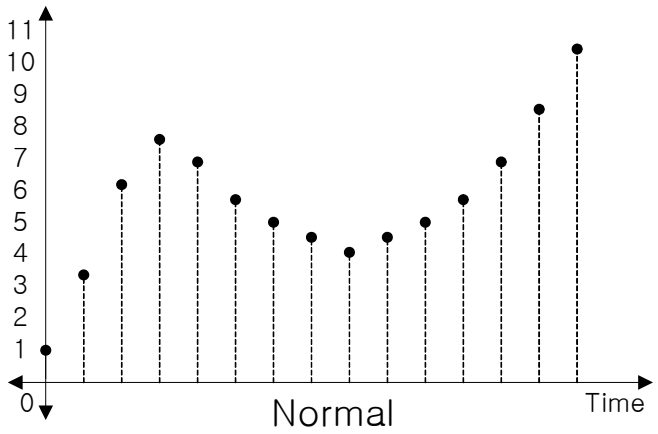
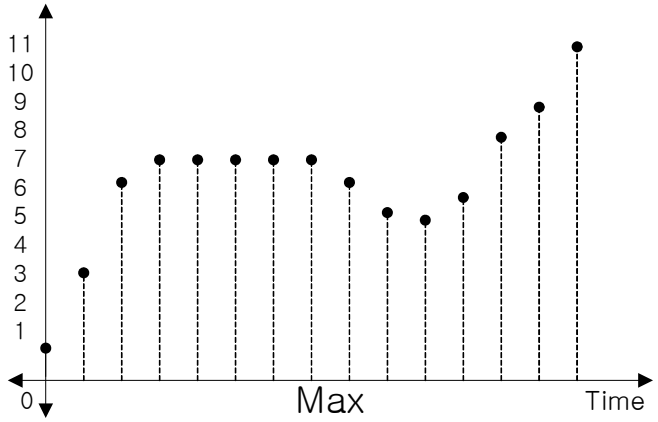
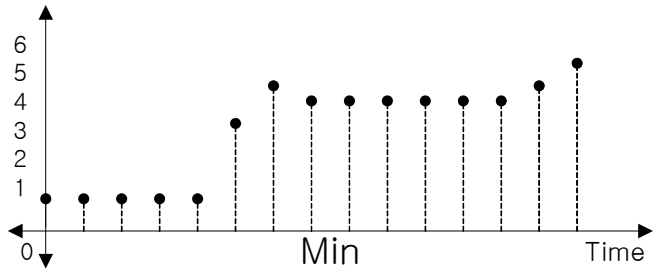
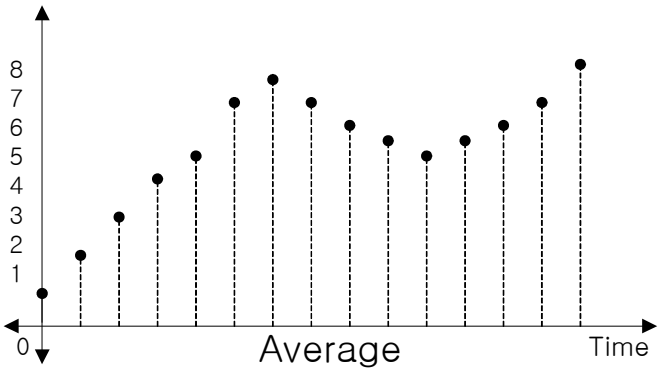
▶ Select input (T/C, RTD, DCV) sensor for CH1 ~ CH12.
☞ Should make SENSOR SETUP first.
▶ Following screen are for CH1 ~ CH6, and CH7 ~ CH12 screen are same as CH1 ~ CH6 screen.
▶ It is not able to change SENSOR GROUP, SENSOR TYPE, RANGE HIGH/LOW, UNIT, SCALE HIGH/LOW during recording.

[Fig. 11-2] SENSOR INPUT SET SCREEN (T/C, RTD, DCV)

Symbol	Description
SETUP	Pressing Setup button will switch to [Fig. 9-1 SYSTEM SETUP SCREEN].

	Description	Remark
SENSOR TYPE	Set INPUT SENSOR TYPE.	
DISPLAY UNIT	Set DISPLAY UNIT.	
TAG NAME	Set TAG NAME.	
☞	Up to 8 character using 0~9, A~Z, special characters.	
T/C DISPLAY	Set use of Thermocouple (T/C).	
☞	Select use of RJC when sensor type is T/C.	
SENSOR RANGE	Set high/low limit of INPUT SENSOR.	Refer to Table 11-3
PV WHEN S.OPN	Set PV direction of current value when sensor is open circuit.	
UNSET	Do not check open circuit on sensor open circuit.	
UP	Display “+S.OPEN” at PV window when sensor is open circuit.	
DOWN	Display “-S.OPEN” at PV window when sensor is open circuit.	
PV WHEN S.OPN	Set data measure method.	Refer to Table 11-1
NORMAL	Use current value as measured value.	
HIGHEST	Use the highest value during specified period as measured value.	
LOWEST	Use the lowest value during specified period as measured value.	
AVERAGE	Use the average value during specified period as measured value.	
DOT POSITION	Set dot position (decimal point) when sensor type is DCV.	

Table 11-1 Data Measure Method

NORMAL	
HIGHEST	
LOWEST	
AVERAGE	

11.2 Sensor Input Set Screen-2

▶ For T/C group sensor
▶ This screen is to set SENSOR TYPE and DISPLAY UNIT.

[Fig. 11-3] SENSOR INPUT SET SCREEN (T/C)

▶ For RTD group sensor
▶ This screen is to set SENSOR TYPE and DISPLAY UNIT.

[Fig. 11-4] SENSOR INPUT SET SCREEN (RTD)

▶ For DCV group sensor
▶ This screen is to set SENSOR TYPE, DISPLAY UNIT and DOT POSITION (Decimal point).

[Fig. 11-5] SENSOR INPUT SET SCREEN (DCV)

Table 11-2. SENSOR INPUT SET PARAMETER

Parameter	Setup Range	Unit	Default Value
CH#n SENSOR TYPE	T/C, RTD, DCV	ABS	T/C
CH#n SENSOR SELECT	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 (For T/C type sensor)
	PT A, PT B, PT C, PT D, JPT A, JPT B	ABS	PT A (For RTD type sensor)
	-10 ~ 20MV, 0 ~ 20MV, -50 ~ 100MV, 0 ~ 100MV, -1 ~ 2V, 0 ~ 2V, 0 ~ 5V, 1 ~ 5V, -5 ~ 10V, 0 ~ 10V, -10 ~ 20V, 0 ~ 20V	ABS	-10 ~ 20MV (For DCV type sensor)
CH#n DISPLAY UNIT	°C, °F	ABS	°C
	℃, °F, EDITABLE, %, Pa, kPa, %RH, mV, V, Ω, mmHg, Kgf	ABS	°C
UNIT NAME OF CHANNEL	0 ~ 9, A ~ Z, Special Character(8 Characters)	ABS	
CH#n TAG NAME	0 ~ 9, A ~ Z, Special Character(8 Characters)	ABS	CH#n PV
CH#n T/C TYPE	T/C, TC+RJC, RJC	ABS	TC+RJC
CH#n RANGE HIGH	CH#n.EU(0.0 ~ 100.0%) CH#n. Range Low < CH#n. Range High	CH#n.EU	CH#n.EU(100.0%)
CH#n RANGE LOW		CH#n.EU	CH#n.EU(0.0%)
CH#n PV WHEN S.OPN	UNSET, UP, DOWN	ABS	Up
CH#n MEASURE METHOD	NORMAL, HIGHEST, LOWEST, AVERAGE	ABS	NORMAL
TIME SET	1~10sec	ABS	1
CH#n DOT POSITION (Decimal Point)	0 ~ 4	ABS	1
CH#n SCALE HIGH	-3000.0 ~ 3000.0 CH#n.SCALE Low < CH#n.SCALE High	℃	100.0
CH#n SCALE LOW		℃	0.0

#n : 1 ~ 12

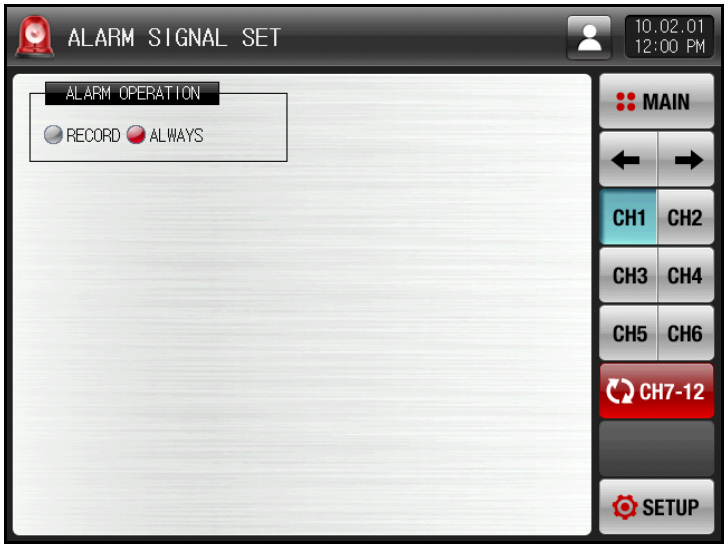
Table 11-3 Sensor Input Type

Number	Sensor Type	Temperature Range (℃)	Temperature Range (°F)	Sensor Group	DISP
1	K1	-200.0 ~ 1370.0	-300.0 ~ 2500.0	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
21	-10 ~ 20mV	-10.00 ~ 20.00mV		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

12. ALARM SIGNAL

12.1 ALARM SIGNAL SET SCREEN-1

▶ Following screen describes for CH1 ~ CH6, and it is same for CH7 ~ CH12.



[Fig. 12-1] ALARM SIGNAL SET SCREEN-1

	Description	Remark
ALARM OPERATION	Set ALARM SIGNAL OPERATION.	
RECORD	Perform alarm operation only during recording.	
ALWAYS	Perform alarm operation regardless of Recording/Stop.	

Table 12-1. ALARM SIGNAL SET-1 PARMETER

Parameter	Setup Range	Unit	Default Value
CH#n ALARM OPERATION	RECORD, ALWAYS	ABS	ALWAYS

#n : 1 ~ 12

12.2 ALARM SIGNAL SET SCREEN -2

- ▶ User can set alarm for each channel from this screen.
- ▶ Following screen describes for CH1 ~ CH6, and it is same for CH7 ~ CH12.
- ▶ Total 48 alarm signals can be set with 4 alarms per channel.
- ▶ ALARM SIGNAL OPERATION is made according to the setup at ALARM TYPE, and there are 9 types of alarm.

[Fig. 12-2] ALARM SIGNAL SET SCREEN -2

Instruction	Description	Remark
ALARM1 TYPE ALARM2 TYPE ALARM3 TYPE ALARM4 TYPE	Set ALARM SIGNAL TYPE.	

- ▶ Following screens displays parameter and relay setup after set the ALARM SIGNAL TYPE.

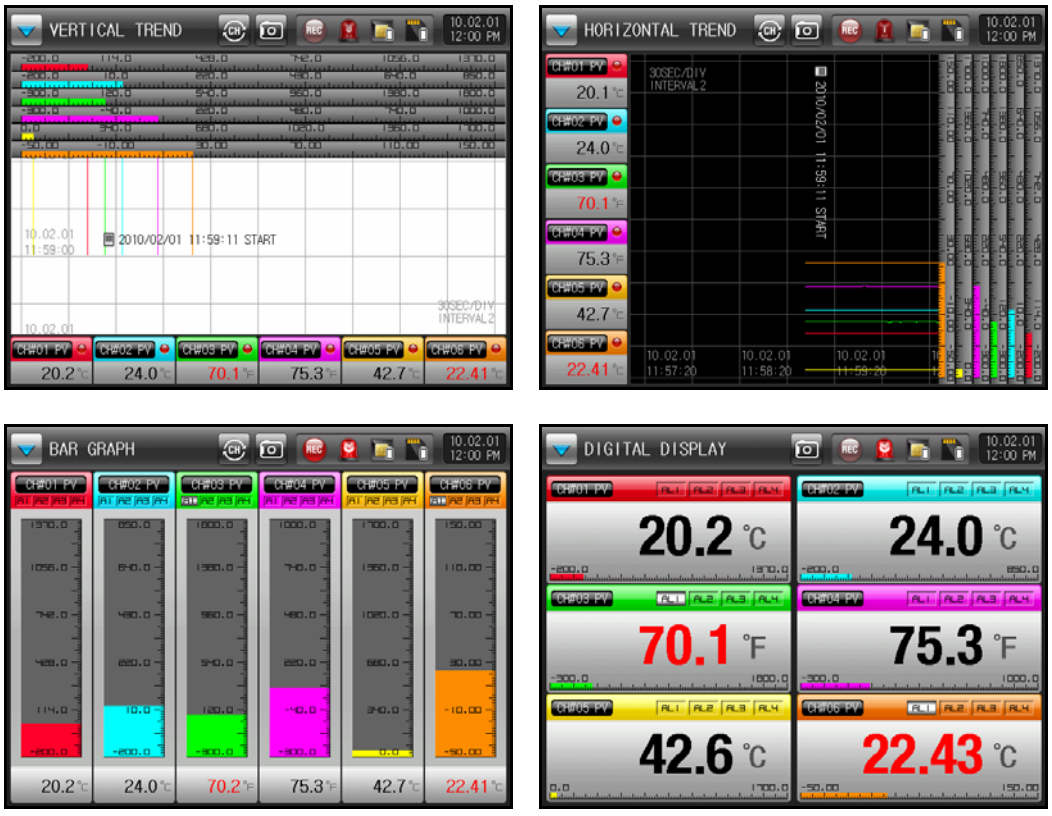
[Fig. 12-3] ALARM SIGNAL SET SCREEN -3

Table 12-2. ALARM SIGNAL SET -2 PARAMETER

Parameter	Setup Range	Unit	Default Value
CH#n ALARM #m TYPE	ALARM OFF, PV HIGH ALARM, PV LOW ALARM PV UP SLOPE HIGH, PV INSIDE ALARM PV DOWN SLOPE LOW, PV OUTSIDE ALARM CH DEVIATION INSIDE, CH DEVIATION OUTSIDE, SENSOR OPEN ALARM	ABS	ALARM OFF
CH#n ALARM #m POINT	CH#n.EU(-5.0~105.0%)	CH#n.EU	CH#n.EU(100.0%)
			CH#n.EU(0.0%)
CH#n ALARM #m HIGH POINT	CH#n.EU(-5.0~105.0%)	CH#n.EU	CH#n.EU(0.0%)
CH#n ALARM #m LOW POINT			
CH#n ALARM #m HYSTERESIS	CH#n.EUS(0.0~50.0%)	CH#n.EUS	CH#n.EUS(0.5%)
CH#n ALARM #m DELAY TIME	0.00~99.59 (MIN.SEC)	ABS	00.00
CH#n ALARM #m RELAY	0 ~ 12	ABS	0
CH#n ALARM #m UP SLOPE	CH#n.EUS(0.0~50.0%)	CH#n.EUS	CH#n.EUS(0.0%)
CH#n ALARM #m DOWN SLOPE	CH#n.EUS(0.0~50.0%)	CH#n.EUS	CH#n.EUS(0.0%)
CH#n ALARM #m SLOPE	00.00 ~ 99.59(HOUR.MIN)	ABS	00.00
CH#n ALARM #m CHANNEL	0 ~ 12	ABS	0
CH#n ALARM #m SENSOR OPEN	CH#n.EUS(0.0~50.0%)	CH#n.EUS	CH#n.EUS(0.0%)

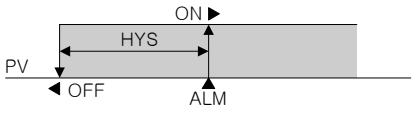
#n : 1 ~ 12
#m : 1 ~ 4

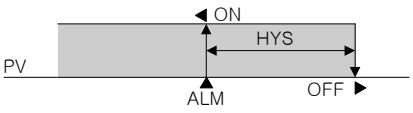
▶ When alarm operates, current value of corresponding channel turns to red, and the ALARM lamp at top right side rotates.

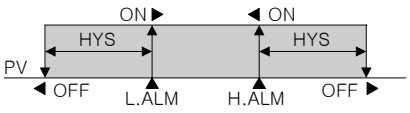


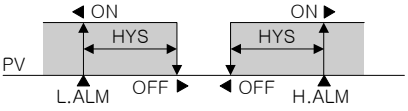
[Fig. 12-4] ALARM SIGNAL OPERATION SCREEN

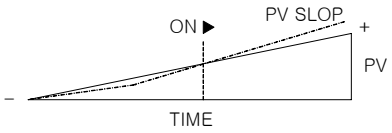
12.3 Alarm Signal Operation

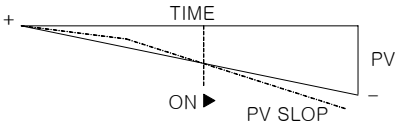
<table>
<tr><td>PV HIGH</td><td> 

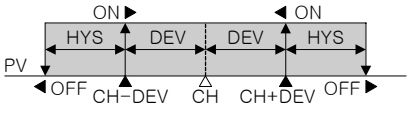
. ALM : Alarm Set Value</td><td>PV LOW</td><td> 

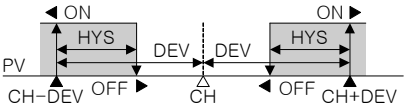
. ALM : Alarm Set Value</td></tr>
<tr><td>PV INSIDE</td><td> 

. L.ALM : Low Alarm Set Value
. H.ALM : High Alarm Set Value</td><td>PV OUTSIDE</td><td> 

. L.ALM : Low Alarm Set Value
. H.ALM : High Alarm Set Value</td></tr>
<tr><td>PV UP
SLOPE
HIGH</td><td> 

. PV SLOP : PV Slope</td><td>PV DOWN
SLOPE LOW</td><td> 

. PV SLOP : PV Slope</td></tr>
<tr><td>CHANNEL
DEVIATION
INSIDE</td><td> 

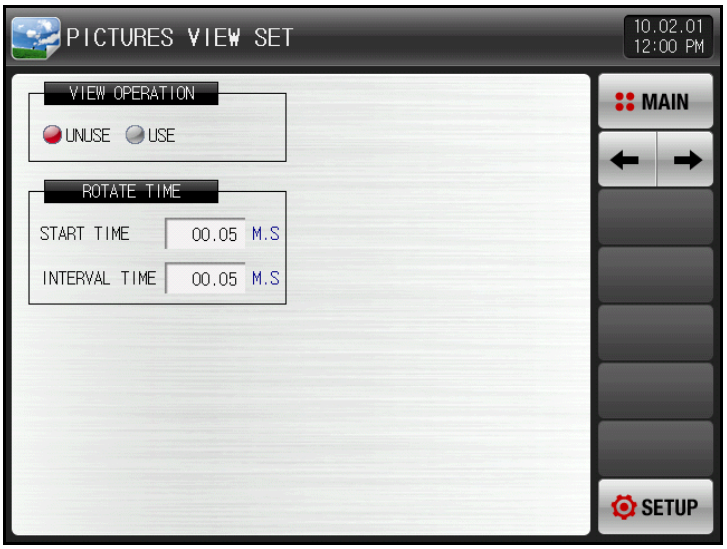
. CH : Reference Channel
. DEV : Deviation Set Value</td><td>CHANNEL
DEVIATION
OUTSIDE</td><td> 

. CH : Reference Channel
. DEV : Deviation Set Value</td></tr>
<tr><td>SENSOR
OPEN</td><td colspan="3">Alarm generated when Sensor Open</td></tr>
</table>

▶ HYS(HYSTERESIS): Deviation applied when Alarm is recovered (Off) after Alarm generation (On).
Default is EUS (0.5%), and it does not operate when set to EUS(0.0%).

13. PICTURES VIEW

13.1 PICTURES VIEW SET SCREEN



[Fig. 13-1] PICTURES VIEW SET SCREEN

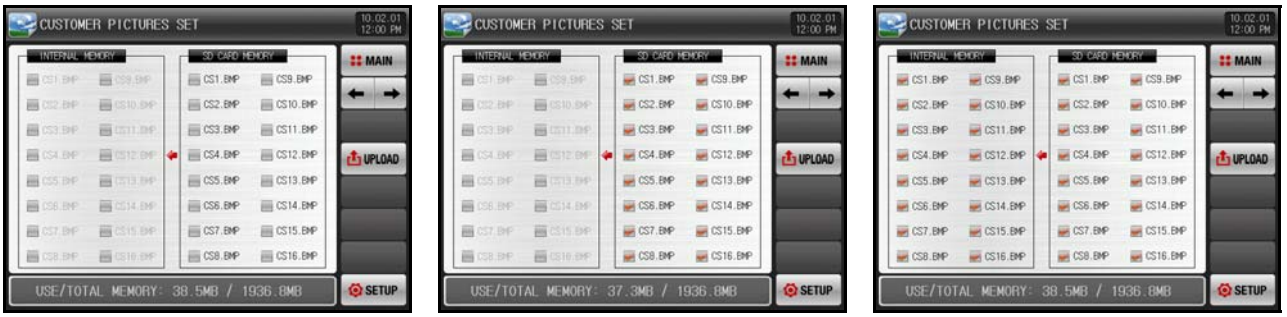
Instruction	Description	Remark
VIEW OPERATION	Set whether to use PICTURES VIEW SCREEN or not.	
☞	PICTURES VIEW SCREEN operates when there is at least one selected picture in INTERNAL MEMORY.	
ROTATE TIME	Set PICTURES VIEW SCREEN operation and Interval Time.	
☞	It starts operation when there is no key input during specified time.	
☞	Pictures switch display with specified time cycle.	

Table 13-1. PICTURES VIEW SCREEN SET PARAMETER

Parameter	Setup Range	Unit	Default Value
VIEW OPERATION	UNUSE, USE	ABS	UNUSE
START TIME	00.05 ~ 99.59(MIN,SEC)	ABS	00.05
INTERVAL TIME	00.01 ~ 99.59(MIN,SEC)	ABS	00.05

13.2 CUSTOMER PICTURE SET

▶ Followings are the screen that shows picture file (BMP) stored in SD CARD.
▶ Files not in SD CARD are inactive and can not select & upload.



[Fig. 13-2] CUSTOMER PICTURE SET SCREEN

Symbol	Description
SETUP	This button uploads picture files in SD CARD to INTERNAL MEMORY.

Table 13-2. Customer Picture Set Parameter

Parameter	Setup Range	Unit	Default Value
UPLOAD	OFF, ON	ABS	OFF

13.3 CUSTOMER SCREEN SET

- ▶ Up to 16 pictures can be used for CUSTOMER SCREEN.
- ▶ Customer screen will be displayed when there is no key touch activity for specified time.
  - ☞ The screen rotates the pictures when there are multiple pictures stored in INTERNAL MEMORY.
- ▶  button is displayed by touching any area in the screen during CUSTOMER SCREEN operation.

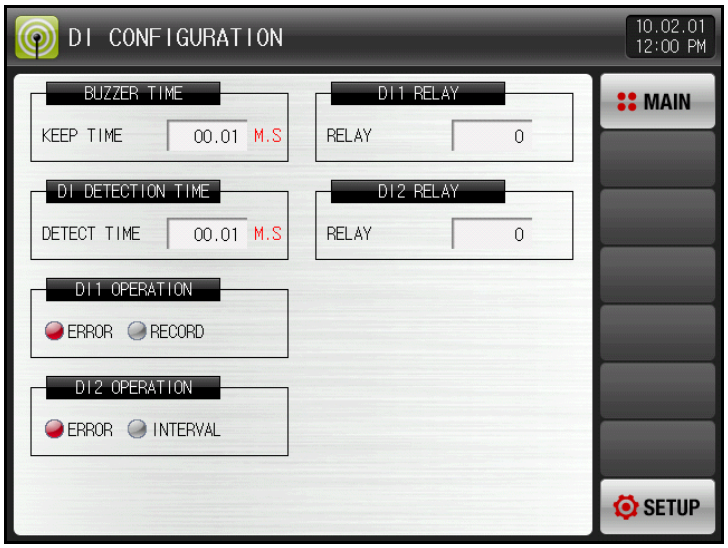
[Fig. 13-3] CUSTOMER SCREEN -1

Number	Symbol	Description
①	▼	 button disappears from CUSTOMER SCREEN.
②	◀◀	Move from current customer screen to previous customer screen.
	☞	It does not work when there is only one Customer Screen file.
③	❚❚	Temporary stop the CUSTOMER SCREEN.
④	▶▶	Move from current USER SCREEN to next CUSTOMER SCREEN.
	☞	It does not work when there is only one CUSTOMER SCREEN file..
⑤	⊗	End the CUSTOMER SCREEN and return to recording screen.
	☞	Return to CUSTOMER SCREEN after specified time.

[Fig. 13-4] CUSTOMER SCREEN -2

14. DI CONFIGURATION

▶ This option can be set when purchased with the DI OPTION.
▶ Please refer to [2.3 INITIAL OPERATION FLOW].



[Fig. 14-1] DI CONFIGURATION SET SCREEN

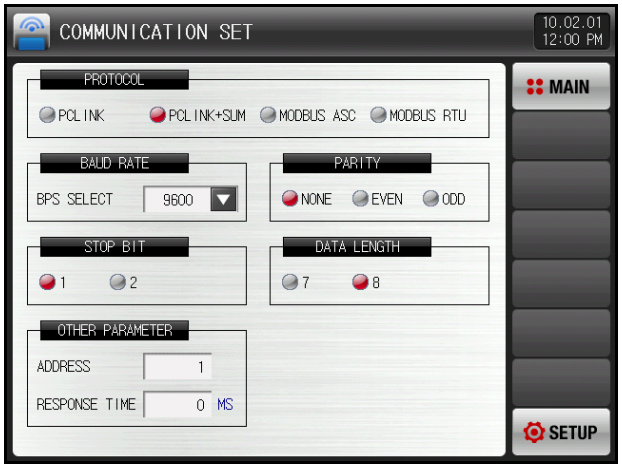
Instruction	Description	Remark
BUZZER TIME	Set BUZZER TIME when DI occurs.	
DI DETECTION TIME	Set DI DETECTION TIME.(그림 14-1 참조)	
DI1 OPERATION	Set DI1 OPERATION METHOD	
ERROR	Buzzer is on and is recorded to ERROR HISTORY.	
RECORD	Used for recording ON/OFF operation.	
DI2 OPERATION	Set DI2 OPERATION METHOD.	
ERROR	Buzzer is on and is recorded to ERROR HISTORY.	
STORAGE INTERVAL	Used for changing STORAGE INTERVAL	
DI1 RELAY	Set DI1 RELAY when DI1 occurs.	
DI2 RELAY	Set DI2 RELAY when DI2 occurs.	

Table 14-1. DI Function and Operation Set Parameter

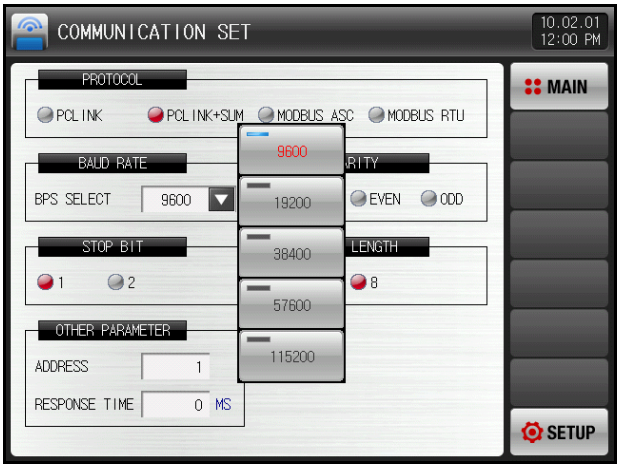
Parameter	Setup Range	Unit	Default Value
BUZZER TIME	00.00 ~ 99.59(MIN.SEC)	ABS	00.01
DI DETECTION TIME	00.00 ~ 99.59(MIN.SEC)	ABS	00.01
DI1 OPERATION	ERROR, RECORD	ABS	ERROR
DI2 OPERATION	ERROR, INTERVAL	ABS	ERROR
DI1 RELAY	0 ~ 12	ABS	0
DI2 RELAY	0 ~ 12	ABS	0

15. COMMUNICATION SET

▶ This option can be set when purchased with the COMMUNICATION option.
▶ Please refer to [2.3 INITIAL OPERATION FLOW].



[Fig. 15-1] COMMUNICATION SET SCREEN (RS485/232C)



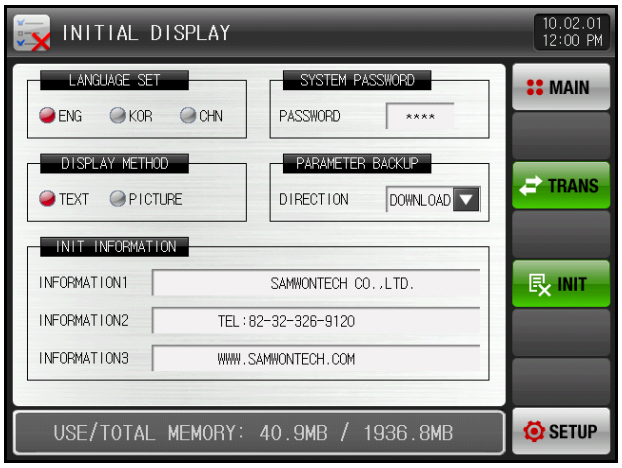
[Fig. 15-2] COMMUNICATION SET SCREEN (Baud Rate)

Instruction	Description	Remark
PROTOCOL	Set PROTOCOL.	
BAUD RATE	Set BAUD RATE.	Refer to [Fig. 15-2]
STOP BIT	Set STOP BIT.	
OTHER PARAMETER	Set OTHER PARAMETER such as Communication Address and Response Time.	
PARITY	Set PARITY	
NONE	No parity	
EVEN	Even parity	
ODD	Odd parity	
DATA LENGTH	Set DATA LENGTH.	
☞	DATA LENGTH is fixed to 7 when Protocol is set to MODBUS ASC.	
☞	DATA LENGTH is fixed to 8 when Protocol is set to MODBUS RTU.	

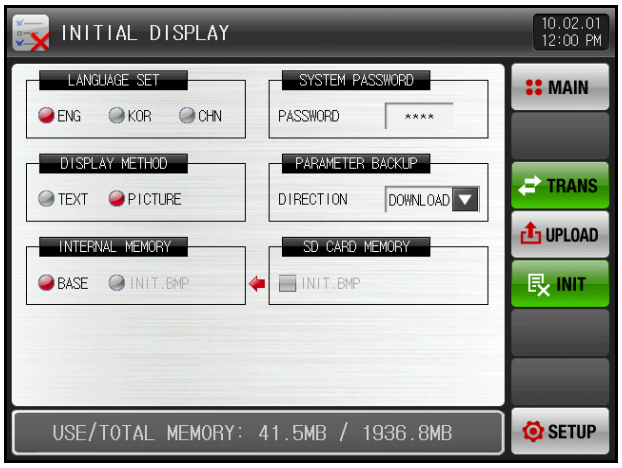
Table 15-1. Communication Set Parameter

Parameter	Setup Range	Unit	Default Value
PROTOCOL	PCLINK, PCLINK+SUM MODBUS ASC, MODBUS RTU	ABS	PCLINK+SUM
BAUD RATE	9600, 19200, 38400, 57600, 115200	ABS	9600
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

16. INITIAL DISPLAY SET



[Fig. 16-1] INITIAL DISPLAY SET SCREEN (Character)



[Fig. 16-2] INITIAL DISPLAY SET SCREEN (Picture)

Symbol	Description
TRANS	Download/Upload button between INTERNAL MEMORY → SD CARD, SD CARD → INTERNAL MEMORY.
UPLOAD	Upload button to upload picture file in SD CARD to INTERNAL MEMORY.
INIT	Initialize all parameters to factory set default value.

Instruction	Description	Remark
LANGUAGE SET	Select SET LANGUAGE to use.	
DISPLAY METHOD	Set initial DISPLAY METHOD when power is on.	
TEXT	Display specified information at Initial Display screen when power is on.	
PICTURE	Display picture in INTERNAL MEMORY when power on.	
INIT INFORMATION	Display the words that appear to initial screen when power on.	
☞	Able to set Information 1, 2, 3 and can enter up to 24 characters.	
☞	Can set when Display Method is set to Text.	
SYSTEM PASSWORD	Set SYSTEM PASSWORD to enter to SYSTEM SCREEN.	
☞	Factory set password is '0'.	
PARAMETER BACKUP	Set data transfer direction between SDR112 and SD CARD.	
DOWNLOAD	Transfer parameter in SDR112 to SD CARD.	
UPLOAD	Transfer parameter in SD CARD to SDR112.	
INTERNAL MEMORY	Select picture to display at initial screen when power on.	
SD CARD MEMORY	Indicate whether there is INIT.BMP file in SD CARD or not.	
☞	☐ button is deactivated when there is no INIT.BMP file.	

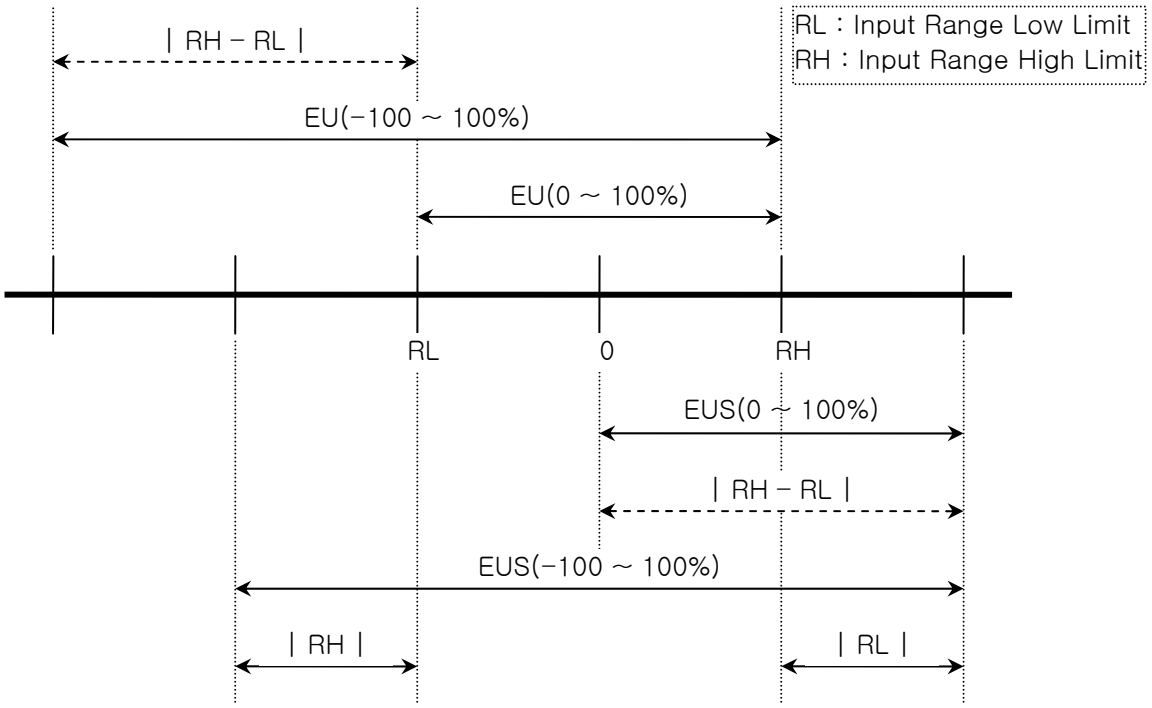
Table 16-1. SYSTEM INITIAL SET PARAMETER

Parameter		Setup Range	Unit	Default Value
LANGUAGE SET		ENG, KOR, CHN	ABS	ENG
DISPLAY METHOD		TEXT, PICTURE	ABS	TEXT
SYSTEM PASSWORD		0 ~ 9999	ABS	0
PARAMETER BACKUP		DOWNLOAD, UPLOAD	ABS	DOWNLOAD
INIT INFORMATION	INFORMATION 1	0 ~ 9, A ~ Z, Special Character (Max. 24 Characters)	ABS	SAMWONTECH CO.,LTD.
	INFORMATION 2	0 ~ 9, A ~ Z, Special Character (Max. 24 Characters)	ABS	TEL : 82-32-326-9120
	INFORMATION 3	0 ~ 9, A ~ Z, Special Character (Max. 24 Characters)	ABS	HTTP://WWW.SAMWONTECH.COM.
INTERNAL MEMORY		Total Memory 64MB(Able to store for 57 days of data when storage interval is 1 second.)		

ENGINEERING UNITS - EU, EUS	EU and EUS are used for the scaling of the parameters.

▶ If the sensor type or minimum/maximum input range (INRH, INRL) is adjusted, the EU(), EUS() parameters also change proportionally (minimum and maximum input ranges are reset)

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



▶ Range of EU(), EUS()

	Range	Center Line
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 = -200.00℃(RL) ~ 1370.00℃(RH)

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