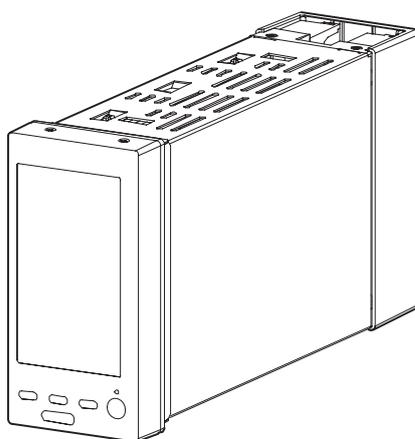# MULTI-FUNCTION PID CONTROLLER
SC100 / 110 / 200 / 210
STARTUP GUIDE

– Please read this booklet first –

― Contents ―

1 POINTS OF CAUTION

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below. If you have any problems or questions with the product, please contact M-System or representatives.

• This product is for use in general industrial environments, therefore may not be suitable for applications which require higher level of safety (e.g. safety or accident prevention systems) or of reliability (e.g. vehicle control or combustion control systems).
• For safety, installation and maintenance of this product must be conducted by qualified personnel.

● POWER INPUT RATING & OPERATIONAL RANGE
• Locate the power input rating marked on the product and confirm its operational range as indicated below:

    100 – 240V AC rating: 85 – 264V, 50/60 Hz,
                          ≤ 25VA at 100V AC
                          ≤ 40VA at 240V AC
    24V DC rating: 24V ±10%, ≤ 500mA

• Supplying any level of power other than specified above can damage the unit or the power source.
• Power supply start-up characteristics must reach within 5 seconds to the operational voltage range of the unit.
• Power cables and signal I/O cables for the unit must be located separately.
• Power cables and signal I/O cables for the unit should not be bundled together.
• To increase noise resistance of the power input wires, twist the strands before connecting.

● GENERAL PRECAUTIONS
• Before you remove the unit, turn off the power supply and input signal for safety.
• Do not disassemble or modify the unit in any way. Doing so may result in a fire or an electrical shock.
• Do not block the unit's ventilation openings or use it in areas where heat accumulates.
  Additionally, do not store or use it under high-temperature conditions.
• Do not use this unit in an environment where flammable/ corrosive gases are present.
• Do not store or use this unit in locations subject to direct sunlight, or where excessive dust, dirt or metal particles are present.
• This unit is a precision instrument. Do not store or use it where large shocks or excessive vibration can occur.
• Do not store or use this unit in environments subject to chemical evaporation (such as that of organic solvents), or where there are chemicals and/or acids present in the environment.
• Do not use paint thinner or organic solvents to clean this unit.
• Observe the environmental conditions when using this unit.
• Wait at least 30 seconds before turning on the power supply after it was turned off.

● ENVIRONMENT
• Indoor use.
• This unit is designed to be mounted on a vertical panel. It is not suitable for a slanted or a horizontal panel surface.
• Environmental temperature must be within -5 to +55°C (23 to 131°F) with relative humidity within 5 to 90% RH in order to ensure adequate life span and operation.

● GROUNDING
• Be sure to determine in advance the most stable grounding point in the environment and earth the unit's FG terminal and that of connected devices to it in order to protect the devices from dielectric breakdown.
• Grounding is also effective to eliminate noise that could cause errors in the unit's operation.

● LCD PANEL

• The LCD panel's liquid contains an irritant.   If the panel is damaged and the liquid contacts your skin, rinse immediately the contact area with running water for at least 15 minutes.   If the liquid gets in your eyes, rinse immediately your eyes with running water for at least 15 minutes and consult a doctor.

• The following phenomena are LCD characteristics, and NOT a product defect:

   - LCD screen may show uneven brightness depending upon displayed images or contrast settings.

   - The LCD screen pixels may contain minute black-and-white-colored spots.

   - The color displayed on the LCD screen may appear different when seen from outside the specified viewing angle.

   - When the same image is displayed on the screen for a long time period, an afterimage may appear when the image is changed.   If this happens, turn off the unit and wait for a while before restarting it.

• To prevent an afterimage:

   - Set the screensaver when you plan to display the same image for a long time period.

   - Plan to change the screen image periodically so that the same image does not remain for the long time period.

• The LCD surface is covered with a protective film at the factory shipment.   Remove it once the unit is installed.

● MINIMIZING NOISE INTERFERENCE TO ANALOG SIGNAL CABLES

• Noise entering through the analog signal cables may cause irregular measurement values, degradation of overall accuracy, and malfunction of the product.   We recommend that you would conduct wiring to the unit with the following points of caution.

• Do not install cables close to noise sources (high frequency line, etc.).

• Do not bind the analog I/O cables together with those in which noises are present.   Do not install them in the same duct.

● DO NOT APPLY OVERRANGE INPUT

• Do not apply voltages exceeding ±15V across the voltage input terminals to prevent damage.

• Do not apply currents exceeding ±30mA to the current input terminals to prevent damage.

● AND ....

• We recommend use of an UPS to supply power backups.

• The unit is designed to function as soon as power is supplied, however, a warm up for 10 minutes is required for satisfying complete performance described in the data sheet.

2 PACKAGE INCLUDES

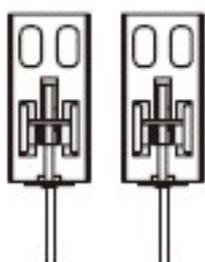Please confirm that all items mentioned below are included in the package.

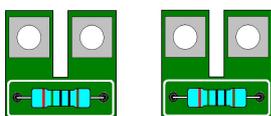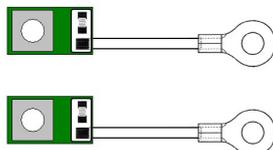□ Multi-function PID controller
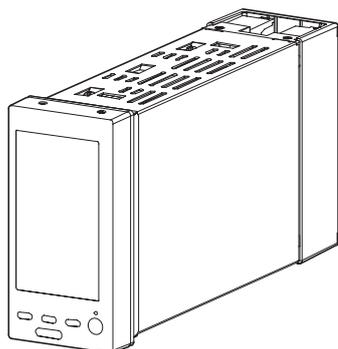
□ Users manual

□ Mounting bracket

□ Startup guide (this booklet)

スタートアップガイド

□ Resistor module (2)

□ CJC sensor (2)

□ Connector adapter

* With stereo jack type

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

Model: SC100-[1]0-[3][4]
Model: SC110-[1]0-[3][4] with MV output backup
Model: SC200-[1][2]-[3][4] Modbus extension model
Model: SC210-[1][2]-[3][4] Modbus extension model with MV output backup

[1] DISCRETE OUTPUT	[4] OPTIONS
1: Relay contact	◆ Housing Depth
2: Photo MOSFET relay	Blank: 250 mm (only for SC100 and SC200)
	/3: 300 mm
	/4: 400 mm
[2] MODBUS	/6: 600 mm (only for SC100 and SC110)
1: Modbus-RTU	◆ Backup Module Power Supply
2: Modbus-TCP	Blank: Single supply
	/M2: 100 – 240 V AC (dual supply)
	/R: 24 V DC (dual supply)
[3] POWER INPUT	◆ Language
◆ AC Power	Blank: Japanese
M2: 100〜240 V AC	/E: English
◆ DC Power	◆ Configurator Interface
R: 24 V DC	Blank: Infrared
	/1: Stereo jack

3   RELATED PRODUCTS

The following products are required for the setting up of the device via PC (not included in the package.)

• PC Configurator Cable (model: COP-US) *1
• Infrared Communication Adaptor (model: COP-IRDA) *2
• Loop Configuration Builder Software (model: SFEW3E) *3
• PC Configurator Software (model: SCCFG) *3

   *1 Configurator interface: for stereo jack type
   *2 Configurator interface : for infrared type
   *3 Downloadable at M-System's web site.

4   EXTERNAL DIMENTIONS

mm (inch)

■ INFRARED COMMUNICATION TYPE
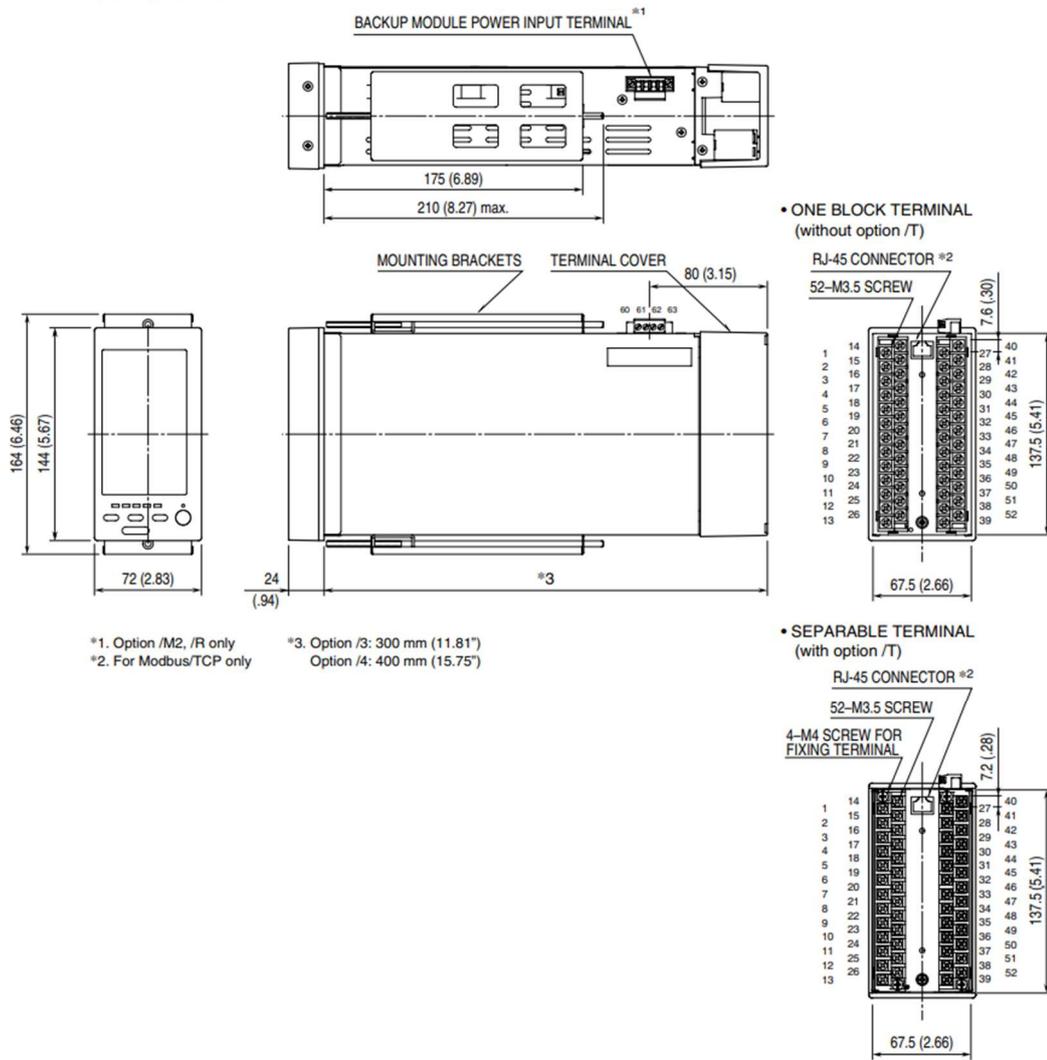
*1. Option /M2, /R only
*2. For Modbus/TCP only
*3. Option /3: 300 mm (11.81")
    Option /4: 400 mm (15.75")

*1. For /M2 and /R.
*2. For Modbus-TCP
*3. Blank: 250 mm, /3: 300 mm, /4: 400 mm, /6: 600 mm

HOUSING DEPTH	250 mm	300 mm	400 mm	600 mm
SC100	✓	✓	✓	✓
SC110	—	✓	✓	✓
SC200	✓	✓	✓	—
SC210	—	✓	✓	—

5 INSTALLATION

■ CAUTION

- IP55 is ensured for the front panel of the unit mounted independently according to a panel.   Test the sealing at the mounting surface once the device is installed.
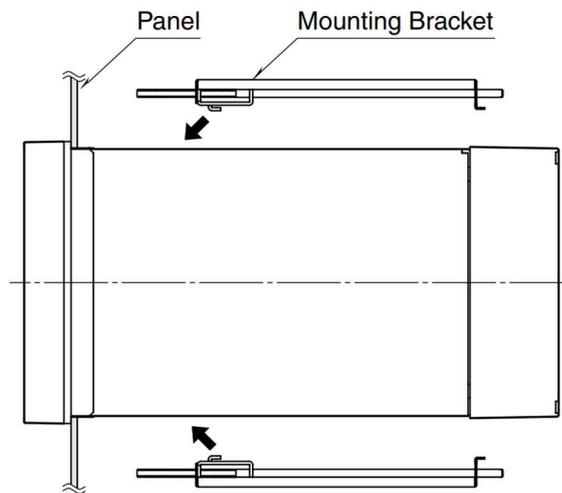- Set the unit on a vertical surface with its operation buttons at the lower side.   Mounting in other directions may cause heat built up inside the unit and shorten its life or degrade its performance.
- Ensure that there is sufficient space for ventilation inside a panel.   Do not install above the devices that generate high heat such as heaters, transformers or resistors.   Leave at least 30 mm (1.2 inch) space above, below and behind the unit for maintenance purpose (e.g. wiring, removing or installing).

■ HOW TO MOUNT THE UNIT ON A PANEL

1) Remove both mounting brackets.

2) Detach the terminal cover and insert it first and then the module itself into the cutout hole.   (The cover is slightly wider than the module.)

3) Put and slide the brackets back into the holes at the top and the bottom and tighten them until the module is firmly fixed.

■ **PANEL CUTOUT unit: mm**

• **Single mounting**

$68^{+0.7}_{0}$

138^{+1}_{0}

138^{+1}_{0}
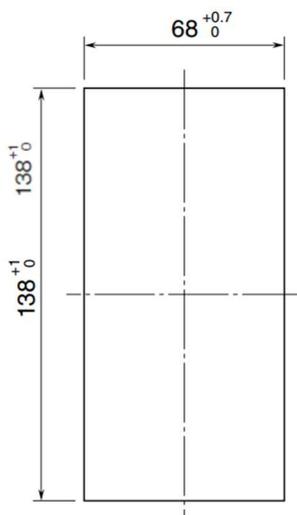
• **Clustered mounting**

$[68+72 \times (n - 1)]^{+1}_{0}$

138^{+1}_{0}

138^{+1}_{0}
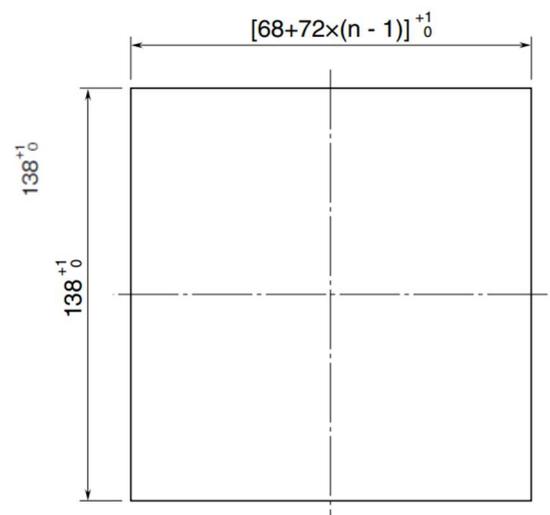
n = number of units   Panel thickness 2.3 – 20

6   TERMINAL BLOCK

■ HOW TO REMOVE THE TERMINAL COVER

Insert the minus tip of a screwdriver into each hole at the four corners of the cover and pull it to the direction as indicated below to separate the terminal cover.

■ CONNECTION DIAGRAM

SCxx0-x1-x (Modbus-RTU)

*1. SC2xx only
*2. /M2, /R only

SC2x0-x-x (Modbus/TCP)

*2. /M2, /R only
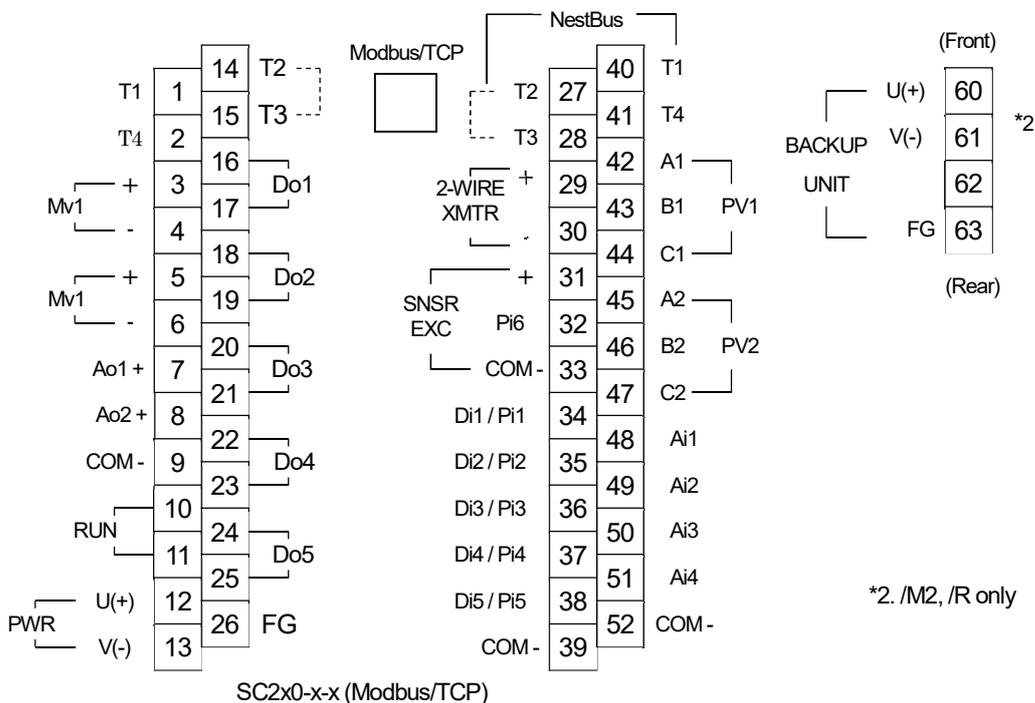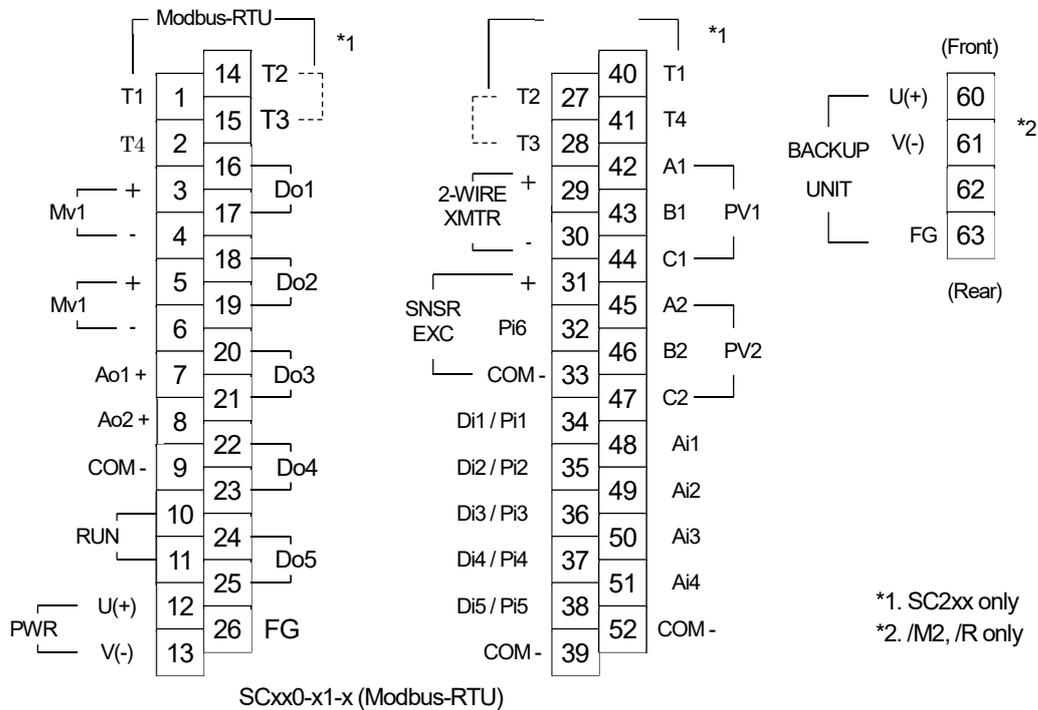
6.1 SCHEMATIC CIRCUITRY & CONNECTION DIAGRAM

Shows the schematic circuitry and connection diagram of SC200.

■ BACKUP MODULE POWER SUPPLY: SINGLE SUPPLY
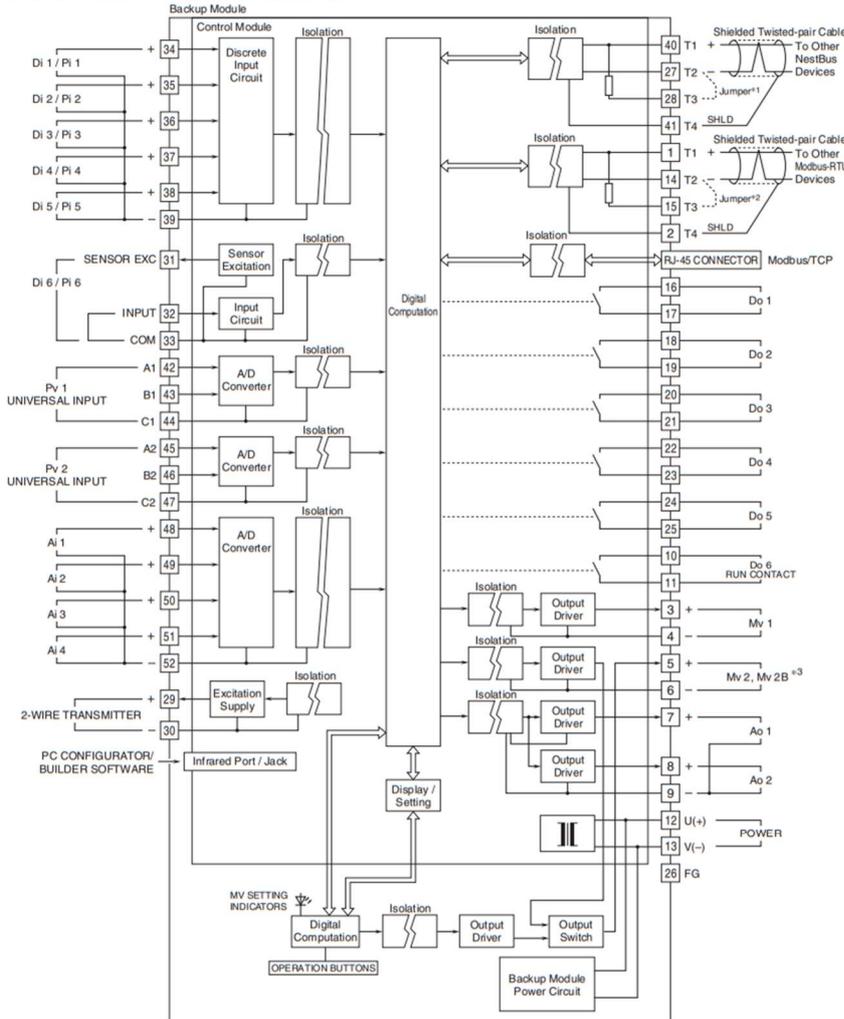
*1. Close across the terminals 27 – 28 when the unit is located at the end of a transmission line (= no cross-wiring).
*2. Close across the terminals 14 – 15 when the unit is located at the end of a transmission line (= no cross-wiring).
*3. Backup is applicable to Mv 2 only. Mv 2B is output of the backup module.

■ UNIVERSAL INPUT CONNECTION E.G.   ■ DISCRETE INPUT PULSE INPUT CONNECTION E.G.:

*4. Connect input resistor module (model: REM4) for current input.
*5. Connect CJC sensor for thermocouple input.
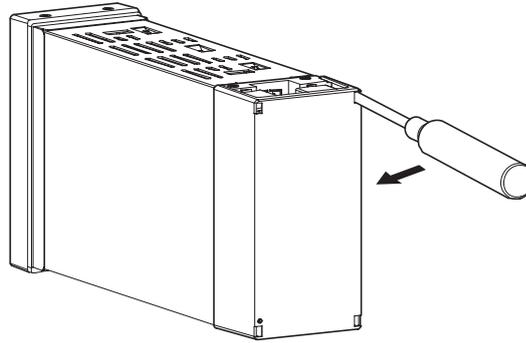*6. Connect input resistor module (model: REM4).
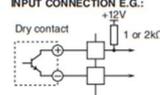
COMMUNICATION CABLE CONNECTIONS

■NestBus
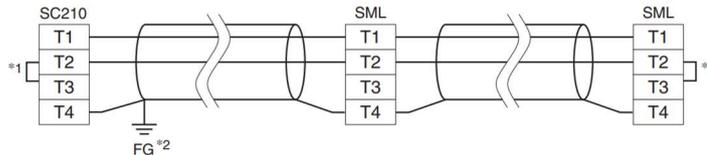
■Modbus-RTU
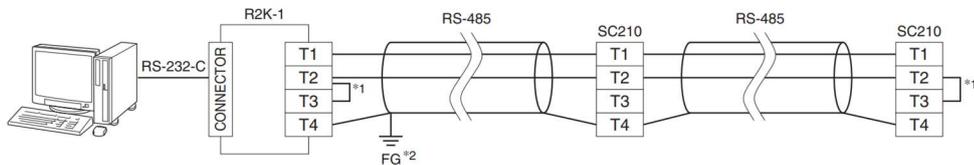
*1. Internal terminating resistor is used when the device is at the end of a transmission line.
*2. For noise protection, connect all shielded cables with each other and ground them at a single dedicated ground point.

6.2   UNIVERSAL INPUT (Pv1, Pv2), INPUT TYPE SETTING

For process input (Pv1, Pv 2), choose among 26 input types.   Be aware that the terminal connection differs depending upon input types.   The factory default setting is "3: 1 to 5 V".

Terminal connections for each input type

Input type		Pv input terminal connection
Voltage / Current	0: -10 - 10 V 1: -1- 1 V 2: 0 - 10 V 3: 1 - 5 V 4: 0 - 1 V 5: 4 - 20 mA	 *1. Connect input resistor module (model: REM4) for current input
Thermocouple	6: K 7: E 8: J 9: T 10: B 11: R 12: S 13: C 14: N 15: U 16: L 17: P 18: PR	 *2. Connect CJC sensor for thermocouple input
RTD	19: Pt100 (JIS'97、IEC) 20: Pt100 (JIS'89) 21: JPt100 (JIS'89) 22: Pt50 (JIS'81) 23: Ni100	
Potentiometer	24: MS	
Current Loop Supply	25: DS	 *3 Connect input resistor module (model: REM4)

7 DEFAULT LOOP CONFIGURATION

7.1 GENERAL DESCRIPTIONS

The Controller is designed to suit with a wide variety of applications using two PID function blocks together with numerous computational functions.

The factory default programming enables the Controller to function as basic PID controller.

The explanation for the usage with the factory default settings is described below.

Parameters can be changed with the touch panel.

7.2 EX-FACTORY SETTING

Two loops of basic PID are preset.

When CASCADE/LOCAL setting mode '1' is selected, cascade control with Ai 1 value is available.

■ Loop 1

P: 100%
I: No integral action
D: No derivative action

■ Loop 2

P: 100%
I: No integral action
D: No derivative action
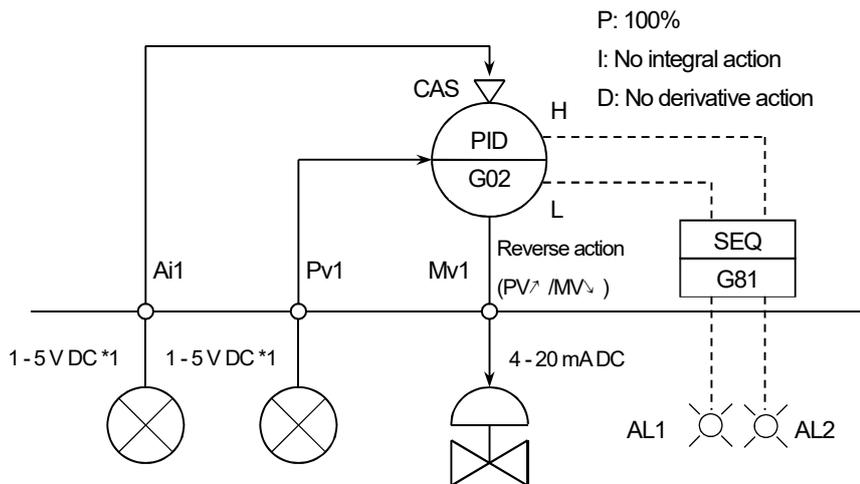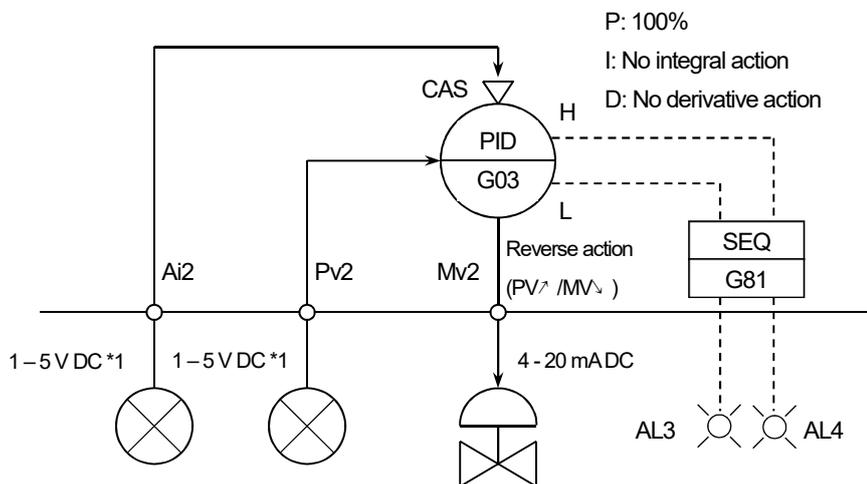
*1: Factory default setting

Note: Use the Loop Configuration Builder Software (model: SFEW3E) for loop configuration.

7.3 USING WITH DEFAULT LOOP CONFIGURATION

7.3.1 Wiring

Using with default loop configuration, connect the power supply, FG, process input (Pv1, Pv2) and control output (Pv1, Pv2) as following.

When using cascade connection, connect to the analog input (Ai1, Ai2). In this case, changing the control type from LOCAL to CASCADE / LOCAL on the tuning view is required. Connecting the Mv1 output to Ai2 via the input resistance of 250Ω, cascade control by Loop1 and Loop2 can be performed. Pv input range is changeable on the tuning view. When the range is changed, make the wiring appropriate for the range.
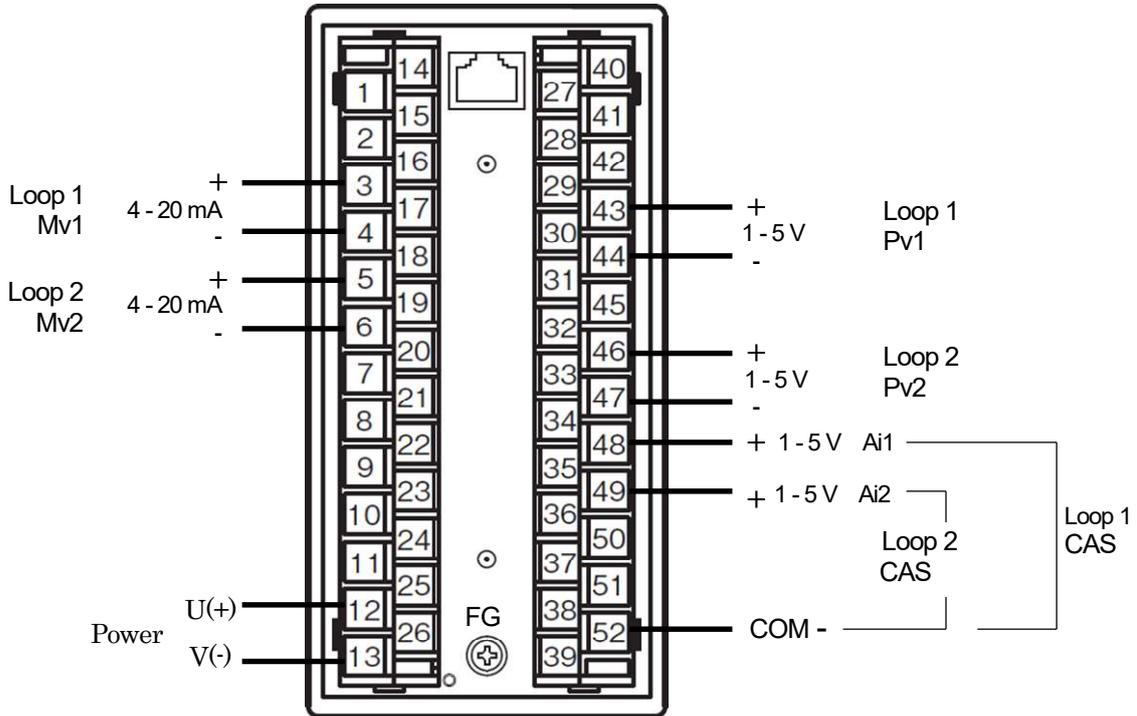
7.3.2 Tuning View Operations

Configuring tuning parameters of each loop is available on this view.

[1] Pressing/holding the acceleration button for approx. 5 seconds activates [Eng] button on the screen.

[2] Pressing/holding the Eng button for approx. 1 second switches the view to Engineering view.

[3] Touch the Eng button for several times switches the view to Tuning view.

[4] Select tuning parameter by ↑↓ tuning parameter select button and touch [Enter].

After configuration, press/hold the Eng button for approx. 1 second or press Home button to go back to the operation view.
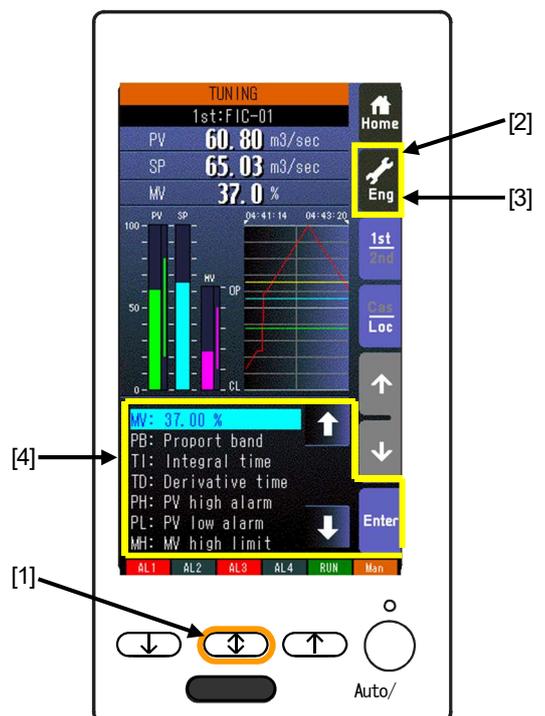
TUNING PARAMETERS

No.	ABBR	SELECTABLE RANGE	FACTORY DEFAULT	CONTENTS
1	SP	-15.00 to 115.00%	0.00%	Setpoint value (Local mode)
2	MV	±115.00%	0.00%	Manipulated value (Man mode)
3	PB	0 to 1000%	100%	Proportional band
4	TI	0.00 to 100.00 min.	0.00 min.	Integral time (0: No integral)
5	TD	0.00 to 10.00 min.	0.00 min.	Derivative time (0: No derivative)
6	PH	-15.00 to 115.00%	115.00%	PV alarm high limit
7	PL	-15.00 to 115.00%	-15.00%	PV alarm low limit
8	MH	±115.00%	115.00%	MV high limit
9	ML	±115.00%	-115.00%	MV low limit
10	DL	0 to 115.00%	115.00%	Deviation alarm setpoint
11	SM	LOCAL, CASCADE/LOCAL	LOCAL	Setting mode
12	DR	Direct, Reverse [PV↗ /MV↘]	Reverse [PV↗ /MV↘]	Control direction
13	DM	PV derivative, Deviation derivative	PV derivative	Derivative type
14	MD	Direct, Reverse	Direct	MV control direction display
15	TG	10 characters	Tag No.	Tag No. (Tag name)
16	MH	±32000	10000	Upper range in engineering unit
17	ML	±32000	0	Lower range in engineering unit
18	DP	0, 1, 2, 3, 4, 5	2	Decimal point position (number of decimal places)
19	TU	8 characters	Unit	Unit

Note 1: SM: Ai signal can be used as SP when Cascade/Local mode is selected.

Note 2: All parameters except AT are locked during the SFEW communication mode.

7.3.3 Basic Operation Procedure

[1] 1st/2nd select button

Used to switch between the primary and the secondary loops.

Valid only when the secondary is set.

[2] SP value UP/DOWN buttons, Cas/Loc select button

Pressing the SP value UP/DOWN button to increase/decrease SP value when the control mode is set to Loc.

Pressing/holding the Cas/Loc select button for approx. 1 second switches the control mode between cascade (Cas) and local (Loc). Valid only when 'Set mode Cas/Loc' setting under the tuning parameters is set to 'Cascade/Local. External input value is adopted as SP value when the control mode is set to Cas.

[3] Auto/Man selector, Monitor LED

Changes the control mode from auto to manual and vice versa.

Monitor LED:

'Auto' mode: Green

'Man' mode: Orange

[4] MV value UP/DOWN buttons, Acceleration button

Pressing the MV value UP/DOWN button to increase/decrease MV value when the control mode is set to manual.

The MV increases/decreases 10 times faster when the acceleration button is pressed at once.
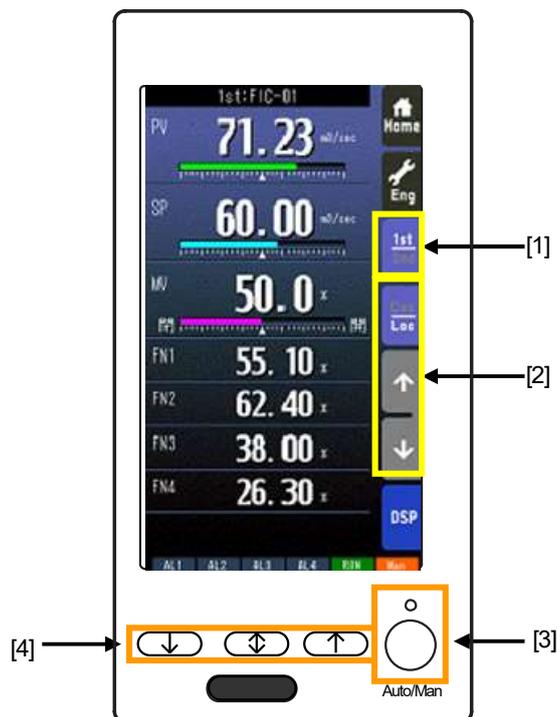
> **Note**
>
> * The AL lamps are set to turn on the High / Low limit alarm of Pv input.
> * Set the Pv input type to 0: -10 to 10V for unused loops, to deactivate AL lamps.

8 DISPLAY OPERATIONS

8.1 FRONT PANEL CONFIGURATION
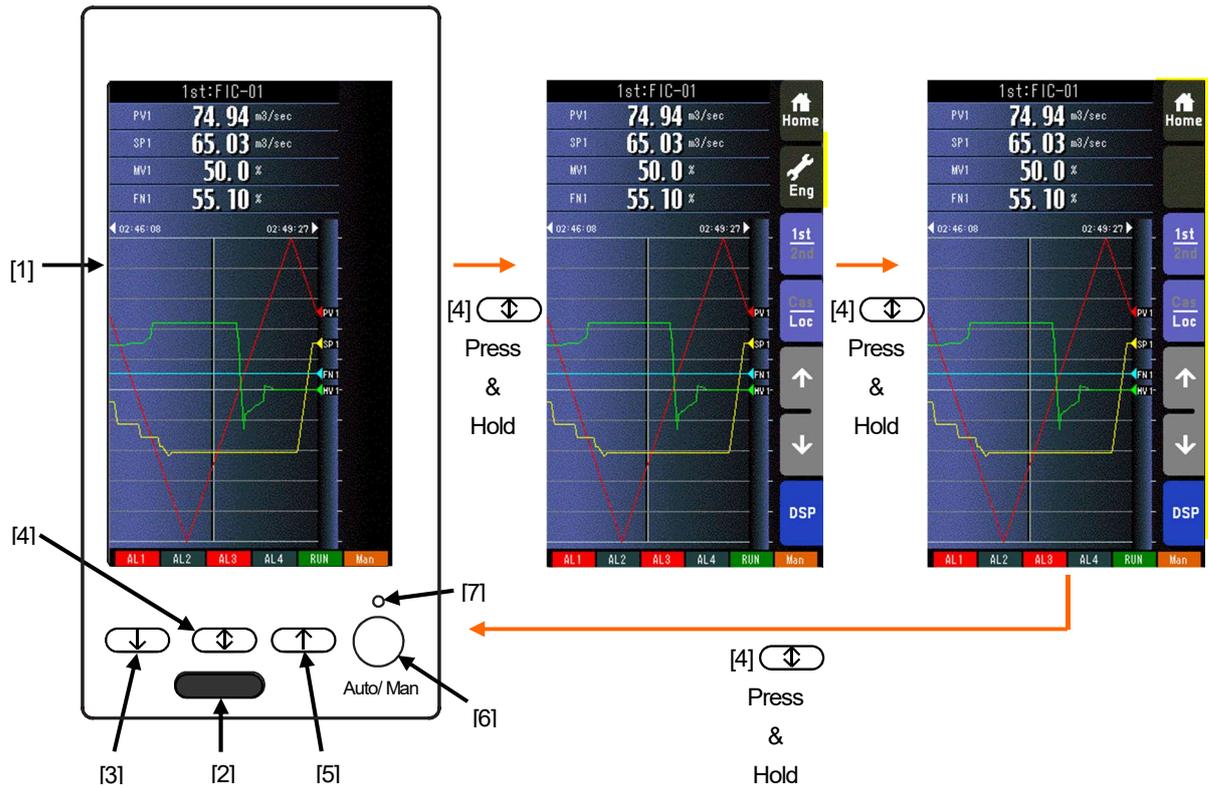
[1] Color LCD with touch panel

TFT color display; various display modes available with the touch panel operability

[2] Infrared communication port / stereo jack port

Used to communicate with PC to program and change parameters in Programming view using the Loop Configuration Builder Software (model: SFEW3E) or to program and change parameters in Configuration view using the PC Configurator Software (model: SCCFG).

[3] MV value (DOWN) button

Decreases the MV in 40 sec. per full-scale when the control mode is set to manual.   Decrements by digit in one-shot is also possible.   The MV decreases in 4 seconds per full-scale when the acceleration button is pressed at once.

[4] Acceleration button

The MV increases in 4 seconds per full-scale when the acceleration button is pressed at once.   Pressing/holding the acceleration button for approx. 5 seconds activates [Eng] button on the screen.

Then repeating the action at this state locks out the touch panel operation buttons. (Hardware buttons are not locked.) In order to release them, press/hold it again for approx. 5 seconds.

[5] MV value (UP) button

Increases the MV in 40 sec. per full-scale when the control mode is set to manual.   Increments by digit in one-shot is also possible.   The MV increases in 4 seconds per full-scale when the acceleration button is pressed at once.

[6] Auto / Man selector

Changes the control mode from auto to manual and vice versa.

[7] Monitor LED

Indicates control operation mode. [1]

'Auto' mode: Green
'Man' mode: Orange
Manual loading or indication only mode (No PID): Amber
Communicating with the SFEW3E: Slow blinking
Communicating with the SCCFG: Fast blinking

[1]   Operation view: Status of the loop specified in 'Loop display (MV/OP)' setting.
     Engineering view: Status of the loop indicated on the screen.

8.2   TOUCH PANEL OPERATION
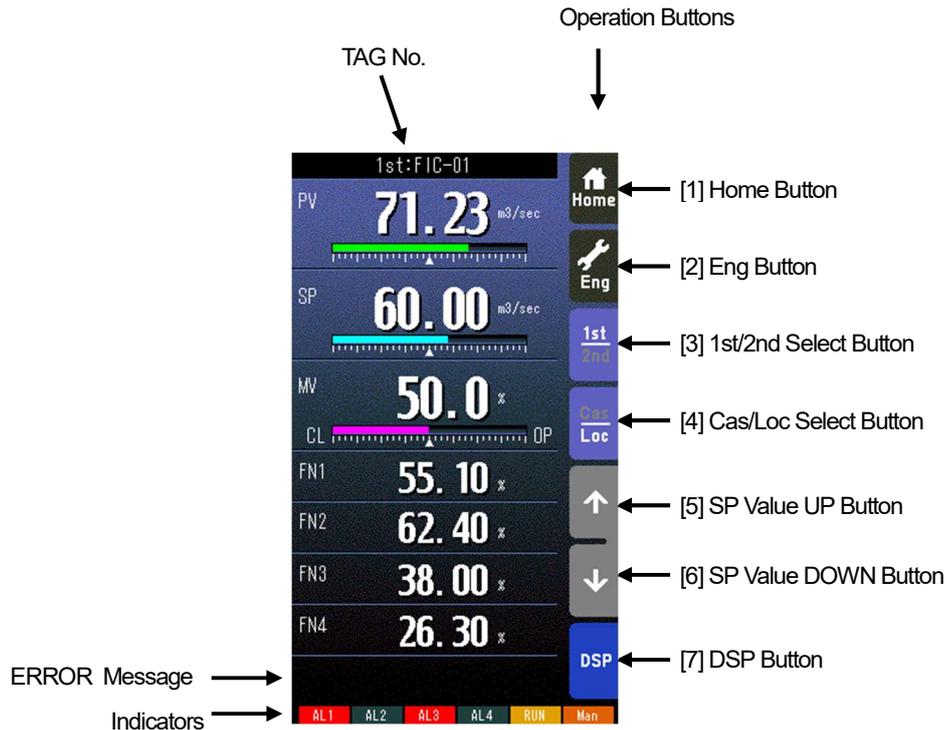
TAG No.

Operation Buttons

[1] Home Button
[2] Eng Button
[3] 1st/2nd Select Button
[4] Cas/Loc Select Button
[5] SP Value UP Button
[6] SP Value DOWN Button
[7] DSP Button

ERROR Message
Indicators

[1] Home button

Used to switch the view to the one registered as Home operation view.

Pressing/holding the button for approx. 1 second registers the view as Home view (including the 1st/2nd choice).

[2] Eng button

Pressing/holding the button for approx. 1 second switches the view to Engineering view.

Once the view is switched, it is used to switch among the engineering views.

[3] 1st/2nd select button

Used to switch between the primary and the secondary loops.   Valid only when the secondary is set.

[4] Cas/Loc select button

Pressing/holding the button for approx. 1 second switches the control mode between cascade (Cas) and local (Loc).   Valid only when 'Set mode Cas/Loc' setting under the tuning parameters is set to 'Cascade/Local.'

The button operation can be locked by SC field terminal setting.

[5] SP value UP button [*1]

Used to increase SP value in the speed of 40 seconds per full-scale.   Touching it briefly increases the value digit by digit.

[6] SP value DOWN button [*1]

Used to decrease SP value in the speed of 40 seconds per full-scale.   Touching it briefly decreases the value digit by digit.

[7] DSP button

Used to switch among the operation views.

*1. SP buttons are locked in CAS mode.

*Indicators

INDICATOR	EXPLANATIONS
AL1 to AL4	Background color turns red during alarm.
RUN/STOP	RUN: Green in normal conditions; Amber in an abnormality. STOP: Grey when the Controller operation is stopped; Red when the memory is failed.
Auto/Man	Auto: Green Auto indicator turns on. Man: Orange Man indicator turns on. The lamp indicates the status of the loop specified in 'Loop display (MV/OP)' setting.

8.3   SWITCHING SCREEN VIEWS

The Controller has two main screen groups, "Operation view" and "Engineering view."
Views switch with touch panel operation.   Unnecessary operation views can be skipped by presetting.

OPERATION VIEWS

| Digital display | Bargraph | Dual Bargraph | Short Trend | User's Parameter Table |

ENGINEERING VIEWS

| Configration | Programing*1 | Tuning (Auto-Tuning) | Realtime I/O Monitoring |

| Backup*2 | User's Parameter Table |
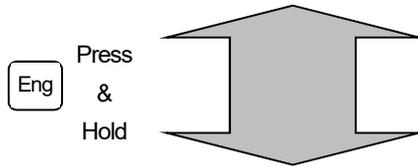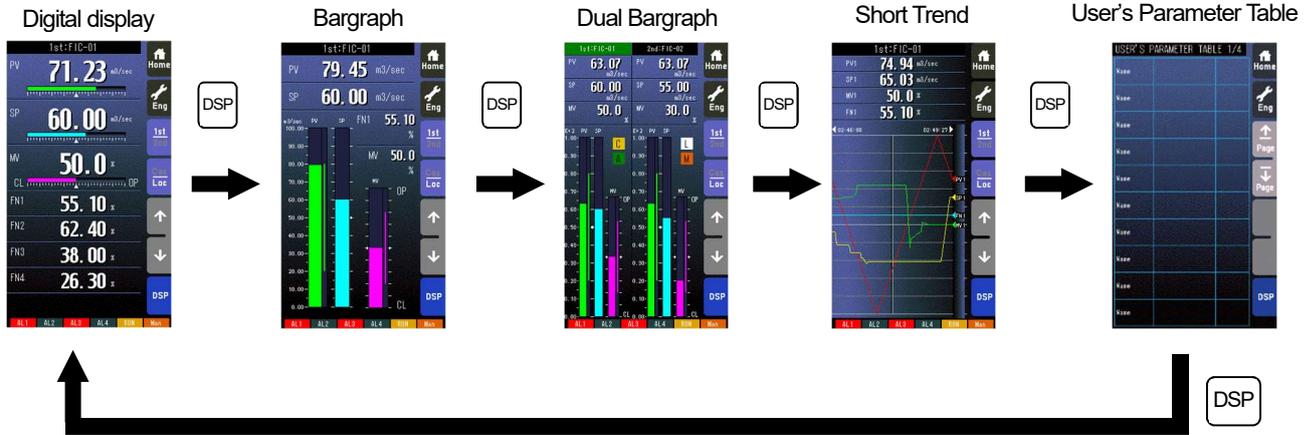
· In digital displays, PV and SP have 7 digits (the 5th decimal digit is rounded down when the number of decimal places is set to 5).
   The MV also has 7 digits. (Sign and decimal point included)
· Unnecessary operation views can be skipped by presetting.

Note

*1. Programming view appears only when 'Config mode' is set to 'Front panel.' Skipped when set to 'SFEW' or 'SCCFG'.
*2. The Backup view is displayed in SC110/210 only.

8.4 OPERATION VIEWS

8.4.1 Digital Display View

TAG No. Operation Buttons

[1] PV Digital Display

PV Bargraph

[2] SP Digital Display

SP Bargraph

[3] MV Digital Display

MV Bargraph

FN1 to FN4 Displays

[4] ERROR Message

[5] Indicators

Alarm Indicator
Red bar blinks during error.

PRG mode Indicator
Yellow bar blinks during program mode.
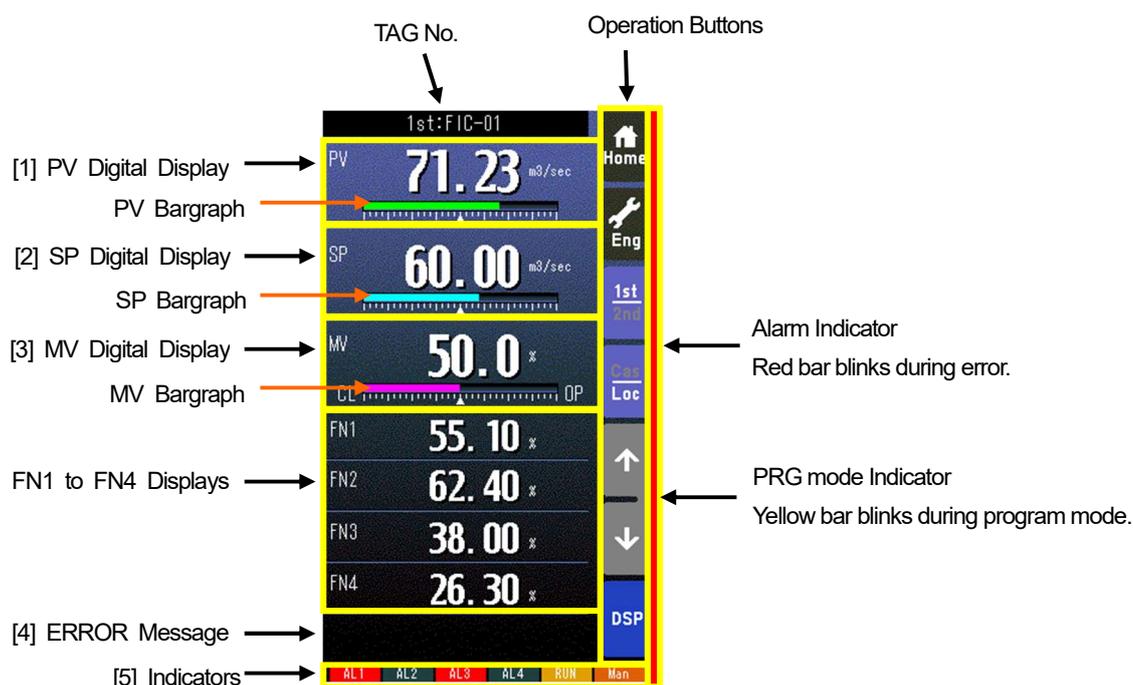
· Pressing on [1st/2nd] button switches between the primary and secondary loops.

· Bargraphs represent respective signals in percentage.

· PV and SP digital displays can be switched between engineering unit data and percentage.

· When error is detected, the error message is displayed on the ERROR code area.

[1] PV display

Touching on the display field switches the PV and SP values in engineering unit and in %

[2] SP display

Touching on the display field opens a numerical pad to directly enter SP value.   (Numerical pad is not available in CAS mode.)

[3] MV display

Touching on the display field opens a numerical pad to directly enter MV value.   (Numerical pad is not available in AUTO mode.)

[4] ERROR Message

MESSAGE	DESCRIPTION	PRIORITY
ERROR: EEPROM database	Equivalent to GROUP oo ITEM 21	HIGH [1]
ERROR: PV	Equivalent to GROUP oo ITEM 22	
ERROR: MV feedback	Equivalent to GROUP oo ITEM 23	
ERROR: Function block	Equivalent to GROUP oo ITEM 24	
ERROR: Control overload	Equivalent to GROUP oo ITEM 25	
ERROR: Modbus communication	Modbus communication module error	
ERROR: Backup module	Backup error (SC110/210)	LOW

*1. When more than one error is occurred at once, the most critical error is indicated.

[5] Indicators

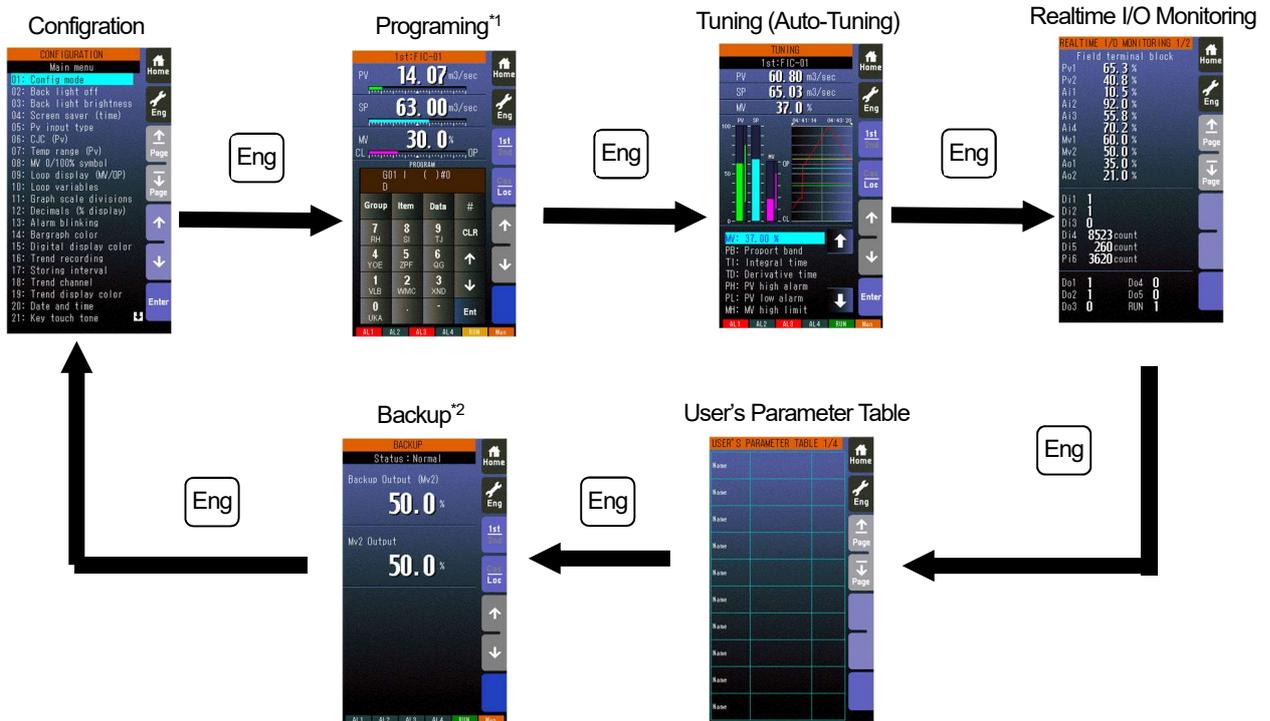| INDICATOR	EXPLANATION
AL1 to AL4	Background color turns red during alarm.
RUN/STOP	RUN: Green in normal conditions; Amber in an abnormality. STOP: Grey when the Controller operation is stopped; Red when the memory is failed.
Auto/Man	Auto: Green Auto indicator turns on. Man: Orange Man indicator turns on. The lamp indicates the status of the loop specified in 'Loop display (MV/OP)' setting.

8.4.2 Bargraph Display View

Tag No.   Operation Buttons

PV Digital Display

SP Digital Display

[2] FNx Digital Display
FN1 - FN4 switched in turn.
Skipped if not assigned.
(e.g. FN1 > FN2 > FN1)

[1] PV/SP Bargraphs
% - Engineering Unit switched
in turn by touching on the field.

PV Bargraph

MV Digital Display

PV Normal Range Indicator

Alarm Indicator
Red bar blinks during error.

PRG mode Indicator
Yellow bar blinks during program mode.

Indicators

MV Output Limit Range Indicator

SP Bargraph

MV Bargraph

· Pressing on [1st/2nd] button switches between the primary and secondary loops.

· PV and SP values are shown in engineering unit value.

· Engineering unit and % scale can be switched with PV and SP bargraphs

[1] PV & SP bargraphs

Touching on the display field switches the PV, SP value in engineering unit and in %.

[2] FNx Digital Display

Touchgin on the display field switches the FN1 through FN4 in turn.   Those not assigned are skipped (e.g. FN1 > FN2 > FN1).

* Indicators

INDICATOR	EXPLANATIONS
AL1 to AL4	Background color turns red during alarm.
RUN/STOP	RUN: Green in normal conditions; Amber in an abnormality.
	STOP: Grey when the Controller operation is stopped; Red when the memory is failed.
Auto/Man	Auto: Green Auto indicator turns on.
	Man: Orange Man indicator turns on.
	The lamp indicates the status of the loop specified in 'Loop display (MV/OP)' setting.

8.4.3 Dual Loop Bargraph View

Tag No. Primary Loop

Tag No. Secondary Loop

Operation Buttons

PV Digital display

SP Digital Display

MV Digital Display

Primary Loop Bargraphs *1

Secondary Loop Bargraphs *1

Alarm Indicator
Red bar blinks during error.

Maintenance Indicator
Yellow bar blinks during program mode.

Indicators
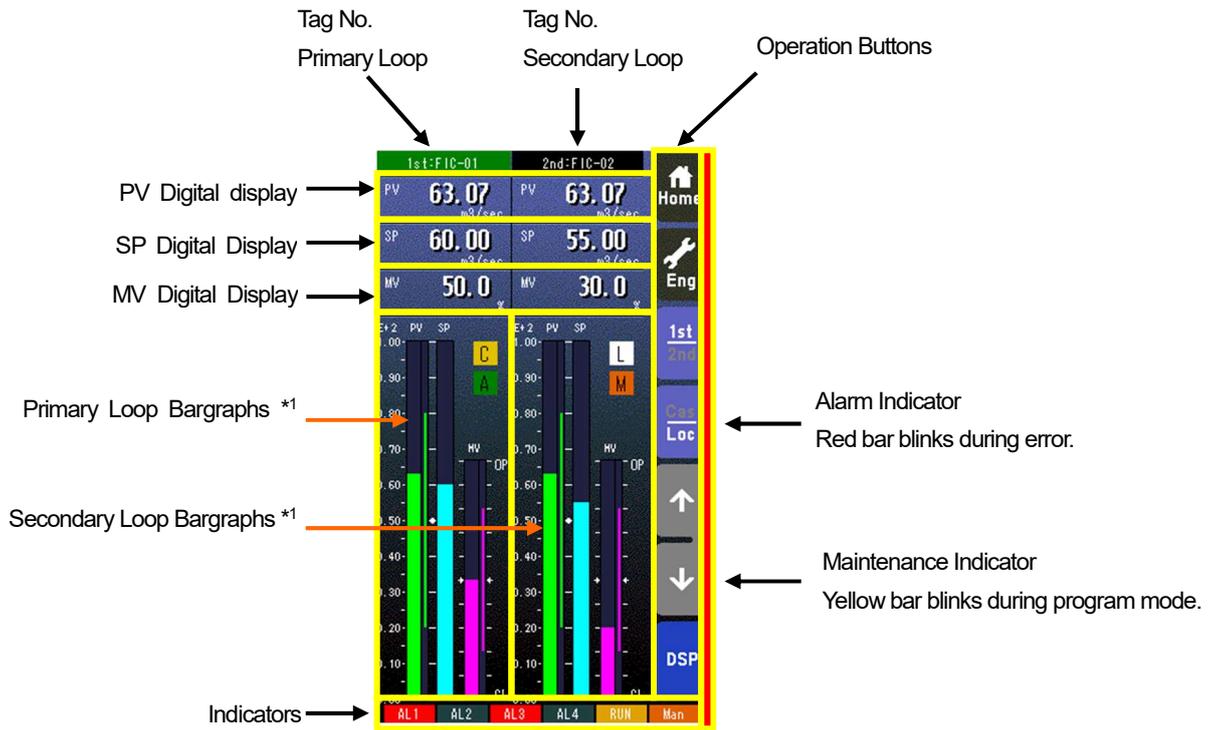
· Pressing on [1st/2nd] button switches between the primary and secondary loops.
· The secondary loop bargraph field is blank with only the background color when the secondary loop is not assigned.
· The background color of the tag field for the selected loop turns to green.

*1. Refer to the 8.4.2 Bargraph Display Views for details of bargraph indications.

*Indicators

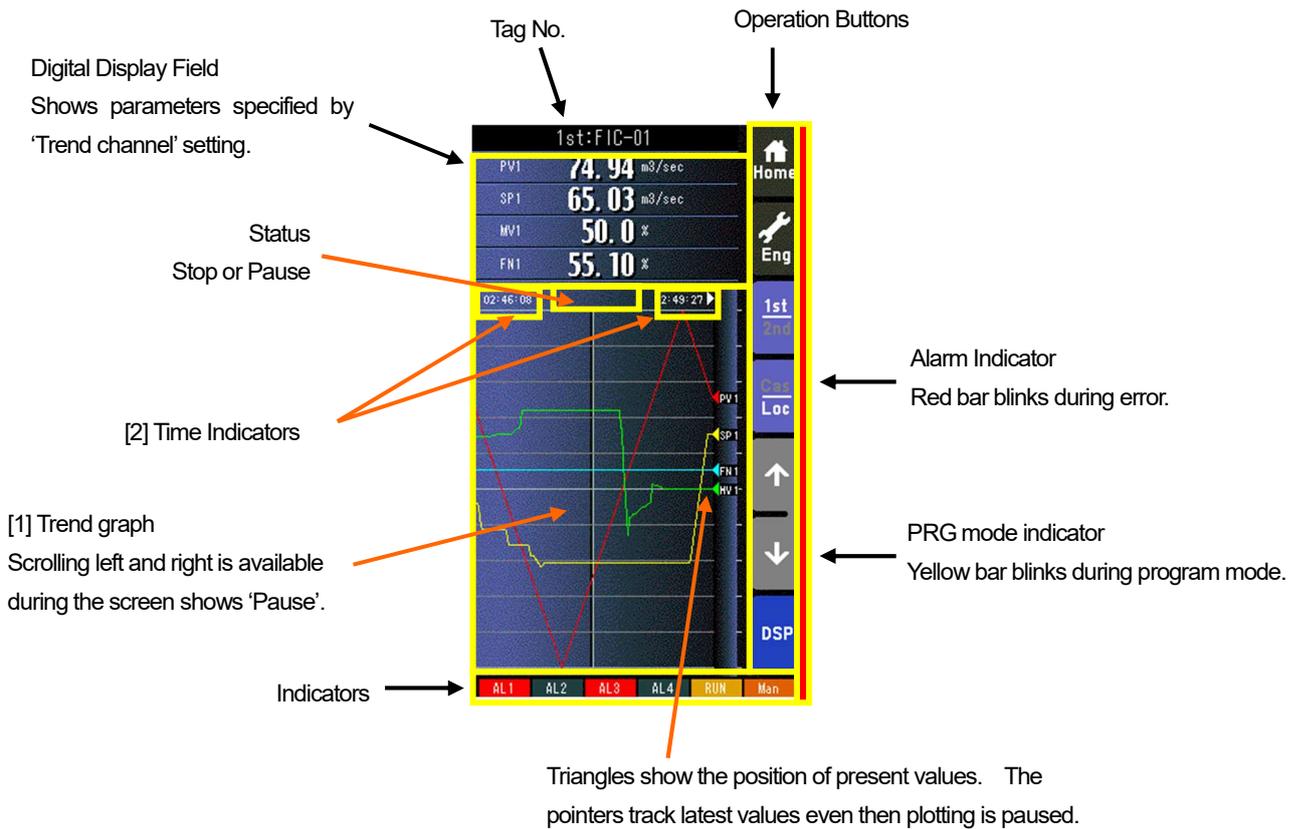| INDICATOR	EXPLANATIONS
AL1 to AL4	Background color turns red during alarm.
RUN/STOP	RUN: Green in normal conditions; Amber in an abnormality. STOP: Grey when the Controller operation is stopped; Red when the memory is failed
Auto/Man	Auto: Green Auto indicator turns on. Man: Orange Man indicator turns on. The lamp indicates the status of the loop specified in 'Loop display (MV/OP)' setting.

8.4.4　Short Trend View

Tag No.

Operation Buttons

Digital Display Field
Shows parameters specified by
'Trend channel' setting.

Status
Stop or Pause

[2] Time Indicators

[1] Trend graph
Scrolling left and right is available
during the screen shows 'Pause'.

Indicators

Alarm Indicator
　Red bar blinks during error.

PRG mode indicator
　Yellow bar blinks during program mode.

Triangles show the position of present values.　The
pointers track latest values even then plotting is paused.

· Pressing on [1st/2nd] button switches between the primary and secondary loops.
· 200 samples are plotted on the chart.
· The graph operation is linked with that on Tuning view.
· Graph plotting is reset to restart in either of the following conditions:
   - When the power supply is turned on with 'Trend recording' set to 'Start.'
   - When 'Trend recording' setting is changed from 'Stop' to 'Start.'
   - When 'Storing interval' setting is changed.
   - When 'Trend channel' setting is changed.
   - When setting is initialized.
   - When setting is changed and applied by PC configurator software (model: SCCFG)

[1] Trend graph

Plotting is freezed by touching on the chart.
The screen shows 'Pause' while it is stopped.　Plotting is restarted at the point of latest data sampling when the chart is touched again.

[2] Time indicators

The chart can be scrolled by half the screen chart span when time indicator is touched (max. two chart spans).　It moves to the directions indicated with arrows beside the time indication.　Scrolling is available when the arrows are yellow.

*Indicator

INDICATOR	EXPLANATIONS
AL1 to AL4	Background color turns red during alarm.
RUN/STOP	RUN: Green in normal conditions; Amber in an abnormality. STOP: Grey when the Controller operation is stopped; Red when the memory is failed.
Auto/Man	Auto: Green Auto indicator turns on. Man: Orange Man indicator turns on. The lamp indicates the status of the loop specified in 'Loop display (MV/OP)' setting.

8.4.5　User's Parameter Table

Operation Buttons

Parameter Column
Parameter type specified in the parameter setting view.

[5] Range Column
Present Range value for the specified GROUP and ITEM type.

Engineering Unit Column
Unit specified in the parameter setting view.

[1] Home Button

[2] Eng Button

[3] Page UP Button

[4] Page DOWN Button

Alarm Indicator
Red bar blinks during error.

· At the maximum of 40 parameters (10 per page, 4 pages in total) can be registered for the user's convenience.

· Only the parameter type identification is displayed when it is disabled in the Parameter Setting view.

· ' ******* ' is indicated in Range cell when illegal GROUP and/or ITEM No. are set for the parameter.

[1] Home button

Used to switch the view to the one registered as Home operation view.　Pressing/holding the button for approx. 1 second registers the view as Home view (including the 1st/2nd choice).

[2] Eng Button

Pressing/holding the button for approx. 1 second switches the view to Engineering view.　Once the view is switched, it is used to switch among the engineering views.

[3] Page UP button

Used to go to the previous page of the main menu.

[4] Page DOWN button

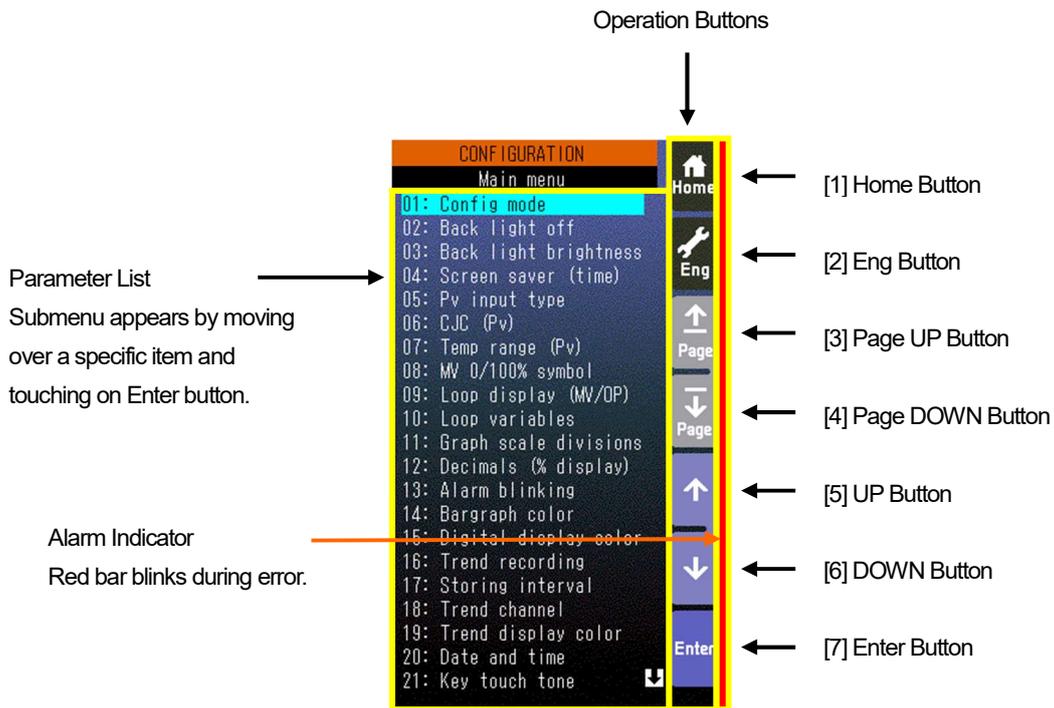Used to go to the next page of the main menu.

[5] Range value

Touching over a Range cell opens a numeric keypad.　The numeric keypad is not available (1) when ' ******* ' is indicated in Range cell for which illegal GROUP and/or ITEM No. are set, or (2) when the Config. mode is set to 'SFEW.'

Note

· Calculation errors when converting range value to internal percentage.
· When 20000 and 0 is set as Range high/low limit, setting to 9999 and converting to percentage, 49.995 % is obtained, however, internally it is processed as 49.99 %.　Therefore the display shows "9998".
· Only the acceleration button among the hardware buttons at the front is usable. The MV value UP/DOWN buttons and the AUTO / MAN selector are locked.
· Parameter settings are not available in the User's parameter table of Operation views.　Set the parameters in the Parameter list of Engineering views.

8.5 ENGINEERING VIEWS

8.5.1 Configuration View

Operation Buttons

Parameter List
Submenu appears by moving
over a specific item and
touching on Enter button.

Alarm Indicator
Red bar blinks during error.

[1] Home Button
[2] Eng Button
[3] Page UP Button
[4] Page DOWN Button
[5] UP Button
[6] DOWN Button
[7] Enter Button

Parameter items can be selected by directly touching over the menu list.

[1] Home button
  Used to switch the view to the one registered as Home operation view.

[2] Eng button
  Used to switch among the engineering views.
  Pressing/holding the button for approx. 1 second switches the view to Operation view.

[3] Page UP button
  Used to go to the previous page of the main menu.

[4] Page DOWN button
  Used to go to the next page of the main menu.

[5] UP button
  Used to go up to next item among listed selections.

[6] DOWN button
 Used to go down to next item among listed selections.

[7] Enter button
 Used to apply the data indicated on the display.

8.5.1.1   Setting Examples

Choosing input type from multiple selections (e.g. changing Pv1 input type from 0-10 V to 4-20 mA)

1) Choose "PV input type" in Configuration view menu and touch [Enter].
2) Choose PV input (Pv1 in this example) you want to change, and touch [Enter].
3) Choose input type (D05: 4 to 20mA in this example) you want to set, and touch [Enter].
Note: Touch [Back] at the bottom to go back to previous view.
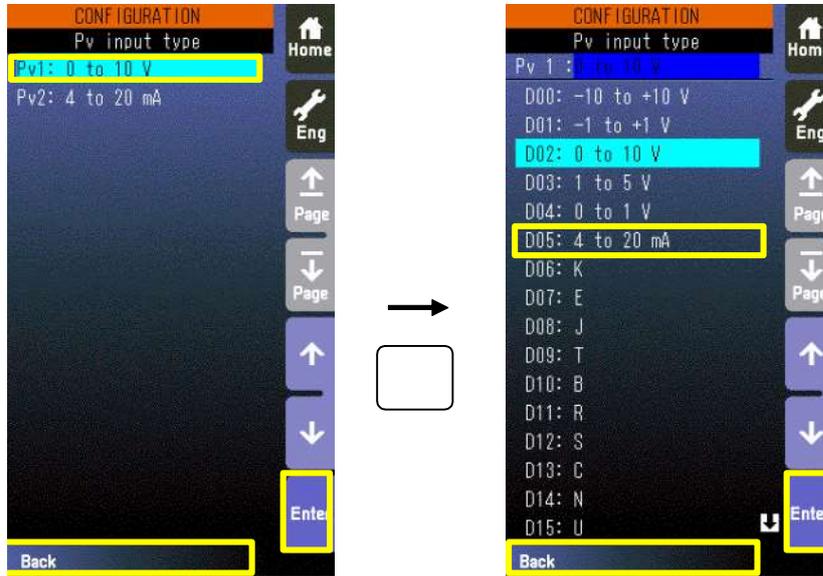
Choosing colors (e.g. changing Pv1 normal range bargraph color from green to blue)

1) Choose "Bargraph color" in Configuration view menu and touch [Enter].
2) Choose signal type ("PV1" in this example) you want to change, and touch [Enter].
3) Touch color indicator (green section to the right of "Norm" in this example) you want to change, and touch [Enter].
4) Color chart appears on the screen.   Touch new color (blue) and touch [Enter].
Note: Touch [Back] at the bottom to go back to previous view.
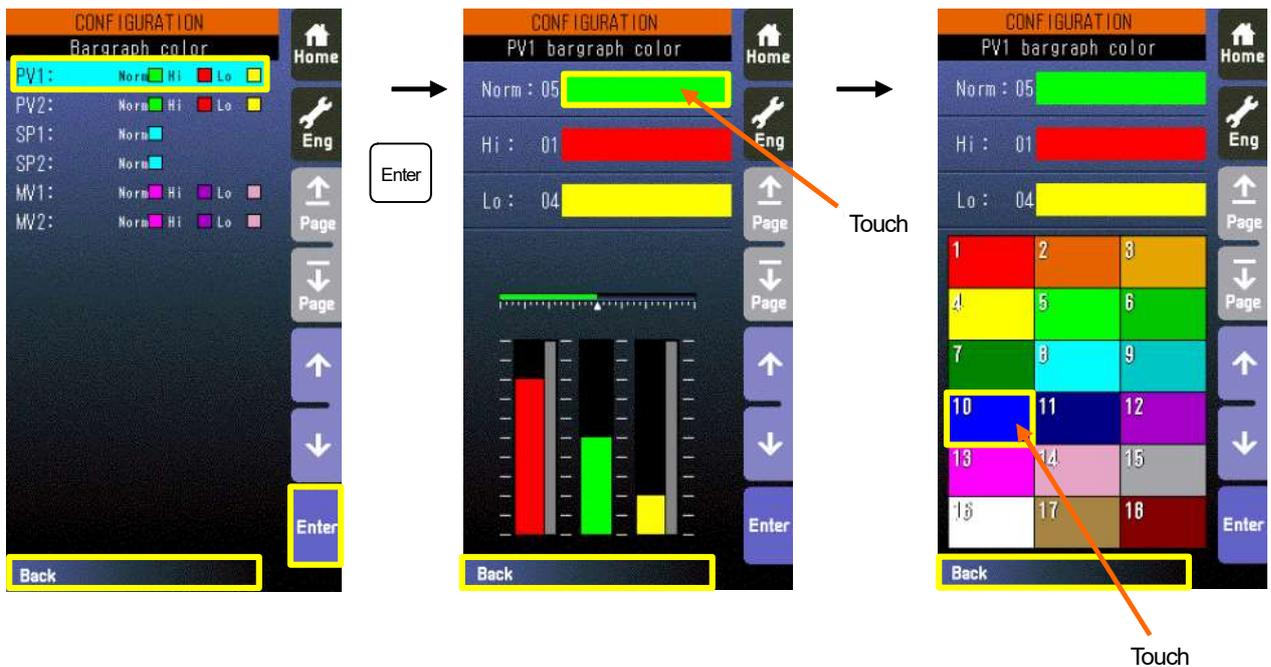
Entering alphanumeric characters (e.g. changing AL1 message)

  1) Choose "AL1-4 message" in Configuration view menu and touch [Enter]

  2) Choose AL message (AL1 in this example) you want to change, and touch [Enter].

  3) Enter characters you want to set, and touch [Enter].

      Use [←] [→] to shift the cursor position.
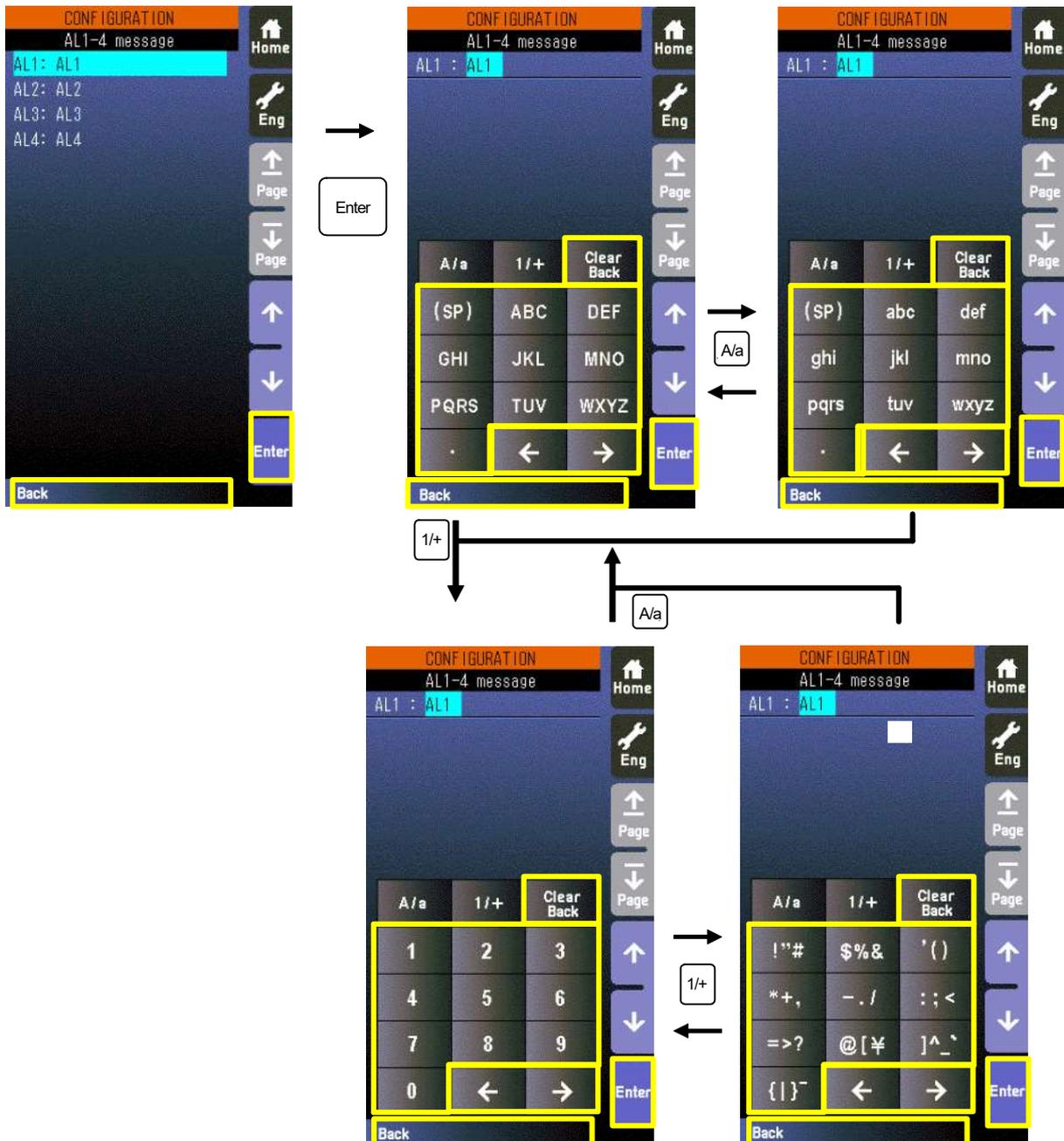
      [Clear Back] deletes the character and its space at the position of the cursor.

      [A/a] switches between capitals and small letters.

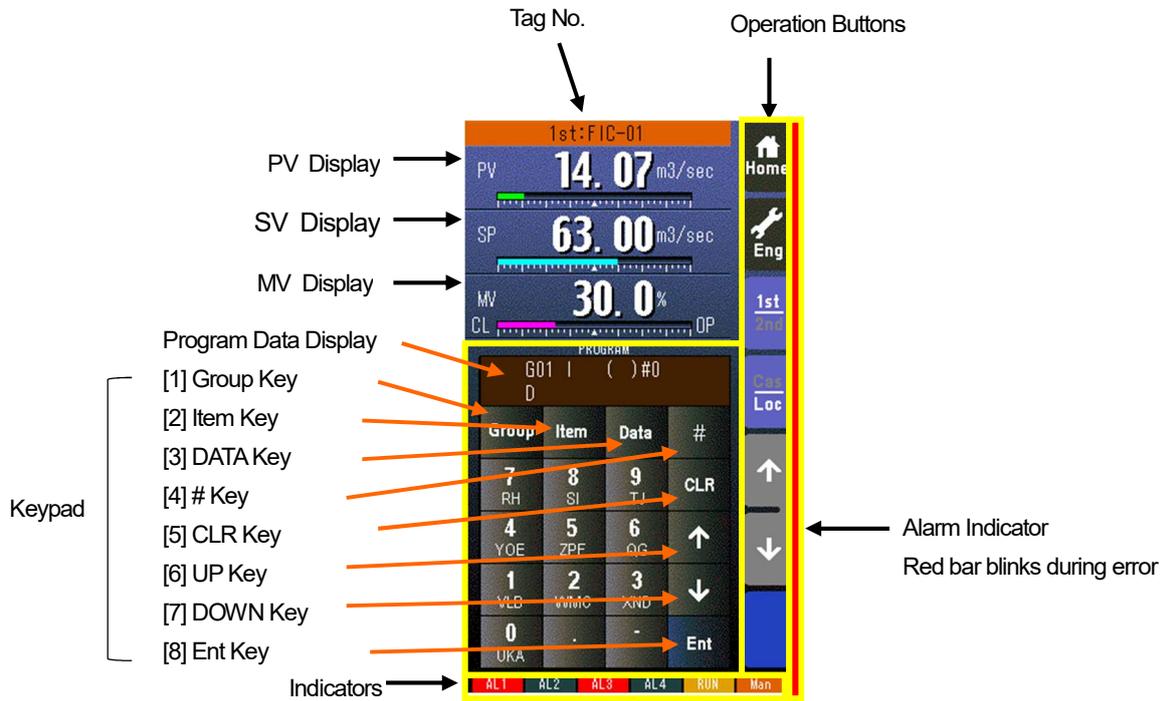   [1/+] switches between numeric and special characters.

      Touching one key each time switches between the characters indicated on the key (e.g. A > B > C > A).

  Note: Touch [Back] at the bottom to go back to previous view.

8.5.2   Programing View

This view is for specifying the position of the setting item with GROUP or ITEM and confirming and rewriting the setting contents.

[1] Group Key

   Used to Stand by entering Group No.

[2] Item Key

   Used to stand by entering Item No.

[3] DATA Key

   Used to set to the DATA input status.

[4] # Key

   Used to switch the shift of data entry characters.

[5] CLR Key

   Used to clear the program data display.

[6] UP Key

   Displaying data: increase ITEM number

   Entering data: increase DATA

[7] DOWN Key

   Displaying data: decrease ITEM number

   Entering data: decrease DATA

[8] Ent Key

   Used to apply the data on the display.

Note

・ The Programming View appears only when the Config. mode is set to 'Front Panel' in the Configuration View.   It is skipped when it is set to 'SFEW' or 'SCCFG'.
・ Items marked with ★ (setting data) and without ◆ (automatically changeable parameters) are not modifiable without setting the Maintenance Switch (ITEM 01) of the relevant group to '1' (program mode).
・ Refer to the Function Block List for setting items and data options.

8.5.2.1 Details of operation

■ OPERATION FLOWCHART

```
┌─────────────────────┐     GROUP and ITEM numbers are blank.
│    Initial state    │
└─────────────────────┘
          │
        [Group]
          │
          ▼
┌─────────────────────┐       [Group] [N] [N]
│ Waiting GROUP No.   │────────────────────────┐
│       input         │        N: 0 to 9        │
└─────────────────────┘                         │
          ▲                                      │
        [Group]                                  │
          │                                      ▼
┌─────────────────────┐   [Item]      ┌─────────────────────┐
│ Waiting DATA No.    │──────────────▶│ Waiting ITEM No.    │
│      input          │◀──────────────│      input          │
└─────────────────────┘ [Item][N][N]  └─────────────────────┘
    │     ▲     ▲          N: 0 to 9
  [Data] [CLR] [Ent]
    │     │     │
       Cancel  Set
          │
          ▼
┌─────────────────────┐   Enter only necessary number of digits.
│ Entering DATA No.   │   First set ITEM 01 DATA 1 to enable the programming mode
└─────────────────────┘   to change any setting.
```
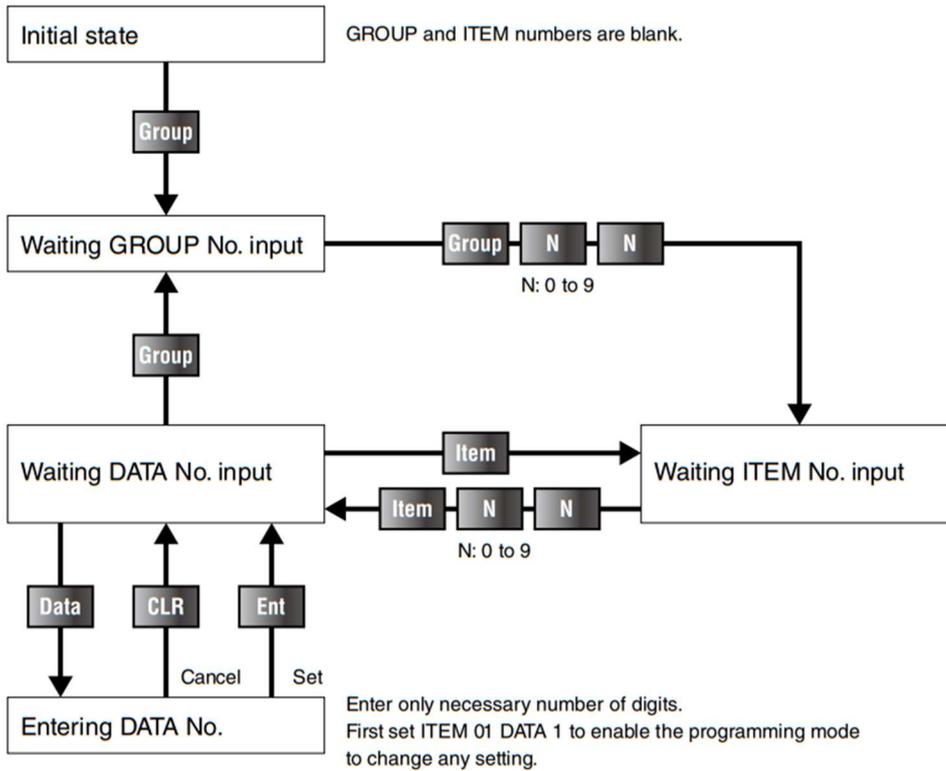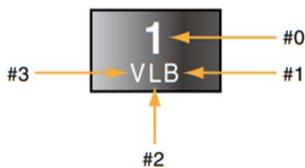
■ PROGRAM DATA FIELD & KEYPAD
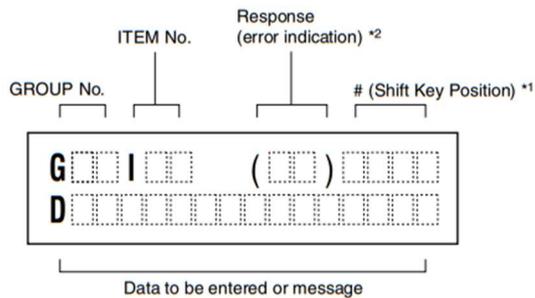
Data to be entered or message

*1. [#] key is used to enter alphabets.
Shift key position indication switches in order of
#1, #2, #3, #0 ... every time the key is pressed.
Level #0 is for entering numeric, and levels #1
to #3 indicate the position of alphabets (below
the numeric) from the right to left.

*2. Response message after format check
OK : OK
NG : No good
ER : Communication error
OE : Operation procedure error
DE : Data syntax error
VE : Non-registered input unit table (not initialized)
WE : Input unit table writing error

[Example]

8.5.3   Tuning (Auto-tuning) View
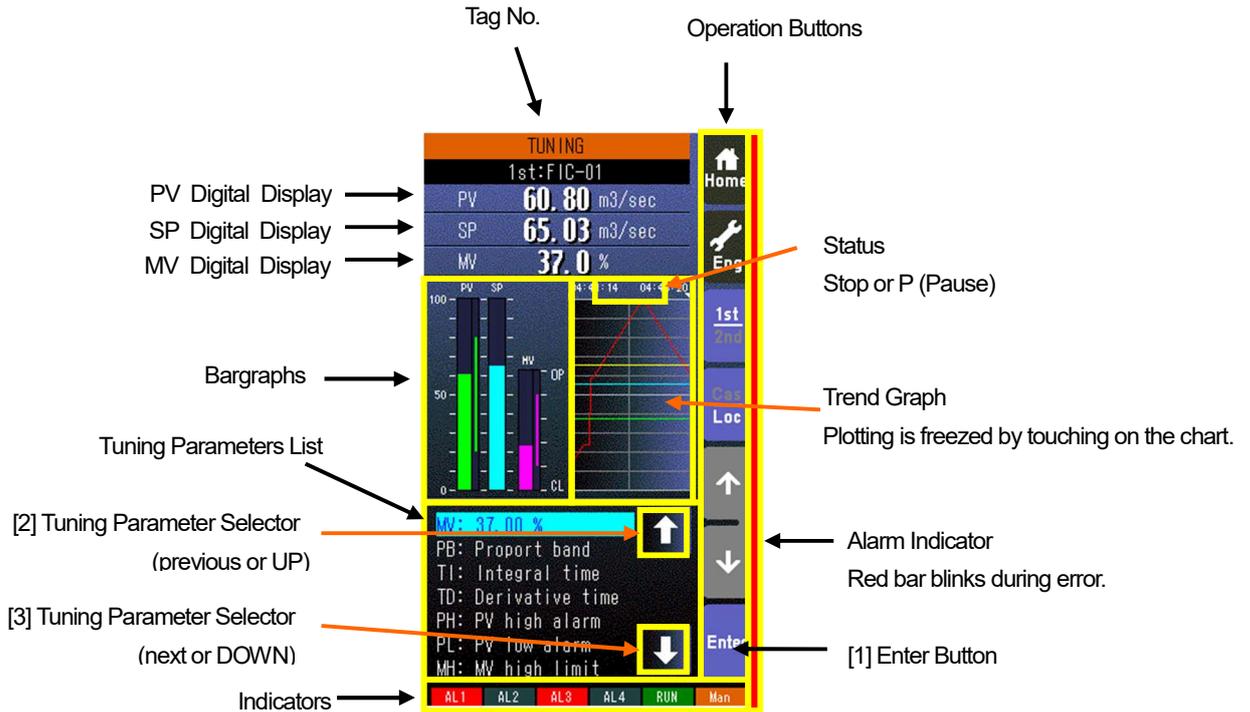
- ・ This view is available when the relevant control loop uses basic PID or advanced PID control.

   (This view is skipped when the relevant control loop is any other control type.)
- ・ Specific tuning parameters can be selected not only by UP/DOWN buttons but also by directly touching them.
- ・ 100 sample data is plotted on the trend graph.

[1] Enter button

   Used select and go to parameter setting of the selector parameter

[2] Tuning parameter selector (previous or UP)

   Used to move up the cursor to choose tuning parameters.

[3] Tuning parameter selector (next or DOWN)

   Used to move down the cursor to choose tuning parameters.

8.5.4   Auto-tuning Operations

The SC Controller uses the limit cycle oscillation for auto-tuning.   The control output (MV) is given with a cyclic oscillation (two cycles) at the reference tuning point (CV) where the PV behavior is observed.   The most appropriate PID parameters are then computed from measured values of the amplitude and frequency of the established output limit cycle waveform.
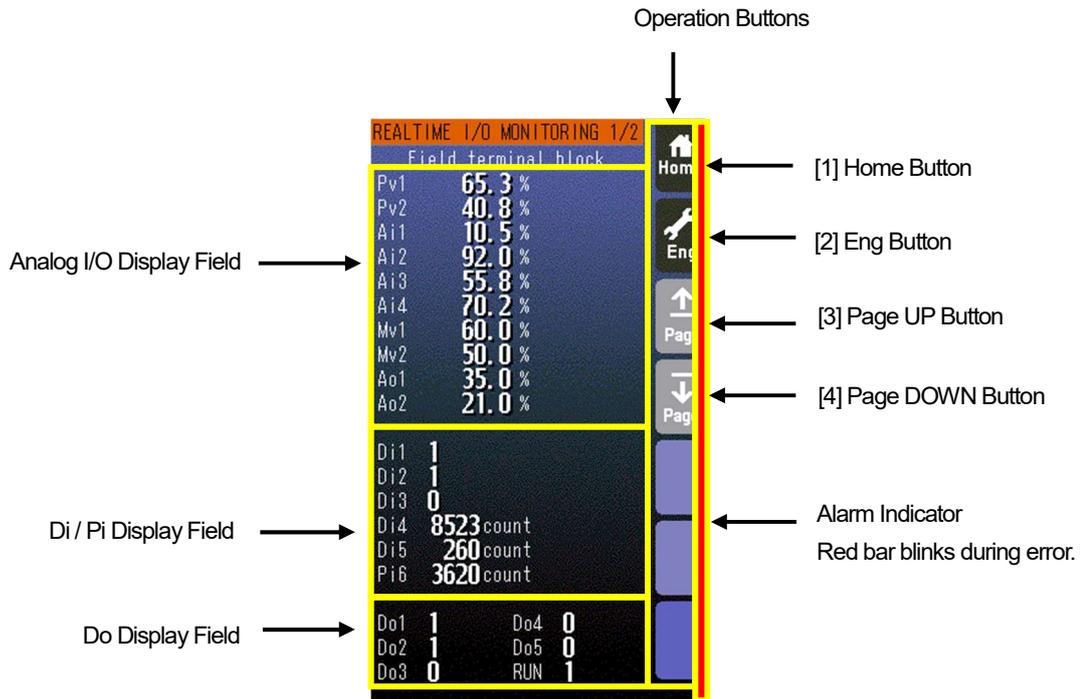
Control output (MV) is changed in a step between 100% and 0% as default setting.   Limited cycle can be selected if the degree of sudden changes to the MV is not desired.

Be aware that the proess may reat in an unexpected way during auto-tuning procedure.   Naturally the parameters obtained in this method may not be the most appropriate. Manual adjustments are recommended to tne them finely.
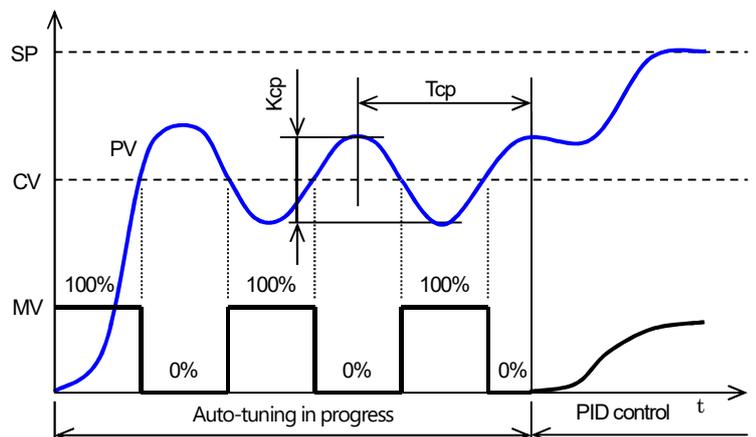
8.5.5 Realtime I/O Monitoring View

8.5.5.1 Page 1/2: Field Terminal Block

Operation Buttons

REALTIME I/O MONITORING 1/2
Field terminal block

Pv1	65.3 %	
Pv2	40.8 %	
Ai1	10.5 %	
Ai2	92.0 %	
Ai3	55.8 %	
Ai4	70.2 %	
Mv1	60.0 %	
Mv2	50.0 %	
Ao1	35.0 %	
Ao2	21.0 %	

Analog I/O Display Field

Di1	1	
Di2	1	
Di3	0	
Di4	8523 count	
Di5	260 count	
Pi6	3620 count	

Di / Pi Display Field

Do1	1	Do4	0
Do2	1	Do5	0
Do3	0	RUN	1

Do Display Field

[1] Home Button
[2] Eng Button
[3] Page UP Button
[4] Page DOWN Button

Alarm Indicator
Red bar blinks during error.

• Analog I/O values are represented in % of the field terminal block range.

• DiX and PiX display items depend upon the user's terminal assignments.

• Di / Do status is given as 1 or 0.

• Pi displays indicate accumulated counts between 0 and 9999 (unit: count).

[1] Home button

Used to switch the view to the one registered as Home operation view

[2] Eng button

Used to switch among the engineering views.

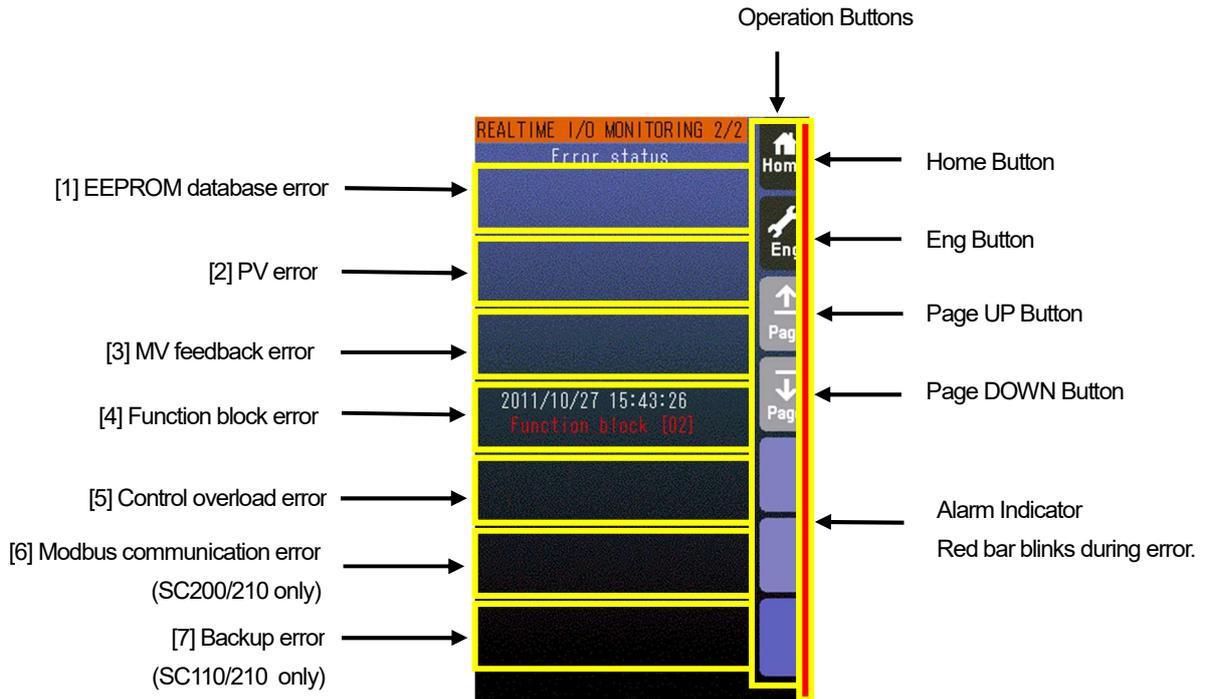Pressing/holding the button for approx. 1 second switches the view to Operation view.

[3] Page UP button

Used to go to the previous page.

[4] Page DOWN button

Used to go to the next page.

8.5.5.2   Page 2/2: Error Status

Operation Buttons

[1] EEPROM database error

[2] PV error

[3] MV feedback error

[4] Function block error

[5] Control overload error

[6] Modbus communication error
(SC200/210 only)

[7] Backup error
(SC110/210 only)

REALTIME I/O MONITORING 2/2
Error status

2011/10/27 15:43:26
Function block [02]

Home Button

Eng Button

Page UP Button

Page DOWN Button

Alarm Indicator
Red bar blinks during error.

・ Error status fields contain the error type and the date it occurred (YYYY/MM/DD HH/MM/SS). (See the example below.)

2011/10/27 15:43:26
Function block [02]

· When more than one error among the errors 1 through 5 has occurred, the only most critical error is displayed.   Priority is given as in the table below.

ERROR No.	MESSAGE	PRIORITY
1	EEPROM database	HIGH
2	PV	
3	MV feedback	↕
4	Function block	
5	Control overload	LOW
6	Modbus communication	—
7	Backup module	—

·For example, only the error 2 is displayed while both the error 2 and 3 are true.   Then the error 3 is displayed after the error 2 is cancelled.

· One of the errors 1 through 5 plus the error 6 and/or 7 can be displayed at once.

8.5.6　User's Parameter Table View

8.5.6.1　Screen Components
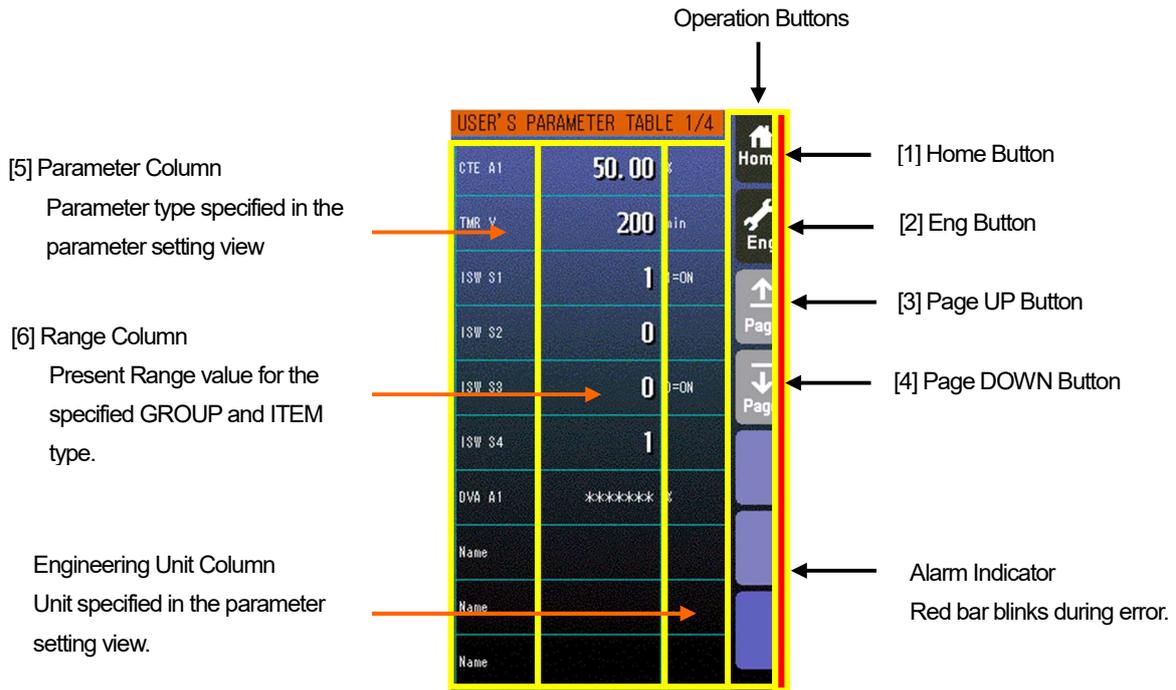
Operation Buttons

[5] Parameter Column
Parameter type specified in the parameter setting view

[6] Range Column
Present Range value for the specified GROUP and ITEM type.

Engineering Unit Column
Unit specified in the parameter setting view.

USER'S PARAMETER TABLE 1/4		
CTE A1	50.00	%
TMR Y	200	min
ISW S1	1	0=ON
ISW S2	0	
ISW S3	0	0=ON
ISW S4	1	
DVA A1	*******	%
Name		
Name		
Name		

[1] Home Button

[2] Eng Button

[3] Page UP Button

[4] Page DOWN Button

Alarm Indicator
Red bar blinks during error.

· At the maximum of 40 parameters (10 per page, 4 pages in total) can be registered for the user's convenience.
· Only the parameter type identification is displayed when it is disabled in the Parameter Setting view.
· ' ******* ' is indicated in Range cell when illegal GROUP and/or ITEM No. are set for the parameter.

[1] Home button

　　Used to switch the view to the one registered as Home operation view.

[2] Eng button

　　Used to switch among the engineering views.

　　Pressing/holding the button for approx. 1 second switches the view to Operation view.

[3] Page UP button

　　Used to go to the previous page.

[4] Page DOWN button

　　Used to go to the next page.

[5] Parameter

　　Touching over a parameter cell switches the view to the Parameter Setting View for the row.
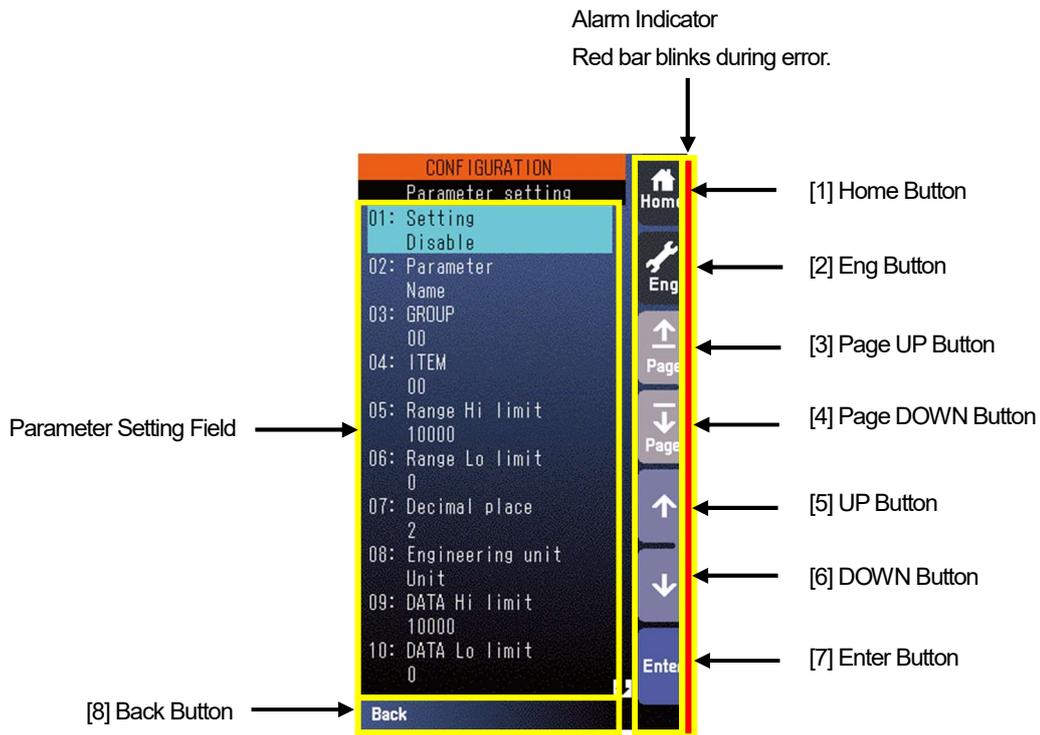
[6] Range value

　　Touching over a Range cell opens a numeric keypad.

　　The numeric keypad is not available (1) when ' ******* ' is indicated in Range cell for which illegal GROUP and/or ITEM No. are set, or (2) when the Config. mode is set to 'SFEW.'

Note

· Calculation errors when converting range value to initial percentage.
· When 20000 and 0 is set as Range high/low limit, setting to 9999 and converting to percentage, 49.995% is obtained, however, initially it is processed as 49.99%.　Therefore the display shows "9998".
· Only the acceleration button among the hardware buttons at the front is usable.　The MV value UP/DOWN buttons and the AUTO / MAN selector are locked.　When "Config. mode" is not set to "Programming view" in the setting view, rewriting the parameter is unavailable.

8.5.6.2   Parameter Setting View Operations

Alarm Indicator
Red bar blinks during error.

CONFIGURATION
Parameter setting

```
01: Setting
    Disable
02: Parameter
    Name
03: GROUP
    00
04: ITEM
    00
05: Range Hi limit
    10000
06: Range Lo limit
    0
07: Decimal place
    2
08: Engineering unit
    Unit
09: DATA Hi limit
    10000
10: DATA Lo limit
    0
```

Back

Parameter Setting Field

[8] Back Button

[1] Home Button
[2] Eng Button
[3] Page UP Button
[4] Page DOWN Button
[5] UP Button
[6] DOWN Button
[7] Enter Button

[1] Home button

Used to switch the view to the one registered as Home operation view

[2] Eng Button

Pressing/holding the button for approx. 1 second switches the view to Engineering view.

Once the view is switched, it is used to switch among the engineering views.

[3] Page UP button

Locked

[4] Page DOWN button

Locked

[5] UP button

Used to go up to next item in the parameter setting field.

[6] DOWN button

Used to go down to next item in the parameter setting field.

[7] Enter button

Used to select an item to change its value.

[8] Back button

Used to go back to User's Parameter Table view.

SETTING ITEMS

SETTING ITEM	DATA INPUT	DEFAULT	CONTENTS
Setting	Enable / Disable	Disable	Enable / Disable the parameter in the User's Parameter Table view.
Parameter	Max. 10 characters	Name	Parameter identification.
GROUP[*1]	0 to 99	0	GROUP No. in the Function Block List
ITEM[*1]	0 to 99	0	ITEM No. in the Function Block List
Range Hi limit	±32000	10000	Range's upper range value
Range Lo limit	±32000	0	Range's lower range value
Decimal place	0 to 5	2	DATA's decimal point position
Engineering unit	Max. 8 characters	Unit	Range's engineering unit in the User's Parameter Table view.

*1. ITEMS marked with ◆ in the SC100/200 Series Function Block List are available for changes.   All parameters are reset to the default values by the initialization in the Configuration view.

8.5.7   Backup View

Status Display → (BACKUP / Status : Backup running)

Backup Module Mv 2 Output → (Backup Output (Mv2) / 50.0 %)

Control Module Mv 2 Output → (Mv2 Output / 60.0 %)

[7] MV Control Buttons appear when the recovery mode is set to 'Manual Tracking' and the backup status is at 'Backup Running.'

Indictors → (AL1 AL2 AL3 AL4 RUN Man)

[1] Home Button
[2] Eng Button
[3] 1st/2nd Select Button
[4] Cas/Loc Button
[5] SP Value UP Button
[6] SP Value DOWN Button
Alarm Indicator
Red bar blinks during error.

- Status display shows either of the following: Normal / Standby backup / Backup running / Backup error.
- Mv 2 is represented in percentage with one decimal place.

[1] Home button

Used to switch the view to the one registered as Home operating view.

[2] Eng button

Used to switch among the engineering views.

Pressing/holding the button for approx. 1 second switches the view to Operating view.

[3] 1st/2nd selector

Used to switch between the primary and the secondary loops.   Valid only when the secondary is set.

[4] Cas/Loc selector

Pressing/holding the button for approx. 1 second switches the control mode between cascade (Cas) and local (Loc).

Valid only when 'Set mode Cas/Loc' setting under the tuning parameters is set to 'Cascade/Local.'

The button operation can be locked by SC field terminal setting.

[5] SP value UP button [*1]

Used to increase SP value in the speed on 40 seconds per full-scale.   Touching it briefly increases the value digit by digit.

The button operation can be locked by SC field terminal setting.

[6] SP value DOWN button [*1]

Used to decrease SP value in the speed on 40 seconds per full-scale.

Touching it briefly decreases the value digit by digit.

The button operation can be locked by SC field terminal setting.

[7] MV Control Buttons

These buttons appear when the recovery mode is set to 'manual tracking' and the backup status is at 'Backup Running.'

Used to control the MV signal of the PID Control Function Block.

*1. SP buttons are locked in CAS mode.

> **Note**
>
> · MV backup output is available for SC110 and SC210.
> · Backups only MV2. Note that MV1 is not backup.
> · With the factory settings, automatic switching is enabled, and it may automatically switch to backup mode when the MV2 is not connected.

8.5.8 Switching Backup View Status

Status: Normal

Status: Normal
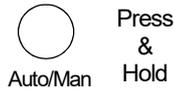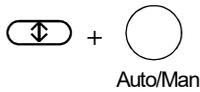
LED : All off

LED : blinks MV2 output

LED STATUS	MV OUTPUT
◎○○○○	Less than 3%
◎◎○○○	3% ≤ Mv 2 < 28%
◎◎◎○○	28% ≤ Mv 2 < 53%
◎◎◎◎○	53% ≤ Mv 2 < 78%
◎◎◎◎◎	78% or more

○: OFF ◎: Blinking

Status: Backup Standby

Status: Backup standby

· MV, Auto/Manual operation is disabled.
 (Other operations such as switching the
 view is enabled.)
· If not switching to backup within 1
 minute, returns to "normal".

Press & Hold — Auto/Man

⊕ + ○ Auto/Man — Press & Hold

Status: Backup Running

Status: Backup running

LED : Indicates MV2 output value

LED STATUS	MV OUTPUT
●○○○○	Less than 3%
●◎○○○	3% ≤ Mv 2 < 22%
●●○○○	22% ≤ Mv 2 < 28%
●●◎○○	28% ≤ Mv 2 < 47%
●●●○○	47% ≤ Mv 2 < 53%
●●●◎○	53% ≤ Mv 2 < 72%
●●●●○	72% ≤ Mv 2 < 78%
●●●●◎	78% ≤ Mv 2 < 97%
●●●●●	97% or more

○: OFF ●: ON ◎: Blinking

· Operating MV2 output value is enabled while back up.

· Control is set to Manual under the backup mode

Note

 Perform the restoration after confirming that the Mv2 output of the main unit and the Mv2 output of the backup unit are close to each other on the backup screen.　MV2 output will bump if performing recovery in a state with significant difference of MV2 output.

9 SETTING PROCEDURE WITH THE BUILDER SOFTWARE

Use the builder software (model: SFEW3E) to change the SC Controller from the factory settings.

9.1 INSTALLING THE BUILDER SOFTWARE

Log in to Windows as administrator.

● Windows 7, Vista

[1] Get ready with a compressed archive of the SFEW3E downloaded at M-System's web site.

[2] Expand the archive and locate setup.exe file in it.

[3] If "User Account Control" dialog box appears, choose 'Yes.'
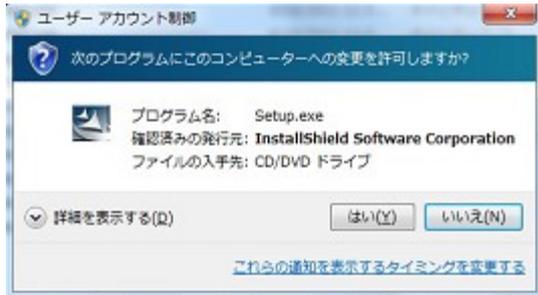
[4] Windows starts the installation program for SFEWin3E software.　Follow instructions on the screen.

[5] Restart Windows when the installation is complete.

9.2 PORT ASSIGNMENT

Start up the SFEW3E and select the port to communicate with SC Controller.

　　File menu > Operation (O) > Option

Set the port assign using SC Controller

　Infrared communication type

　　Port: Msystem COP-IRDA

　　Connecting device: SCx (COP-IRDA)

　Stereo jack type (option code /1)

　　Port: Msystem COP-US

　　Connecting device: SCx (COP-US)

Online monitor operation: Set if necessary

　　Online: PU

9.3   CONNECTING THE CONTROLLER TO PC

Connect SC Controller to the PC as following to communicate with the SFEW3E.

9.3.1   Infrared Communication Type

1) Install the SFEW3E program and driver for Infrared Communication Adaptor device (model: COP-IRDA) to the PC and connect the COP-IRDA to its USB port.

2) Start up the SFEW3E and set the COM port number assigned to the USB in the initial setting.

3) Set the infrared port in the direct line to face the COP-IRDA's send/receive window, within the maximum distance of 0.2 meter.

Max. 0.2 m
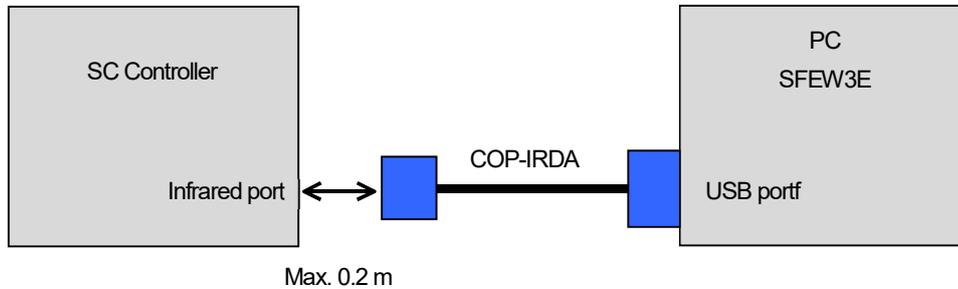
Using Holders
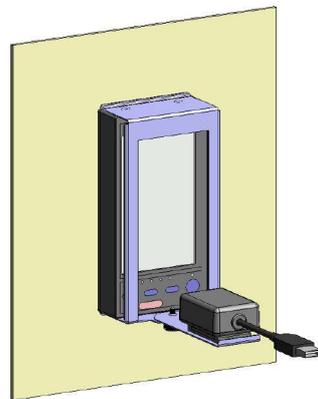
Two-part type Holder
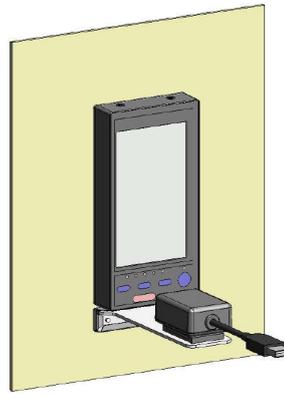
L Type Holder

9.3.2   Stereo Jack Type

1) Install the SFEW3E program and driver for PC Configurator cable (model: COP-US) to the PC and connect the COP-US to its USB port.

2) Start up the SFEW3E and set the COM port number assigned to the USB in the initial setting.

3) Connect the COP-US to the connector adaptor and after this, to the Controller's jack port.
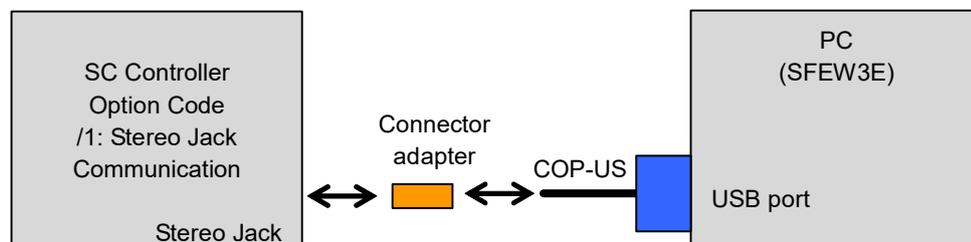
*Connector adapter is included to SC Controller with option code /1: stereo jack communication.

9.3.3 Setting of the SC Controller

Go to Engineering View and choose Configuration > 01 : Config mode > 02 : SFEW. The front monitoring LED starts blinking slowly to indicate the ready state.
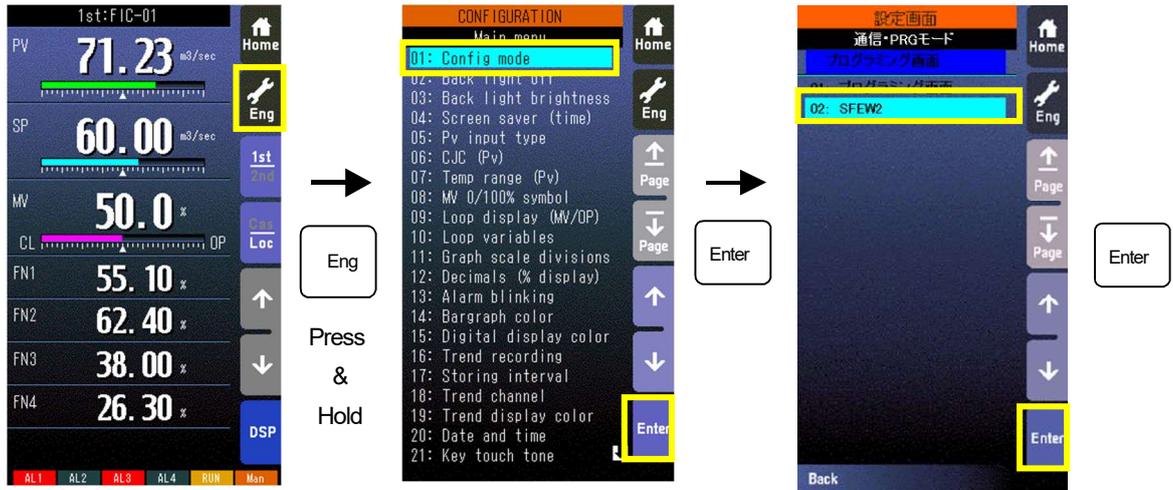
Note

Only one Controller module can communicate with the SFEW3E or SCCFG when multiple modules are mounted side by side. Detecting more than one module at once in the communication mode will result in error.

9.4   USING EXAMPLE OF SFEW3E

This section describes how to use SFEW3E, using the example of building a PID controller using SC210 as an example.

Based on the default setting data, add a Square Root Block to the PV1 input, and add the upper and lower limit alarms for the loop1 to the lamp display and output to Do1 and Do2.

9.4.1   System Configuration View

Start up the SFEW3E, and System Configuration view is displayed.

Double-click the Station 00, Card No. 0 slot to open "Model Selection" daialog to specify the model or drag the SC210 icon from the Module Window on the left and drop it at Station 00/Card No. 0 slot in the Setting Window on the right.
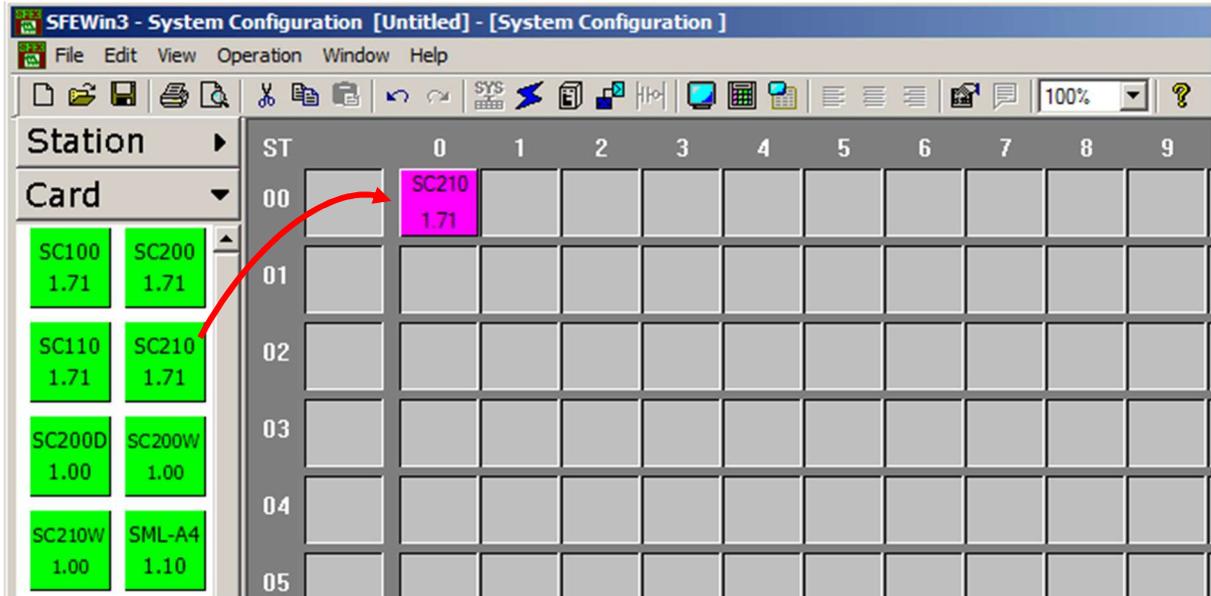
9.4.2   Uploading Setting Data

Connect SC210 and PC to upload default setting of SC210.

Right-click SC210 in the Setting Window and select upload dialog,   Click [Start] on the upload window to start uploading.
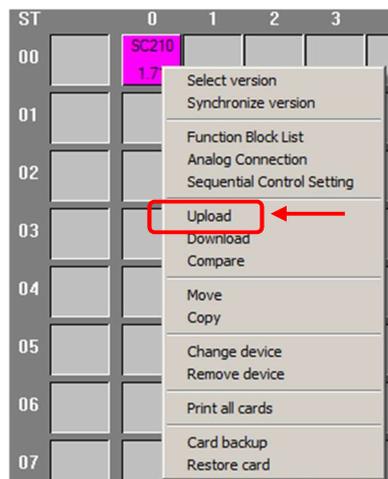
Note

Reading the SC controller settings to the PC is called uploading, and writing the PC data to the SC controller is called downloading.

9.4.3 Function Block List View

Double-click the placed SC210 icon in System Configuration view to open Function Block List view.

Click Operations [G30-61] group button in the left window and drag SQR 54 (Square Rood Block) function block icon and drop it at G03 slot in the right window.
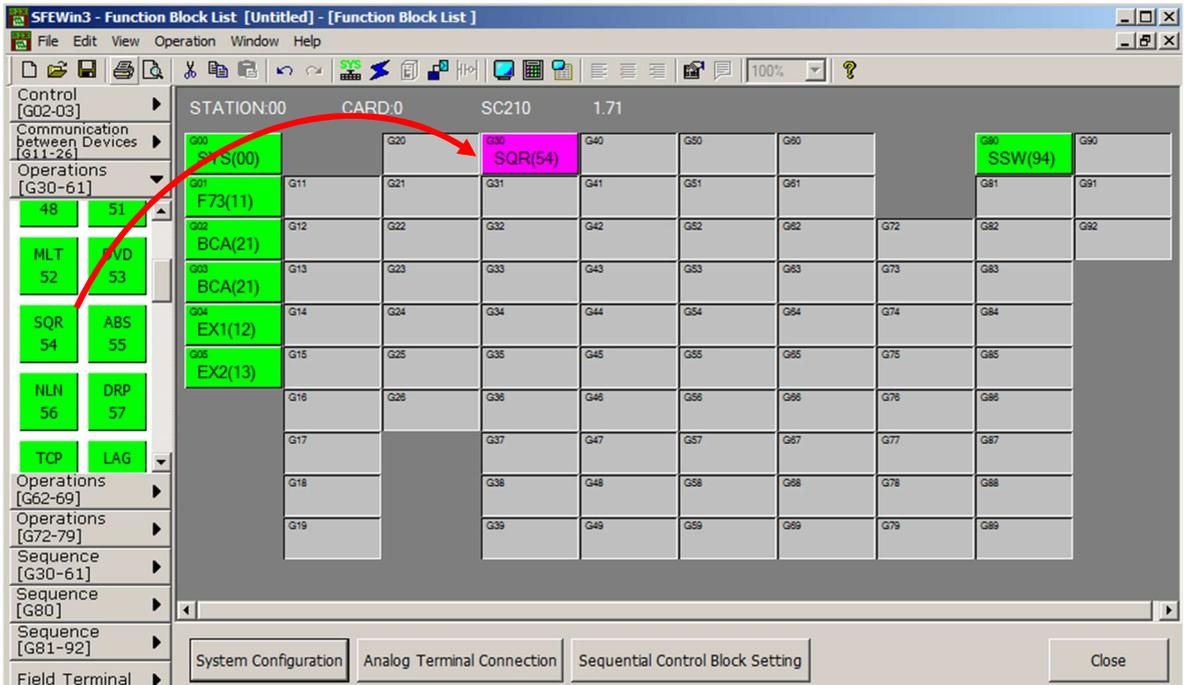
9.4.4 Connecting Analog Terminals

Click Analog Terminal Connection button in Function Block List view to open Analog Terminal Connection view.

Set the analog data connection in this view. Click analog input terminal and analog output terminal continuously to establish analog connection.

Click the added G30 SQR(54) and move (drag and drop) it to a position where it is easy to connect.

Click terminal 21 (PV1) of G04 extension field terminal, click the break point in the way, and finally click terminal X1 of G30 SQR(54) to connect.

As the same way, click terminal 21 of G30 Square Root Block and click terminal PV of basic Basic PID Block to connect.

Click the connected line to select, and change the line format and the break points.
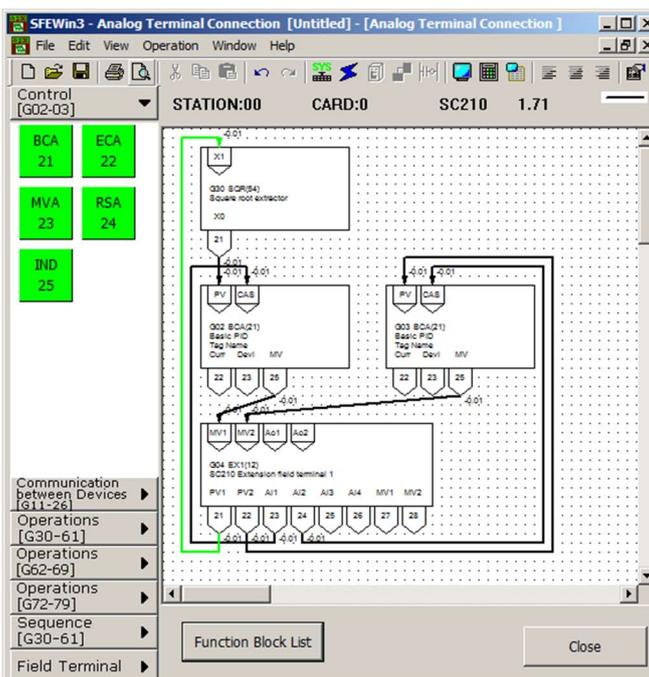
9.4.5　Sequential Control Block Setting View

After clicking Sequential Control Block Setting button in Function Block List view, double-click [Group81] [Step00] to open Ladder Setting view.

On the line below the output coil 0101, insert a line with the right-click menu. Drag OR command and Output Coil command from the Module Window on the left and drop it to beloe the output coil 0101 in the ladder diagram setting window on the right.　Enter the terminal: 0501 in Enter Parameter dialog or click Browse button to choose Goup 05 Terminal 01 (Do 1) from the lists.

As the same way, add output coil 0502 (Do 2) below the output coil 0102.
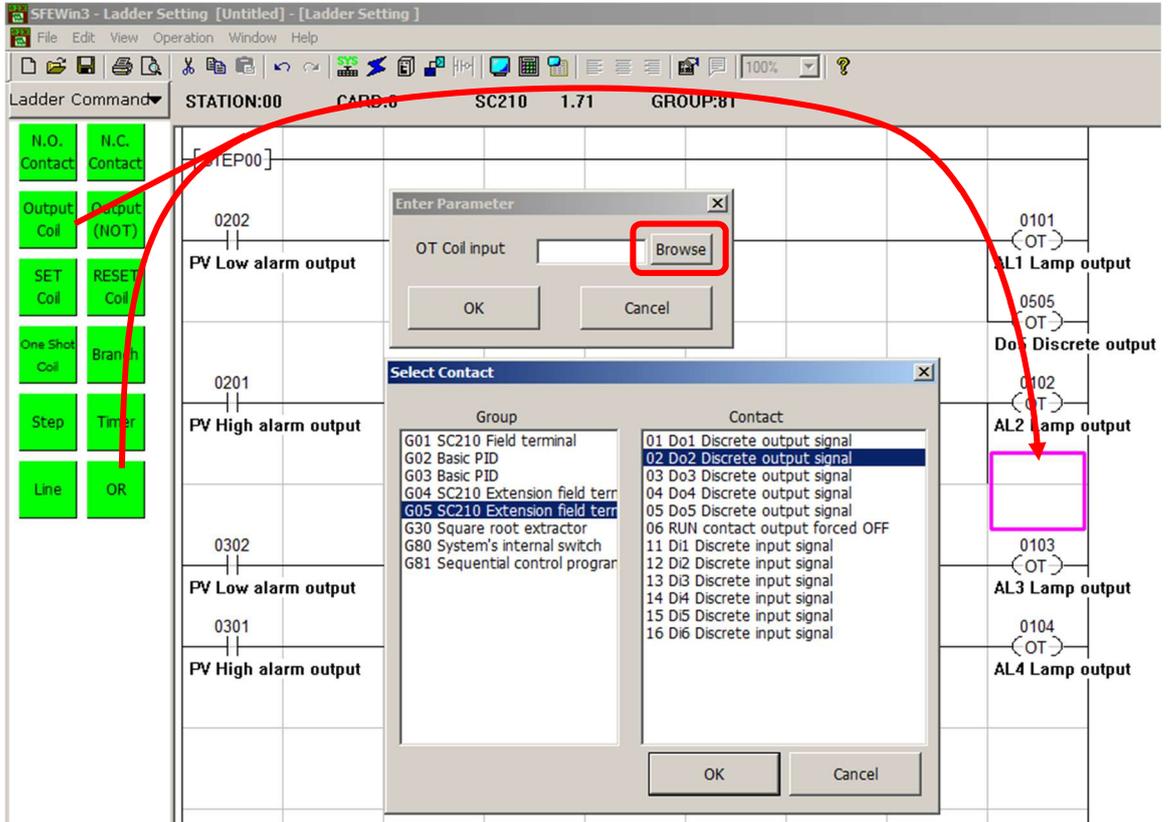
9.4.6　Function Block Setting View

Double-click target group frame on the Function Block List view or double-click corresponding function block of Analog Terminal Connection view to open Function Block Setting view.

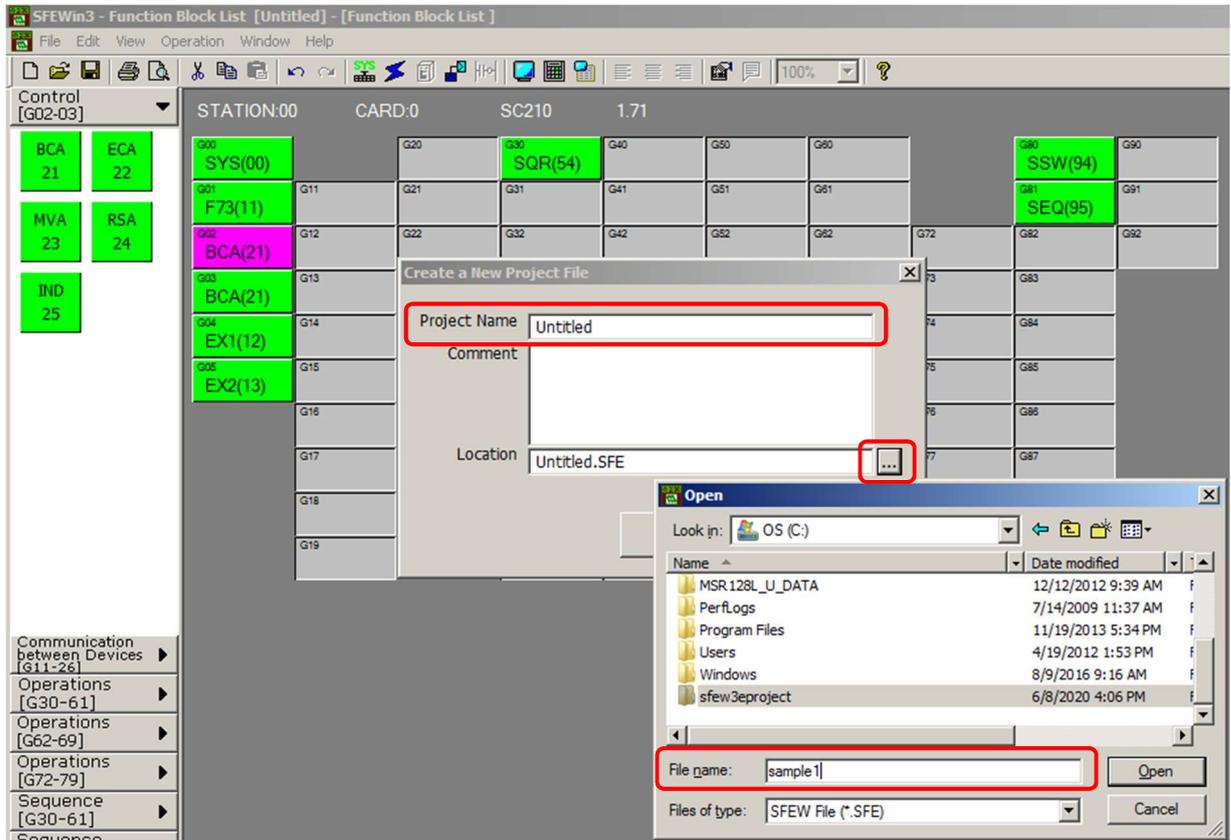Set details of each block on the Function Block Setting view.
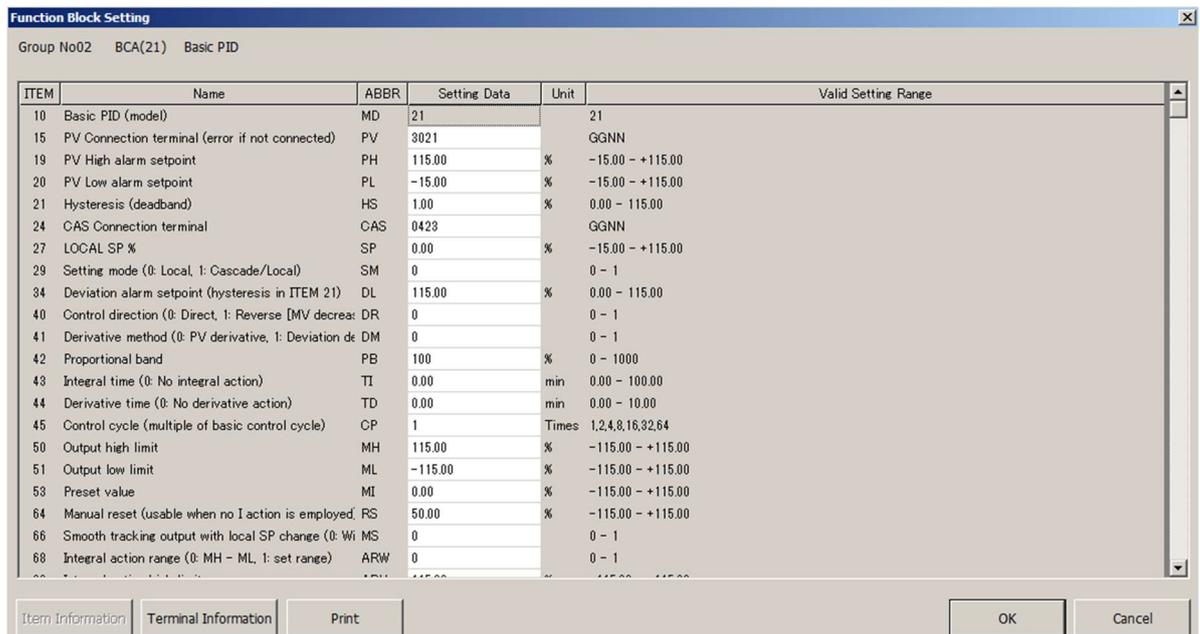
9.4.7 Saving the Project

Choose File > Save or Save As to open "Create a New Project File" dialog.

Enter a project (file) name and comments, specify its location, and click [OK] to save the project.
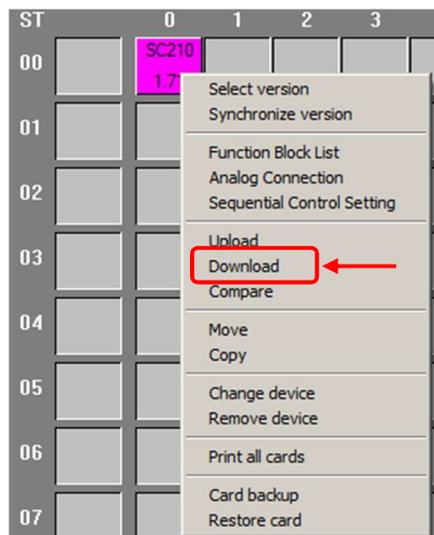
Click [...] at the right enables to choose save folder through [open folder] with the mouse.

9.4.8 Downloading Setting Data

Connect the SC210 to the PC to download setting data to SC210.

Right-click the SC210 module in Station 00/Card No. 0 slot and choose Download dialog.   Click [Start] to start downloading.

Note

・Basically download is an overwriting operation. In case the registerd block is already deleted, download the data after checking [Clear EEPROM and Download], otherwise,the block in the SC controller will not be deleted.
・Internal terminals such as AL1 to AL4 hold previous values when sequence is changed. Write 0 or perform cold reset (write 2 to Group 00 and Item 03) to clear.

10 EXAMPLE OF USING THE SCCFG

Saving short trend data (CSV format) and saving and transferring setting screen parameters are available by using configurator software (model: SCCFG).

10.1 COMMUNICATING WITH THE SCCFG PROGRAM

Connect SC controller to PC in order to communicate with the SCCFG.
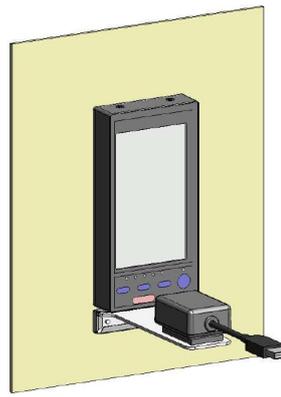
10.1.1 Infrared Communication Type

1) Install the SCCFG program and driver for Infrared Communication Adaptor device (model: COP-IRDA) to the PC and connect the COP-IRDA to its USB port.

2) Set the COM port number assigned to the USB for use with the SCCFG.

3) Set the infrared port in the direct line to face the COP-IRDA's send/receive window, within the maximum distance of 0.2 meter.
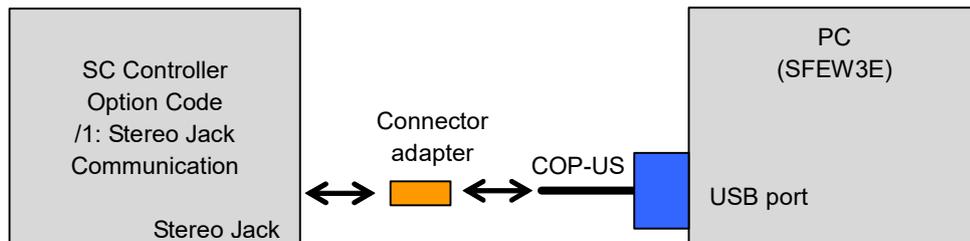

Max. 0.2 m
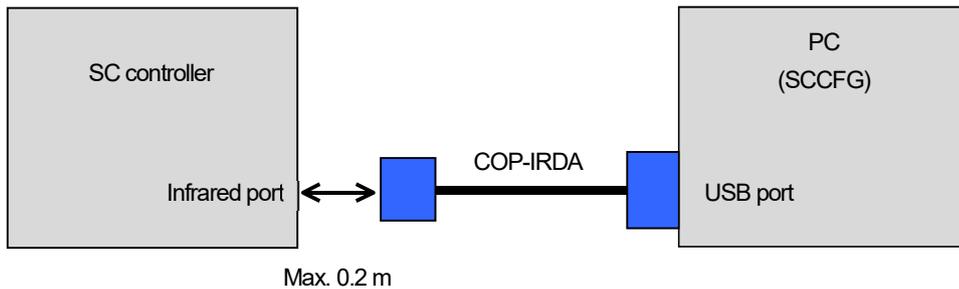
Using Holders
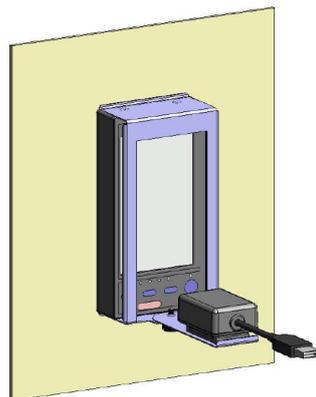
Two-part type Holder

L Type Holder

10.1.2 Stereo Jack Type

1) Install the SCCFG program and driver for PC Configurator cable (model: COP-US) to the PC and connect the COP-US to its USB port.

2) Set the COM port number assigned to the USB for use with the SCCFG.

3) Connect the COP-US to the connector adaptor and insert into the Controller's jack port

*Connector adapter is included to SC Controller with option code /1: stereo jack communication.

10.1.3 Setting the Module

Shift the SC Controller to the Engineering view and set it to "Setting view" → "01: Config. mode" → "03: SCCFG".
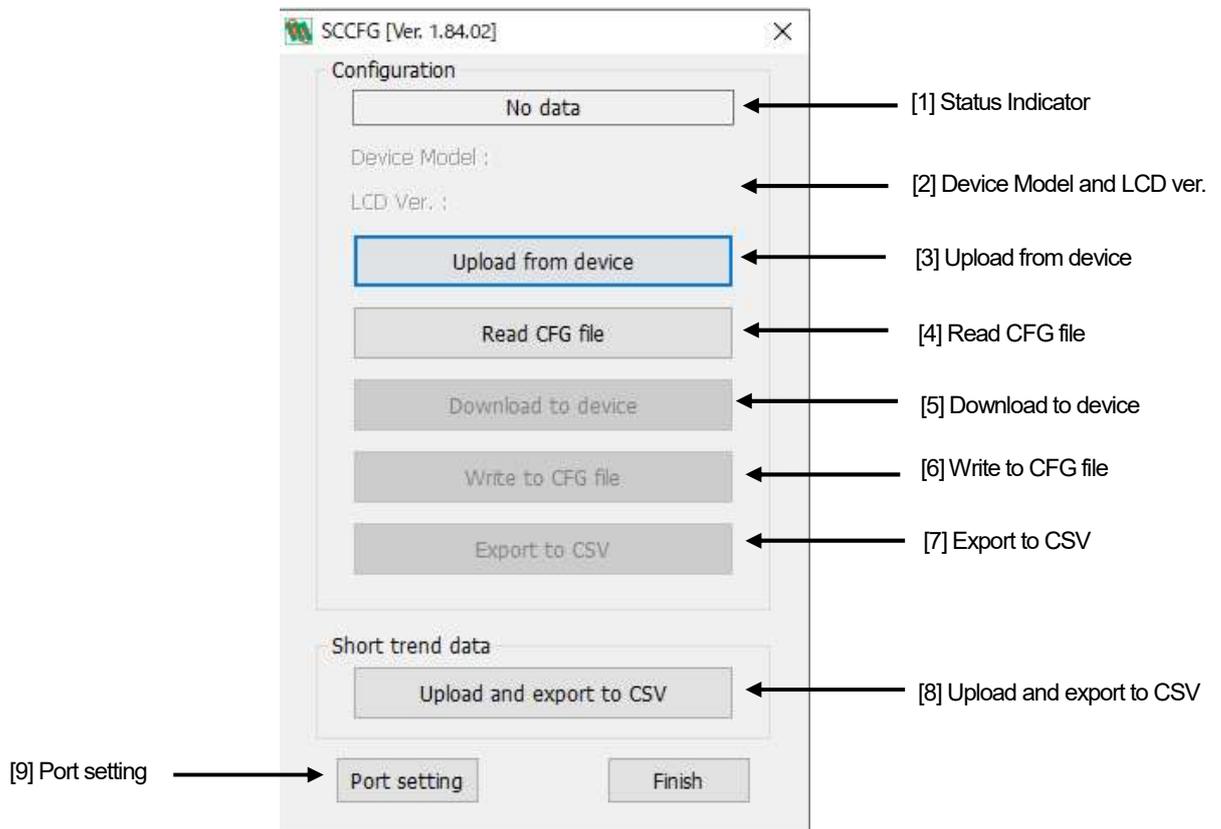
After settings, the "monitor lamp" blinks rapidly and communication is established.
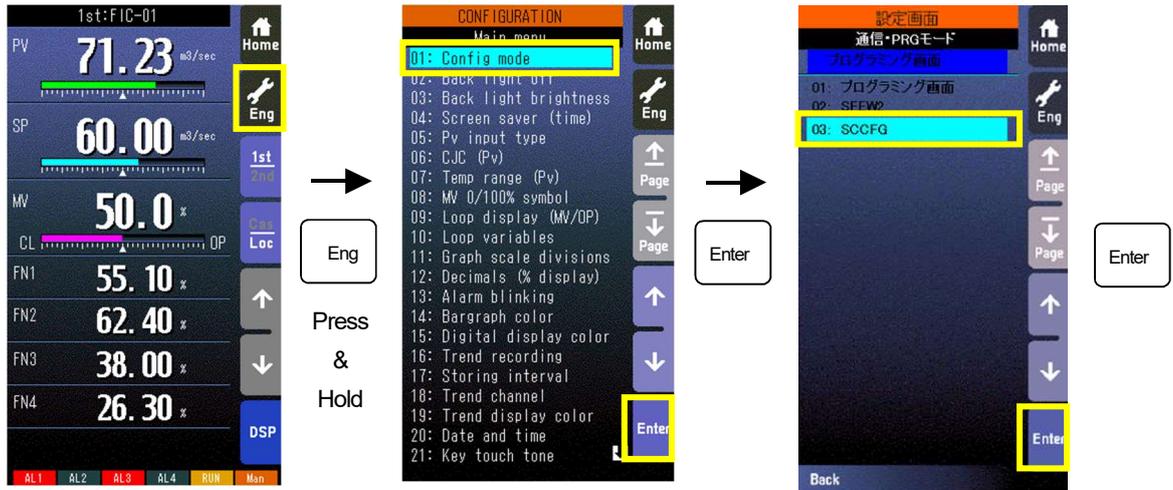
> **Note**
>
> Only one Controller module can communicate with the SFEW3E or SCCFG when multiple modules are mounted side by side. Detecting more than one module at once in the communication mode will result in error.

10.2 SCCFG OPERATING PROCEDURE

● **SETTING DATA**

Save display setting parameter set by SC controller to the PC and transfer the parameter saved in the PC to SC controller

[1] Status Indicator

"Uploaded from device" is indicated when [Upload from device] has been successfully completed.

File name is indicated when [Read CFG file] has been successfully completed.

[2] Device Model and LCD Ver.

Device Model and LCD Ver. are indicated when [Upload from device] or [Read CFG file] has been successfully completed.

[3] Upload from device

Setting data is uploaded from the Controller via infrared communication.

[4] Read CFG file

Setting data is read in from a file.

[5] Download to device

Setting data is downloaded to the Controller via infrared communication.

*New setting is valid only after the power supply is restarted.

[6] Write to CFG file

Setting data is saved in a file.

[7] Export to CSV

Setting data is converted into CSV and saved.

● **Short trend data**

Short trend data saved in the device can be saved in CSV format using SCCFG.

The maximum number of short trend data is 400 samples from the currently displayed latest data.

[8] Upload and export to CSV

Short trend data is acquired from the device via infrared and saved as CSV file.

● **Setting Environment**

[9] Port setting

Choose COM port assigned COP-IRDA from COM1 to COM20.

Note

・Items [5] to [7] can be selected after "Read from SC controller" and "Read from file" succeed.
・Turn off and on the power supply to activate the setting when transferred parameters of setting view saved in the PC to the SC controller.
・Reading in short trend data is available with only SC200 and SC210.

⚠ Specifications are subject to change without notice.