3 [Basic operation] Operation panel and screen display

This chapter introduces the functions of the operation keys on the operation panel and screen display and explains how to operate them.

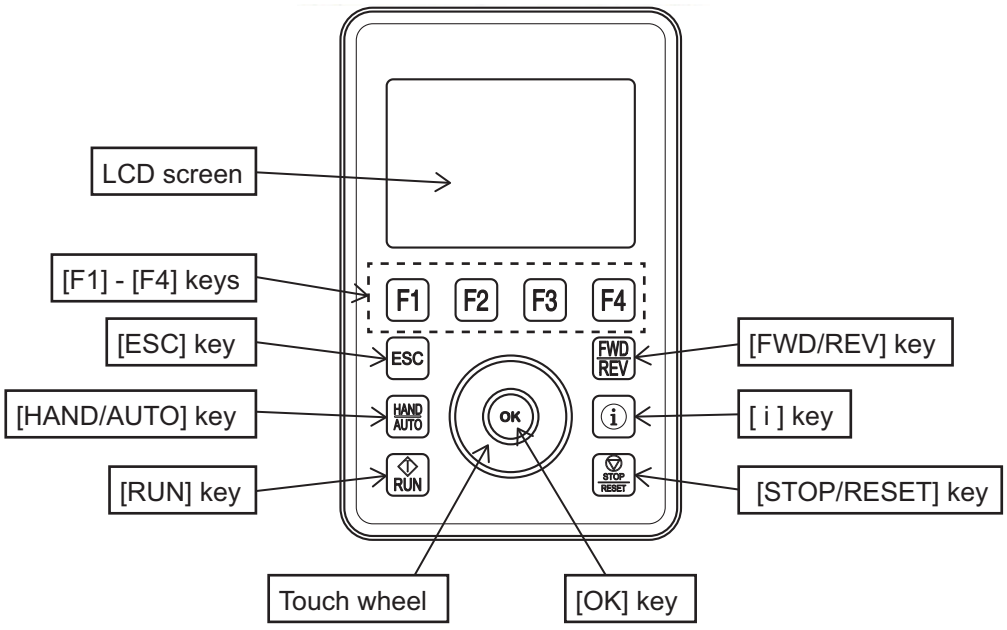
Memo

- The specifications and operation procedure of the operation panel are common to all the types of this inverter.

3. 1 Basic of operation panel

The operation panel allows you to set parameters and monitor the status. This section explains how to operate the operation panel and how to switch four types of display modes.

3. 1. 1 LCD screen and operation keys



• LCD screen

This screen displays [Standard mode], [Setting mode], [Monitor mode], and [Easy mode] according to the purpose. When an error occurs, an alarm, trip, etc. are displayed. For details, refer to [3. 1. 2].
Normally, the backlight color is white, but it turns red when a trip occurs. You can adjust the contrast and set screen settings such as automatic off time. For details, refer to [3. 1. 3].

• [F1] - [F4] keys

They are keys to execute functions displayed on the screen.
For details, refer to [■[F1] - [F4] keys] described later in this subsection.

• **[ESC] key**

This key switches the display mode.
It is also used to return to the previous item of the hierarchy of the screen.

• **[HAND/AUTO] key**

This key switches between hand (operation panel)/remote (remote control).
It is used to operate the inverter temporarily at hand (operation panel) while performing terminal operation (remote control) normally.
To enable this key, set the parameter <F750: EASY key function>.
For details, refer to [6. 37].

• **[RUN] key**

This key is used for a run command from the operation panel.
To enable this key, set "1" to the parameter <CMOd: Run command select>.
For details, refer to [5. 2. 1].

• **[FWD/REV] key**

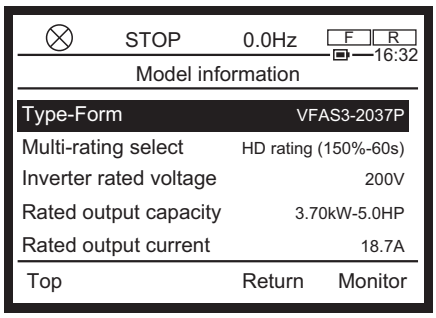
This key switches between forward run and reverse run of the motor during panel run.
It is enabled when the parameter <CMOd: Run command select> is "1" and <Fr: Panel Fwd/Rev run select> is "2" or "3".
For details, refer to [5. 3. 9].

• **[i] key**

This key displays information.
When "Website (QR code)" is selected, the information is QR code. When "Model information" is selected, model information is displayed.
Necessary information is displayed when a trip occurs.
And you can see QR code for the parameter information when the parameter is selected or edited.

■ Model information

You can check the following model information.
- Type-Form
- Multi-rating select
- Inverter rated voltage
- Rated output capacity
- Rated output current
- CPU 1 version
- CPU 2 version
- Serial No.
- Region setting



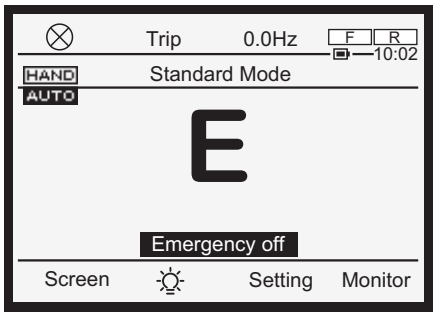
■ Website (QR code)

When you press the [i] key, information is displayed.
For example, you can access easily from your smartphone to our website by displaying the QR code.

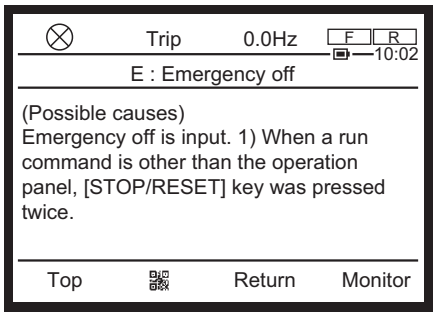
■ Trip information

You can check the trip information of possible causes and remedies. When you press the [F2] key, you can see QR code for troubleshooting.

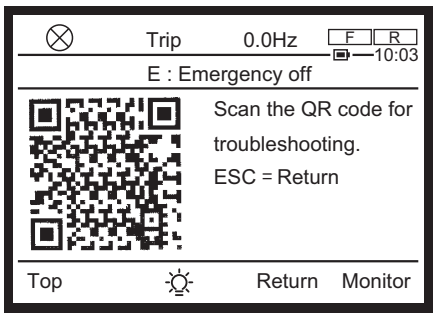
When a trip occurs, the trip title and trip name blink, and the backlight of the LCD screen turns red to inform you of a trip.



↓Press[i] key



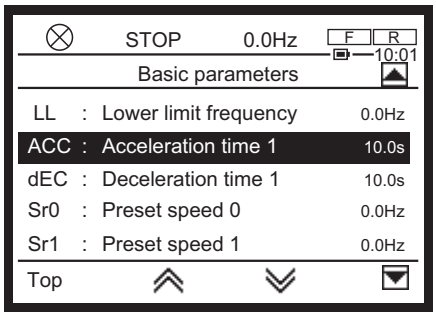
↓Press[F2] key



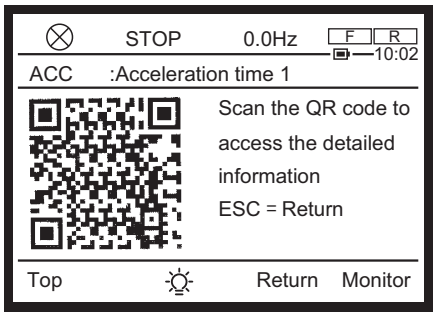
Note) If the camera cannot scan QR code because of the red screen, you can change the backlight color from red to white by pressing the [F2] key.

■ Parameter information

You can see QR code for the parameter when the parameter is selected or edited.



↓Press[i] key



• [STOP/RESET] key

This key is used for a stop command from the operation panel.
To enable the stop command by this key, set "1" to the parameter <CMOd: Run command select>.
For details, refer to [5. 2. 1].
Emergency off can be applied to the inverter except when it is operated by the operation panel. When you press this key, EOFF blinks. When you press it again, "E" is displayed and the emergency off is applied.
For details, refer to [3. 2. 3].
It is also used as a reset key when a trip occurs. The inverter can be reset by pressing this key twice in succession when a trip occurs.
For details, refer to [3. 2. 4].

• Touch wheel

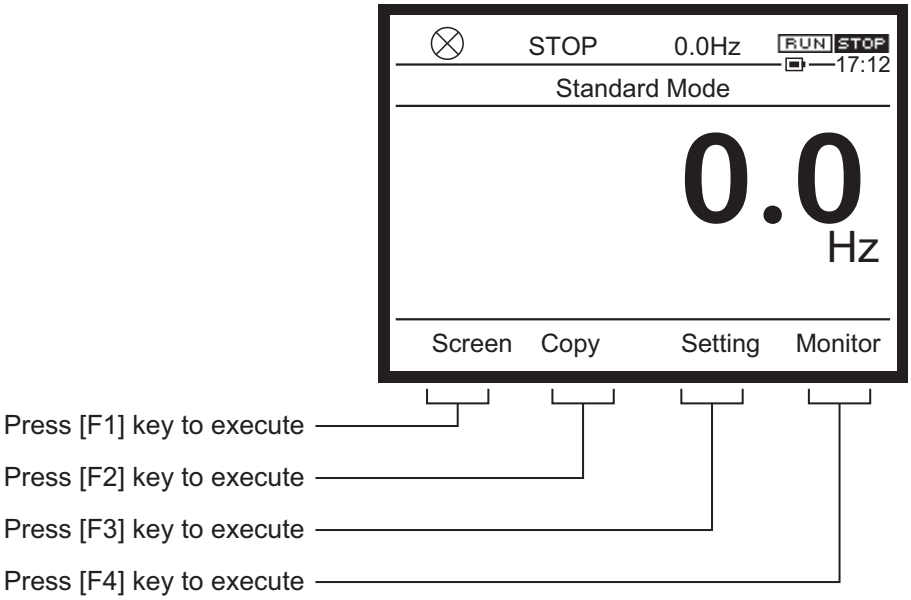
Slide your finger in a circular motion to change the menu items and values on the screen.
Turning clockwise: To move to the next item or increase the value.
Turning counterclockwise: To move to the previous item or decrease the value.
When you lightly touch the top or bottom of the circle, you can move to that direction by one item. For example, if you touch the top of the circle continuously, it works similarly to turning clockwise.

• [OK] key

This key is used to confirm the menu items and values on the screen.

■ [F1] - [F4] keys

The [F1] - [F4] keys are used to execute the items (text, symbol, icon, etc.) displayed on the lower side of the LCD screen.



The [F1] - [F4] keys corresponding to the screen display are as follows.

Key	Screen display		Function	Reference
	Displayed position	Display		
[F1]	Left end	Screen	Sets the LCD screen	[3. 1. 3]
		Top	Displays the screen for [Standard mode]	[3. 1. 2]
		A9-- to A8--	Displays parameters of previous hundreds (A900s to A800s)	[4. 2. 1]
		F9-- to F8--	Displays parameters of previous hundreds (F900s to F800s)	[4. 2. 1]
		C9-- to C8--	Displays parameters of previous hundreds (C900s to C800s)	[4. 2. 1]
		X1000	Sets the far left number	[4. 2. 3]
[F2]	Middle left	OK	Displays details monitor or Same as [OK] key	[3. 1. 4]
		☼	Inverts the backlight color (white or red)	[3. 2. 2]
		Language	Displays the screen for language selection	[3. 1. 3]
		<	Move setting to left	[3. 1. 3] [4. 2. 1]
		^^	Page up (If there are more than six choices)	-
		Easy	Displays the screen for [Easy mode]	[3. 1. 2]
		Return	Same as [ESC] key (Return to the screen of [Setting mode])	-
		Change	Displays the setting screen of related parameters	[8. 1. 1]
		X100	Sets the number second from the left	[4. 2. 3]
		Copy	Copy function	[3. 1. 4]

Key	Screen display		Function	Reference
	Displayed position	Display		
[F3]	Middle right	☼	Inverts the backlight color (white or red)	[3. 1. 3]
		›	Move setting to right	[3. 1. 3] [4. 2. 1]
		»	Page down (If there are more than six choices)	-
		R (Back)	Searches backward	[4. 2. 1]
		Setting	Displays the screen for [Setting mode]	[3. 1. 2]
		Return	Same as [ESC] key (Return to the screen of [Monitor mode])	-
		X10	Sets the number third from the left	[4. 2. 3]
[F4]	Right end	Jog	The inverter performs jog run while the key is pressed	[6. 10]
		›	Move setting to right	[3. 1. 4]
		‹	Move setting to left	[3. 1. 4]
		Monitor	Displays the secreen for [Monitor mode]	[3. 1. 2]
		F2-- to F1--	Displays parameters of next hundreds (F200s to F100s)	[4. 2. 1]
		C1-- to C0--	Displays parameters of next hundreds (C100s to C000s)	[4. 2. 1]
		OK	Displays details monitor	[8. 1. 1]
		F (Next)	Searches forward	[4. 2. 1]
		X1	Sets the far right number	[4. 2. 3]

3

3. 1. 2 Display mode

This inverter has four types of display modes.
The display modes can be switched in the following two ways.

- **Press the [ESC] key.**
- **Press any of the [F1] - [F4] keys to which the applicable display mode is assigned.**

(1) [Standard mode]

- This is the mode that is displayed first power on.
- The operation status (output frequency of the inverter, etc) is always displayed and alarms and trips when they occur.
  In the default setting, the output frequency is displayed. The display contents can be selected with <F710: Standard mode display>.
- Setting of the panel operation frequency, EASY key function operation, language selection, and screen setting are also made in [Standard mode].

(2) [Setting mode]

- Parameters are set in this mode.
- All the parameters are displayed.
- [Easy mode] is also available in which only the registered parameters are displayed.

(3) [Easy mode]

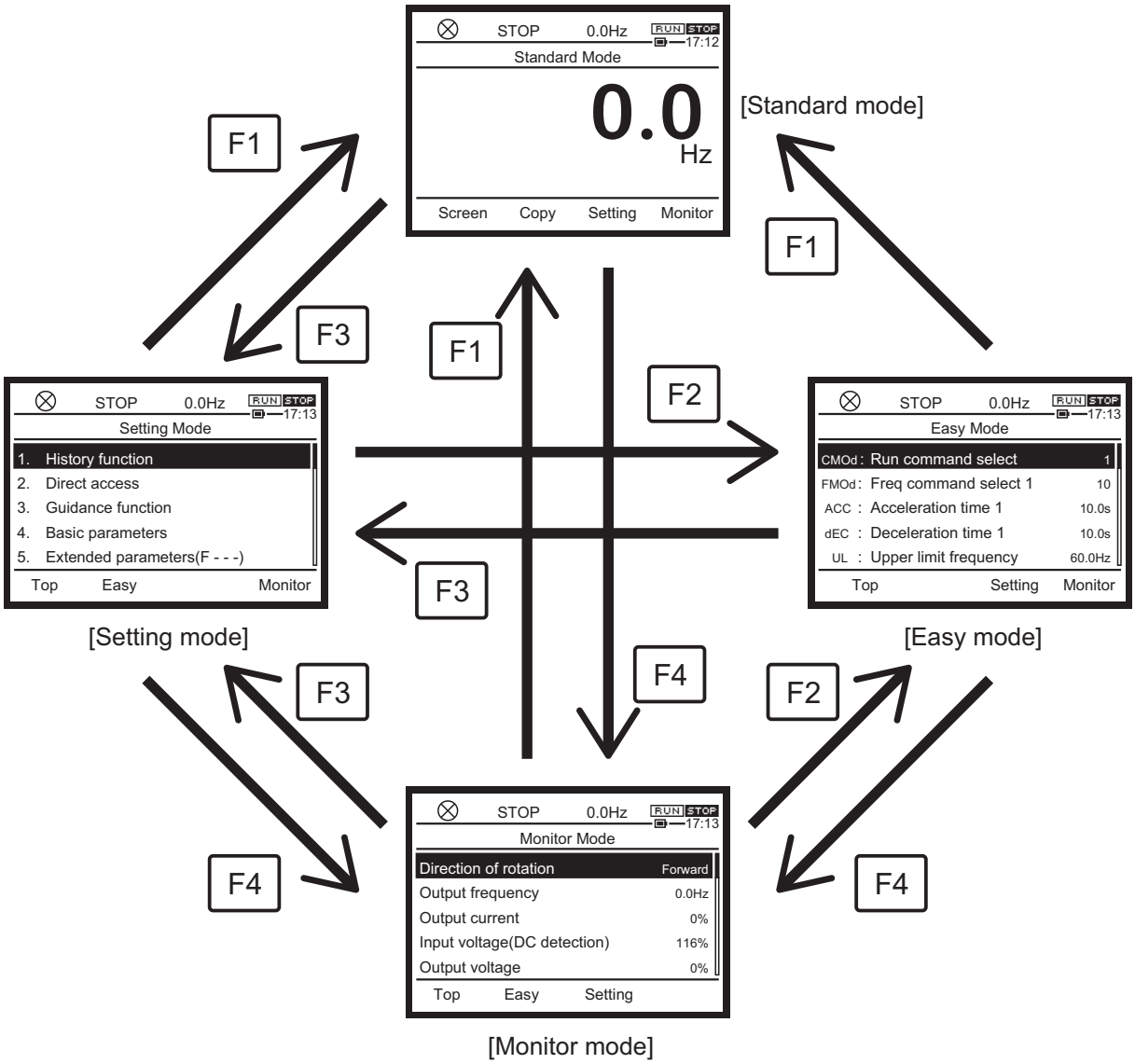
- Parameters are set in this mode.
- In this mode, only the registered parameters are displayed.

(4) [Monitor mode]

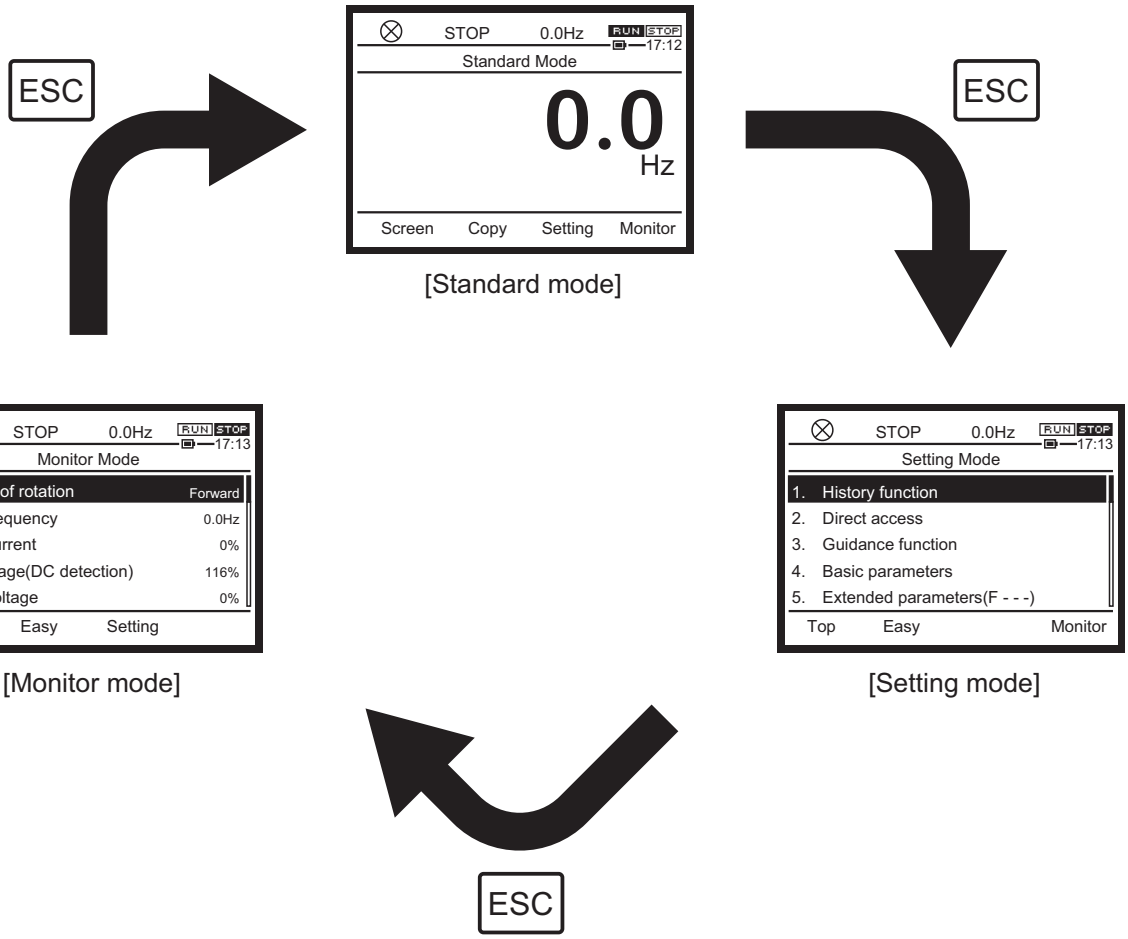
- You can check the status such as the operation status of the inverter and terminal information.

The following are the top screen of each mode and how to switch between them.

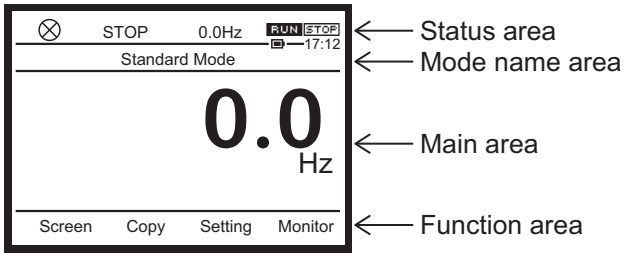
When switching with the [F1] - [F4] keys



When switching with the [ESC] key

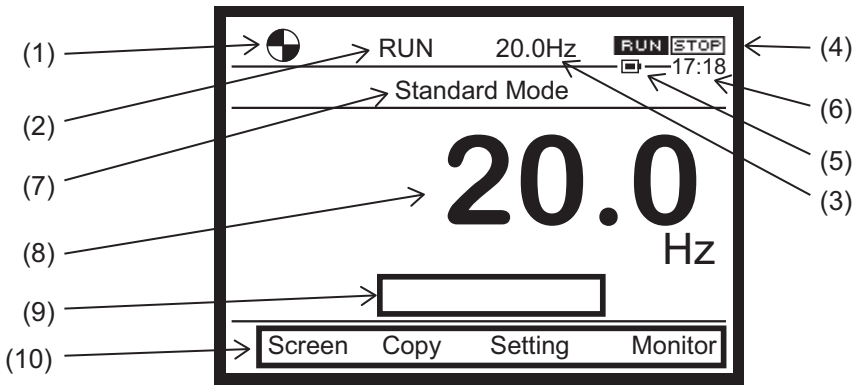


■ Screen structure



■ Screen display of [Standard mode]

This is the normal display mode of the inverter.
(1) - (6) are display contents common to [Standard mode], [Setting mode], [Easy mode], and [Monitor mode].



(1) The operation status is displayed with the following symbols.

(Rotating): In operation (clockwise for forward run, counterclockwise for reverse run)

: Stop

EOFF (Blinking): Waiting for emergency off applied with the [STOP/RESET] key (when you press the [STOP/RESET] key again while the symbol is blinking, the motor comes to an emergency off)

(2) The operation status is displayed with the following text.

"RUN": During run
"STOP": Stopped
"Trip": Trip has occurred
"JOG": In jog run

(3) The frequency command value (default setting) is displayed in Hz. Set the display contents with <F723: Status area display of operation panel>.

For details, refer to [5. 4. 3].

(4) The run commands are displayed with icons.

Run command from	Icon	Run / Stop
Terminal	F R	Stop
	F R	Fwd Run
	F **R**	Rev Run
Operation panel, Extension panel	RUN STOP	Stop
	RUN STOP	Run
Embedded Ethernet	Emb.Ethernet	Stop
	Emb.Ethernet	Run
RS485 communication (connector 1)	RS485-CN1	Stop
	RS485-CN1	Run

Run command from	Icon	Run / Stop
RS485 communication (connector 2)	RS485-CN2	Stop
	RS485-CN2	Run
Communication option	Com.option	Stop
	Com.option	Run

(5) The remaining capacity of the battery (yes/ no) is displayed with icons.

(6) The current time ("hour/minute") is displayed.

(7) Current display mode
[Standard mode] is displayed.

(8) Normally, the output frequency (default setting) is displayed. Set the display contents with <F710: Standard mode display>. For details, refer to [5. 4. 3].
When an alarm or trip occurs, its contents are displayed.

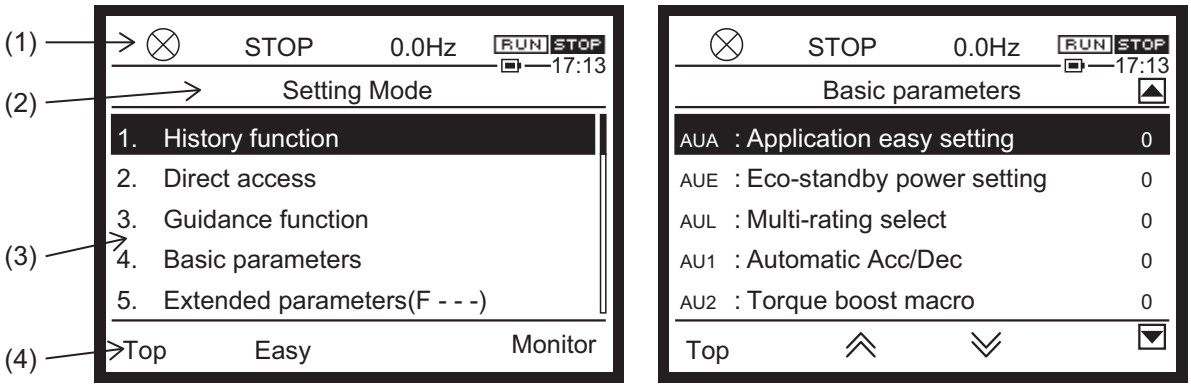
(9) When an alarm or trip occurs, the name of the alarm and a message are also displayed here.

(10) The functions assigned to the [F1] - [F4] keys are displayed.
For details, refer to [3. 1. 1].

Memo • When emergency off, alarm, or trip has occurred, refer to [3. 2] and [Chapter 13].

■ Screen display of [Setting mode]

This is a display mode to set parameters.



Top screen of [Setting mode] Setting screen of basic parameters

(1) From the operation status to the current time, this mode has the same display as [Standard mode].

(2) The current display mode [Setting mode] is displayed.

(3) The setting items are displayed. One screen can display up to five items.
Select an item with the touch wheel and press the [OK] key. Then the setting screen is displayed.
<Setting screen of basic parameter>
"Left end": Title
"Middle": Parameter name
"Right end": Setting value

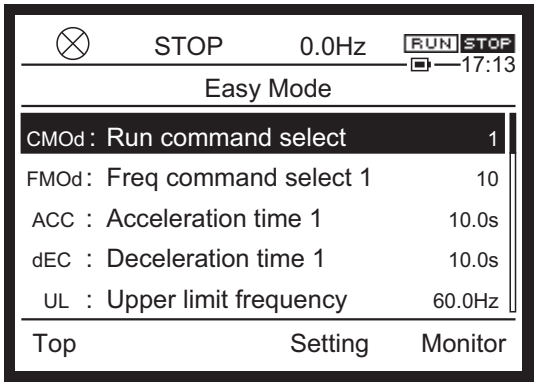
(4) The functions assigned to the [F1] - [F4] keys are displayed.
For details, refer to [3. 1. 1].

■ Screen display of [Easy mode]

This is a display mode to set parameters easily.
It is displayed in the following cases.

- When "Easy" of the [F1] - [F3] keys is pressed in [Setting mode] and [Monitor mode]
- When [Easy mode] is set in <PSEL: Parameter mode select>

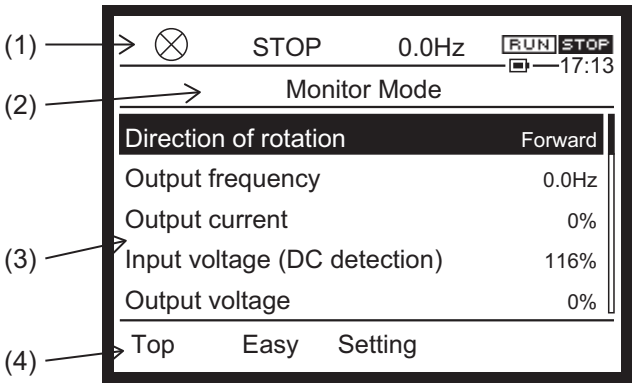
Only the parameters set in <F751: Easy setting 1> - <F782: Easy setting 32>. For details, refer to [5. 2. 8].



Memo • For details of how to set parameters, refer to [4. 2. 3].

■ Screen display of [Monitor mode]

This is a display mode to monitor the inverter status (output current, input voltage, terminal information, etc.).



(1) From the operation status to the current time, this mode has the same display as [Standard mode].

(2) The current display mode [Monitor mode] is displayed.

(3) The monitor items are displayed. One screen can display up to five items.
"Left end": Monitor item name
"Right end": Value, status

Furthermore, if (OK) is displayed in the [F4] key when selecting an item with the touch wheel, detailed information is displayed when you press the [OK] key.

(4) The functions assigned to the [F1] - [F4] keys are displayed.
For details, refer to [3. 1. 1].

Memo

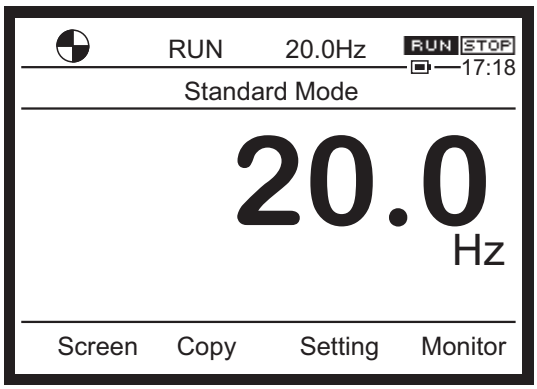
- For details of [Monitor mode], refer to [Chapter 8].

3. 1. 3 Setting of LCD screen

Important

- Note that if power off or a power failure occurs while the setting of the LCD screen is being changed, the LCD screen information is lost, and you may not be able to use the operation panel.

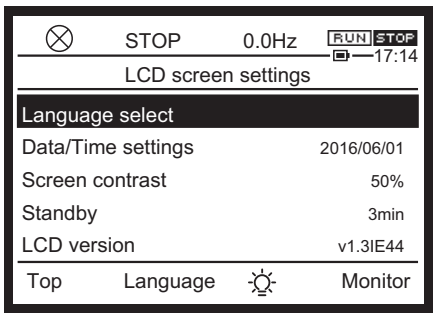
When you press the [F1] key ("Screen") in [Standard mode], the LCD setting screen is displayed.
This screen allows various settings of the LCD screen such as selection of display language, setting of current date/time, link to the website, adjustment of contrast, and automatic off time.



■ **LCD screen**

The following five items can be set.

- Selection of display language
- Setting of current date/time (date is displayed at the right end)
- Contrast adjustment of LCD screen (unit: %)
- Automatic off time setting of LCD screen backlight (unit: min)
- Link to website

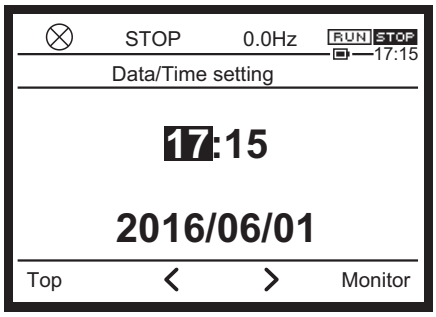


■ Language selection

Select a language to be displayed from the list.
You can select among English, German, Italian, Spanish, Portuguese, Chinese (simplified). (French and Russian are in preparation.)
The default setting is English.
A check mark is display to the right end of the selected language.

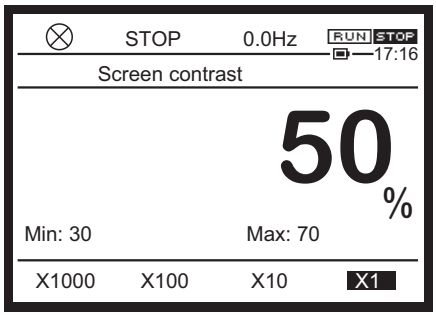
■ Date/time setting

Set the date and the time.
The time is represented in HH:MM and the date in YYYY/MM/DD.
Set the current time.
The digits that can be changed are highlighted. Press the [F2] key ❮ or [F3] key ❯ to shift the highlighted digits. Increase or decrease the value and press the [OK] key.



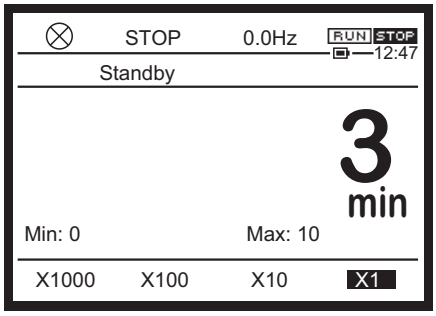
■ Contrast adjustment

The contrast can be adjusted in the range of 30 -70%.
The default setting is 50%.
If you touch the touch wheel, the value in the middle is highlighted. Increase or decrease the value and press the [OK] key.



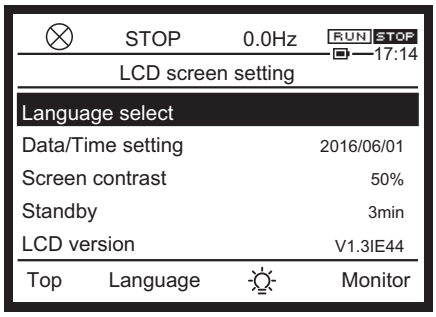
■ Automatic off time

The off time of the backlight can be set in the range of 0 min (always on) - 10 min (off after 10 minutes).
The default setting is 3 min.
If you touch the touch wheel, the value in the middle is highlighted. Increase or decrease the value and press the [OK] key.



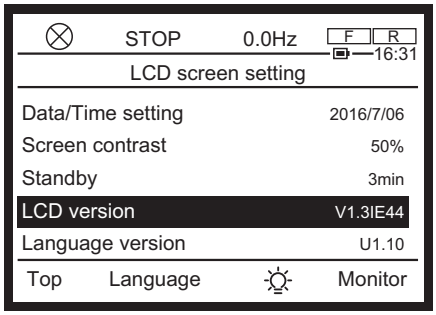
■ Switching of backlight color

When you press the [F3] key (☼ mark), you can change the color of the backlight to white or red.
The color is switched every time you press the key.



■ LCD version and Language version

You can check the version of the LCD body at the bottom of the screen.



Memo

- The LCD screen can be set regardless of the setting of inhibition of parameter change with <F700: Parameter reading&writing access lockout>.

3. 1. 4 Copy function

Mandatory action

- The copy function cannot be used during run. Use this function when the inverter is stopped.
- Never turn off the power of the body or attach/remove the LCD during copying. Otherwise, the memory in the LCD may be damaged, and repair (service call) may be required.

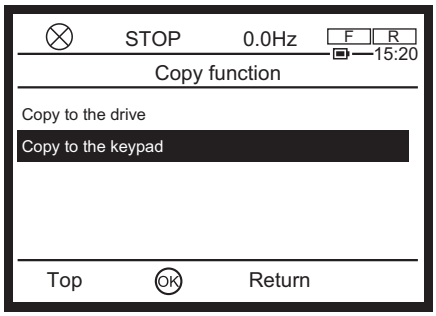
When you press the [F2] key ("Copy") in [Standard mode], the copy function screen is displayed.
The copy function allows you to upload/download the parameters of the inverter to/from the file (memory) of the LCD body.

<Limitations>

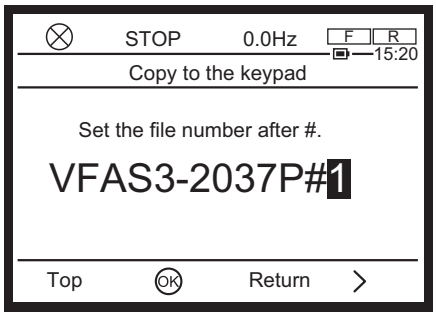
- **Copying cannot be executed between inverters with different capacities.**
- **Re-upload the file if you want to use parameters added with version upgrade.**
- **Up to 16 files can be stored. Since the 17th file cannot be created, overwrite with the same file name.**

(1) Copying to LCD (uploading)

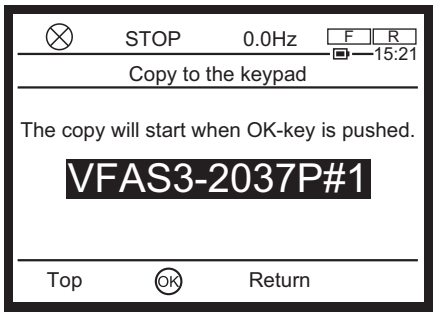
(1) Select "Copy to the keypad" and press the [OK] or [F2] key.



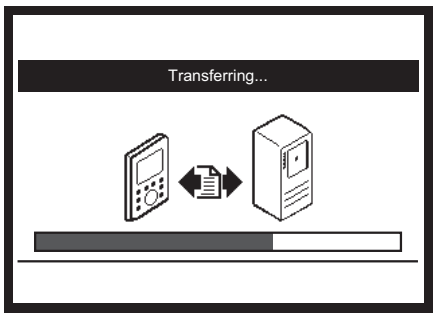
(2) Set a figure 0 - 99 after the inverter type followed by #, and press the [OK] or [F2] key.



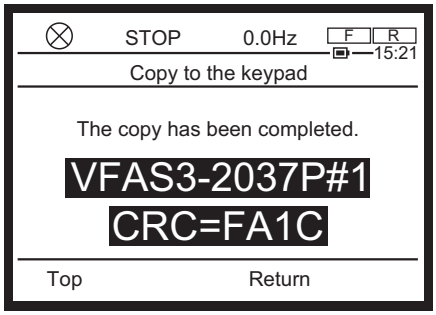
(3) The highlighted part is the file name. In the following example, "VFAS3-2037P#1" is the file name.



(4) When you press the [OK] or [F2] key, copying of the parameters of the inverter body to the file (memory) of the LCD body is started.



(5) When the transfer is completed normally, the file name and CRC are displayed.



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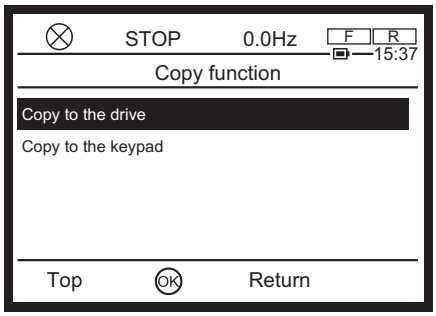
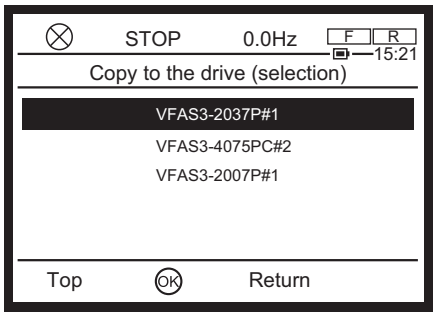
(2) Copying to inverter (downloading)

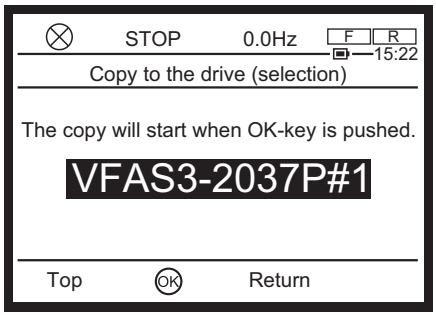
(1) Select "Copy to the drive", and press the [OK] or [F2] key.



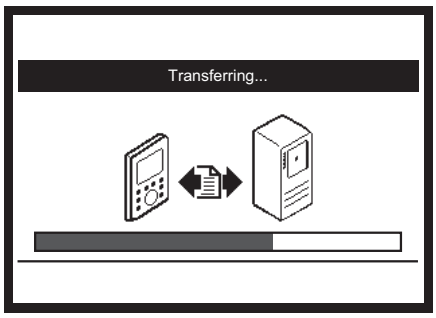
(2) Select a file to be downloaded to the inverter and press the [OK] or [F2] key.



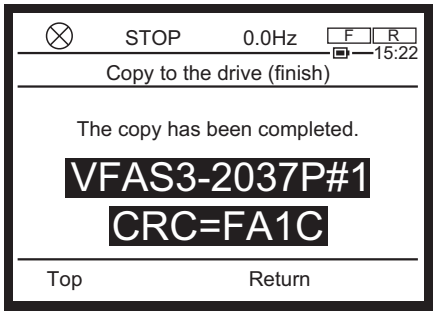
(3) The selected file is displayed.



(4) When you press the [OK] or [F2] key, copying from the file (memory) of the LCD body to the parameters of the inverter body is started.



(5) When the transfer is completed normally, the file name and CRC are displayed.

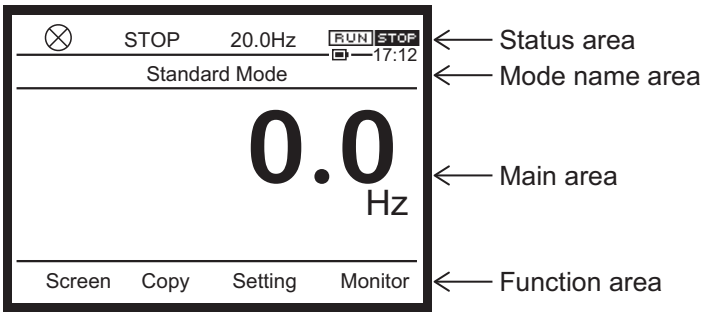


3. 2 Normal/emergency screen display

This section explains the screen display of the operation panel.
When operation such as parameter setting is not performed, the top screen of [Standard mode] is displayed. During run, output frequency, etc. are displayed, and the status of alarm and trip is displayed when an error occurs.

3. 2. 1 Normal display

When the inverter is stopped, the screen on the right is displayed.



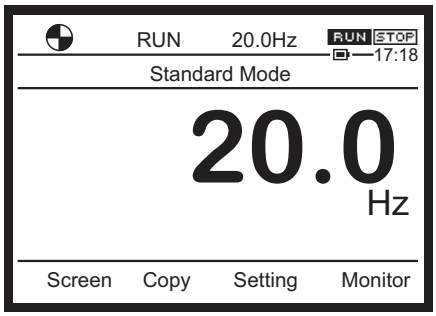
Status area

- **⊗ at the left end is stopped**
- **As status, "STOP" is displayed.**
- **The frequency command value "20.0 Hz" is displayed (<F723: Status area display of operation panel> = "1: Frequency command value")**
- **The run command is selected from operation panel, Extension panel (RUN STOP).**

Main area

- **The output frequency "0.0 Hz" is displayed (<F710: Standard mode display> = "0: Output frequency")**

During run of the motor, the screen shown on the right is displayed.



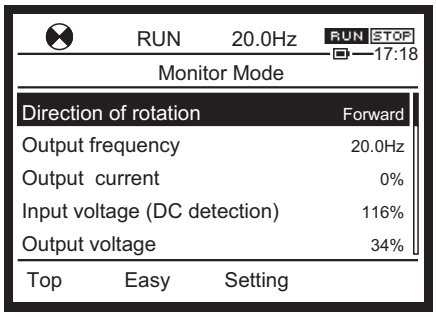
Status area

- **⊗ at the left end rotates**
- **As status, "RUN" is displayed**
- **The frequency command value "20.0 Hz" is displayed (<F723: Status area display of operation panel> = "1: Frequency command value")**
- **The run command is selected from operation panel, Extension panel (RUN STOP).**

Main area

- **The output frequency "20.0Hz" is displayed (<F710: Standard mode display> = "0: Output frequency")**

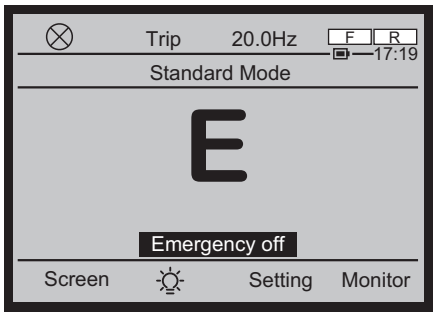
Even if [Standard mode] is switched to other display mode, you can grasp the operation status from the display in the status area.



Reference	• When the LCD screen is dark -> Refer to [3. 1. 3] • To check the output current, input/output voltage, etc. -> Refer to [3. 1. 2], [8. 1. 1] • To check the setting value of the parameter -> Refer to [3. 1. 2], [4. 2]

3. 2. 2 Display at the time of trip

When a trip occurs, the trip title and trip name blink, and the backlight of the LCD screen turns red to inform you of a trip. Check the cause of the trip and eliminate it.
When you press the [i] key, necessary information is displayed. For details, refer to [3. 1. 1].



Memo	• If you want to return only the backlight from red to white, press the [F2] key.

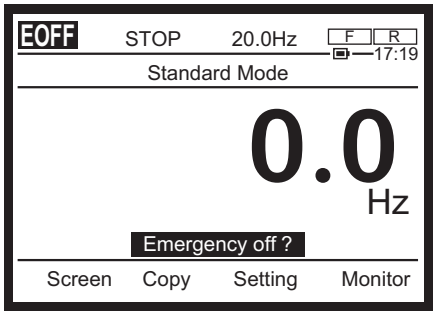
Reference	• To reset from the operation panel -> Refer to [3. 2. 4] • To know details of the display at the time of alarm/trip, causes, and measures -> Refer to [Chapter 13]

3. 2. 3 Emergency off

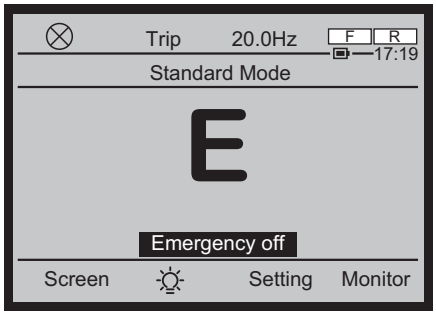
To apply emergency off from the operation panel except when the inverter is operated by the operation panel, follow the procedure below.
For how to apply emergency off by other than the operation panel (digital input, etc.), refer to [6. 30. 4].

1 Press the [STOP/RESET] key.

EOFF blinks at the left end of the status area.
In [Standard mode], "Emergency off? (STOP) key" is displayed on the lower side in the main areas.
In the cases of "Setting mode" and "Monitor mode," just EOFF blinks.



2 If you press the [STOP/RESET] key again while EOFF is blinking, the inverter comes to emergency off.
- The backlight turns red, and "E" blinks.
- "Trip" is displayed in the second position from the left of the status area.
- "Emergency off" is displayed in the main area.



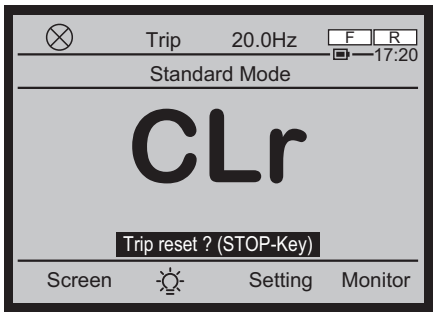
Memo

- The blinking EOFF returns to the original display status after few seconds if no operation is performed.. The inverter comes to emergency off only if you press the [STOP/RESET] key while EOFF is blinking.
- If you want to return only the backlight from red to white, press the [F2] key.

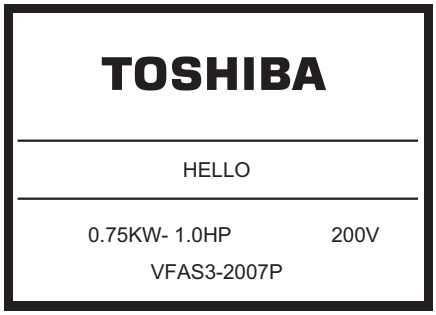
3. 2. 4 How to reset trip

If a trip occurs, you can reset it with panel operation.
For how to reset a trip by other than the operation panel (digital input, etc.), refer to [13. 1].

1 Press the [STOP/RESET] key with the trip displayed. "CLr" blinks in the main area, and "Reset? (STOP) key" is displayed on the lower side.
- The backlight is red.
  It is white when the setting of the backlight is changed.



2 If you press the [STOP/RESET] key again while "CLr" is blinking, the trip is reset.
The display on the screen once disappears, and the screen immediately after power on is displayed.
The backlight returns to while.



Important	• If the cause of the trip is not eliminated, a trip occurs again even after reset. • If the trip is caused by overload protection or overheat or when pre-alarm occurs, the trip cannot be reset. For details, refer to [13. 1].

Memo	• The blinking "CLr" returns to the trip display after few seconds if no operation is performed. The trip is reset only if you press the [STOP/RESET] key while "CLr" is blinking. • If you press keys other than the [STOP/RESET], it is considered that reset will not be done, and the screen returns to trip display.