Thank you for choosing the Mitsubishi inverter option unit. This instruction manual gives handling information and precautions for use of this equipment. Incorrect handling might cause an unexpected fault. Before using the equipment, please read this manual carefully to use the equipment to its optimum. Please forward this manual to the end user.

1. Electric Shock Prevention

This section is specifically about safety matters.

Do not attempt to install, operate, maintain or inspect this product until you have read through this instruction manual and appended documents carefully and can use the equipment correctly. Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

In this instruction manual, the safety instruction levels are classified into "WARNING" and "CAUTION".

**WARNING**

- While the inverter power is ON, do not open the front cover. Do not run the inverter with the front cover removed. Otherwise you may access the exposed high voltage terminals or the charging part of the circuitry and get an electric shock.
- Before starting wiring or inspection, check that the operation panel indicator is OFF, wait for at least 10 minutes after the power supply has been switched OFF, and check that there are no residual voltage using a tester or the like. The capacitor is charged with high voltage for some time after power OFF and it is dangerous.
- Any person who is involved in the wiring or inspection of this equipment should be fully competent to do the work.
- Always install the inverter before wiring. Otherwise, you may get an electric shock or be injured.
- Operate the keys with dry hands to prevent an electric shock.

**CAUTION**

- Do not attempt to install, operate, maintain or inspect this product until you have read through this instruction manual and appended documents carefully and can use the equipment correctly.
- Do not use this product until you have a full knowledge of the equipment, safety information and instructions.

Note that the **CAUTION** level may lead to a serious consequence according to conditions. Please follow the instructions of both levels because they are important to personnel safety.
2. Additional Instructions

To prevent injury, damage or product failure, please note the following points.

(1) Transportation and mounting

**CAUTION**
- Do not install and operate the parameter unit (FR-PU04/PU04V) if it is damaged or has parts missing.
- Do not stand or rest heavy objects on this equipment.
- Check the inverter mounting orientation is correct.
- The parameter unit (FR-PU04/PU04V) is a precision device. Do not drop it or subject it to impact.
- Use the inverter under the following environmental conditions:
  - Temperatures applicable for a short time, e.g. in transit.
  - If halogen-based materials (fluorine, chlorine, bromine, iodine, etc.) infiltrate into a Mitsubishi product, the product will be damaged. Halogen-based materials are often included in the product or used for packaging. When packaging, prevent residual fumigant components from being infiltrated into Mitsubishi products, or use an alternative sterilization or disinfection method (heat disinfection, etc.) for packaging. Sterilization or disinfection of wooden package should also be performed befor e packaging the product.

(2) Test operation and adjustment

**CAUTION**
- Before starting operation, confirm and adjust the parameters. A failure to do so may cause some machines to make unexpected motions.

(3) Usage

**WARNING**
- Since pressing the [STOP] key may not stop output depending on the function setting status, provide a circuit and switch separately to make an emergency stop (power OFF, mechanical brake operation for emergency stop, etc.).
- Make sure that the start signal is off before resetting the inverter alarm. A failure to do so may restart the motor suddenly.
- Do not modify the equipment.
- Do not perform parts removal which is not instructed in this manual. Doing so may lead to fault or damage of the inverter.

**CAUTION**
- When parameter clear or all parameter clear is performed, each parameter returns to the factory setting. Re-set the required parameters before starting operation.

(4) Corrective actions for alarm

**CAUTION**
- Provide safety backup devices, such as an emergency brake, to protect equipment and personnel from hazard if the parameter unit (FR-PU04/PU04V) becomes faulty.
(5) Disposal

* CAUTION

Treat as industrial waste.

(6) General Instruction

All illustrations given in this manual may have been drawn with covers or safety guards removed to provide in-depth description. Before starting operation of the product, always return the covers and guards into original positions as specified and operate the equipment in accordance with the manual.
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6.2 Outline Drawing and Panel Cutting Drawing

6.2.1 FR-PU04/PU04V outline dimension drawings

6.2.2 FR-PU04/PU04V enclosure cut dimensions

APPENDIX

Appendix 1 Disposing of the equipment in the EU countries
INTRODUCTION

This product is a unit for setting inverter functions (parameters) and has the following features.

- An operation panel can be removed and a parameter unit can be connected.
- Setting such as direct input method with a numeric keypad, operation status indication, and help function are usable.
- Eight languages can be displayed.
- Parameter setting values of maximum of three inverters can be stored.
INTRODUCTION

This instruction manual uses the screens on the FR-PU04 connected to the FR-A500 series inverter for describing the operation. For using the FR-PU04V, some indications or terms used in this instruction manual must be replaced as follows.

<table>
<thead>
<tr>
<th>Item</th>
<th>FR-PU04</th>
<th>FR-PU04V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Name</td>
<td>Frequency, output frequency</td>
<td>Speed, running speed</td>
</tr>
<tr>
<td>Main monitor indication</td>
<td>60.00Hz</td>
<td>1500.0r</td>
</tr>
<tr>
<td>First monitor</td>
<td>Frequency</td>
<td>Speed</td>
</tr>
<tr>
<td>Monitor indication</td>
<td>F Command</td>
<td>S Command</td>
</tr>
</tbody>
</table>

| Appearance       | ![Image](image1.png)     | ![Image](image2.png)     |
| Rating plate     | ![Image](image3.png)     | ![Image](image4.png)     |
| Terminal         | FM                       | DA1                      |
|                  | AM                       | DA2                      |
1. PRE-OPERATION INSTRUCTIONS

1.1 Unpacking and Product Confirmation

Take the parameter unit out of the package, check the unit name, and confirm that the product is as you ordered and intact.

1.1.1 Unpacking confirmation

Check the enclosed items.
- FR-PU04/PU04V

Parameter unit

| 1 |
1.1.2 Appearance and parts identification

Unpack the parameter unit, check the name plate on the back, and make sure that the product has not been damaged before using.

FR-PU04/PU04V

Monitor section
- Liquid crystal screen (16 characters × 4 lines, with backlight)
- Interactive parameter setting
- Help function, troubleshooting guidance.
- Monitor (frequency, current, power, etc.)

Front Rear

- Keys used to command forward rotation, reverse rotation and stop (reset at alarm occurrence).
- Write, read keys

Function and number keys (0 to 9)

Help mode selection key

Setting mode selection key

Operation command keys

Frequency changing keys

Escape key

Operation mode selection key

Write, read keys

Interactive parameter setting

Monitor mode selection key

Help mode selection key

Operation command keys

Help function, troubleshooting guidance.

Monitor (frequency, current, power, etc.)

Front Rear

- Connector

Rating plate
1.1.3 **Explanation of keys**

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
</table>
| MT  | - Used to select the parameter setting mode.  
     | - Press to select the parameter setting mode. |
| MDR | Used to display the first priority screen. |
| ESC | Operation cancel key. |
| HLP | - Used to display the help menu.  
    | - Various functions can be executed from the help menu. |
| SWF | Used to shift to the next item in the setting or monitoring mode. |
| 9 to 4 | Used to enter a frequency, parameter number or set value. |
| ext | Used to select the External operation mode. |
| PU  | Used to select the PU operation mode to display the frequency setting screen. |

- Used to keep on increasing or decreasing the running frequency. Hold down to change the frequency.
- Press either of these keys on the parameter setting mode screen to change the parameter setting value sequentially.
- On the selecting screen, these keys are used to move the cursor.
- Hold down (SWF) and press either of these keys to advance or return the display screen one page.
### Unpacking and Product Confirmation

<table>
<thead>
<tr>
<th>Key</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>[MW]</td>
<td>Forward rotation command key.</td>
</tr>
<tr>
<td>[MV]</td>
<td>Reverse rotation command key.</td>
</tr>
<tr>
<td>[MS]</td>
<td>Stop command key.</td>
</tr>
<tr>
<td></td>
<td>- Used to reset the inverter when a fault occurs.</td>
</tr>
<tr>
<td>[RE]</td>
<td>Used to write a set value in the setting mode.</td>
</tr>
<tr>
<td></td>
<td>- Used as a clear key in the all parameter clear or alarm history clear mode.</td>
</tr>
<tr>
<td>[RS]</td>
<td>Used as a decimal point when entering numerical value.</td>
</tr>
<tr>
<td></td>
<td>- Used as a parameter number read key in the setting mode.</td>
</tr>
<tr>
<td></td>
<td>- Used as an item select key on the menu screen such as parameter list or monitoring list.</td>
</tr>
<tr>
<td></td>
<td>- Used as an alarm definition display key in the alarm history display mode.</td>
</tr>
<tr>
<td></td>
<td>- Used as a command voltage read key in the calibration mode.</td>
</tr>
</tbody>
</table>

#### Display
- 16 character × 4 line liquid crystal display screen shows monitoring data, such as frequency, motor current and I/O terminal states, as well as troubleshooting guidance and other information.

#### Connector
- Used for connection of the parameter unit with the inverter. You may either connect the unit directly or use the connection cable (FR-CB230D) for connection.

#### CAUTION
- Do not use a sharp-pointed tool to push the keys.
- Do not press your fingers against the display.
1.2 Installation and Removal of FR-PU04/PU04V

To ensure safety, install or remove the FR-PU04/PU04V only after switching the power of the inverter OFF.

1.2.1 Direct installation to the inverter

(1) Remove the operation panel (FR-DU04/DU-04-01).
(2) Insert the parameter unit straight into the position and fit it securely.

REMARKS
- Direct installation of the FR-PU04 is possible only to the FR-A500/F500 series inverter. Direct installation of the FR-PU04V is possible only to the FR-V500 inverter.
1.2.2 Removal from the inverter

Tilt the parameter unit toward the front while holding down its top button, and pull it out of the hook.

FR-PU04

FR-A500/F500 series inverter

Hook

FR-PU04V

FR-V500 series inverter

Hook
Installation and Removal of FR-PU04/PU04V

1.2.3 Installation using the connection cable (FR-CB2)

For details of the connection cable (FR-CB2), refer to the instruction manual of the FR-CB2.

- Connection to the FR-A500/F500/V500/E500 series inverter

1. Remove the operation panel.
2. Insert the cable plugs into the connectors on the inverter and the parameter unit (FR-PU04/PU04V) until the tabs snap into place.

**CAUTION**

Do not remove the inverter's front cover.
Installation and Removal of FR-PU04/PU04V

- Connection to the FR-S500/F500/J/C500 series inverter
  1. Remove the front cover.
  2. Insert the cable plugs into the connectors on the inverter and the parameter unit (FR-PU04/PU04V) until the tabs snap into place.

1.2.4 Removal when the connection cable (FR-CB2) is used

Hold down the tab at the cable end and gently pull the plug.

**CAUTION**

Do not remove the inverter’s wiring cover.

**REMARKS**

- The cable plug can be connected after cutting off the lug of the wiring cover, allowing the plug to be inserted and removed without removing the front cover.
1.3 Parameters to be Checked First

Change the following parameter settings as required. For the changing procedures, refer to page 23.

1.3.1 PU display language selection (Pr. 145)

By setting the Pr. 145 PU display language selection value, you can select the language displayed on the parameter unit.

<table>
<thead>
<tr>
<th>Pr. 145 Setting</th>
<th>Display Language</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>Japanese</td>
</tr>
<tr>
<td>1</td>
<td>English</td>
</tr>
<tr>
<td>2</td>
<td>German</td>
</tr>
<tr>
<td>3</td>
<td>French</td>
</tr>
<tr>
<td>4</td>
<td>Spanish</td>
</tr>
<tr>
<td>5</td>
<td>Italian</td>
</tr>
<tr>
<td>6</td>
<td>Swedish</td>
</tr>
<tr>
<td>7</td>
<td>Finnish</td>
</tr>
</tbody>
</table>
1.3.2 **PU buzzer control (Pr. 990)**

By setting the **Pr. 990 PU buzzer control** value, you can select to either generate or mute the "beep" which sounds when you press any of the parameter unit keys.

<table>
<thead>
<tr>
<th>Pr. 990 Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0</td>
<td>No buzzer sound</td>
</tr>
<tr>
<td>1 (initial value)</td>
<td>Buzzer sound generated</td>
</tr>
</tbody>
</table>

**REMARKS**
- Inverter alert faults with beep sounds when this parameter is set to activate the buzzer.

1.3.3 **PU contrast adjustment (Pr. 991)**

By setting the **Pr. 991 PU contrast adjustment** value, you can adjust the contrast for the display panel of the parameter unit.

<table>
<thead>
<tr>
<th>Pr. 991 Setting</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0 to 63</td>
<td>Light</td>
</tr>
<tr>
<td></td>
<td>Dark</td>
</tr>
</tbody>
</table>
2 FUNCTIONS

2.1 Monitoring Function

2.1.1 Display overview

(1) Main monitor
Shows the output frequency (Hz Out), output current (I Out), output voltage (V Out), alarm history and other monitor data.
- Using [NEXT] to change to the next screen (Refer to page 15)
- Using [UP/DOWN] to change to the next screen (Refer to page 48)
- Using the parameter “PU main display data selection” (Refer to page 18)

(2) PU level meter
Use Pr 53 PU level display data selection to display the value for the selected data on the 5-percent scale level meter.
(For details on the parameters, refer to the instruction manual of the inverter.)

(3) Rotation direction indication
Display the direction (forward rotation/reverse rotation) of the start command.
STF: Forward rotation
STR: Reverse rotation
---: No command or both STF and STR ON

(4) Operating status indication
Display the running status of the inverter.
STOP: During stop
FWD: During forward rotation
REV: During reverse rotation
JOGf: During Jog forward rotation
JOGr: During Jog reverse rotation
ALAR: At fault occurrence
(5) Operation mode indication  
Displays the status of the operation mode.  
- EXT: External operation mode  
- PU: PU operation mode  
- EXTj: External Jog mode  
- PUj: PU Jog mode  
- NET: Network operation mode  
- PU+E: External/PU combined operation mode  
- PRG: Programmed operation mode  
  (for inverters compatible with programmed operations only)

(6) Unit indication  
Shows the unit of the main monitor.

(7) Warning indication  
Displays an inverter warning.  
The warning type varies with the inverter model.  
Refer to the inverter instruction manual for details.  
Nothing is displayed when there is no inverter warning.
Monitoring Function

2.1.2 Using "SHIFT" to change the main monitor

When "0" (initial value) is set in the Pr. 52 DU/PU main display data selection, simply pressing "SHIFT" calls 6 different monitor screens in sequence.

- Output frequency monitor
- Output current monitor
- Output voltage monitor
- Alarm history monitor
- Selective monitor
- 3-step monitor

Switch power ON or press "SHIFT"

First priority monitor and top two monitors among output current, output frequency, and output voltage are displayed in rows.

When output frequency is the first priority monitor (Initial setting):
- Output frequency
- Others (READING)

When output current is the first priority monitor:
- Output current
- Others (READING)

When output voltage is the first priority monitor:
- Output voltage
- Others (READING)

When the first priority monitor is other than output frequency, output current and output voltage:
- Output frequency
- Output current
- Output voltage

Example: When electric thermal relay function load factor is set as the first priority monitor:

- 0.00A
- 0.00V
- 0.00Hz

<READ>

ALARM HISTORY

OTHERS

0.00A
0.0V
0.0Hz
--- STOP EXT

0.0%
---STOP EXT
2.1.3 Setting the power-ON monitor (the first priority monitor)

Set the monitor which appears first when power is switched ON or (M) is pressed.

- When you press [M] during any monitor screen other than ALARM HISTORY being displayed, that screen is set as the power-ON screen and will be displayed first.
2.1.4 Using [READ] to change the main monitor

Press [READ] to display the monitoring list while the main monitor is displayed. Select a monitor from the monitoring list to change the main monitor.

Example: Select the output current peak value monitor.

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press (MON)</td>
</tr>
<tr>
<td>2</td>
<td>Press (READ)</td>
</tr>
<tr>
<td>3</td>
<td>Press (▲) / (▼) to move the cursor to &quot;Peak I.&quot; Hold down (OFF) and press (▲) or (▼) to shift one screen.</td>
</tr>
<tr>
<td>4</td>
<td>Press (SET)</td>
</tr>
<tr>
<td>5</td>
<td>Press (SET)</td>
</tr>
</tbody>
</table>

*1 The selected monitor is not set as the first priority monitor yet when only (READ) was pressed. Hence, the selected monitor is erased from memory as soon as the power is switched OFF or another operation mode is selected. In this case, the item must be selected again. When you press (SET), the selected item is stored in memory.

*2 Pressing (SET) sets the selected "output current peak" to be displayed in the first priority monitor when switched to the monitoring mode from other operation modes. To give first priority to another monitor screen, press (SET) with that monitor screen being displayed. (Refer to page 16)

**REMARKS**
- Setting from the help menu is also available. For details refer to page 42.
- When "Current monitor" or "Power monitor" is selected, note that any current or power not more than 5% of the rated inverter current cannot be detected and displayed. Example: When a small motor is rotated with a large-capacity inverter (a 0.4kW motor is used with a 55kW inverter), the power monitor keeps displaying 0kW and is inoperative.
2.1.5 Using the parameter to change the monitor (Pr. 52)

To change the third monitor (output voltage monitor), set Pr. 52 DU/PU main display data selection. (Note that setting "17" (load meter), "18" (Motor excitation current), and "24" (Motor load ratio) change the output current monitor.

*Output voltage monitor* monitor displays from the first priority monitor using [SHIFT].

**REMARKS**
- The monitor items depend on the inverter. For the monitor items and descriptions, refer to the instruction manual of each inverter.
**Monitoring Function**

* The monitor displayed at powering ON is the first priority monitor. Refer to page 16 for the setting method of the first priority monitor.

1) For the set value of "17, 18, 24", their monitors are displayed at the second monitor instead of output current monitor.

2) For the set value of "19 to 23, 25 ——", their monitors are displayed at the third monitor instead of output voltage monitor.

**REMARKS**

The setting range of Pr. 52 DU/PU main display data selection differs according to the inverter. Refer to the inverter instruction manual for details.
2.2 Frequency Setting

The frequency in PU operation mode and External/PU combined operation mode (Pr. 79 = “3”) can be set.

**Remarks**
- When changing the operation mode from External operation mode to PU operation mode, operation mode cannot be changed if the external starting signal (STF or STR) is ON.

2.2.1 Direct setting

Directly enter a frequency setting using  to .

- **Operation procedure (Changing from 0Hz setting to 60Hz setting)**

1. Press . The frequency setting screen appears.
2. Press ( ) and ( ). Enter 60Hz.*
3. Press . The 60Hz setting is complete.

* If you entered an incorrect value, press (ESC) to return to the pre-entry state.
2.2.2 Step setting

Change frequency continuously using ▲ / ▼.

You can change the frequency only while you press ▲ / ▼. Since the frequency changes slowly at first, this setting can be used for fine adjustment.

1. Press [PU].
   The frequency setting screen appears.

2. Press ▲ / ▼ to enter a desired value (60.00Hz).*
   You can set any value between the maximum frequency (Pr. 1) and minimum frequency (Pr. 2).

3. Press [ESC].
   The 60Hz setting is complete.

* To cancel an incorrect entry and restore the previous screen, press [ESC].

REMARKS

Change of frequency can be made during operation by the step setting. However, pressing ▲ / ▼ at monitor mode may cause actual set frequency to be higher/lower from the indicated frequency on the monitor. When performing the step setting at monitor mode, make sure that output frequency is following the set frequency.
2.2.3 Precautions for frequency setting

1) Pr. 79 Operation mode selection must have been set to switch to the PU operation. (Refer to the inverter instruction manual for details of Pr. 79.)

2) In the monitor mode, you cannot make the direct setting (Refer to page 20) to set the running frequency. Perform the step setting (Refer to page 21) and press [MV] or press [PU] to display the frequency setting screen before frequency setting.
2.3 Setting and Changing the Parameter Values

Using the FR-PU04/PU04V allows you to read the parameter of inverter or change the set value easily. Refer to the inverter instruction manual for details of the parameters.

2.3.1 Specifying the parameter number to change the set value

Example: When changing 5s to 180s at the Pr. 8 Deceleration time setting

1. Press \[ \text{PU} \].
   - The frequency setting screen appears, and operation mode changes to PU operation mode.
   - (You need not press \[ \text{PU} \] when the parameter unit is already in the PU operation mode.)

2. Press \[ \text{P} \].
   - The parameter unit is in the parameter setting mode.

3. Press \[ \text{P} \].
   - Enter the desired parameter number.

4. Press \[ \text{SET} \].
   - The present setting appears.

5. (1) Direct setting
   - Press \[ \text{①} \] \[ \text{②} \] \[ \text{③} \].
   - Enter the desired value.
   - Or
   - (2) Step setting
   - Press \[ \text{①} \] \[ \text{②} \].
   - Display “180” using \[ \text{①} \] \[ \text{②} \].

6. Press \[ \text{SET} \].
   - The set value is changed.

7. Press \[ \text{SET} \] to display the next parameter.

8. Dec.T1
   - 5.0S
   - 0-1800

9. Set THM
   - 2.55A
   - 0-500

* If you entered an incorrect value, press \[ \text{PU} \] to return to the pre-entry state.
### 2.3.2 Selecting the parameter from functional list to change the set value

Example: When changing 5s to 180s at the Pr. 8 Deceleration time setting

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press ( \text{PU} ) ( \text{SET} ). The frequency setting screen appears, and operation mode changes to PU operation mode.</td>
</tr>
<tr>
<td>2</td>
<td>Press ( \text{SET} ). The parameter unit is in the parameter setting mode.</td>
</tr>
<tr>
<td>3</td>
<td>Select the screen using ( \text{AppGpr} ) and move the cursor to &quot;Appl.Grp&quot;.</td>
</tr>
<tr>
<td>4</td>
<td>Press ( \text{SET} ). The function list appears.</td>
</tr>
<tr>
<td>5</td>
<td>Select a function. Point the cursor to &quot;Acc.Dec&quot; using ( \text{FCommand} ).</td>
</tr>
<tr>
<td>6</td>
<td>Press ( \text{SET} ). A function list regarding acceleration/deceleration is displayed.</td>
</tr>
<tr>
<td>7</td>
<td>Select a function. Using ( \text{Acc/Dec T} ), point the cursor to &quot;Acc/Dec T&quot;.</td>
</tr>
<tr>
<td>8</td>
<td>Press ( \text{SET} ). A parameter list regarding acceleration/deceleration time is displayed.</td>
</tr>
<tr>
<td>9</td>
<td>When moving the cursor to &quot;Dec.T1&quot; using ( \text{Acc/Dec F} ) and pressing ( \text{SET} ), the present set value is called.</td>
</tr>
<tr>
<td></td>
<td></td>
</tr>
<tr>
<td>---</td>
<td>---</td>
</tr>
</tbody>
</table>
| 10 | (1) Direct setting  
Press [ ] *.
Enter the desired value.
Or  
(2) Step setting  
Press [ ] [ ] .
Display "180" using [ ] [ ]. |   |
|   |   |   |
| 11 | Press [ ].
The set value is changed. |   |
|   |   |   |
| 12 | Press [ ] to display the next parameter. | Completed |

* If [ ] is pressed when an incorrect setting value is input, the display returns to the list display "8".
2.3.3 Selecting the parameter from parameter list to change the set value

Example: When changing 5s to 180s at the Pr. 8 Deceleration time setting

1. Press the "FV" key.
   The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Press the "SET" key.
   The parameter unit is in the parameter setting mode.

3. Change the screen using the cursor keys.

4. Select a parameter list.
   Using the cursor keys, point the cursor to "Pr.List".

5. Press the "List" key.
   Select the parameter list.
   The list of the parameters can be read.

6. Select the parameter.
   When moving the cursor using the cursor keys and pressing "SET" at "Dec.T1", the present set value is called.

7. (1) Direct setting
   Press the "1", "2", or "3" key.
   Enter the desired value.

   Or

   (2) Step setting
   Press the "A" or "B" key.
   Display "180" using the cursor keys.

8. Press the "SET" key.
   The set value is changed.

9. Press the "FINISH" key to display the next parameter.

* If the "FINISH" key is pressed when an incorrect setting value is input, the display returns to the list display "5".
## Setting and Changing the Parameter Values

### 2.3.4 Selecting the parameter from User List to change the set value

If a parameter is registered to User List, the parameter can be read from User List and changed. (For registering the user group, refer to page 29.)

Example: When changing 5s to 180s at the Pr. 8 Deceleration time setting

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press ( P_U ). The frequency setting screen appears, and operation mode changes to PU operation mode.</td>
</tr>
<tr>
<td>2</td>
<td>Press ( \text{SET} ). The parameter unit is in the parameter setting mode.</td>
</tr>
<tr>
<td>3</td>
<td>Change the screen using ( \text{F} ).</td>
</tr>
<tr>
<td>4</td>
<td>Select a User List. Using ( \text{A} / \text{V} ), point the cursor to &quot;User List&quot;.</td>
</tr>
<tr>
<td>5</td>
<td>Press ( \text{SW} ). The list of the parameters registered to User List appears.</td>
</tr>
<tr>
<td>6</td>
<td>Select the parameter. When moving the cursor using ( \text{A} / \text{V} ), and pressing ( \text{SET} ) at &quot;Dec.T1&quot;, the present set value is called.</td>
</tr>
</tbody>
</table>
| 7    | (1) Direct setting. Press \( 1 \) \( 8 \) \( 5 \). Enter the desired value.  
Or  
(2) Step setting. Press \( \text{A} / \text{V} \). Display "18" using \( \text{A} / \text{V} \). |
| 8    | Press \( \text{PRT} \). The set value is changed. |
| 9    | Press \( \text{SW} \) to display the next parameter.  
* If \( \text{SW} \) is pressed when an incorrect setting value is input, the display returns to the list display "5".  
Completed |
2.3.5 Precautions for setting write

- Perform parameter setting change during an inverter stop basically in the PU operation mode or combined operation mode. The parameter setting cannot be changed in the External operation mode or during inverter operation. (Read is performed independently of the operation mode.) Note that some parameters can be written even in the External operation mode or during operation. Therefore, refer to the inverter manual.

- As Pr. 77 Parameter write selection = "0" in the initial setting, parameter can be written only during an inverter stop. (Read is allowed even during operation.) Note that some parameters can be written always. Refer to the inverter manual for details of Pr. 77.

- In addition to the above case, setting write cannot be performed when:
  1) The parameter number selected does not exist in the parameter list; or
  2) The value entered is outside the setting range.

- When write cannot be performed and the "Setting Err." appears, press <ESC> and make setting once more.

(Example: For Pr. 7 Acceleration time)
User Group Function

2.4 User Group Function

- User group function is a function to display only parameters necessary for setting.
  Among all parameters, maximum 16 parameters can be registered to the user group. When "1" is set in 
  Pr. 166, only parameters registered in the user group can be accessed for reading and writing. (The 
  parameters not registered to the user group cannot be read.)

REMARKS

- The function may or may not be available depending on the inverter. Refer to the instruction manual of the inverter 
  for details.
### 2.4.1 Registering the parameters to user group

1. Press \( \text{SET} \), The parameter unit is in the parameter setting mode.

2. Read the parameters. Enter the parameter number to be registered to the user group with the number keys and press to read the parameter setting.

3. Set the parameters. When changing the setting value, enter a new value with the number keys and press to write. When not changing the setting value, press to display the setting completion screen.

4. Press \( \text{MP} \). The selecting screen appears.

5. Register. When moving the cursor to "YES" and pressing \( \text{MP} \), the registration is executed.

6. The parameter setting screen appears. To continue parameter registration, repeat the operation from step 2.
### User Group Function

#### 2.4.2 Deleting the parameters from user group

1. **Press**: 
   - The parameter unit is in the parameter setting mode.

2. **Select “User List”**: 
   - Using (▲/▼) point the cursor to “3 User List” and press ENTER.

3. **Select the parameter to be deleted**: 
   - Using (▲/▼) point the cursor to the parameter to be deleted and press ENTER.

4. **Delete**: 
   - The screen of delete confirmation appears. When pointing the cursor to "Yes" and pressing ENTER, the parameter is deleted.

#### 2.4.3 Confirming the parameters registered to user group

1. **Press**: 
   - The parameter unit is in the parameter setting mode.

2. **Select “User List”**: 
   - Using (▲/▼), point the cursor to “3 User List” and press ENTER.

3. **Read the parameter**: 
   - You can confirm the parameters registered to the user group.

### REMARKS

If the parameter is not registered to the user group, "User List Setting Err." will be displayed. Press CANCEL to return to the screen of step 1.
2.5 Calibration of the Meter (Frequency Meter)

The functions vary with the inverter. (Refer to the inverter instruction manual for details of the parameters.)

2.5.1 Calibration of the FM terminal

This section provides the way to calibrate the full-scale of meter connected to terminal FM using the parameter unit.

- Calibrating the meter at the running frequency of 60Hz

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pr. 900 FM terminal calibration</td>
<td></td>
</tr>
<tr>
<td>Pr. 54 FM terminal function selection</td>
<td></td>
</tr>
<tr>
<td>Pr. 55 Frequency monitoring reference</td>
<td></td>
</tr>
</tbody>
</table>

1. **Press \( \text{PU} \)\text{.}**
   - The frequency setting screen appears, and operation mode changes to PU operation mode.

2. **Press \( \text{SET} \)\text{.}**
   - The parameter unit is in the parameter setting mode.

3. **Enter \( 8 \) \( 0 \) \( 0 \) \( \uparrow \) and press \( \text{SET} \text{.} \)**
   - The preset frequency is displayed.

4. **Enter \( 6 \) \( 0 \) \( \uparrow \) and press \( \text{SET} \text{.} \)**
   - 60Hz is set.

5. **Press \( \text{SET} \text{.} \)**
   - Forward rotation is performed at 60Hz. You need not connect the motor.

6. **Using \( \text{UP} \) \( \downarrow \text{, adjust the meter pointer to a predetermined position.} \)**
   - The meter pointer moves. (It takes a long time before the pointer moves.)
### Calibration of the AM terminal

This section provides a way to calibrate the meter connected to terminal AM using the parameter unit.

#### Calibration procedure 1

**Example: To calibrate the meter at the running frequency of 60Hz**

<table>
<thead>
<tr>
<th>Step</th>
<th>Action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Press ( \text{PU} )</td>
<td>The frequency setting screen appears, and operation mode changes to PU operation mode.</td>
</tr>
<tr>
<td>2</td>
<td>Press ( \text{SET} )</td>
<td>The parameter unit is in the parameter setting mode.</td>
</tr>
<tr>
<td>3</td>
<td>Enter ( 0 ), ( 0 ), ( 1 ) and press ( \text{SET} )</td>
<td>The preset frequency is displayed.</td>
</tr>
</tbody>
</table>

- **Pr 901 AM terminal calibration**
- **Pr 158 AM terminal function selection**
- **Pr 55 Frequency monitoring reference**
- **Pr 56 Current monitoring reference**

Press \( \text{B} \) to return to the main monitor screen.
(2) When calibrating output current
For the output current or another item, which does not easily point 100% value during operation, adjust the reference voltage output, then select the item to be displayed.

1. Press \( \text{[PU]} \),
The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Press \( \text{[SET]} \)
The parameter unit is in the parameter setting mode.

3. Enter \( \text{001 AM Tune} \) and press \( \text{[WRITE]} \)
The present \( Pr.158 \) setting appears.

4. Enter \( \text{001 AM Tune} \) and press \( \text{[WRITE]} \)
The present \( Pr.158 \) setting appears.

5. Press \( \text{[STF]} \)
The parameter unit is in the parameter setting mode.

6. Using \( \text{[\langle \rangle]} \), adjust the meter pointer to a predetermined position.
The meter pointer moves. (It takes a long time before the pointer moves.)

7. Press \( \text{[STOP]} \)
Calibration is complete.

8. Press \( \text{[STOP]} \) to return to the main monitor screen.

(2) When calibrating output current
For the output current or another item, which does not easily point 100% value during operation, adjust the reference voltage output, then select the item to be displayed.

1. Press \( \text{[PU]} \),
The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Press \( \text{[SET]} \)
The parameter unit is in the parameter setting mode.

3. Enter \( \text{001 AM Tune} \) and press \( \text{[WRITE]} \)
The present \( Pr.158 \) setting appears.

4. Enter \( \text{001 AM Tune} \) and press \( \text{[WRITE]} \)
The setting of reference voltage output is complete.

5. Press \( \text{[STF]} \)
The parameter unit is in the parameter setting mode.
6. Enter 9 0 1 and press .
   The present Pr. 901 setting appears.

7. Enter 6 0 and press .
   The setting of maximum running frequency is complete.

8. Press  .
   Forward rotation is performed at 60Hz.
   You need not connect the motor to make adjustment.

   Setting is complete.
   The output voltage displayed is the value at 100% output.
   This voltage is not stored if you do not press .

10. Press .
    The parameter unit is in the parameter setting mode.

11. Enter 1 6 8 and press .
    The present Pr. 158 setting appears.

12. Enter 2 and press .
    The setting of output current is complete.
    The output current for 10VDC is the setting value of Pr. 56
    Current monitoring reference (initial value: rated inverter current).
2.6 Adjustment of the Frequency Setting Signals "Bias" and "Gain"

The functions vary with the inverter model. (Refer to the inverter instruction manual for details of the functions.)

2.6.1 Adjustment procedure

There are three ways to adjust the bias and gain of the frequency setting voltage (current).

(1) Adjust only the bias and gain frequencies and not adjust the voltage (current) (Refer to page 36)

(2) Adjust any point by applying a voltage across terminals 2-5 (starting a current across terminals 4-5) (Refer to page 38)

(3) Adjust any point without a voltage being applied across terminals 2-5 (without a current being applied across terminals 4-5) (Page 40)

* The parameters may or may not be available depending on the inverter. For details, refer to the instruction manual of each inverter.

1. Adjust only the bias and gain frequencies and not adjust the voltage

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Pr. 902 to Pr. 905, Pr. 917 to Pr. 920</th>
</tr>
</thead>
</table>

* The parameters may or may not be available depending on the inverter. For details, refer to the instruction manual of each inverter.

1. Press . The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Enter 0 and press . The present Pr. 902 setting appears.

3. Set<WRITE>

---

**Setting of the frequency setting voltage bias**

1. Press . The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Press (RT). The parameter unit is in the parameter setting mode.

3. Enter 0, 0, 0, 0, 0, 0 and press .

---

Page 36
### Adjustment of the Frequency Setting Signals “Bias” and “Gain”

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>4</td>
<td>Enter 1. Enter 9. Voltage need not be applied across terminals 2-5. 902 Ext2bias 10Hz set WRITE.</td>
</tr>
<tr>
<td>5</td>
<td>Press [WX]. The bias frequency is set at 10Hz.</td>
</tr>
<tr>
<td></td>
<td>If the voltage is being applied across terminals 2-5 at this time, the bias setting is as shown above.</td>
</tr>
<tr>
<td>6</td>
<td>Press [WX]. The present setting appears.</td>
</tr>
<tr>
<td>7</td>
<td>Enter 8. Enter 9. Voltage need not be applied across terminals 2-5.</td>
</tr>
</tbody>
</table>

![Graph showing frequency and voltage relationship](image)  

The adjustment of the frequency setting voltage bias and gain is complete.

#### REMARKS
- The current input (Pr. 904) can also be adjusted using a similar procedure.
- The Pr. 903 Terminal 2 frequency setting gain remains unchanged if the Pr. 20 acceleration/deceleration reference frequency setting is changed.
Adjustment of the Frequency Setting Signals "Bias" and "Gain"

(2) Adjust any point by application of voltage to across terminals 2-5

Setting of the frequency setting voltage bias

1. Press \text{	exttt{PU}}.
   The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Press \text{	exttt{SET}}.
   The parameter unit is in the parameter setting mode.

3. Enter \texttt{902}.

4. Press \text{	exttt{SET}} twice.
   The present Pr. 902 setting appears.
   When the set voltage is changed, the % value also changes.
   This example assumes that a 1V voltage is applied.
   The value selected in Pr. 71 (5V in this example) is 100%.
   \text{Pr. 902 EXT2bias}

5. Enter \text{	exttt{10Hz}},
   Set the bias frequency at 10Hz.

6. Press \text{	exttt{SET}}.
   The cursor (\texttt{\textbf{h}}) moves to the set voltage.

7. Apply a 0V voltage.
   In this example, 0V is applied as 10Hz is set for 0V.
   (Indicated % on the right changes.)

8. Press \text{	exttt{SET}}.
   The bias frequency is set at 10Hz for 0V input.
   Setting is completed as shown below:

<table>
<thead>
<tr>
<th>Voltage</th>
<th>Bias (%)</th>
<th>Frequency</th>
</tr>
</thead>
<tbody>
<tr>
<td>0V</td>
<td>-0.2%</td>
<td>10.00Hz</td>
</tr>
<tr>
<td>Ext</td>
<td>0.2%</td>
<td>10.00Hz</td>
</tr>
</tbody>
</table>

   0.0% of analog input value may not be displayed in some cases.
### Adjustment of the Frequency Setting Signals “Bias” and “Gain”

- **Setting of the frequency setting voltage gain**

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 9    | Press 

The present Pr. 903 setting appears. When the set voltage is changed, the % value also changes. The value selected in Pr. 73 (5V in this example) is 100%. |

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 10   | Enter 

The present set voltage across terminals 2-5 is displayed in %. |

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
</table>
| 11   | Press 

The cursor ( ) moves to the set voltage. |

<table>
<thead>
<tr>
<th>Step</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>12</td>
<td>Apply a 5V voltage. In this example, 5V is applied to set 50Hz for 5V input.</td>
</tr>
</tbody>
</table>

The adjustment of the frequency setting voltage bias and gain is complete.

### REMARKS

- The current input (Pr. 904, Pr. 905) can also be adjusted using a similar procedure.
- The Pr. 903 Terminal 2 frequency setting gain remains unchanged even if the Pr. 20 Acceleration/deceleration reference frequency setting is changed.
- A narrow calibration (command) value set using Pr. 902 and Pr. 903 (Pr. 904 and Pr. 905) will result in "Incr V P" and disable write.
Adjustment of the Frequency Setting Signals "Bias" and "Gain"

(3) Adjust any point without application of voltage to across terminals 2-5

- Setting of the frequency setting voltage bias

1. Press .
   The frequency setting screen appears, and operation mode changes to PU operation mode.

2. Press .
   The parameter unit is in the parameter setting mode.

3. Enter .
   The present setting appears.

4. Press twice.
   The present Pr. 902 setting appears.
   When the set voltage is changed, the % value also changes.
   The value selected in Pr. 71 (5V in this example) is 100%.

5. Enter .
   Set the bias frequency at 10Hz.

6. Enter .
   The cursor moves to the set voltage.
   Voltage need not be applied across terminals 2-5.

7. Enter .
   Input 0V to set bias.

8. Press .
   The bias frequency is set at 10Hz.
   Setting is completed as shown below:

   ![Diagram showing the bias frequency]
Adjustment of the Frequency Setting Signals "Bias" and "Gain"

- Setting of the frequency setting voltage gain

9 Press \(\text{SET}+\), then \(\text{SET}+\).
   The present Pr. 903 setting value appears.
   When the set voltage is changed, the % value also changes.
   The value selected in Pr. 73 (5V in this example) is 100%.

10 Enter \(\text{SET}+\),
   Set the gain frequency at 50Hz.

11 Press \(\text{SET}+\).
   The cursor \(\rightarrow\) moves to the set voltage.
   Voltage need not be applied across terminals 2-5.

12 Enter \(\text{SET}+\),
   Input 5V to set gain.

[Add tables or diagrams if needed]

REMARKS

- The current input (Pr. 904, Pr. 905) can also be adjusted using a similar procedure.
- The Pr. 903 Terminal 2 frequency setting gain remains unchanged even if the Pr. 20 acceleration/deceleration reference frequency setting is changed.
- A narrow calibration (command) value set using Pr. 902 and Pr. 903 (Pr. 904 and Pr. 905) will result in "Inc/Dec" and disable write.
3 HELP

3.1 Overview of the Help Menu

Press the (HELP) key in any operation mode to call the help menu. Various functions can be executed from the help menu.

3.1.1 Help menu

<table>
<thead>
<tr>
<th>Help Menu</th>
<th>Description</th>
<th>Refer To</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. MONITOR</td>
<td>The monitor list appears, and you can change from one monitor to another and set the first priority monitor.</td>
<td>Page 48</td>
</tr>
<tr>
<td>2. PU Oper</td>
<td>You can select the PU operation mode via direct input (direct setting with the number keys) or select the Jog operation mode from the PU, and displays how to operate the keys.</td>
<td>Page 49</td>
</tr>
<tr>
<td>3. Pr.List</td>
<td>The parameter menu appears, and you can perform &quot;parameter setting&quot;, &quot;list display&quot;, &quot;parameter change list display&quot; and &quot;initial value list display&quot;.</td>
<td>Page 51</td>
</tr>
</tbody>
</table>

Press any of the MONITOR, SET, , and PU keys to switch to the corresponding mode.
### Overview of the Help Menu

<table>
<thead>
<tr>
<th>Help Menu</th>
<th>Description</th>
<th>Refer To</th>
</tr>
</thead>
<tbody>
<tr>
<td>4. Pr.Clear</td>
<td>The parameter clear menu appears, and you can perform &quot;parameter clear&quot; and &quot;all clear&quot;.</td>
<td>Page 54</td>
</tr>
<tr>
<td>5. Alarm Hist</td>
<td>This function displays history of past eight faults (alarms).</td>
<td>Page 56</td>
</tr>
<tr>
<td>6. AlarmClear</td>
<td>This function clears all the fault (alarm) history.</td>
<td>Page 57</td>
</tr>
<tr>
<td>7. Inv.Reset</td>
<td>This function resets the inverter.</td>
<td>Page 58</td>
</tr>
<tr>
<td>8. T/Shooting</td>
<td>The inverter displays the cause of mismatch between inverter operation and control/setting or the cause of an inverter fault. This menu is used for the FR-A500/F500 series only. Selecting this menu for the other models results in an error.</td>
<td>Page 58</td>
</tr>
<tr>
<td>9. S/W</td>
<td>This function displays the software control number of the inverter.</td>
<td>-</td>
</tr>
<tr>
<td>10. Selectop</td>
<td>This function displays the signals assigned to the I/O terminals of the control circuit and the ON/OFF states of the signals.</td>
<td>Page 63</td>
</tr>
<tr>
<td>11. Option</td>
<td>This function displays the option fitting states of the option connectors 1 to 3.</td>
<td>Page 64</td>
</tr>
<tr>
<td>12. FRCpy set</td>
<td>The function can perform the &quot;parameter copy&quot; (read, write, verification).</td>
<td>Page 65</td>
</tr>
</tbody>
</table>

**REMARKS**

The validity of each help menu depends on the inverter model.
Overview of the Help Menu

3.1.2 Help menu transition

- 1 Frequency: Output frequency [Hz]
- 2 Current: Output current [A]
- 3 Voltage: Output voltage [V]
- 4 Alarm 
  - A fault description: The latest 8 faults are displayed
  - B: Frequency setting (shows the frequency already set)
- 5 RPM: Running speed (shows the motor speed or moving speed)
- 6 Shaft Trq: Motor torque (torque produced by the motor) [%]
- 7 DC Link: DC voltage in converter output [V]
- 8 Br.Duty %: Regenerative brake duty [%]
- 9 Electronic Thermal Relay Function Load Factor [%]
- 10 Peak I: Output current peak [A]
- 11 DC Peak V: Converter output voltage peak (maximum value of converter output voltage) [V]
- 12 I/P Power: Input power (input side power amount currently used) [kW]
- 13 O/P Power: Output power (output side power amount currently used) [kW]
- 14 I/P Signal: Input signal (ON-OFF states of STF, STR, etc.)
- 15 O/P Signal: Output signal (ON-OFF states of RUN, PU, etc.)
- 16 I/P Signal: Operation in PU operation mode at running frequency set by numeric keys.
- 17 JCG: Jog operation mode

REMARKS
- The validity of each help menu depends on the inverter model.
Overview of the Help Menu

- Setting Mode
  - 0~9: Ser Pr.No.
  - Select Oper

- Pr. List
  - 1: Appl. Grp
  - 3: User List
  - 4: Param Copy

- Set Pr. List
  - 15: JOG F 15.00 Hz
  - 79: Oper 1125
  - 2: Freq 50.00

- Def. Pr. List
  - 0: Trq B 6.0
  - 1: Max. F 120.00
  - 2: Min. F 0.00

- Clear All Pr.
  - Exec<WRITE>
  - Cancel<ESC>

- Clear All Pr.
  - Exec<WRITE>
  - Cancel<ESC>

- Alarm Clear
  - Exec<WRITE>
  - Cancel<ESC>

* The latest 8 faults are displayed.
Overview of the Help Menu

* This menu is used for the FR-A500/F500 series only. Selecting this menu for the other models results in an error.
Overview of the Help Menu

Select Char Name: 0
READ: Decide Char
WRITE: Decide Name

Option

RM:  1
RL:  0
RH:  2
RT:  3
OP1: ----
OP2: ----
OP3: A5NC

Copy area 2
Copy area 1
Copy area 3

1 Read VFD
2 Write VFD
3 Verifying

Overwrite area 1
WRITE: Executing
ESC: Cancel

Verify Area 1
WRITE: Executing
ESC: Cancel

Param Copy
Reading Completed

Param Copy
Writing Completed
Please Reset

Param Copy
Verifying Completed

Terminal Name

ON
OFF

Settings of Pr. 180 to Pr. 196 are displayed.
3.2 Operation Procedures for the Help Menu

3.2.1 Monitor function

The monitoring list appears and you can change from one monitor screen to another and set the first priority screen.

1. Press \( \text{[HELP]} \). The help menu appears.

2. Make sure that the cursor is located at “1 MONITOR”. If not, move the cursor with \( \text{[\(\text{[A]}\) \(\text{[V]}\)]} \).

3. Press \( \text{[\(\text{[A]}\) \(\text{[V]}\)]} \). The monitoring list is called.

4. Press \( \text{[\(\text{[A]}\) \(\text{[V]}\)]} \) to move the cursor to the desired item. Hold down \( \text{[\(\text{[A]}\) \(\text{[V]}\)]} \) and press \( \text{[\(\text{[A]}\) \(\text{[V]}\)]} \) to shift one screen.

5. Press \( \text{[\(\text{[E]}\) \(\text{[Q]}\)]} \). The monitor screen selected by the cursor appears. Press \( \text{[\(\text{[E]}\) \(\text{[Q]}\)]} \) to give the first priority to this monitor screen.

REMARKS
- The monitoring list can be called only with pressing \( \text{[\(\text{[E]}\) \(\text{[Q]}\)]} \) in the monitoring mode. (Refer to page 17)
- “4 Alarm His” cannot be set to the first priority monitor.
- Some monitoring items are not displayed depending on the connected inverter. To check the available monitoring items, refer to the setting range of Pr. 52 DU/PU main display data selection of the inverter.
### Operation Procedures for the Help Menu

#### 3.2.2 Selection of PU operation (direct input)

You can select the PU operation mode to set PU operation frequency.

1. Press \( \text{HELP} \). The help menu appears.
2. Using \( \text{▲} \), move the cursor to "2 PU Oper".
3. Press \( \text{SET} \). The menu on the right appears.
4. Make sure that the cursor is located at "1 PU: Directly". If not, move the cursor with \( \text{▲} / \text{▼} \).
5. Press \( \text{SET} \). The PU operation mode is selected and the frequency setting screen appears.
6. Enter the set frequency using \( \text{▲} \) to \( \text{▼} \) and press \( \text{SET} \). The frequency setting is complete.
7. Press \( \text{PU} \) to perform forward or reverse rotation with the set frequency.

**REMARKS**

Press \( \text{PU} \) to call the frequency setting screen any time.
3.2.3 Selection of the PU Jog operation mode

You can select the PU Jog operation mode to set PU Jog frequency.

1. Press (F1) (HELP). The help menu appears.

2. Using the cursors, move the cursor to “2 PU Oper”.

3. Press (F2) (2 PU Oper). The menu on the right appears.

4. Using the cursors, move the cursor to “2 JOG: Jogging”.

5. Press (F4) (SET). The PU Jog operation mode is selected, and the frequency setting screen appears.

6. Enter the set frequency using the cursors and press (F5) (SET). The PU Jog frequency setting is complete.

7. Hold down the jog to perform forward or reverse rotation with the PU Jog set frequency.

REMARKS

- Press (F6) (PU/JOG) to call the PU Jog frequency setting screen any time after pressing F5.

- Press (F6) (PU/JOG) to operate the PU Jog.
### Operation Procedures for the Help Menu

#### 3.2.4 Parameters

When the parameter on the help menu is selected, the parameter menu appears, and you can select the following operations for the parameters.

<table>
<thead>
<tr>
<th>Display</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Setting Mode</td>
<td>Switches to the parameter setting mode to read and write the parameter setting.</td>
</tr>
<tr>
<td>2 Pr. List</td>
<td>Displays the parameters list. You can select the parameter from the list to read and write the parameter setting.</td>
</tr>
<tr>
<td>3 Set Pr. List</td>
<td>Lists the parameters whose setting is changed from initial value. You can select the parameter from the list to read and write the parameter setting.</td>
</tr>
<tr>
<td>4 Def. Pr. List</td>
<td>Displays the parameters and initial value list. You can select the parameter from the list to read and write the parameter setting.</td>
</tr>
<tr>
<td>5 Def. Pr. List 2 *</td>
<td>Displays the list of user's settings for initial value (settings of the parameters selected with Pr. 199 User's initial value setting).</td>
</tr>
</tbody>
</table>

* This function is supported by the PR-PU04 only.
Operation Procedures for the Help Menu

1. Setting Mode
   1. Press [HELP].
      The help menu appears.
   2. Using , move the cursor to "Pr. List".
   3. Press .
      The parameter menu appears.
   4. Press .
      The parameter unit switches to the setting mode.
      Refer to page 23 to set the parameters.

2. Pr. List
   1. Call the parameter menu similarly to above steps 1 to 3.
   2. Using , move the cursor to "Pr. List".
   3. Press .
      The parameter menu appears.
   4. Press / to move the cursor to the desired parameter.
      Press [SET] and to shift to the next page.
   5. Press .
      The parameter indicated by the cursor is read, and the parameter unit is in the parameter setting mode.
      Refer to page 23 to set the parameters.

Press to move to the next parameter.
### Operation Procedures for the Help Menu

#### (3) Set Pr.List

1. **Call the parameter menu similarly to steps 1 to 3 of page 52.**
2. **Using \( \uparrow/\downarrow \), move the cursor to “3 Set Pr. List”.**
3. **Press .** The change list appears.
4. **Press .** The parameter indicated by the cursor is read, and the parameter unit is in the parameter setting mode. Refer to page 23 to set the parameters.

#### (4) Def.Pr.List/Def. Pr. List 2

The initial values of parameters are displayed.

1. **Call the parameter menu similarly to steps 1 to 3 of page 52.**
2. **Using \( \uparrow/\downarrow \), move the cursor to “4 Def. Pr. List”.**
3. **Press .** The initial value list appears.
4. **Press .** The parameter indicated by the cursor is read, and the parameter unit is in the parameter setting mode. Refer to page 23 to set the parameters.

1. To display the “Def. Pr. List 2”, move the cursor to “5 Def. Pr. List 2”.
2. When “Def. Pr. List 2” is not registered, “No Changes” appears.
3.2.5 Parameter clear

You can perform the "parameter clear" and "all parameter clear".

Before performing any operation, switch to the PU operation mode.

- Clear Pr. .......... Returns (initializes) the parameters to the factory settings with the exception of
  the some parameters (Pr. 75 and calibration values in Pr. 900 to 905).
- Clear All .......... Initializes all parameters with the exception of Pr. 75.

(1) Parameter clear

1. Press (HELP).
   The help menu appears.

2. Using (▲)/ (▼), move the cursor to "4 Pr. Clear".

3. Press (SEL).
   The parameter menu appears.

4. Select the "Clear Pr.".
   Using (▲)/ (▼), move the cursor to "1" and press the (SEL).

5. "Clear Pr." is selected, and the confirmation screen for clearing execution is displayed.

6. Press (EXEC).
   The parameters are initialized.
   When canceling the initialization, press (ESC) on the confirmation screen.

   Exec<WRITE>
   Cancel<ESC>

   Clear Pr.
   Completed
Operation Procedures for the Help Menu

(2) All parameter clear

<p>| | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Call the parameter menu similarly to steps 1 to 3 of page 54.</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Clear Pr. 2 Clear All" /></td>
</tr>
<tr>
<td>2</td>
<td>Select the &quot;Clear All&quot;.  Using [\triangledown,\triangledown], move the cursor to &quot;2 Clear All&quot; and press the [\text{Execute}].</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Clear Pr. 2 Clear All" /></td>
</tr>
<tr>
<td>3</td>
<td>&quot;Clear All&quot; is selected, and the confirmation screen for clearing execution is displayed.</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Clear All Pr. Exec&lt;WRITE&gt; Cancel&lt;ESC&gt;" /></td>
</tr>
<tr>
<td>4</td>
<td>Press [\text{Execute}]. The parameters are initialized. When canceling the initialization, press [\text{ESC}] on the confirmation screen.</td>
</tr>
<tr>
<td></td>
<td><img src="image" alt="Clear All Pr. Exec&lt;WRITE&gt; Cancel&lt;ESC&gt;" /></td>
</tr>
</tbody>
</table>
3.2.6 Alarm history
Shows the history of past eight faults.

1. Press [HELP]. The help menu appears.

2. Using [▲]/[▼], move the cursor to "5 Alarm His". Hold down [□] and press [▲]/[▼] to shift one screen.

3. Press . The fault history appears.

4. Press . The running frequency at fault occurrence is displayed.

5. Press [▼]. The output current, output voltage and cumulative energization time at fault occurrence is displayed.

6. Press [△] when displaying the operation mode for fault occurrence in steps 4 and 5 to display the operation data for the preceding fault occurrence.
3.2.7 Alarm clear
Clears all the fault history.

1. Press [HELP].
   - The help menu appears.

2. Using [▲]/[▼], move the cursor to "6 Alarm Clear".
   - Hold down [SHIFT] and press [▲]/[▼] to shift one screen.

3. Press [相]
   - "Alarm Clear" is selected, and the confirmation screen for clearing is displayed.

4. Press [相]
   - The fault history is cleared.
   - When canceling the clear, press [ESC] on the confirmation screen.
3.2.8 Inverter reset

Resets the inverter.

1. Press (HELP). The help menu appears.

2. Using (▲) (▼), move the cursor to "7 INV. Reset". Hold down (SET) and press (▲) (▼) to shift one screen.

3. Press (HELP). "INV. Reset" is selected, and the confirmation screen for reset is displayed.

4. Press (EXEC). The inverter is reset, and the parameter unit switches to the monitoring mode. When canceling the inverter reset, press (ESC) on the confirmation screen.

**REMARKS**

- If the inverter’s protective function is activated to bring the inverter to trip (output shutoff), execute the inverter reset only by pressing (HELP).
- A similar reset operation may also be performed by switching power ON again or by switching the RES signal ON. (Refer to the inverter instruction manual for details.)
3.2.9 Troubleshooting

If the inverter appears to operate improperly, perform the following operation to display the most likely cause of the fault.

This operation may also be performed during inverter operation (PU operation, External operation) or during trip (protection activated).

1. Press [HELP].
   The help menu appears.

2. Using [▲] / [▼], move the cursor to "8 T/Shooting".
   Hold down [SHIFT] and press [▲] / [▼] to shift one screen.

3. Press [ ▼ ].
   The fault menu appears.

4. Press [▲] or [▼] to move the cursor to the desired item.

5. Press [ ▼ ].
   The estimated cause of the fault is displayed. (Refer to page 60)

REMARKS
- This menu is used for the FR-A500/F500 series only.
- Selecting this menu for the other models results in an error.

SetF>Max.F1/F2
60.00Hz
M.Speed Error
Pr.1/18
### Troubleshooting guidance

#### 1) M NOT RUNNING (Motor does not run)

<table>
<thead>
<tr>
<th>Condition</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M NOT RUNNING</td>
<td>The protective function is activated to bring the inverter to trip. Press ( \text{[F2]} ) to display the cause of the trip.</td>
</tr>
<tr>
<td>M NOT RUNNING</td>
<td>The inverter's main circuit power has decreased or a phase in the power supply is lost. Check the power supply.</td>
</tr>
<tr>
<td>M NOT RUNNING</td>
<td>Both start signals STF and STR are OFF or ON.</td>
</tr>
<tr>
<td>M NOT RUNNING</td>
<td>MRS signal is ON.</td>
</tr>
<tr>
<td>M NOT RUNNING</td>
<td>The inverter starting frequency (Pr. 13) setting is higher than the frequency currently set.</td>
</tr>
<tr>
<td>M NOT RUNNING</td>
<td>The current input select signal AU remains OFF. (not ON)</td>
</tr>
<tr>
<td>M NOT RUNNING</td>
<td>Neither of ( \text{[F3]} ) and ( \text{[F4]} ) are pressed in the PU operation mode.</td>
</tr>
</tbody>
</table>

The inverter cannot start because:

- The inverter starting frequency (Pr. 13) is higher than the frequency currently set.
- The current input select signal AU remains OFF. (not ON)
2) M.SPEED ERROR
(Speed does not match the running frequency setting)

- **M. SPEED ERROR**
  - Since the running frequency setting is higher than the maximum frequency (Pr. 1) setting, the running frequency remains at the maximum frequency.

- **M. SPEED ERROR**
  - SetF MinF1 60.00Hz
  - Pr.2

- **M. SPEED ERROR**
  - Fjump Working
  - See Pr. 31 36
  - SetF= 60.00Hz

Since the running frequency setting is lower than the minimum frequency (Pr. 2) setting, the running frequency has been increased to the minimum frequency.

- **M. SPEED ERROR**
  - Current Limit Activated
  - As a result of arithmetic operation of PID control, the running frequency differs from the set value.

3) M.A/Dec Err
(Actual acceleration/deceleration time is longer than the Pr. 7/8 if setting)

- **M. SPEED ERROR**
  - Acceleration time setting (Pr. 7) is displayed.

- **M. SPEED ERROR**
  - Deceleration time setting (Pr. 8) is displayed.

- **M. SPEED ERROR**
  - Frequency reached in the above set time (Pr. 20 acceleration/deceleration reference frequency) is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.

- **M. SPEED ERROR**
  - Frequency from which deceleration is made in the above set time (Pr. 20 acceleration/deceleration reference frequency) is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.

- **M. SPEED ERROR**
  - Estimated cause that actual acceleration/deceleration time is longer than the setting is displayed.
4) M.Curr.High

(Inverter output current is larger than normal)

First, the running frequency, output current and output voltage of the inverter are displayed. Press [SHIFT] to display the estimated cause of large output current.

- **INV.Output**
  - **60.00Hz**
  - **10.00A**
  - **182.4V**

**REMARKS**

When the fault could not be identified:

When the cause of the fault is not specified even after performing the operation mentioned above, the current running frequency, output current and output voltage at the point are displayed on the screen.

Press [SHIFT] to display the estimated cause related.
Operation Procedures for the Help Menu

3.2.10 Terminal assignment (Selectop)

The signals assigned to the control circuit terminals and their ON-OFF state are displayed.
The terminal status of the plug-in option can be checked if a plug-in option FR-A5AX/A5AY/A5AR is installed.

1. Press \( \text{[HELP]} \).
The help menu appears.

2. Using \( \text{[\( \uparrow \) I]} \), move the cursor to "10 Selectop".
   Hold down \( \text{[SEL]} \) and press \( \text{[\( \uparrow \) I]} \) to shift one screen.

3. Press \( \text{[EXEC]} \).
The signals assigned to the control circuit terminals and their ON-OFF states are displayed.
3.2.11 Option

Displays what options are fitted to the option connectors.

1. Press [HELP].
   The help menu appears.

2. Using ▲▼, move the cursor to "11 Option".
   Hold down [ENT] and press ▲▼ to shift one screen.

3. Press ▼.
   Numbers OP1 to OP3 correspond to numbers 1 to 3 of the option slot on the inverter side.
   For the inverter with only one option slot, mounted option is displayed next to OP1.
   The plug-in option which is mounted on the inverter is displayed.
3.2.12 Multiple copies

(1) Copying the parameter settings
Inverter parameter settings can be read. The settings of a maximum of three inverters can be stored in FR-PU04/PU04V. You can also copy the stored parameter settings to another inverter of the same series.

Confirm for setting

- Is the Pr. 77 setting of the copy destination inverter correct? → Set "0 or 2" in Pr. 77.
- Is the inverter of the copy destination the same series as that of the copy source? → Select the inverter of the same series.

Example:
- FR-A520-0.4K → FR-A520-0.75K
- FR-A520-0.4K → FR-F520-0.75K

Parameters can be copied only to the same series inverters.

CAUTION
Turning power OFF during parameter copy (read, write) as below, processing is not completely ended. Perform parameter copy again.
- Turn OFF the inverter power.
- Remove the FR-PU04/PU04V from the inverter.
- Pull out the PU cable.
Operation Procedures for the Help Menu

- Reading the parameter settings of the inverter and storing them to FR-PU04/PU04V.

1. Connect the FR-PU04/PU04V to the copy source inverter.
2. Press [HELP]. The help menu appears.
3. Select the "PRCpy set". Using [▲]/[▼], move the cursor to "12 PRCpy set" and press [≡].
4. Select the copy area. The copy area selection screen is displayed. Then, move the cursor to any one of 1 to 3 and press [≡]. (Parameter settings of each inverter (three inverters in total) can be copied to the area 1, 2 or 3.)
5. Select the "READ". Using [▲]/[▼], move the cursor to "1 Read VFD" and press [≡].
6. Give a name. You can name each of copy areas 1 to 3. Select the characters with [▲]/[▼] and set them with [≡]. Press [≡] to set the name for the area.
7. Write to the copy area of FR-PU04/PU04V. The screen for confirming the overwriting of the data in the FR-PU04/PU04V is displayed.
8. Press [≡]. The parameter settings of the inverter are stored. When canceling, press [ESC].
**Operation Procedures for the Help Menu**

- Writing the parameter setting stored in FR-PU04/PU04V to the inverter

1. Connect the FR-PU04/PU04V to the copy destination inverter.
   - Is the PU operation mode selected? → If not, press \( \text{PU} \) to select the PU operation mode.
   - Is the inverter stopped? → If it is running, press \( \text{STOP} \) to stop it.


3. Select the "PRCpy set".
   - Using \( \text{A} / \text{V} \), move the cursor to "12 PRCpy set" and press \( \text{ENT} \).

4. Select the copy area.
   - Point the cursor to the copy area that stores the parameter settings to be written to the inverter, and press \( \text{ENT} \).

5. Select the "WRITE".
   - Using \( \text{A} / \text{V} \), point the cursor to "2 Write VFD" and press \( \text{ENT} \).

6. Writing the parameter settings is selected, and the confirmation screen for writing is displayed.

7. Press \( \text{ENT} \).
   - The parameter settings stored in the FR-PU04/PU04V are copied to the copy destination inverter.

8. Reset the inverter. (Refer to page 58)
Operation Procedures for the Help Menu

(2) Verifying the parameters

All the parameter settings stored in the FR-PU04/PU04V are verified with those which are stored in the inverter.

REMARKS
Verification cannot be performed between different inverter series.

1. Refer to page 66 and copy the parameter settings of the verify source inverter to the FR-PU04/PU04V.
2. Connect the FR-PU04/PU04V to the inverter to be verified.
3. Press [HELP].
   The help menu appears.
4. Select the "multiple copies".
   Using [△] move the cursor to "12 PRCpy set" and press [OK].
5. Select the copy area.
   Point the cursor to the copy area that stores the parameter settings required verification, and press [OK].

REMARKS
- Overwriting the data of the FR-PU04/PU04V deletes the previous data.
- The parameter settings of three inverters can be stored in areas 1 to 3.
- Read and write cannot be stopped during execution.
- If power is switched OFF, parameter data stored in the parameter unit remains unerased.

Verification cannot be performed between different inverter series.
Operation Procedures for the Help Menu

6. Select the "Verifying". Using [▲]/[▼] point the cursor to "Verifying" to press [OK].

7. Verification of the parameter settings is selected, and the confirmation screen for verification is displayed.


9. If an error is detected during verification, the corresponding Pr. is shown. Note that only "Verify Err" will be displayed if an incorrect value has been entered directly (f setting) or set in either Pr. 173 or Pr. 174.

10. Press [OK]. When verification is stopped with verification error, press [OK] to continue verification.

11. Verification is complete.
3.3 Other Precautions

3.3.1 Precautions for parameter unit operation

Note the following items when operating the parameter unit to prevent setting from being disabled or incorrect values from being entered.

- Precautions for the digit count and decimal point of input value
  The maximum number of input digits is six including a decimal point. If you enter a value in excess of 6 digits, the most significant digit is ignored.
  
  12345.6 → 2345.6
  (Input) → Ignored
4 OPERATION

4.1 How to Select the Operation Mode

4.1.1 Switching from External operation mode [EXT] to PU operation mode [PU]

Pressing \[\text{EXT}\] switches to the PU operation mode and changes the operation mode indication to \[\text{PU}\].

Confirmation
Make sure that the external input signal (STF, STR) is OFF.

4.1.2 Switching from PU operation mode [PU] to External operation mode [EXT]

Pressing \[\text{EXT}\] switches to the External operation mode and changes the operation mode indication to [EXT].

Confirmation
Make sure that the external input signal (STF, STR) is OFF and that the operation command indication is "- - -".

0.00Hz
--- STOP PU
Freq Set
SET 0.00Hz
0.00Hz
--- STOP EXT
0.00Hz
--- STOP PU
4.1.3 Switching to the External / PU combined operation mode

Changing the Pr. 79 Operation mode selection setting to "3" or "4" switches to the External / PU combined operation mode. "PU+E" is displayed in the operation mode indication position.

The relationship between the running frequency and the start signal is as indicated in the following table.

<table>
<thead>
<tr>
<th>Pr. 79 Setting</th>
<th>Description</th>
<th>Running Frequency Setting</th>
<th>Start Signal</th>
</tr>
</thead>
</table>
| 3              | Parameter unit
- Direct setting and ▲▼ key setting
- External signal input
- Multi-speed selection (Pr. 4 to Pr. 6, Pr. 24 to Pr. 27)
- 4 to 20mADC across terminals 4-5 | External signal input
- Terminal STF
- Terminal STR | |
How to Select the Operation Mode

REMARKS

If the operation mode cannot be switched properly, check the following:
- Make sure that the external input signal is OFF. If it is ON, the operation mode (STF or STR signal) cannot be switched properly.
- Confirm the Pr. 79 Operation mode selection setting.
Refer to page 71 and the inverter instruction manual.)
### 4.2 How to Operate PU Operation

#### 4.2.1 Normal operation

During motor operation, the speed can be changed by simply executing Step 2.

<table>
<thead>
<tr>
<th>Step</th>
<th>Operation Procedure</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch power ON. Make sure that the monitor appears.</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>Set the running frequency. Set the running frequency using direct setting or step setting. (Refer to page 20)</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Press (up) or (down). The parameter unit automatically enters the monitoring mode and shows the output frequency.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>Press (up) or (down). The motor is decelerated to a stop.</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
</tbody>
</table>

**REMARKS**

When performing PU operation to run the motor, pressing the start key (up) or (down) after setting the running frequency switches to monitor mode automatically.
4.2.2 PU Jog operation

Hold down \( \text{PU} \) or \( \text{JOG} \) to perform operation, and release it to stop.

Jog operation cannot be performed in the following cases:
- During motor operation
- The Pr. 15 Jog frequency is less than the Pr. 13 Starting frequency.

Example: To operate at the PU Jog running frequency of 8Hz

<table>
<thead>
<tr>
<th>Step</th>
<th>Operation Procedure</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch to the PU operation mode. If the operation mode indication is not ( \text{[PU]} ), refer to page 72 and switch to the PU operation mode.</td>
</tr>
<tr>
<td>2</td>
<td>The frequency for Jog operation can be set with Pr. 15 Jog frequency and the acceleration/deceleration time with Pr. 16 Jog acceleration/deceleration time both in the parameter unit. (Refer to page 23 for the parameter setting method.) &lt;Initial value&gt; - Pr. 15 SHz - Pr. 16 0.5s</td>
</tr>
</tbody>
</table>

3. Jog operation mode selection
4. Operation (or) Freq Set
5. Exit from jog operation mode

REMARKS
The PU Jog operation mode is selected, and the PU Jog frequency setting screen appears on the display. To change the frequency, enter the value and press [Freq Set].

The inverter exits from the Jog operation mode and returns to the ordinary PU operation mode.
4.3 Combined Operation (Operation Using External Input Signals and PU)

4.3.1 Entering the start signal from outside and setting the running frequency from the PU (Pr. 79 = 3)

The external frequency setting signals and of the parameter unit are not accepted.

Stop with  is valid when Pr. 75 Reset selection/disconnected PU detection/PU stop selection = "14 to 17".

<table>
<thead>
<tr>
<th>Step</th>
<th>Operation Procedure</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch the power ON.</td>
<td><img src="image1" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>Set &quot;3&quot; in Pr. 79 Operation mode selection. The External/PU combined operation mode is selected and the operation mode indication on the display changes to &quot;PU + E&quot;.</td>
<td><img src="image2" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Set the running frequency. Set the running frequency using direct setting or step setting. (Refer to page 20)</td>
<td><img src="image3" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>Set the start switch (STF or STR) to ON. The operation command indication changes to &quot;STF&quot; or &quot;STR&quot; and the operation status indication changes to the output (FWD or REV) indication. If the forward and reverse rotation switches are both set to ON, the inverter will not start. Also, if these switches are both set to ON during operation, the motor is decelerated to a stop.</td>
<td><img src="image4" alt="Image" /></td>
</tr>
<tr>
<td>5</td>
<td>Set the start switch (STF or STR) to OFF. The motor stops running.</td>
<td><img src="image5" alt="Image" /></td>
</tr>
</tbody>
</table>
## Combined Operation (Operation Using External Input Signals and PU)

### 4.3.2 Entering the running frequency from outside and making start and stop from the PU (Pr. 79 = 4)

<table>
<thead>
<tr>
<th>Step</th>
<th>Operation Procedure</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch the power ON.</td>
<td><img src="image1.png" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>Set &quot;4&quot; in Pr. 79 Operation mode selection. The External/PU combined operation mode is selected and the operation mode indication on the display changes to &quot;PU + E&quot;.</td>
<td><img src="image2.png" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Enter the external frequency command. Select the multi-speed signal or turn the frequency setting potentiometer.</td>
<td><img src="image3.png" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>Press [up] or [down] of the parameter unit. The motor starts running, and the state of the output frequency is shown on the display. The starting terminals (STF, STR) of the inverter are invalid. The inverter may also be started by pressing the PU (PU or [enter]) and then inputting the frequency command.</td>
<td><img src="image4.png" alt="Image" /></td>
</tr>
<tr>
<td>5</td>
<td>Press [enter] of the parameter unit. The motor is decelerated to a stop.</td>
<td><img src="image5.png" alt="Image" /></td>
</tr>
</tbody>
</table>
4.3.3 Entering the start signal and multi-speed signal from outside and setting multiple speeds from the parameter unit

<table>
<thead>
<tr>
<th>Step</th>
<th>Operation Procedure</th>
<th>Image</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Switch the power ON.</td>
<td><img src="https://example.com/image1.png" alt="Image" /></td>
</tr>
<tr>
<td>2</td>
<td>Select the multi-speed signal required for operation. Switch the RH, RM or RL signal ON.</td>
<td><img src="https://example.com/image2.png" alt="Image" /></td>
</tr>
<tr>
<td>3</td>
<td>Set the start switch (STF or STR signal) to ON. The operation command indication changes to &quot;STF&quot; or &quot;STR&quot;, the operation status indication changes to the output (FWD or REV) indication, and the motor starts running. If the forward and reverse rotation switches are both set to ON, the inverter will not start. Also, if these switches are both set to ON during operation, the motor is decelerated to a stop.</td>
<td><img src="https://example.com/image3.png" alt="Image" /></td>
</tr>
<tr>
<td>4</td>
<td>Change the multi-speed frequency during operation from the parameter unit. When high speed has been selected (RH signal ON), changing the Pr. 4 Multi-speed setting (high speed) value varies the speed. The other multiple-speed settings not being used may also be changed during operation.</td>
<td><img src="https://example.com/image4.png" alt="Image" /></td>
</tr>
<tr>
<td>5</td>
<td>Switch off the multi-speed signal (RH, RM or RL signal) and set the start switch (STF or STR signal) to OFF. The motor stops running.</td>
<td><img src="https://example.com/image5.png" alt="Image" /></td>
</tr>
</tbody>
</table>
5 CHECK FIRST WHEN YOU HAVE A TROUBLE

5.1 Troubleshooting

If a fault occurs and the inverter fails to operate properly, locate the cause of the fault and take proper corrective action by referring to the troubleshooting below. If the corresponding information is not found in the table, the inverter has problem, or the component parts are damaged, contact your sales representative.

<table>
<thead>
<tr>
<th>Status</th>
<th>Possible Causes</th>
<th>Check Point</th>
<th>Corrective Action</th>
</tr>
</thead>
<tbody>
<tr>
<td>The LCD or backlight of the parameter unit does not light.</td>
<td>Connection fault of the parameter unit</td>
<td>Check that the parameter unit is connected properly. Or check that the PU cable is inserted far into the PU connector.</td>
<td>Check the connection of the parameter unit and the PU cable.</td>
</tr>
<tr>
<td></td>
<td>The setting of Pr. 991 “PU contrast adjustment” is changed from the initial value.</td>
<td>Check the Pr. 991 setting.</td>
<td>Return the Pr. 991 setting to the initial value using the operation panel.</td>
</tr>
<tr>
<td></td>
<td>The inverter is in the standby status.</td>
<td>Check whether the PU cable is disconnected.</td>
<td>Check the connection of the PU cable.</td>
</tr>
<tr>
<td></td>
<td>During inverter reset</td>
<td>Check whether the RES signal of the inverter is ON.</td>
<td>Turn OFF the RES signal of the inverter.</td>
</tr>
<tr>
<td></td>
<td>Connection fault of a cable or connector</td>
<td>Check that no cable damage or connection fault of a connector is found.</td>
<td>Replacement of a cable Check for a connector connection</td>
</tr>
</tbody>
</table>
## SPECIFICATIONS

### 6.1 Standard Specifications

<table>
<thead>
<tr>
<th>Item</th>
<th>Specifications</th>
</tr>
</thead>
<tbody>
<tr>
<td>FR-PU4/PU4V</td>
<td></td>
</tr>
<tr>
<td>Surrounding air temperature</td>
<td>-10°C to +50°C (non-freezing) *1</td>
</tr>
<tr>
<td>Ambient humidity</td>
<td>95%RH or less (non-condensing)</td>
</tr>
<tr>
<td>Storage temperature</td>
<td>-20°C to +65°C *2</td>
</tr>
<tr>
<td>Ambience</td>
<td>Indoors (free from corrosive gas, flammable gas, oil mist, dust and dirt)</td>
</tr>
<tr>
<td>Altitude, vibration</td>
<td>Maximum 1000m above sea level for standard operation. 5.9m/s² or less at 10 to 55Hz (directions of X, Y, Z axes)</td>
</tr>
<tr>
<td>Power supply</td>
<td>Installed to the inverter or connected to the inverter by the cable.</td>
</tr>
<tr>
<td>Display</td>
<td>LCD (liquid crystal display, 16 characters 4 lines)</td>
</tr>
<tr>
<td>Data retention</td>
<td>Onboard EEPROM</td>
</tr>
<tr>
<td>Number of write times</td>
<td>Maximum 100,000 times</td>
</tr>
</tbody>
</table>

*1 At the low temperatures of less than about 0°C, the liquid crystal display (LCD) may be slower in operation.

*2 At high temperatures, the LCD life may become shorter.

---

**CAUTION**

- Do not expose the liquid crystal screen to direct sunlight.
- During transportation, avoid applying load to the liquid crystal display.
6.2 Outline Drawing and Panel Cutting Drawing

6.2.1 FR-PU04/PU04V outline dimension drawings

![Outline Drawing and Panel Cutting Drawing](image)

- Unit: mm
- Valid depth 4.5
- 5-M3 screw
6.2.2 FR-PU04/PU04V enclosure cut dimensions

(Unit: mm)
APPENDIX

Appendix 1 Disposing of the equipment in the EU countries

- The symbol shown below, which is printed on the product for EU countries, means that electric and electronic equipment, at their end-of-life, should be disposed of separately from your household waste.
- Please, dispose of this equipment at your local community waste collection/recycling centre if it is to be disposed of in EU countries.
- In the European Union, there are separate collection systems for used electrical and electronic product.
- Please, help us to conserve the environment we live in.

Note: This symbol is for EU countries only. This symbol is according to the directive 2006/66/EC Article 20 Information for end-users, Article 21 Labeling, and Annex II.
**REVISIONS**

*The manual number is given on the bottom left of the back cover.

<table>
<thead>
<tr>
<th>Print Date</th>
<th><em>Manual Number</em></th>
<th>Revision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Apr. 2016</td>
<td>IB(NA)-0600637ENG-A</td>
<td>First edition</td>
</tr>
</tbody>
</table>
INVERTER
Option unit
FR-PU04
FR-PU04V
INSTRUCTION MANUAL

Parameter unit

Specifications subject to change without notice.

PRE-OPERATION INSTRUCTIONS
FUNCTIONS
HELP
OPERATION
CHECK FIRST WHEN YOU HAVE A TROUBLE
SPECIFICATIONS