



REMOTE CONTROLLER

DP008

Instruction Manual

DA00027115-001

REMOTE CONTROLLER

DP008

Instruction Manual

Preface

Thank you for purchasing our Remote Controller DP008.

For safe and correct use of the electrical product, please first read "Safety Precautions" on the next page.

- **Alert symbols in this manual**

This manual uses the following alert symbols. The instructions by these alert symbols shall be carefully obeyed to ensure equipment operator's safety and prevent damage to equipment.

 WARNING

Equipment handling could result in death or serious injury. This symbol contains information to avoid such risk.

 CAUTION

Equipment handling could result in minor or moderate injury, or property damage. This symbol contains information to avoid such risk.

- **This manual consists of the following chapters.**

If it is the first time for you to use this product, start with "1. Outline."

- 1. Outline**

Explains the overview and features of this product.

- 2. Preparation before Use**

Explains the preparations carried out before installation or operation.

- 3. Component Name and Function**

Explains the name and function of each part in the operation and display areas.

- 4. Operation Method**

Explains how to see the indications and operate the keys.

- 5. Troubleshooting and Maintenance**

Explains the remedies to a suspected failure and the daily maintenance method.

- 6. Outline Dimensional Drawing**

Provides the outline dimensional drawing.

———— Safety Precautions ————

For safe use, ensure to obey the following warnings and cautions.

We are not responsible for damage resulting from failure to obey these warnings and cautions.

- **Ensure you obey the instructions in this instruction manual.**

This instruction manual contains instructions for safe operation and use of this product.

Before using the product, please read this manual first.

All the warning items contained in this instruction manual are intended for preventing risks that may lead to serious accidents. Ensure to obey them.

- **If you notice anything strange**

If this product produces smoke, unusual odor, or strange sound, immediately cut the power to the product and stop using it.

Should you encounter any anomaly like above, immediately contact us or our agent. Never use it until the repair is completed.

- **Do not use in a gaseous atmosphere.**

This may pose a risk of explosion or other.

- **Do not remove the cover.**

This product has high-voltage portions inside. Never remove the cover.

When inspection into the inside of the product is needed, never allow anybody to touch the innards except our certified service engineers.

- **Do not modify the product.**

Never modify the product. Modification to the product may pose a new risk. We may refuse the repair of a modified product at fault.

- **Safety symbols**

The following shows the general definitions of the safety symbols used on the product main unit and in the instruction manual.



Refer to the instruction manual

This notifies the user of potential hazards and indicates that he/she must refer to the instruction manual.



Electric shock hazard

This indicates that an electric shock may occur under specific conditions.



Protection conductor terminal

This indicates that the terminal needs to be grounded in order to prevent electric shock accidents.

Before operating the equipment, ensure to connect this terminal to an earth ground so that ground resistance is 100Ω or less.



Warning

This contains information to avoid risks in equipment handling that could result in loss of life or bodily injury (e.g., electric shock).



Caution

This contains information to avoid damage to the equipment in equipment handling.

- **Other symbol**



Chassis

This indicates that the terminal (or external conductor for a connector) is connected to the chassis.

- **Request about disposal**

For environmental preservation, pay attention to the followings when you dispose of this product.

- ① The display (fluorescent display tube) uses materials containing cadmium and lead.
- ② This product shall be disposed of through an appropriate industrial waste disposer.

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1. Outline

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1.1 Overview

By connecting the DP008 to the programmable AC power source DP series, you can perform most operations available on the main unit's control panel.

1.2 Features

The DP008 has a cable about 3.5 meters long, allowing you to operate the programmable AC power source DP series remotely.

2. Preparation before Use

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2.1 Check upon Unpacking

Before you first use the product, make sure there is no damage from transportation and all content are included. If there is any problem, contact the seller (NF Corporation or our agent) from whom you purchased the product.

Table 2.1 List of Content

Content		Quantity
Main unit	Remote controller main unit	1
Accessories	Remote controller cable (about 3.5 meters)	1
	Base magnet	1
	Instruction Manual	1

2.2 Cautions in Handling

Be careful with the followings to prevent damage to or failure of the DP008.

- Do not drop it. Avoid physical shock.
- Do not expose it to water or other liquid.
- Avoid rapid temperature change.
- Do not expose it to direct sunlight.

The DP008 operating environment condition follows that of the programmable AC power source DP series. For details, see the instruction manual of the programmable AC power source DP series.

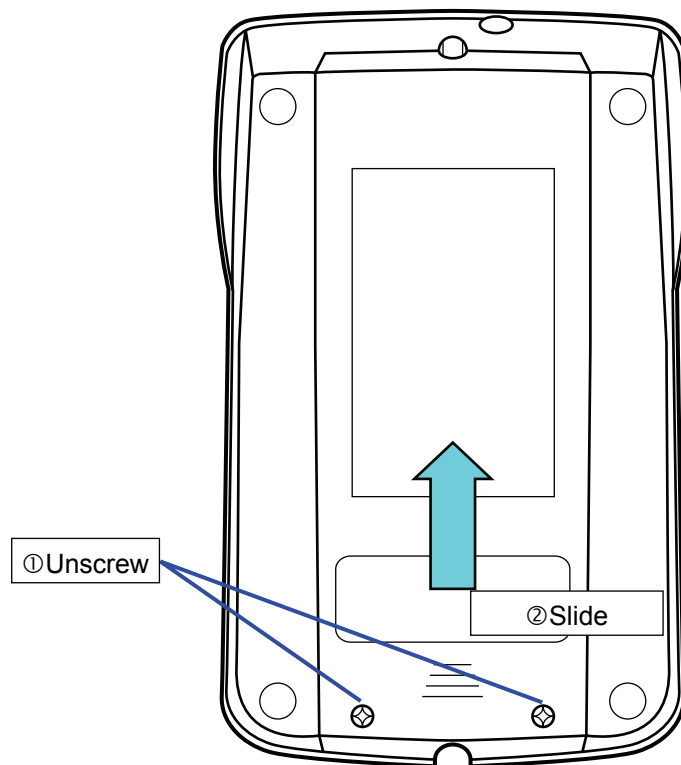
2.3 Installing Remote Controller Cable

This section explains the procedure for installing the remote controller cable to the DP008 main unit. The DP008 main unit has the cable outlets on its top and bottom. You can select the more useful one.

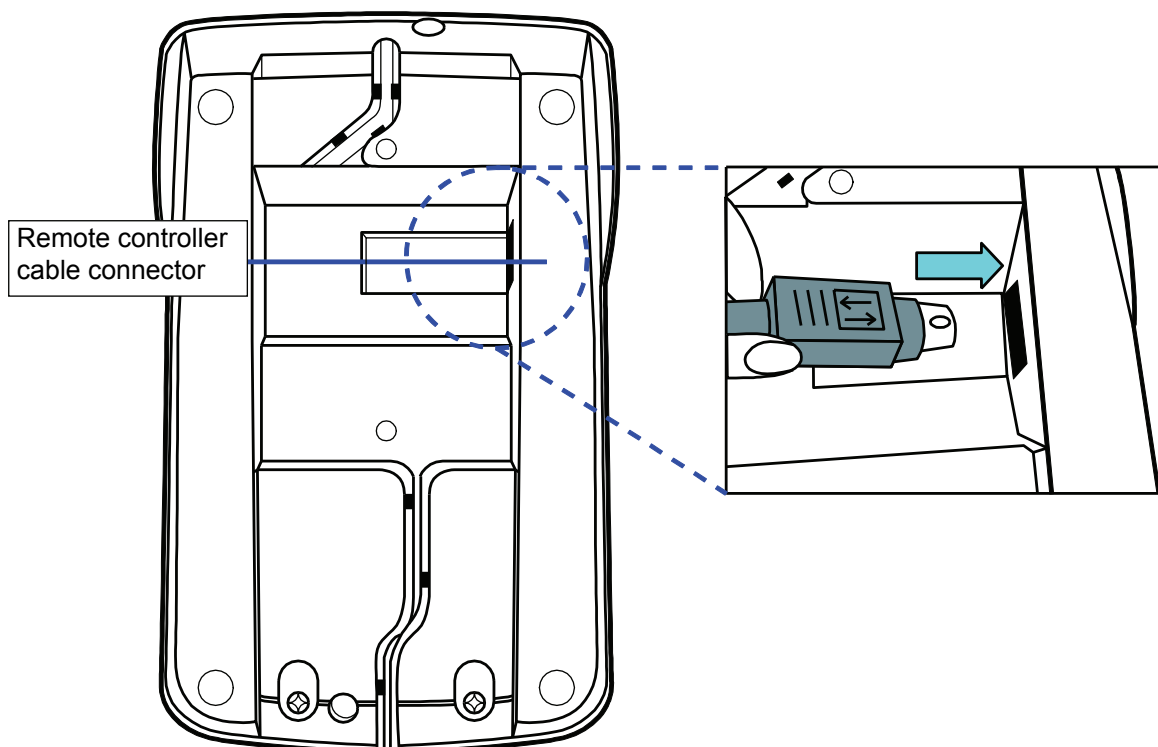
First, connect the remote controller cable to the DP008 main unit, and then to the programmable AC power source. Attach the base magnet that comes with the product onto the back side of the remote controller.

■ Installation procedure

1. Remove the cover on the back side of the DP008 main unit. Unscrew the two screws, then slide the cover upward to remove it.

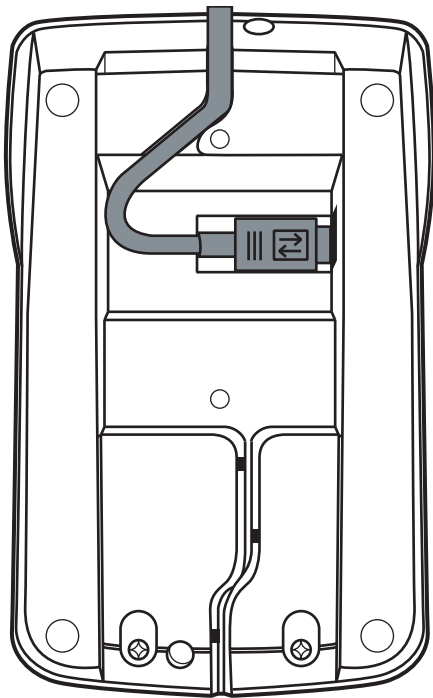


2. Connect one end of the remote controller cable to the cable connector on the remote controller. It does not matter which end of the cable is connected.

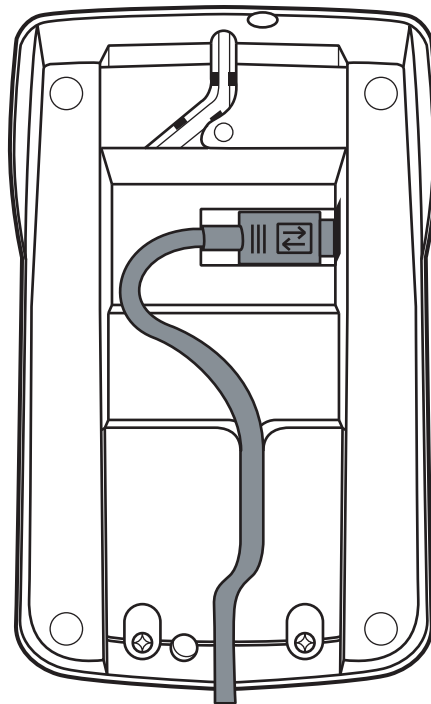


2. Preparation before Use

3. Fit the cable to the cable guide either on the top or bottom.

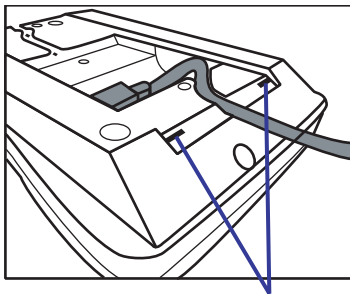


When fitting to the top cable guide

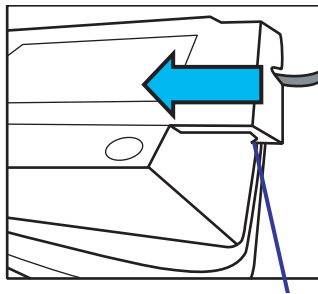


When fitting to the bottom cable guide

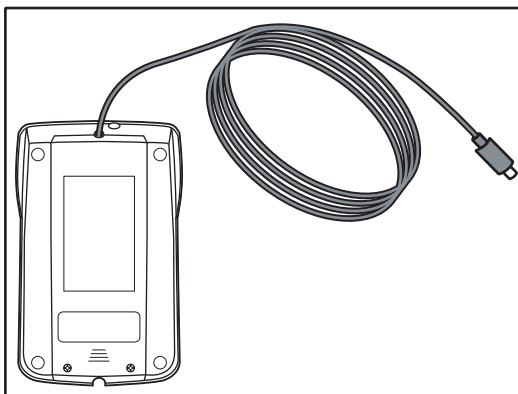
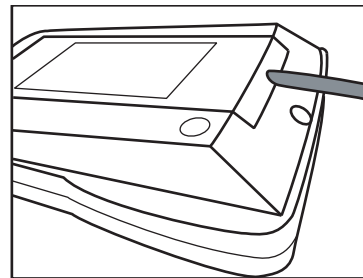
4. Remount the cover onto the back side of the DP008 main unit. Slide the cover in from the top so that the cover hooks come into the cover latch holes on the top of the DP008 main unit. Then, screw the cover at the bottom.



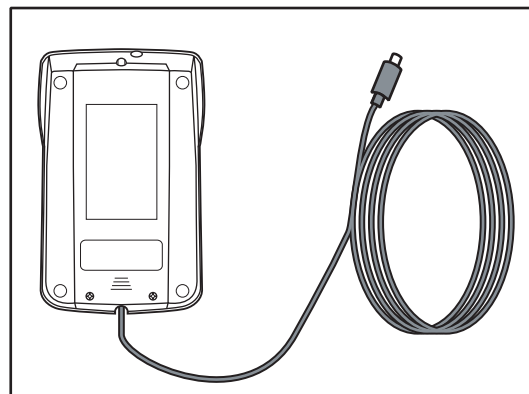
Cover latch holes



Hook



When pulling out the cable from the top



When pulling out the cable from the bottom

2.4 Connecting to Programmable AC Power Source DP Series

This section explains the procedure for installing and de-installing the remote controller DP008 from the programmable AC power source DP series. Before installation and de-installation, turn off the programmable AC power source power.

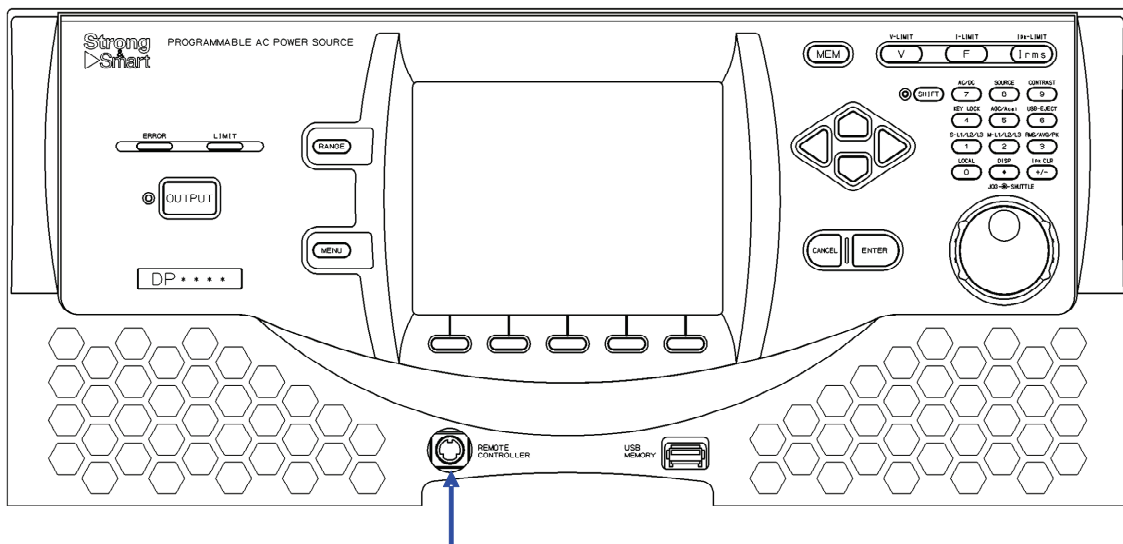
First, connect the remote controller cable to the DP008 main unit according to 2.3, and then to the programmable AC power source.

Notes

- For a polyphase system, connect the cable to the L1 cabinet. The L2 and L3 cabinets are not available for this purpose.
- If the DP008 is de-installed while the programmable AC power source is powered on, the main unit LCD screen displays an error message.
- The programmable AC power source recognizes the DP008 connection at power-on. The DP008 does not operate if connected while the main unit is powered on.

■ Installation procedure

1. Turn off the programmable AC power source.
2. Insert the remote controller cable to the remote controller connector of the programmable AC power source.



Remote controller connector

■ De-installation procedure

1. Turn off the programmable AC power source.
2. Pull out the remote controller cable from the remote controller connector of the programmable AC power source.

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3.1 Operation Section

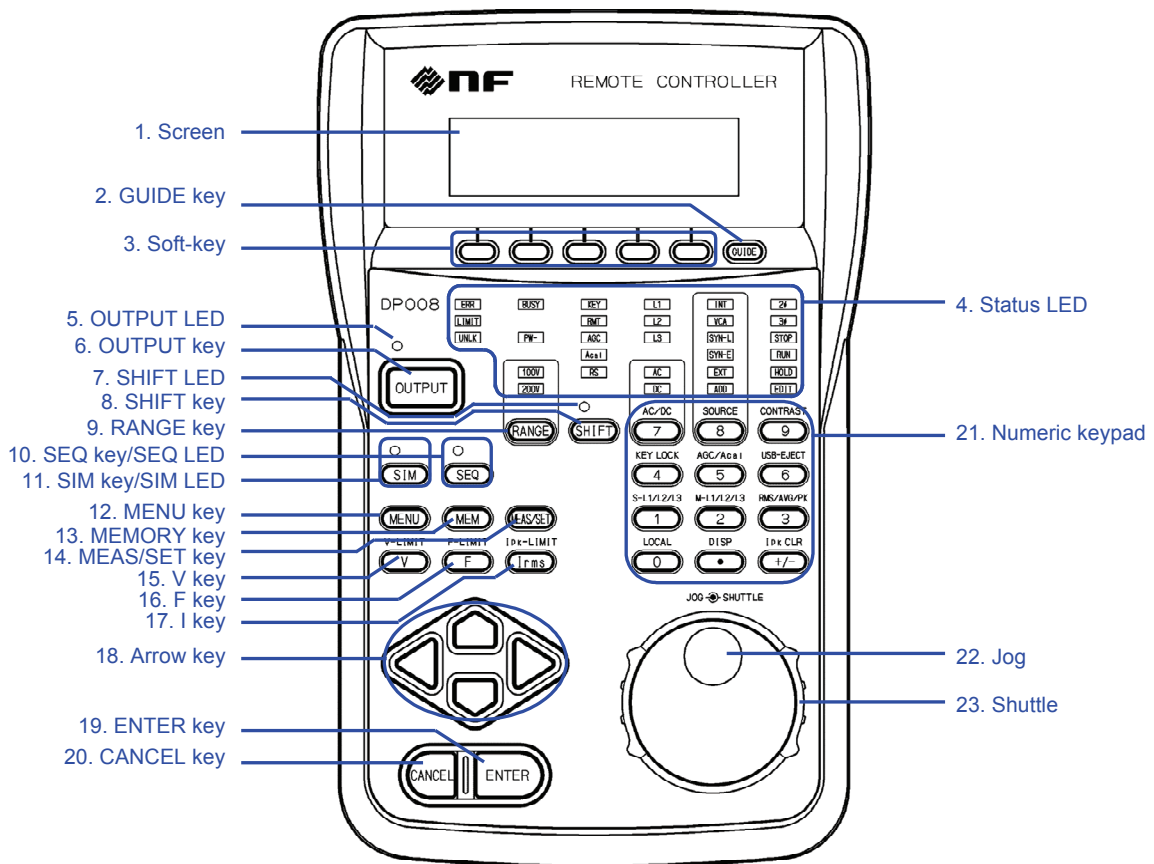


Figure 3.1 Component Name (Operation Section)

Table 3.1 Component Name (Operation Section)

Number	Name	Description	Refer to
1	Screen	Displays the measured values or menu.	3.2.1
2	GUIDE key	Shows or hides the soft-key functions.	4.2, 4.3
3	Soft-key	Assigned with the functions displayed at the bottom of the screen.	4.2
4	Status LED	Indicates the range, mode, and other selections as well as specific states such as the limiter operation.	3.2.2
5	OUTPUT LED	Illuminates in the output on state.	—
6	OUTPUT key	Turns the output on or off.	4.3
7	SHIFT LED	Illuminates when the shift state is turned on.	—
8	SHIFT key	Turns on or off the shift state, which enables shortcut operations.	4.3
9	RANGE key	Switches between the 100 V and 200 V ranges.	4.3
10	SEQ key/SEQ LED	Press the SEQ key to move to the Sequence function. The SEQ LED illuminates when the Sequence function is used.	4.3
11	SIM key/SIM LED	Press the SIM key to move to the Simulation function. The SIM LED illuminates when the Simulation function is used.	4.3
12	MENU key	Displays the root menu.	4.3
13	MEMORY key	Displays the Memory View.	4.3
14	MEAS/SET key	Switches between the measured and setting value displays.	4.3
15	V key	Opens the numerical entry box for the output voltage setting.	4.3
16	F key	Opens the numerical entry box for the frequency setting.	4.3
17	I key	Opens the RMS current limiter set window.	4.3
18	Arrow key	Used to move across the items or incrementing/decrementing the value by one step.	4.3
19	ENTER key	Confirms the selection.	4.3
20	CANCEL key	Returns to the previous state without confirming the selection. The numerical entry box is closed when the value was incremented or decremented using the jog, shuttle, or arrow key.	4.3
21	Numeric keypad	Used to enter a value directly.	4.3
22	Jog	Used to move across the items or incrementing/decrementing the value by one step.	4.3
23	Shuttle	Used to move across the items or incrementing/decrementing the value. The greater the turning angle is, the faster you move or increment/decrement.	4.3

3.2 Display Section

3.2.1 Screen

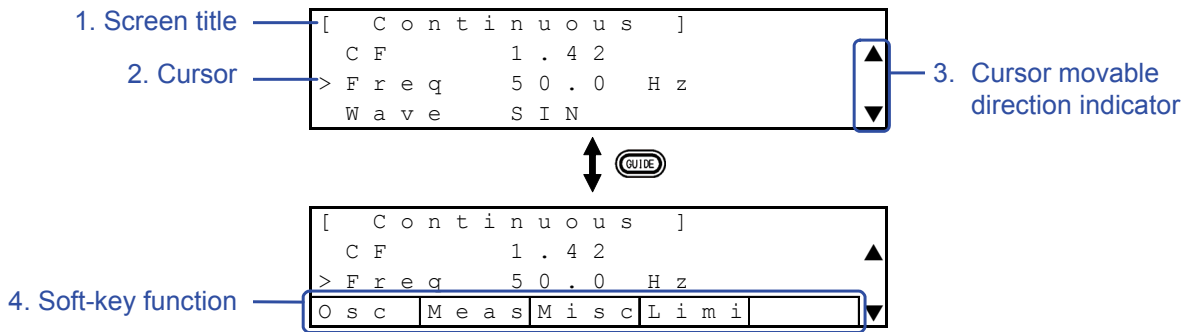


Figure 3.2 Component Name (Screen)

Table 3.2 Component Name (Screen)

Number	Name	Description	Refer to
1	Screen title	Title of the currently displayed screen.	—
2	Cursor	Indicates the item for operation. Use the jog, shuttle, or arrow key to move cursor upward and downward.	4.2
3	Cursor movable direction indicator	Indicates that the cursor is movable by the jog, shuttle, or arrow key as there is any item above or below the item at the cursor. ▲ and ▼ indicate that there is any item to move the cursor upward and downward to, respectively.	4.2
4	Soft-key function	Shows the functions assigned to the soft-keys below. Press the GUIDE key to show or hide the functions.	4.2

3.2.2 Status LED

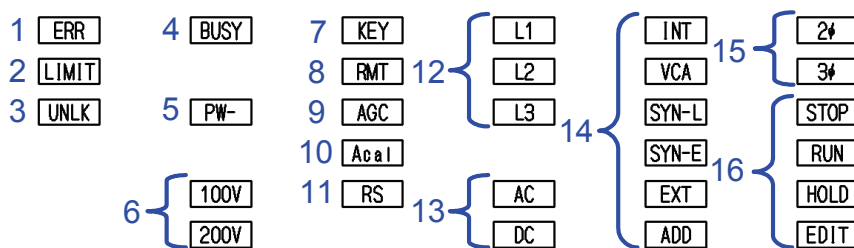


Figure 3.3 Component Name (Status LED)

Table 3.3 Component Name (Status LED)







Number	Name	Description																																				
1	ERROR	Illuminates when an error is detected. Works with the ERROR LED on the main unit's control panel.																																				
2	LIMIT	Illuminates when the peak current limiter, RMS current limiter, or active wattage limiter activates. Works with the LIMIT LED on the main unit's control panel.																																				
3	UNLOCK	Illuminates when the signal source is SYNC and the internal signal source is not synchronizing with the external signal (or power line). Works with the  icon on the main unit LCD screen.																																				
4	BUSY	Illuminates when the product does not accept key operations for changing the setting as it is performing the internal processing. Works with the  icon on the main unit LCD screen.																																				
5	Rated power limit	Illuminates when there is a power unit with the energization setting disabled and thus the rated power is restricted. Works with the reverse video of the rated power icon on the main unit LCD screen.																																				
6	Output range	Indicates the selected output range.																																				
7	Key lock	Illuminates when the key lock is enabled. Works with the  icon on the main unit LCD screen.																																				
8	Remote	Illuminates in the remote control status. Works with the  icon on the main unit LCD screen.																																				
9	AGC	Illuminates when the AGC setting is turned on. Works with the  icon on the main unit LCD screen.																																				
10	Autocal	Illuminates when the Autocal setting is turned on. Works with the  icon on the main unit LCD screen.																																				
11	Remote sensing	Illuminates when the remote sensing setting is turned on.																																				
12	Phase voltage/line voltage	Indicates whether the measured or setting value displayed on the screen is phase voltage or line voltage, according to the following table (○: Light-on, ×: Light-off). L1 stays illuminated on a single-phase model. <table border="1" data-bbox="646 1310 1340 1680"> <thead> <tr> <th>L1</th> <th>L2</th> <th>L3</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>○</td> <td>×</td> <td>×</td> <td>L1 phase voltage</td> </tr> <tr> <td>×</td> <td>○</td> <td>×</td> <td>L2 phase voltage</td> </tr> <tr> <td>×</td> <td>×</td> <td>○</td> <td>L3 phase voltage</td> </tr> <tr> <td>○</td> <td>○</td> <td>×</td> <td>L1-L2 line voltage</td> </tr> <tr> <td>×</td> <td>○</td> <td>○</td> <td>L2-L3 line voltage</td> </tr> <tr> <td>○</td> <td>×</td> <td>○</td> <td>L3-L1 line voltage</td> </tr> <tr> <td>○</td> <td>○</td> <td>○</td> <td>Line voltage for all phases (only three-phase and setting value)</td> </tr> <tr> <td>×</td> <td>×</td> <td>×</td> <td>Phase voltage for all phases (only setting value)</td> </tr> </tbody> </table>	L1	L2	L3	Description	○	×	×	L1 phase voltage	×	○	×	L2 phase voltage	×	×	○	L3 phase voltage	○	○	×	L1-L2 line voltage	×	○	○	L2-L3 line voltage	○	×	○	L3-L1 line voltage	○	○	○	Line voltage for all phases (only three-phase and setting value)	×	×	×	Phase voltage for all phases (only setting value)
L1	L2	L3	Description																																			
○	×	×	L1 phase voltage																																			
×	○	×	L2 phase voltage																																			
×	×	○	L3 phase voltage																																			
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×	○	○	L2-L3 line voltage																																			
○	×	○	L3-L1 line voltage																																			
○	○	○	Line voltage for all phases (only three-phase and setting value)																																			
×	×	×	Phase voltage for all phases (only setting value)																																			
13	AC/DC mode	Indicates the selected AC/DC mode, according to the following table (○: Light-on, ×: Light-off). <table border="1" data-bbox="646 1758 1340 1892"> <thead> <tr> <th>AC</th> <th>DC</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>○</td> <td>×</td> <td>AC mode</td> </tr> <tr> <td>○</td> <td>○</td> <td>ACDC mode</td> </tr> <tr> <td>×</td> <td>○</td> <td>DC mode</td> </tr> </tbody> </table>	AC	DC	Description	○	×	AC mode	○	○	ACDC mode	×	○	DC mode																								
AC	DC	Description																																				
○	×	AC mode																																				
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×	○	DC mode																																				

Table 3.3 Component Name (Status LED) (continued)

Number	Name	Description
14	Signal source	Indicates the selected signal source. SYN-L indicates that the signal is SYNC and the synchronization signal source is the power line. SYN-E indicates that the signal is SYNC and the synchronization signal source is the external signal.
15	Phase mode	The 2 ϕ illuminates in a single-phase three-wire model or a single-phase three-wire system. The 3 ϕ illuminates in a three-phase model or a three-phase system.
16	Sequence and simulation status	Indicates the status in the Sequence or Simulation function. These LEDs work with the EDIT , STOP , RUN , and HOLD icons. EDIT illuminates when the Edit View is displayed. While the Control View is displayed, STOP illuminates when the sequence or simulation is stopped, RUN when it is running, and HOLD when it is suspended.

4. Operation Method

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4.1 Basics

The remote controller DP008 is designed to be able to perform operations nearly equivalent to those of the control panel of the programmable AC power source DP series ("main unit"). The DP008 screen display operates simultaneously with the LCD screen display of the main unit. The key operation is basically equivalent to that of the control panel on the main unit. For how to operate the main unit's control panel, see the instruction manual of the programmable AC power source DP series.

4.2 Description of Screen Display

The comparison of screen displays between the programmable AC power source DP series and the remote controller DP008 is shown in Figure 4.1.

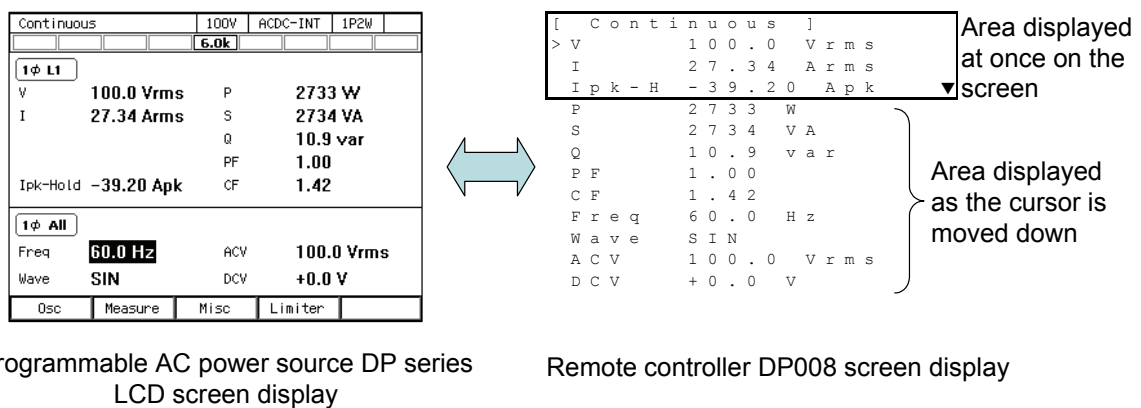


Figure 4.1 Comparison of Screen Displays between Main Unit and DP008

The differences of the DP008 screen display from the main unit LCD screen display are described below.

- **Icons and buttons are not displayed on the screen. Only the text display is available.**

The items displayed as icons or buttons ([Close], [OK], [Cancel], etc.) on the main unit LCD screen are displayed as text on the DP008 screen. Since the DP008 screen display (including a cursor position, or a selected status of an item) works with the main unit LCD screen, the displayed contents can be also confirmed on the main unit LCD screen.

- **A status LED illuminates instead of a status indication on the main unit LCD screen.**

The output range, output mode, output phase mode, and status icon displayed on the main unit LCD screen are indicated with the lighting state of the status LEDs in the DP008. For details of the status LED, see 3.2.2.

- **An item name may be displayed as an abbreviation.**

Some item names may be displayed as an abbreviation due to the restriction of the DP008 screen area.

■ **The cursor is displayed as ">".**

The cursor is displayed as the symbol ">" on the DP008 screen, while it is displayed as highlight on the main unit LCD screen. The cursor can only move upward or downward on the DP008 screen. An item shown in two rows on the main unit LCD screen is shown in one row on the DP008 screen (see figure 4.1).

■ **When a cursor movable direction indicator is displayed, more items exist in the direction.**

When there is any item above and/or below the item at the cursor and the cursor is movable, the cursor movable direction indicators, ▲ and/or ▼, are displayed on the right edge of the screen. If any cursor movable direction indicator is displayed, you can use the jog, shuttle, or arrow key to move the cursor upward or downward through items. If there are many items, the screen scrolls.

■ **The soft-key functions are shown or hidden by the GUIDE key.**

Usually, the soft-key functions are not displayed due to the restriction of the DP008 screen area. Press the GUIDE key to show or hide the soft-key functions. The soft-key functions are available even if they are not displayed on the screen.

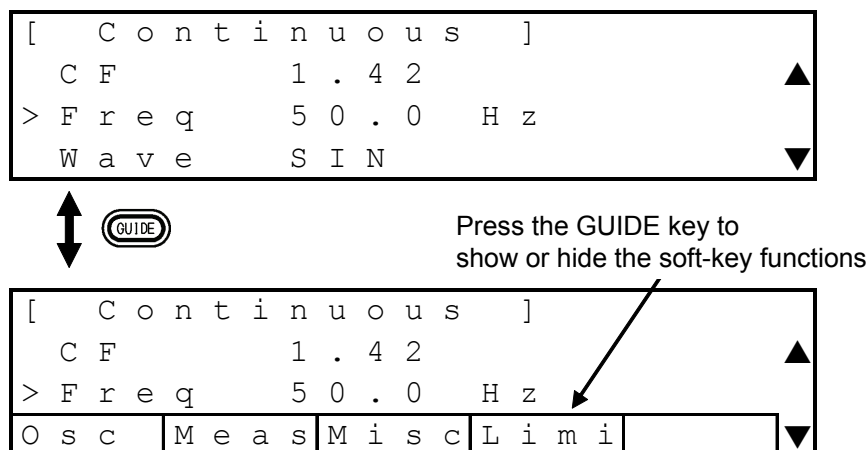


Figure 4.2 Show or hide the soft-key functions

4.3 Operation Using Key, Jog, or Shuttle

The keys, jog, and shuttle of the DP008 shown in Table 4.1 have the same functions and operation methods as the keys with the same names in the control panel of the main unit. For details, see the instruction manual of the programmable AC power source DP series.

Table 4.1 List of Keys Common to Control Panel of Main Unit

No. (Figure 3.1)	Name	Description
6	OUTPUT key	Turns the output on or off.
9	RANGE key	Switches between the 100 V and 200 V ranges.
12	MENU key	Displays the root menu.
3	Soft-key	Assigned with the functions displayed at the bottom of the screen.
13	MEMORY key	Displays the Memory View.
15	V key	Opens the numerical entry box for the output voltage setting.
16	F key	Opens the numerical entry box for the frequency setting.
17	I key	Opens the RMS current limiter set window.
8	SHIFT key	Turns on or off the shift state, which enables shortcut operations.
21	Numeric keypad	Used to enter a value directly.
18	Arrow key	Used to move across the items or incrementing/decrementing the value by one step.
19	ENTER key	Confirms the selection.
20	CANCEL key	Returns to the previous state without confirming the selection. The numerical entry box is closed when the value was incremented or decremented using the jog, shuttle, or arrow key.
22	Jog	Used to move across the items or incrementing/decrementing the value by one step.
23	Shuttle	Used to move across the items or incrementing/decrementing the value. The greater the turning angle is, the faster you move or increment/decrement.

The DP008 specific keys are described below that are not on the control panel of the main unit.

GUIDE key

Shows or hides the soft-key functions. The soft-key functions are available even if they are not displayed on the DP008 screen. The assignment of the soft-key functions is the same as that of the main unit.

MEAS/SET key

Switches between the measured and setting value displays. As shown in Figure 4.1, the measured and setting values are displayed and scrolled in one screen. The displayed area jumps to the other one each time the MEAS/SET key is pressed, as shown in Figure 4.3.

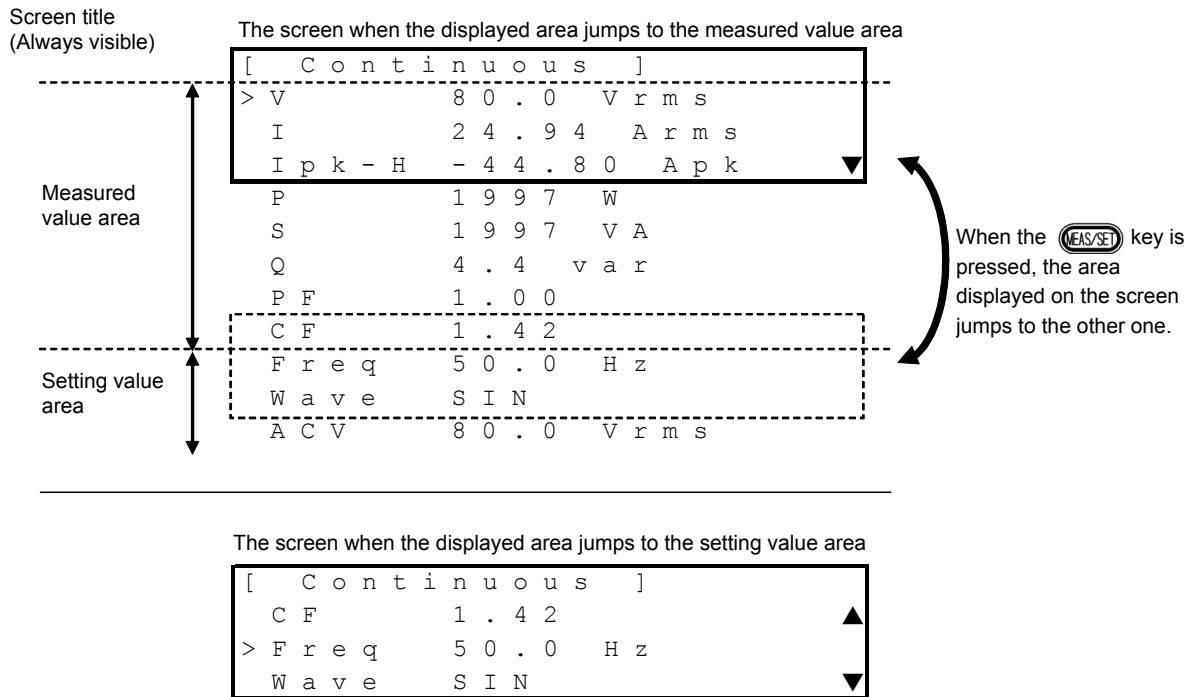


Figure 4.3 Jump to Screen Display Area with MEAS/SET Key

SEQ key

Displays the Sequence Edit View. The SEQ LED illuminates when the Sequence function is enabled. When the SEQ key is pressed in the Sequence Edit View, the Continuous function screen is displayed and the SEQ LED is lighted off. The SEQ key is available only in the output off state.

SIM key

Displays the Simulation Edit View. The SIM LED illuminates when the Simulation function is enabled. When the SIM key is pressed in the Simulation Edit View, the Continuous function screen is displayed and the SIM LED is lighted off. The SIM key is available only in the output off state.

4.4 Restricted Functions

This section describes the functions that do not work together between the remote controller DP008 and the programmable AC power source DP series, and the functions unavailable to the remote controller DP008.

4.4.1 SHIFT key

The shift state does not work together between the main unit control panel and the DP008. When you want to use shortcut operations on the DP008, press the SHIFT key on the DP008.

4.4.2 Power Unit Energization Setting

The power unit energization setting cannot be configured on the DP008. The PU-ON item in the SYSTEM menu displayed on the main unit LCD screen is not displayed on the DP008 screen.

4.4.3 Error Display

Examples of error display screen on the DP008 are shown in the figure below. The error ID is displayed but the error message is not, while both are displayed on the main unit LCD screen of the DP series. For error IDs and error handling, see the instruction manual of the programmable AC power source DP series.

As described in 4.4.2, the power unit energization cannot be disabled on the DP008 in the case of an error. The power unit energization setting should be configured on the main unit control panel.

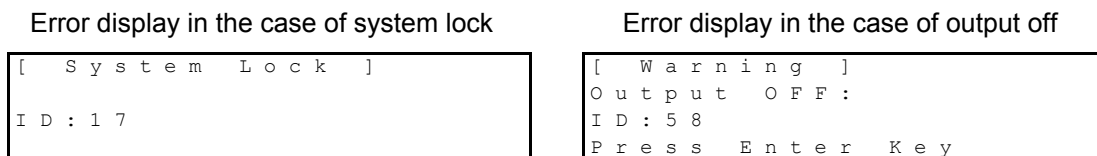


Figure 4.4 Error Display Screen

4.4.4 Display and Operation in Remote State

In the Remote state, the screen displays "Remote" and does not work with the main unit LCD screen. The status LEDs illuminate by working with the main unit LCD screen. Key operations are not accepted as on the main unit control panel. However, the output off (OUTPUT key) and the switching to the Local state (**SHIFT**+**O**) are accepted.

5. Troubleshooting and Maintenance

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5.1 When a Failure is Suspected

When a symptom occurs that suspects a failure, take an action according to Table 5.1. If it does not solve the problem, contact the seller (NF Corporation or our agent) from whom you purchased the product.

Table 5.1 Actions When a Failure is Suspected

Symptom	Possible Cause	Necessary Actions
The screen displays nothing	The remote controller cable is not connected properly	Connect the remote controller cable properly to the DP008 and the main unit. →2.3,2.4
	The main unit is not powered on	Power on the main unit.
	The remote controller cable was connected to the main unit while it is powered on.	Power off the main unit before connecting the remote controller cable to it.
No key operations are accepted	The remote controller cable is not connected properly	Connect the remote controller cable properly to the DP008 and the main unit. →2.3,2.4
	The main unit is not powered on	Power on the main unit.
	The remote controller cable was connected to the main unit while it is powered on.	Power off the main unit before connecting the remote controller cable to it.
	In the Remote state.	The DP008 cannot be operated in the Remote state. Use it in the Local state.

5.2 Daily Maintenance

If the external surface on the DP008 becomes dirty, wipe it with a soft cloth. If the dirt is heavy, wipe it with a cloth wrung out with diluted neutral detergent solution.

⚠ CAUTION

- Ensure to power off the programmable AC power source DP series before maintenance.
- Do not use solvents (thinners, benzine, etc.) or wipes. Otherwise, the surface may be altered or the printed characters and coatings may be peeled off.

5.3 Storage, Repackaging, Transportation

The DP008 storage condition follows that of the programmable AC power source DP series main unit. For details, see the instruction manual of the programmable AC power source DP series.

■ Storage when unused for a long time

- Do not store the product where:
 - falling objects may hit it
 - water or other liquid may fall on it
 - there is excessive dust
 - there is large variation in temperature
 - it is exposed to direct sunlight
- If it may be covered with dust, put it in a case or put the cover, such as cloth and sheet, on it.

■ Repackaging and transportation

Follow the instructions below when repackaging the product due to transfer or repair.

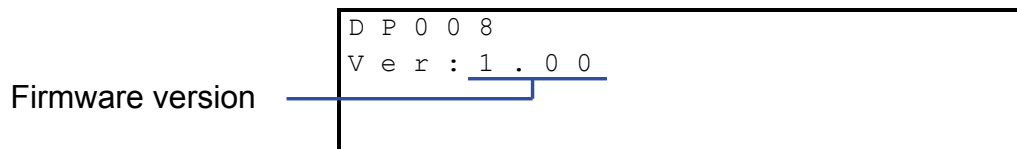
- Wrap the main unit in a polyethylene bag or sheet.
- Put the main unit in a larger box and fill empty space with a shock absorbing packing material to package it.
- When requesting transportation, instruct the carrier that this product is a precision equipment.

5.4 Checking Firmware Version

The firmware version of the DP008 appears when it starts up.

■ Operation procedure

1. Connect the DP008 to the programmable AC power source DP series according to 2.3 and 2.4.
2. Observe the DP008 screen immediately after the main unit is powered on.
3. Check the firmware version displayed as shown in the figure below.



6. Outline Dimensional Drawing

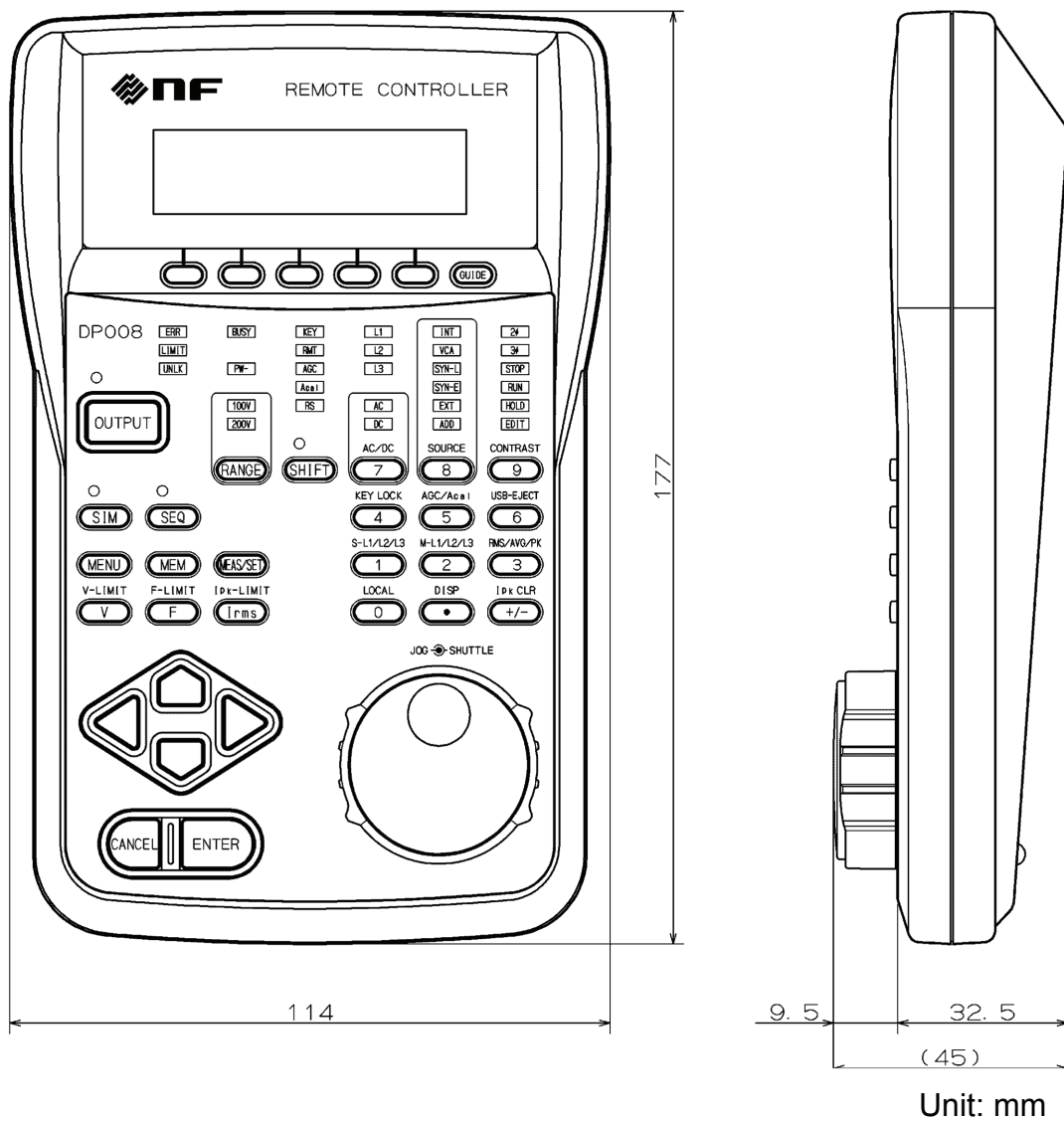


Figure 6.1 DP008 Outline Dimensional Drawing

Weight: Main unit - Approx. 350g (Excluding cable and base magnet)

WARRANTY

NF Corporation certifies that this instrument was thoroughly tested and inspected and found to meet its published specifications when it was shipped from our factory.

All **NF** products are warranted against defects in materials and workmanship for a period of one year from the date of shipment. During the warranty period of, **NF** will, at its option, either will repair the defective product without any charge for the parts and labor, or either repair or replace products which prove to be defective. For repair service under warranty, the product must be returned to a service center designated by **NF**. Purchaser shall prepay all shipping cost, duties, and taxes for the product to **NF** from another country, and **NF** shall pay shipping charge to returned the product to purchaser.

This warranty shall not apply to any defect, failure or damage caused by improper use, improper or inadequate maintenance and care or modified by purchaser or personnel other than **NF** representatives.

NF Corporation

WABUN: (DA00025676)

NOTES

- No part of the contents of this instruction manual may be reprinted or reproduced without prior permission from us.
- The information in this instruction manual is subject to change without notice.
- We have taken enough care regarding the contents of this instruction manual. However, no responsibility is assumed by us for any damage which may result from the use of the information in the instruction manual.
Should you notice anything suspicious, error, or erroneous omission, please contact us or our agent from whom you purchased the product.

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Remote Controller DP008 Instruction Manual

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