
**User's
Manual**

**Model LL100
PC-based Parameters
Setting Tool**



IM 05G01B12-01E

Introduction

This user's manual describes the functions of the LL100 PC-based Parameters Setting Tool, which are used with GREEN Series of controllers, and how to operate the tool.

This manual should also be read by users of the LL200 PC-based Custom Computation Building Tool, which includes the functions of LL100.

■ Controllers Covered by LL100

For information about the GREEN Series controllers covered by LL100, see Section 1.3, "Model and Suffix Codes of Applicable Controller Models."

■ Intended Readers

This manual is intended for people familiar with the functions of the GREEN Series controllers and capable of working with Windows, such as control engineers and personnel in charge of the maintenance of instrumentation and control equipment.

■ Related Documents

The following user's manuals all relate to the LL100 PC-based Parameters Setting Tool. Read them as necessary. The codes enclosed in parentheses are the document numbers.

- **Models UT350/UT320 User's Manual** (IM 05D01D02-01E to -03E)
Explains the basic operation of the UT350/UT320 controllers.
- **Models UT351/UT321 User's Manual** (IM 05D01D12-01E to -04E)
Explains the basic operation of the UT351/UT321 controllers.
- **Model UT351-xA User's Manual** (IM 05D01D13-01E to -04E)
Explains the basic operation of the UT351-xA controller.
- **Model UT351-x3 User's Manual** (IM 05D01D52-01E to -04E)
Explains the basic operation of the UT351-x3 controller.
- **Models UT450/UT420 User's Manual** (IM 05D01C12-01E to -04E)
Explains the basic operation of the UT450/UT420 controllers.
- **Models UT550/UT520 User's Manual for Single-loop Control** (IM 05D01C02-01E to -05E)
Explains the basic operation of the UT550/UT520 controllers.
- **Model UT551 with Embedded Ethernet User's Manual for Single-loop Control** (IM 05D01C03-01E to -06E)
Explains the basic operation of the UT551 controller.

- **Model UT551 User's Manual for Single-loop Control** (IM 05D01C04-01E to -06E)
Explains the basic operation of the UT551 controller.
- **Model UT750 User's Manual for Single-loop Control** (IM 05D01B02-01E to -05E)
Explains the basic operation of the UT750 controller.
- **Model UP350 User's Manual** (IM 05E01D02-01E to -04E)
Explains the basic operation of the UP350 controller.
- **Model UP351 User's Manual** (IM 05E01D12-01E to -05E)
Explains the basic operation of the UP351 controller.
- **Model UP550 User's Manual for Single-loop Control** (IM 05E01C02-01E to -07E)
Explains the basic operation of the UP550 controller.
- **Model UP750 User's Manual for Single-loop Control** (IM 05E01B02-01E to -07E)
Explains the basic operation of the UP750 controller.
- **GREEN Series User's Manual (Reference)** (IM 05D01A02-01E)
Explains the functions of the GREEN Series controllers in detail.
(Supplied with each GREEN Series controller.)
- **GREEN Series Communication Functions** (IM 05G01B02-01E)
Explains the communication functions and communication protocols of the GREEN Series in detail.
- **GREEN Series Communication Reference** (IM 05G01B02-02E)
Provides detailed information about GREEN Series controller's internal registers that can be accessed by communication.
- **Ethernet Communication Functions User's Manual** (IM 05G01B52-01E)
Explains the Ethernet communication functions and communication protocols of the UT351-xA and UT551 controllers in detail.
- **Model LL200 PC-based Custom Computation Building Tool** (IM 05G01B22-01E)
A user's manual for creating UT750/UP750 custom computations on a personal computer.

- **Model LL200 PC-based Custom Computation Building Tool User's Reference for UT750 (IM 05G01B22-02E)**

- **Model LL200 PC-based Custom Computation Building Tool User's Reference for UP750 (IM 05G01B22-03E)**

User's manuals that describe the functions needed to create custom computations of UT750 and UP750. Refer to these manuals if you are unfamiliar with the types of functions available or how these functions work.

- **Model VJET Ethernet/RS-485 Converter User's Manual (IM 77J01E11-01E)**

Explains the basic operation of the VJET converter.

■ Trademarks

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"Ethernet" is registered trademark of XEROX Corporation, USA.

Visual Inspection and Check of Accessories

Visually inspect the product upon delivery to make sure it is not damaged in any way. Store the box and inner packing material of the package in a safe place - they may be needed if there is a problem with the product and it needs to be sent back for repair.

■ Check of Model and Suffix Codes

Refer to the following table to make sure the model and suffix codes of the tool are as were specified with your order.

Model code	Suffix code	Description
LL100		PC-based Parameters Setting Tool for GREEN Series controllers
	-E10	Model for use with IBM PC/AT-compatible personal computer (English version)

■ Confirmation of the Package Contents

Make sure the delivered package contains all of the following items. If any item is missing or found to be damaged, immediately contact the sales office or dealership from which you purchased the product.

- (1) 3.5-inch floppy disks (4 disks)
- (2) Dedicated adapter, supplied with two AAA-size batteries (one unit)
- (3) Dedicated cable (one cable)
- (4) GREEN Series User's manual (Reference) (CD-ROM version)

Documentation Conventions

■ Symbols



WARNING

Indicates that operating the hardware or software in this manner may damage it or lead to system failure.



NOTE

Draws attention to information that is essential for understanding the operation and/or features of the product.

TIP

Gives additional information to complement the present topic.

See Also

Gives reference locations for further information on the topic.

■ Conventions in the Texts that Describe Tool Operation

Item	Usage
The names of named dialog box, windows, and views are written in title caps and refer to the exact titles.	Analog Input Computation Setting dialog box
The names of unnamed windows, dialog box, and views are written in all lowercase letters.	Document window Print preview
Commands (including buttons) in a dialog box or window and menu commands are written in boldface .	Click OK . Click Cancel . From the File menu, choose Open .
Dialog box elements, such as text boxes, list boxes, option buttons, and check boxes, are also written in boldface and refer to their exact labels.	Select the Spaces check box. Click to clear the Bookmarks check box. In the File Name box, enter a file name.
Characters to be typed by the user via keyboard are written in monotype font.	Type UT750 in the Model box.
Keys on a keyboard are written in all caps.	Press ENTER to execute. Press ALT + CTRL.

■ Description of Displays

- (1) Some of the representations of product displays shown in this manual may be exaggerated, simplified, or partially omitted for reasons of convenience when explaining them.
- (2) Figures and illustrations representing the controller's displays may differ from the real displays in regard to the position and/or indicated characters (upper-case or lower-case, for example), to the extent that they do not impair a correct understanding of the functions and the proper operation and monitoring of the system.

Notices

■ Regarding This User's Manual

- (1) This manual should be passed on to the end user. Keep at least one extra copy of the manual in a safe place.
- (2) Read this manual carefully to gain a thorough understanding of how to operate this product before you start using it.
- (3) This manual is intended to describe the functions of this product. Yokogawa Electric Corporation (hereinafter simply referred to as Yokogawa) does not guarantee that these functions are suited to the particular purpose of the user.
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- (6) Every effort has been made to ensure accuracy in the preparation of this manual. Should any errors or omissions come to your attention, however, please contact your nearest Yokogawa representative or our sales office.

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- (3) Reverse engineering such as the disassembly or decompilation of software is strictly prohibited.

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- (4) Use this software with one specified computer only. You must purchase another copy of the software for use on each additional computer.
- (5) Copying this software for purposes other than backup is strictly prohibited.
- (6) Store the floppy disk(s) (original medium or media) containing this software in a secure place.

Model LL100 PC-based Parameters Setting Tool

IM 05G01B12-01E 5th Edition

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1. Overview

Model LL100 PC-based Parameters Setting Tool is a software package used to set various parameters of the GREEN Series controllers from a personal computer. This tool makes it easy to set parameters that configure the many useful functions of GREEN Series controllers. It is also possible to manage created parameter data on a personal computer.

The LL100 tool can run on Windows 98/2000/XP or Windows NT 4.0. For details on using your personal computer or Windows, see the respective manuals.

1.1 Function Overview of LL100

The LL100 offers the following functions.

● Setup parameter setting

Sets parameters that configure GREEN Series controller functions.

● Operating parameter setting

Sets control parameters such as P, I, and D. Also sets the program pattern for a UP350/UP351 program controller.

● Ethernet parameter setting

Sets parameters such as IP address, subnet mask, default gateway, parity or port number for GREEN Series controllers and VJET Ethernet converter.

● Download to/Upload from a controller

Downloads created parameter data to a GREEN Series controller, or uploads parameter data contained in a GREEN Series controller to a personal computer.

● Saving parameters onto a disk

Saves parameter data created using the LL100 or parameters uploaded from a GREEN Series controller to the hard disk of a personal computer or floppy disk.

● Printing parameter data

Prints created parameter data.

● Tuning function

Performs online adjustment* of a GREEN Series controller's PID parameters. The auto-tuning function allows automatic optimization of PID parameters. You can also manually change PID parameter values, switch operation modes, and make other changes while monitoring the trend graphs of PV, SP, and OUT (control output) on the personal computer screen.

* Online adjustment means changes to tuning parameters while the GREEN Series controller in question is being used for control.

● Program pattern setting

For UP750/UP550 program controllers, sets parameters that configure program patterns.

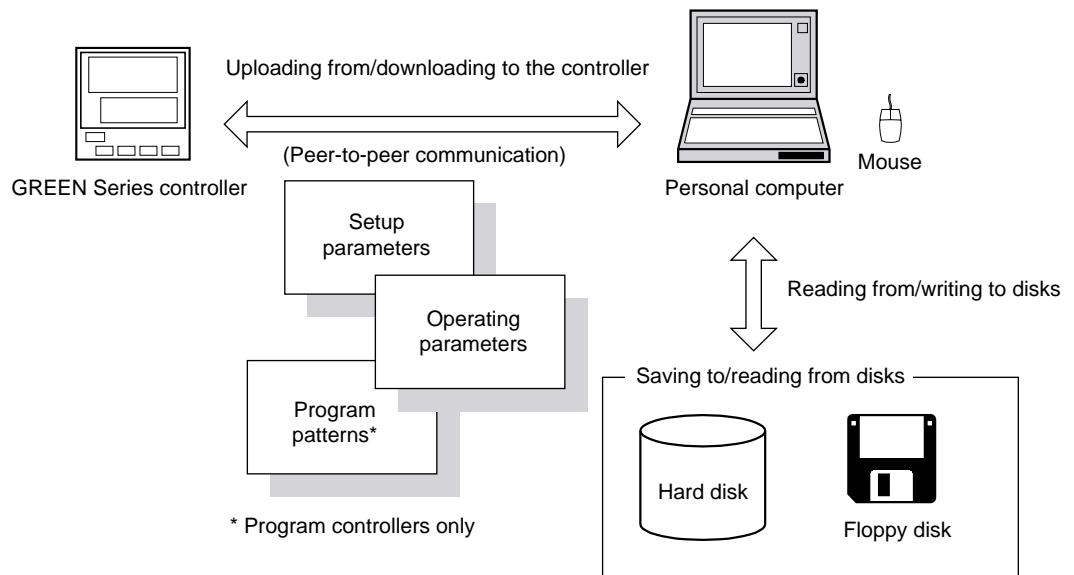


Figure 1.1.1 Conceptual View of LL100 PC-based Parameters Setting Tool

1.2 Operating Environment and Wiring Specifications

■ System Requirements

- **Personal computer:**

Windows 98/2000/XP or Windows NT 4.0 enabled PC-compatible model.

- **Operating system:**

Windows 98/2000(Professional)/XP(Home Edition/Professional) or Windows NT 4.0 (Service Pack 3 or later).

- **CPU:**

300 MHz Pentium processor or superior is recommended.

- **Memory:**

128 MB minimum when running LL100 under Windows 98/2000/XP or 24 MB minimum under Windows NT 4.0, is recommended.

- **Free hard disk space:**

10 MB or more for storing the tool programs and 2 MB or more for parameter data.

- **CRT display:**

800 × 600 pixels or greater.

Should be capable of handling at least 256 colors.

Small fonts should be used.

- **RS-232C communication port:**

One channel or more (select from COM1 to COM16), with 9-pin D-Sub connector for PC-compatible model.

- **Network:**

10Base-T/100Base-TX (required for Ethernet communication)

- **3.5-inch floppy disk drive:**

Required for installation.

- **Printer:**

Windows 98/2000/XP or Windows NT 4.0 compatible A4-size printer.

■ Dedicated Adapter

- **Communication method:**

Controller: Non-contact optical, bi-directional serial communication.

Personal computer: RS-232C half-duplex communication using dedicated cable.

● **Power supply:**

Two AAA-size batteries or external power source.

Use of an external power source is recommended when using the Tuning View over a prolonged time period.

● **Battery life:**

Approximately 50 hours (when the adapter is continuously operated on alkaline batteries).

● **Specifications of external power source:**

Should comply with EIAJ RC-6705.

Input rating: 5 V DC/50 mA.

(Note: Purchase a commercially available plug and AC adapter for the external power source.)

● **Ambient temperature:**

0°C to 50°C

● **Ambient humidity:**

20 to 90% Rh (no condensation)

● **Transport and storage conditions:**

-25°C to 70°C, 5 to 90% RH (no condensation).

● **Dustproof and waterproof construction:**

Not applicable.

● **Standards:**

CE Marking approved (EMC only).

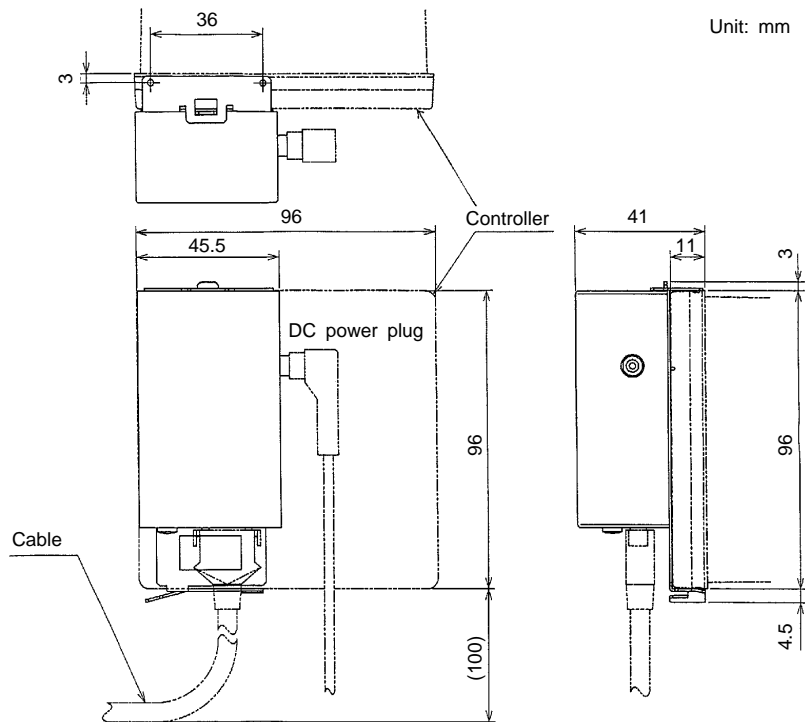


Figure 1.2.1 External View of the Dedicated Adapter



WARNING

The dedicated adapter is not waterproof. Do not use it in locations where it is likely to be exposed to splashes of water or other liquid.

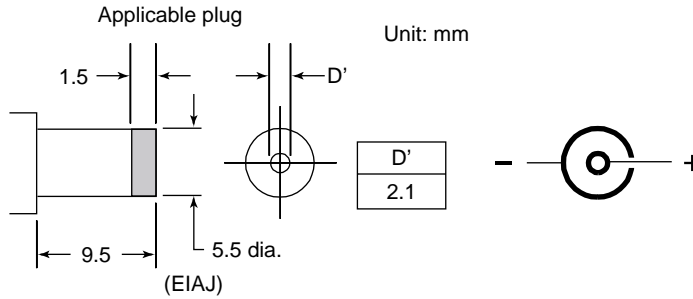


Figure 1.2.2 External Power Inlet Plug of Dedicated Adapter

■ Dedicated Cable

Cable with 9-pin D-Sub connector for PC-compatible models

Cable length: 3m

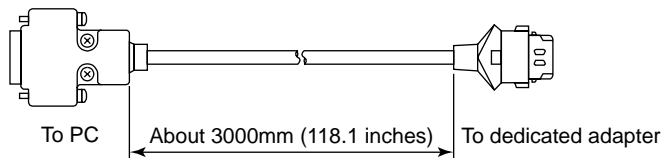


Figure 1.2.3 External View of Dedicated Cable

1.3 Model and Suffix Codes of Applicable Controller Models

1.3.1 For GREEN Series

LL100 tool can handle parameter settings of the following models of GREEN Series controllers.

■ Digital Indicating Controllers

Model Code	Suffix code	Description
UT750	-□□	Digital Indicating Controller (provided with Custom Computing Function)
Type	-0 -1 -5	Single-loop type Position proportional type Dual-loop type
Optional functions	0	None
	1	With communication, auxiliary analog (remote) input

Model Code	Suffix code	Description
UT550 UT551	-□□	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0 -1 -2 -3 -4	Standard type Position proportional type Heating/cooling type Standard type (with 24 V DC loop power supply) Position proportional type (with 24 V DC loop power supply)
Optional functions	0	None
	1	With communication, auxiliary analog (remote) input, 6 additional DIs and 4 additional DOs
	2	With communication, auxiliary analog (remote) input, and 1 additional DI
	3	With 5 additional DIs and 4 additional DOs
	4	With auxiliary analog (remote) input and 1 additional DI

Model Code	Suffix code	Description
UT551	-□□	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0 -1	Standard type Position proportional type
Optional functions	A	With Ethernet communication
	B	With Ethernet communication, auxiliary analog (remote) input, and 1 additional DIs
	C	With Ethernet communication, 5 additional DIs and 4 additional DOs
	D	With Ethernet communication, auxiliary analog (remote) input, 6 additional DIs and 4 additional DOs

Model Code	Suffix code	Description
UT520	-□□	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0	Standard type
Optional functions	0	None
	7	With communication, auxiliary analog (remote) input, and 2 additional DIs
	8	With auxiliary analog (remote) input and 2 additional DIs

Model Code	Suffix code	Description
UT450	- □ □	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0 -1 -2 -3 -4	Standard type Position proportional type Heating/cooling type Standard type (with 24 V DC loop power supply) Position proportional type (with 24 V DC loop power supply)
Optional functions	0 1 2 3 4	None With communication, remote input, 5 additional DIs and 1 additional alarm With communication, remote input, and 1 additional DI With 4 additional DIs and 1 additional alarm With remote input and 1 additional DI

Model Code	Suffix code	Description
UT420	- □ □	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0	Standard type
Optional functions	0 7 8	None With communication, remote input, and 2 additional DIs With remote input and 2 additional DIs

Model Code	Suffix code	Description
UT350 UT320	- □ □	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0 -2 -3	Standard type Heating/cooling type Standard type (with 24 V DC loop power supply)
Optional functions	0 1 2	None With communication, heater burnout alarm With heater burnout alarm

Model Code	Suffix code	Description
UT351 UT321	- □ □	Digital Indicating Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0 -2 -3	Standard type Heating/cooling type Standard type (with 24 V DC loop power supply)
Optional functions	0 1 2 3 A	None With communication, heater burnout alarm With heater burnout alarm With Ethernet communication function (*) With Ethernet communication(*)

* For UT351-0x or UT351-2x only

■ Program Controllers

Model Code	Suffix code	Description
UP750	- □ □	Program Controller (provided with Custom Computing Function)
Type	-0 -5	Single-loop type Dual-loop type
Optional functions	0 1	None With communication, auxiliary analog input

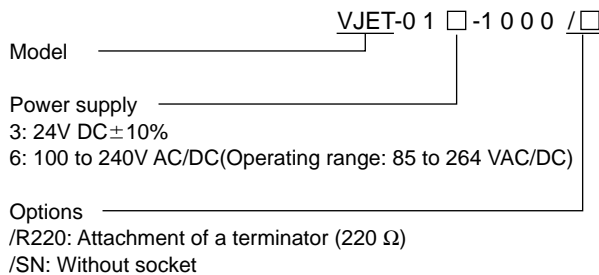
Model Code	Suffix code	Description
UP550	- □ □	Program Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0 -1 -2	Standard type Position proportional type Heating/cooling type
Optional functions	0 1	None With communication, auxiliary analog input, and 1 additional DI

Model Code	Suffix code	Description
UP350	- □ □	Program Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0	Standard type
Optional functions	0 1	None With communication

Model Code	Suffix code	Description
UP351	- □ □	Program Controller (provided with retransmission output and 15 V DC loop power supply as standard)
Type	-0	Standard type
Optional functions	0 1	None With communication

1.3.2 Ethernet/RS485 Converter

Only Ethernet parameters can be set to Ethernet/RS485 converter.



1.3.3 For Old GREEN Series

LL100 tool can handle parameter settings of the following models of old GREEN Series controllers.

■ Digital Indicating Controllers

Model Code	Suffix code	Description
UT750	-□□	Digital Indicating Controller
Type	-0 -1 -5 -7	Single-loop type Position proportional type Dual-loop type Dual-loop type (provided with Custom Computation function)
Optional functions	0 1	None With communication, auxiliary analog (remote) input

Model Code	Suffix code	Description
UT550	-□□	Digital Indicating Controller
Type	-0 -1 -2	Standard type Position proportional type Heating/cooling type
Optional functions	0 1 2 3 4	None With communication, auxiliary analog (remote) input, 6 additional DIs and 4 additional DOs With communication, auxiliary analog (remote) input, and 1 additional DI With 5 additional DIs and 4 additional DOs With auxiliary analog (remote) input and 1 additional DI

Model Code	Suffix code	Description
UT520	-□□	Digital Indicating Controller
Type	-0	Standard type
Optional functions	0 7 8	None With communication, auxiliary analog (remote) input, and 2 additional DIs With auxiliary analog (remote) input and 2 additional DIs

Model Code	Suffix code	Description
UT350	-□□	Digital Indicating Controller
Type	-0 -2	Standard type Heating/cooling type
Optional functions	0 1 2	None (Not available) With communication and heater burnout alarm With heater burnout alarm (Not available)

Model Code	Suffix code	Description
UT320	-□□	Digital Indicating Controller
Type	-0 -2	Standard type Heating/cooling type
Optional functions	0 1 2	None (Not available) With communication and heater burnout alarm With heater burnout alarm (Not available)

■ Program Controllers

Model Code	Suffix code	Description
UP750	- □ □	Program Controller
Type	-0 -5 -7	Single-loop type Dual-loop type Dual-loop type (provided with Custom Computation function)
Optional functions	0 1	None With communication and auxiliary analog input

Model Code	Suffix code	Description
UP550	- □ □	Program Controller
Type	-0 -1 -2	Standard type Position proportional type Heating/cooling type
Optional functions	0 1	None With communication, auxiliary analog input, and 1 additional DI

Model Code	Suffix code	Description
UP350	- □ □	Program Controller
Type	-0	Standard type
Optional functions	0 1	None (Not available) With communication

1.4 Setting Parameters

The sequence for setting parameters differs depending on the selected controller model. In the Menu dialog box, buttons and parameters (**SP** for example) vary depending on the model and specification codes, and controller mode you choose.

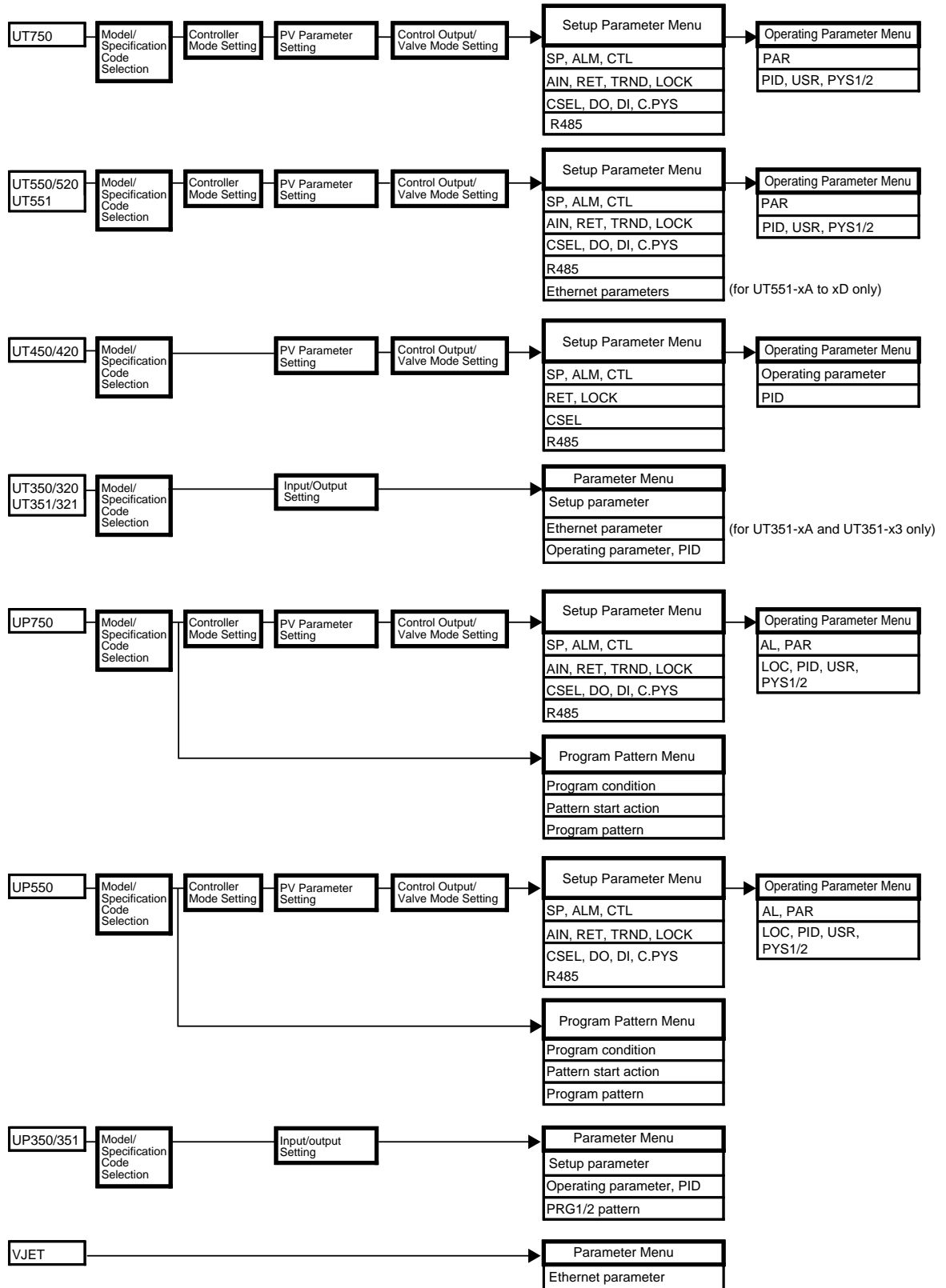


Figure 1.4.1 Sequence for Setting Parameters

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2. Setup

This chapter explains how to set up the hardware and software necessary to work with the LL100 tool.

2.1 Installing LL100



NOTE

Before installing LL100, quit all running applications.

When using Windows 2000 or XP :

Log on using the user name of Administrators group.

The program does not start normally if the user name not belonging to the Administrators group is used for logging on.

- (1) Start Windows.
- (2) Insert Disk 1 of LL100 into the floppy disk drive.
- (3) From the **Start** menu of Windows, choose **Run**. Type the floppy disk drive name followed by a backslash, then `Setup.exe` (for example, `a:\Setup.exe` if the floppy disk drive of your PC is "a"). Click **OK**.
- (4) To continue, follow the instructions appearing on screen.

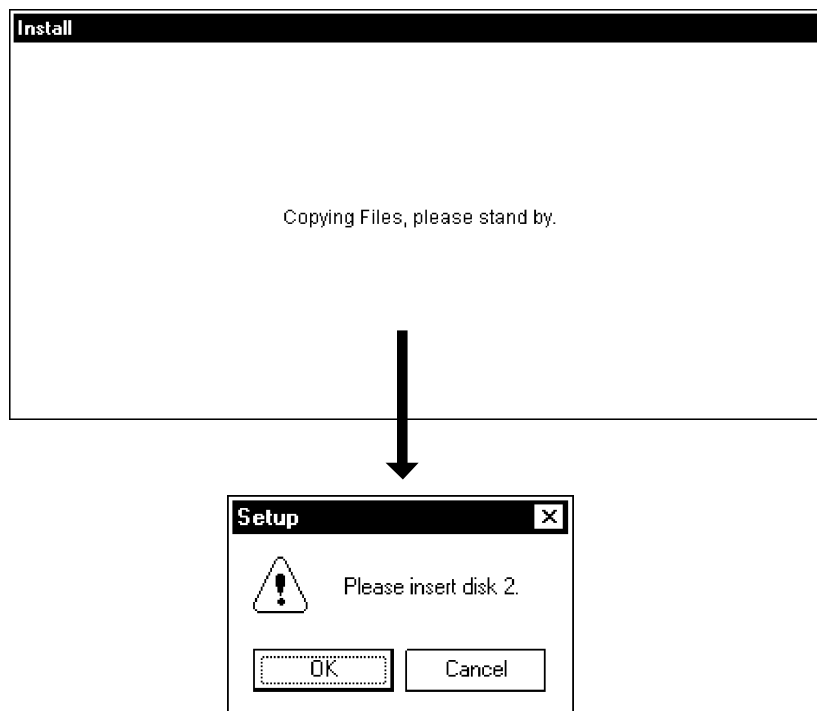


Figure 2.1.1 Dialog Boxes Appearing When Running Installer

- (5) When installation is ready to proceed, the setup wizard starts and the Green Series LL100 Setup dialog box shown in Figure 2.1.2 appears.

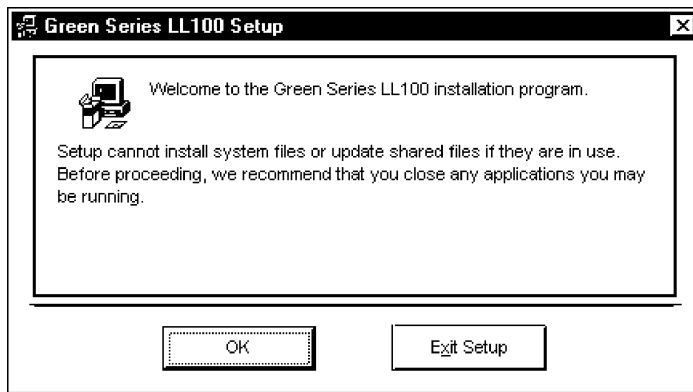


Figure 2.1.2 Green Series LL100 Setup Dialog Box

- (6) To continue the setup, click **OK**. The dialog box contents change as shown in Figure 2.1.3. Or, to quit the setup, click **Exit**.

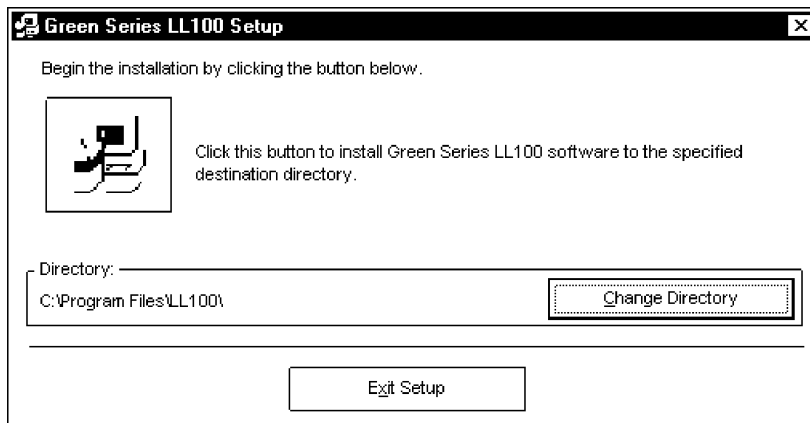


Figure 2.1.3 Dialog Box Announcing Start of Installation of LL100

- (7) To continue the setup, click the button with a symbol of a personal computer. The dialog box named Green Series LL100 – Choose Program Group, shown in Figure 2.1.4, appears.
 - If you do not want to install LL100 in the default location, click **Change Directory** and specify the installation location in the Change Directory dialog box appearing consequently.



NOTE

Avoid entering just the drive as the installation location, such as D:\. Enter the full directory path.

- To quit the setup, click **Exit Setup**.

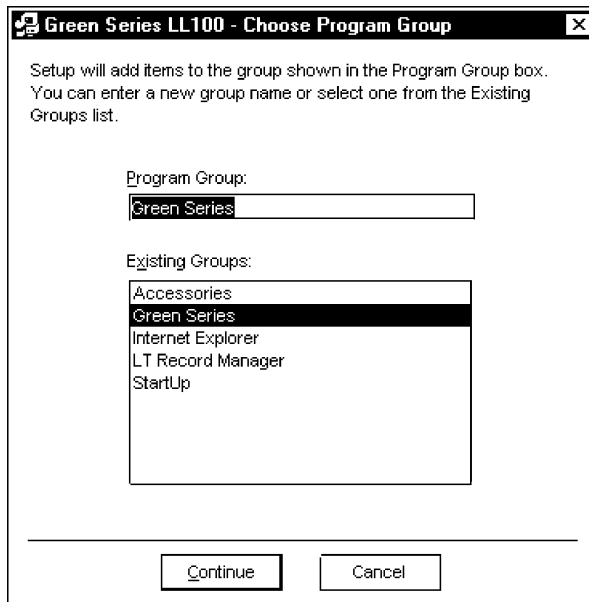


Figure 2.1.4 Green Series LL100 – Choose Program Group Dialog Box

- (8) To continue the setup, click **Continue**. Subsequently, a dialog box requesting you to insert Disk 4 appears. Insert Disk 4 into the floppy drive and click **Continue**.
 - Clicking **Cancel** aborts the setup without updating the system file; in this case, the LL100 tool is not installed.

- (9) When a message announcing completion of installation appears, click **OK**.



Figure 2.1.5 Dialog Box Announcing Completion of Installation of LL100

- (10) Finally, check that **Green Series** has been added to the **Programs** submenu of the **Start** menu, and the **Green Series** submenu contains **Green Series LL100**.

2.2 Uninstalling LL100

- (1) Start Windows.
- (2) In Control Panel of Windows, double-click the **Add/Remove Programs** icon. The Add/Remove Programs Properties dialog box shown below appears.
- (3) On the Install/Uninstall page, choose **Green Series LL100**, and click **Add/Remove**.
- (4) Then, follow the instructions appearing consequently.

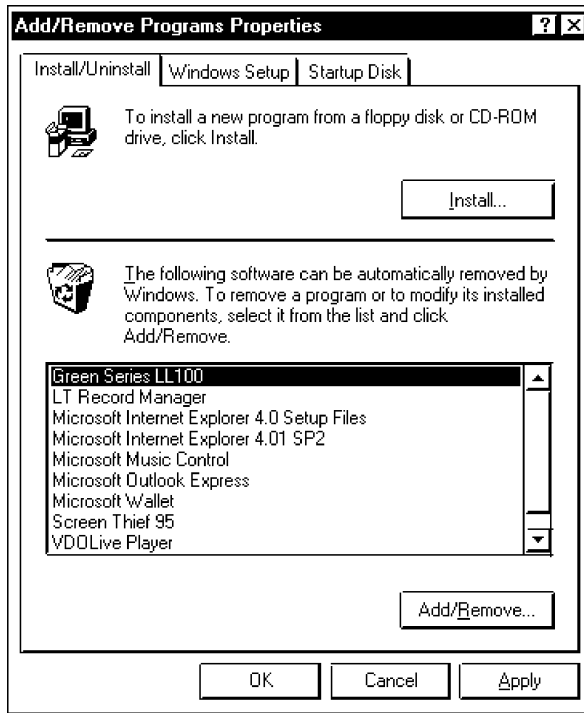


Figure 2.2.1 Add/Remove Programs Properties dialog box

2.3 Connecting Controller to Personal Computer

A GREEN Series controller can be connected to a personal computer in three ways: using either the optical communication interface on the controller's front panel, the RS-485 communication terminals on the rear panel or the Ethernet communication terminal on the rear panel. This section describes how to connect to the optical communication interface.

See Also

- Chapter 2, "Setup" in the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for how to connect to RS-485 communication terminals.
- Chapter 2, "Setup" in the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for how to connect to Ethernet communication terminal.



NOTE

- The dedicated adapter has an internal switch (located where the adapter comes into contact with the controller). Be careful not to break this switch when attaching the adapter to the controller.
- Attaching the adapter in place automatically turns on this switch, causing the batteries to discharge even if no communication is done. Therefore, if you have no immediate plans to perform communication, keep the adapter removed from the controller.



WARNING

When using an external power source, take care to ensure that the polarities of the AC adapter are correct (see Figure 1.2.2). Do not apply power from the adapter in excess of the power ratings of the controller. Either of these cases can result in damage to the controller.

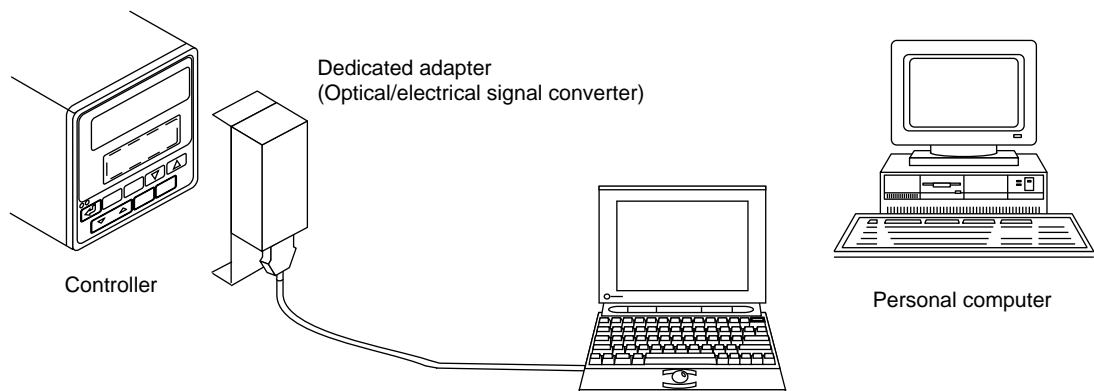


Figure 2.3.1 Connecting GREEN Series Controller to Personal Computer via Front Optical Communication Interface

Follow the steps below to connect the controller to a personal computer.

- (1) Connect the dedicated adapter to the RS-232C communication port of a personal computer using the dedicated cable.

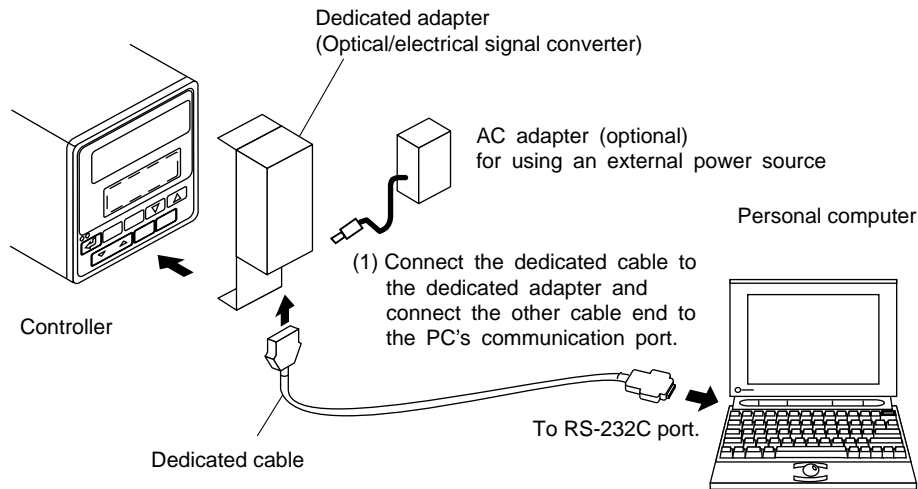


Figure 2.3.2 Connection via Dedicated Adapter

- (2) As shown in Figure 2.3.3, hang the dedicated adapter from the top groove of the controller.
- (3) Push the adapter to the controller's front panel to securely fix it in place.



NOTE

Make sure the adapter is attached to the controller in a vertical orientation. Communication is not possible if the dedicated adapter is attached in a slanting position.

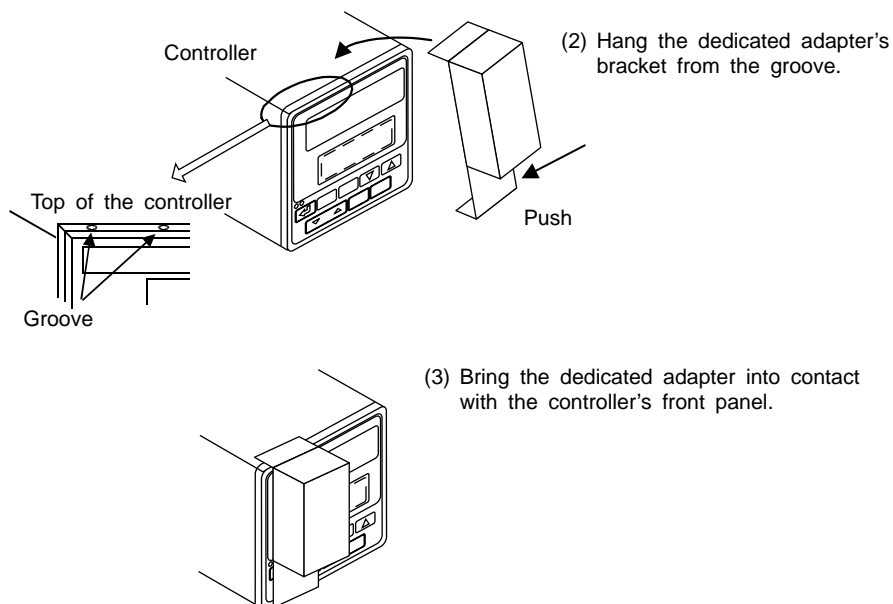


Figure 2.3.3 Attaching the Dedicated Adapter

3. Using the Parameter Setting Tool

This chapter describes how to use the parameter setting tool, showing the procedures of parameter setting via dialog boxes, notes on tool operations, and other common operations. Be sure to read through this chapter before use.

3.1 Starting and Quitting the Parameter Setting Tool



NOTE

Before installing the tool, quit all running applications.

When using Windows 2000 or XP :

Log on using the user name of Administrators group.

The program does not start normally if the user name not belonging to the Administrators group is used for logging on.

3.1.1 Starting the Tool

- (1) Start Windows.
- (2) From the **Start** menu of Windows, point to **Programs**, then **Green Series**, and click **Green Series LL100**.
- (3) LL100 then starts and the Tool Selection dialog box (Figure 3.1.1) appears. (For LL200, "Custom Computation Building Tool" appears at the top of dialog box.)

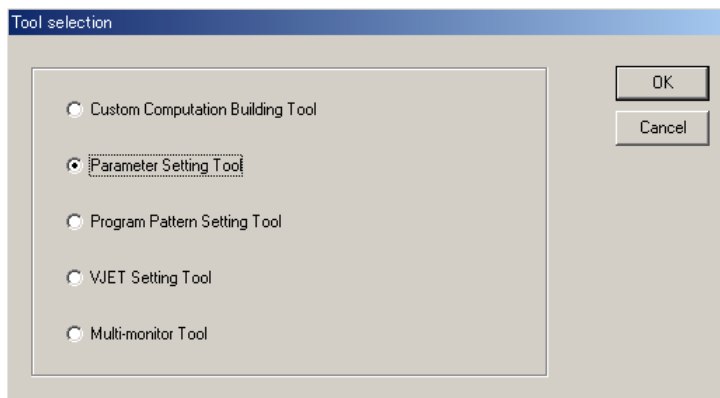


Figure 3.1.1 Tool Selection Dialog Box

- (4) Select **Parameter Setting Tool** and click **OK**.
- (5) The Select Series dialog box (Figure 3.1.2) appears.

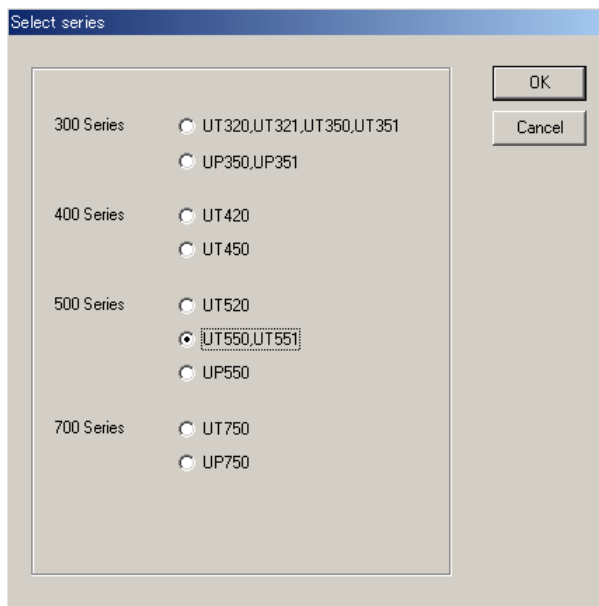


Figure 3.1.2 Select Series Dialog Box

- (6) Select a controller model and click **OK**.
- (7) The New/Change Selection dialog box appears (Figure 3.1.3).

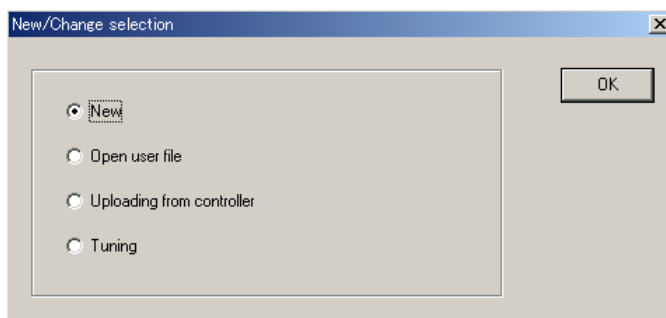


Figure 3.1.3 New/Change Selection Dialog Box

To start the parameter setting tool while you are using another tool, click **Set ****(P)** from the menu bar, then choose **Run Parameter Setting Tool**. (**** varies depending on the tool)

3.1.2 Quitting the Tool

- (1) From the menu bar, click **File** then choose **Terminate**.
- (2) If the current setting data has not been saved, the following message box appears (Figure 3.1.4).

- To quit after saving the current parameter data, click **Yes**.

The Save As dialog box appears. Enter a file name of up to 16 alphanumeric characters, and then click **Save**.

- To quit without saving the parameter data, click **No**.

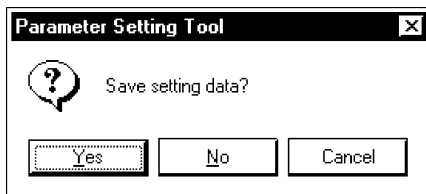


Figure 3.1.4 Data Save Confirming Dialog Box

- (3) The message box in Figure 3.1.5 appears for confirmation.

- To exit, click **YES**.
- To cancel exit, click **NO**.

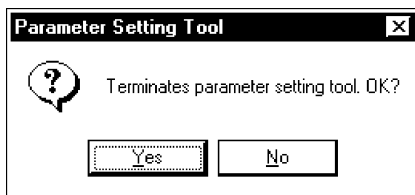


Figure 3.1.5 Close Dialog Box

3.2 Work Flow of Parameters Setting Tool

There are three parameter setting procedures:

- Create new parameter data and download it to the controller.
- Upload parameter data from the controller, modify it, and then download it to the controller.
- Read parameter data saved on disk, modify it, and then save it to the disk.

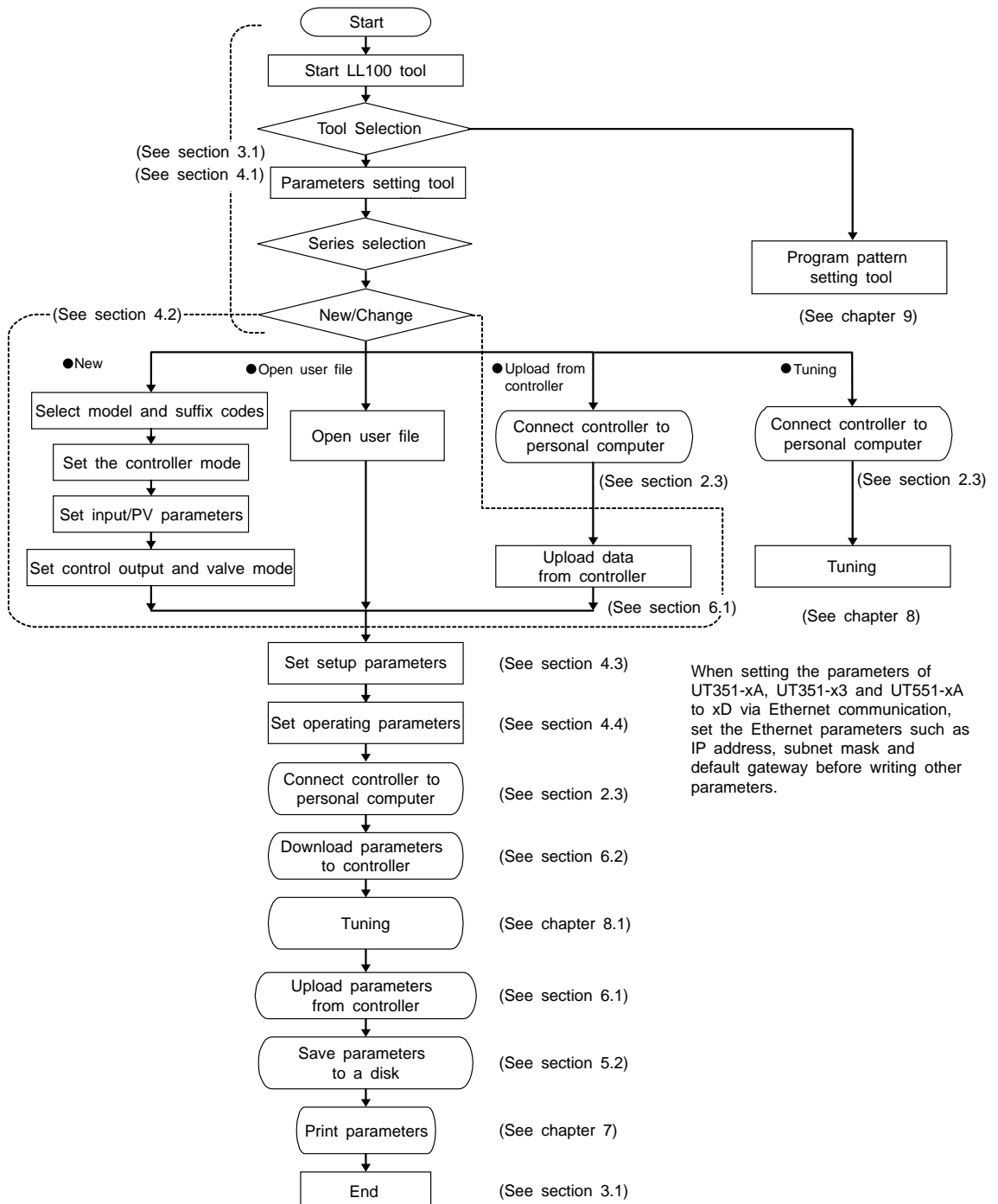


Figure 3.2.1 Work Flow of Parameters Setting Tool

3.3 Dialog Box Elements and Functions

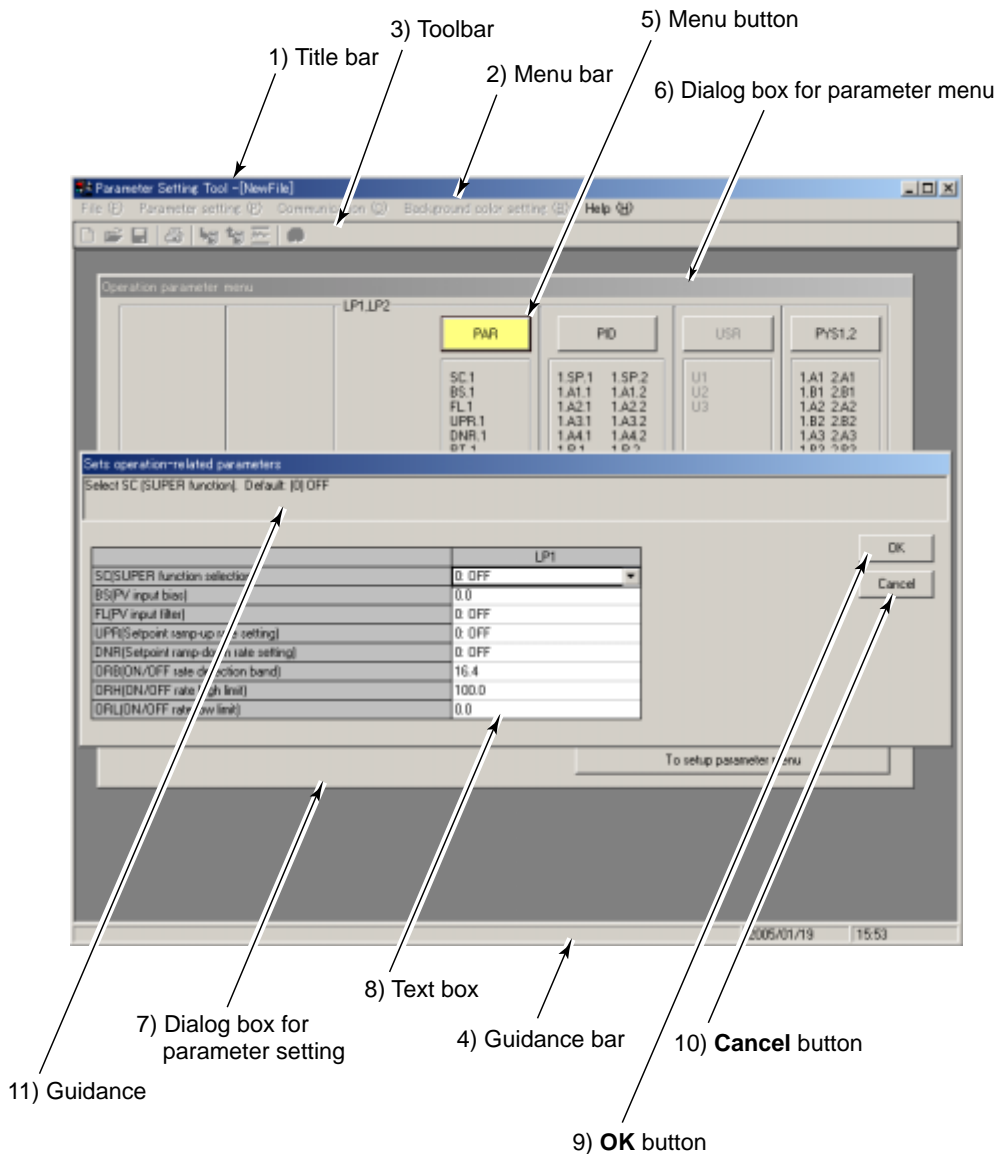


Figure 3.3.1 Dialog Box Elements and Functions

1) Title bar

Shows the tool name (Parameters Setting Tool) and the file name of the parameter file being used.

2) Menu bar

Contains the various tool functions that can be selected.

3) Toolbar

Displays the frequently used tool menu items as command buttons.

4) Guidance bar

Provides helpful guidance for operation.

5) Menu button

Command buttons placed in a parameter menu dialog box. These buttons open their corresponding parameter setting dialog boxes when clicked, and the color of the button changes.

6) Dialog box for parameter menu

There are two menu dialog boxes: one for setup parameters and the other for operating parameters. (The figure 3.3.1 shows the menu dialog box for operating parameters.)

7) Dialog box for parameter setting

You can set parameters via a dialog box. When you select the text box for a parameter in a parameter setting dialog box, a description, range of setting, and initial value of the parameter are shown for guidance.

8) Text box

A text box is a cell in a parameter setting dialog box, in which a parameter value is entered and set. Clicking in a text box of a parameter that cannot be set (a bar “-” is displayed in such text boxes) does not produce any effect.

9) **OK** button

Clicking this button will update the parameters shown in the parameter setting table and close the parameter setting dialog box.

10) **Cancel** button

Clicking this button will discard the changes made and close the parameter setting dialog box. This operation will not update the parameter settings.

11) Guidance

The parameter name, range of setting, and initial value of parameter are shown for guidance.

When range of setting and initial value make a difference, according to model code and the other setting parameter value, see also the controller's user's Manual for GREEN Series.

3.4 Menu Commands

In the parameters setting tool, you can use the menu commands when the Setup Parameter Menu, Operating Parameter Menu or Program Pattern Menu dialog box is displayed. Most of the menu names and commands provided for the program pattern setting tool are the same.

● Using menu commands

- (1) Click a name on the menu bar.
- (2) The corresponding menu (see Figure 3.4.1) appears; select the command you wish to carry out.

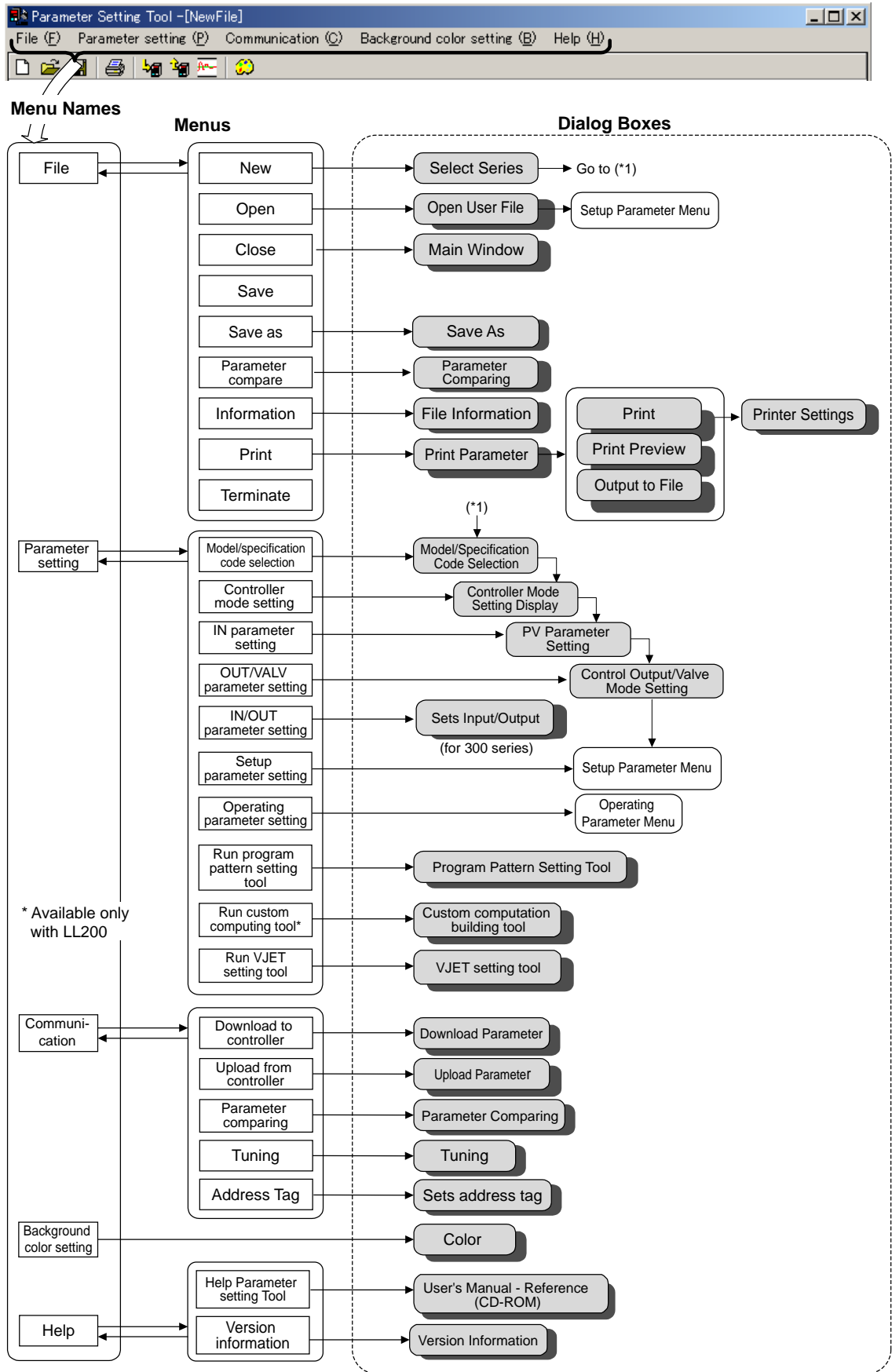


Figure 3.4.1 Tool Menu Items (for Setup and Operating Parameter Menu)

3.5 Parameter Setting Basics

This section describes the basic operation procedure for parameter setting. This procedure also applies to some of the program pattern setting operations.

Set parameters as shown in the flowchart below.

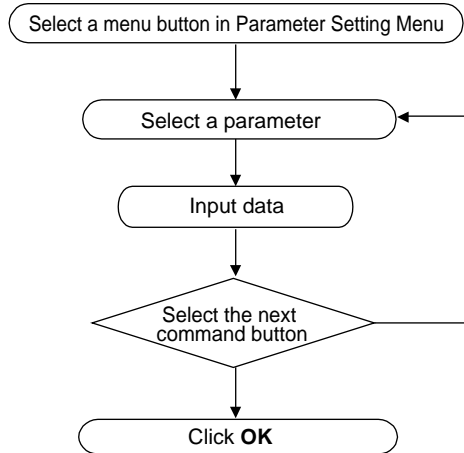


Figure 3.5.1 Parameter Setting Flowchart

3.5.1 Selecting a Parameter

- (1) In a parameter setting dialog box, click the text box of the parameter you wish to change.
- (2) The text box of the selected parameter is displayed with a thick frame, indicating that it is ready for input.

3.5.2 Inputting the Setting for a Parameter

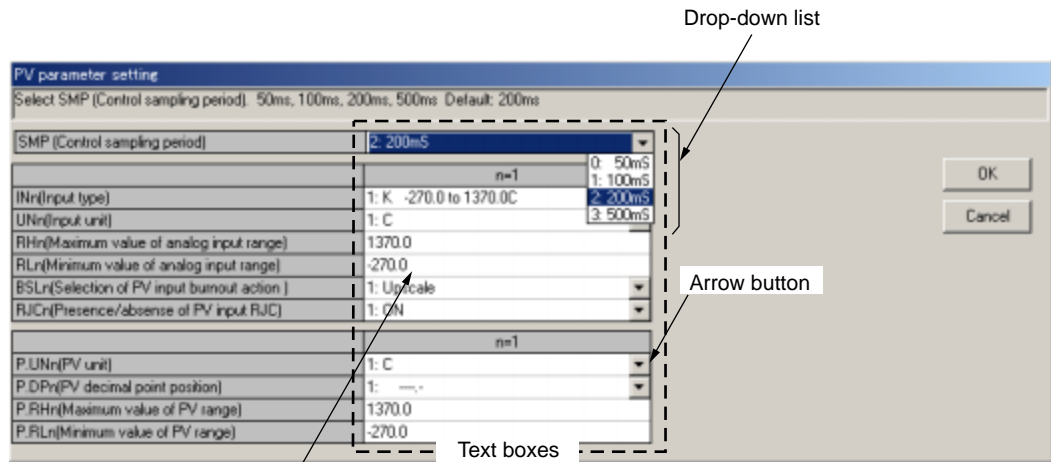
Data entry in text boxes is a fundamental operation in every Windows-based application. There are two types of text boxes in a parameter setting dialog box.

● **Text box with arrow button on the right:**

Click the arrow button to open a list of available selections. Select an item from the list.

● **Text box without arrow button:**

Click in the text box and type appropriate characters. See the guidance bar for the setting range, initial value, and other information on that parameter. If an illegal value is input for a numeric setting, a message box will appear, stating that an “Illegal value has been entered.” Click **OK** and input a proper value.



Enter a numeral or character string.

Figure 3.5.2 Parameter Setting Table Elements (Example of UT551)

3.5.3 Applying and Canceling Changes in Dialog Box

● **To apply the changes:**

Click **OK** after all the settings have been made in the current dialog box.

● **To cancel the changes:**

Click **Cancel** to cancel the changes.



NOTE

Be sure to click **OK** to apply changes to the parameter settings. Clicking **Cancel** discards all changes you made in the dialog box.

3.5.4 Using the Keyboard When You Have No Mouse

● Menu bar operation

- (1) Press the F10 or ALT key on the keyboard. A border line appears around the menu name **File** on the menu bar (like a button).
- (2) Using the LEFT (←) and RIGHT (→) keys, move the border line on the menu bar to select the menu name that contains the desired command, and press the ENTER key. Then, the menu opens.
- (3) Using the UP (↑) and DOWN (↓) keys, select the desired command in the menu and press the ENTER key. (You can also open the **File** menu by simply pressing ALT and F keys at the same time.)
- (4) To cancel the operation, press ESC.

● Selecting a parameter menu

- (1) Press the TAB key to select Menu button for parameter setting.
- (2) Press the ENTER key.

● Selecting a parameter

- (1) Pressing the TAB key switches the active element in the following sequence: **OK** button, **Cancel** button, text box for a parameter, then back to the **OK** button.
- (2) When a text box is active, you can move between text boxes (parameters) using the UP, DOWN, RIGHT, and LEFT (↑/↓/←/→) keys. A selected text box is displayed with a thick frame around it and is ready for input.

● Data input operation

After you select a parameter, do either of the following:

- Selecting from a drop-down list
 - (1) Press the CTRL + ENTER keys to open the drop-down list.
 - (2) Select an item using the UP and DOWN (↑/↓) keys.
 - (3) Press the ENTER key to set the item.
- Setting a numeral
 - (1) Type a numeral in the text box.
 - (2) Press the ENTER key to set the numeral in the parameter.

● Button operation (OK, Execute, Cancel, and other buttons)

- (1) Press the TAB key repeatedly until the desired button becomes active.
- (2) Press the ENTER key to carry out the command.

4. Setting Parameters

This chapter describes how to use the LL100 tool for making parameter settings. This chapter is divided into the following topic areas:

- (1) Tool and Series Selection
- (2) New/Change Selection
- (3) Setup Parameter Menu
- (4) Operating Parameter Menu

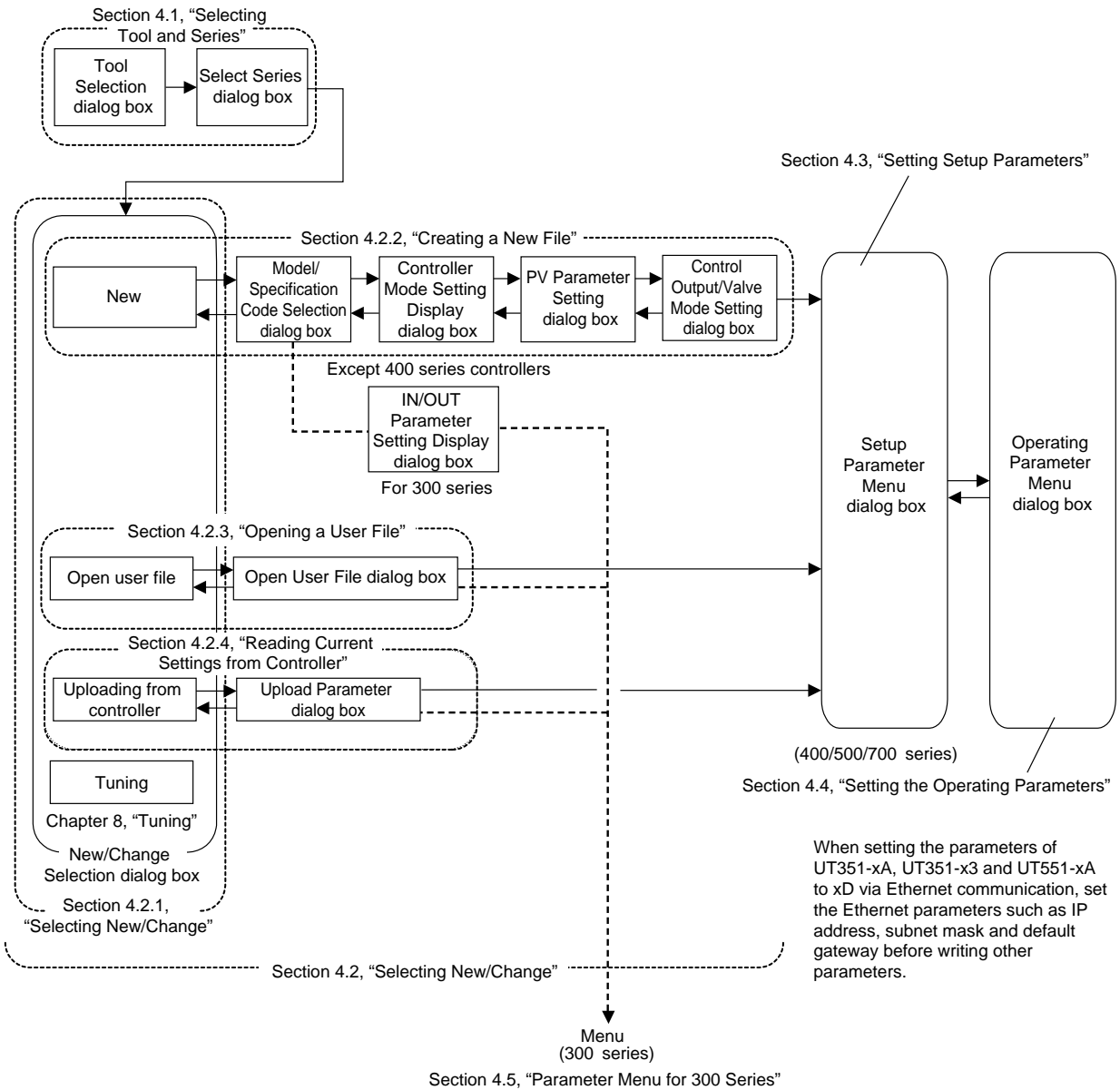


Figure 4.0.1 Configuration of Dialog Boxes Related to LL100 Parameter Setting

4.1 Selecting Tool and Series

4.1.1 Selecting the Tool

After the LL100 tool is started, the Tool Selection dialog box appears (Figure 4.1.1). (For LL200, "Custom Computation Building Tool" appears at the top of dialog box.)

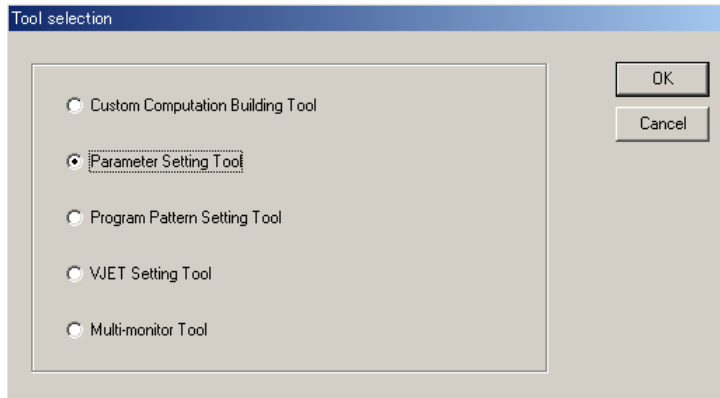


Figure 4.1.1 Tool Selection Dialog Box

● To select the tool

- (1) Click **Parameter Setting Tool**.
- (2) Click **OK**. (Go on to section 4.1.2)

4.1.2 Selecting the Series

After you select the Tool, the Select Series dialog box appears (Figure 4.1.2).

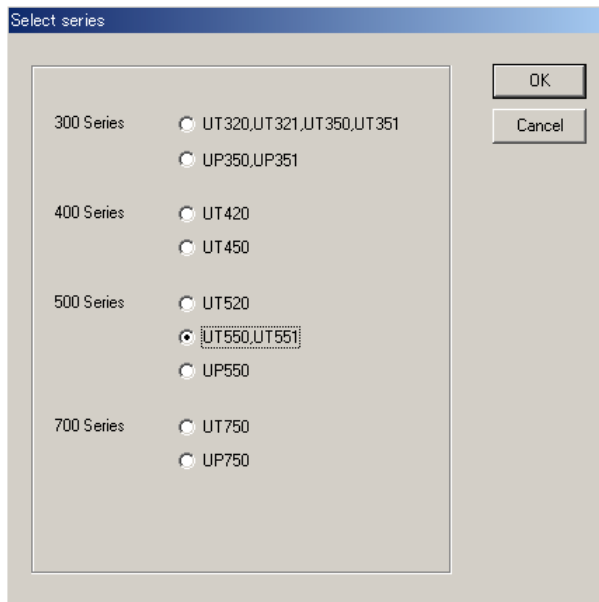


Figure 4.1.2 Select Series Dialog Box

● To select the controller model

- (1) Click the controller model you wish to start.
- (2) Click **OK**. (Go on to section 4.2.1)

4.2 Selecting New/Change

4.2.1 Selecting New/Change

After you select the controller model, the New/Change Selection dialog box appears (Figure 4.2.1).

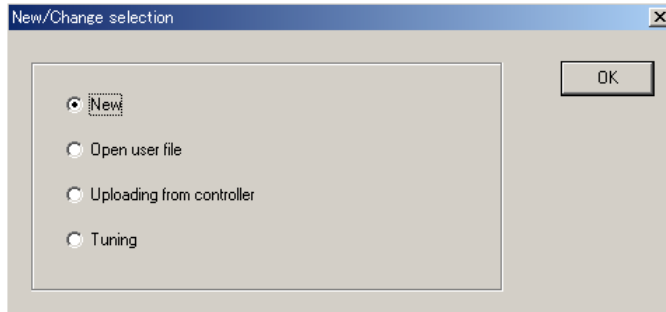


Figure 4.2.1 New/Change Selection Dialog Box

● To create a file of new parameter settings

- (1) Click **New**.
- (2) Click **OK**. (Go on to section 4.2.2)

● To make changes to parameter settings

- To make changes to an existing parameter setting file saved in your PC:

- (1) Click **Open user file**.
- (2) Click **OK**. (Go on to section 4.2.3.)

- To read and change the current parameter settings in a controller:

- (1) Click **Uploading from controller**.
- (2) Click **OK**. (Go on to section 4.2.4.)

- To change the current PID control parameter settings (also referred to as “tuning parameters”) in a controller:

- (1) Click **Tuning**.
- (2) Click **OK**. (Go on to chapter 8.)

4.2.2 Creating a New File

If you select **New**, the Model/Specification Code Selection dialog box (Figure 4.2.2) appears.

● Creating new parameter data

- (1) Select the desired specification code and optional specification code.

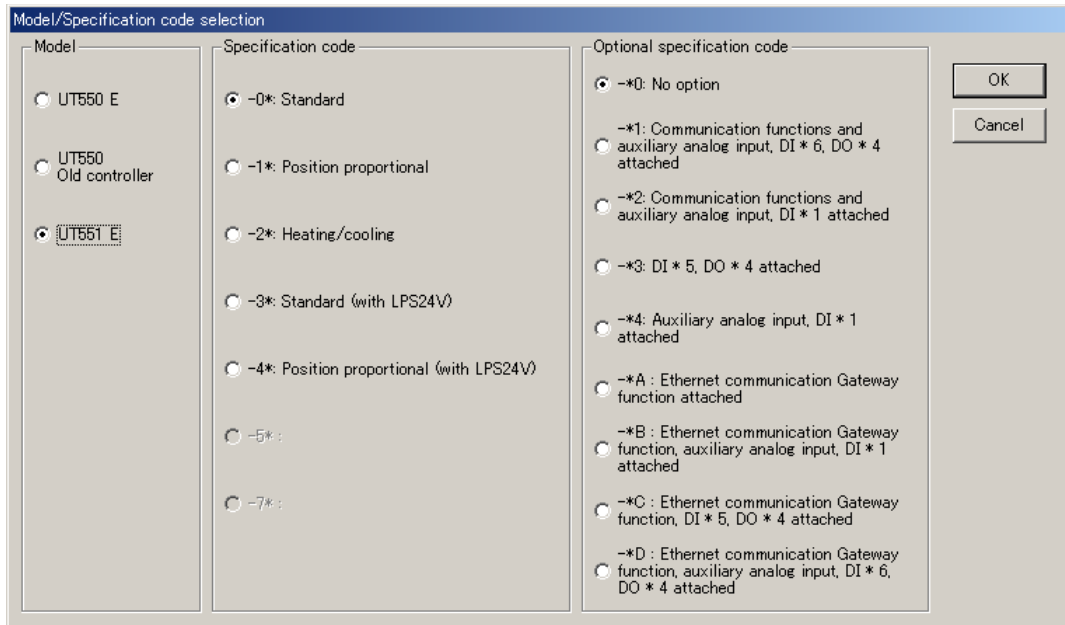


Figure 4.2.2 Model/Specification Code Selection Dialog Box (Example of UT551)

TIP

If you are not sure of your controller's model and specification codes, see the model and suffix indications on the nameplate attached to the left side of the controller.

- (2) Click **OK**.

If you click **Cancel** instead, the tool returns to the New/Change Selection dialog box, discarding any settings you have made.

- (3) The Controller Mode Setting Display dialog box (Figure 4.2.3) opens.

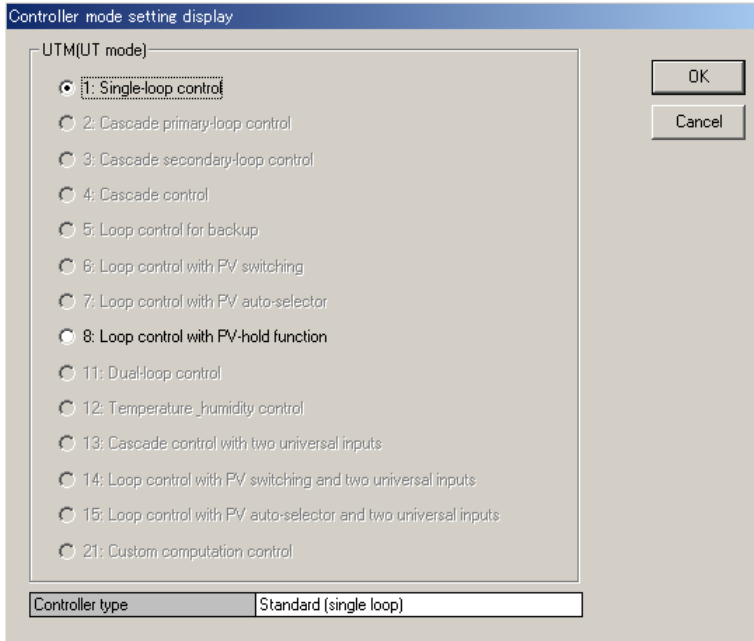


Figure 4.2.3 Controller Mode Setting Display Dialog Box (Example of UT551)

- (4) Select the desired controller mode.
- (5) Click **OK**.

If you click **Cancel** instead, the tool returns to the Model/Specification Code Selection dialog box.

- (6) The PV Parameter Setting dialog box (Figure 4.2.4) opens.

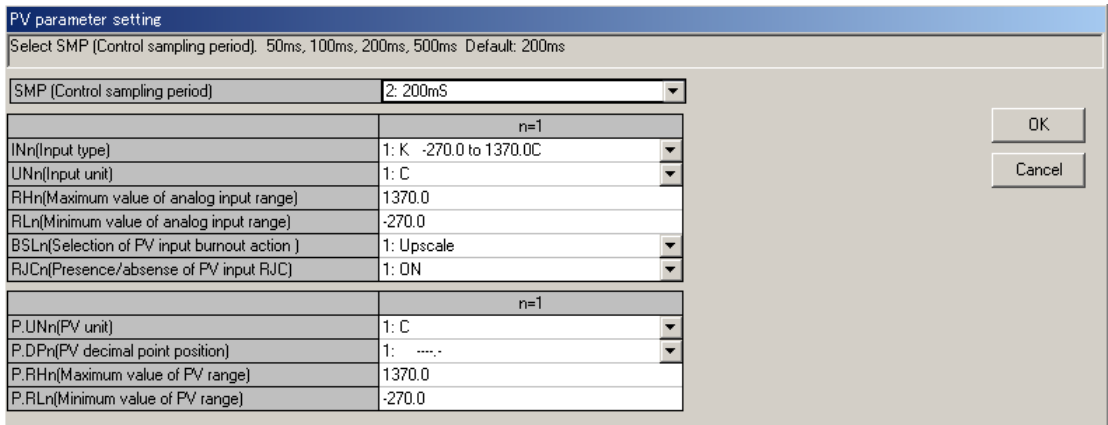
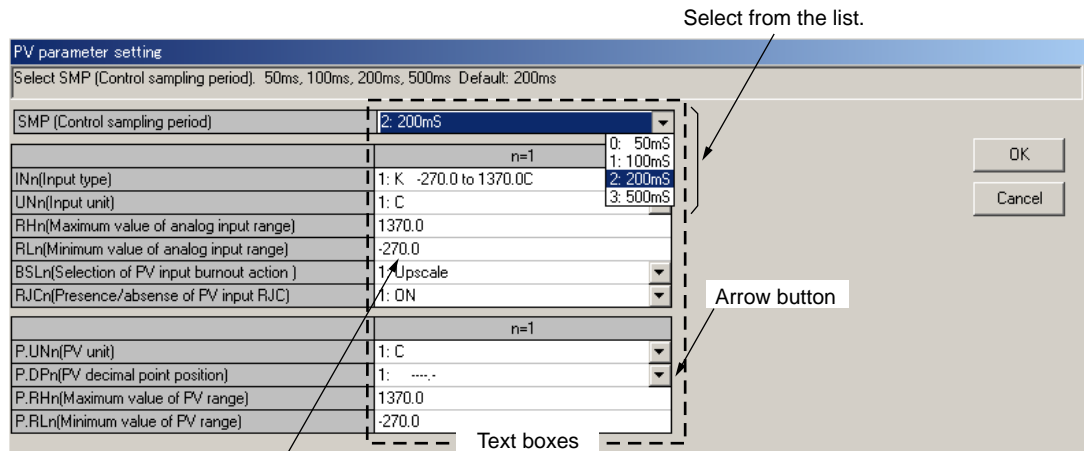


Figure 4.2.4 PV Parameter Setting Dialog Box (Example of UT551)

- (7) Set the parameters in the following ways.
 - For text boxes with an arrow button on the right: Click the arrow button to open a list of available selections. Select an item from the list.
 - For text boxes without an arrow button: Click in the text box and type appropriate characters.



Enter a numeral or character string.

Figure 4.2.5 Setting Parameters (Example of UT551)

- (8) When you have finished setting the parameters, click **OK**.
If you click **Cancel** instead, the tool returns to the Controller Mode Setting Display dialog box.
- (9) The Control Output/Valve Mode Setting dialog box (Figure 4.2.6) opens.
- (10) Set the parameters.
- (11) When you have finished setting the parameters, click **OK**.
If you click **Cancel** instead, the tool returns to the PV Parameter Setting dialog box.

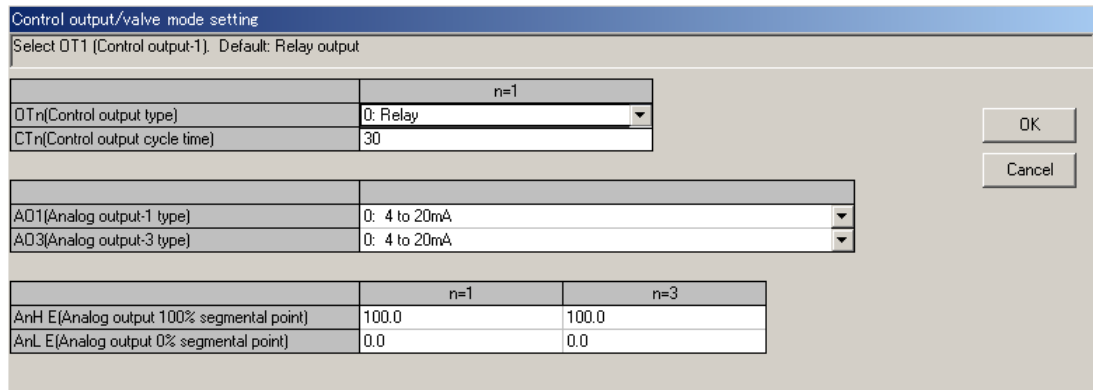


Figure 4.2.6 Control Output/Valve Mode Dialog Box (Example of UT551)

- (12) The Setup Parameter Menu dialog box (Figure 4.3.2) opens. (Go on to section 4.3.2.)

4.2.3 Opening a User File

After you click **Open user file** in the New/Change Selection dialog box (Figure 4.2.1), the Open User File dialog box (Figure 4.2.7) appears.

Can read a user file created and saved using old LL100.

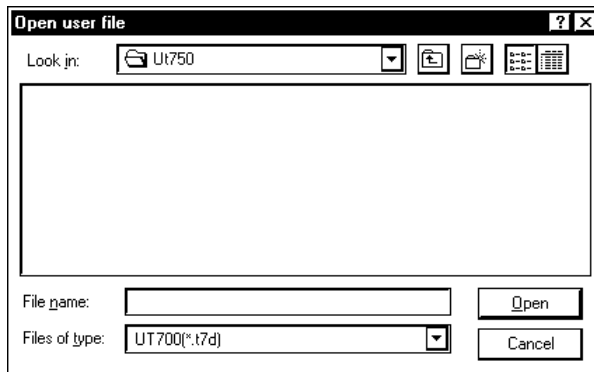


Figure 4.2.7 Open User File Dialog Box (Example of UT750)

● **To open a parameter setting file**

- (1) On the menu bar, click **File** then choose **Open**. The Open User File dialog box (Figure 4.2.7) opens.
- (2) Click in the **Look in** box.
- (3) From the list thus appearing, locate the folder in which the desired parameter setting file resides and select it.
- (4) The files contained in the folder you selected are listed in the box beneath. Click to select the parameter setting file, and click **Open**. When LL100 has successfully finished reading the parameter settings from the file, a dialog box displaying the “Uploading from file have finished.” message appears.
- (5) Click **OK**. The Setup Parameter Menu dialog box (Figure 4.3.2) then appears. (Go on to section 4.3.2.)

● **File configuration of GREEN series**

The filename extension of parameter setting files are either **t*d** or **p*d**. The filenames preceding the extension must be up to 16 alphanumeric characters. The tool automatically sets the filename extension according to the model of the GREEN Series controller as shown below.

Table 4.2.1 Filename Extensions

Type of File	Controller Model								
	UT750	UP750	UT550/520/551	UP550	UT450/420	UT350/320	UT351/321	UP350	UP351
Parameter setting file	t7d	p7d	t5d	p5d	t4d	t3d	ttd	p3d	ptd
Parameter comparison result file	e7d		e5d		e4d	e3d			
Program pattern file	-	p7p	-	p5p	-	-	-	-	-
Program-pattern comparison result file	-	e7p	-	e5p	-	-	-	-	-
Print image file	csv								

4.2.4 Reading Current Settings from Controller

Clicking **Uploading from controller** in the New/Change Selection dialog box (Figure 4.2.1), opens the Upload Parameter dialog box (Figure 4.2.8).

Can read current settings from old GREEN series controller.

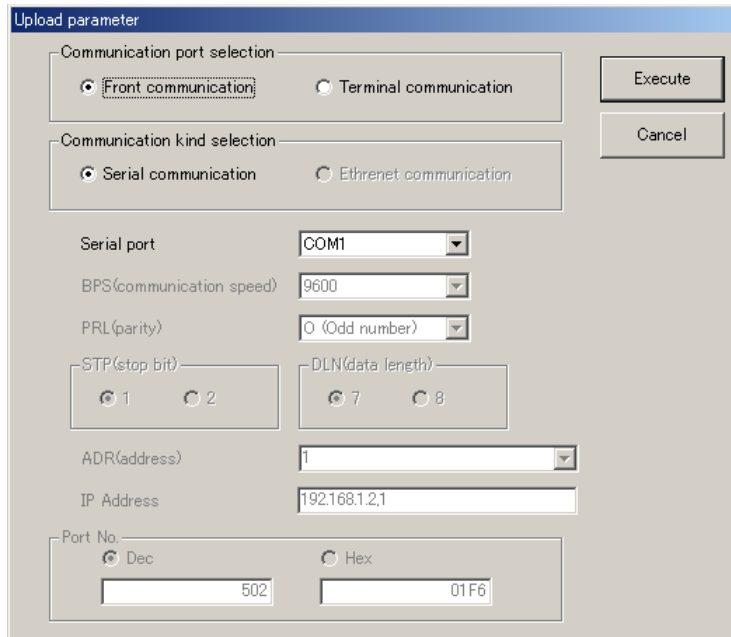


Figure 4.2.8 Upload Parameter Dialog Box

● To upload via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Upload from controller**. The Upload Parameter dialog box (Figure 4.2.8) opens.
- (2) Click **Front communication** (this means to use the communication port at the front of the controller).
- (3) From the **Serial port** list, select the communication port of the personal computer from **COM1** to **COM16**.
- (4) Connect the controller to the personal computer, and then click **Execute**.
- (5) When the parameter data has been successfully uploaded, the tool displays a message stating "Parameter data has been uploaded from the controller."
- (6) Click **OK**. The Setup Parameter Menu dialog box (Figure 4.3.2) then appears. (Go on to section 4.3.2.)

See Also

Section 2.3, "Connecting Controller to Personal Computer," for how to connect the optical communication adapter.

● To upload via serial communication terminals

- (1) On the menu bar, click **Communication**, and then choose **Upload from controller**. The Upload Parameter dialog box (Figure 4.2.8) opens.
- (2) Click **Terminal communication** (this means to use the communication terminals at the rear of the controller).
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer from **COM1** to **COM16**.
- (5) Set the RS485 communication conditions:
 - Communication speed, parity and address: Select from drop-down lists.
 - Stop bit and data length: Select with option buttons.Use the same settings for the target controller's RS485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When the parameter data has been successfully uploaded, the tool displays a message stating "Parameter data has been uploaded from the controller."
- (8) Click **OK**. The Setup Parameter Menu dialog box (Figure 4.3.2) appears. (Go on to section 4.3.2.)



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring for the serial communication terminals.

● To upload via Ethernet communication terminal

- (1) On the menu bar, click **Communication**, and then choose **Upload from controller**. The Upload Parameter dialog box (Figure 4.2.8) opens.
- (2) Click **Terminal communication** (this means to use the communication terminals at the rear of the controller).
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When the parameter data has been successfully uploaded, the tool displays a message stating "Parameter data has been uploaded from the controller."
- (8) Click **OK**. The Setup Parameter Menu dialog box (Figure 4.3.2) appears. (Go on to section 4.3.2.)



NOTE

Uploading parameters via Ethernet is impossible for the UT750 in UT mode 21 and the UP750 in UP mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

4.3 Setting Setup Parameters

This section describes how to make settings in the Setup Parameter Menu dialog box.

The following figures show examples of the dialog boxes displayed when using a UT551.

For details about dialog box contents of other models, refer to the corresponding user's manual supplied with the controller.

4.3.1 Setup Parameter Menu Configuration

Figure 4.3.1 shows the configuration of the operating parameter menu.

See Also

Section 1.4 for information about show/hide of setup parameters of each controller.

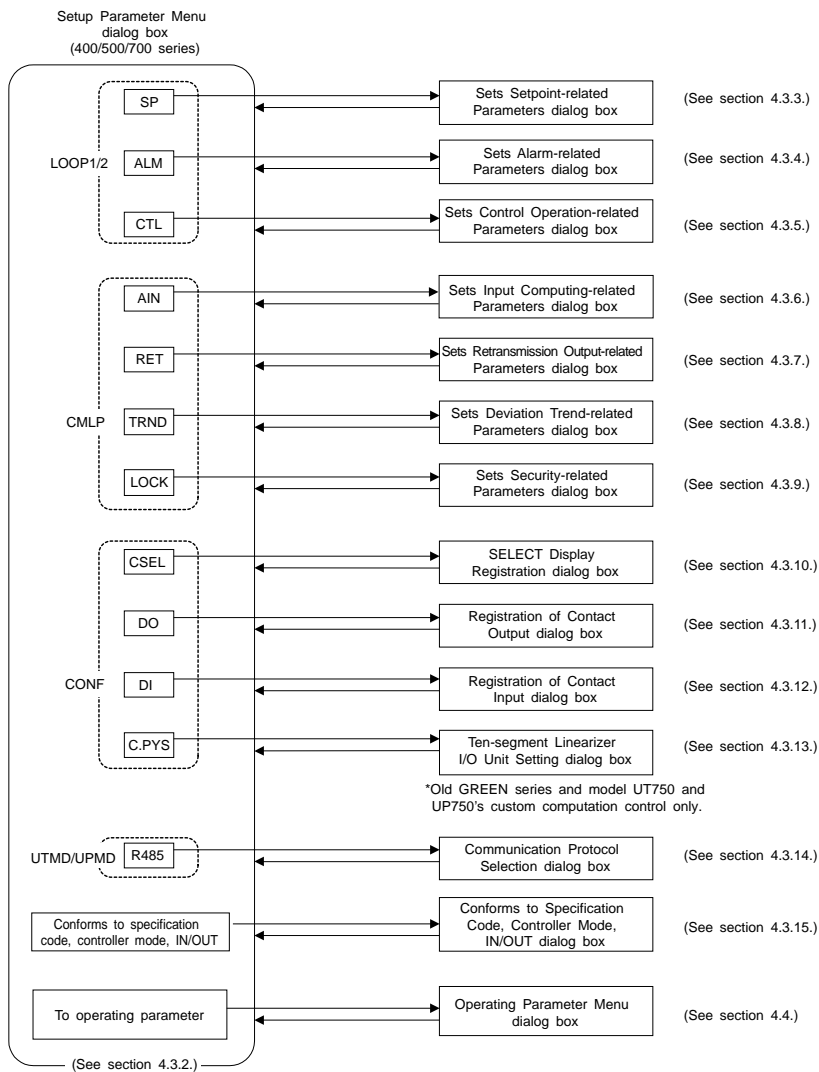


Figure 4.3.1 Setup Parameter Menu Configuration

4.3.2 Setup Parameter Menu

From the Setup Parameter Menu dialog box, you can open various parameter setting dialog boxes.

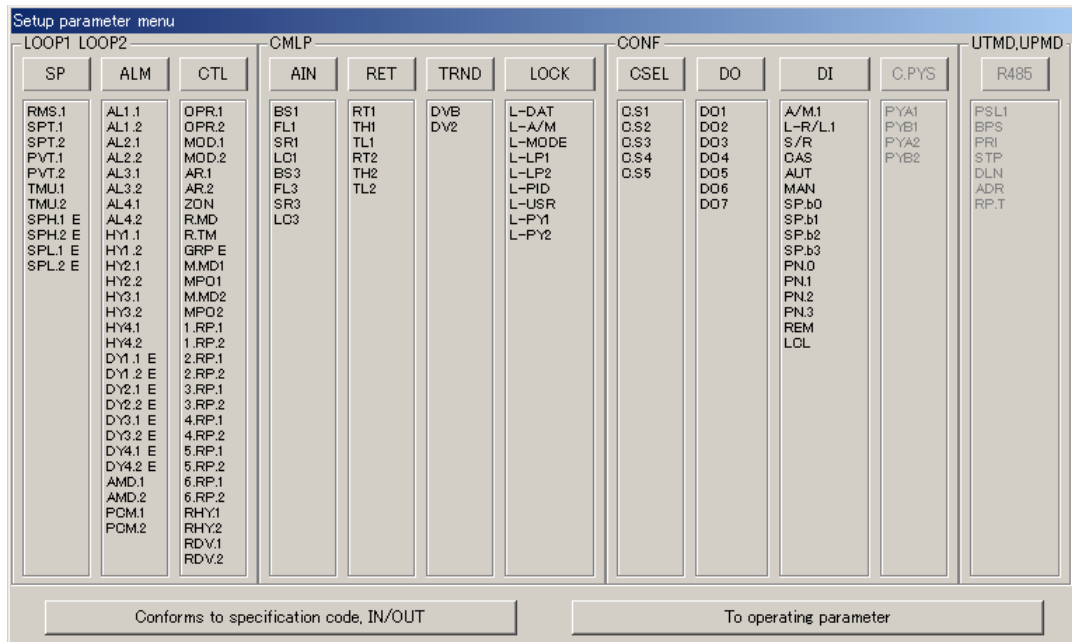


Figure 4.3.2 Setup Parameter Menu Dialog Box (Example of UT551)

● To open the Setup Parameter Menu dialog box

The menu can be opened in 5 ways:

- In the Control Output/Valve Mode Setting dialog box (figure 4.2.6), click **OK**.
- In the menu bar, click **Parameter setting**, and then choose **Setup parameter setting**. (This operation is only possible when **Parameter setting** is shown in the menu bar.)
- The menu opens after parameter data has been loaded from a disk or a controller.
- In the Operating Parameter Menu, Click **To Setup Parameter**.
- The menu opens after Open User File dialog box.

● To open individual setup parameter setting dialog boxes

Click one of the menu buttons (**SP**, **ALM**, ... , and **R485**).

→ The parameter setting dialog box of the clicked button opens.

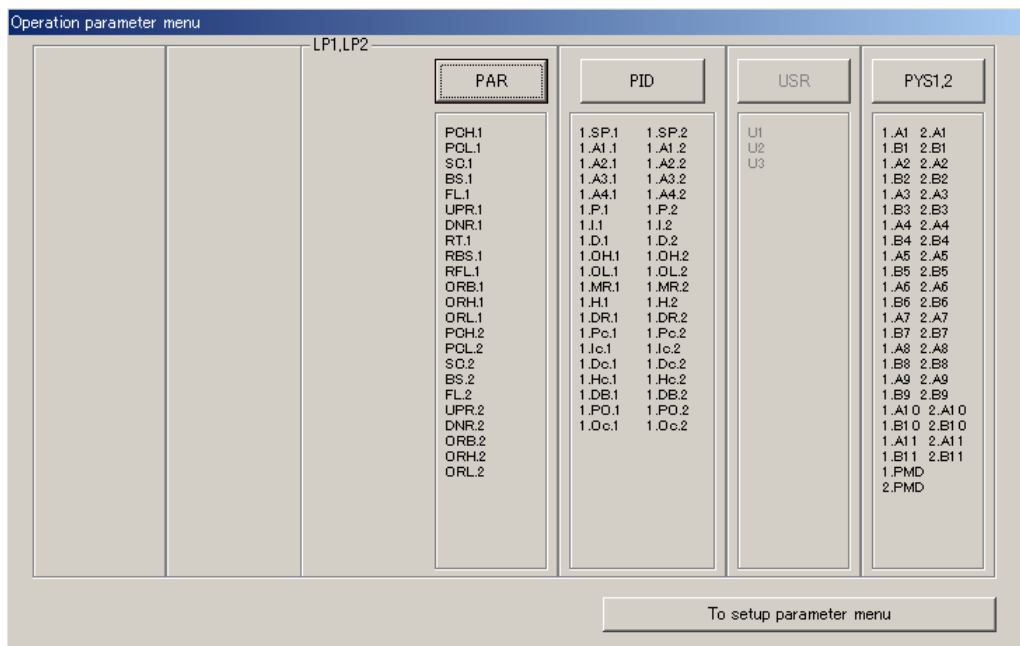
● To open other dialog boxes than those for setup parameter setting

Click **Conforms to specification code, controller mode, IN/OUT**. (Although the button is named "Conforms to...", it should be "Confirm...")

→ The Conforms to Specification Code, Controller Mode, IN/OUT dialog box opens. (Although the dialog box is named as "Conforms to ...," it should be "Confirm...".)

Click **To operating parameter**.

→ The Operating Parameter Menu dialog box opens. (next page)



Operating Parameter menu Dialog Box (Example of UT551)

4.3.3 Setting Target Setpoint (SP)

This section explains setting parameters related to the target setpoint (SP).

● To open the Sets Setpoint-related Parameters dialog box

In the Setup Parameter Menu dialog box, click **SP**.

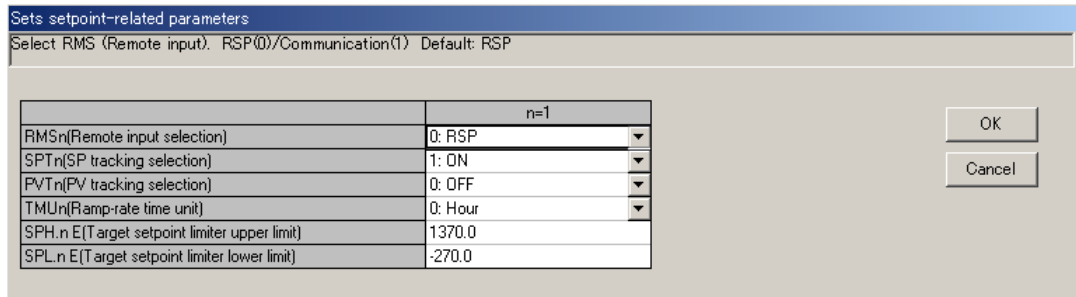


Figure 4.3.3 Sets Setpoint-related Parameters Dialog Box (Example of UT551)

● Parameters to be set

In the example shown above, only loop-1 parameters are shown because single-loop control is assumed. However, the following parameters are provided for both loop 1 and loop 2.

- Remote input selection (RMS)
This parameter sets the use of input terminal or communication for remote input SP.
RSP: by remote input terminal; COM: by communication
- SP tracking selection (SPT)
This parameter sets whether or not to perform SP tracking when switching from remote input SP to local SP.
OFF: disabled; ON: enabled
- PV tracking selection (PVT)
Operating parameters UPR (setpoint ramp-up rate) and DNR (setpoint ramp-down rate) are also used to configure this function.
OFF: disabled; ON: enabled
- Ramp-rate time unit (TMU)
This parameter is used in combination with operating parameters UPR (setpoint ramp-up rate) and DNR (setpoint ramp-down rate) to determine the ramp rate of SP.
0: HOUR (Denotes “per hour”); 1: MIN (Denotes “per minute”)
- Target setpoint limiter upper limit (SPH)
- Target setpoint limiter lower limit (SPL)
These parameters limit a SP value when it is being changed.
Setting range: 0.0 to 100.0% of PV input range (SPL < SPH)

● To go back to the Setup Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.4 Setting Alarms (ALM)

This section explains setting parameters related to alarms.

● **To open the Sets Alarm-related Parameters dialog box**

In the Setup Parameter Menu dialog box, click **ALM**.

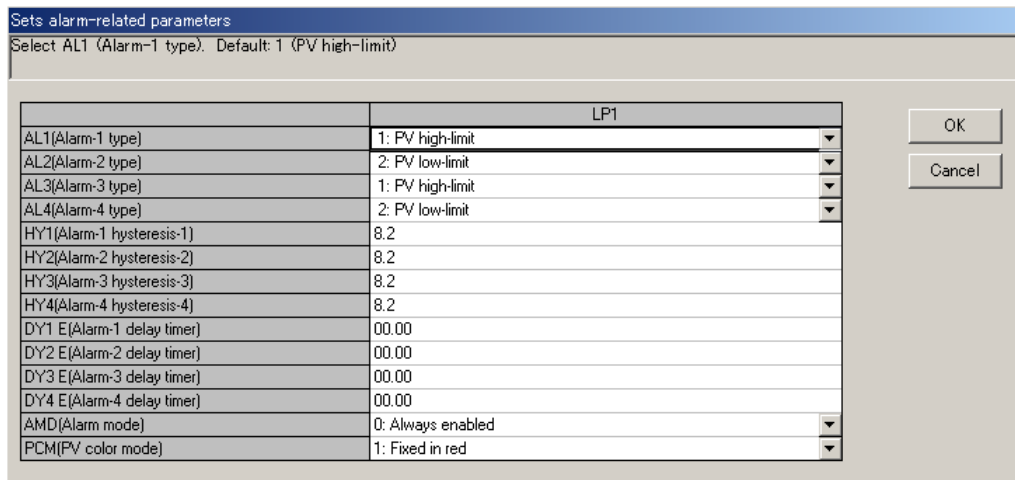


Figure 4.3.4 Sets Alarm-related Parameters Dialog Box (Example of UT551)

● **Parameters to be set**

In the example shown above, only loop-1 parameters are shown because single-loop control is assumed. However, the following parameters are provided for both loop 1 and loop 2.

- Alarm type (ALn: n = 1 to 4)

These parameters set the alarm types for alarm 1 to 4.

Alarm 1-type; OFF & 1 to 48

(Setting range depends on the model. See each user's manual.)

Alarm 2 to 4-type; OFF & 1 to 48

(Setting range depends on the model. See each user's manual.)

Example: To specify PV high-limit alarm with no waiting action and normally open contact operation, set "1."

See Also

GREEN Series User's Manual (Reference) (IM 05D01A02-01E) for information on alarm types.

- Alarm hysteresis (HYn: n = 1 to 4)

These parameters set the alarm hysteresis for alarm 1 to 4.

Setting range: 0.0 to 100% of PV input range span; for output alarms, however, the range is 0.0 to 100.0%

- Alarm delay timer (DYn: n = 1 to 4)

After the alarm setpoint is reached, the alarm will be output when the delay time has elapsed, however, alarm type setting is 1 to 20 or 28 to 31.

- Alarm mode (AMD)

This parameter sets alarm action conditions.

0: Always enabled; 1: Disabled in STOP mode; 2: Disabled in STOP or MAN mode;
3: 8 alarms and always enabled; 4: 8 alarms and disabled in STOP mode;
5: 8 alarms and disabled in STOP or MAN mode.

- PV color mode (PCM) (for UT551, UT351, UT321 and UP351 only)

Set PV display color.

0: Fixed in green

1: Fixed in red

2: Link to alarm 1 (Alarm OFF: green, Alarm ON: red)

3: Link to alarm 1 (Alarm OFF: red, Alarm ON: green)

4: Link to alarm 1 and 2 (Alarm OFF: green, Alarm ON: red)

5: Link to alarm 1 and 2 (Alarm OFF: red, Alarm ON: green)

6: PV limit (Within PV range: green, Out of PV range: red)

7: PV limit (Within PV range: red, Out of PV range: green)

8: SP deviation (Within deviation: green, Out of deviation: red)

9: SP deviation (Within deviation: red, Out of deviation: green)



NOTE

The 8-alarm mode is unavailable when the controller mode is set for cascade control or cascade control with two universal inputs.

● To go back to the Setup Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

- Manual preset output (MPO) Selects the output value when switched to manual operation.
-5.0 to 105.0 %

● **To go back to the Setup Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.6 Setting Analog Input Computations (AIN)

This section explains setting parameters related to the computation of analog inputs 1 to 3.

● **To open the Sets Input Computing-related Parameters dialog box**

In the Setup Parameter Menu dialog box, click **AIN**.

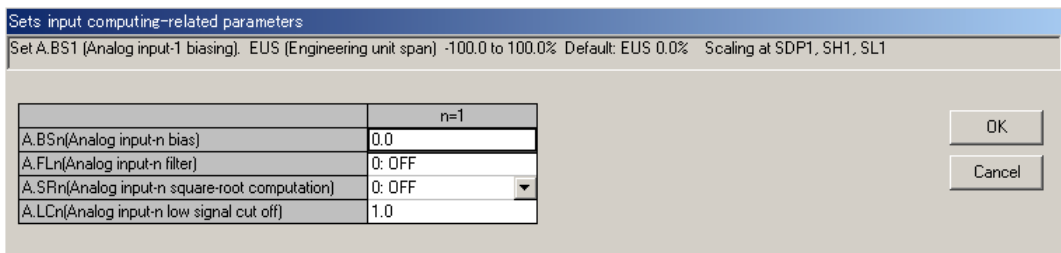


Figure 4.3.6 Sets Input Computing-related Parameters Dialog Box (Example of UT551)

● **Parameters to be set**

The following parameters are provided for each of the analog inputs 1 to 3.

- Analog input bias (A.BSn: n = 1 to 3) -100.0 to 100.0% of PV input range span
- Analog input filter (A.FLn: n = 1 to 3) 0: OFF; 1 to 120 seconds
- Analog input square-root computation (A.SRn: n = 1 to 3)
OFF, ON
- Analog input low signal cut off for square-root computation (A.LCn: n = 1 to 3)
0.0 to 5.0%

● **To go back to the Setup Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.7 Setting Retransmission Outputs (RET)

This section explains setting parameters related to retransmission outputs 1 to 3.

● **To open the Sets Retransmission Output-related Parameters dialog box**

In the Setup Parameter Menu dialog box, click **RET**.

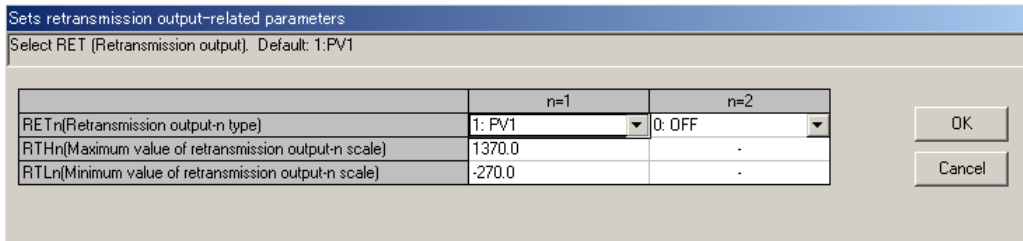


Figure 4.3.7 Sets Retransmission Output-related Parameters Dialog Box (Example of UT551)

● **Parameters to be set**

The following parameters are provided for each of the retransmission outputs 1 to 3.

- Retransmission output type (RETn: n = 1 to 3) 0 (OFF), 1 to 17
(Setting range depends on the model. See each user’s manual.)
- Maximum value of retransmission output scale (RTHn: n = 1 to 3)
 - RTH1&2: RTLn + 1 digit to 100% of PV input range,
 - RTH3: RTLn + 1 digit to 100.0%
- Minimum value of retransmission output scale (RTLn: n = 1 to 3)
 - RTL1&2: 0.0% of PV input range span to RTHn - 1 digit,
 - RTL3: 0.0% to RTHn - 1 digit

● **To go back to the Setup Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.8 Setting Deviation Trend (TRND)

This section explains setting the deviation bandwidth used for deviation monitor lamp display and the scale and data recording time interval for the deviation trend display.

● **To open the Sets Deviation Trend-related Parameters dialog box**

In the Setup Parameter Menu dialog box, click **TRND**.

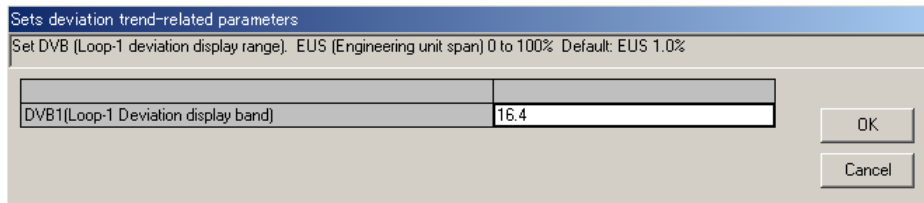


Figure 4.3.8 Sets Deviation Trend-related Parameters Dialog Box (Example of UT551)

● **Parameters to be set**

In the display example above, only loop-1 parameters are shown because single-loop control is assumed here. However, the following parameters are provided for both loop 1 and loop 2.

- Deviation display band (DVBn: n = 1 to 3) 0.0 to 100.0% of PV input range span
- Deviation trend display scale (TSCn: n = 1 to 3) 0.1 to 100.0% of PV input range span
- Deviation trend display time (TTM) 1 to 600 seconds

● **To go back to the Setup Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.9 Setting Security (LOCK)

This section explains setting whether to enable or disable the GREEN Series controller's specific main menu displays and some of the operation keys.

● To open the Sets Security-related Parameters dialog box

In the Setup Parameter Menu dialog box, click **LOCK**.

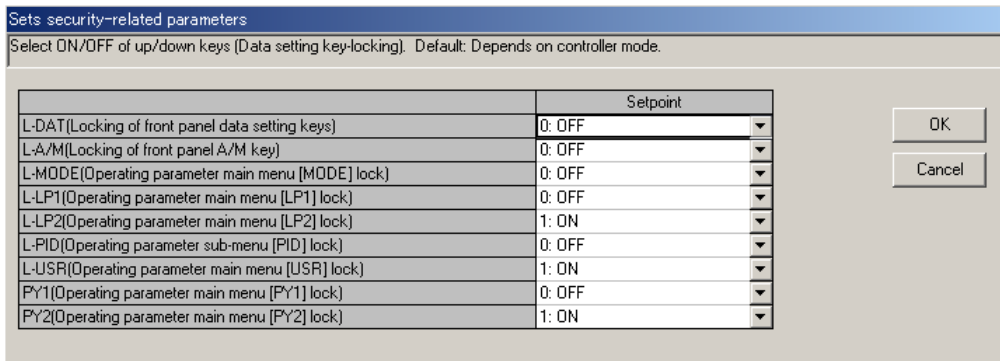


Figure 4.3.9 Sets Security-related Parameters Dialog Box (Example of UT551)

● Parameters to be set

- Front panel data setting keys lock (L-DAT) OFF, ON
- Front panel A/M key lock (L-A/M) OFF, ON
- Operating parameter main menu MODE menu lock (L-MODE) OFF, ON
- Operating parameter main menu LP1 menu lock (L-LP1) OFF, ON
- Operating parameter main menu LP2 menu lock (L-LP2) OFF, ON
- Operating parameter main menu PID menu lock (L-PID) OFF, ON
- Operating parameter main menu USR menu lock (L-USR) OFF, ON
- Operating parameter main menu PY1 menu lock (PY1) OFF, ON
- Operating parameter main menu PY2 menu lock (PY2) OFF, ON

● To go back to the Setup Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.10 Configuring SELECT Displays (CSEL)

If you wish to display certain operating parameters on the controller during operation, register them as SELECT displays.

● To open the SELECT Display Registration dialog box

In the Setup Parameter Menu dialog box, click **CSEL**.

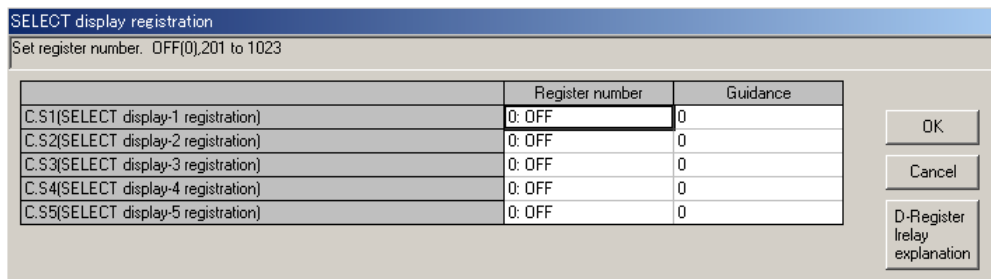


Figure 4.3.10 SELECT Display Registration Dialog Box (Example of UT551)

● Parameters to be set

- SELECT display registration (C.Sn: n = 1 to 5)

You can add up to 5 SELECT displays in the operating displays.

The operating parameters that can be registered will be listed in the D-register List dialog box by their D-register names.

Set the parameters in the following steps:

- (1) Click the text box of the SELECT display registration parameter you wish to set.
- (2) The D-register List dialog box opens.
- (3) Click the setup parameter or the operating parameter (D-register name) you wish to register.
- (4) Click **OK**.
(To close the D-register List dialog box, click **Cancel**.)
- (5) In the text box of the SELECT display registration parameter, the set-up parameter or the operating parameter (D-register name) appears, and in the guidance box, the D-register number appears.

● To go back to the Setup Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

See Also

GREEN Series Communication Functions user's manual (IM 05G01B02-01E) or Ethernet Communication Functions user's manual (IM 05G01B52-01E) for setup parameters, operating parameters and D-register numbers. The correspondence between D-register names and numbers is given in the chapter "Functions and Usage of D-registers" for each controller model.

4.3.11 Configuring Contact Outputs (DO)

This section explains assigning functions to the contact outputs (DO1 to 7, RDO151 to 158 and RDO251 to 258).



NOTE

The registration of contact output should be performed only by personnel with sufficient understanding of the GREEN Series controller's functions and custom computation function. Note that changing the contact output configuration will change the pre-assigned contact output functions provided by the controller mode setting.

● To open the Registration of Contact Output dialog box

In the Setup Parameter Menu dialog box, click **DO**.

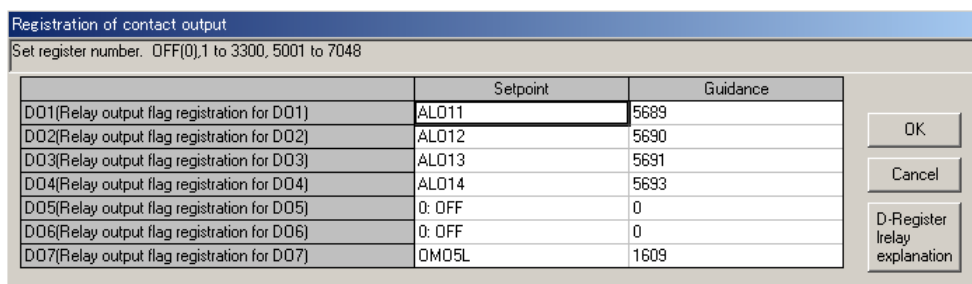


Figure 4.3.11 Registration of Contact Output Dialog Box (Example of UT551)

● Parameters to be set

- (1) Click the text box of any parameter you wish to set.
- (2) The Register List dialog box opens.
- (3) Click the relay and output module you wish to register.
- (4) Click **OK**.

● To go back to the Setup Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

See Also

GREEN Series User's Manual (Reference) (IM 05D01A02-01E) for contact output function assignments by the controller mode.

To see descriptions of D registers and I relays, click **D-Register I-relay explanation**.

4.3.12 Configuring Contact Inputs (DI)

This section explains assigning functions to the contact inputs (DI1 to DI7). DI 8 is provided for UT550, UT551, UT520 and UP550 only.



NOTE

The registration of contact input should be performed only by personnel with sufficient understanding of the GREEN Series controller's functions and custom computation function. Note that changing the contact input configuration will change the pre-assigned contact input functions provided by the controller mode setting.

● To open the Registration of Contact Input dialog box

In the Setup Parameter Menu dialog box, click **DI**.

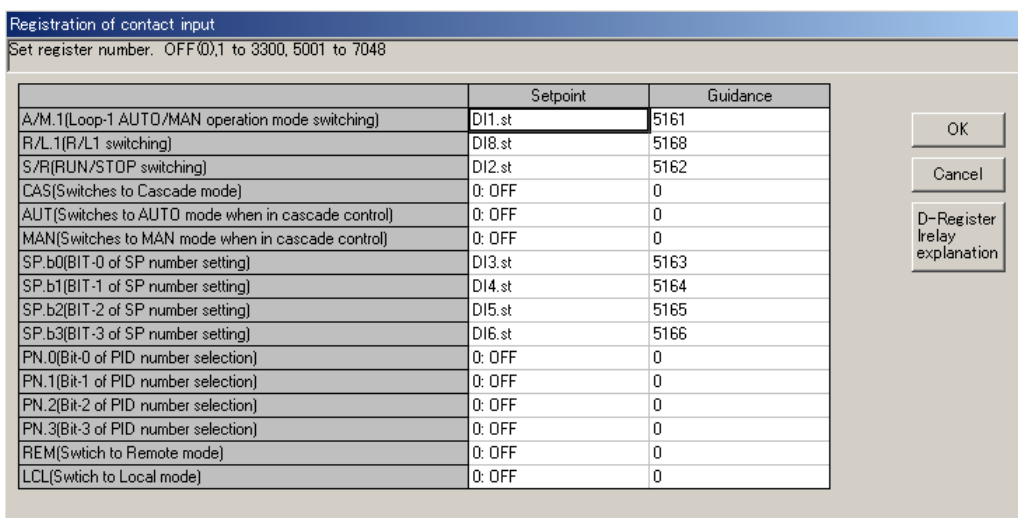


Figure 4.3.12 Registration of Contact Input Dialog Box (Example of UT551)

● Parameters to be set

- (1) Click the text box of any parameter you wish to set.
- (2) The Register List dialog box opens.
- (3) Click the relay and output module you wish to register.
- (4) Click **OK**. (To close the Register List dialog box, Click **Cancel**.)

For UT551, set the following setting items.

- **AUT**: Switchs to AUTO mode by rising edge switching of the external contact input.
- **MAN**: Switchs to MAN mode by rising edge switching of the external contact input.
- **PN.0 to PN.3**: Selects PID number by bit configuration of the external contact input.
- **REM**: Switchs to REMOTE mode by rising edge switching of the external contact input.
- **LCL**: Switchis to LOCAL mode by rising edge switching of the external contact.

● **To set messages 1 to 4**

For UT750, UP750, and UP550, interruptive messages can be set.

- Message 1 to 4: Set display messages with no more than 20 alphanumeric characters.

● **To go back to the Setup Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

See Also

GREEN Series User's Manual (Reference) (IM 05D01A02-01E) for contact input function assignments by the controller mode.

To see descriptions of D registers and I relays, click **D-Register I-relay explanation**.

For details on the interruptive message display function, see GREEN Series User's Manual (Reference) (IM 05D01A02-01E).

4.3.13 Setting Units for Ten-segment Linearizers (C. PYS)

Set units for the input/output of ten-segment linearizer 1 and 2. (Old Green series)

● **To open the Ten-segment Linearizer I/O Unit Setting dialog box**

In the Setup Parameter Menu dialog box, click **C.PYS**.

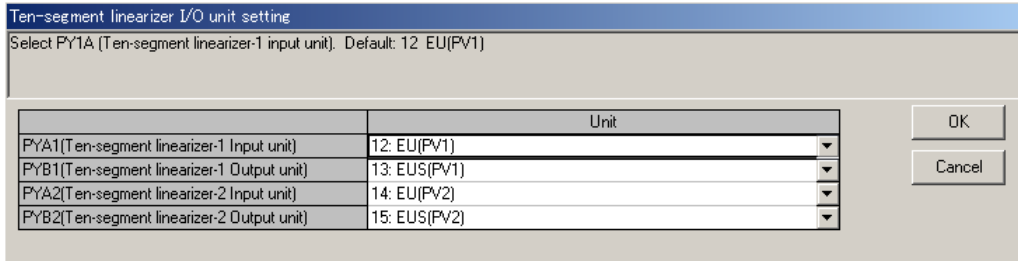


Figure 4.3.13 Ten-segment Linearizer I/O Unit Setting Dialog Box (Example of UT551)

● **Parameters to be set**

- Ten-segment linearizer input unit (PYAn: n = 1, 2)
0 to 15: See below for the corresponding units.
- Ten-segment linearizer output unit (PYBn: n = 1, 2)
0 to 15: See below for the corresponding units.

0: %; 1: ABS0; 2: ABS1; 3: ABS2; 4: ABS3; 5: ABS4; 6: EU(AIN1); 7: EUS(AIN1); 8: EU(AIN2); 9: EUS(AIN2); 10: EU(AIN3); 11: EUS(AIN3); 12: EU(PV1); 13: EUS(PV1); 14: EU(PV2); 15: EUS(PV2)

● **To go back to the Setup Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

4.3.14 Setting Communication Protocol

■ When Using RS485 Terminals

Set communication conditions for the RS-485 terminals.

● To open the Communication Protocol Selection dialog box

In the Setup Parameter Menu dialog box, click **R485**.

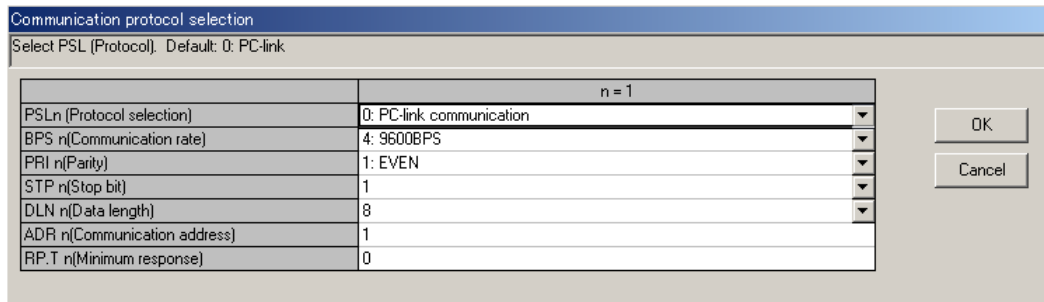


Figure 4.3.14 Communication Protocol Selection Dialog Box (Example of UT551)

● Parameters to be set

- Protocol selection-1 (PSL1) 0: PC-link; 1: PC-link with checksum; 2: Ladder; 3: Coordinated master station; 4: Coordinated slave station; 7: MODBUS (ASCII); 8: MODBUS (RTU); 9: Coordinated master station (2-loop mode); 10: Coordinated slave station (loop-1 mode); 11: Coordinated slave station (loop-2 mode)
- Protocol selection-2 (PSL2) 0: PC-link; 1: PC-link with checksum; 2: Ladder; 3: Coordinated master station; 4: Coordinated slave station; 5: I/O expansion (for single-controller applications); 6: I/O expansion (for dual-controller applications); 9: Coordinated master station (2-loop mode); 10: Coordinated slave station (loop-1 mode); 11: Coordinated slave station (loop-2 mode);
- Communication rate-1 (BPS1) 0:600; 1:1200; 2:2400; 3:4800; 4:9600 bps
- Communication rate-2 (BPS2) 0:600; 1:1200; 2:2400; 3:4800; 4:9600; 5:19200; 6:38400 bps
- Parity (PRIn: n = 1, 2) 0:NONE; 1:EVEN; 2:ODD
- Stop bit (STPn: n = 1, 2) 1, 2
- Data length 1 (DLN1) 7, 8; always 7 with MODBUS (ASCII)
Always 8 with MODBUS (RTU) or ladder communication.
- Data length 2 (DLN2) 7, 8; always 8 with ladder communication
- Communication address (ADRn: n = 1, 2) 1 to 99 (however, the max. number of connectable units is 32)
- Minimum response time (RP. Tn: n = 1, 2) 0 to 10 (× 10 ms)

● To go back to the Setup Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Setup Parameter Menu dialog box. This operation will not update the parameter settings.

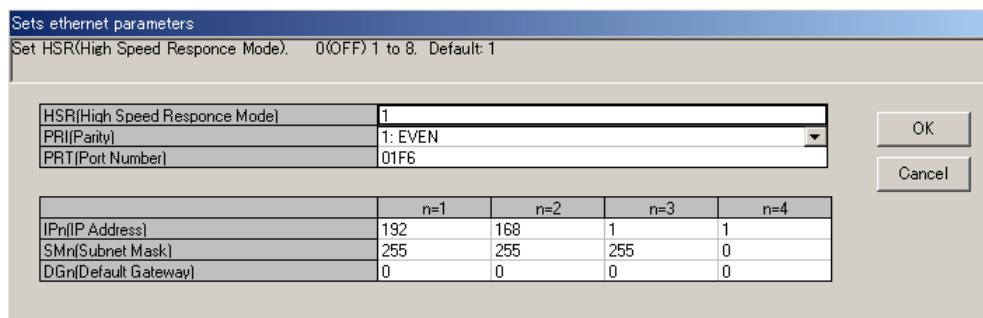


NOTE

If you select **Terminal communication** as the communication port of the LL100 tool, the RS-485 parameter setting file will not be downloaded to the controller. The RS-485 parameter data will be downloaded only when **Front communication** is selected. To use the LL100 tool with terminal communication, set the RS-485 communication protocol of the target controller to "PC link." Communication is not possible using another protocol.

■ When Using Ethernet Terminals

- (1) Setting parameters via front communication of the controller using Light loader adapter
 - 1) Start the LL100.
 - 2) The Tool Selection dialog box appears. Select **Parameter Setting Tool** and click **OK**.
 - 3) The Select Series dialog box appears. Select a controller model and click **OK**.
 - 4) The New/Change Selection dialog box appears. Select **New** and click **OK**.
 - 5) The Model/Specification Code Selection dialog box appears. Select the desired specification code and optional specification code and click **OK**.
 - 6) The Sets Input/Output dialog box appears. Set the required values to the parameters such as Input type, PV input range and Control output 1 type. Then click **OK**.
 - 7) The Menu dialog box appears. Click **Ethernet**, and then the Sets Ethernet Parameters dialog box appears. Set the High-speed response mode, parity, port number, IP address, subnet mask, default gateway, parity and port number of the controller. The initial values are as follows.
 High-speed response mode: 1; Parity: EVEN; Port number: 01F6 in hexadecimal, 502 in decimal; IP address: 192.168.1.1; Subnet mask: 255.255.255.0; Default gateway: 0.0.0.0
 * Ask the system administrator for the settings of the network you are connecting to.



- 8) Set the setup parameters, operating parameters and PID parameters which are to be set to the controller.
- 9) On the menu bar, click **File** then choose **Save As**. Enter a file name, and then click **Save** to save the settings to the personal computer.

- 10) Connect the controller to the personal computer using Light loader adapter and cable.
- 11) On the menu bar, click **Communication** then choose **Download to controller** to download the settings via front communication. Perform **Upload from controller**, **Parameter Comparing** and **Tuning** if required.



NOTE

When downloading the parameter data to the controller, the values set in the Sets Ethernet Parameters dialog box are downloaded to the Ethernet parameters of the controller. Be sure to confirm that the values set in the Sets Ethernet Parameters dialog box are appropriate.

- (2) Setting parameters directly via enclosure of Local Area Network without using Light loader adapter
 - 1) Connect the controller to the enclosure of LAN.
 - 2) Set the parity, port number, IP address, subnet mask and default gateway of the controller using key operations. See the user’s manual for controllers with Ethernet communication about the operation of the controller.
 - * Ask the system administrator for the settings of the network you are connecting to.
 - 3) Set the network settings of the personal computer.
 - * Ask the system administrator for how to set the network.
 - 4) Start the LL100.
 - 5) The Tool Selection dialog box appears. Select **Parameter Setting Tool** and click **OK**.
 - 6) The Select Series dialog box appears. Select a controller model and click **OK**.
 - 7) The New/Change Selection dialog box appears. Select **New** and click **OK**.
 - 8) The Model/Specification Code Selection dialog box appears. Select the desired specification code and optional specification code and click **OK**.
 - 9) The Sets Input/Output dialog box appears. Set the required values to the parameters such as Input type, PV input range and Control output 1 type. Then click **OK**.
 - 10) The Menu dialog box appears. Click **Ethernet**, and then the Sets Ethernet Parameters dialog box appears. Set the High-speed response mode, parity, port number, IP address, subnet mask, default gateway, parity and port number of the controller. The initial values are as follows.
 High-speed response mode: 1; Parity: EVEN; Port number: 01F6 in hexadecimal, 502 in decimal; IP address: 192.168.1.1; Subnet mask: 255.255.255.0; Default gateway: 0.0.0.0
 - * Ask the system administrator for the settings of the network you are connecting to.

Set HSR(High Speed Response Mode). 0(OFF) 1 to 8. Default: 1

HSR(High Speed Response Mode)	1			
PRI(Parity)	1: EVEN			
PRT(Port Number)	01F6			
	n=1	n=2	n=3	n=4
IPn(IP Address)	192	168	1	1
SMn(Subnet Mask)	255	255	255	0
DGn(Default Gateway)	0	0	0	0

- 11) Set the setup parameters, Operating parameters and PID parameters which are to be set to the controller.

- 12) On the menu bar, click **File** then choose **Save As**. Enter a file name, and then click **Save** to save the settings to the personal computer.
- 13) On the menu bar, click **Communication** then choose **Download to controller** to download the settings via terminal communication.
Perform **Upload from controller**, **Parameter Comparing** and **Tuning** if required.



NOTE

When downloading the parameter data to the controller, the values set in the Sets Ethernet Parameters dialog box are downloaded to the Ethernet parameters of the controller. Therefore the values set to the controller in step 2 will be replaced with the values set in the Sets Ethernet Parameters dialog box after the downloading is completed. Be sure to confirm that the values set in the Sets Ethernet Parameters dialog box are appropriate.

4.3.15 Confirming Specification Code, Controller Mode, IN, and OUT Parameter Settings

You can confirm the current settings of the basic parameters (specification code, controller mode, analog input, and control output related parameters) in the following dialog box.

- **To open the Confirms to Specification Code, IN/OUT dialog box**

In the Setup Parameter Menu dialog box, click **Confirms to specification code, IN/OUT**.

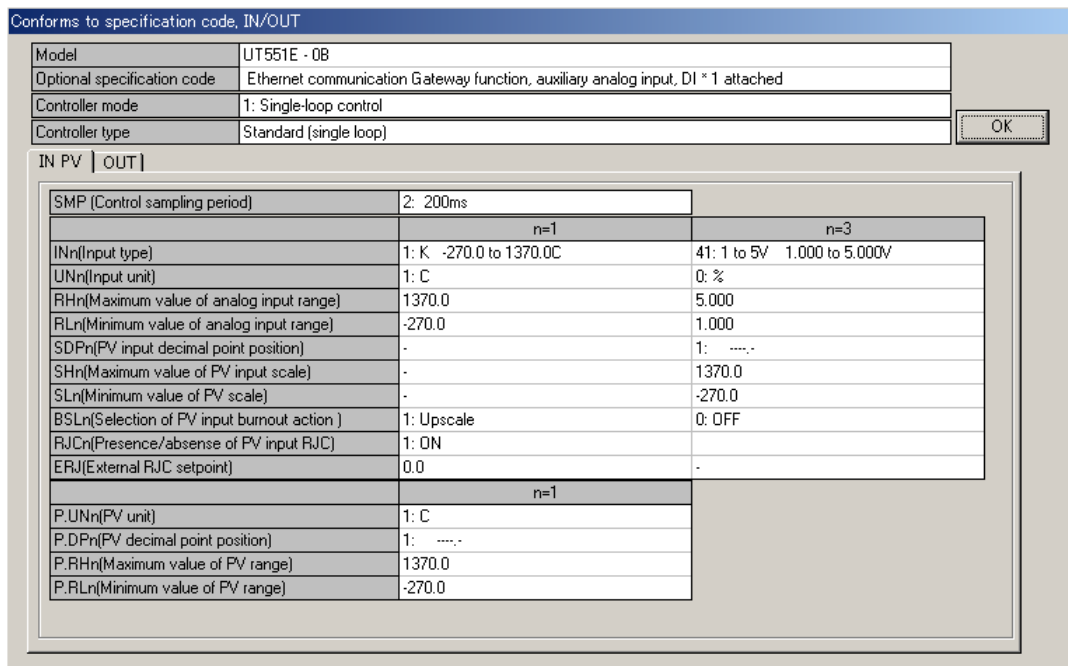


Figure 4.3.15 Confirms to Specification Code, IN/OUT Dialog Box (Example of UT551)

- **Parameters to be confirmed**

- Specification code
- Controller mode (except the 400 series)
- PV input-related parameters (IN)
- Control output-related parameters (OUT)

- **To go back to the Setup Parameter Menu dialog box**

Click OK.

- **To change the settings after confirmation**

- (1) Go back to the Setup Parameter Menu dialog box.
- (2) On the menu bar, click **Parameter setting** and choose the following:
 - **Model/specification code selection**, to change the specification code
GREEN series model names can't be changed to old GREEN series model names.
 - **Controller mode setting**, to change the controller mode
 - **IN parameter setting**, to change the IN parameters
 - **OUT/VALV parameter setting**, to change the OUT/VALV parameters
- (3) Change the parameter settings in each dialog box.



NOTE

Note that changing the controller mode and the IN parameter will initialize all parameters other than the controller mode, the IN parameters and the RS-485 parameters. You must therefore be careful not to change the controller mode accidentally.

4.4 Setting Operating Parameters

This section describes the operations concerning the Operating Parameter Menu dialog box.

4.4.1 Operating Parameter Menu Configuration

Figure 4.4.1 shows the configuration of the operating parameter menu.

See Also

Section 1.4 for information about show/hide of operating parameters of each model.

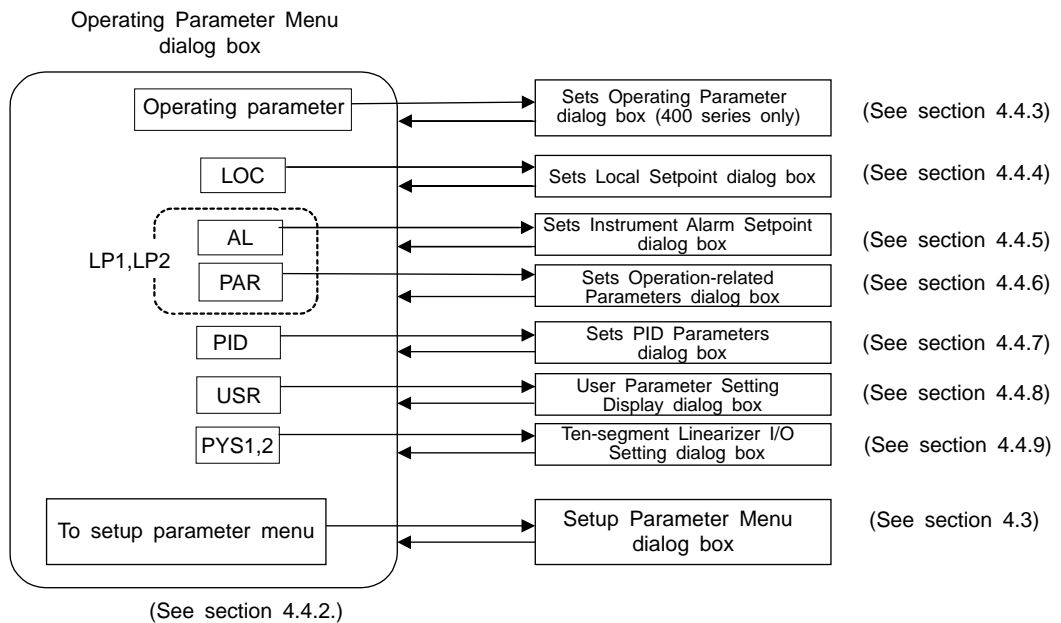


Figure 4.4.1 Operating Parameter Menu Configuration

4.4.2 Operating Parameter Menu

From the Operating Parameter Menu dialog box, you can open individual operating parameter setting dialog boxes.

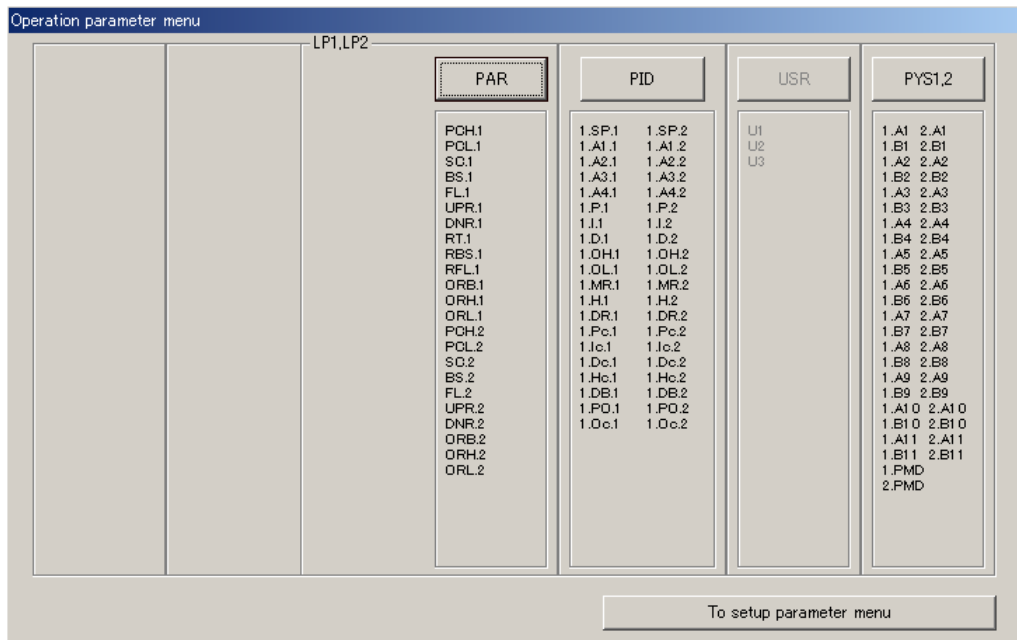


Figure 4.4.2 Operating Parameter Menu Dialog Box (Example of UT551)

● To open the Operating Parameter Menu dialog box

The menu can be opened in 2 ways:

- In the Setup Parameter Menu dialog box, click **To operating parameter**.
- In the menu bar, click **Parameter setting**, and then choose **Operating parameter setting**.

(This operation is only possible when **Parameter setting** is shown in the menu bar.)

● To open individual operating parameter setting dialog boxes

Click one of the menu buttons (**Operating parameter**, **LOC**, ... , and **PYS1,2**).

→ The parameter setting dialog box of the clicked button opens.

● To open a dialog box other than those for operating parameter setting

In the Operating Parameter Menu, click **To setup parameter menu**.

→ The Setup Parameter Menu dialog box opens.

4.4.3 Setting Operating Parameters

Set the operating parameters for UT450/UT420.

● To open the Sets Operating Parameter dialog box

In the Operating Parameter Menu dialog box, click **Operating parameter**.

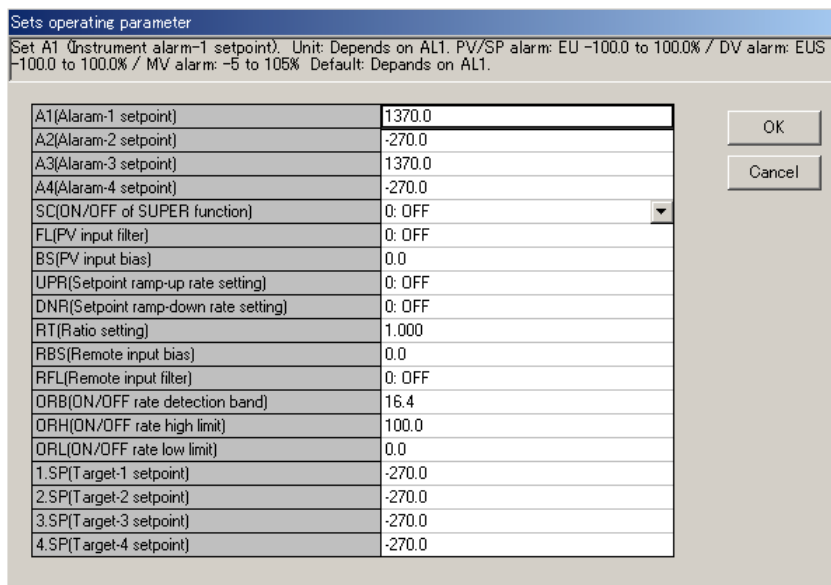


Figure 4.4.3 Sets Operating Parameter Dialog Box (Example of UT450)

● Parameters to be set

- Alarm setpoint (An: n = 1 to 4)
 - For PV/SP alarms: -100.0 to 100.0% of PV input range
 - For deviation alarms: -100.0 to 100.0% of PV input range span
 - For timer alarm (alarm 1 only): 00.00 to 99.59 (hh.mm or mm.ss)
 - For output alarms: -5.0 to 105.0%
- On/off of “super” function (SC)
 - 0: OFF; 1: Overshoot suppressing function; 2: Hunting suppressing function (Stable mode); 3: Hunting suppressing function (Response mode)



NOTE

Even if you set parameter SC to “ON,” the super function will not operate unless the parameters for PID computation — P (proportional band), I (integral time), and D (derivative time) — are all set.

- PV input filter (FL)
 - Set 0 (OFF) or an optional value within the range of 1 to 120 seconds.
- PV input bias (BS)
 - Set an optional value within the range of -100.0 to 100.0% of PV input range span.
- Setpoint ramp-up rate (UPR)
 - Set an optional value within the range of 0.0% + 1 digit to 100.0% of PV input range span.
- Setpoint ramp-down rate (DNR)
 - Set an optional value within the range of 0.0% + 1 digit to 100.0% of PV input range span.
- Ratio setting (RT)
 - Set an optional value within the range of 0.001 to 9.999.

- Remote input bias (RBS)
Set an optional value within the range of -100.0 to 100.0% of PV input range span (EUS).
- Remote input filter (RFL)
Set 0 (OFF) or an optional value within the range of 1 to 120 seconds.
- ON/OFF rate detection band (ORB): 0.0 to 100.0% of PV input range span
- ON/OFF rate high limit (ORH): ORL + 1 digit to 105.0%
- ON/OFF rate low limit (ORL): -5.0% to ORH - 1 digit
- Target setpoint (n.SP: n = 1 to 8 (PID number)): 0.0 to 100.0% of PV input range

● To go back to the Operating Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operating Parameter Menu dialog box. This operation will not update the parameter settings.

4.4.4 Setting Local Setpoint (LOC)

Set the parameters involved in the local mode operation. (for UP550 and UP750 only.)

● To open the Sets Local Setpoint dialog box

In the Operating Parameter Menu dialog box, click **LOC**.

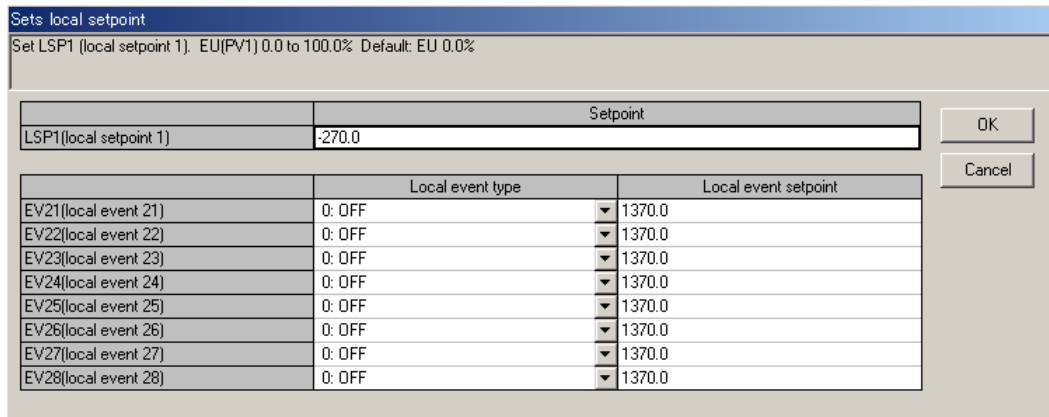


Figure 4.4.4 Sets Local Setpoint Dialog Box (Example of UP750)

● Parameters to be set

In this dialog box, you can set parameters used for local mode operation of UP750/UP550: the local setpoint and the types and setpoints for local events (used as PV events).

- Local setpoint (LSPn: n = 1, 2): 0.0 to 100.0% of PV input range
- Local event (EVn: n = 21 to 28): Local event type
 - 0 to 10, 28 to 31, 41 to 50, 68 to 71
 - Each of these values represents the following:
 - 0: OFF
 - 1: PV high limit
 - 2: PV low limit
 - 3: high limit deviation
 - 4: low limit deviation
 - 5: high limit deviation, de-energized during alarm
 - 6: low limit deviation, de-energized during alarm
 - 7: deviation of high or low limits
 - 8: high and low limits within deviation
 - 9: PV high limit, de-energized during alarm
 - 10: PV low limit, de-energized during alarm
 - 28: SP high limit
 - 29: SP low limit
 - 30: Control output high limit
 - 31: Control output low limit
- Local event setpoint
 - PV/SP events: -100.0 to 100.0% of PV input range
 - Deviation events: -100.0 to 100.0% of PV input range span
 - Control output events: -5 to 105.0%

● To go back to the Operating Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operating Parameter Menu dialog box. This operation will not update the parameter settings.

4.4.5 Setting Instrument Alarms (AL)

Set the instrument alarm setpoints. (for UP550 and UP750 only.)

● **To open the Sets Instrument Alarm Setpoint dialog box**

In the Operating Parameter Menu dialog box, click **AL**.

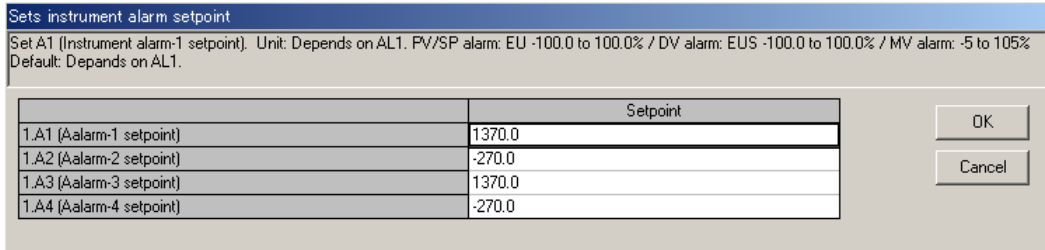


Figure 4.4.5 Sets Instrument Alarm Setpoint Dialog Box (Example of UP750)

● **Parameters to be set**

- Instrument alarm setpoint (An: n = 1 to 4)
 - PV/SP alarms: -100.0 to 100.0% of PV input range
 - Deviation alarms: -100.0 to 100.0% of PV input range span
 - Timer alarms (A1 only): 00.00 to 99.59 (hh.mm or mm.ss)
 - Output alarms: -5.0 to 105.0%

● **To go back to the Operating Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operating Parameter Menu dialog box. This operation will not update the parameter settings.

4.4.6 Setting Operation-related Parameters (PAR)

Set operating parameters.

● To open the Sets Operation-related Parameters dialog box

In the Operating Parameter Menu dialog box, click **PAR**.

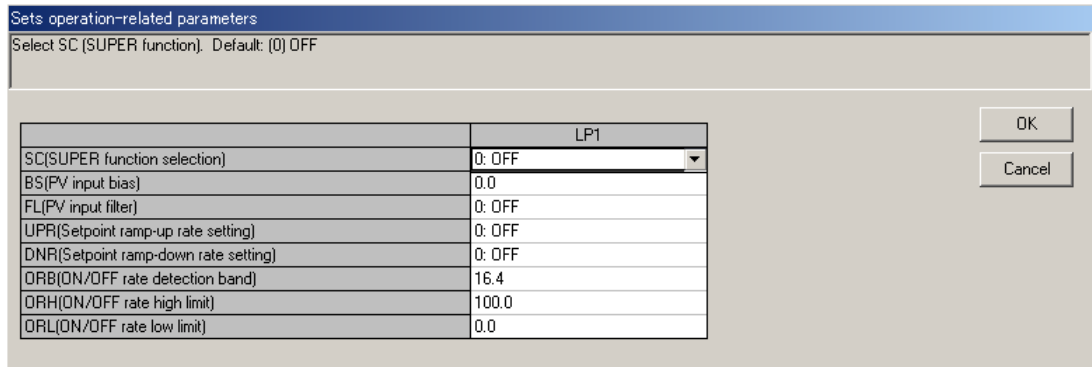


Figure 4.4.6 Sets Operation-related Parameters Dialog Box (Example of UT551)

● Parameters to be set

- Parameter for better controllability
- On/off of “super” function selection (SC)
0: OFF; 1: Overshoot suppressing function; 2: Hunting suppressing function (Stable mode); 3: Hunting suppressing function (Response mode)



NOTE

Even if you set parameter SC to “ON,” the super function will not operate unless the parameters for PID computation — P (proportional band), I (integral time), and D (derivative time) — are all set.

● Parameters related to PV calculation

These parameters set the factors of calculation provided for PV.

- PV input bias (BS)
Set an optional value within the range of -100.0 to 100.0% of PV input range span.
- PV input filter (FL)
Set 0 (OFF) or an optional value within the range of 1 to 120 seconds.

● Parameters related to SP calculation

These parameters are used in combination with the setup parameter TMU (time unit for ramp-rate setting) and set the amount of SP change rate in order to prevent sudden changes during SP changing operation.

- Setpoint ramp-up rate setting (UPR)
Set an optional value within the range of 0.0% + 1 digit to 100.0% of PV input range span.

- Setpoint ramp-down rate setting (DNR)
Set an optional value within the range of 0.0% + 1 digit to 100.0% of PV input range span.

● **Parameters related to calculation for input**

These parameters set the factors of calculation provided for input.

- Ratio setting (RT)
Set an optional value within the range of 0.001 to 9.999.
- Remote input bias (RBS)
Set an optional value within the range of -100.0 to 100.0% of PV input range span.
- Remote input filter (RFL)
Set 0 (OFF) or an optional value within the range of 1 to 120 seconds.

● **Parameters related to ON/OFF rate calculation**

These parameters set detection band and limit values for ON/OFF rate.

- ON/OFF rate detection band (ORB): 0.0 to 100.0% of PV input range span
- ON/OFF rate high limit (ORH): ORL + 1 digit to 105.0%
- ON/OFF rate low limit (ORL): -5.0% to ORH - 1 digit

● **To go back to the Operating Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operation Parameter Menu dialog box. This operation will not update the parameter settings.

4.4.7 Setting PID Group Parameters

In the display example below, only loop-1 parameters are shown because single-loop control is assumed. However, PID group parameters are provided for both loop 1 and loop 2.

● **To open the Sets PID Parameters dialog box**

In the Operating Parameter Menu dialog box, click **PID**.

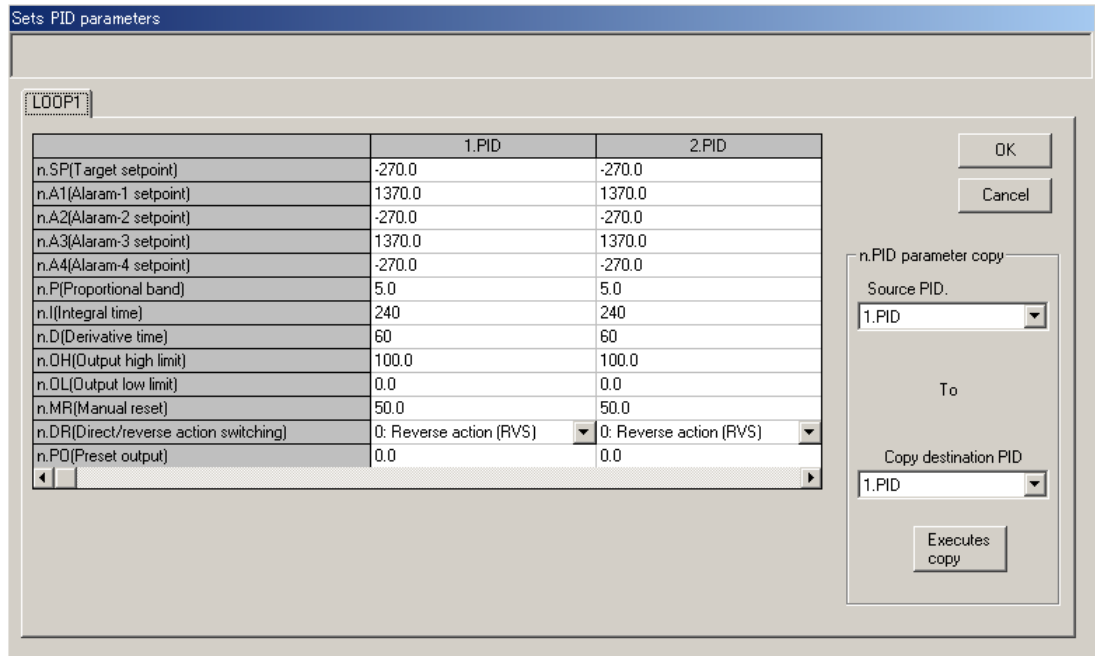


Figure 4.4.7 Sets PID Parameters Dialog Box (Example of UT551)

● **Parameters to be set**

For each loop, up to eight groups of parameter settings can be preset under the group names of 1.PID to 8.PID. The number of PID groups shown depends on the value of setup parameter GRP (see section 4.3.5). Each PID group contains the following parameters, though some of the parameters differ between controller models.

Parameters unnecessary for the selected controller model and controller mode are displayed with “—” in their text boxes.

- Target setpoint (n.SP, where n = 1 to 8: PID No.)
0.0 to 100.0% of PV input range
- Alarm setpoint (n.Am, where n = 1 to 8: PID No.; m = 1 to 4)
 - PV/SP alarms: -100.0 to 100.0% of PV input range
 - Deviation alarms: -100.0 to 100.0% of PV input range span
 - Timer alarms (A1 only): 00.00 to 99.59 (hh.mm or mm.ss)
 - Output alarms: -5.0 to 105.0%
- Proportional band (n.P, where n = 1 to 8: PID No.)
0.1 to 999.9 % (0.0 to 999.9 % for heating/cooling control)
- Integral time (n.I, where n = 1 to 8: PID No.)
0: OFF, 1 to 6000 sec

- Derivative time (n.D, where n = 1 to 8: PID No.)
0: OFF, 1 to 6000 sec
- Output high limit (n.OH, where n = 1 to 8: PID No.)
-0.5 to 105.0 % (0.0 to 105.0 % for heating side)
- Output low limit (n.OL, where n = 1 to 8: PID No.)
-5.0 % to 10.0% (0.0 to 105.0 % for cooling side)
- Manual reset (n.MR, where n = 1 to 8: PID No.)
-5.0 to 105.0%
- Direct/reverse action switching (n.DR, where n = 1 to 8: PID No.)
0: Reverse action, 1: Direct action
- Preset output (n.PO, where n = 1 to 8: PID No.)
-5.0 to 105.0 %

● To copy PID parameter settings

You can copy parameter settings between PID groups for the same loop.

Example of operation

- (1) At the **Source PID**, click the arrow button and select "1.PID."
- (2) At the **Copy destination PID**, click the arrow button and select "4.PID."
- (3) Click **Executes copy**.
- (4) The settings of 1.PID parameters are copied to 4.PID parameters.

● To go back to the Operating Parameter Menu dialog box

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operating Parameter Menu dialog box. This operation will not update the parameter settings.

4.4.8 Setting User Parameters (USR)

Set the user parameters.



NOTE

Units for user parameters can be set only when the controller mode 21 (custom computation control) is selected. The units must be set identical to the user parameter units specified using the custom computation building tool. If not, the user parameter data will not be downloaded to the target controller.

● **To open the User Parameter Setting Display dialog box**

In the Operating Parameter Menu dialog box, click **USR**.

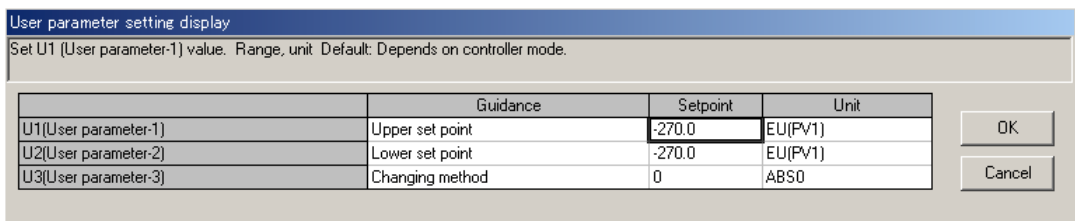


Figure 4.4.8 User Parameter Setting Display Dialog Box

● **Parameters to be set**

- USER parameter (Un: n = 1 to 8)
U4 to U8 is for models UT750 and UP750 only.

See Also

Section 4.6 in the LL200 PC-based Custom Computation Building Tool user’s manual (IM 05G01B22-02E) for the USER parameter units.

● **To go back to the Operating Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operating Parameter Menu dialog box. This operation will not update the parameter settings.

4.4.9 Setting Ten-segment Linearizer 1 and 2 (PYS1, 2)

Set the input/output parameters for ten-segment linearizer 1 and 2.

● **To open the Ten-segment Linearizer I/O Setting dialog box**

In the Operating Parameter Menu dialog box, click **PYS1,2**.

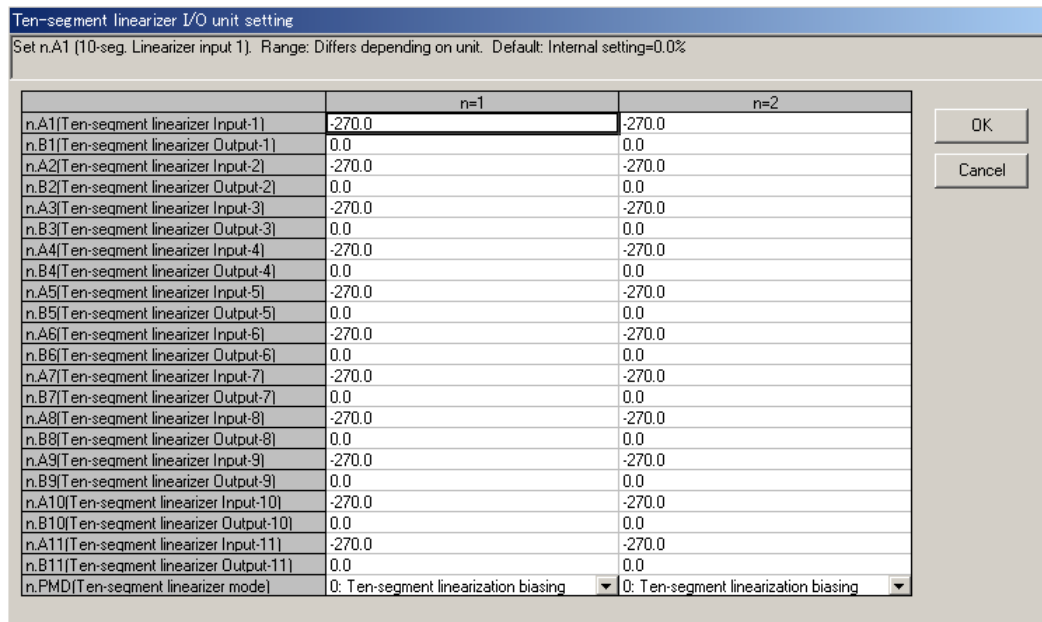


Figure 4.4.9 Ten-segment Linearizer I/O Setting Dialog Box (Example of UT551)

● **Parameters to be set**

The following parameters are provided for each of ten-segment linearizer 1 and 2.

- Ten-segment linearizer input (n.Am: n=1 to 2, m = 1 to 11): -66.7 to 105.0% of PV input range
- Ten-segment linearizer output (n.Bm: n=1 to 2, m = 1 to 11):
-66.7 to 105.0% of PV input range
-66.7 to 105.0% of PV input range span
- Ten-segment linearizer mode (n.PMD: n = 1 to 2):
Select ten-segment linearizer biasing (0) or approximation (1).

● **To go back to the Operating Parameter Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Clicking **Cancel** will discard the changes made and return you to the Operating Parameter Menu dialog box. This operation will not update the parameter settings.

4.5 Parameter Menu for 300 Series

This section describes how to make settings in the Menu dialog box for the 300 series of controllers.

4.5.1 Configuration of Menu Dialog Box

Figure 4.5.1 shows the configuration of the Menu dialog box.

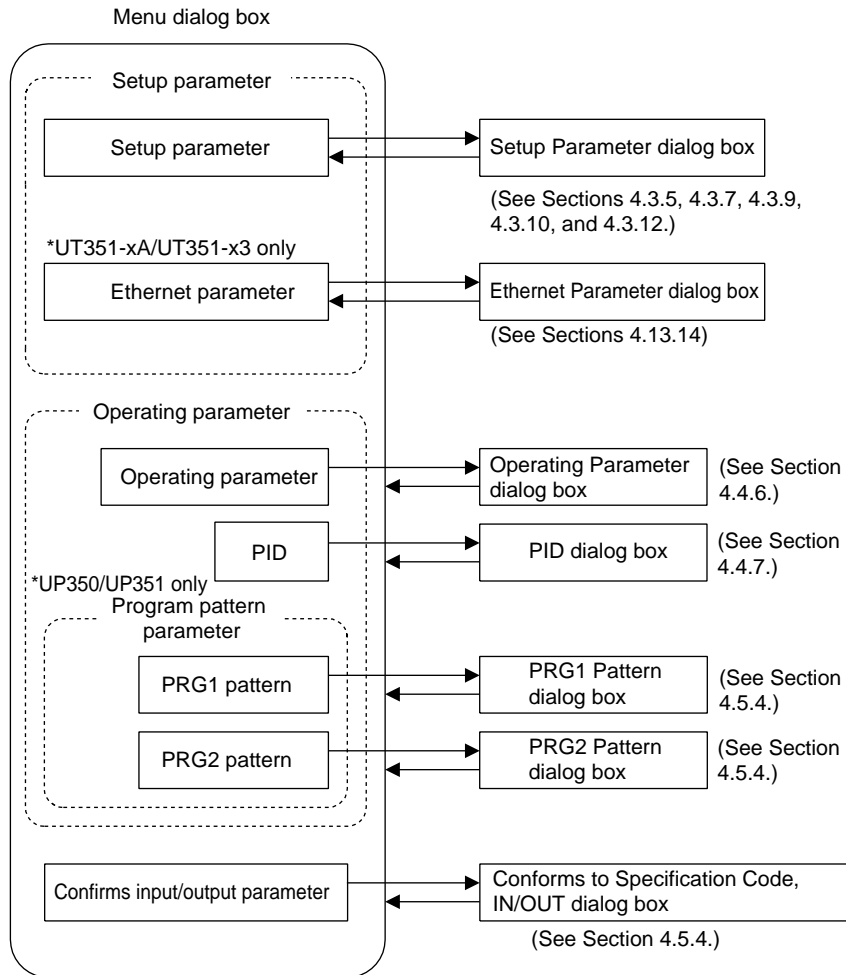


Figure 4.5.1 Parameter Menu Configuration

4.5.2 Parameter Menu

Shown below is the Parameter Menu dialog box for the 300 series. From this dialog box, you can open dialog boxes for setting individual settings.

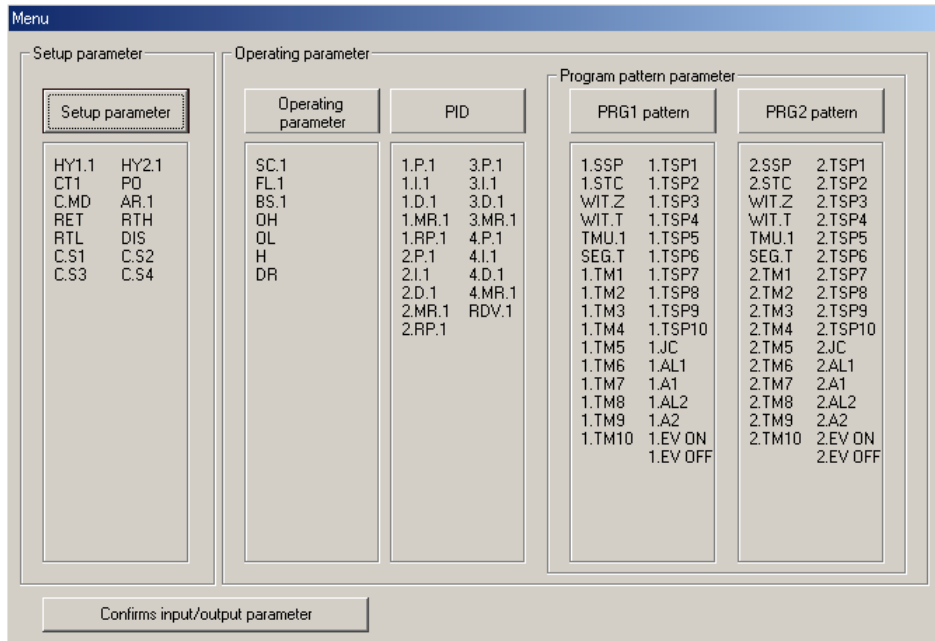


Figure 4.5.2 Parameter Menu Dialog Box (Example of UP350)

● To open the Parameter Menu dialog box

The menu can be opened in 3 ways:

- In the Sets Input/Output dialog box, click **OK**.
- The menu opens after parameter data has been loaded from a controller.
- The menu opens after the Open User File dialog box.

● To open a parameter setting dialog box

Click one of the buttons in the upper part of the dialog box (**Setup parameter, Operating parameter, etc.**).

→ The corresponding parameter setting dialog box appears.

● To view the input/output parameter settings

Click **Confirms input/output parameter**.

→ The Confirms to Specification Code, Controller Mode, IN/OUT dialog box appears.

4.5.3 Setting Patterns PRG1 and PRG2 (for UP350 and UP351 only)

Set parameters for PRG1 and PRG2 patterns in the following way.

- **To open the PRG1 Sets Program Pattern dialog box or PRG2 Sets Program Pattern dialog box**

In the Parameter Menu dialog box, click **PRG1 pattern** or **PRG2 pattern**.

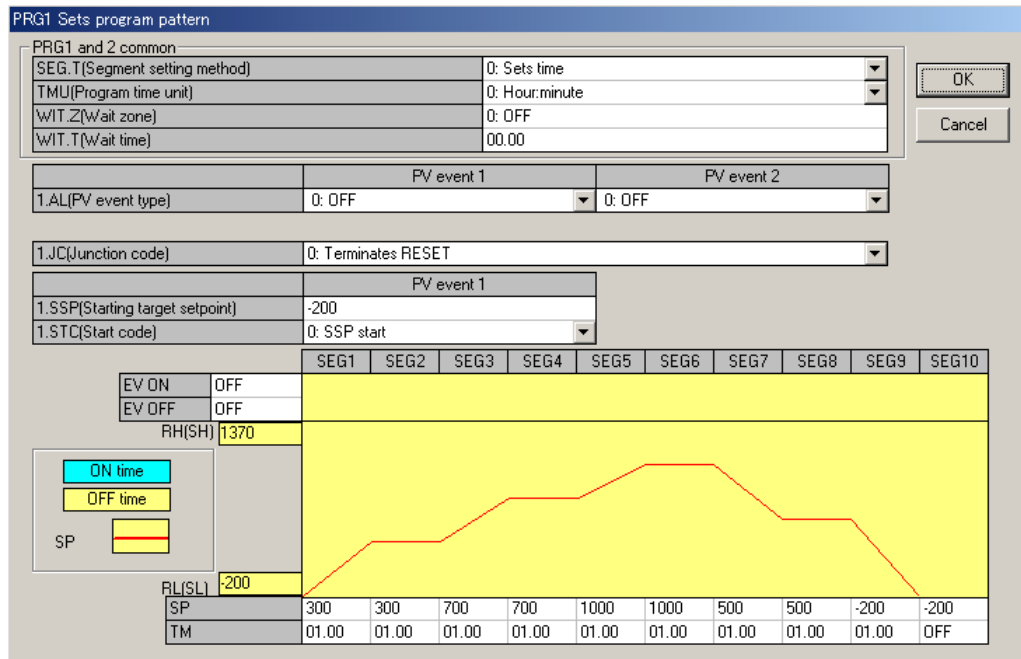


Figure 4.5.3 PRG1 Sets Program Pattern Dialog Box

- **Parameters to be set**

SEG.T, TMU, WIT.Z and WIT.T are common parameters and their settings are common to PRG1 and PRG2.

The following parameters exist for both PRG1 and PRG2.

- SEG.T (Segment setting method) 0: Sets time; 1: Sets ramp
Selects the segment setting method.



NOTE

Changing the value of SEG.T clears all the previous program pattern settings.

- TMU (Program time unit) 0: hh:mm; 1: mm:ss
Selects the time unit for the program pattern and wait time settings.
- WIT.Z (Wait zone) 0 (OFF), 1.0 to 10.0% of the PV input range span
Sets the allowance of the deviation between the program setpoint and feedback PV.

- WIT.T (Wait time) 0 (OFF), 0.00 to 99.59 (hh:mm or mm.ss)

WIT.T is also set as the time length of waiting for PV to enter the wait zone. Wait time is set in the same unit as is set for TMU.

- AL (PV event type) OFF, 1 to 10 (see corresponding event types shown below)

Specifies the type of alarm that will be output as a PV event.

- 1: PV high limit
- 2: PV low limit
- 3: High limit deviation
- 4: Low limit deviation
- 5: High limit deviation, de-energized during alarm
- 6: Low limit deviation, de-energized during alarm
- 7: Deviation of high and low limits
- 8: Deviation within high and low limits
- 9: PV high limit, de-energized during alarm
- 10: PV low limit, de-energized during alarm

- JC (Junction code) 0: Reset end; 1: Hold end
2: Start pattern 1; 3: Start pattern 2

Specifies the operation at the end of the program pattern.

- SSP (Starting target setpoint) 0.0 to 100.0% of the PV input range
Sets the target setpoint used at the start of program operation.

- STC (Start code) 0: Starts from SSP
1: Ramp-prioritized PV start
2: Time-prioritized PV start

Sets the start action of the program pattern.

- EV ON (ON time for time event) OFF, 0.00 to 99.59 in unit set for TMU

- EV OFF (OFF time for time event) OFF, 0.00 to 99.59 in unit set for TMU

- SP (Target setpoint) 0.0 to 100.0% of the PV input range
Sets the final target setpoint.

- TM (Segment time)

· When time-setting method is selected (SEG.T = 0), enter the time length of each segment:

OFF, 0.00 to 99.59 in unit set for TMU (-1:deletion)

· When ramp-setting method is selected (SEG.T = 1), enter the amount of PV change per hour or minute for each segment: 0.0 to 100.0% of the PV input range span.

● **To return to the Parameter Menu dialog box**

Click **OK** or **Cancel** to return to the Parameter Menu dialog box.

4.5.4 Viewing the Input/Output Parameter Settings

You can view the current settings of the basic parameters (related to inputs and outputs) in the following dialog box.

● **To open the dialog box for viewing input/output-related parameters**

In the Parameter Menu dialog box, click **Confirms input/output parameter**. The dialog box having the name of “Confirms to Specification Code, IN/OUT” then appears.

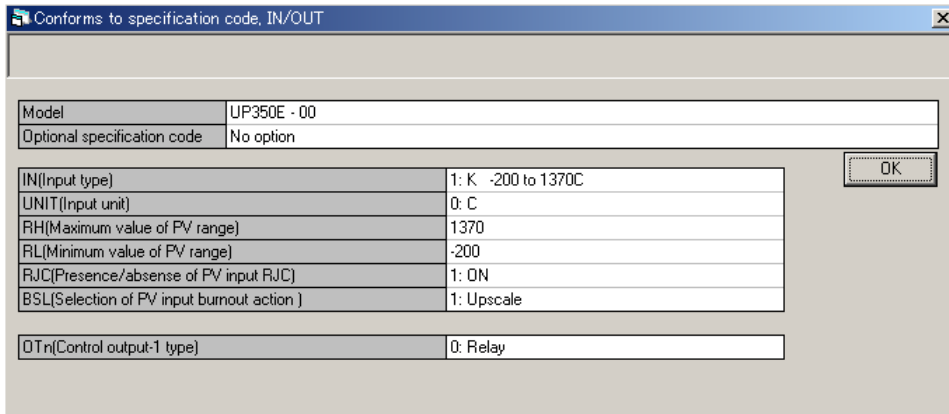


Figure 4.5.4 Confirms to Specification Code, IN/OUT Dialog Box (Example of UP350)

● **Parameters that can be viewed**

Current settings of the following parameters are shown as a list.

- Model and specification codes
- Input-related parameters
- Output-related parameter

● **To return to the Parameter Menu dialog box**

To return to the Parameter Menu dialog box, click **OK**.

● **To change the settings after they have been viewed**

- (1) Click **OK** to return to the Parameter Menu dialog box.
- (2) On the menu bar, click **Parameter setting** and choose:
 - **Model/specification code selection**, to change the model and specification codes. GREEN series model names can't be changed to old GREEN series model names.
 - **Input/output parameter setting** to change the input/output parameters.
- (3) Change the settings in the dialog box that thus opens.



NOTE

Note that changing the Input/Output Parameter will initialize all parameters other than Input/Output parameters and SEG.T parameter.

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5. Working with Parameter Data Files

This chapter describes the procedures for the following:

- Saving parameter data created with the LL100 or uploaded from a GREEN Series controller as a file on disk.
- Reading parameter data files saved on disk, with the LL100.
- Comparing parameter data values in LL100 with those in a parameter file saved on disk.

See Also

Section 4.2.3 “Opening a User File” for each parameter file.

5.1 Setting the File Information

Before saving parameter data, you can enter a title, creator, date of creation, and comments for the file. However, this information will not be downloaded to the controller.

● To set the file information

- (1) On the menu bar, click **File** and then choose **Information**.
The File Information dialog box (Figure 5.1.1) appears.
- (2) Type the necessary file information in each text box.
- (3) Click **OK**.
- (4) Then, proceed to section 5.2.1, “Saving Parameter Data on Disk.”

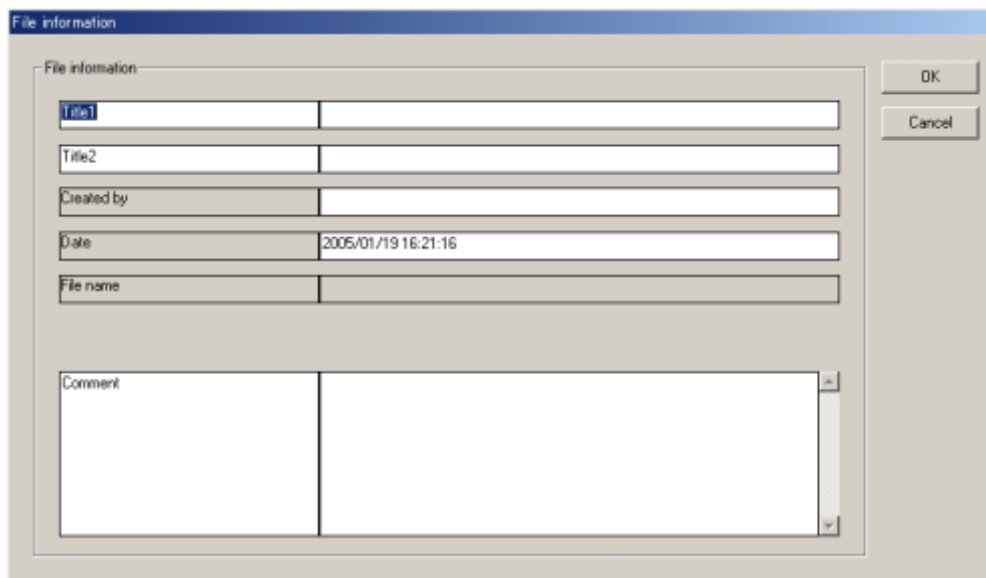


Figure 5.1.1 File Information Dialog Box

TIP

The UT300 series controllers do not have “Parameter name.”

5.2 Saving/Reading Data on/from Disk and Comparing Data Values

5.2.1 Saving Parameter Data on Disk

- **To save the data under a new filename**

Carry out the following steps to save the parameter data to disk:

- (1) On the menu bar, click **File**, and then choose **Save As**.

The Save As dialog box (Figure 5.2.1) appears.

- (2) In the **File name** text box, type a name (within 16 alphanumeric characters) and then click **Save**.

- (3) The parameter data is saved to disk.

The file is normally located in C:\USER\controller_model (ex. UT750 and UP750) directory.

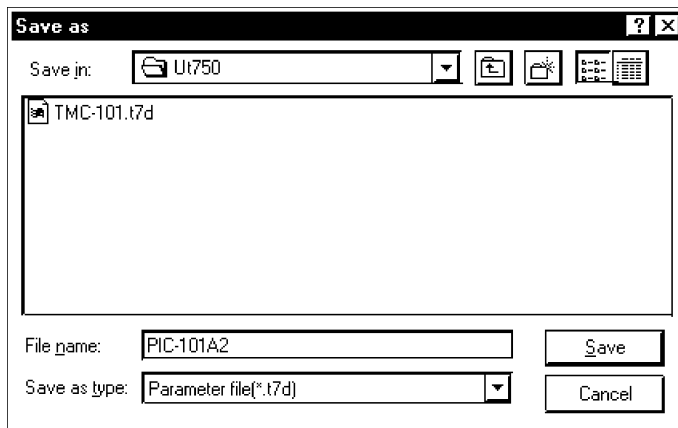


Figure 5.2.1 Save As Dialog Box (Example of UT750)

- **To overwrite the current file**

- (1) On the menu bar, click **File**, and then choose **Save**.

- (2) The parameter data is saved to disk, overwriting the current file you are working with.

5.2.2 Reading Parameter Data from Disk

Read the parameter data saved to disk with the LL100 tool.



NOTE

If you read data from a disk, it replaces all the current data in the LL100. If you need the current data, save it to disk before reading new data.

● To read data from disk

- (1) On the menu bar, click **File**, and then choose **Open**.
The Open User File dialog box (Figure 5.2.2) appears.
- (2) From the list box, select the file you wish to read.
- (3) Click **Open**.

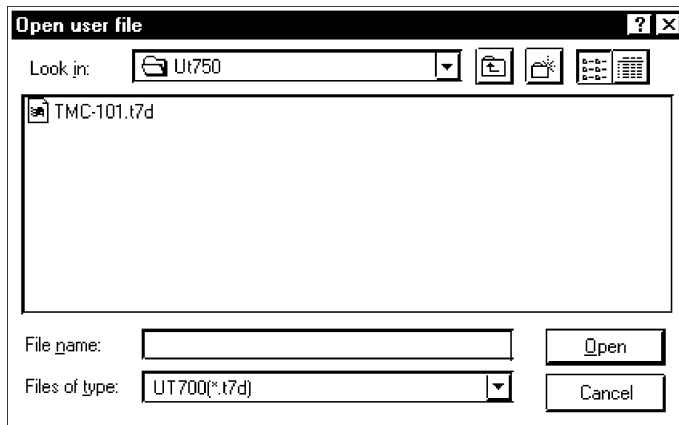


Figure 5.2.2 Open User File Dialog Box (Example of UT750)

5.2.3 Comparing Parameter Data Values in LL100 with Those Saved to Disk

You can compare parameter data values in the LL100 with those saved to disk.



NOTE

The comparison is possible only when the parameter values set in the Model/Specification Code Selection dialog box match the controller model and specification code settings saved on disk.

Also note that the parameters which display “—” in their text boxes and the set units will not be compared.

● **To compare parameter data values between the LL100 and those saved to disk**

- (1) On the menu bar, click **File**, and then choose **Compare**.
- (2) From the list box, select the parameter data file you wish to compare.
- (3) Click **Open**.
- (4) A message appears saying “The data in the Parameter Setting Tool will be compared with those saved to the file on disk. OK?”
- (5) Click **Yes** to start comparing.
- (6) When all parameter data match, a message appears saying “Non-matching parameter not detected.”

If any parameter value does not match, a message appears saying “Non-matching parameter detected. Do you want to see the list?” Click **Yes** to open the Non-matching Parameters dialog box.

The Non-matching Parameter dialog box (Figure 5.2.3) appears.

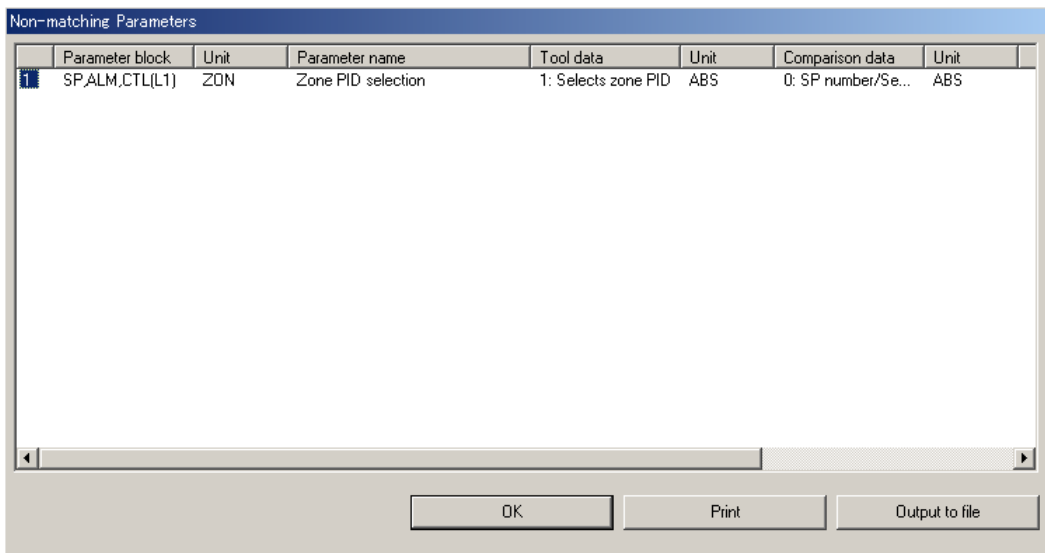


Figure 5.2.3 Non-matching Parameter Dialog Box

6. Uploading/Downloading Data from/to Controller and Comparing Data Values

This chapter describes the procedures for the following:

- Uploading parameter data from a controller
- Downloading parameter data to a controller
- Comparing parameter data values with those in a controller

6.1 Uploading Parameter Data from Controller

Upload the parameter data from a GREEN Series controller to the LL100.



NOTE

If you upload data from a controller, it replaces all the current data in the LL100. If you need the current data, save it to disk before uploading.

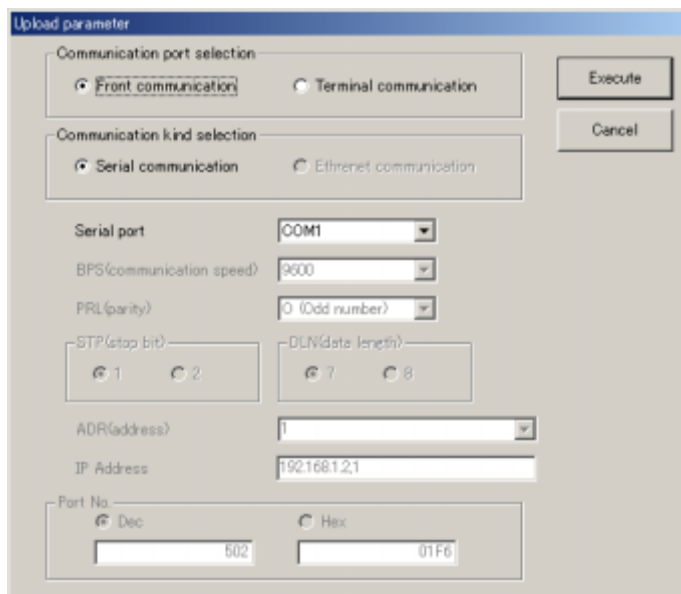


Figure 6.1.1 Upload Parameter Dialog Box

● To upload via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Upload from controller**.
The Upload Parameter dialog box (Figure 6.1.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **Execute**.
- (5) When uploading is complete, a message appears informing that “Parameter data have been uploaded from the controller.”

See Also

Section 2.3, "Connecting Controller to Personal Computer," for how to connect via the optical communication adapter.

● To upload via serial communication terminals

- (1) On the menu bar, click **Communication**, and then choose **Upload from controller**.
The Upload Parameter dialog box (Figure 6.1.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (5) Set the RS-485 communication conditions:
 - Communication speed, parity, and address: Select from drop-down lists.
 - Stop bit and data length: Select with option buttons.Use the same settings for the target controller's RS-485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When uploading is complete, a message appears informing that "Parameter data have been uploaded from the controller."
- (8) Click **OK**. The Setup Parameter Menu dialog box appears.



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring when using the rear terminals.

● To upload via Ethernet communication terminal

- (1) On the menu bar, click **Communication**, and then choose **Upload from controller**. The Upload Parameter dialog box (Figure 6.1.1) opens.
- (2) Click **Terminal communication** (this means to use the communication terminals at the rear of the controller).
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When the parameter data has been successfully uploaded, the tool displays a message stating "Parameter data has been uploaded from the controller."
- (8) Click **OK**. The Setup Parameter Menu dialog box appears.



NOTE

Uploading parameters via Ethernet is impossible for the UT750 in UT mode 21 and the UP750 in UP mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

6.2 Downloading Parameter Data to Controller

Download the parameter data from LL100 to a GREEN Series controller.



WARNING

Do not download parameter data to a controller while the controller is being used. Be sure to change the controller status to OFFLINE before you execute downloading.

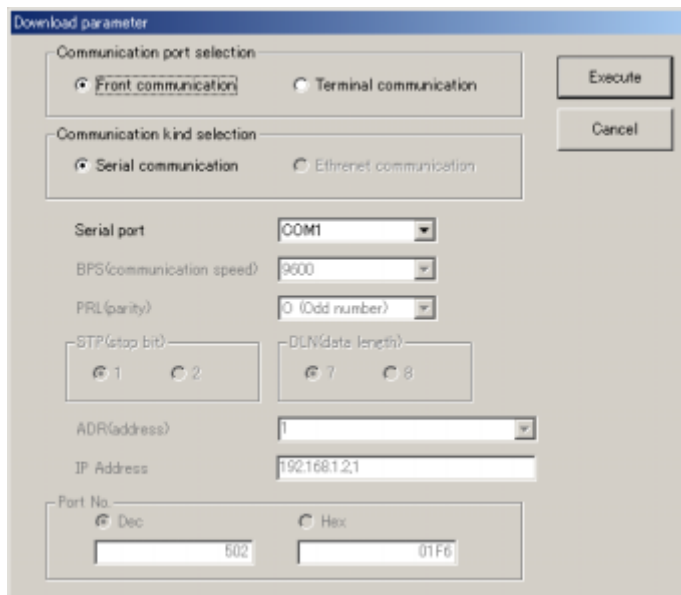


Figure 6.2.1 Download Parameter Dialog Box

● To download via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Download to controller**.
The Download Parameter dialog box (Figure 6.2.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **Execute**.
- (5) When downloading is complete, a message appears informing that “Parameter data have been downloaded to the controller.”

See Also

Section 2.3, “Connecting Controller to Personal Computer,” for how to connect via the optical communication adapter.

● To download via serial communication terminals

- (1) On the menu bar, click **Communication**, and then choose **Download to controller**.
The Download Parameter dialog box (Figure 6.2.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (5) Set the RS-485 communication conditions:
 - Communication speed, parity, and address: Select from drop-down lists.
 - Stop bit and data length: Select with option buttons.
Provide the same settings for the target controller's RS-485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When downloading is complete, a message appears informing you that "Parameter data have been downloaded to the controller."



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring when using the rear terminals.



NOTE

Before downloading, the LL100 verifies the model and specification code (including option code), controller mode, then the sampling period between the parameter data to be downloaded and those in the target controller. On detecting disagreement with the parameters above, the tool acts in the following ways.

- 1) Non-matching model and specification code: The tool cancels the downloading.
- 2) Non-matching controller mode: The tool asks you whether to continue or cancel the downloading. If you click **Continue**, the tool changes the controller mode in the target controller and restarts it; after about 15 seconds, the tool downloads remaining parameter data.
- 3) Non-matching sampling period: A message appears informing you that "Change the sampling period data?" after click OK, and then restarts the controller; after about 15 seconds, it downloads remaining parameter data.

The tool will not download in the following cases:

- No filename is given to the parameter data.
- When downloading data that sets custom computation control, the target controller has no custom computation information or the controller type does not match.

● **To download via Ethernet communication terminal**



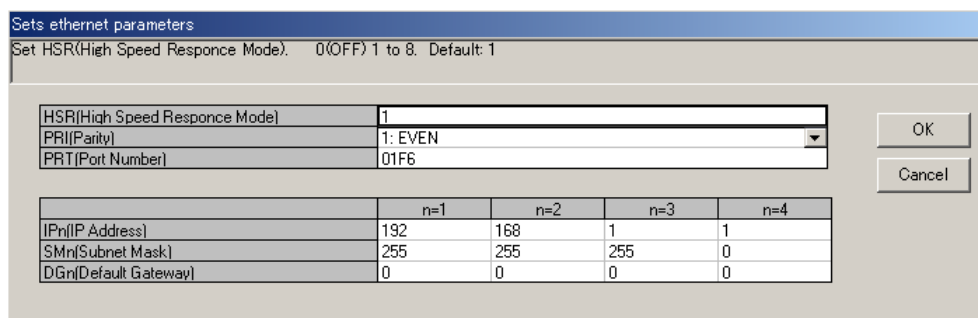
NOTE

When downloading the parameter data to the controller, the values set in the Sets Ethernet Parameters dialog box (High-speed response mode, IP address, Subnet mask and Default gateway) are downloaded to the Ethernet parameters of the controller. Be sure to confirm that the values set in the Sets Ethernet Parameters dialog box are appropriate.

The initial values are as follows.

High-speed response mode: 1; IP address: 192.168.1.1; Subnet mask: 255.255.255.0; Default gateway: 0.0.0.0

* Ask the system administrator for the settings of the network you are connecting to.



- (1) On the menu bar, click **Communication**, and then choose **download from controller**. The Download Parameter dialog box (Figure 6.2.1) opens.
- (2) Click **Terminal communication** (this means to use the communication terminals at the rear of the controller).
- (3) Click **Ethernet communication**.

- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When the parameter data has been successfully downloaded, the tool displays a message stating "Parameter data has been downloaded from the controller."



NOTE

Downloading parameters via Ethernet is impossible for the UT750 in UT mode 21 and the UP750 in UP mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

6.3 Comparing Parameter Data Values of the Tool and Controller

You can compare the parameter data values of the LL100 with those of a controller.



NOTE

The comparison is only possible when the parameter values set in the Model/Specification Code Selection dialog box match the target controller's model and specification codes. Also note that the parameters which display “—” in their text boxes and the parameters for a unit setup will not be compared.

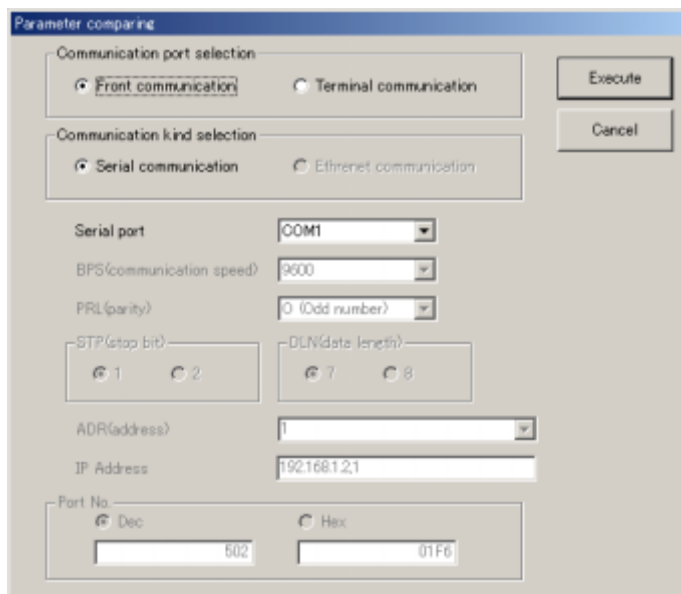


Figure 6.3.1 Parameter Comparing Dialog Box

● To compare via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Compare**.
The Parameter Comparing dialog box (Figure 6.3.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **Execute**.
- (5) When all parameter data match, a message appears saying “Non-matching parameter not detected.” If any parameter value does not match, a message appears saying “Non-matching parameter detected. Do you want to see the list?”
- (6) Click **Yes** to open the Non-matching Parameters dialog box.

See Also

Section 2.3, “Connecting Controller to Personal Computer,” for how to connect via the optical communication adapter.

● To compare via serial communication terminals

- (1) On the click **Communication**, and then choose **Compare**.
The Parameter Comparing dialog box (Figure 6.3.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (5) Set the RS-485 communication conditions:
 - Communication speed, parity, and address: Select from drop-down lists.
 - Stop bit and data length: Select with option buttons.Use the same settings for the target controller's RS-485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When all parameter data match, a message appears saying "Non-matching parameter not detected." If any parameter value does not match, a message appears saying "Non-matching parameter detected. Do you want to see the list?"
- (8) Click **Yes** to open the Non-matching Parameters dialog box.



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring when using the rear terminals.

● To compare via Ethernet communication terminal

- (1) On the menu bar, click **Communication**, and then choose **compare**. The Parameter Comparing dialog box (Figure 6.3.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When all parameter data match, a message appears saying "Non-matching parameter not detected." If any parameter value does not match, a message appears saying "Non-matching parameter detected. Do you want to see the list?"
- (8) Click **Yes** to open the Non-matching Parameters dialog box.

**NOTE**

Comparing parameters via Ethernet is impossible for the UT750 in UT mode 21 and the UP750 in UP mode 21. Use front communication.

**NOTE**

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.

**NOTE**

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

6.4 Address Tag

When performing RS485 communication, you can set up a tag name for each of the communication address from 1 to 99 so that it may be easy to discriminate.

The set address tag is displayed with the communication address in the Download Parameter, Upload Parameter and Parameter Comparing dialog box.

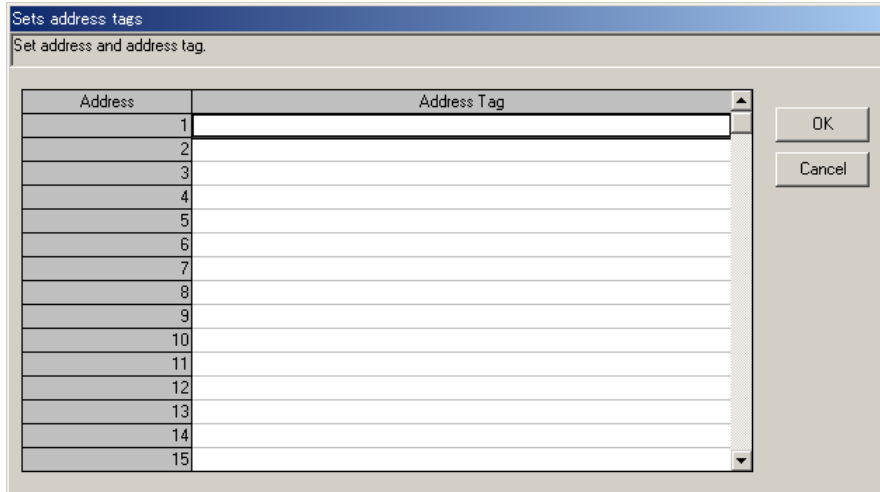


Figure 6.4.1 Address Tag Dialog Box



NOTE

The same address tag cannot be set up to a different communication address.

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7. Printing Parameters

This chapter explains the procedure for printing the parameter data created with the LL100 tool, uploaded from a GREEN Series controller, or saved to disk. You can also save the printout data as a text file.

7.1 Printing Parameters

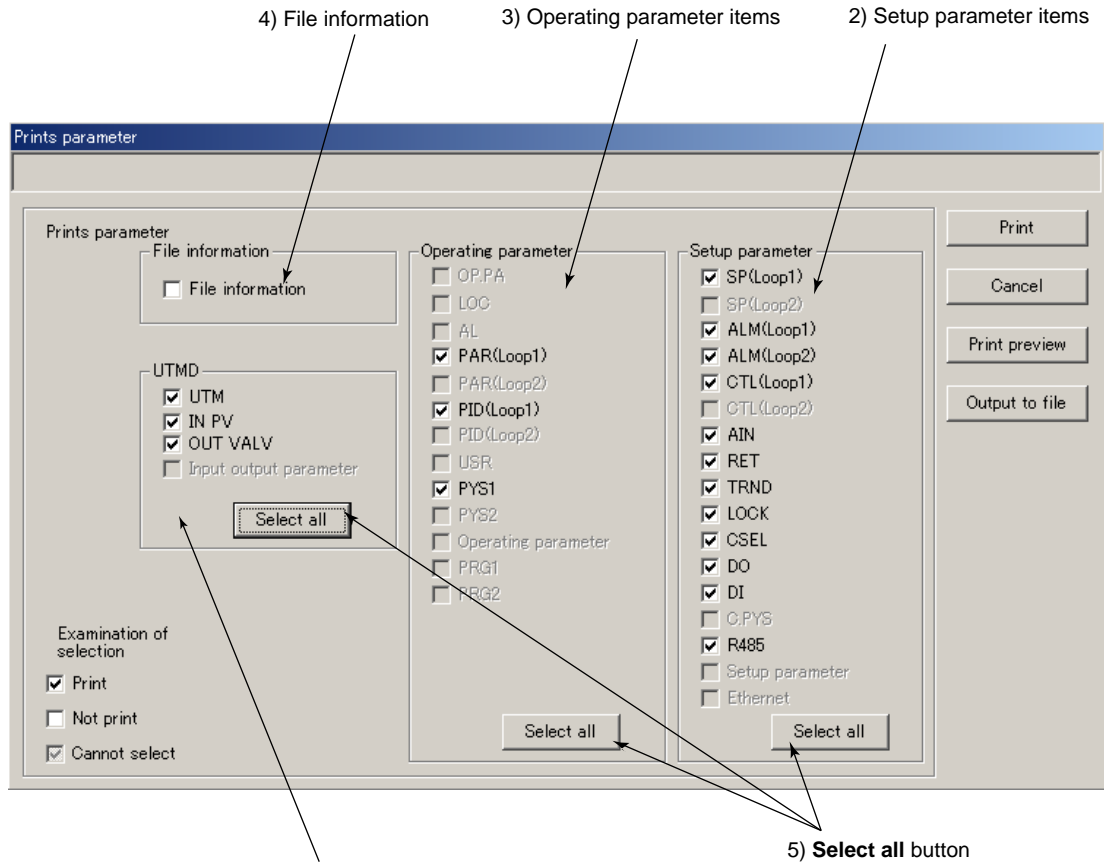


Figure 7.1.1 Prints Parameter Dialog Box (Example of UT551)

● To print out parameters

- (1) Make sure that the printer is connected to the personal computer.
- (2) On the menu bar, click **File**, and then choose **Print**.
The Prints Parameter dialog box (Figure 7.1.1) appears.
- (3) Select the check boxes of the data items you wish to print.

1) UTMD (or UPMD) items

- UTM/UPM : Controller mode setting
- IN-PV : PV input settings
- OUT VALV : Control output and value mode settings
- IN/OUT parameter : Input and output settings (for 300 series)

2) Setup parameter items

- SP (Loop1): Target setpoint settings for loop-1
- SP (Loop2): Target setpoint settings for loop-2
- ALM (Loop1): Alarm settings for loop-1
- ALM (Loop2): Alarm settings for loop-2
- CTL (Loop1): Control function settings for loop-1
- CTL (Loop2): Control function settings for loop-2
- AIN: Analog input computation settings
- RET: Retransmission output settings
- TRND: Deviation trend settings
- LOCK: Security settings
- CSEL: SELECT displays configuration
- DO: Contact output configuration
- DI: Contact input configuration
- C.PYS: Ten-segment linearizer units
- R485: RS485 communication settings
- ETHR: Ethernet communication settings
- Setup parameter: Setup parameter settings (for 300 series)

3) Operation parameter items

- OP. PA: Operating parameter settings (for 400 series)
- LOC: Local setpoint settings (UP750/550)
- AL: Instrument alarm settings (UP750/550)
- PAR (Loop1): Operation-related parameters for loop-1
- PAR (Loop2): Operation-related parameters for loop-2
- PID (Loop1): PID group parameter settings for loop-1
- PID (Loop2): PID group parameter settings for loop-2
- USR: User parameter settings
- PYS1: Ten-segment linearizer 1 settings
- PYS2: Ten-segment linearizer 2 settings
- Operating Parameter: Operating parameter settings (for 300 series)
- PRG1/2: PRG1 and 2 pattern settings (for 300 series)

4) File information items

Prints the file information set at file creation.

- Title and creator
- Date of creation
- Parameter name (except 300 series)
- Comments

5) **Save all** button

Click this button to select all parameter items.

- (4) Click **Print**.
- (5) The Printer Settings dialog box opens. Select printer type, paper size, and orientation of printing.
- (6) Click **OK** to start printing.

**NOTE**

The printout may be on a larger or smaller scale according to the type of printer in use.

In this case, modify the resolution before printing. Refer to the instruction manual for printer regarding to the modification of resolution.

DATE : 80/01/04

UT750E -51

File name : test.t7d
Created by :
Title : test2

===[Mark]===	===[ParameterName]===	===[ParameterData]===	===[UNIT]===
[MD]			
UTM		1: Single-loop control	ABS
SMP	Controller mode	2: 200 ms	ABS
[IN]			
IN1	Input-1 type	1: K -270.0 to 1370.0C	ABS
UN1	Input type	1: C	ABS
RH1		1370.0	ABS
RL1	Maximum value of PV range	-270.0	ABS
SDP2	Selection of PV input-1 burnout action	1: Upscale	ABS
RJC	Selection of PV input burnout action	1: ON	ABS
IN2	PV input-2 type	0: OFF	ABS
UN2	PV input-2 type	0: %	ABS
RH2		0.0	ABS
BO2	Selection of PV input-2 burnout action	0: OFF	ABS
RJC	Selection of PV input-2 burnout action	0: OFF	ABS
IN3	Presence/absense of PV input-2 reference junction compensation	41: 1 to 5V 1.000 to 5.000V	ABS
UN3	Remote input type	0: %	ABS
RH3		5.000	ABS
RL3	Maximum value of analog input-3 range	1.000	ABS
SDP3	Minimum value of analog input-3 range	1: ----,-	ABS
SH3	Remote input decimal point position	1370.0	ABS
SL3	Maximum value of remote input scale	-270.0	ABS
BO3	Minimum value of input	0: OFF	ABS
P.U1	Selection of input-3 burnout action	1: C	ABS
P.D1	PV1 unit	1: ----,-	ABS
P.H1	PV1 decimal point position	1370.0	ABS
P.RL1	Minimum value of PV1 range	-270.0	ABS
[OUT]			
OT1	Minimum value of PV2 range	0: Relay	ABS
OT2	Control output-1 type	0: Relay	ABS
CT	Control output-2 type	30	Second
AO1	Analog output-1 type	0: 4 to 20mA	ABS
AO2	Analog output-2 type	0: 4 to 20mA	ABS
AO3	Analog output-3 type	0: 4 to 20mA	ABS
A1H E		100.0	%
A1L E	Analog output-1 100% segmental point	0.0	%
A2H E	Analog output-2 100% segmental point	100.0	%
A2L E	Analog output-2 0% segmental point	0.0	%
A3H E	Analog output-2 0% segmental point	100.0	%
A3L E	Analog output-3 100% segmental point	0.0	%
[PAR1]			
SC.1	SUPER function selection	0: OFF	ABS
BS.1	PV input bias	0.0	EUS
FL.1	PV input filter	0: OFF	
UPR.1	Setpoint ramp-up rate	0: OFF	
DNR.1	Setpoint ramp-down rate	0: OFF	
RT.1	Ratio setting	1.000	ABS
RBS.1	Remote input bias	0.0	EUS
RFL.1	Remote input filter	0: OFF	
ORB.1	ON/OFF rate detection band	16.4	EUS
ORH.1	ON/OFF rate high limit	100.0	%
ORL.1	ON/OFF rate low limit	0.0	%
[PID1]			
1.SP.1	Target setpoint	-270.0	EU
1.A1.1	Alaram-1 setpoint	1370.0	EU(PV1)
1.A2.1	Alaram-2 setpoint	-270.0	EU(PV1)
1.A3.1	Alaram-3 setpoint	1370.0	EU(PV1)
1.A4.1	Alaram-4 setpoint	-270.0	EU(PV1)
1.P.1	Proportional band	5.0	%
1.I.1	Integral time	240	Second
1.D.1	Derivative time	60	Second
1.OH.1	Output high limit	100.0	%
1.OL.1	Output low limit	0.0	%
1.MR.1	Manual reset	50.0	%
1.DR.1	Direct/reverse action switching	0: Reverse action (RVS)	ABS
1.PO.1	Preset output	0.0	%
2.SP.1	Target setpoint	-270.0	EU
2.A1.1	Alaram-1 setpoint	1370.0	EU(PV1)
2.A2.1	Alaram-2 setpoint	-270.0	EU(PV1)
2.A3.1	Alaram-3 setpoint	1370.0	EU(PV1)
2.A4.1	Alaram-4 setpoint	-270.0	EU(PV1)
2.P.1	Proportional band	5.0	%
2.I.1	Integral time	240	Second
2.D.1	Derivative time	60	Second
2.OH.1	Output high limit	100.0	%

Figure 7.1.2 Example of Printout Result (UT750)

7.2 Previewing the Printout

● To preview printout data before printing

- (1) On the menu bar, click **File**, and then choose **Print**.
The Prints Parameter dialog box (Figure 7.1.1) appears.
- (2) Click **Print preview**.

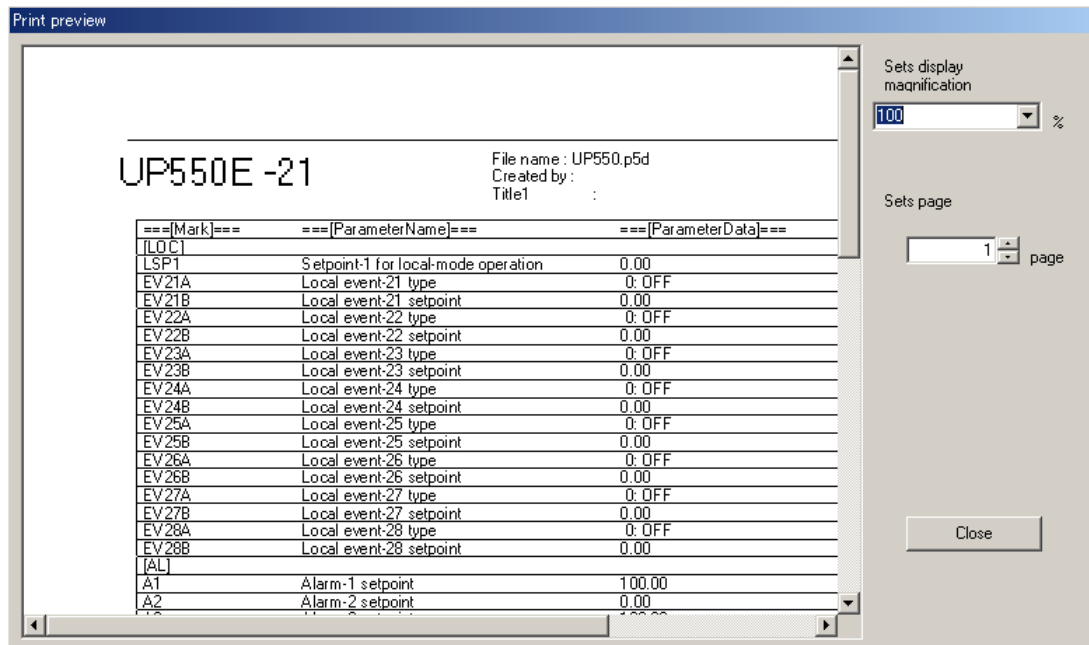


Figure 7.2.1 Example of Print Preview Dialog Box (Example of UP550)

7.3 Saving Printout Data as a CSV File

You can save the printout data as a CSV file.

- The filename extension of CSV files is csv. The filenames preceding the extension must be within 16 alphanumeric characters.

- To save as a CSV file

- (1) On the menu bar, click **File**, and then choose **Print**.
The Prints Parameter dialog box (Figure 7.1.1) appears.
- (2) Click **Output to file**. The Save As dialog box (Figure 7.3.1) opens.
- (3) In the **File name** text box, type a file name (within 16 alphanumeric characters) then click **Save**.

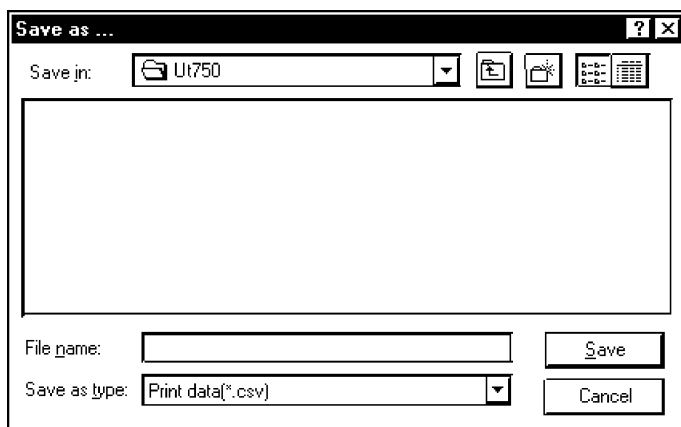


Figure 7.3.1 Save As Dialog Box (Example of UT750)

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8. Tuning

With a GREEN Series controller connected to the personal computer, you can adjust PID parameters while monitoring PV, SP, and control output on the personal computer screen.

8.1 Tuning the Controller

Tune up the GREEN Series controller.



WARNING

Since the tuning function directly changes the target controller's PID parameters, the operation parameter data in the personal computer no longer match those in the controller. For this reason, be sure to carry out the operation in section 6.1, "Uploading Parameter Data from Controller" after tuning is ended in order to match the operating parameters.

● To tune via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Tuning**.
The Tuning dialog box (Figure 8.1.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **Execute**.
- (5) The Tuning View dialog box (Figure 8.1.2) appears.
Adjust PID parameters while monitoring the PV, SP, and control output values in the trend graph.
- (6) When tuning is end, click **Exit**. From the message box thus shown, execute parameter uploading from the controller.
- (7) Save the uploaded parameter data on disk or print them out.

See Also

Section 2.3, "Connecting Controller to Personal Computer," for how to connect via the optical communication adapter.

● To tune via serial communication terminals

- (1) On the menu bar, click **Communication**, and then choose **Tuning**.
The Tuning dialog box (Figure 8.1.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer (COM1 to COM16).
- (5) Set the RS-485 communication conditions:
 - Communication speed, parity, and address: Select from drop-down lists.
 - Stop bit and data length: Select with option buttons.Use the same settings for the target controller's RS-485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **Execute**.
The Tuning View dialog box (Figure 8.1.2) appears.
Adjust PID parameters while monitoring the PV, SP, and control output values in the trend graph.
- (7) When tuning is complete, click **Exit**. From the message box thus shown, execute parameter uploading from the controller.
- (8) Save the uploaded parameter data on disk or print them out.



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring when using the rear terminals.

● To tune via Ethernet communication terminal

- (1) On the menu bar, click **Communication**, and then choose **Tuning**.
The Tuning dialog box (Figure 8.1.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **Execute**.
The Tuning View dialog box (Figure 8.1.2) appears.
Adjust PID parameters while monitoring the PV, SP, and control output values in the trend graph.
- (7) When tuning is complete, click **Exit**. From the message box thus shown, execute parameter uploading from the controller.
- (8) Save the uploaded parameter data on disk or print them out.



NOTE

Tuning parameters via Ethernet is impossible for the UT750 in UT mode 21 and the UP750 in UP mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

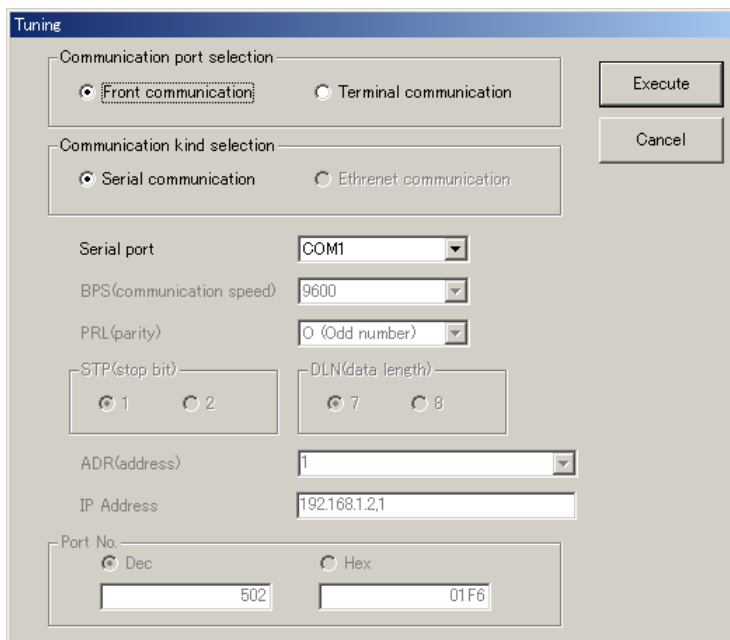


Figure 8.1.1 Communication Conditions for Tuning Dialog Box

See Also

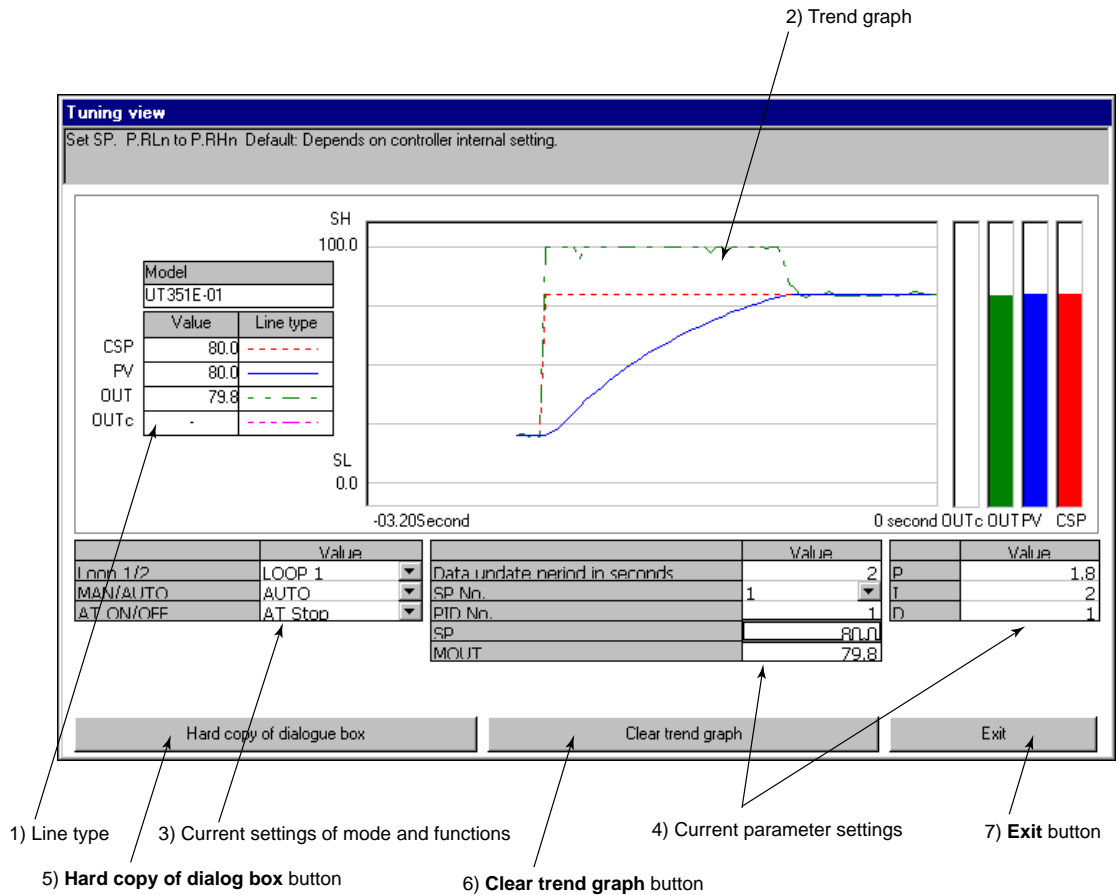
Figure 8.1.2 for details of the Tuning View dialog box.

Section 8.2, "Tuning Guide" for details on tuning operations.

Section 6.1, "Uploading Parameter Data from Controller" for how to upload PID parameters.

Subsection 5.2.1, "Saving Parameter Data on Disk" for how to save parameters on disk.

Section 7.1, "Printing Parameters" for information about printing.



1) Line type

Indicates the line types and colors displayed in the trend graph.

- CSP (current target setpoint): Red solid line
- PV (measured input): Blue dotted line
- OUT (control output): Green broken line
- OUTc (cooling-side control output): Pink broken line

2) Trend graph

3) Current settings of mode and functions

You can change the settings from here.

- Loop 1/2: Sets and indicates the loop for which data are displayed in the Tuning View when the controller is in dual-loop control, temperature and humidity control, or internal cascade control.
- RUN/STOP: Sets and shows the RUN/STOP status of the controller.
- MAN/AUTO/CAS: Sets and shows the operation mode of the controller.
- REMOTE/LOCAL: Sets and shows the Remote/Local mode of the controller.
- AT ON/OFF: Starts and stops auto-tuning. After you start auto-tuning, optimized PID parameter values are set in the controller and displayed in the 4) area table.
- V.AT ON.OFF: Starts and stops automatic valve tuning.

4) Current parameter settings

You can set parameter values and confirm the current settings. Displayed data are updated at a specified data updating period.

Data update period: 1 to 600 seconds (This period is also applied to the trend graph display.)

SP No.: Sets and shows the currently selected SP number.

PID No.: Sets and shows the currently selected PID group number.

PV: Measured input P: Proportional band

SP: Target setpoint I: Integral time

MOUT: Manual output D: Derivative time

MOUTc: Cooling-side manual output Pc: Cooling-side proportional band

Ic: Cooling-side integral time

Dc: Cooling-side derivative time

5) **Hard copy of dialog box** button

Prints a screen shot of the dialog box.

6) **Clear trend graph** button

Clears the current trend graph and starts a new trend graph.

7) **Exit** button

Quits tuning and closes the dialog box.

8.2 Tuning Guide

Tuning can be carried out in the following ways:

- Set and adjust P (proportional band), I (integral time), and D (derivative time) individually.
- Set and adjust the PID parameters by auto-tuning.

GREEN Series controllers can have a maximum of 8 sets of P, I, and D parameter values — these parameter sets are referred to as PID groups (1.PID to 8.PID). A set of PID parameter values obtained through tuning are to be stored for each of the PID groups.

8.2.1 What is Auto-tuning?

Auto-tuning is a function that changes the control output in steps several times and calculates the appropriate PID parameter values from the response data. By selecting from AT1 to AT9, where AT9 selects all the PID groups, auto-tuning is executed for individual or all PID groups and the obtained PID parameter values will be stored in respective PID groups.

● **To execute auto-tuning**

- (1) Set the controller in AUTO mode (for cascade control, set the secondary loop to CAS mode).
- (2) In the **AT ON/OFF** text box of the Tuning View dialog box (Figure 8.1.2), set the auto-tuning (AT1 to AT9) you wish to execute.
- (3) When auto-tuning is complete, "0" is displayed in the **AT ON/OFF** text box.

8.2.2 What is Automatic Valve Tuning?

Automatic valve tuning is a function that adjusts the valve's fully-open and fully-closed positions, referring to the valve position signal (feedback input) from the slide resistor attached to the valve. This function is normally used while manually operating the controller's output.

● To execute automatic valve tuning

- (1) Set the controller in MAN mode.
- (2) In the **V.AT ON/OFF** text box of the Tuning View dialog box (Figure 8.1.2), select "ON."
- (3) When the tuning is complete, "V.AT Stop" is displayed in the **V.AT ON/OFF** text box.

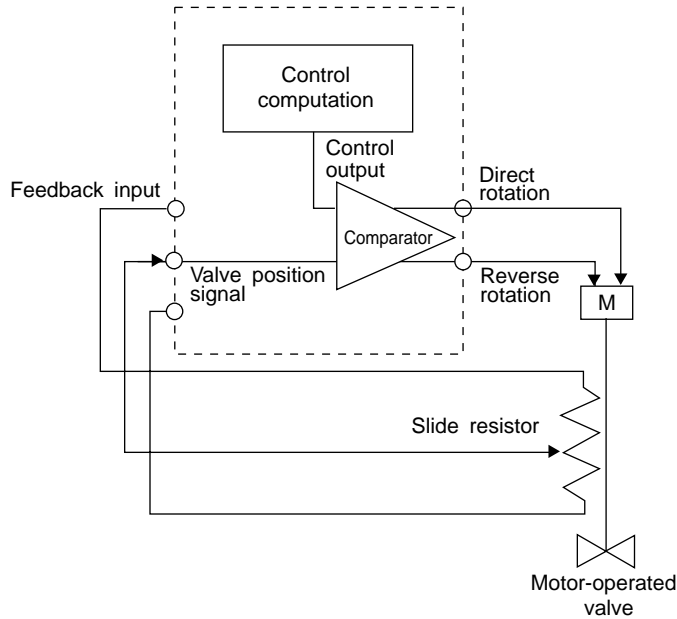


Figure 8.2.1 Loop of Automatic Valve Tuning

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9. Using the Program Pattern Setting Tool

This chapter describes how to use the program pattern setting tool by showing the procedure for setting the program pattern, notes on tool operations, making settings in dialog boxes, and other common operations.

9.1 Starting and Quitting the Program Pattern Setting Tool

9.1.1 Starting the Tool

- (1) Start Windows.
- (2) From the **Start** menu of Windows, point to **Program**, then **Green Series**, and click **Green Series LL100**.
- (3) The LL100 tool starts up, and the Tool Selection dialog box appears (Figure 9.1.1). (For LL200, "Custom Computation Building tool" appears at the top of dialog box.)

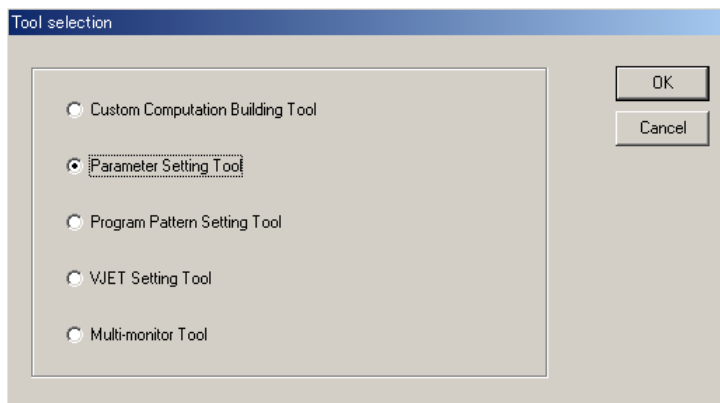


Figure 9.1.1 Tool Selection Dialog Box

- (4) Select **Program pattern setting tool**.
- (5) Click **OK**.
- (6) The Select Series dialog box appears (Figure 9.1.2).

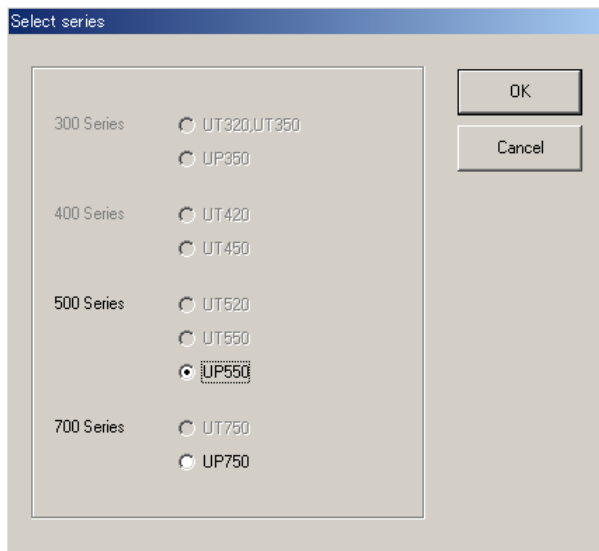


Figure 9.1.2 Select Series Dialog Box

- (7) Select the controller model.
- (8) Click **OK**.
- (9) The Select New/Change dialog box appears (Figure 9.1.3).

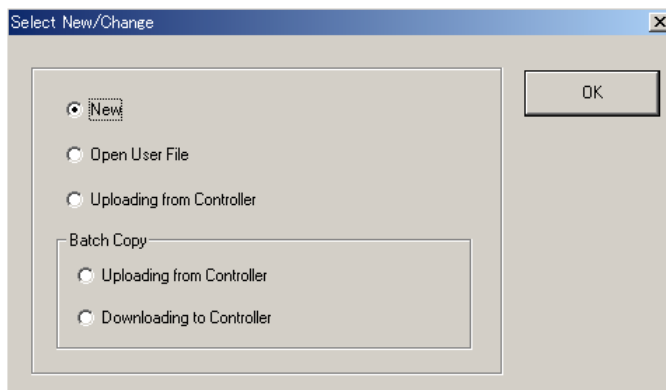


Figure 9.1.3 Select New/Change Dialog Box

To start the program pattern setting tool when you are using another tool, click **Set **** (P)** on the menu bar, then choose **Run Program Pattern Setting Tool**. (**** varies depending on the tool)

9.1.2 Quitting the Tool

- (1) On the menu bar, click **File** then choose **Exit**.
- (2) If the current setting data has not yet been saved, the following message box appears (Figure 9.1.4).

- To save the current program pattern data before quitting, click **Yes**.

Click **OK** in the Overwrite dialog box.

If a message informing that “Cannot save file because no registered pattern name exists.” appears, click **OK**. Then on the menu bar, click **Information**. The File Information dialog box appears (see Section 11.1). Set the required settings. Then go back to the step (1).

If the Save As dialog box appears, enter a file name of up to 16 alphanumeric characters, and then click **Save**.

- To quit without saving the program pattern data, click **No**.

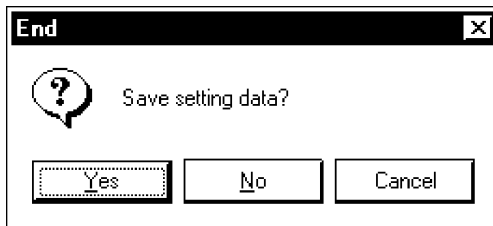


Figure 9.1.4 Data Save Confirming Dialog Box

- (3) The message box in Figure 9.1.5 appears for confirmation.
- To exit, click **Yes**.
 - To cancel exiting, click **No**.

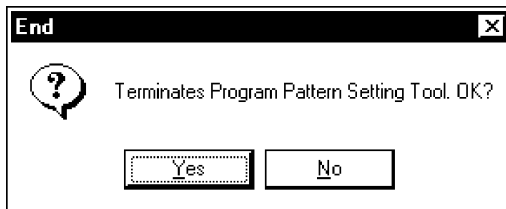


Figure 9.1.5 End Dialog Box

9.2 Work Flow of Program Pattern Setting Tool

There are 5 cases of program pattern setting procedures:

- Create new program pattern data and download it to the controller.
- Upload program pattern data from the controller, modify it, and then save it to the disk.
- Read program a pattern data saved on disk, modify it, and then save it to the disk.
- Upload program pattern data from the controller and save it to the disk.
- Download program pattern data saved on disk to the controller.

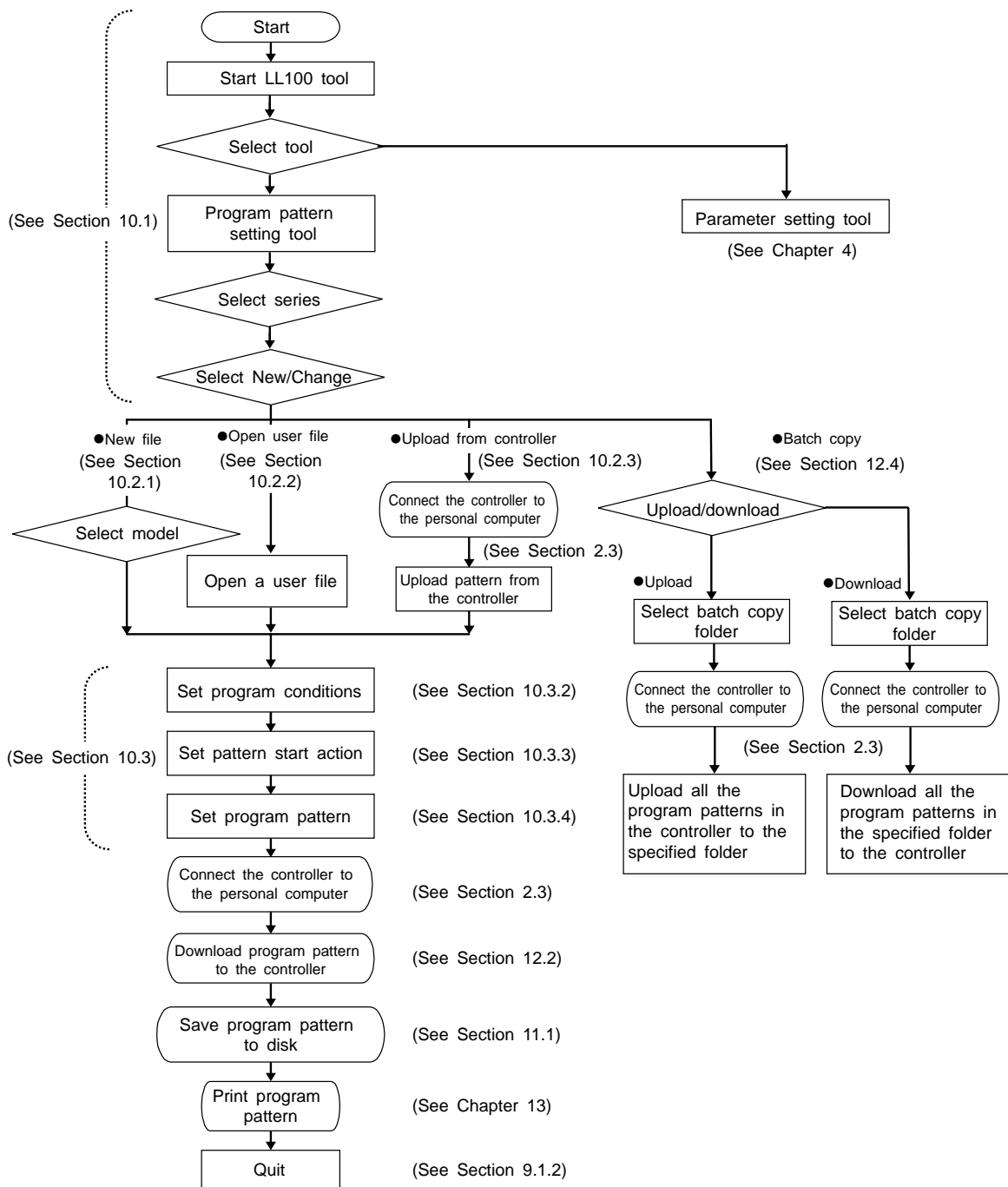


Figure 9.2.1 Work Flow of Program Pattern Setting Tool

9.3 Dialog Box Elements and Functions

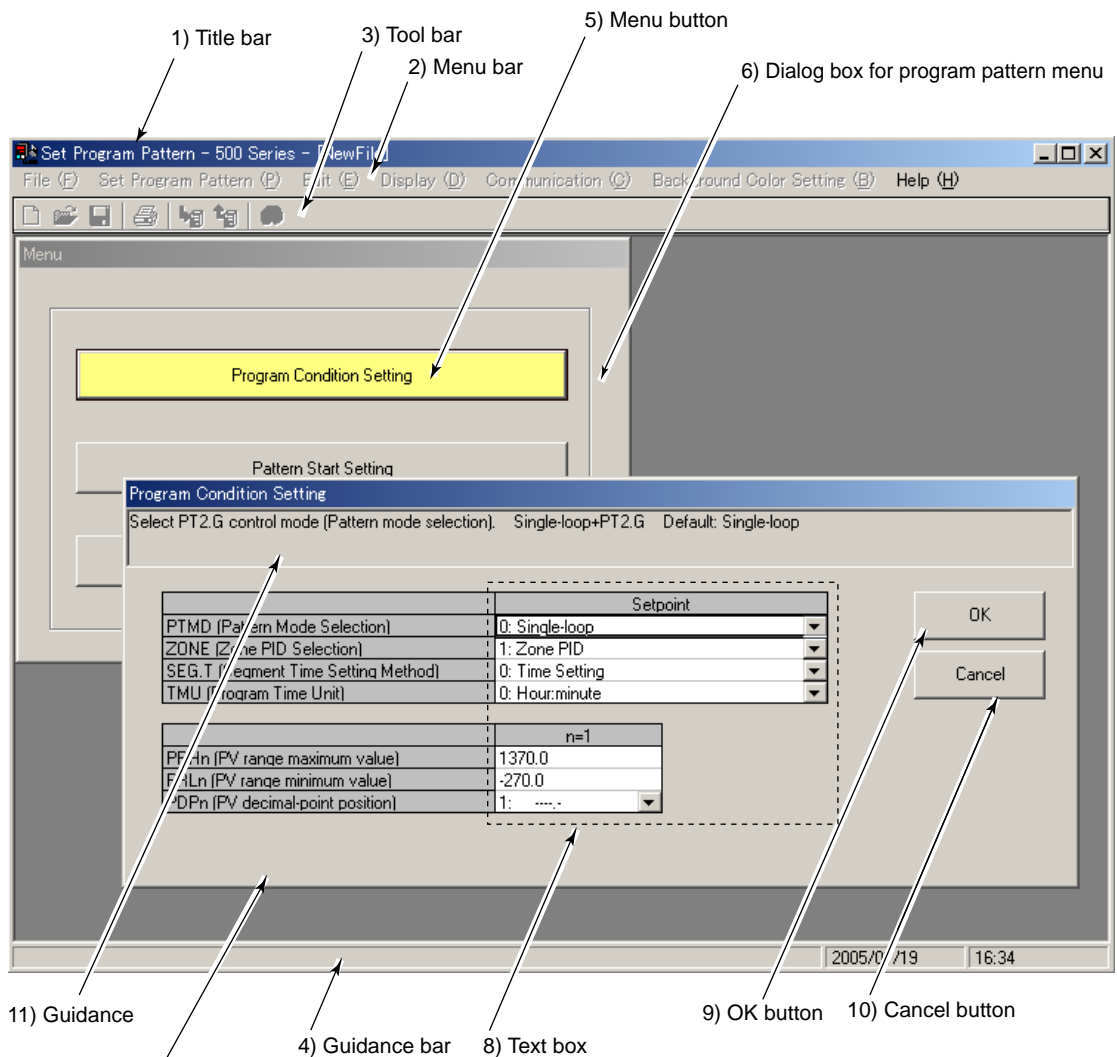


Figure 9.3.1 Dialog Box Elements and Functions (Example of UP550)

- 1) Title bar
Shows the tool name (Set Program Pattern) and the name of the open program pattern file being used.
- 2) Menu bar
Contains the various tool functions that can be selected.
- 3) Toolbar
Displays the frequently used tool menu items as command buttons.
- 4) Guidance bar
Displays helpful guidance.
- 5) Menu button
Clicking one of the buttons in the Menu dialog box opens the corresponding dialog box, and the color of the button changes to show that the dialog box is open.

6) Dialog box for program pattern menu

A menu for selecting dialog box for setting individual program parameters (referred to in (5) below).

7) Dialog box for program condition setting

Individual program parameters can be set in the 3 dialog boxes; Program Condition Setting, Pattern Start Setting, and Program Pattern Setting.

The guidance bar at the bottom of the window displays the description, range of settings, and initial value of the parameter whose text box is clicked. (Figure 9.3.1 shows the Program Condition Setting dialog box.)

8) Text box

A text box is a cell in a dialog box, where a parameter value can be entered. A bar “—” is displayed in a text box of a parameter that cannot be set.

9) **OK** button

Clicking this button updates the parameters shown in the parameter setting table and closes the dialog box.

10) **Cancel** button

Clicking this button will discard the changes made and close the dialog box. This operation will not update the settings.

11) Guidance

The parameter name, range of setting, and initial value of parameter are shown for guidance.

When range of setting and initial value make a difference, according to model code and the other setting parameter value, see also the controller's user's manual for GREEN series.

9.4 Menu Commands

In the program pattern setting tool, you can use the menu commands of the menu bar when the Menu dialog box is displayed. You cannot use them while any of the dialog boxes for setting individual program parameters is displayed.

● Using menu commands

- (1) Click a name on the menu bar.
- (2) Choose the command you wish to execute from the menu that appears (see Figure 9.4.1 or 9.4.2).

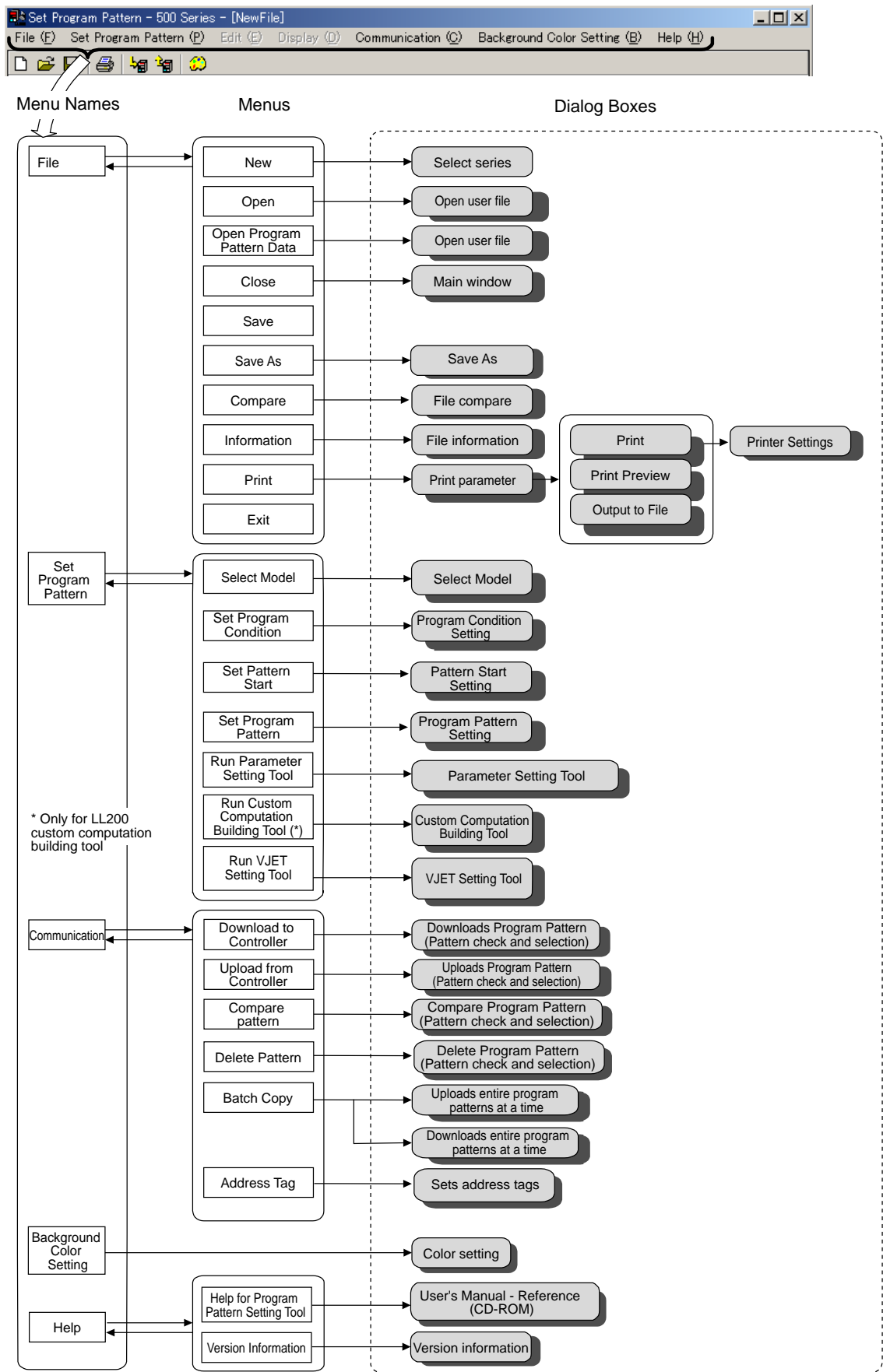


Figure 9.4.1 Tool Menu Items (for Program Pattern Menu)

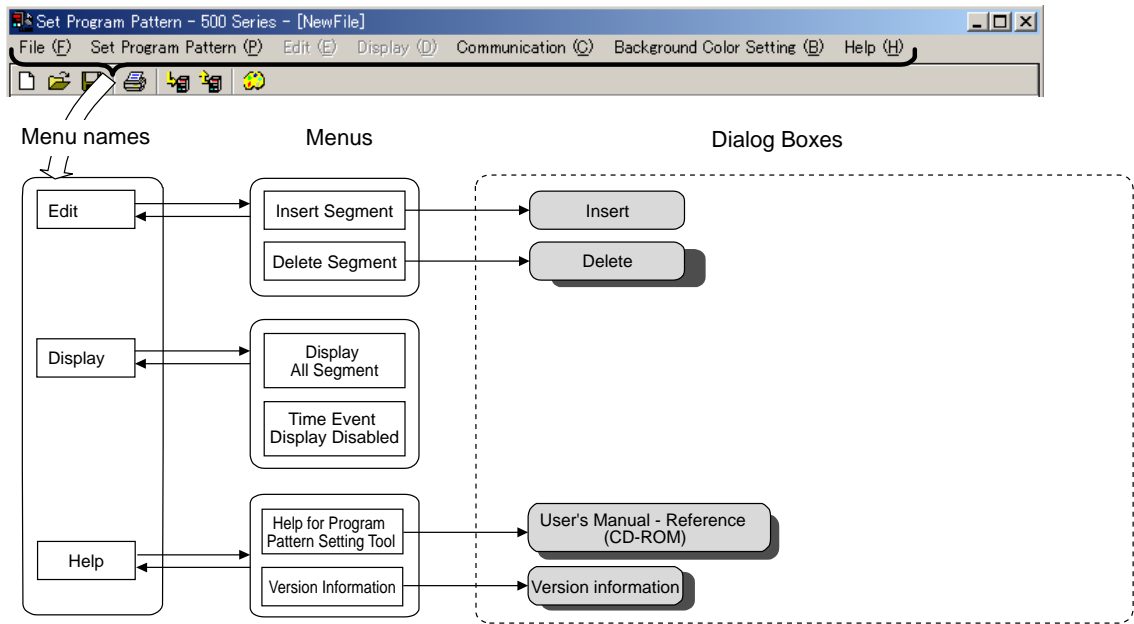


Figure 9.4.2 Tool Menu Items (for Program Pattern Setting)

9.5 Parameter Setting Basics

This section describes the basic operation procedure for program pattern setting. Set parameters as shown in the flowchart below.

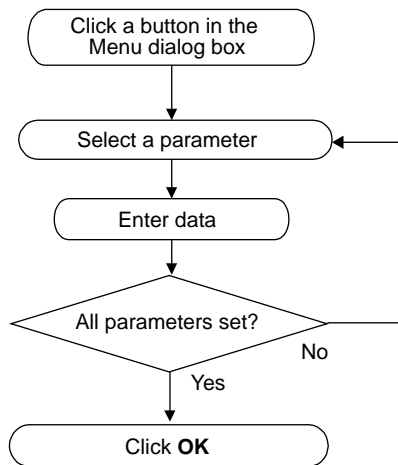


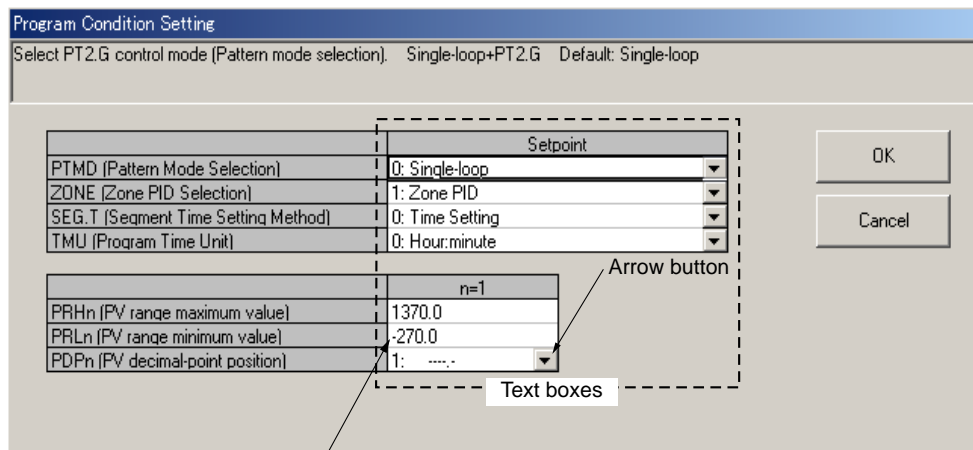
Figure 9.5.1 Parameter Setting Flowchart

9.5.1 Selecting a Parameter

- (1) In a dialog box for setting individual parameters, click the text box of the parameter you wish to change.
- (2) A thick frame is displayed around the text box of the selected parameter, indicating that it is ready for input.

9.5.2 Inputting the Setting for a Parameter

Data entry in text boxes is a fundamental operation in every Windows-based application. See Figure 9.5.2 for dialog box elements.



Enter an alphanumeric string.

Figure 9.5.2 Parameter Setting Table Elements

There are two types of text boxes in a parameter setting dialog box.

● **Text box without arrow button:**

Click in the text box and type appropriate characters.

See the guidance bar for the setting range, initial value, and other information on that parameter. If an illegal value is input for a numeric setting, a message box appears, stating that an “Illegal value has been entered.” Click **OK** and input a proper value.

● **Text box with arrow button on the right:**

Click the arrow button to open a list of available selections. Select an item from the list.

9.5.3 Applying and Canceling Changes in Dialog Box

● **To apply the changes:**

Click **OK** after all settings have been made in the current dialog box.

● **To cancel the changes:**

Click **Cancel** to cancel the changes.



NOTE

Be sure to click **OK** to apply changes to the parameter settings. Clicking **Cancel** discards all changes you made in the dialog box.

9.5.4 Using the Keyboard When You Have No Mouse

● Menu bar operation

- (1) Press the F10 to ALT key on the keyboard. A border line appears around the menu name **File** on the menu bar (like a button).
- (2) Using the LEFT (←) and RIGHT (→) keys, move the border line on the menu bar to select the menu name that contains the desired command, and press the ENTER key. Then, the menu opens.
- (3) Using the UP (↑) and DOWN (↓) keys, select the desired command in the menu and press the ENTER key. (You can also open the **File** menu by simply pressing ALT and F keys at the same time.)
- (4) To cancel the operation, press ESC.

● Selecting a parameter menu

- (1) Press the TAB key to select Menu button for parameter setting.
- (2) Press the ENTER key.

● Selecting a parameter

- (1) Pressing the TAB key switches the active element in the following sequence: **OK** button, Cancel button, text box for a parameter, then back to the **OK** button.
- (2) When a text box is active, you can move between text boxes (parameters) using the UP, DOWN, RIGHT, and LEFT (↑/↓/←/→) keys. A selected text box is displayed with a thick frame around it and is ready for input.

● Data input operation

After you select a parameter, do either of the following:

- Selecting from a drop-down list

- (1) Press the CTRL + ENTER keys to open the drop-down list.
- (2) Select an item using the UP and DOWN (↑/↓) keys.
- (3) Press the ENTER key to set the item.

- Setting a numeral

- (1) Type a numeral in the text box.
- (2) Press the ENTER key to set the data.

● Command button operation (OK, Execute, Cancel, and other buttons)

- (1) Press the TAB key repeatedly and choose the command button.
- (2) Press the ENTER key to set the numeral in the parameter.

10. Setting Program Patterns

This chapter describes how to use the LL100 tool for making program pattern settings.

The program pattern setting tool facilitates the creation and management of program patterns for UP750 and UP550 program controllers. The number of program patterns that can be set are:

- UP750: 300 patterns maximum
- UP550: 30 patterns maximum

Using the program pattern setting tool, you can perform the following operations for each pattern.

- Set program conditions
- Set the start action
- Create program pattern
- Upload from/download to a controller
- Save to/read from a disk
- Print out program pattern data

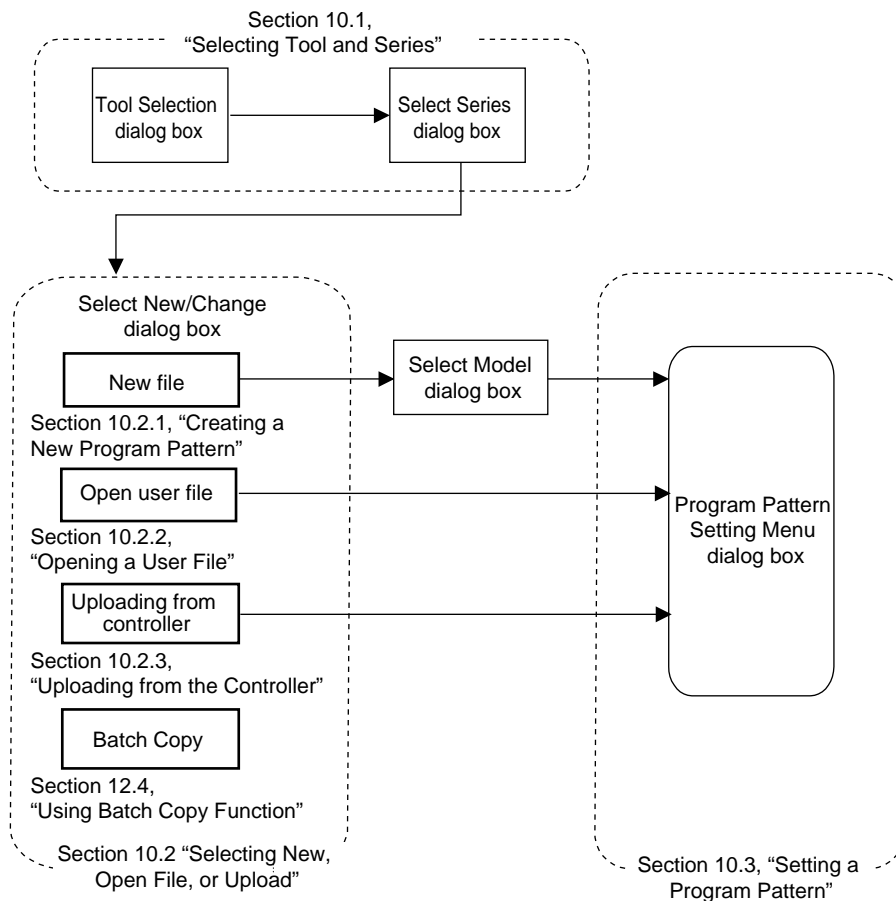


Figure 10.01 Configuration of Dialog Boxes Related to Program Pattern Setting

10.1 Selecting Tool, Series, and New/Change

10.1.1 Selecting the Tool

After you start the LL100 tool, the Tool Selection dialog box appears (Figure 10.1.1). (For LL200, “Custom Computation Building Tool” appears at the top of dialog box.)

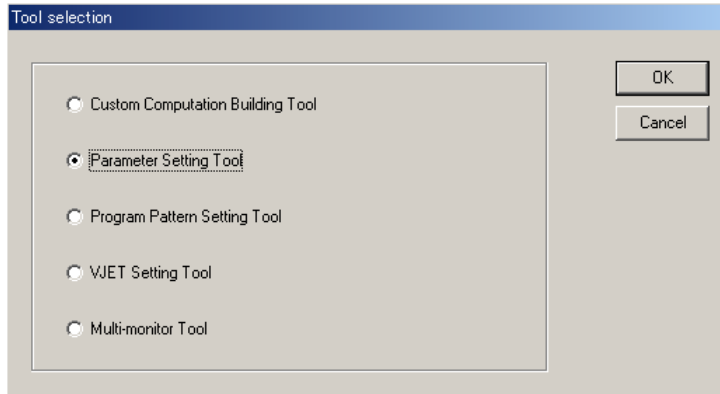


Figure 10.1.1 Tool Selection Dialog Box

● To select the tool

- (1) Click **Program pattern setting tool**.
- (2) Click **OK**. (Go on to Section 10.1.2)

10.1.2 Selecting the Series

After you select the tool, the Select Series dialog box appears (Figure 10.1.2).

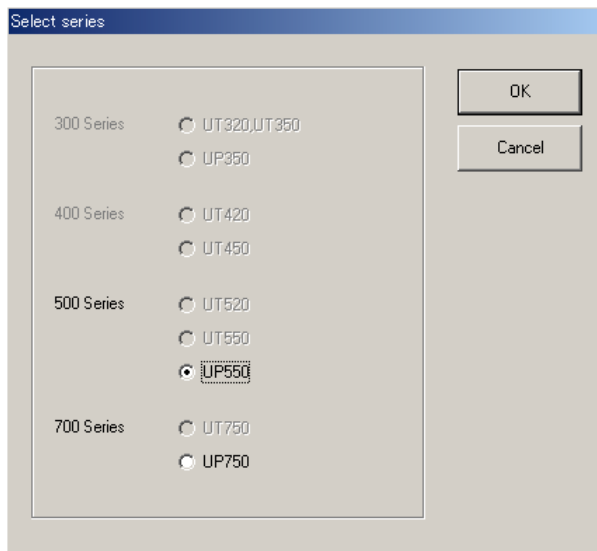


Figure 10.1.2 Select Series Dialog Box

● To select the controller series

- (1) Click the controller series you wish to configure.
- (2) Click **OK**. (Go on to Section 10.1.3)

10.1.3 Selecting New/Change

After you select the controller model, the Select New/Change dialog box appears (Figure 10.1.3).

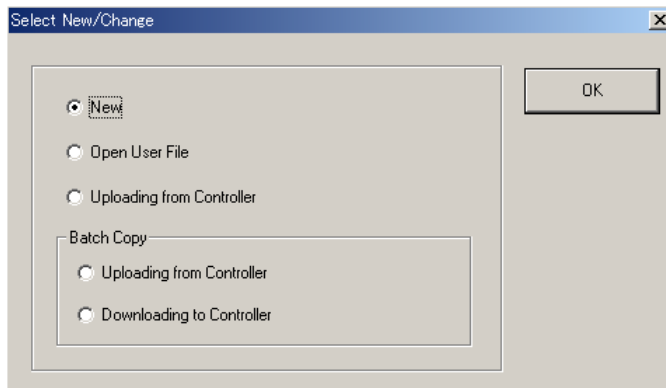


Figure 10.1.3 New/Change Selection Dialog Box

● To create a file of New Program Pattern settings

- (1) Click **New**.
- (2) Click **OK**. (Go on to section 10.2.1)

● To make changes to Program Pattern settings

- To make changes to an existing Program Pattern setting file saved in your PC:

- (1) Click **Open User File**.
- (2) Click **OK**. (Go on to section 10.2.2)

- To read and change the current Program Pattern settings in a controller:

- (1) Click **Uploading from Controller**.
- (2) Click **OK**. (Go on to section 10.2.3)

- To copy the Program Pattern data settings in a controller:

- (1) Select and click an option button in **Batch Copy**.
- (2) Click **OK**. (Go on to section 12.4)

10.2 Selecting New, Open File, or Upload

After you start the program pattern setting tool and specify the controller model, perform one of the following.

- 1) Create a new program pattern
- 2) Open and edit a user file containing a saved program pattern with the tool.
- 3) Upload a program pattern from a controller to the tool and edit it.

10.2.1 Creating a New Program Pattern

● **To create a program pattern**

- After starting the program pattern setting tool, create a program pattern.

(1) Go on to section 10.2.4.

- After stopping the parameter settings, create a program pattern.

(1) On the menu bar, click **File** then choose **New**.

(2) Go on to section 9.1.1 (6).

10.2.2 Opening a User File

The filename extension of program pattern data files is either ***pp** or **p*d**. The filenames preceding the extension must be up to 16 alphanumeric characters. The tool automatically sets the filename extension according to the model of the GREEN Series controller as shown below.

Table 10.2.1 Filename Extensions

Type of File	Controller Model	
	UP750	UP550
Parameter setting file	p7d	p5d
Parameter comparison result file	e7d	e5d
Program pattern file	p7p	p5p
Program pattern comparison result file	e7p	e5p
Print image file	csv	

● **To open a User file**

(1) On the menu bar, click **File** then choose **Open**.

The Open User File dialog box (Figure 10.2.1) opens.

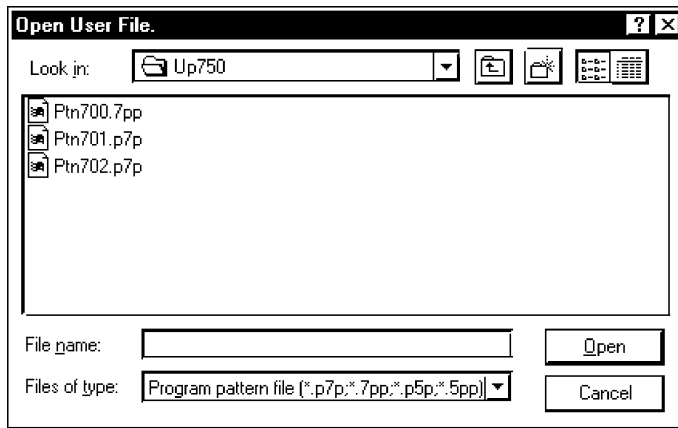


Figure 10.2.1 Open User File Dialog Box

- (2) Click in the **Look in** box.
- (3) From the list thus appearing, locate the folder in which the desired program pattern setting file resides and select it.
- (4) The files contained in the folder you selected are listed in the box beneath. Click to select the program pattern setting file and click **Open**. When the LL100 has successfully finished reading the program pattern settings from a file, a dialog box displaying “Program pattern data has been loaded” message appears.
- (5) Click **OK**.
- (6) Go on to Section 10.3.2.

● **To open a program pattern data**

- (1) On the menu bar, click **File** then choose **Open program pattern data**. The Open User File dialog box (Figure 10.2.1) opens.
- (2) Click the **Look in** box.
- (3) From the list thus appearing, locate the folder in which the desired program pattern setting file resides and select it.
- (4) The files contained in the folder you selected are listed in the box beneath. Click to select the program pattern data and click **Open**. When the LL100 has successfully finished reading the program pattern settings from a file, a dialog box displaying “Program pattern data has been loaded” message appears.
- (5) Click **OK**.
- (6) Go on to Section 10.3.2.

TIP

Click **File**, and then choose **Open program pattern data**, expansion into UP750 using the UP550 Program Patterns or expansion into UP550 using one of the UP750 program patterns is possible.

10.2.3 Uploading from the Controller

● To upload via the supplied optical communication adapter

- (1) On the menu bar, click **Communication** then choose **Upload from Controller**.
The Uploads Program Pattern dialog box (Figure 10.2.2) opens.

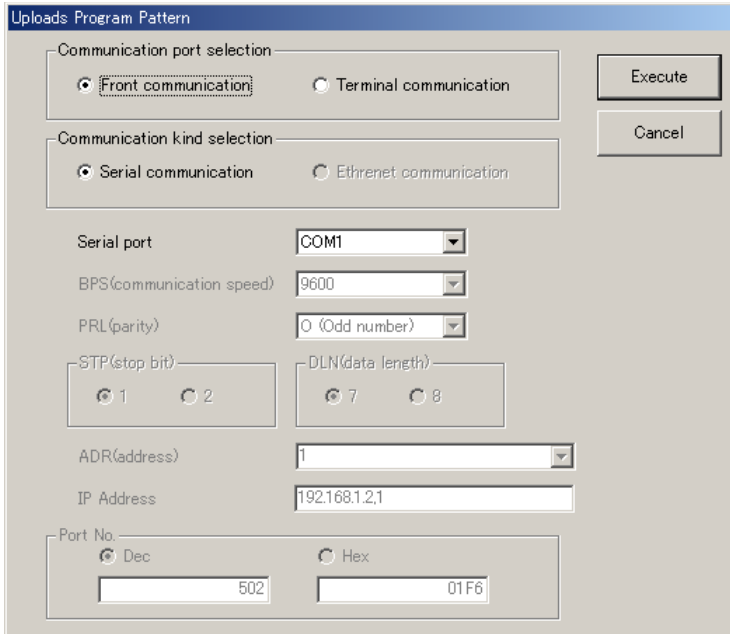


Figure 10.2.2 Uploads Program Pattern Dialog Box

- (2) Click **Front communication** (this means to use the communication port at the front of the controller).
- (3) From the **Serial port** list, select the communication port of the personal computer from **COM1** to **COM16**.
- (4) Connect the controller to the personal computer, and then click **OK**.
- (5) When communication is established, the Pattern Check and Selection dialog box (Figure 10.2.3) appears, showing the program pattern setting status of the controller.

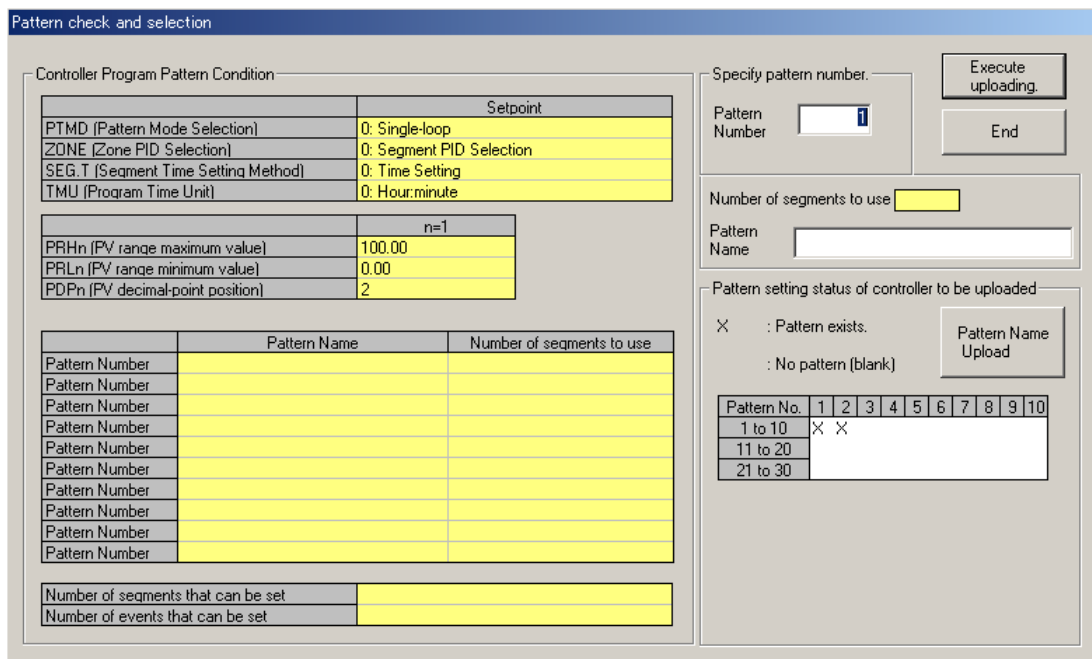


Figure 10.2.3 Pattern Check and Selection Dialog Box (Upload)

- (6) Enter the pattern number in the **Pattern Number** box and click **Execute uploading**.
- (7) When the program pattern has successfully been uploaded, the tool displays a message stating “Program pattern data has been uploaded from the controller.”
- (8) Go on to Section 10.3.2.

See Also

Section 2.3, “Connecting Controller to Personal Computer,” for how to connect the optical communication adapter.

● **To upload via serial communication terminals**

- (1) On the menu bar, click **Communication** then choose **Upload from Controller**.
The Uploads Program Pattern dialog box (Figure 10.2.2) opens.
- (2) Click **Terminal communication**. (This means to use the communication terminals at the rear of the controller.)
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer from **COM1** to **COM16**.
- (5) Set the RS485 communication conditions:
 - Communication speed, parity and address: Select from drop-down list.
 - Stop bit and data length: Select with option buttons.
 Use the same settings for the target controller’s RS485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **OK**.
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 10.2.3) appears, showing the program pattern setting status of the controller.

- (8) Enter the pattern number in the **Pattern Number** box and click **Execute uploading**.
- (9) When the program pattern has been successfully uploaded, the tool displays a message stating "Program pattern data has been uploaded from the controller." Then, click **OK**.
- (10) Go on to Section 10.3.2.

**NOTE**

Uploading program pattern via Ethernet is impossible for the UP750 in UT mode 21. Use front communication.

**NOTE**

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring for the serial communication terminals.

● To upload via Ethernet communication terminals

- (1) On the menu bar, click **Communication** then choose **Upload from Controller**.
The Uploads Program Pattern dialog box (Figure 10.2.2) opens.
- (2) Click **Terminal communication**. (This means to use the communication terminals at the rear of the controller.)
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.

- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When the program pattern has been successfully uploaded, the tool displays a message stating "Program pattern data has been uploaded from the controller." Then, click **OK**.
- (8) And then click **OK**. The Menu dialog box appears.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the communication optional function and for the controllers with the Ethernet communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

10.2.4 Selecting the Controller Model

After you select the New, the Select Model dialog box appears (Figure 10.2.4).

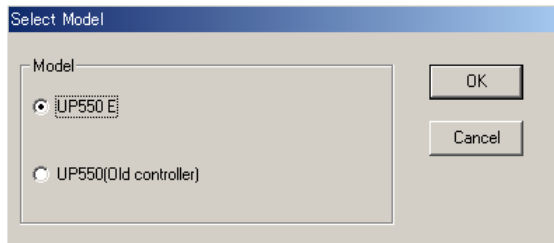


Figure 10.2.4 Select Model Dialog Box (UP550)

● **To select the controller model**

- (3) Click the controller model you wish to configure.
- (4) Click **OK**. (Go on to Section 10.3.2)

TIP

If you are not sure of your controller's model, see the MODEL and SUFFIX indications on the nameplate attached on the left side of the controller.

10.3 Setting a Program Pattern

This section describes how to make settings to configure a program pattern.

The following figures show examples of the dialog boxes displayed when using a UP750E-51 (dual-loop type with communication and auxiliary remote input).

For details about dialog box contents of other models, refer to the user’s manual supplied with the controller.

10.3.1 Program Pattern Menu Configuration

Figure 10.3.1 shows the configuration of the program pattern menu.

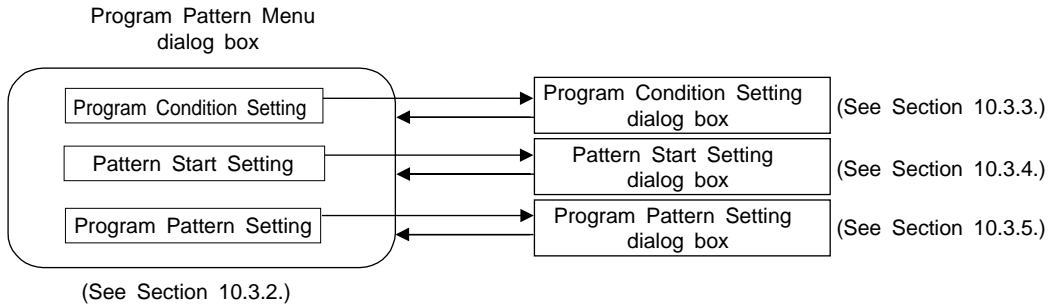


Figure 10.3.1 Program Pattern Menu Configuration



NOTE

When you create a new program pattern, make settings in the Program Condition Setting dialog box first.

10.3.2 Program Pattern Menu

From the Program Pattern Menu dialog box, you can open various parameter setting dialog boxes.

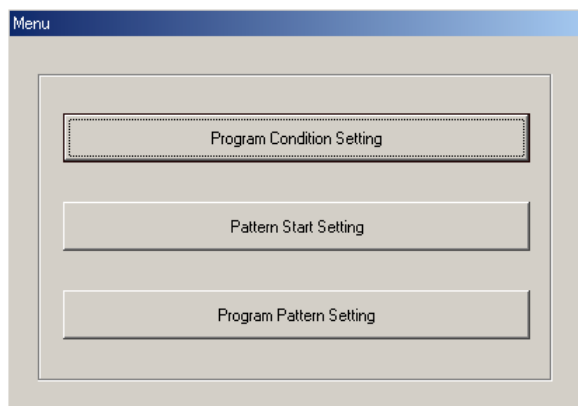


Figure 10.3.2 Program Pattern Menu Dialog Box

● To open the Program Condition Setting dialog box

In the Program Pattern Menu dialog box, click **Program Condition Setting**.

Go on to Section 10.3.3.



NOTE

When you create a new program pattern, make settings in the Program Condition Setting dialog box first.

● **To open the Pattern Start Setting dialog box**

In the Program Pattern Menu dialog box, click **Pattern Start Setting**.

Go on to Section 10.3.4.

● **To open the Program Pattern Setting dialog box**

In the Program Pattern Menu dialog box, click **Program Pattern Setting**.

Go on to Section 10.3.5.

10.3.3 Setting the Program Conditions

Set parameters that specify conditions for the program pattern.



NOTE

When you create a new program pattern, make settings in the Program Condition Setting dialog box first.

● **To open the Program Condition Setting dialog box**

In the Program Pattern Menu dialog box, click **Program Condition Setting**.

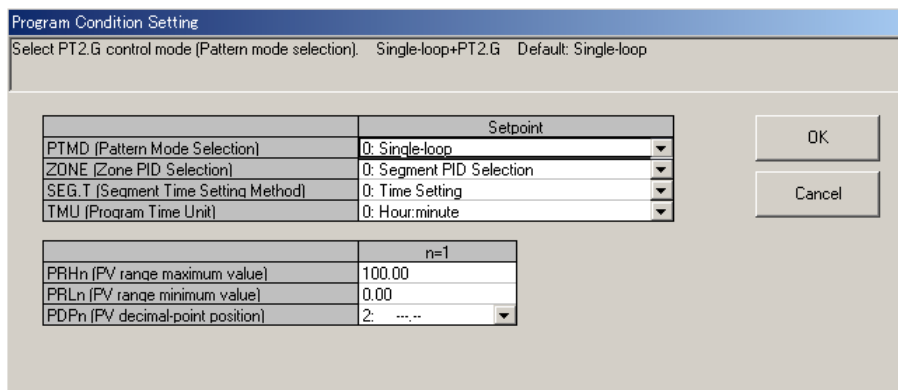


Figure 10.3.3 Program Condition Setting Dialog Box

● **Program condition parameters to be set**

Set the following parameters to set program conditions.

- Pattern mode selection (PTMD)

Pattern modes are related to the controller configuration as shown below.

Pattern mode	Controller mode	Pattern 2 generator (PT2.G*)	Description
Single-loop	Other than dual-loop type controller modes	OFF	Only one pattern can be set on a single time axis.
Dual-loop	•Dual-loop control •Temperature and humidity control	OFF	Two patterns can be set on a single time axis. Events can be assigned to both patterns.
Single-loop + PT2.G	Other than dual-loop type controller modes	OFF	Only one pattern can be set on a single time axis. Events can be assigned to only one pattern.

*PT2.G: This parameter is set in the Sets Setpoint-related Parameters dialog box. The pattern generated by this function is mainly output to another controller as setpoint signal.

Click the arrow and select either “0: Single-loop”, “1: Dual-loop” or “2: Single-loop+PT2.G.”

- Zone PID/segment PID selection (ZONE)

This parameter selects the PID switching method for the program pattern. Click the arrow and select either “0: Segment PID” or “1: Zone PID” from the list.

- Segment time setting method (SEG.T)

This parameter sets the segment setting method for the program pattern. Click the arrow and select either “0: Time setting” or “1: Ramp setting” from the list that appears.

- Program time unit (TMU)

This parameter selects the time unit for the program pattern. Click the arrow and select either “0: Hour:minute” or “1: Minute:second” from the list that appears.

- PV range maximum value (PRHn: n = 1, 2)

This parameter sets the maximum value of the range for the program pattern.

- PV range minimum value (PRLn: n = 1, 2)

This parameter sets the minimum value of the range for the program pattern.

- PV decimal-point position (PDPn: n = 1, 2)

This parameter sets the decimal point position of PV value used for the program pattern.



NOTE

Data set in this dialog box must be set identical to the settings of the controller. If not, the program pattern data cannot be downloaded to the controller.



WARNING

You must be very careful because if you change the segment time setting method (SEG.T) and the pattern mode selection (PTMD) after setting a program pattern, the pattern will be cleared. At the same time, PRHn and PRLn settings will also be cleared.

● **To return to the Program Pattern Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Be sure to click **OK** to apply changes to the parameter settings. Clicking **Cancel** discards all changes you made in the dialog box.

10.3.4 Setting Start Action of the Pattern

Set parameters that specify start conditions for the program pattern.



NOTE

Before you set the start action, always set program conditions.

● **To open the Pattern Start Setting dialog box**

In the Program Pattern Menu dialog box, click **Pattern Start Setting**.

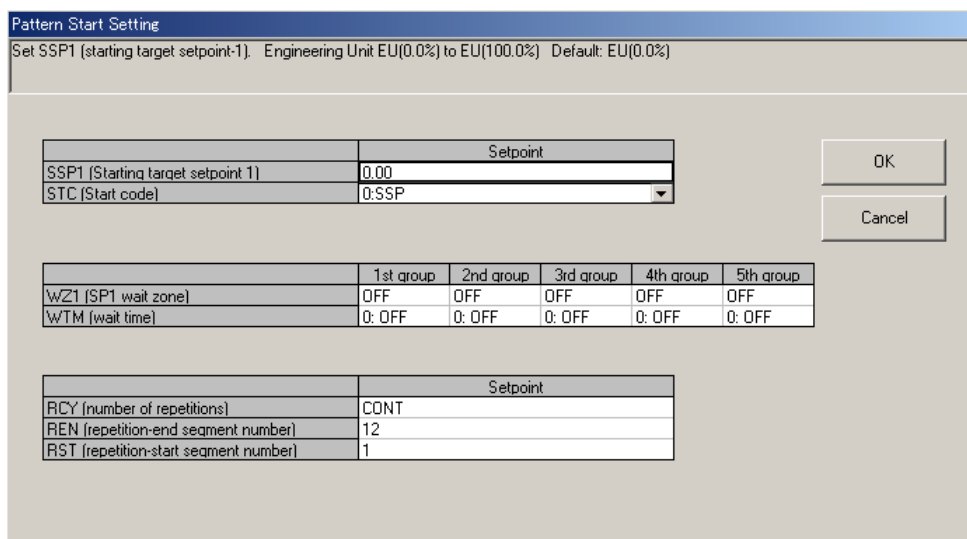


Figure 10.3.4 Pattern Start Setting Dialog Box

● **Pattern start parameters to be set**

Set the following parameters to set start action.

- Starting target setpoint 1 (SSP1)
This parameter sets the target setpoint for TSP1 used at the start of program operation.
- Starting target setpoint 2 (SSP2)
This parameter sets the target setpoint for TSP2 used at the start of program operation.

- Start code (STC)
This parameter sets the start action of the program pattern.
Click the arrow and select the desired parameter from the list that appears:
 - 0: SSP
 - 1: Ramp-prioritized PV start (PV1)
 - 2: Time-prioritized PV start
 - 3: Ramp-prioritized PV start (PV2)
- SP1 wait zone (WZ1n: n = 1 to 5)
These parameters set wait zones for TSP1.
- SP2 wait zone (WZ2n: n = 1 to 5)
These parameters set wait zones for TSP2.
- Wait time (WTMn: n = 1 to 5)
Wait times are set in the time unit specified in the Program Condition Setting dialog box (TMU).
These parameters set the wait times for the waiting function.
- Number of repetitions (RCY)
This parameter sets the number of repetitions of program operation.
- Repetition-end segment number (REN)
Specifies the last segment number for repeating operation.
- Repetition-start segment number (RST)
Specifies the first segment number for repeating operation.

● To return to the Program Pattern Menu dialog box

Click **OK** or **Cancel**.



NOTE

Be sure to click **OK** to apply changes to the parameter settings. Clicking **Cancel** discards all changes you made in the dialog box.

10.3.5 Setting a Program Pattern

Set the parameters to configure a program pattern.



NOTE

- Before you set a program pattern, always set program conditions.
- In the pattern display, the horizontal (time axis) length per segment is shown with a constant length regardless of the length of the time period set.

● To open the Program Pattern Setting dialog box

In the Program Pattern Menu dialog box, click **Program Pattern Setting**.

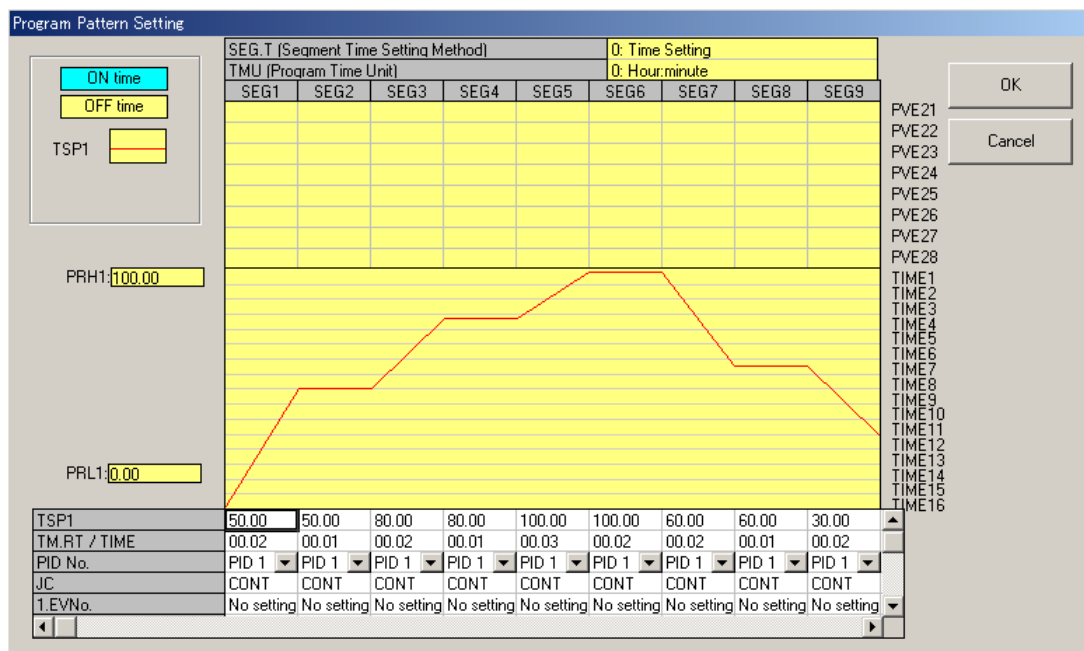


Figure 10.3.5 Program Pattern Setting Dialog Box

Table 10.3.1 Event List

Event type (Loop 1)	Indication	Event type (Loop 2)	Indication
01: PV high limit	PVH1	41: PV high limit	PVH2
02: PV low limit	PVL1	42: PV low limit	PVL2
03: High limit deviation	DVH1	43: High limit deviation	DVH2
04: Low limit deviation	DVL1	44: Low limit deviation	DVL2
05: High limit deviation, de-energized during alarm	b-DVH1	45: High limit deviation, de-energized during alarm	b-DVH2
06: Low limit deviation, de-energized during alarm	b-DVL1	46: Low limit deviation, de-energized during alarm	b-DVL2
07: Deviation of high and low limits	DVB1	47: Deviation of high and low limits	DVB2
08: Deviation within high and low limits	i-DVB1	48: Deviation within high and low limits	i-DVB2
09: PV high limit, de-energized during alarm	b-PVH1	49: PV high limit, de-energized during alarm	b-PVH2
10: PV low limit, de-energized during alarm	b-PVL1	50: PV low limit, de-energized during alarm	b-PVL2
28: SP high limit	SPH1	68: SP high limit	SPH2
29: SP low limit	SPL1	69: SP low limit	SPL2
30: Control output high limit	MVH1	70: Control output high limit	MVH2
31: Control output low limit	MVL1	71: Control output low limit	MVL2

Table 10.3.2 Junction Code

Type of junction code	Indication
0: Continuous switching	CONT
1: Hold switching	HOLD
2: Local-mode end	LOCAL
11: Wait when switching segments (1st group)	WJ1
12: Wait when switching segments (2nd group)	WJ2
13: Wait when switching segments (3rd group)	WJ3
14: Wait when switching segments (4th group)	WJ4
15: Wait when switching segments (5th group)	WJ5
21: Wait within a segment (1st group)	WS1
22: Wait within a segment (2nd group)	WS2
23: Wait within a segment (3rd group)	WS3
24: Wait within a segment (4th group)	WS4
25: Wait within a segment (5th group)	WS5
101 to 199: Link to pattern 1 to 99 101 to 130: for UP550	LINK 1 to LINK 99

* Not available for the old GREEN series program controller.

Note: LOCAL is valid only for the last segment.
If specified for other segments, they will be ignored and segment switching will be performed as CONT.

● **To configure a program pattern**

Set the following items for each segment: final target setpoint, segment time, junction code, PID group number (when segment PID switching is selected), and event(s). You can set all these items through the spreadsheet under the pattern display section.

Time data are displayed and set in the time unit (TMU), which is specified in the Program Condition Setting dialog box.

- **Final target setpoint for PV1 (TSP1)**
Set the final target setpoint for program pattern 1.
- **Final target setpoint for PV2 (TSP2)**
Set the final target setpoint for program pattern 2.
- **Segment time (TM.RT/TIME)**
When time-setting method is selected (SEG.T = 0), enter the time length of the segment within the range of 0.00 to 99.59.
When ramp-setting method is selected (SEG.T = 1), enter the amount of PV change per hour or minute within the range of 0.0 to 100.0% of the PV input range span.
- **PID group number (PID No.)**
When segment PID switching is selected (ZON = 0), set the PID group number used for that segment.
Click the arrow and select from "PID1" to "PID8" from the list that appears.
- **Junction code (JC)**
Set a junction code to specify the type of segment transfer.
Click the arrow and select one of the parameters from the list that appears. (See Table 10.3.2.)
- **Event number (n.EV No.: n = 1 to 8)**
To assign an event to the segment, set the event number first. Click in the **n.EVNo.** cell of the concerned segment. Then click the arrow and select one of the parameters from the list that appears.
Event type is determined as the following according to the event number.
0: OFF (no event set); 1 to 16: time event; 21 to 28: PV event
- **ON time and OFF time**
When Time event is selected in Event number, set within the range of 0.00 to 99.59. The unit depends on the setting of parameter TMU.
- **Type of PV event**
0: OFF; 1, 2, 9, 10, 41, 42, 49, 50: PV-related events; 28, 29, 68, 69: SP-related events; 30, 31, 70, 71: Output-related events; 3 to 8, 43 to 48: Deviation-related events (See Table 10.3.1.)
- **Setpoint of PV event**
Set the setpoint for the PV event within the following range.
PV-related events: -100.0 to 100.0% of the PV input range
Deviation-related events: -100.0 to 100.0% of the PV input range span
Control output-related events: -5.0 to 105.0%

● To set a program pattern

- For Final target setpoint for PV (TSPn) and Segment time (TM.RT/TIME), click in the text box and type appropriate characters.
- For PID group number (PID No.) and Junction code (JC), click the arrow button to open a list of available selections. Select an item from the list.

● To delete a program pattern in the controller

- (1) On the menu bar, click **Communication** and then choose **Delete Pattern**.
- (2) In the Delete Program Pattern dialog box that appears, set the communication conditions. For more information regarding this dialog box, see Section 10.2.3, "Uploading from the Controller."
- (3) Click **OK**.

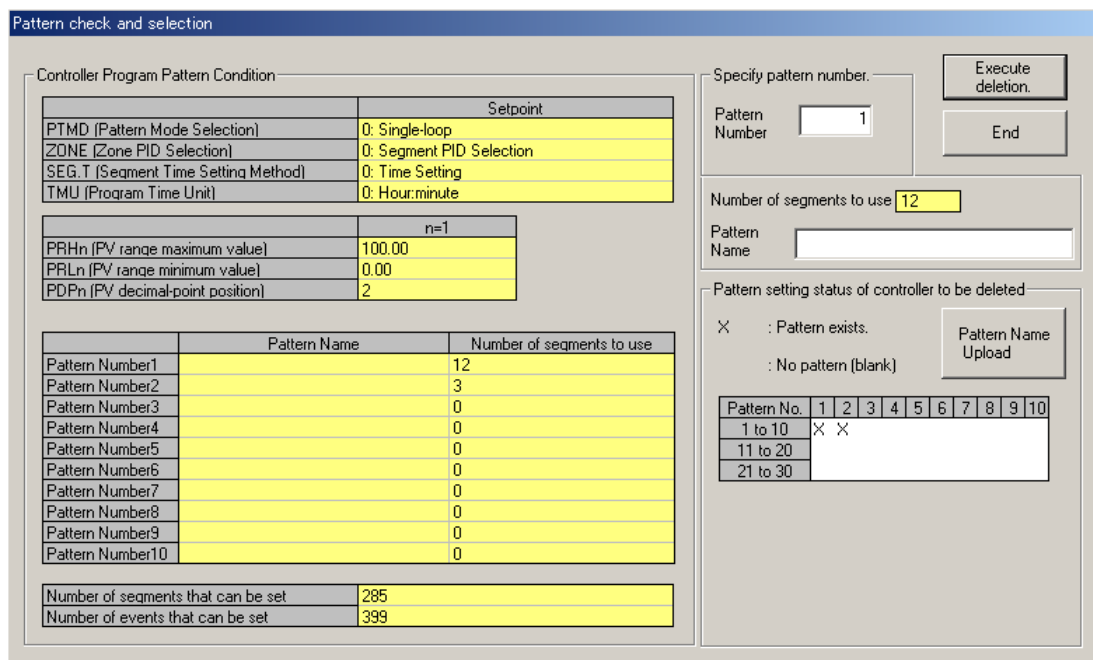


Figure 10.3.6 Pattern Check and Selection Dialog Box (Delete)

- (4) When communication is established, the Pattern Check and Selection dialog box (Figure 10.3.6) appears, showing the program pattern setting status of the controller.
- (5) Enter the pattern number in the **Pattern Number** box and click **Execute deletion**.
- (6) When the program pattern deletion is done, the tool displays a message informing you that the pattern in the controller has been deleted.

● To set an event

- (1) Click in the **n.EVNo.** cell of the segment you wish to set.
- (2) Click the arrow and select the desired event from the list that appears.

● To delete an event

- (1) Click in the **n.EVNo.** cell of the segment you wish to delete.
- (2) Click the arrow and select "OFF" from the list that appears.

● **To insert segment(s)**

- (1) In the spreadsheet under the program pattern display, click any of the cells of the segment after which you wish to insert new segment(s).
- (2) On the menu bar, click **Edit** and then choose **Insert Segment**.
- (3) The Insert dialog box (Figure 10.3.7) appears.

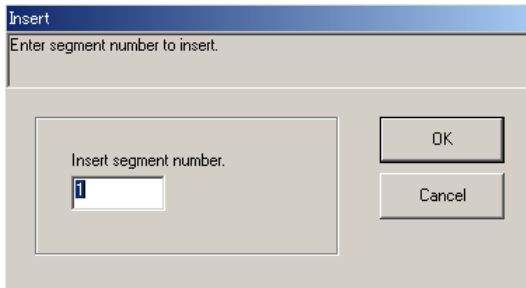


Figure 10.3.7 Insert Dialog Box

- (4) Enter the number of segments you wish to insert and click **OK**.

● **To delete segment**

- (1) On the menu bar, click **Edit** and then choose **Delete Segment**.
- (2) The Delete dialog box (Figure 10.3.8) appears.

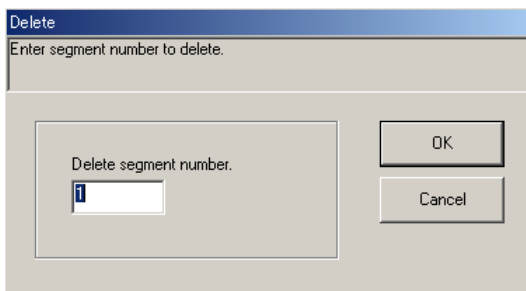


Figure 10.3.8 Delete Dialog Box

- (3) Enter the segment number to be deleted and click **OK**.

● **To non-display time event**

On the menu bar, click **Display** and then choose **Time Event Disply Disabled**.

● **To display all segment**

On the menu bar, click **Display** and then choose **Display All segment**.

● **To go back to the Program Pattern Menu dialog box**

Click **OK** or **Cancel**.



NOTE

Be sure to click **OK** to apply changes to the parameter settings. Clicking **Cancel** discards all changes you made in the dialog box.

11. Working with Program Pattern Data Files

This chapter describes the procedures for the following:

- Saving program pattern data created on the tool or uploaded from a GREEN Series controller to a file on disk.
- Reading a program pattern data file saved on disk with the LL100 tool.
- Comparing program pattern data values on the LL100 tool with those in a program pattern data file saved to disk.

For information about program pattern data files, see Section 10.2.2, “Opening a User File.”

11.1 Setting the File Information

Before saving parameter data, you can enter a title, creator, and comments for the file. However, this information will not be downloaded to the controller.



NOTE

Be sure to enter a Registered Pattern Name because it is downloaded to the controller. The program pattern without the Registered Pattern Name can not be downloaded to the controller.

● To set the file information

- (1) On the menu bar, click **File** and then choose **Information**.
The File Information dialog box (Figure 11.1.1) appears.
- (2) Type the necessary file information in each text box.
- (3) Click **OK**.
- (4) Then, proceed to Section 11.2.1, “Saving Program Pattern Data on Disk.”

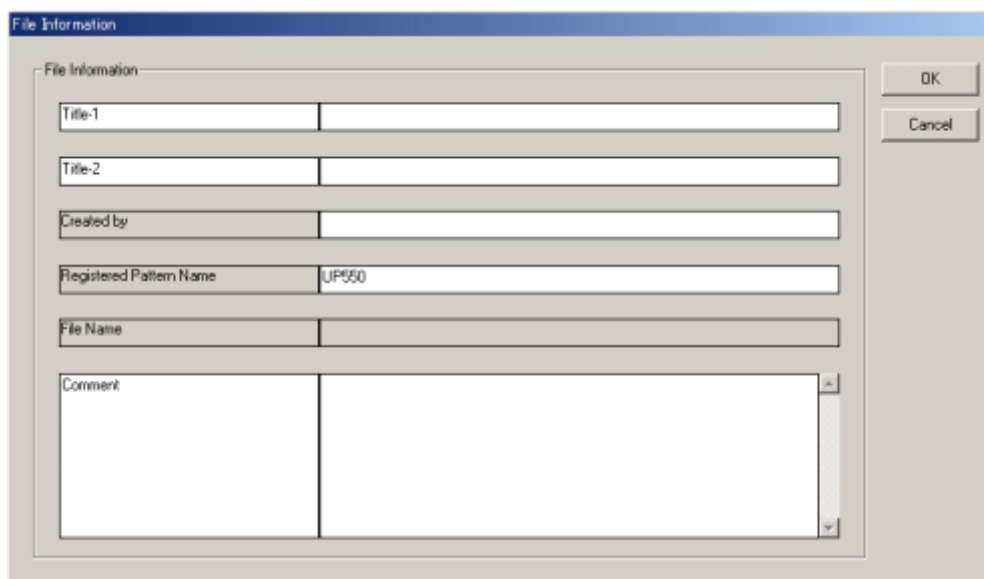


Figure 11.1.1 File Information Dialog Box

11.2 Saving/Reading Data on/from Disk and Comparing Data Values

11.2.1 Saving Program Pattern Data on Disk

- **To save the data under a new filename**

Carry out the following steps to save the LL100 tool's program pattern data to disk:

- (1) On the menu bar, click **File**, and then choose **Save As**.
The Save As dialog box (Figure 11.2.1) appears.
- (2) In the **File name** text box, type a name (within 16 alphanumeric characters) and then click **Save**.
- (3) The program pattern data is saved to disk.
The file is normally located in C:\USER\controller_model (ex. UP750 or UP550) directory.

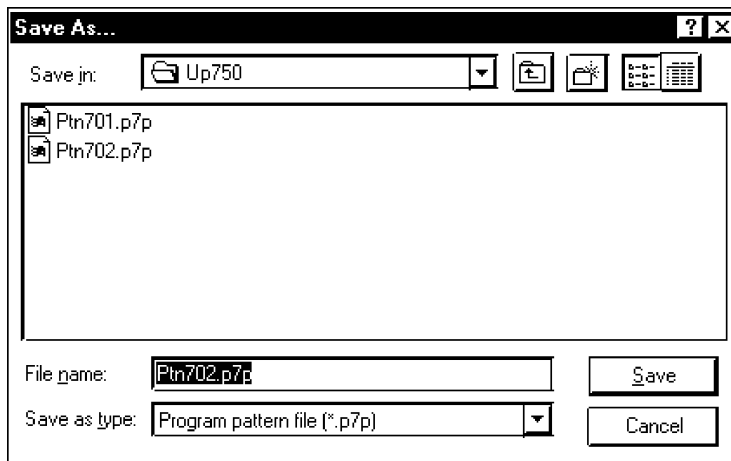


Figure 11.2.1 Save As Dialog Box (Example of UP750)

- **To overwrite the current file**

- (1) On the menu bar, click **File**, and then choose **Save**.
- (2) The program pattern data is saved to disk, overwriting the current file you are working with.

11.2.2 Reading Program Pattern Data from Disk

Read the program pattern data saved on disk onto the LL100 tool.



NOTE

If you read data from a disk, it replaces all the current data in the LL100 tool. If you need the current data, save it to disk before reading new data.

● To read program pattern data from disk

- (1) On the menu bar, click **File**, and then choose **Open**.
The Open User File dialog box (Figure 11.2.2) appears.
- (2) From the list box, select the program pattern file you wish to read.
- (3) Click **Open**.

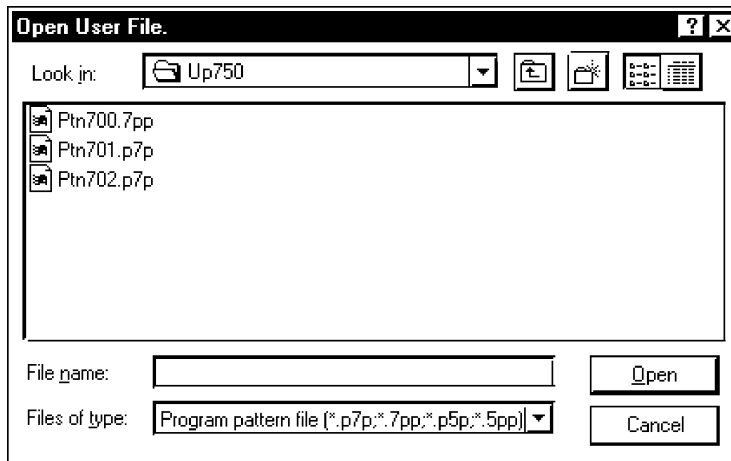


Figure 11.2.2 Open User File Dialog Box (Example of UP750)

11.2.3 Comparing Program Pattern Data Values in LL100 with Those Saved to Disk

You can compare parameter data values in the LL100 with those saved to disk.



NOTE

It is impossible to compare the data values in GREEN Series controllers with those in old GREEN Series controllers. Also note that the parameters which display “-” in their text boxes and the parameters for a unit setup will not be compared.

● **To compare program pattern data values between the LL100 and those saved to disk**

- (1) On the menu bar, Click **File**, and then choose **Compare**.
- (2) From the list box, select the program pattern data file you wish to compare.
- (3) Click **Open**.
- (4) A message appears saying “The data on Program Pattern Setting Tool will be compared with those saved to the file on disk. OK?”
- (5) Click **Yes** to start comparing.
- (6) When the program pattern data match, a message appears saying “No non-matching parameter detected.”

If any program pattern data value does not match, a message appears saying “Non-matching parameter detected. Do you want to see the list?” Click **Yes** to open the List of inconsistencies dialog box.

The List of inconsistencies dialog box (Figure 11.2.3) appears.

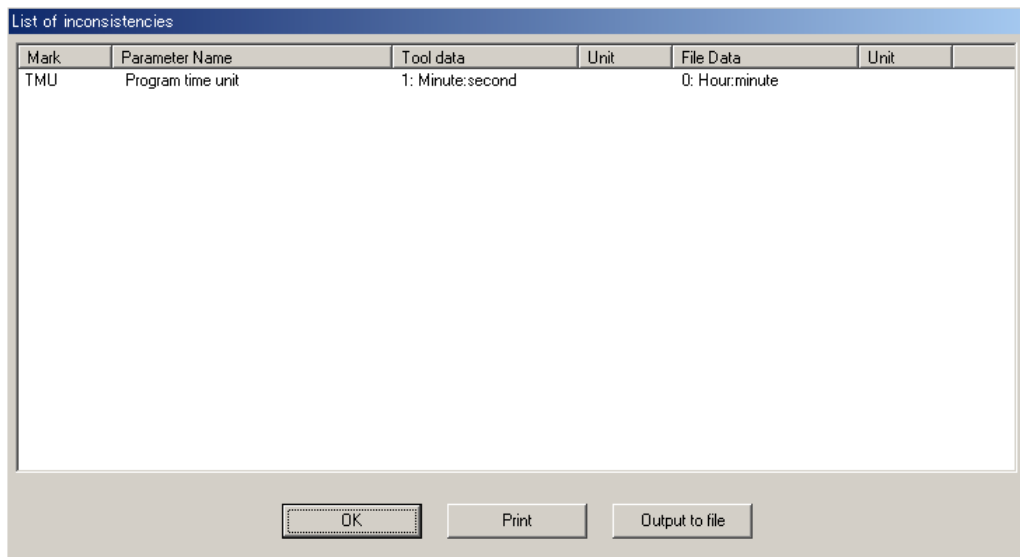


Figure 11.2.3 List of Inconsistencies Dialog Box

12. Uploading/Downloading Program Pattern from/to Controller, Comparing Data Values, and Batch Copy

This chapter describes the procedures for the following:

- Uploading a program pattern from a controller
- Downloading a program pattern to a controller
- Comparing program pattern data values with those in a controller
- Batch copy

12.1 Uploading a Program Pattern from Controller

Upload a program pattern from a GREEN Series controller to the LL100 tool.



NOTE

If you upload a program pattern from a controller, it replaces all the current data in the LL100. If you need the current data, save it to disk before uploading.

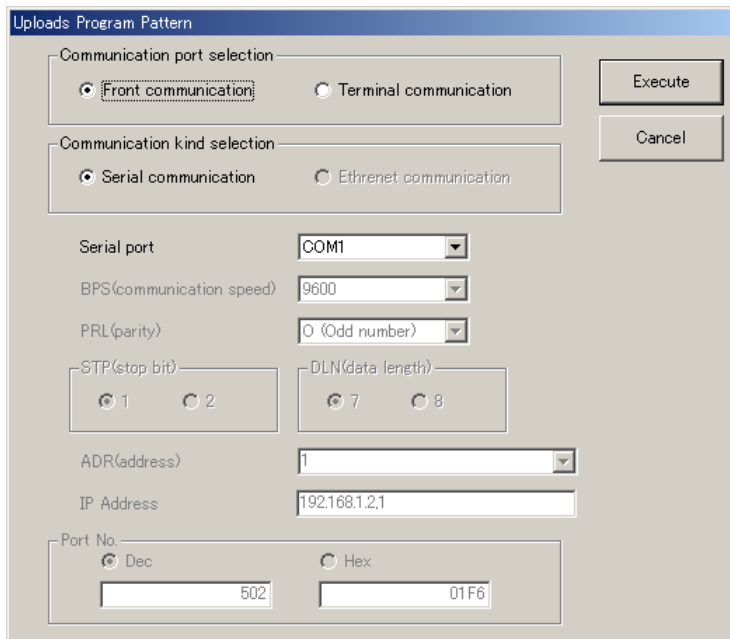


Figure 12.1.1 Uploads Program Pattern Dialog Box

● To upload via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Upload from Controller**.
The Uploads Program Pattern dialog box (Figure 12.1.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial Port** list, select a communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **OK**.
- (5) When communication is established, the Pattern Check and Selection dialog box (Figure 12.1.2) appears, showing the program pattern setting status of the controller.

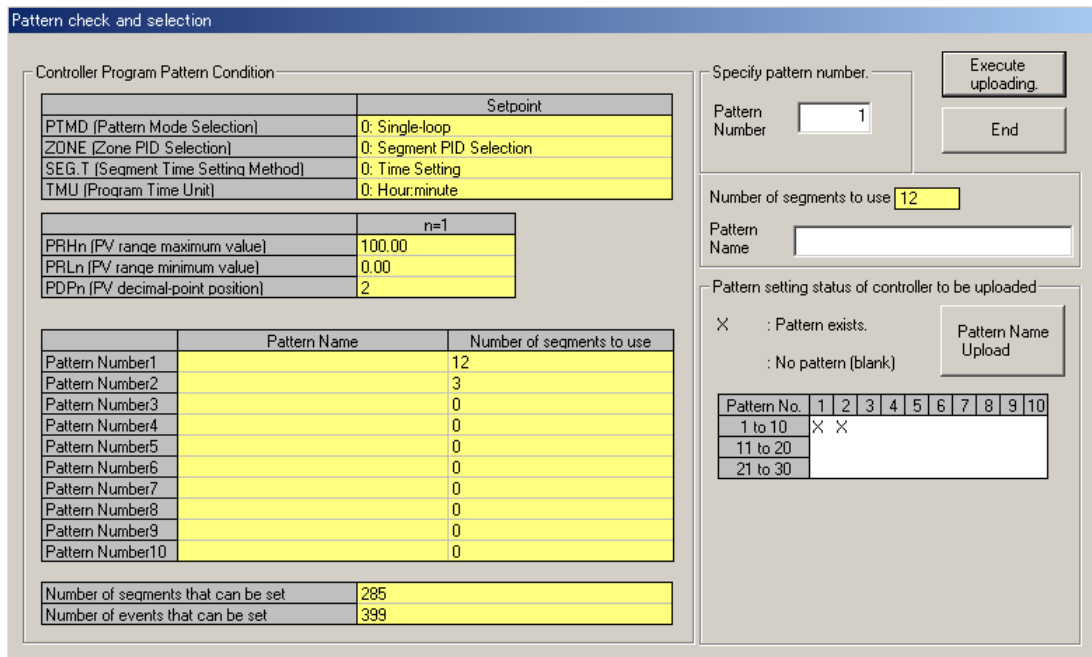


Figure 12.1.2 Pattern Check and Selection Dialog Box (Upload)

- (6) Enter the pattern number in the **Pattern Number** box and click **Execute uploading**.
- (7) When uploading is complete, a message appears to notify you it is complete.

See Also

Section 2.3, "Connecting Controller to Personal Computer," for how to connect via the optical communication adapter.

● To upload via serial communication terminals

- (1) On the menu bar, click **Communication** then choose **Upload from Controller**.
The Uploads Program Pattern dialog box (Figure 12.1.1) opens.
- (2) Click **Terminal communication**. (This means to use the communication terminals at the rear of the controller.)
- (3) Click **Serial communication**.
- (4) From the **Serial port** list, select the communication port of the personal computer from **COM1** to **COM16**.
- (5) Set the RS485 communication conditions:
 - Communication speed, parity and address: Select from drop-down list.
 - Stop bit and data length: Select with option buttons.Use the same settings for the target controller's RS485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **OK**.
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 12.1.2) appears, showing the program pattern setting status of the controller.
- (8) Enter the pattern number in the **Pattern Number** box and click **Execute uploading**.
- (9) When uploading is complete, a message appears to notify you it is complete.



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring for using the serial communication terminals.

● To upload via Ethernet communication terminal

- (1) On the menu bar, click **Communication** then choose **Upload from Controller**.
The Uploads Program Pattern dialog box (Figure 12.1.1) opens.
- (2) Click **Terminal communication**. (This means to use the communication terminals at the rear of the controller.)
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **Execute**.
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 12.1.2) appears, showing the program pattern setting status of the controller.
- (8) Enter the pattern number in the **Pattern Number** box and click **Execute uploading**.
- (9) When uploading is complete, a message appears to notify you it is complete.



NOTE

Uploading program pattern via Ethernet is impossible for the UP750 in UT mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.

**NOTE**

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, "Setup" of the Ethernet Communication Functions user's manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

12.2 Downloading Program Pattern Data to Controller

Download the program pattern data from LL100 to a GREEN Series controller.



WARNING

Do not download parameter data to a controller while the controller is being used. Be sure to change the operation status to STOP before you execute downloading.

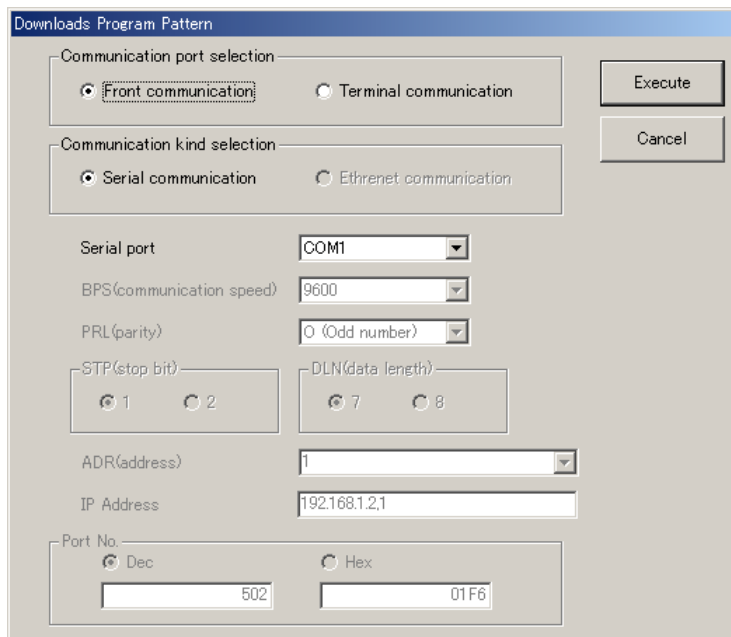


Figure 12.2.1 Downloads Program Pattern Dialog Box

● To download via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Download Controller**.
The Downloads Program Pattern dialog box (Figure 12.2.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial Port** list, select a communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **OK**.
- (5) When communication is established, the Pattern Check and Selection dialog box (Figure 12.2.2) appears, showing the program pattern setting status of the controller.

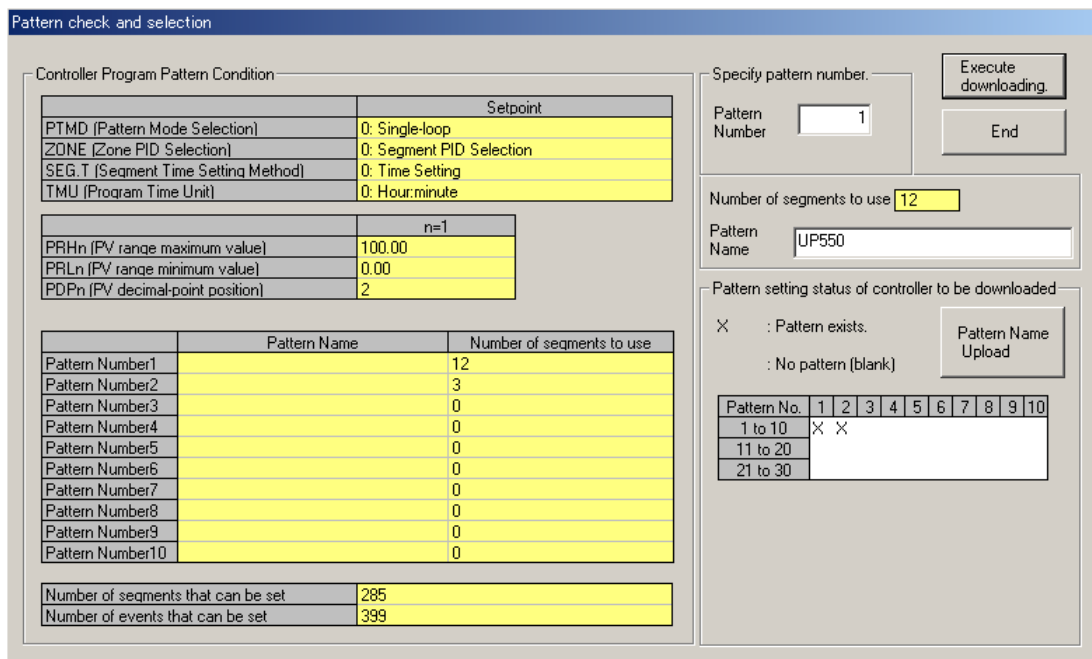


Figure 12.2.2 Pattern Check and Selection Dialog Box (Download)

- (6) Enter the pattern number in the **Pattern Number** text box and click **Execute downloading.**
- (7) When downloading is complete, a message appears to notify you it is complete.

See Also

Section 2.3, "Connecting Controller to Personal Computer," for how to connect via the optical communication adapter.

● **To download via serial communication terminals**

- (1) On the menu bar, click **Communication** then choose **Download from Controller.**
The Downloads Program Pattern dialog box (Figure 12.2.1) opens.
- (2) Click **Terminal communication.** (This means to use the communication terminals at the rear of the controller.)
- (3) Click **Serial communication.**
- (4) From the **Serial port** list, select the communication port of the personal computer from **COM1** to **COM16.**
- (5) Set the RS485 communication conditions:
 - Communication speed, parity and address: Select from drop-down list.
 - Stop bit and data length: Select with option buttons.
 Use the same settings for the target controller's RS485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **OK.**
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 12.2.2) appears, showing the program pattern setting status of the controller.
- (8) Enter the pattern number in the **Pattern Number** box and click **Execute downloading.**
- (9) When downloading is complete, a message appears to notify you it is complete.

**NOTE**

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, "Setup" of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring the serial communication terminals.

● To download via Ethernet communication terminal

- (1) On the menu bar, click **Communication** then choose **Download from Controller**.
The Downloads Program Pattern dialog box (Figure 12.2.1) opens.
- (2) Click **Terminal communication**. (This means to use the communication terminals at the rear of the controller.)
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **OK**.
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 12.2.2) appears, showing the program pattern setting status of the controller.
- (8) Enter the pattern number in the **Pattern Number** box and click **Execute downloading**.
- (9) When downloading is complete, a message appears to notify you it is complete.

**NOTE**

Downloading program pattern via Ethernet is impossible for the UP750 in UT mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller



NOTE

Before downloading, the LL100 verifies the registered pattern name and program condition, segment and event number between the parameter data to be downloaded and those in the target controller. On detecting disagreement with the parameters above, the tool acts in the following ways.

- | | |
|---|--|
| 1) Unspecified registered pattern name: | The tool cancels the downloading. |
| 2) Non-matching program condition: | The tool asks you to cancel the downloading. |
| 3) Segment and event number over: | The tool asks you to cancel the downloading. |
-

12.3 Comparing Program Pattern Data Values between the Tool and Controller

You can compare the program pattern data values on the LL100 tool with those in a controller.



NOTE

It is impossible to compare the data values in GREEN Series controllers with those in old GREEN Series controllers. Also note that the parameters which display “-” in their text boxes and the parameters for a unit setup will not be compared.

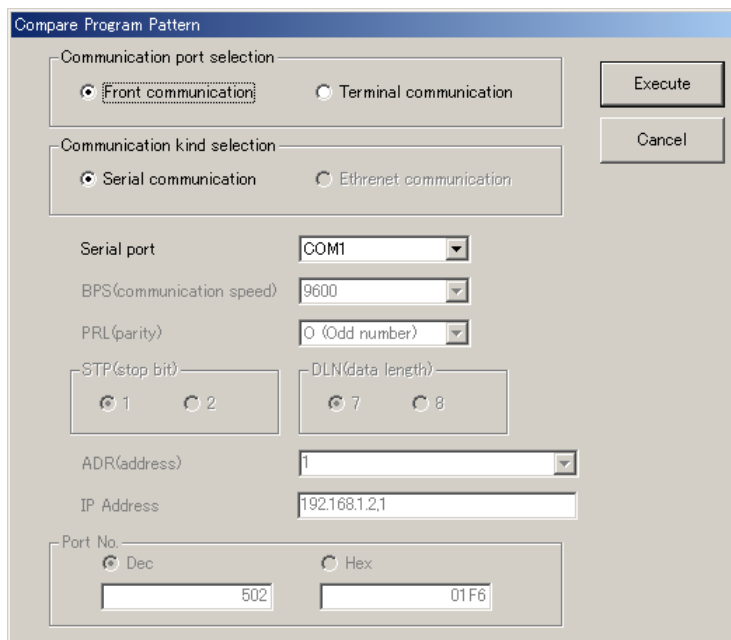


Figure 12.3.1 Compare Program Pattern Dialog Box

● To compare via the supplied optical communication adapter

- (1) On the menu bar, click **Communication**, and then choose **Compare Parameter**.
The Compare Program Pattern dialog box (Figure 12.3.1) appears.
- (2) Click **Front communication**.
- (3) From the **Serial Port** list, select the communication port of the personal computer (COM1 to COM16).
- (4) Connect the controller to the personal computer, and then click **OK**.
- (5) When communication is established, the Pattern Check and Selection dialog box (Figure 12.3.2) appears, showing the program pattern setting status of the controller.

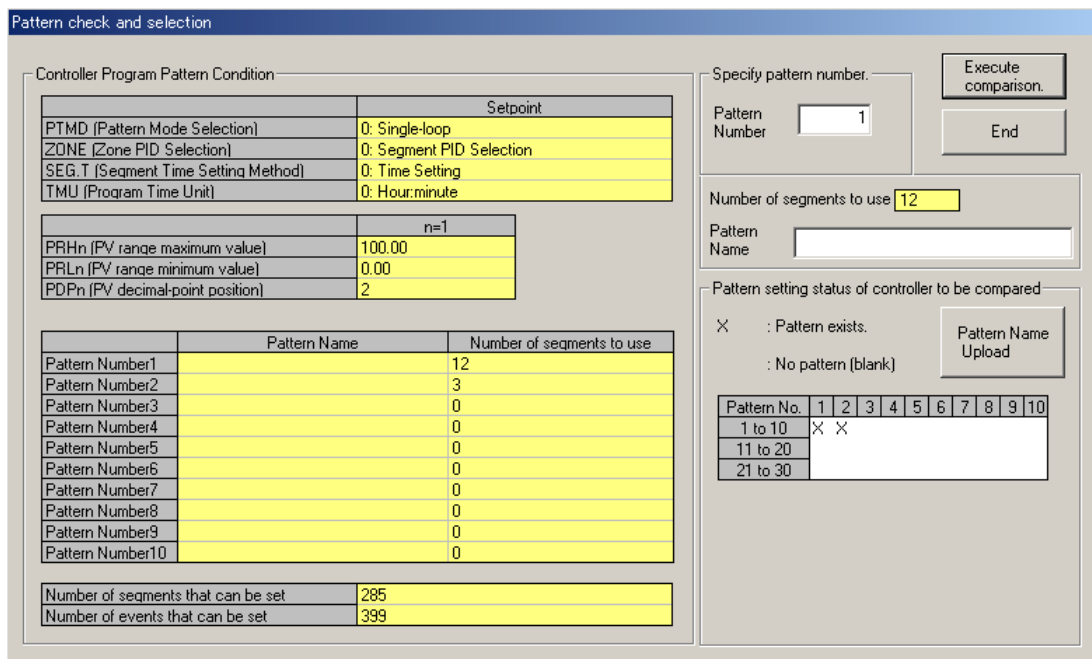


Figure 12.3.2 Pattern Check and Selection Dialog Box (Compare)

- (6) Enter the pattern number in the **Pattern Number** text box and click **Execute comparison**.
- (7) When the program pattern data match, a message appears saying “No non-matching parameter detected.”
If any program pattern data value does not match, a message appears saying “Non-matching parameter detected. Do you want to see the list?” Click **Yes** to open the Non-matching Parameters dialog box.
- (8) Click **Yes** to open the Non-matching Parameters dialog box.

See Also

Section 2.3, “Connecting Controller to Personal Computer,” for how to connect via the optical communication adapter.

● **To compare via serial communication terminals**

- (1) On the menu bar, click **Communication**, and then choose **Compare Pattern**.
The Compare Program Pattern dialog box (Figure 12.3.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Serial communication**.
- (4) From the **Serial Port** list, select the communication port of the personal computer (COM1 to COM16).
- (5) Set the RS-485 communication conditions:
 - Communication speed, parity, and address: Select from drop-down lists.
 - Stop bit and data length: Select with option buttons.
 Use the same settings for the target controller’s RS-485 communication parameters.
- (6) Connect the controller to the personal computer, and then click **OK**.
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 12.3.2) appears, showing the program pattern setting status of the controller.

- (8) Enter the pattern number in the **Pattern Number** text box and click **Execute comparison**.
- (9) When the program pattern data match, a message appears saying “No non-matching parameter detected.”
If any program pattern data value does not match, a message appears saying “Non-matching parameter detected. Do you want to see the list?” Click **Yes** to open the Non-matching Parameters dialog box.
- (10) Click **Yes** to open the Non-matching Parameters dialog box.



NOTE

Communication via serial communication terminals is possible only for GREEN Series controllers with the RS485 communication optional function. For controllers without the RS485 communication optional function, always select **Front communication**.

To communicate via serial communication terminals, set the target controller's RS485 communication protocol to PC-link communication. With other protocol, the serial terminal communication is unavailable. Also note that the RS485 communication parameters (communication speed, parity, stop bit and data length) must be set identically for both the target controller and the personal computer.

In the case of 300 series of old GREEN Series, the serial terminal communication is possible only for the controllers with the communication function.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or serial terminal communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via serial communication terminals is possible for the controllers with RS485 communication function.

See Also

Chapter 2, “Setup” of the GREEN Series Communication Functions user's manual (IM 05G01B02-01E), for information about wiring the serial communication terminals.

● To compare via Ethernet communication terminal

- (1) On the menu bar, click **Communication**, and then choose **Compare Pattern**.
The Compare Program Pattern dialog box (Figure 12.3.1) appears.
- (2) Click **Terminal communication**.
- (3) Click **Ethernet communication**.
- (4) Set the target controller's IP address and RS485 communication address in the **IP Address** text box.
- (5) Set the target controller's port number in the **Port No.** text box. The port number can be set in decimal or hexadecimal.
- (6) Connect the controller to the personal computer, and then click **OK**.
- (7) When communication is established, the Pattern Check and Selection dialog box (Figure 12.3.2) appears, showing the program pattern setting status of the controller.

- (8) Enter the pattern number in the **Pattern Number** text box and click **Execute comparison**.
- (9) When the program pattern data match, a message appears saying “No non-matching parameter detected.”
If any program pattern data value does not match, a message appears saying “Non-matching parameter detected. Do you want to see the list?” Click **Yes** to open the Non-matching Parameters dialog box.
- (10) Click **Yes** to open the Non-matching Parameters dialog box.



NOTE

Comparing program pattern via Ethernet is impossible for the UP750 in UT mode 21. Use front communication.



NOTE

Communication via Ethernet communication terminal is possible only for controllers with the Ethernet communication optional function and for the controllers with the RS485 communication function for which the Ethernet converter is used as Ethernet-serial gateway. For controllers without the RS485 communication optional function, always select **Front communication**.

In the case of 300 series of GREEN Series, the LL operating parameter selects the front communication or Ethernet communication. Be sure to confirm the setting of LL parameter.

When LL parameter is ON, communication with LL100/LL200 is possible.

When LL parameter is OFF, communication via Ethernet communication terminal is possible for the controllers with Ethernet communication function.



NOTE

Set an IP address and RS485 communication address being divided by the comma (,) in the **IP Address** text box.

Example: 192.168.1.1,1

To communicate with a controller with Ethernet communication function:

IP address=IP address set to the controller

RS485 address=1

To communicate with a controller with RS485 communication function for which the controller with Ethernet communication function or the Ethernet converter is used as Ethernet-serial gateway:

IP address=IP address set to the gateway

RS485 address=RS485 address set to the controller

See Also

Chapter 2, “Setup” of the Ethernet Communication Functions user’s manual (IM 05G01B52-01E), for information about wiring for the Ethernet communication terminals.

12.4 Using Batch Copy Function

This section explains the batch copy function, which copies all the program patterns in a controller to another controller at the same time. The batch copy functions consists of the following two functions.

- 1) Uploads all the program patterns from a controller at a time
- 2) Downloads all the program patterns to a controller at a time



NOTE

With batch copy, the LL100 carries out the downloading only when the program condition settings (see Section 10.3.3) match between the copy source and destination controllers.

● To upload all the patterns from a controller

- (1) On the menu bar, click **Communication**, choose **Batch Copy**, and then **Upload at a time**.
- (2) In the Batch Copy: Uploading from Controller dialog box (Figure 12.4.1) that subsequently opens, specify the directory where you wish to save the uploaded data.

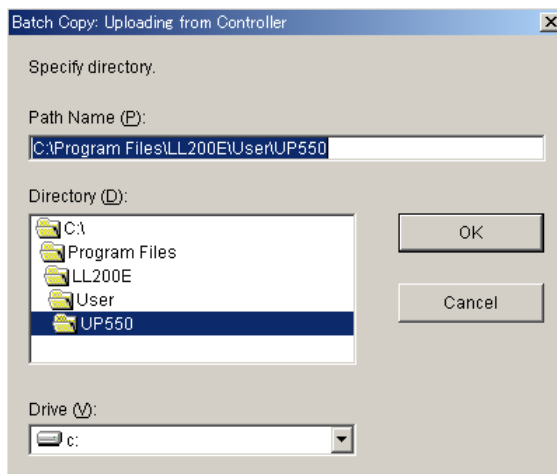


Figure 12.4.1 Batch Copy: Uploading from Controller Dialog Box



NOTE

If you specify an existing directory as the uploading destination, a message asking you to confirm program pattern file deletion appears if any program pattern file exists in that directory. If you need the program pattern file(s), click **No** and specify a new folder.

- (3) Click **OK**.
- (4) In the Uploads Entire Program Patterns at a Time dialog box that subsequently opens, set the communication conditions. See Section 12.1, “Uploading a Program Pattern from Controller.”

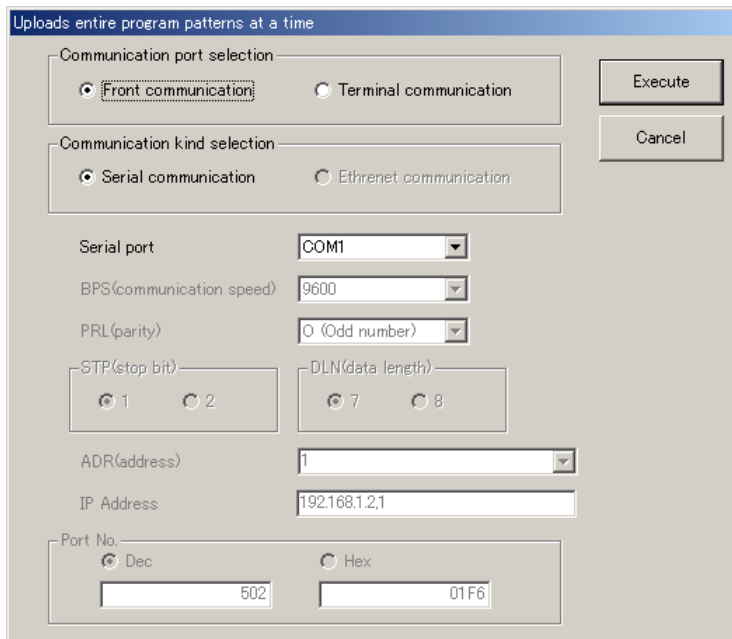


Figure 12.4.2 Uploads Entire Program Patterns at a Time Dialog Box

- (5) After you set the communication conditions, click **OK**.
- (6) Following the instructions given by the message that appears, connect the controller.
- (7) When you are ready, click **OK**.
- (8) The Communicating dialog box (Figure 12.4.3) appears.

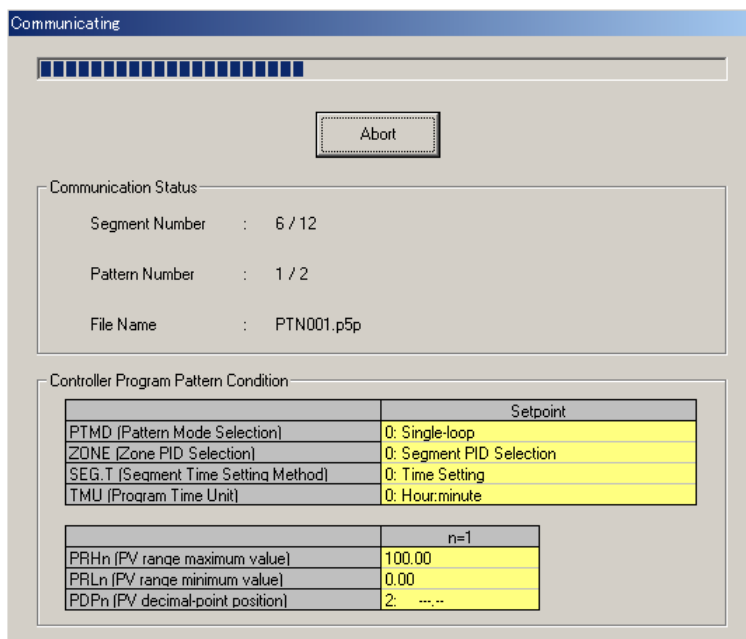


Figure 12.4.3 Communicating Dialog Box

- (9) When uploading is complete, a message appears to notify you it is complete. Click **OK**.

● **To download all the patterns to a controller**

- (1) On the menu bar, click **Communication**, choose **Batch Copy**, and then **Download at a time**.
- (2) In the Batch Copy: Downloading to Controller dialog box (Figure 12.4.4) that subsequently opens, specify the directory where the data you wish to download is stored.

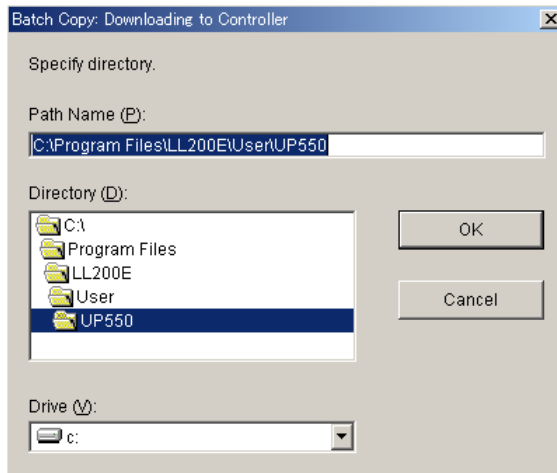


Figure 12.4.4 Batch Copy: Downloading to Controller Dialog Box



NOTE

- In batch copy, the tool downloads program pattern files of the following file names:
UP750: PTN001.p7p to PTN300.p7p
UP550: PTN001.p5p to PTN030.p5p
where the numbers in the file names are pattern numbers.
- If the program pattern files are not found in the specified directory, a message will appear to inform you. In this case, specify the correct directory.
- Batch copy downloading will replace all the existing program patterns in the target controller.
- Before you download, check that the total numbers of used segments and events do not exceed their respective limits.

- (3) Click **OK**.
- (4) In the Downloads Entire Program Patterns at a Time dialog box that subsequently opens, set the communication conditions. For the operation of this dialog box, see Section 12.2, “Downloading a Program Pattern to Controller.”

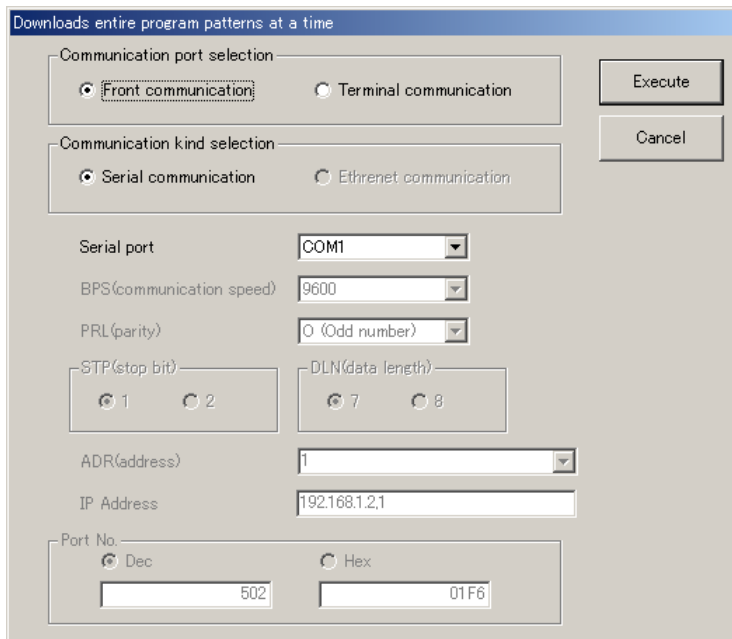


Figure 12.4.5 Downloads Entire Program Patterns at a Time Dialog Box

- (5) After you set the communication conditions, click **OK**.
- (6) Following the instructions given by the message that appears, connect the controller.
- (7) When you are ready, click **OK**.
- (8) The Communicating dialog box (Figure 12.4.6) appears.

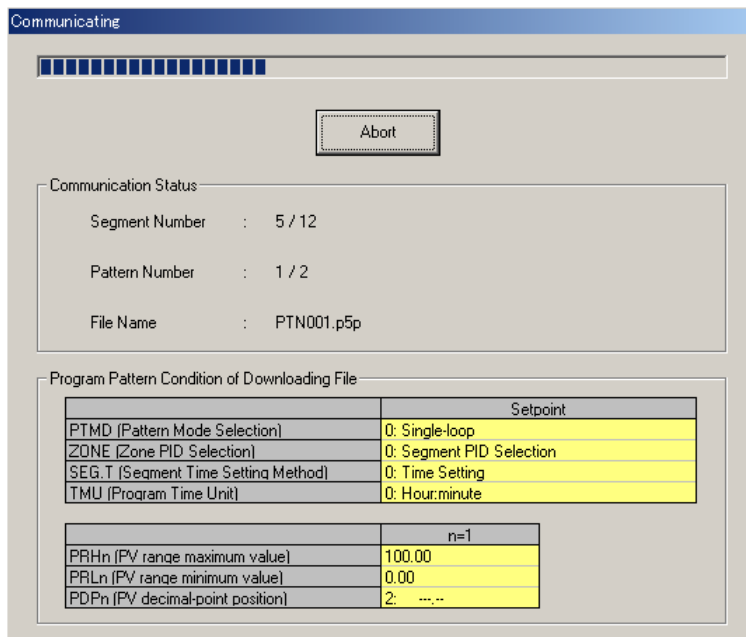


Figure 12.4.6 Communicating Dialog Box

- (9) When downloading is complete, a message appears to notify you that it is complete. Click **OK**.

12.5 Address Tag

When performing RS485 communication, you can set up a tag name for each of the communication address from 1 to 99 so that it may be easy to discriminate.

The set address tag is displayed with the communication address in the Download Parameter, Upload Parameter and Parameter Comparing dialog box.

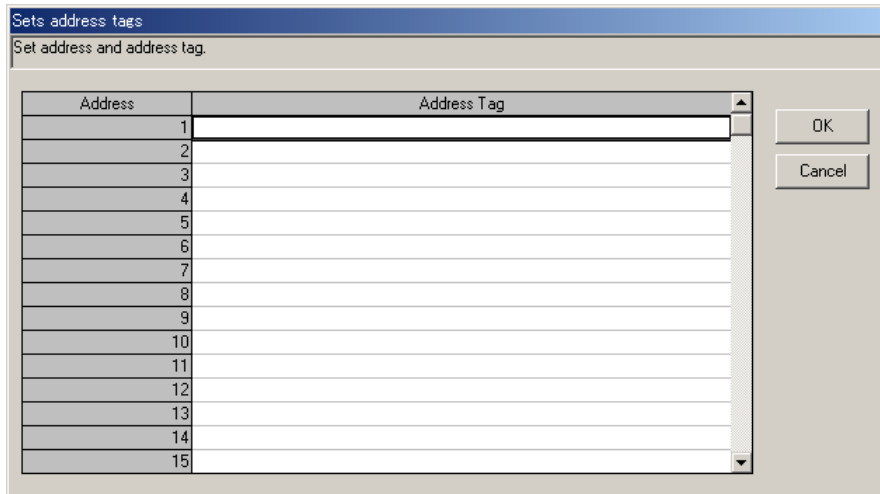


Figure 12.5.1 Address Tag Dialog Box



NOTE

The same address tag cannot be set up to a different communication address.

13. Printing a Program Pattern

This chapter explains the procedure for printing out the program pattern data that is created in the LL100 tool, uploaded from a GREEN Series controller, or saved on disk. You can also save the printout data as a text file.

13.1 Printing a Program Pattern

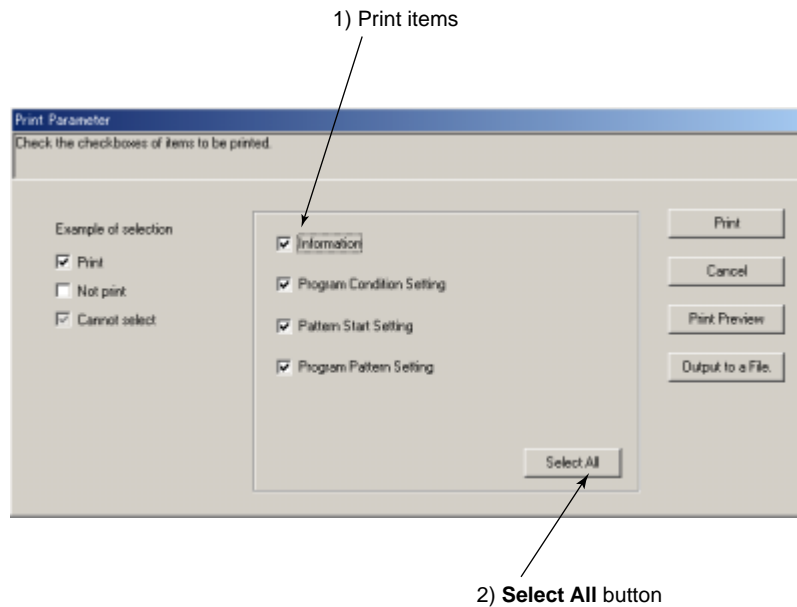


Figure 13.1.1 Print Parameter Dialog Box (Example of UP750)

● To print out parameters

- (1) Make sure that the printer is connected to the personal computer.
- (2) On the menu bar, click **File**, and then choose **Print**.
The Print Parameter dialog box (Figure 13.1.1) appears.
- (3) Select the check boxes of the data items you wish to print.
 - 1) Print items
 - Information
 - Program Condition Setting
 - Pattern Start Setting
 - Program Pattern Setting
 - 2) **Select All** button
Click this button to select all the items.
- (4) Click **Print**.
- (5) The Printer Settings dialog box opens. Select printer type, paper size, and orientation of paper.
- (6) Click **OK** to start printing.



NOTE

The printout may be on a larger or smaller scale according to the type of printer in use. In this case, modify the resolution before printing. Refer to the user's manual for printer regarding to the modification of resolution.

DATE : 5/12/00

UP750

File Name : PRO75-1F.p7p
 Created by :
 Pattern Name : Flow Control-10A

Program Pattern Setting

	SEG10	SEG11	SEG12	SEG13	SEG14	SEG15	SEG16	SEG17	SEG18
TSP1	800.0	800.0	20.0	20.0	600.0	600.0	20.0	20.0	400.0
TIME	00.30	01.00	00.15	01.00	00.20	00.03	02.00	01.00	00.01
JC	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT	CONT
EVNO1	PVE21	TIME1	PVE22	TIME2	TIME3	PVE25	TIME4	TIME10	PVE23
ON time1	-	00.00	-	00.00	00.00	-	00.00	00.00	-
OFF time1	-	01.10	-	00.10	00.25	-	01.00	00.45	-
EVA1	DVB1	-	PVL1	-	-	i-DVB1	-	-	OFF
EVB1	5.0	-	100.0	-	-	0.0	-	-	0.0
EVNO2	No stting	No stting	No stting	No stting	No stting	No stting	No stting	No stting	No stting
ON time2									
OFF time2									
EVA2									
EVB2									
EVNO3									
ON time3									
OFF time3									
EVA3									
EVB3									
EVNO4									
ON time4									
OFF time4									
EVA4									
EVB4									
EVNO5									
ON time5									
OFF time5									
EVA5									
EVB5									
EVNO6									
ON time6									
OFF time6									
EVA6									
EVB6									
EVNO7									
ON time7									
OFF time7									
EVA7									
EVB7									
EVNO8									
ON time8									
OFF time8									
EVA8									
EVB8									
	SEG10	SEG11	SEG12	SEG13	SEG14	SEG15	SEG16	SEG17	SEG18

PRH1:1370.0

ON time
 OFF time

TSP1: _____

PRL1:-200.0

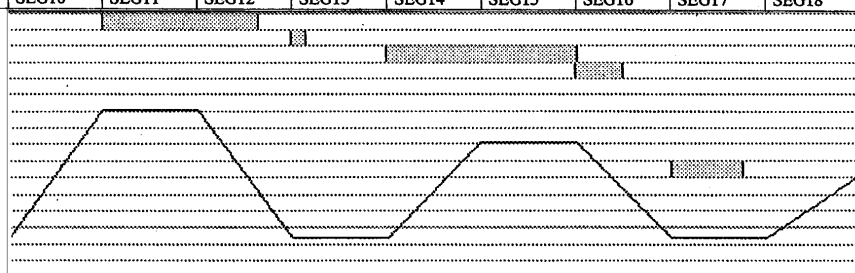


Figure 13.1.2 Example of Printout Result (UP750)

13.2 Previewing the Printout

● To view a printout image

- (1) Make sure that the printer is connected to the personal computer.
- (2) On the menu bar, click **File**, and then choose **Print**.

The Print Parameter dialog box (Figure 13.1.1) appears.

- (3) Click **Print Preview**.

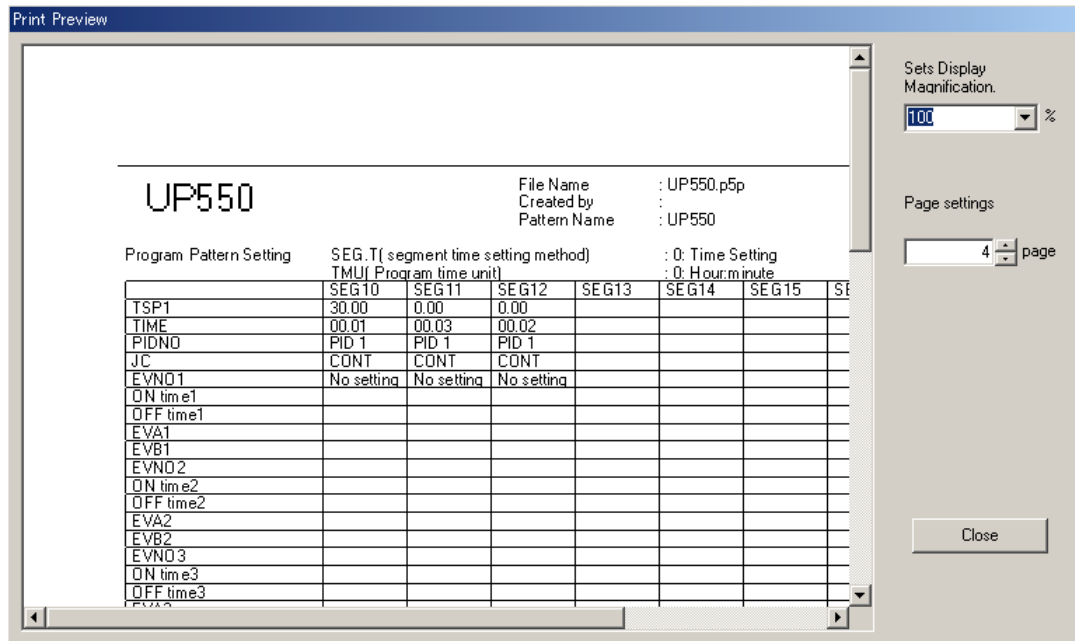


Figure 13.2.1 Example of Print Preview Dialog Box (Example of UP550)

13.3 Saving Printout Data As a CSV File

You can save the printout data as a CSV file.

- The filename extension of CSV files is csv. The filenames preceding the extension must be up to 16 alphanumeric characters.

- To save as a CSV file

- (1) On the menu bar, click **File**, and then choose **Print**.
The Print Parameter dialog box (Figure 13.1.1) appears.
- (2) Click **Output to a File**. The Save As dialog box (Figure 13.3.1) opens.
- (3) In the **File name** text box, type a file name (up to 16 alphanumeric characters) then click **Save**.

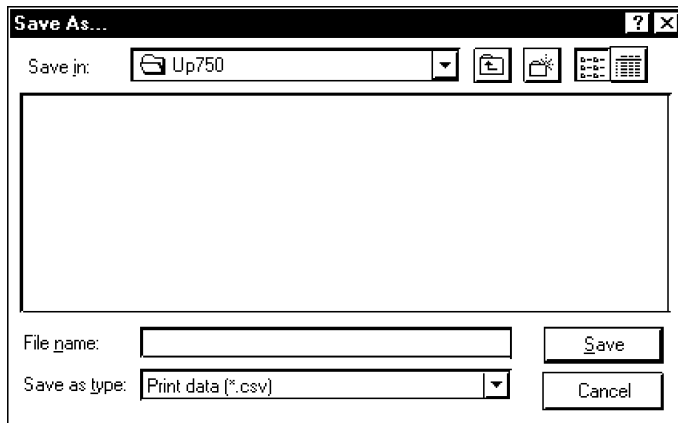


Figure 13.3.1 Save As Dialog Box (Example of UP750)

14. Starting and Setting the VJET (Ethernet Converter) Setting Tool

This chapter describes how to start and set the VJET (Ethernet converter) setting tool.

- (1) On the menu bar, click **Parameter setting**, and then choose **Run VJET Setting Tool**.

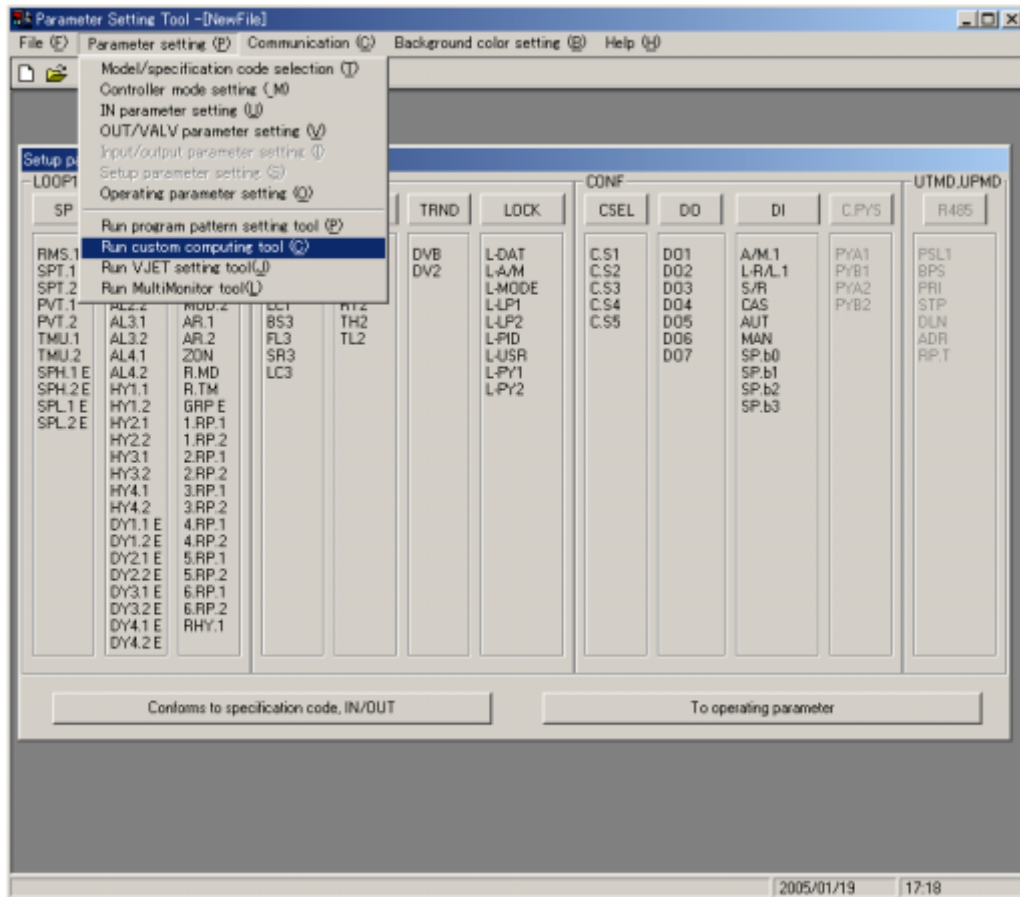


Figure 14.1.1 Starting the VJET Setting Tool

- (2) The VJET Setting Tool dialog box appears, showing the list of VJET connected to the personal computer. (If the VJET is connected after starting the tool, click Tool on the Menu bar and then choose Research.)

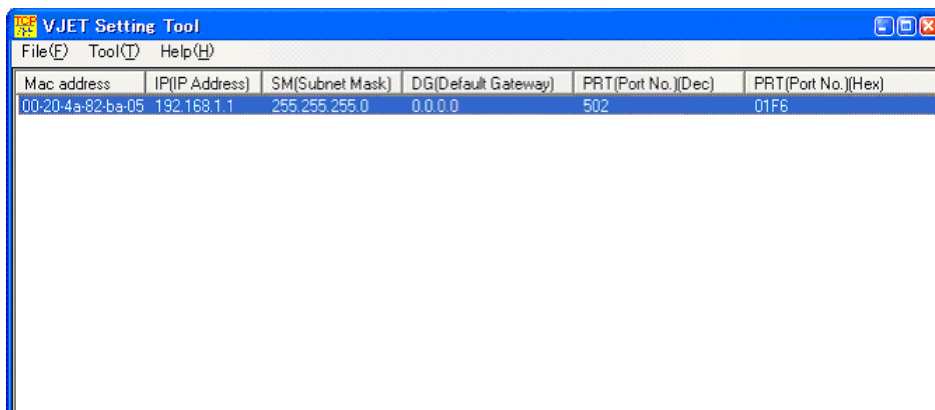
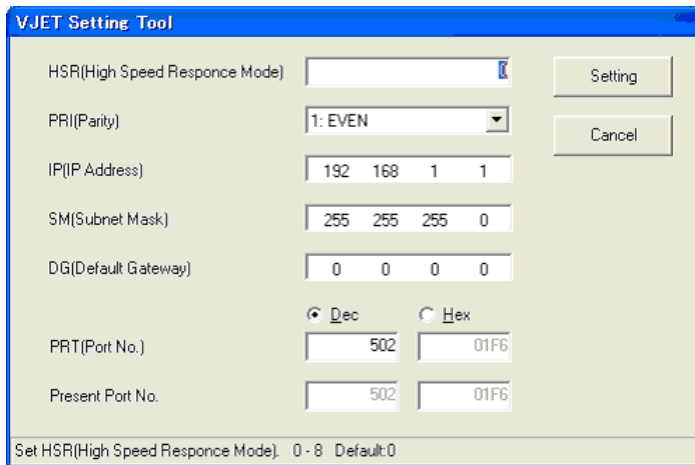


Figure 14.1.2 VJET Setting Tool Dialog Box

- (3) When changing the setting, double click the corresponding IP address. Then the VJET Setting Tool dialog box appears. If multiple VJET are displayed, identify them by Mac address. (Mac address: The seal showing the 12-digit alphanumeric character is attached to the sideface of the VJET main unit.)



- (4) Change the settings of the High-speed response mode, Parity, IP address, Subnet mask, Default gateway and Port number, and then click **OK**. The set parameter data is set to VJET.(It takes about 10 seconds to change the settings.)
 - PRT (Port number) : Set a new port number if changing the port number currently set.
 - Present Port No. : The port number currently set in the VJET.
- (5) The change of settings is completed if the changed settings are displayed in the first dialog box.

Factory-set defaults

High-speed response mode: 0 (OFF) *1
 Parity: 1 (Even)
 IP address: 192.168.1.1
 Subnet mask: 255.255.255.0
 Default gateway: 0.0.0.0
 Port number: 502

*1 The High-speed Response Mode improves the response performance of reference numbers 40001 to 40025 of RS-485 connection devices. The Mode can be set to a maximum of eight devices. Setting the number of devices using the VJET setting tool applies the Mode to the connection devices for Unit ID 1 to the set number.
 * The period to read the process data from RS-485 connection devices cannot be specified. The VJET automatically reads the process data at the highest speed corresponding to the number of RS-485 connection devices for which this function (High-speed Response Mode) is used.
 * If the function is used for many RS-485 connection devices, the process data from each RS-485 connection device stored in the VJET may be delayed to the actual process. In this case, turn off the function.

*2 The setting rang for the port number (PRT) is as follows.
 502, 1024 to 65535 (decimal number)
 01F6, 0400 to FFFF (hexadecimal number)

15. Starting the Custom Computation Building Tool

This chapter describes how to start the custom computation building tool after setting the parameters. This chapter is intended for users of the LL200 PC-based Custom Computation Building Tool.

For the operation of the custom computation building tool, read the LL200 PC-based Custom Computation Building Tool user's manual (IM 05G01B22-01E).



NOTE

Starting the custom computation building tool will clear the data in the parameters setting tool. If you need the data, download it to the controller or save in on disk before you start the custom computation building tool.

● To start the custom computation building tool

- (1) Click **Parameter setting**, and then choose **Run custom computing tool**. The Select Series dialog box for custom computation building tool (Figure 15.1.2) appears.

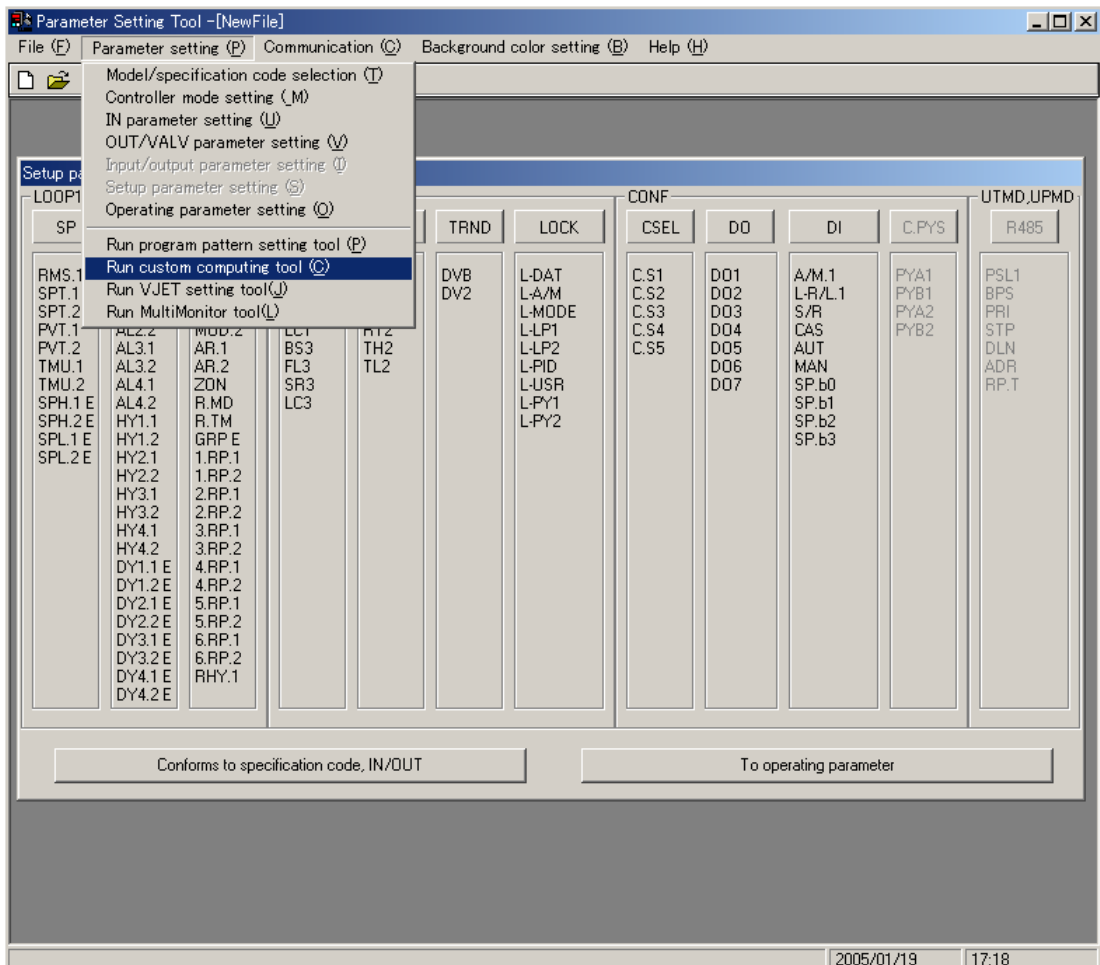


Figure 15.1.1 Starting LL200 Custom Computation Building Tool

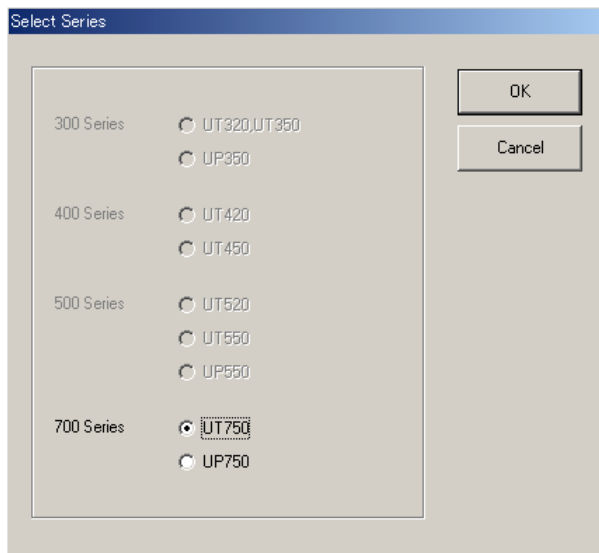


Figure 15.1.2 Select Series Dialog Box for Custom Computation Building Tool

For further operation, read the LL200 PC-based Custom Computation Building Tool user's manual (IM 05G01B22-01E).

16. Maintenance and Troubleshooting

This chapter explains how to replace the batteries in the dedicated adapter and suggests steps you can take to solve problems that may occur when using the LL100.

16.1 Replacing the Batteries

When replacing the batteries in the dedicated adapter, follow the procedure shown below.



NOTE

The dedicated adapter has an internal switch (on the side where the adapter comes into contact with the controller). Be careful not to break this switch when attaching the adapter to the controller. Attaching the adapter in place turns on the switch, causing the batteries to discharge even if there is no communication. If you have no immediate plan to perform communication, remove the adapter.

● To replace the batteries

- (1) Remove the screw from the bottom of the adapter.
- (2) Slide the cover about 5 mm downward, and then remove it.
- (3) Replace the two AAA-size batteries with new ones, ensuring correct polarity.
- (4) Place the cover back on the adapter while making sure the cover's hook properly engages with the opening on the adapter's top.
- (5) Slide the cover upward until you feel a click.
- (6) Fasten the screw in the bottom of the adapter.

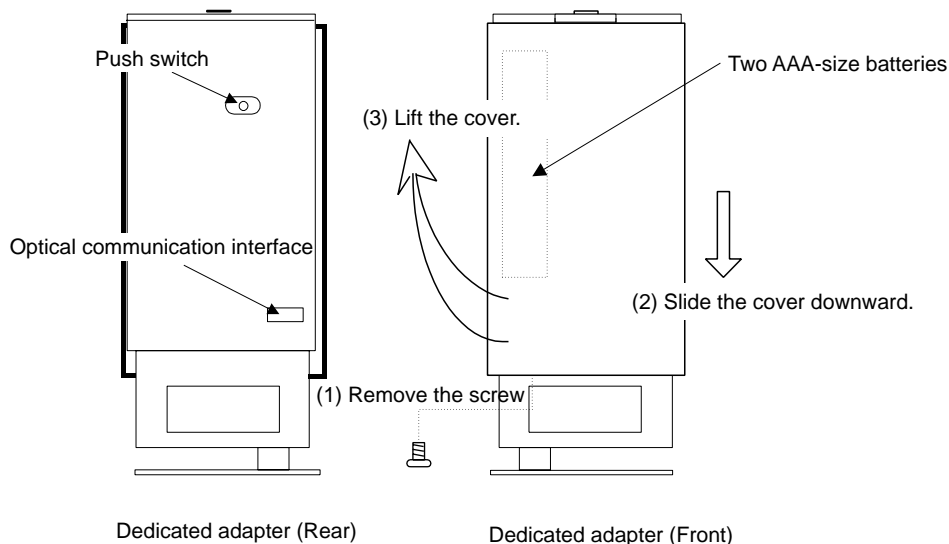


Figure 16.1.1 Replacing the Batteries

**WARNING**

- Replace both of the batteries with new ones of the same type, at the same time. Do not continue using the AC adapter over a prolonged period with depleted batteries inside. Doing so can result in fluid leakage.
 - Do not loosen the screws that fix the printed circuit board in place. Doing so can disable communication with a controller.
 - The batteries used are not rechargeable. If you attempt to recharge the batteries, fluid leakage may occur and damage the adapter.
 - Ensure correct polarity when you insert the batteries. Wrong polarity can cause fluid leakage or damage the adapter.
-

16.2 Troubleshooting Problems with Display and Communication Functions

16.2.1 Problems with Display Functions

■ Improper window views

For the operating environment requirements, Yokogawa recommends the use of a display that has a resolution of 800 × 600 pixels or superior and is capable of handling at least 256 colors and small fonts. Check if your system satisfies these requirements.

If you have any difficulty in viewing windows due to an improper background color, you can change colors in the **Background color setting** menu of the LL100 tool.

16.2.2 Problems with Communication Functions

Check your system for the following.

■ When using front terminal (optical) communication

- Make sure the dedicated adapter is installed properly.
- Check that the cable has not become disconnected.
- Check if the batteries in the dedicated adapter are depleted.
- Make sure the personal computer's serial port setting is correct.

■ When using serial terminal (RS-485) communication

- Make sure the wiring is correct.
- Make sure the communication condition settings are consistent between the controller and the personal computer.
- Make sure "PC link" is selected for communication protocol. (Communication is not possible with "PC link with checksum.")
- Make sure the personal computer's serial port setting is correct.

■ When using network (Ethernet) communication

- Make sure the wiring is correct.
- Make sure the values of communication parameters (IP address, subne mask and default gateway) of the controller with Ethernet communication are appropriate.
- Make sure the personal computer's network setting is correct.

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1st Edition/June 2000

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