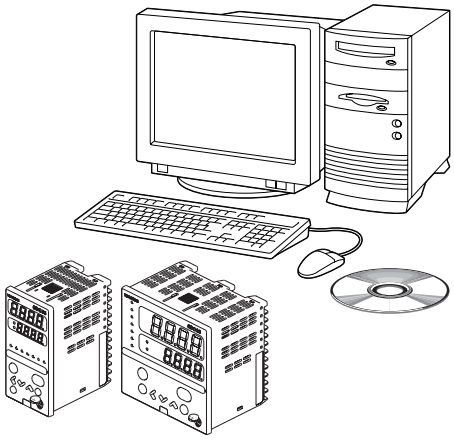
No. CP-UM-5324E

Smart Loader Package SLP-C35PRO for Single Loop Controller SDC35/36

User's Manual

"Professional"



Thank you for purchasing the SLP-C35PRO for Single Loop Controller SDC 35/36.
This manual contains information for ensuring correct use of the SLP-C35PRO. It also provides necessary information for installation, maintenance, and troubleshooting.
This manual should be read by those who design and maintain devices that use the SDC35/36.
Be sure to keep this manual nearby for handy reference.

Yamatake Corporation

RESTRICTIONS ON USE

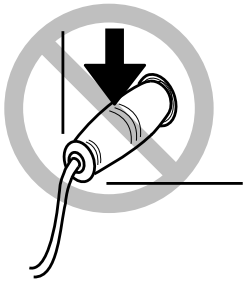
This product has been designed, developed and manufactured for general-purpose application in machinery and equipment.
Accordingly, when used in applications outlined below, special care should be taken to implement a fail-safe and/or redundant design concept as well as a periodic maintenance program.

- Safety devices for plant worker protection
- Start/stop control devices for transportation and material handling machines
- Aeronautical/aerospace machines
- Control devices for nuclear reactors

Never use this product in applications where human safety may be put at risk.

IMPORTANT

Do not apply a strong force while connecting a loader plug. Failure to do so might damage the instrument.



Handling Precautions
Application of excessive force to the loader plug might cause communication failure. If such failure happens, reconnect the loader plug correctly.

REQUEST

Ensure that this User's Manual is handed over to the user before the product is used.

Copying or duplicating this User's Manual in part or in whole is forbidden. The information and specifications in this User's Manual are subject to change without notice.

Considerable effort has been made to ensure that this User's Manual is free from inaccuracies and omissions.
If you should find any inaccuracies or omissions, please contact Yamatake Corporation.

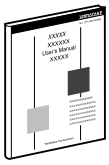
In no event is Yamatake Corporation liable to anyone for any indirect, special or consequential damages as a result of using this product.

Unpacking

Check the following items when removing the SLP-C35PRO from its package:

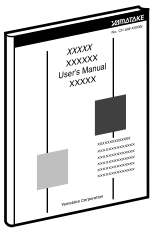
1. Check the model No. to make sure that you have received the product that you ordered.
2. Check the SLP-C35PRO for any apparent physical damage.
3. Check the contents of the package against the Package List to make sure that all accessories are included in the package.

After unpacking, handle the SLP-C35PRO and its accessories taking care to prevent damage or loss of parts.
If an inconsistency is found or the package contents are not in order, immediately contact your dealer.

Name	Model No.	Q'ty	Remarks
SLP-C35PRO System disk 	SLP-C35PRO	1	CD-ROM
Special cable	-	1	(1 set)
Protection key 		1	This protection key is used with it connected to the USB port. When the protection key is connected to the USB port, the PID simulator can then be operated.
User's Manual 	CP-UM-5324E	1	This manual.

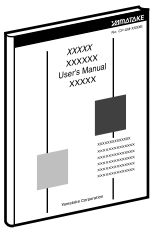
The Role of This Manual

In all, four manuals have been prepared for the SDC35/36. Read the manual according to your specific requirements.
The following lists all the manuals that accompany the SDC35/36 and gives a brief outline of the manual:
If you do not have the required manual, contact Yamatake Corporation or your dealer.



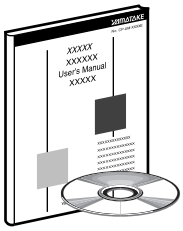
Single Loop Controller SDC35/36 User's Manual "Installation"
Manual No.CP-UM-5289E

This manual is supplied with the product. Personnel in charge of design and/or manufacture of a system using this unit must thoroughly read this manual. This manual describes the safety precautions, installation, wiring, list of parameters, and primary specifications. For further information about operation, refer to another manual, "Installation & Configurations".



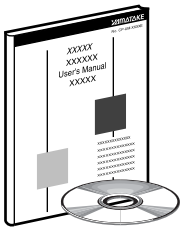
Single Loop Controller SDC35/36 User's Manual "Installation & Configurations" **Manual No.CP-SP-1150E**

This manual is optional (sold separately). The manual describes the hardware and all functions of this unit. Personnel in charge of design, manufacture, operation, and/or maintenance of a system using this unit and those in charge of communication software of a system using the communication functions of this unit must thoroughly read this manual. This manual also describes the installation, wiring, connections for communication, all functions and settings of this unit, operating procedures, communication with host station, such as personal computer, communication addresses, troubleshooting, and detailed specifications.



Smart Loader Package SLP-C35 for Single Loop Controller SDC15/25/26/35/36 User's Manual **Manual No. CP-UM-5290E**

This manual is supplied with the Smart Loader Package SLP-C35.
The manual describes the software used to make various settings for SDC15/25/26/35/36 using a personal computer. Personnel in charge of design or setting of a system using SDC15/25/26/35/36 must thoroughly read this manual. The manual describes installation of the software into a personal computer, operation of the personal computer, various functions, and setup procedures.



Smart Loader Package SLP-C35PRO for Single Loop Controller SDC35/36 User's Manual "Professional" **Manual No. CP-UM-5324E**

This manual.
This manual is supplied with the Smart Loader Package SLP-C35PRO. The manual describes the software used to make various settings for SDC15/25/26/35/36 using a personal computer.
PID simulator functions are added to the functions of the SLP-C35 that support tuning the PID values of the SDC35/36.

Organization of This User's Manual

This manual is organized as follows:

Chapter 1. INTRODUCTION

Be sure to read this chapter before you start using the Smart Loader Package. This chapter describes the required operating environment for the personal computer, how to install the package, and briefly introduces its features.

Chapter 2. INSTALLATION, STARTINGUP AND QUITTING THE LOADER

This chapter describes how to install, start up and quit.

Chapter 3. SETTING UP

This chapter describes how to set up the data.

Chapter 4. MONITORING

This chapter describes how to change the settings, as well as the screens monitoring the operation status.

Chapter 5. TUNING THE PID VALUES

This chapter describes support software "PID simulator" used to tune the PID values and how to tune the PID values.

Chapter 6. TROUBLESHOOTING

This chapter describes error messages that are displayed when trouble occurs, and how to remedy trouble.

Contents

Chapter 5. TUNING THE PID VALUES

Chapter 6. TROUBLESHOOTING

Conventions Used in This Manual

The following conventions are used in this manual:

Handling Precautions :
Handling Precautions indicate items that the user should pay attention to when handling the SLP-C35PRO.

Note : Notes indicate useful information that the user might benefit by knowing.

☞ : This indicates the item or page that the user is requested to refer to.

(1), (2), (3) : The numbers with the parenthesis indicate steps in a sequence or indicate corresponding parts in an explanation.

[OK] button : Indicates a selection button in screens displayed on the personal computer.

[Option] : Indicates messages and menus displayed on the personal computer.

>> : Indicates the result of an operation, details displayed on the personal computer or devices, or the state of a device after an operation.

[Ctrl] key, [A] key : Indicates keys on the keyboard.

[Ctrl]+[A] key : Indicates the operation of pressing the [A] key with the [Ctrl] key on the keyboard held down.

Chapter 1. INTRODUCTION

1 - 1 Overview

This software SLP-C35PRO is an engineering tool that has the PID simulator functions for the SDC35/36 in addition to the loader functions of the SDC15/25/26/35/36.

Note

- Install SLP-C35PRO on the hard disk following the procedure in ☞■ Installing procedures (page 2-1).
  Use the system disk that you have purchased as the backup system.

Handling Precautions

- This disk does not contain the system, and cannot be used as they are.

■ Loader functions

The loader has the following functions:
• Setup function
• Monitor function
• Adjustment function
• PID simulator function

● Setup function

This function is for setting up parameters required for running the controller on the personal computer and writing (setting) them to the controller. For details, refer to;
☞Chapter 3. SETTING UP.

● Monitor function

After the setup parameters have been written to the controller, changes to and tuning of control constants while the controller is running, switching of modes (RUN/READY, AUTO/MANUAL, etc.), run state and alarm occurrence can be checked.
The run state can also be checked on the Trend screen, and sampled data can be output in CSV format so that it can be handled in third-party spreadsheet software such as Microsoft Excel. For details, refer to;
☞Chapter 4. MONITORING.

Handling Precautions

- The monitor target is limited to only one unit when the loader jack on the front panel is used for performing monitoring.

● Adjustment function

This function is used when the user adjusts controller input.
For details on the adjustment function, refer to;
☞Single Loop Controller SDC35/36 User's Manual "Installation & Configurations" CP-SP-1150E.

Handling Precautions

- When the adjustment function is used, adjustment value stored on the controller so far are discarded. (When this function is used for the first time, the controller's default adjustment values are discarded.) Pay sufficient attention to this when using this function.

● PID simulator function

This PID simulator is software designed to support tuning the PID values based on originally developed simulation technology.
To use the PID simulator, it is necessary to install "SSD5411-32bit.exe" from the CD-ROM.

For details about how to install the PID simulator, refer to;
☞2-2 Installing the Sentinel System Driver (page 2-6).

For details about PID simulator, refer to;
☞Chapter 5. TUNING THE PID VALUES.

1 - 2 System Operating Environment

The following system environment is required for using the loader:

■ Hardware

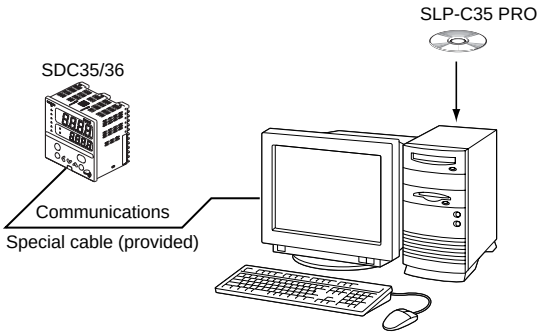
Item	Description	
Personal Computer	Target model	PC/AT compatibles with a Pentium chip or higher
	Memory	32M byte or more
	Operating system	Windows98/Me/2000 Professional/XP Home/ XP Proffessional
	Serial port	9-pin, serial port, 1ch or more
USB Port	USB Port	1 port or more
Peripheral Devices	Display	800 X 600 dot or more, 16 bit color or more
	Hard disk drive	Hard disk with at least 40M byte of free space
	CD-ROM drive	1 drive or more
	Pointing device	Windows-compatible mouse or equivalent device

Handling Precautions

- Before starting up loader, quit all other applications.
  If you start up loader while another application is running, loader may not function.
  Also, set the power save setting, infrared communications and screen saver to OFF.
- Make sure that the [Decimal symbol] has been set to " . " for [Control Panel] → [Regional Settings] → [Number].
  If it has been set to other character, the loader cannot correctly function.

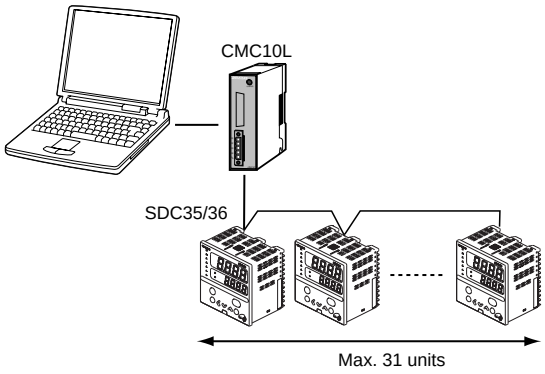
■ Hardware configuration

● General configuration

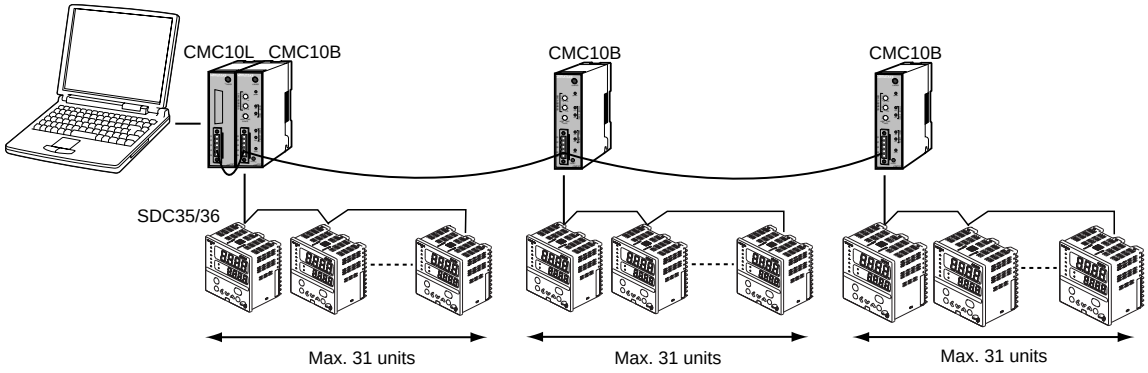


● Configuration with CMC10B/L

• When connecting 31 units or less



• When connecting 32 units or more



Note

• The CMC10B allows up to 31 units to be connected to a host device.

Note

• Personal computer used for confirmation of operating environment

Manufacturer	Model No.
Dell	OptiPlex GX110
IBM	Think Pad A31

Chapter 2. INSTALLATION, STARTING UP AND QUITTING THE LOADER

2 - 1 Installing the loader

■ Installing procedures

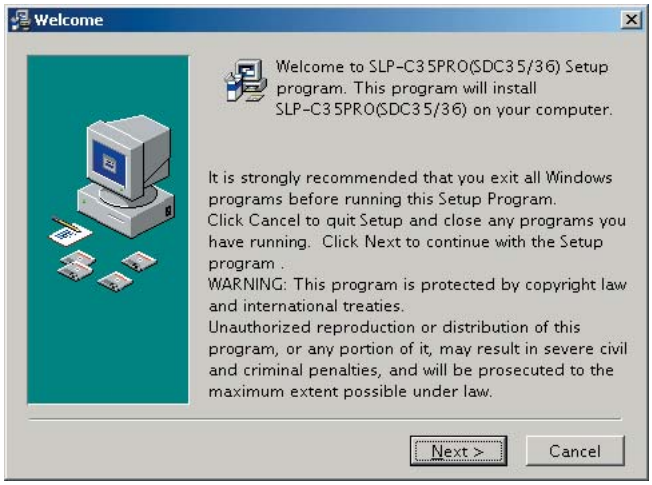
This section describes how to install the loader on a personal computer.

! Handling Precautions

- If you start up the Installer while another application is running, the Installer may malfunction.
  Remove other resident applications from their directories before starting up the Installer.
  The SLP-SC35PRO sometimes cannot be started up depending on the combination of other applications and drivers.
  For details on Windows and personal computer settings, refer to the User' s Manuals provided with Windows and the personal computer.

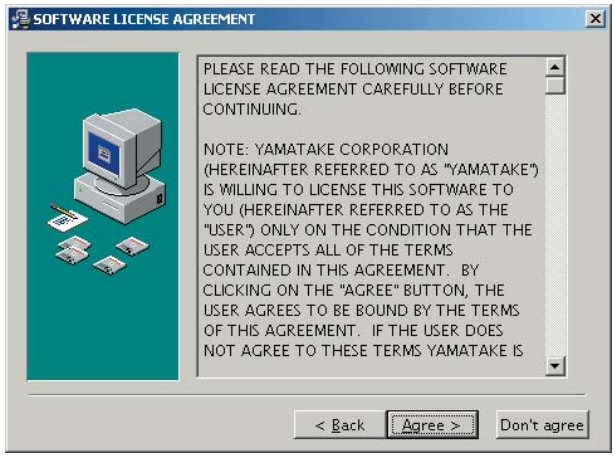
● Installing loader

(1) Set the CD-ROM in the CD-ROM drive of your personal computer.
>>The installation program is then started up automatically and the following screen appears:

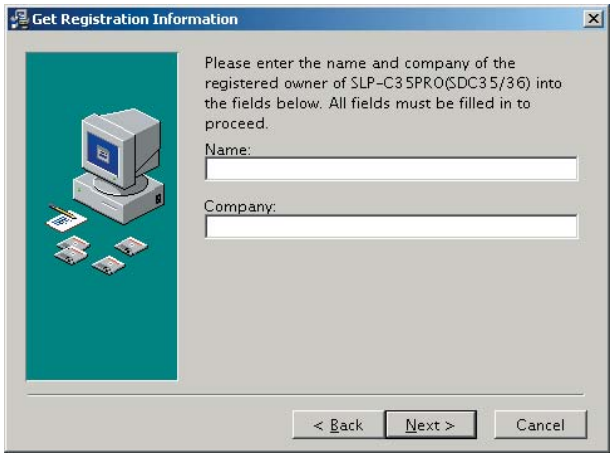


If the SLP-C35PRO having the old version has been installed, the screen shown below appears.
Click the [OK] button to uninstall the SLP-C35PRO having the old version.

(2) Click [Next >] button.
>>The following screen appears :

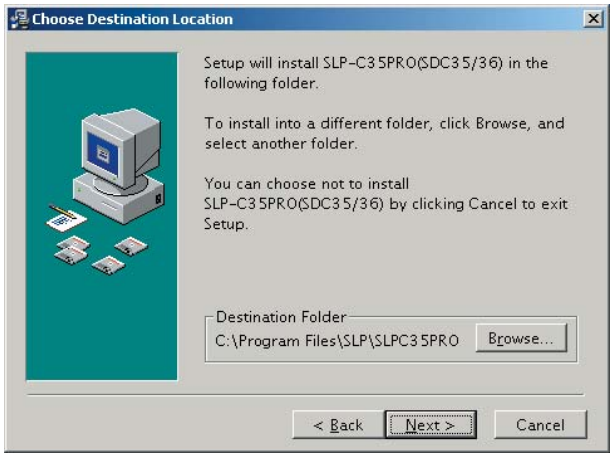


(3) If you agree to the software license agreement and wish to install the loader, click the [Agree >] button.
If you abort the installation, click the [Don't agree] button.
>>When clicking the [Agree >] button, the following screen appears :



(4) Enter a registered user name and company name, and then click the [Next >] button.
>>The following screen appears :

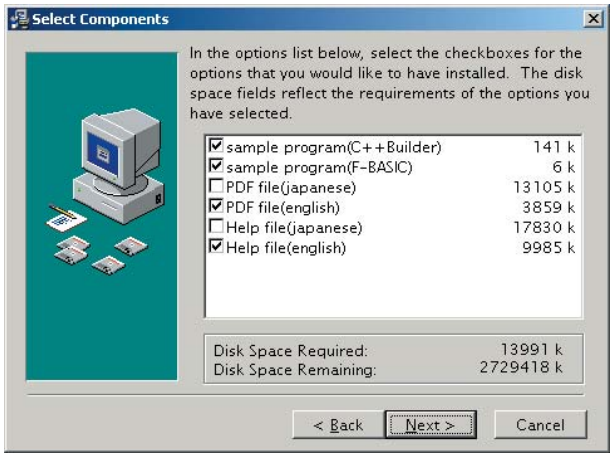
(5) Click [Next >] button.
>>The following screen appears :



Note

- To change the installation destination directory, click [Browse...] button.

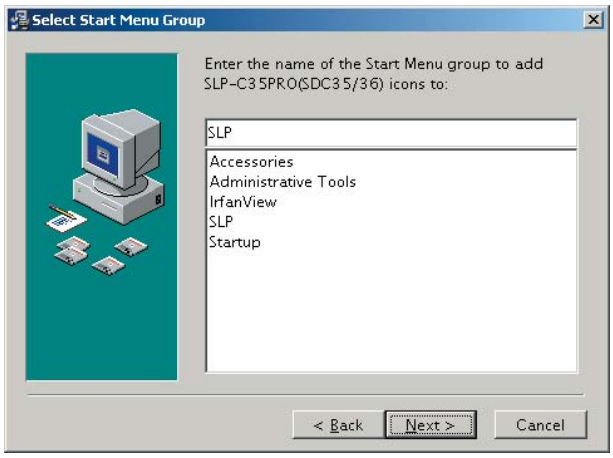
(6) Click [Next >] button.
>>The following screen appears :



Note

- Check on necessary files.
  To display a PDF file, it is absolutely necessary to install Acrobat Reader.
  For details, refer to;
  ☞Note on page 2-5.

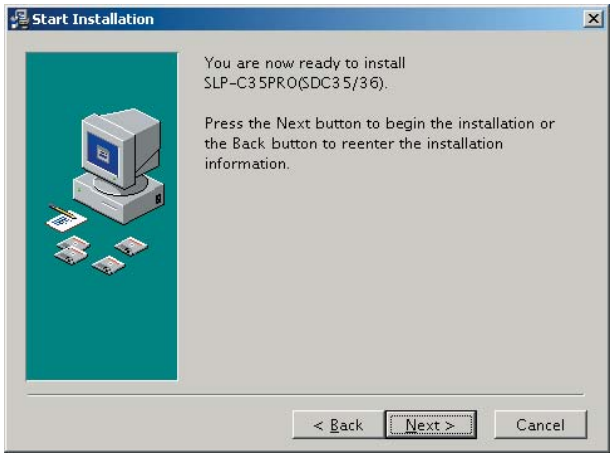
(7) Check on (put a check mark : ☑) software components you wish to install and click [Next >] button.
>>The following screen appears :



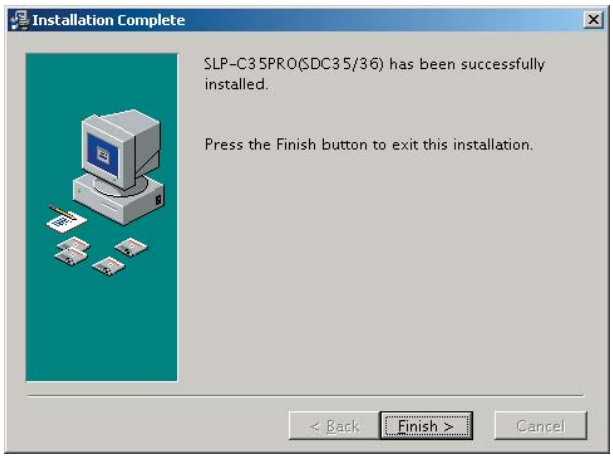
Note

- To change the program folder, enter the new folder name.

(8) Click [Next >] button.
>>The following screen appears :



(9) Click [Next >] button.
>>The following screen appears :



(10)Click [Finish >] button.

>>When the installation is completed successfully, the screen will return to the Windows screen.

Note

- Installation of Adobe Acrobat Reader

  If the Adobe Acrobat Reader is not installed in your personal computer, install it using any of the following procedures:

  - Download the Adobe Acrobat Reader from Adobe Systems' home page.
  - Install [adberdr60_enu_full.exe]from the CD-ROM.

2 - 2 Installing the Sentinel System Driver

■ Overview of protection key

Sentinel System Driver is absolutely required for the protection key (Sentinel SuperPro USB key).
To use the protection key, it is necessary to install the Sentinel System Driver.

IMPORTANT

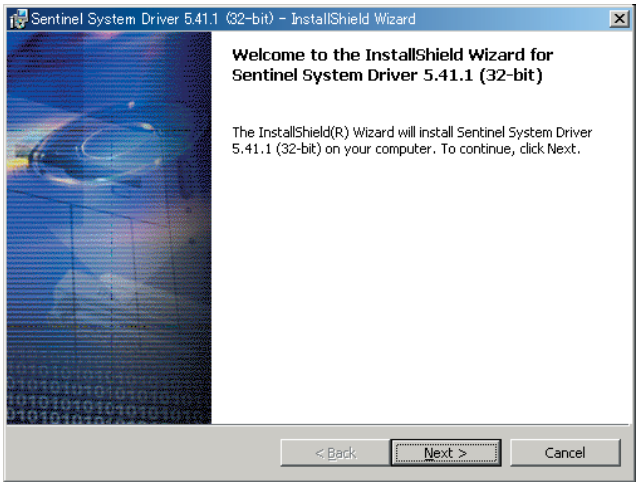
- About Sentinel System Driver
  When the Sentinel System Driver with the previous version functions correctly at present, it is not necessary to update it to the latest version.
  However, to update the driver to the latest version, select [ControlPanel] → [Add/Remove Programs] to uninstall the driver with the previous version before starting the steps listed below.
- Before installing the latest driver, disconnect the protection key. For details, refer to;
  ☞■ Cautions about protection key.

■ Cautions about protection key

Disconnect the protection key (Sentinel SuperPro USB key) completely before installing or uninstalling the Sentinel System Driver.
If the protection key is not disconnected, it may be failed to install the USB portion of the Sentinel System Driver.
The installer may give the “Install Confirmation” (confirmation of installation) message immediately before starting the installation to warn you.
If you do not follow this warning, uninstall the Sentinel System Driver without connection of the protection key, and then install the Sentinel System Driver again. The system is restored, and then the protection key can be used.

■ Installing procedures

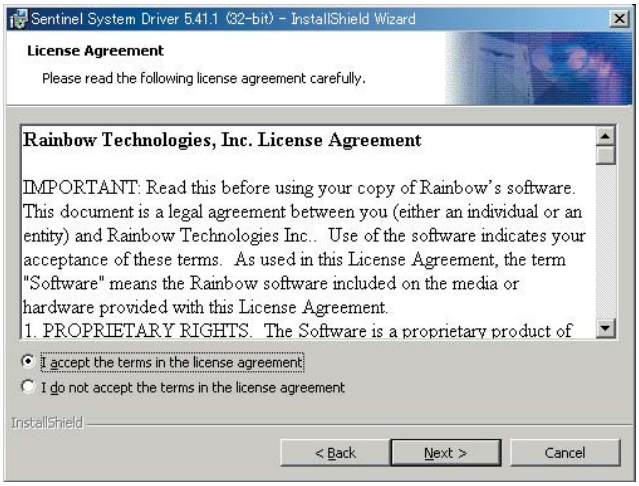
(1) Run [SSD5411-32bit.exe].
>>The "Welcome to the InstallShield Wizard for Sentinel System Driver" window will appear on the screen.



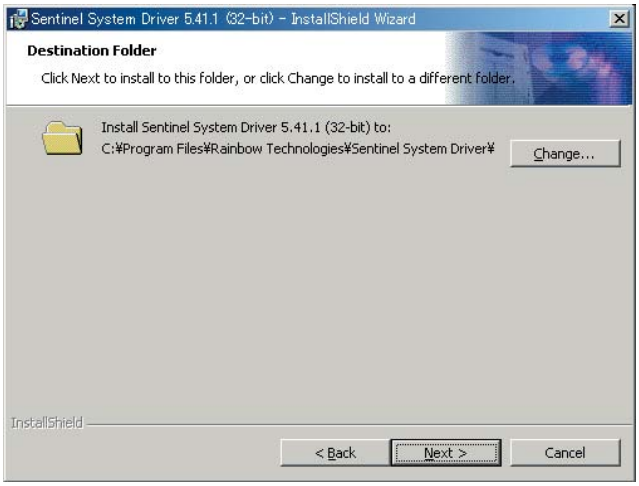
Handling Precautions

- At this time, do not connect the protection key.
  Additionally, pay special attention so that the Sentinel System Driver 5.41.1 and Sentinel System Driver 5.39 (previous version) are not installed together.
  Proceed the installation steps after uninstalling the Sentinel System Driver 5.39 (previous version).

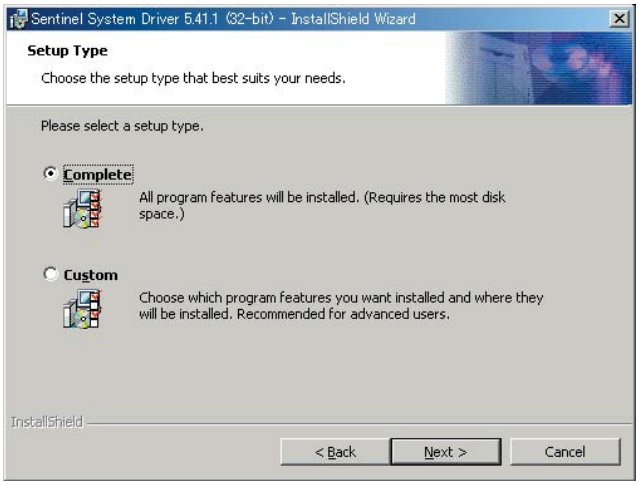
(2) Install the Sentinel System Driver.
Click [Next >]button.
>>The following dialogbox appears :



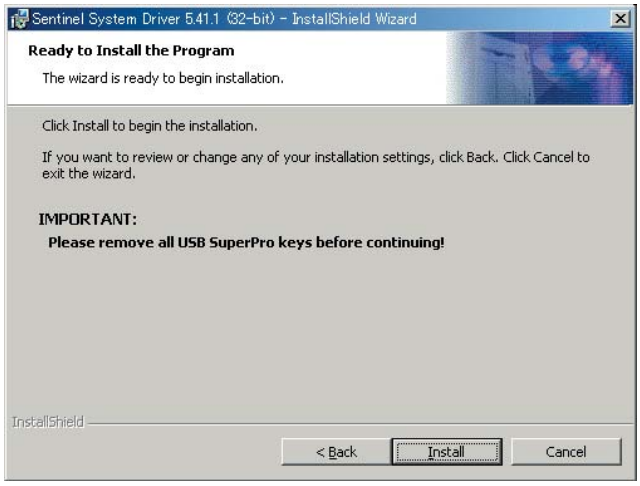
(3) Select [I accept the terms in the license agreement].
Click [Next >] button.
>>The following dialogbox appears :



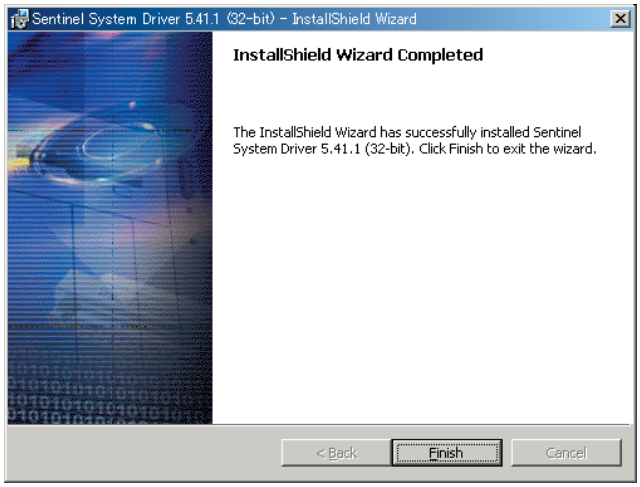
(4) Click [Next >] button.
>>The following dialogbox appears :



(5) Select [Complete].
Click [Next >] button.
>>The preparations for installation are then completed.



(6) Click [Install] button.
>>The installation is completed and the message, [InstallShield Wiz ard Completed], appears.



(7) Click [Finish] button.
>>The installation is then completed.

Note

- According to the operating system or personal computer configuration you are using, it may be required to restart the system after the Sentinel System Driver has been updated.
  Additionally, the system needs to be restarted in order to make the settings changed by the Sentinel System Driver enabled.
  To restart the system immediately, click [Yes] button. On the contrary, to restart the system later, click [No] button.

2 - 3 Starting up and Quitting the Loader

■ Starting up loader

Double-click the SLP-C35PRO (SDC35/36)  icon on the desk top or click [Start] button at the lower portion of the screen and select [Programs] → [SLP] → [SLP-C35].
>>The loader is started up and the menu window is displayed.

Note

For the operating system details and the mouse setup, refer to User's Manuals provided with Windows.

■ Quitting loader

Click  icon at the top right of the screen.
The operation is the same by selecting the [Menu] → [Quit].

Chapter 3. SETTING UP

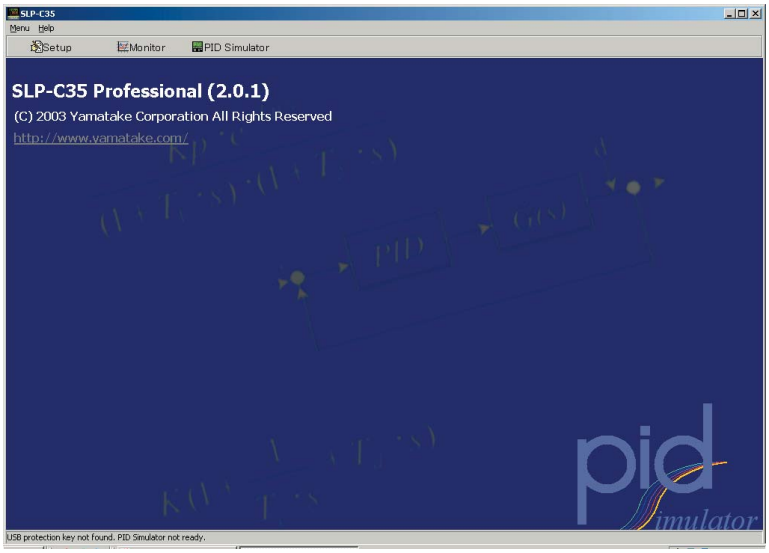
3 - 1 Setup Function

■ Overview

The setup function allows you to set the various parameters (about 10 to 70 constants required for operation) and write these parameters to the SDC35/36 so that it functions according to your particular control requirements. When the SDC35/36 is used for the first time, it will not function as required unless it is set up by using this setup function.
Parameters such as SP (set point) and control constants (PID values) that are changed relatively frequently while the SDC35/36 is running can also be set from the monitor function screen.
By the setup function, parameters that hardly need changing later once they are set are saved to file in list format before the SDC35/36 is run, and the saved file is called up and written to the SDC35/36 in a single operation.

■ Screen explanations

● Menu screen



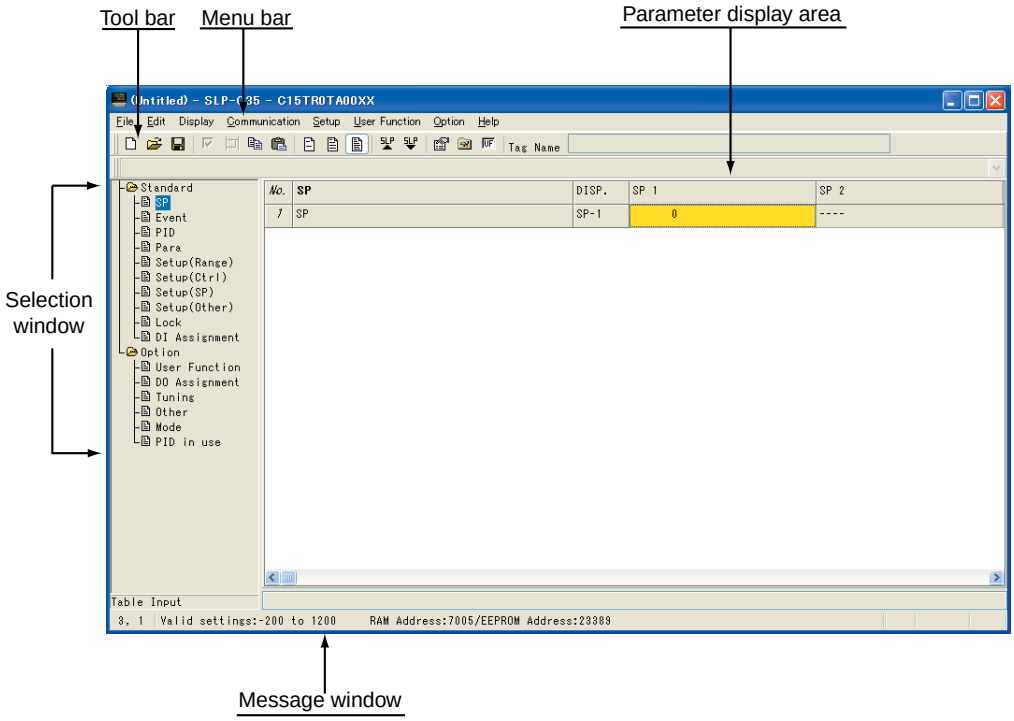
- Menu configuration list

Menu	Icon	Sub Menu	Description	Shortcut Keys
Menu		Setup	Displays the Setup window.	Ctrl+S
		Monitor	Displays the Monitor / Trend window.	Ctrl+M
		PID Simulator	Displays the PID Simulator window. (Only SDC35 / 36)	Ctrl+P
		Calibration(J)	Displays the Adjustment window.	Ctrl+J
		Option(E)	Changes the environment setup.	Ctrl+E
		Quit	Quits the application.	Ctrl+Q
Help		SLP-C35 Help	-	Ctrl+F1
		Version(A)	Displays the version information.	Ctrl+A

! Handling Precautions

- The functions other than the PID simulator are also applicable to the SDC15/25/26.

● Setup screen



- Menu configuration list

Menu	Icon	Sub Menu	Description	Shortcut Keys
File		New	Creates new data.	Ctrl+N
		Open	Opens existing data.	CtrlvO
		Save	Saves the active data.	Ctrl+S
		Save As	Saves the active data with name.	Ctrl+A
		CSV Out(X)	Saves the active data in CSV format.	Ctrl+X
		HTML Out(H)	Saves the active data in HTML format.	Ctrl+H
		Print	Prints out the data. (Same contents of data saved in the HTML format.)	-
		Quit	Quits the application.	Ctrl+Q
Edit		Data Check	Checks all setting values.	Ctrl+D
		Bit edit	Inputs to bit lists.	Ctrl+B
		Input/Output Port setup	Displays the input/output port setup screen.	Ctrl+P
		Copy	Stores the copy source.	Ctrl+C
		Paste	Pastes the stored copy data.	Ctrl+V
Display		Basic(L1)	-	-
		Standard(L2)	-	-
		High function(L3)	-	-
		Parameter disp area	Displays the parameter display area.	-
		Hint enable	Displays the hint.	-
		Auto siz e	Makes the auto-cell siz e enabled.	-
		Siz e initaliz e	Initializ es the cell siz e.	-
		Cell siz e adjust	Makes the cell siz e matched with the window.	-
Communication		Read(SDC15/25/26/35/36 -> SLP)(R)	Reads the device data.	Ctrl+R
		Write(SLP -> SDC15/25/26/35/36)(W)	Writes the data to the device.	Ctrl+W
Setup		Standard	-	-
		Option	-	-
User Function		User function	Displays the user function registration screen.	-
		User function clear	Clears the contents of the user function registration.	-
Option		Type Setting	Changes the type setup.	Ctrl+T
		Environment Setting	Changes the environment setup.	Ctrl+E
Help		Version(A)	-	-

3 - 2 Method of Setup

Configure setup in offline state (without connecting the cable to controller).
Click the [Option] on the menu screen. Set up in the following steps:

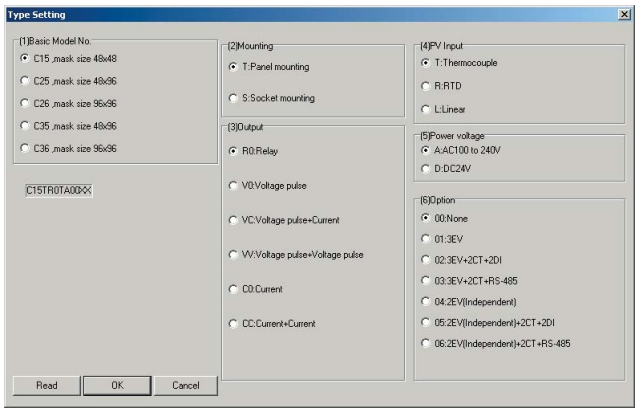
The following tasks are performed:
Step 1: Setting up the loader type
Step 2: Initialization (clearing previous setting values)
Step 3: Setting up the environment
Step 4: Setting up SDC35/36 parameters
Step 5: Saving setup data
Step 6: Downloading the setup

Handling Precautions

- Operations in steps 1 to 5 are required before the setup parameters are entered on the SDC35/36. Be sure to perform these steps. Otherwise, the SDC35/36 may be set up incorrectly. For example, the required setup items may not be displayed or unrequired items may be displayed.

● **Step 1 (setting up the loader type)**

Set up the loader type to match the SDC35/36 model number.
(1) Click  icon.
The operation is the same by selecting the [Option] → [Type Setting] or the [Ctrl] + [T] keys.
>>The Type Setting dialog box is displayed.



(2) Set the mounting type, control output, input type, power voltage and additional functions.
(3) Select from the selection items for each setting item.
(4) Click [OK] button.

Note

- Click the [Read] button to read out product data. This method prevents the downloading of a wrong parameter by the model number setup error.

Handling Precautions

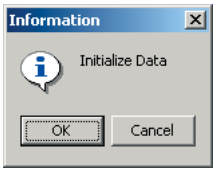
- "Type" set here is the setting for internal use on the loader. The model number of the SDC35 /36 will not change even if the type is changed on the loader.
- For an explanation of each of the specifications, refer to;
  ☞Single Loop Controller SDC35/36 User's Manual "Installation & Configurations" CP-SP-1150E.

● **Step 2 (initialization)**

(1) Click icon.

The operation is the same by selecting the [File] → [New] or the [Ctrl] + [N] keys.

>>The initialize dialog box appears.



(2) Click [OK] button.

>>A new file opens.

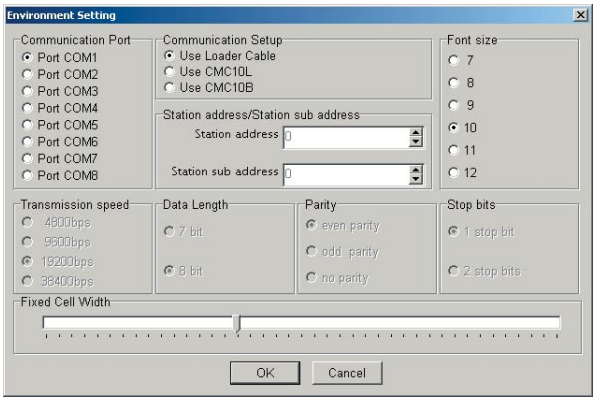
● **Step 3 (setting up the environment)**

Set the communications port and font on the personal computer.

(1) Click icon.

The operation is the same by selecting the [Option] → [Environment Setting] or [Ctrl] + [E] keys.

>>The Environment Setting dialog box appears.



(2) Set the communications port. Select the port from the selection items.

(3) Set the font size. Select the front size from the selection items.

(4) Click [OK] button.

Handling Precautions

- Normally, use "Port COM1".
  Even if another communications port can be selected, it sometimes cannot be used depending on its shape.
- Normally, use "Use Loader Cable".

● **Step 4 (Setting up SDC35/36 parameters)**

Move the cursor to the target channel of each setup item, and perform the following operations:

- When the setting is a numerical value
  Enter the numerical value, and press [Return] key.
- When the setting is selected by a number
  Press the right mouse button on a setting item. The list of settings you can select will appear. Select a desired item to complete the setting.

Set each of the parameters required for running the SDC35/36. The following two types of parameters are set:

• Basic functions:
Basic functions for device operation such as control and communications functions

• Option functions:
Functions related to optional specifications, such as user function, DO assignment, and extended tuning.

Handling Precautions

- "– – – –" is displayed within the cell for parameters whose setting is not required or is prohibited by other setting items. These parameters cannot be set. In this case, re-check the type setting or other related settings.
- Items on the horiz ontal axis are channel numbers when basic functions are being set up, and are event output numbers or external switch input numbers when option functions are being set up.
- About connection to the personal computer
  Normally, the controller is connected to the personal computer with the special cable.
  Select [Option(O)] → [Environment Setting] and set [Communication Setup] to [Connect through CMC10L] or [Connect through CMC10B]. The controller is then connected through the CMC10B/L.
  At this time, the environment setting and communication setup on the controller main unit must be adjusted beforehand.
  Additionally, configure the settings on the controller in the offline mode (the cable is not connected to the controller).

Note

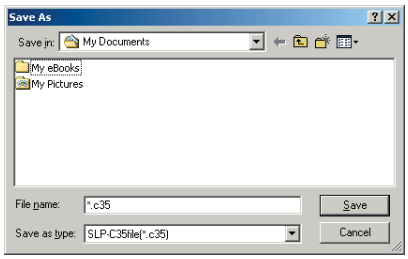
- For details on the functions, refer to;
  ☞Single Loop Controller SDC35/36 User's Manual "Installation & Configurations" CP-SP-1150E.

● **Step 5 (saving setup data)**

When you have finished making the settings, save the setup.
Saving setups in advance and using saved setups greatly reduces the time and load when setting up the loader. The following items are saved:

• Type
• Setup parameters

(1) The operation is the same by selecting the [File] → [Save As] or [Ctrl] + [A] keys.
>>The Save As dialog box appears.



(2) Enter the file name, and click [Save] button.

● **Step 6 (downloading the setup)**

Write the set parameters or parameters called up from a saved file to the SDC35/36.

(1) Use the special loader cable to connect the personal computer to the SDC35/36 body.

(2) Turn the SDC35/36 ON.

(3) Click  icon.

The operation is the same by selecting [Communication] → [Write(SLP→SDC)] in the pull-down menu.

>>The message "Writing is going to be executed." is displayed.

(4) Click [OK] button.

>>This starts writing of the setup parameters.

During writing, the message [Please wait.] is displayed. When writing ends, the message [Normal end] is displayed.

Handling Precautions

• If writing fails, the message [Communications error has occurred.] is displayed. If writing is not possible, refer to;
☞Chapter 6. TROUBLESHOOTING.

Chapter 4. MONITORING

4 - 1 Monitor Function

■ Overview

The loader exclusively for the SDC35/36 is used for monitoring SDC35/36 operation.
To enter the monitor screens, click [Monitor] in the menu screen.
The loader has the following two monitor screens:

• Numeric Monitor screen:
This screen is for performing operations such as changing setups or switching modes.
  • Numeric display of the various running parameters (parameters can be changed)
  • Lamp indication of the various running modes (lamp indications can be operated)
  • Alarm display (representative and detailed)

• Trend Monitor screen:
This screen is for monitoring the running state of the SDC35/36 in the form of a trend graph.
  • Screen display of trends for max. of sixteen data items
  • Screen display of digital data trends for max. of five data items
  • Export of sampled data as CSV file
  • Trend screen dumps
  • Data type:
    PV, SP, MV, user-defined data (all analog data that can be communicated)
  • Sampling cycle:
    Variable within the range 1 to 3600s
  • Max. sampling count:
    60,000 (fixed regardless of number of data items to sample)

Note

A "CSV file" is the data format that can be handled in third-party spreadsheet software such as Microsoft Excel. In this format, sampled trend data can be interpreted in spreadsheet software.

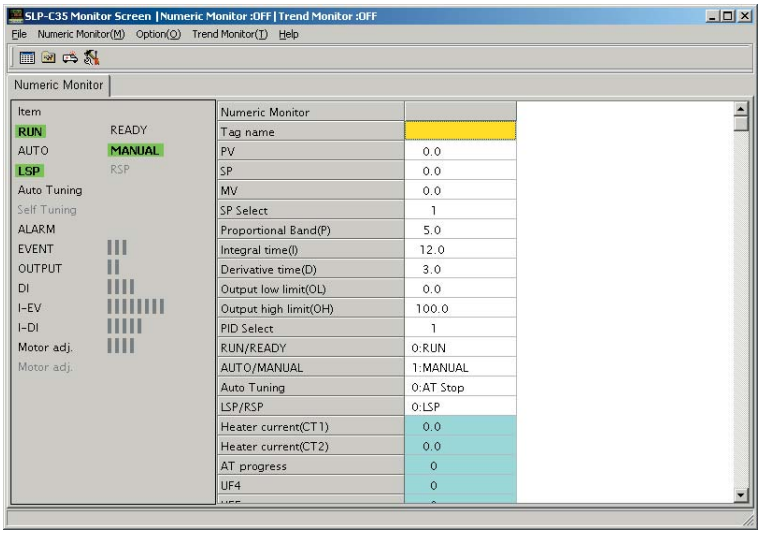
These screens can be used to perform the following operations:
• Monitoring of the running state and changing of parameters in the Numeric Monitor screen
• Switching of the run mode in the Numeric Monitor screen
• Tuning of control constants in the Numeric Monitor screen
• Monitoring of trends and sampling of data while the SDC35/36 is running
• Monitoring of alarm states in the Numeric Monitor screen

Handling Precautions

- About connection to the personal computer
  When making the setup or operating the monitor using the loader, connect the loader cable.
- Before starting the trend monitor, configure the settings suitable for the trend monitor.
- The sampling cycle sometimes shifts due to fluctuations in the communications cycle. To perform measurement at exact times, use the special recorder or data logger.

■ Screen explanations

● Numeric monitor screen

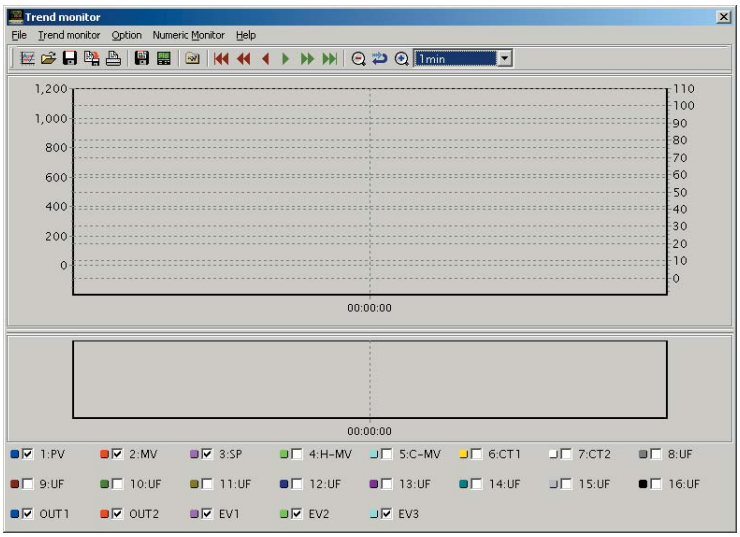


- Menu configuration list

Menu	Icon	Sub Menu	Description	Shortcut Keys
File		Quit	Quits the Monitor window.	Ctrl+Q
Numeric Monitor (M)		Numeric Monitor Start/Stop (M)	Starts/stops the monitor.	Ctrl+M
Option (O)		Setup	Displays the Setup window.	-
		Alarm (A)	Displays the Alarm Details window.	-
		Command Line (C)	Displays the Command Line window.	-
PID Simulator *		-	Changes the display to the PID simulator.	-
Trend Moni Monitor (T)		-	Changes the display to the trend monitor.	-
Help		Version(A)	Displays the version information.	-

* : This menu is displayed only when the PID simulator is started up.

● Trend monitor screen



- Menu configuration list

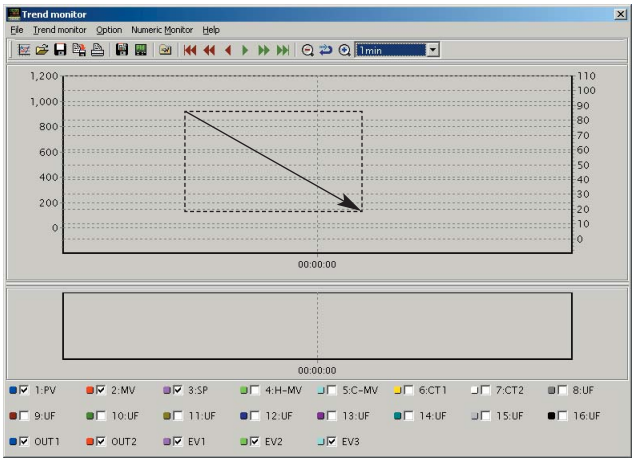
Menu	Icon	Sub Menu	Description	Shortcut Keys
File		Quit	Quits the Monitor window.	Ctrl+Q
Trend monitor		Trend monitor Start/Stop (T)	Starts/stops the trend monitor	Ctrl+T
		CSV Read	Reads the trend data.	-
		CSV Out(X)	Outputs the trend data in CSV format.	Ctrl+X
		Clipboard Graph Out	Outputs an image of the graph to the Clipboard.	Ctrl+C
		Save for PID Simulator	Saves the trend data for PID simulator.	-
		Run PID Simulator	Runs the PID simulator.	-
Option		Setup	Displays the Setup window.	-
PID Simulator *		-	Changes the display to the PID simulator.	-
Numeric Monitor		-	Changes the display to the numeric monitor	-
Help		Version(A)	Displays the version information.	-

- Icon list

Icon	Description
	Returns the graph to the start time.
	Returns the graph by 1/2 screen.
	Returns the graph by 1/4 screen.
	Advances the graph by 1/4 screen.
	Advances the graph by 1/2 screen.
	Advances the graph to the latest time.
	Zooms out the graph.
	Undoes the graph z oom.
	Zooms in the graph.
	Specify a time scale of the graph. 1min. 2min. 10min. 1hr. 12hrs. 24hrs. Auto

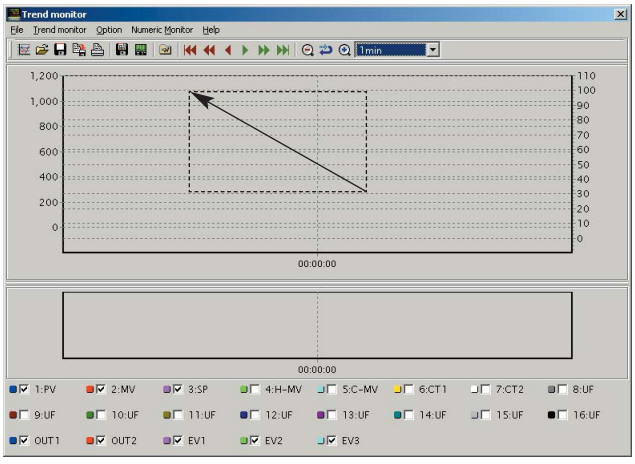
- Zooming the graph

  Drag the mouse from the upper left portion to the lower right portion with the left mouse button kept pressed.



- Canceling the zoomed graph

  Drag the mouse from the lower right portion to the upper left portion with the left mouse button kept pressed.



4 - 2 Method of Operation

■ How to operate the numeric monitor screen

● Start of monitoring (start of communications)

The operation described below is required to start monitoring.
Otherwise, monitoring and rewriting of data cannot be performed.

• Click  icon.
The operation is the same by selecting [Numeric Monitor] → [Numeric Monitor Start].
>> During normal operation: The data on the SDC35/36 is displayed.
During an error: The message [Check the device to which the loader is connected.] is displayed. Remedy according to Chapter 6. TROUBLESHOOTING.

The following operations are possible when the device and the loader are correctly connected:

● Monitoring of run state and changing of parameters

Numeric monitor (displayed in table format) Numeric group monitor	Tag name Process Variable (PV) Set point (SP) Manipulated variable (MV)
State monitor (displayed in lamp lighting format)	RUN/READY mode, AUTO/MANUAL mode LOACAL/REMOTE state Auto-tuning start/stop state Self-tuning start/stop state ALARM mode Control output ON/OFF state Event output ON/OFF state Internal event ON/OFF state DI terminal ON/OFF state
Operation (Operations possible in numeric changes are limited as follows.)	SP value change SP set change Manipulated variable (MV) change in MANUAL mode PID value change RUN↔READY switching AUTO↔MANUAL switching Auto-tuning start↔stop switching
About the operation mode	RUN/READY mode 0: RUN 1: READY AUTO/MANUAL mode 0: AUTO 1: MANUAL

● **Changing of data**

Operation by entry of numerical values → Enter the numerical value, and press the [Return] key.

● **Setting of user-defined address**

Optional data not in the table can be registered to user configuration address UF 1 to 8 in the table. Data can be read or written according to the data type.

• How to set user-defined address:

(1) Select the [Set monitor] tag under [Option (O)] → [Setup] in the pull-down menu.

(2) Enter the address of the data to display according to Single Loop Controller SDC35/36 User's Manual "Installation & Configurations" CP-SP-1150E.

● **Use of the command line**

Data can be read or written or the mode switched by directly entering communications commands on the command line.

Handling Precautions

- Transmission of the wrong command may result in trouble on the SDC35/36. For this reason, take sufficient care when describing command types, addresses, data and other information.
- For details on communications commands and data addresses, refer to;
  ☞Single Loop Controller SDC35/36 User's Manual "Installation & Configurations" CP-SP-1150E
- Loader lock is enabled.

● **Checking details of alarms**

You can check the details of alarms in the Alarm window when an alarm occurs.

• Click  icon.

The operation is the same by selecting the [Option (O)] → [Alarm (A)].

• The details of the alarm that is occurring are displayed.

Handling Precautions

- This window displays the details of currently occurring alarms, and does not have a function for restoring the SDC35/36. To restore the SDC35/36, you must perform the appropriate remedy described in Chapter 6. TROUBLESHOOTING.

● **About the numeric group monitor**

The numeric group monitor can be used when [Connect via CMC10] is set by the [Environment Setting] → [Communication Setup]. Connect the loader cable to CMC10B/L.

Up to eight groups can be monitored.

■ How to operate the trend monitor

● Setup

Select [Trend], [Trend monitor individual], and [Digital trend] at [Option (O)] → [Setup], and make the following settings for each sampled data (1 to 16).
As the cycle and display upper/lower limits are common to all channels.

• Trend

Setting Item	Description	Setting Range	Factory Setting
Cycle	Setting of sampling cycle	1 to 3600s	1
Display low limit of left axis	Lower value of vertical axis of screen display	-1999 to display upper limit	0
Display high limit of left axis	Upper value of vertical axis of screen display	Display lower limit to 9999	1200
Display low limit of right axis	Lower value of vertical axis of screen display	-1999 to display upper limit	-10
Display high limit of right axis	Upper value of vertical axis of screen display	Display lower limit to 9999	110

• Trend monitor individual

Setting Item	Description	Setting Range	Factory Setting
Data type	Type of sampled data	0 : Not used 1 : PV 2 : MV 3 : SP 4 : H-MV 5 : C-MV 6 : CT1 7 : CT2 8 : User-defined data	-
Axis	Specify an axis used for the graph.	0 : Left 1 : Right	-
User-defined address	Address of relevant parameter when the data type is set as "user type"	Address of communicable parameter	256
Station adress	Set the station address when a CMC10B, for example, is used.	0 to 127	1
Station sub-adress	Set the station sub-address when a CMC10B, for example, is used.	0 to 127	0

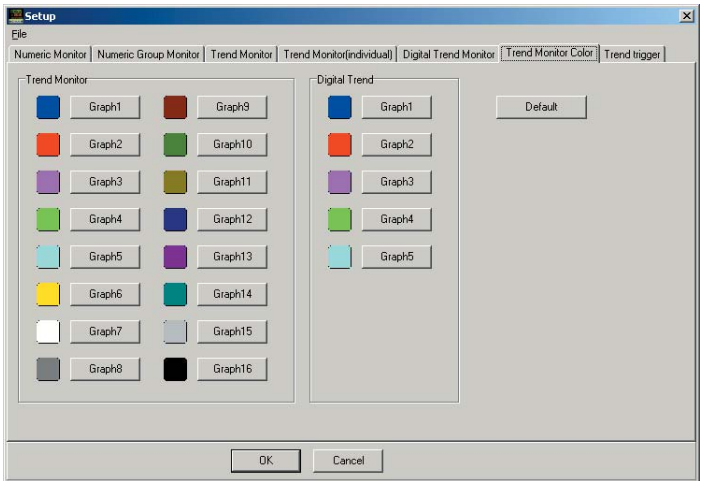
Handling Precautions

- When the user-defined address is specified, make the decimal point setting manually.

• Digital trend

Setting Item	Description	Setting Range
Address	Address of parameter	256 to 32767
Bit	Specified bit of parameter	0 to 15
Name	Name of parameter	Up to 10 alphanumeric characters

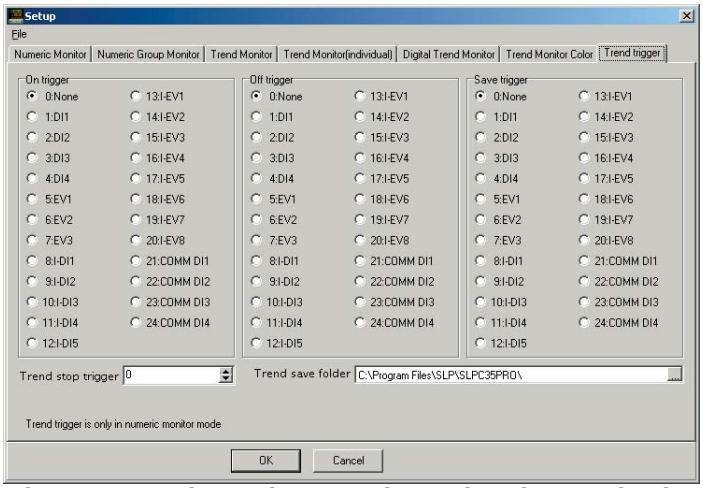
• Selecting trend monitor colors



When selecting [Graph 1] to [Graph 16], the color selection screen will appear. Select a desired color.

Clicking [Default] will return the color setting to its initial value.

• Setting up the trend trigger



When setting up the trend triggers, the trend can be started and stopped according to the status of the individual monitor.

The trend trigger setup is valid only while the individual monitor is running.

When setting up the trend save triggers, the trend can be saved according to the status of the individual monitor.

The file is saved into a specified trend save folder in the "TREND-YYYY-MM-DD-HH-MM-SS.CSV" format.

● **Starting the data sampling**

When the setup is completed, start up the trend monitor.
Click  icon.
The same operation can be started by selecting [Trend Monitor] → [Trend Monitor Start].
The data sampling is started, and then the trend of the specified parameters is displayed on the screen.

- Once the trend monitor is started, it continues until the stop operation is performed or the data for 60,000 cycles is sampled.
- If the stop operation is not performed, the data is overwritten onto the old data when the data sampling for 60,000 cycles is completed.
- The screen can be transited to the "Numeric Monitor" screen while the trend monitor is running. However, the loader cannot be quitted or the screen cannot be transited to the "Setup" screen. To do so, quit the trend monitor.

● **Stopping the data sampling**

Select [Trend Monitor] → [Trend Monitor Stop].
The trend monitor is then stopped.

● **Saving sampled data**

The data sampled using the trend monitor can be saved into a file in the CSV format. The sampled data saved in the CSV format can be processed using spreadsheet applications, such as Microsoft Excel.

Handling Precautions

- The data can be saved into a file even while the trend monitor is running.
- The data, which has been saved into a file, is retained in the personal computer unless it is initializ ed. However, the data saved in the file cannot be redisplayed on the loader screen.
  To display such data, use an appropriate spreadsheet application.

● **Saving clipboard graph output**

The display contents on the "Trend Monitor" screen can be directly saved into the clipboard as a copy of the screen.