Configuration and Data Management Software for Controllers and Indicators

PROTEM 2

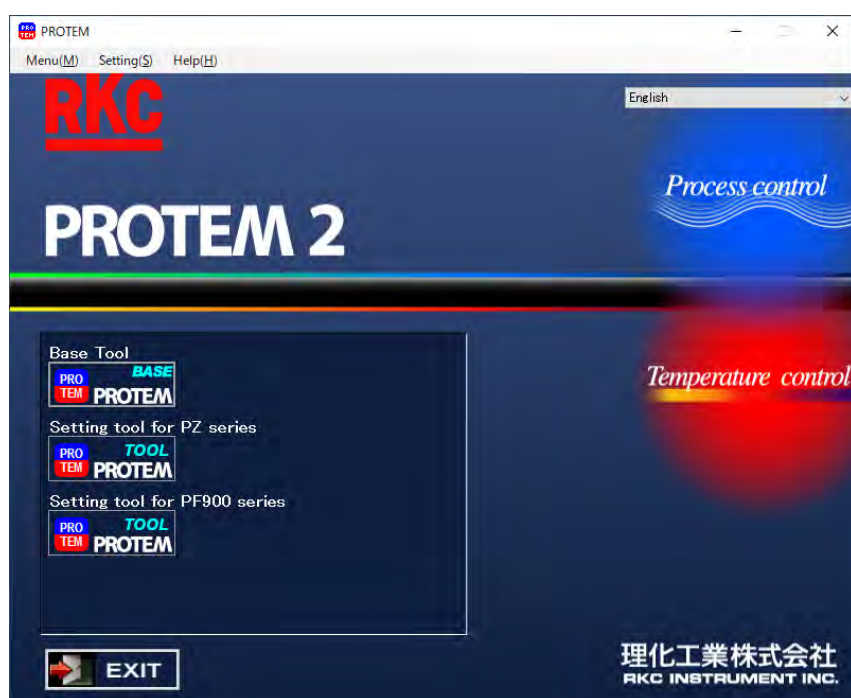## Ver. 2.0.3.0

IMT01D11-E7

Users Guide

The PROTEM2 is an integrated software for the management of parameters and measured values, consisting of the following tools.

This software consists of the following tools.

PROTEM2 Base tool --------------------------- Used to set and verify the parameters.

        Recipe tool -------------- Used to save the parameters to a computer and transfer the data to the instruments.

        Logging tool ------------- Used to visualize the various data and log the data in a CSV format.

        Report tool -------------- Used to create a list (report) of parameters and save the data in CSV/HTML format.

        Backup tool ------------- Used to make overall management of set values (saving to a computer, transferring to a controller, verifying the data).

Setting tool for the PZ series --------------- Used to set and check the parameter setting of the PZ series.

Setting tool for the PF900 series ---------- Used to set and check the parameter setting of the PF900 series.

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RKC INSTRUMENT INC.

Note

- This Software tool enables a user to monitor and set all the set values including those in the initial setting level. This may cause an unexpected change of the specification. RKC is not responsible for any damage of the products and the equipment due to the use of this software.

- RKC is not responsible for any damage of any kind, including computer virus and unauthorized entry to the computer and computer networks.

Notice Before Use

- This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and communications. It is assumed that the reader has a fundamental knowledge of the Windows such as terminology and operation. For detailed terminology and operation, refer to the manuals of the operating system and the PC you use.

- The figures, diagrams and numeric values used in this manual are only for purpose of illustration.

- RKC is not responsible for any damages and/or injury listed below.
  - Damages due to the use of this product.
  - Damages due to unexpected failures in this product.
  - Damages due to the use of counterfeits of this product.
  - All other indirect damages.

- Unauthorized duplication or modification of the software for purposes other than backup is prohibited.

- The information in this manual is subject to change without prior notice.

- No portion of this document may be reprinted, modified, copied, transmitted, digitized, stored, processed or retrieved through any mechanical, electronic, optical or other means without prior written approval from RKC.

Notation in This Manual

NOTE : This symbol is used for important items for operation and handling of the product.

TIPS : This symbol indicates supplemental information on installation, handling and operating procedures.

☞ : This symbol is used to show the reference where details and relating information are obtained.

- In this document a personal computer is referred to as a computer or a PC.

- In this document menus and dialog boxes are shown with quotation marks (" "), whereas buttons and tabs are shown with [brackets].

Table of Contents

1. Before Using This Software

■ Operating Environment

To run this Software, we recommend using a PC with the specifications detailed below.

Operating system	Windows 10 (64-bit edition) [PROTEM2 works only on Windows 10 (64-bit edition) and has not been tested on other versions of Microsoft Windows.]
Firmware	.NET Framework 4.5 or later
Memory (RAM)	100MB or more (free memory space)
Hard disk	100MB or more (free disk space)
Display	1024 × 768 or higher
Others	Serial communication port or USB2.0 port

■ Models Supported by PROTEM2

PROTEM2 supports the following models.

For the latest information, please check our website.

Modular Controllers SRZ System	Extended Communication Modules Z-COM-A	Digital Controllers HA series　*1	HA400, HA900
	Temperature Control Modules Z-TIO-A/B/C/D	Digital Melt Pressure Controllers HA series　*1	HA430, HA930
	Temperature Control Module with High Resolution Z-TIO-G	Digital Indicators	AG500
	Digital Input/Output Module Z-DIO-A	Wireless Temperature Sensor Converters NWS series　*1	NWS-COM NWS-COM-M1
	CT Input Module Z-CT-A	High Performance Power Controllers	THV-A1
Modular Controllers SR Mini HG System SR Mini System H-□□……: SR Mini HG System M-□□……: SR Mini System	Power/CPU Modules H-PCP-A/B/J M-PCP-A/B	Open Board Temperature Controllers	B400
	Temperature Control Modules H-TIO-A/B/C/D/E/F/G/H/J M-TIO-A/B/C/D	Digital Controllers RB series　*2	RB100, RB400, RB500, RB700, RB900
	Temperature Input Modules H-TI-A/B/C/D	Digital Controllers RD series	RD100, RD400, RD500, RD700, RD900
	CT Input Modules H-CT-A M-CT-A	Digital Controllers RZ series　*2	RZ100, RZ400
	Analog Input Modules H-AI-A/B M-AI-A/B	Digital Controllers SA series　*1	SA100, SA200
	Analog Output Modules H-AO-A/B	Temperature Controller with a built-in SSR	SB1
	Digital Input Modules H-DI-A/B M-DI-A	Melt Pressure Indicator	PG500
	Digital Output Modules H-DO-A/B/C/D/E/G M-DO-A/B	Intelligent Control Output Distributor　*1	IOPD
	Cascade Control Modules H-CIO-A	Power Controllers	THV-40/THV-10 (150/200A) THV-10 (20A to 100A)
	Speed Control Module H-SIO-A	Ramp/Soak Program Controllers　*3	PZ400, PZ900 PF900, PF901
Modular Controllers SRJ　*1	J-TI	USB Communication Converters　*1	COM-KG (NWS wireless)
Digital Controllers FB series	FB100、FB400、FB900	Communication Converters COM-ME series	
Digital Controllers FZ series	FZ110、FZ400、FZ900	Communication Converters COM-ML series	
Digital Controllers GZ series	GZ400, GZ900		

*1 Supported by PROTEM2 Japanese edition only.
*2 Supported by PROTEM2 Japanese and English editions only.
*3 Use Setting tool for the PZ series or the PF900 series which are supported by PROTEM2 (English edition). Base tool (English edition) does not cover this model.

■ Procedure to Set up PROTEM2

Models supported by PROTEM2

Refer to P. 1-1

Before using PROTEM2, make sure your model is included in the models supported by PROTEM2.

↓

Installing PROTEM2

Refer to P. 2-1

Install PROTEM2 to your computer after downloading it from our website.

↓

Connecting an instrument and a PC

Refer to P. 3-1

Arrange for necessary items such as a converter and finish wiring.

↓

Starting/Ending PROTEM2

Refer to P. 4-1

Check Starting/Ending PROTEM2.

Base tool

To use Base tool

Refer to P. 5-1

This part describes outline of setting up PROTEM2.

To conduct data management of instruments.

Refer to P. 6-1

This part describes how to save the setting data to your computer and transfer the data to your instrument as well as logging method using the Logging tool.
This part also shows how to make a list (report) of setting parameters.

Setting tool for the PZ

To conduct a program control using the PZ series.

Refer to P. 8-1

This part describes how to run a ramp/soak program on the PZ series using the Setting tool for the PZ series.

Setting tool for the PF900

To conduct a program control using the PF900 series.

Refer to P. 9-1

This part describes how to run a ramp/soak program on the PF900 series using the Setting tool for the PF900 series.

2. Installing PROTEM2

NOTE

● **To use this software Microsoft .NET Framework 4.5 or later is required.**

TIPS

● In case any previous version of PROTEM2 is installed in your PC, you can install this version without uninstalling it.*
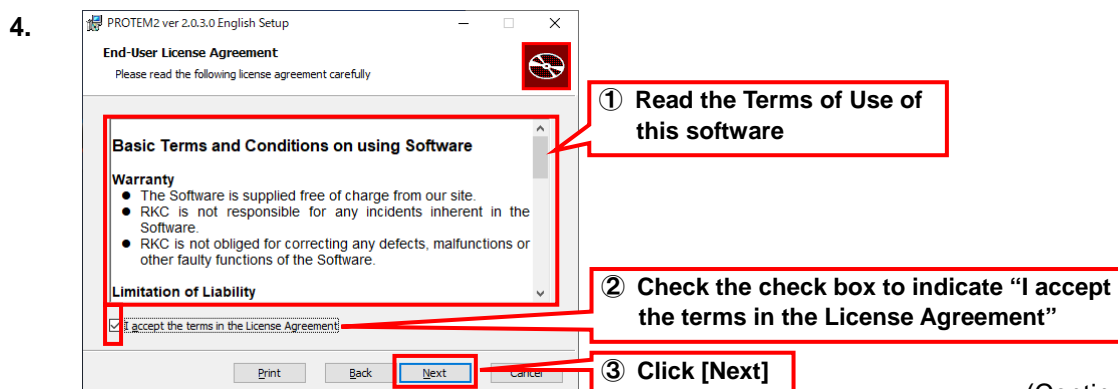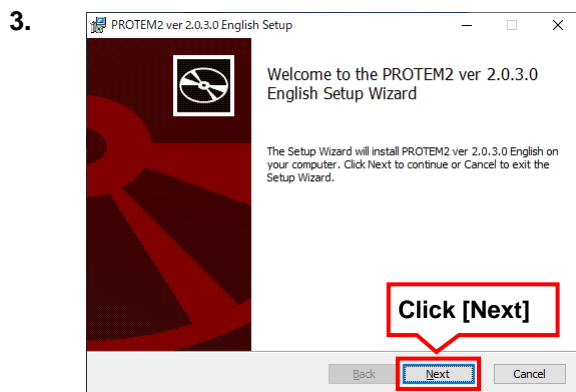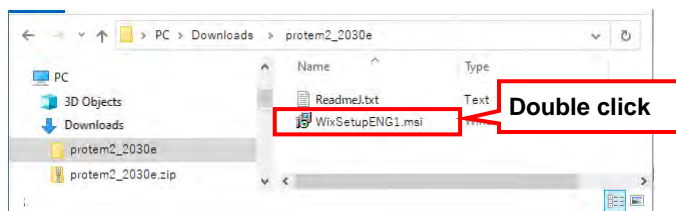
    * If you have uninstalled the older version, the projects and log files created/changed with the older version will not be deleted by the uninstallation. Delete those manually, if necessary.

2.1 Installing PROTEM2

Proceed as follows to install the software.

This procedure is based on Installer version 2.0.3.0 (English edition).

1. Extract the [protem2_2030e.zip] downloaded from our website.

2. Double click WixSetupENG1.msi found in the extracted folder.
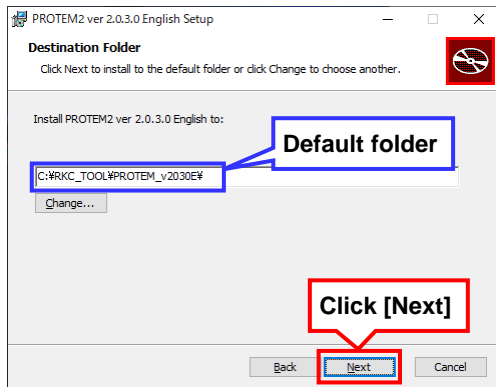
Double click

3.

Click [Next]

4.

① **Read the Terms of Use of this software**

② **Check the check box to indicate "I accept the terms in the License Agreement"**

③ **Click [Next]**

(Continued on the next page)

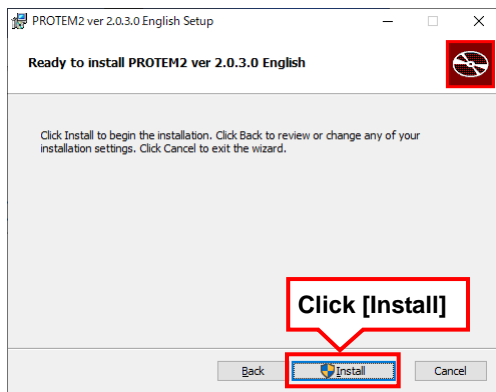(Continued from the previous page)

5.

Default folder

Click [Next]

TIPS

If you wish to change the default installation location, click [Change…] and select the location of your choice.
Click [Next] after you have changed the installation location.
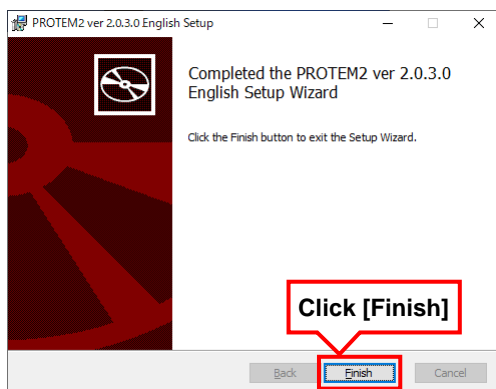
6.

Click [Install]

TIPS

The User Account Control (UAC) dialog box will appear soon after you have started the installation. Click [Yes] to proceed.
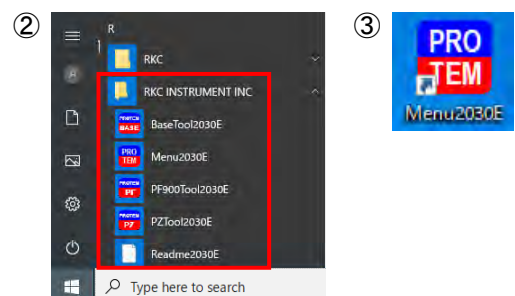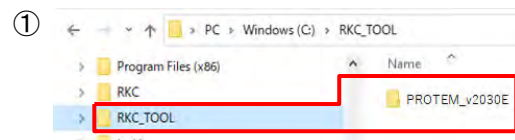

Click [Yes]

7.

Click [Finish]
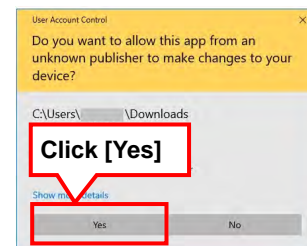
TIPS

If the installation is successfully finished, the folder designated in procedure 5 (1) above will be created, the software will be registered to the start menu (2), and a short cut will be created on the Desktop (3).

①

②   ③

This completes the installation process.

2.2 Uninstalling PROTEM2

To uninstall PROTEM2, follow the Windows program uninstallation procedure.

(Example: Windows10)

① **Click here**

② **Click [Apps]**

③ **Click [PROTEM2 ver2.0.3.0_English]**

⑤ **Click [Uninstall]**

④ **Click [Uninstall]**

(When User Account Control screen is displayed)

⑥ **Click [Yes]**
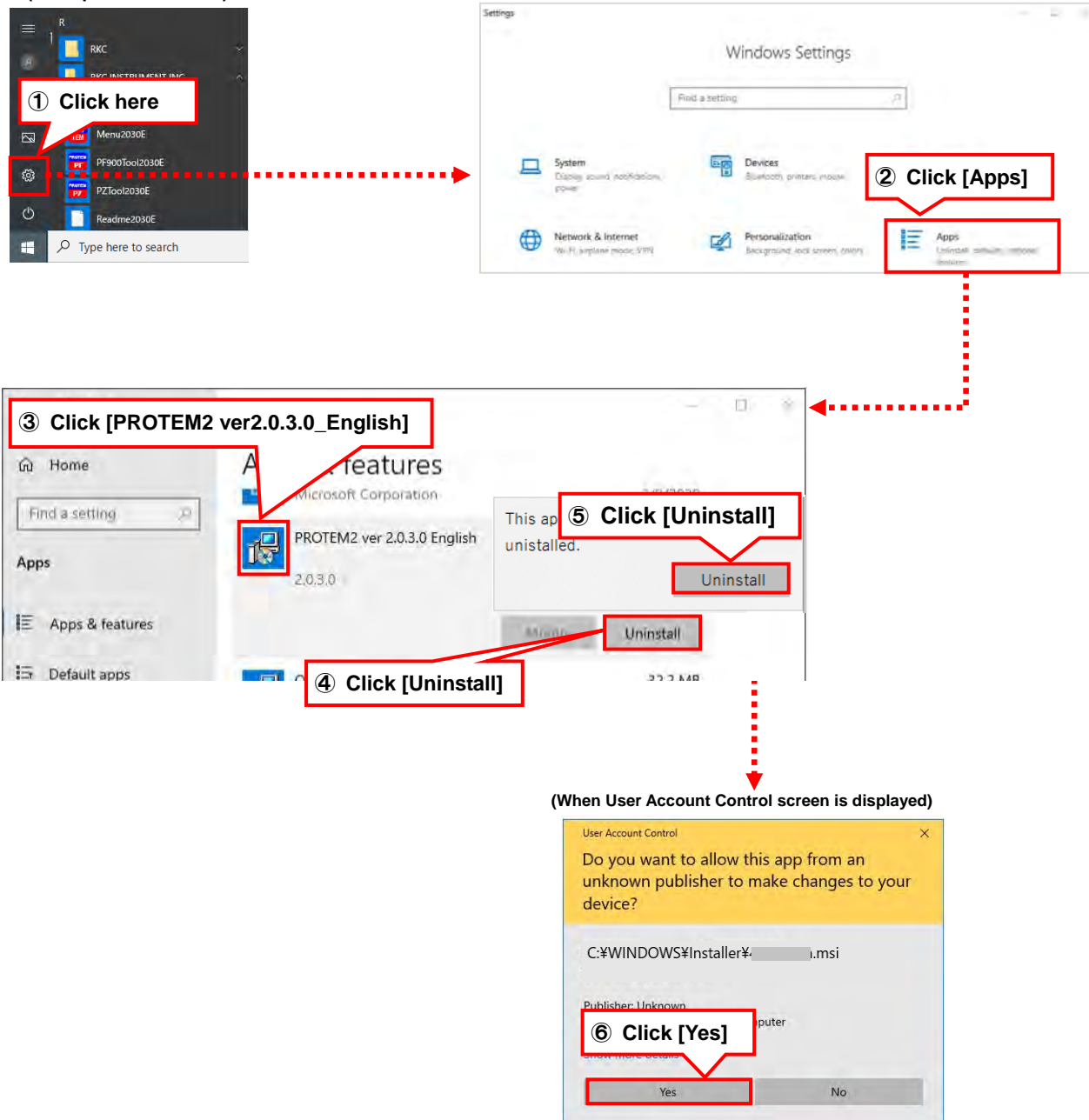
This completes the uninstallation process of PROTEM2.

Memo

3. Connecting instruments to PC

3.1 Necessary Products and Cables

To use PROTEM2, you need to establish a connection to allow Loader communication or Serial communication between the supported instrument and the PC. Refer to the following table for the communication converter and cables required for the connection. In this manual, the connection example between the PC and the supported model is explained using the typical model.

Refer to the Instruction Manual of the relevant model for the details of wiring and connection of the supported models. The Instruction Manuals of the supported models can be downloaded from the official RKC website.

● **List of Necessary Products and Cables**

✓: Supported   ○: Connectable Converters and cables (○/○/○: Converter and cable with a circle of the same color mean that they can be used together.)

Supported models		Comm. interface – Serial comm. RS-232C	RS-422A	RS-485	Loader comm.	USB converters (RKC)[1,2,3] COM-K2-□	COM-KG-□□	Comm. converters – RKC[1] RS-232C/RS-422A converter: COM-A	Commercial products[4] RS-232C/RS-485 conv.CD485,CD485V series	USB/Serial comm. converter: DL-U232A	USB/Serial comm. converter: DL-U422T	USB/Serial comm. converter: DL-U485	Comm. cable (RKC)[1,5] W-BF-01-3000	W-BF-02-3000	W-BF-28-3000	W-BV-02-3000
SRZ System	Z-COM-A		✓	✓	✓	○	○	○	○					○	○	
	Z-TIO-A/B/C/D		✓	✓	✓	○	○		○			○				
	Z-DIO-A		✓	✓	✓	○	○		○			○				
	Z-CT-A		✓	✓	✓	○	○		○			○				
	Z-TIO-G		✓	✓	✓	○	○					○				
SR Mini HG System		✓	✓	✓				○	○	○	○	○	○	○	○	○
SR Mini System		✓	✓	✓				○	○	○	○	○	○	○	○	○
SRJ *	J-TI			✓		○	○	○							○	
B400			✓	✓		○	○	○	○		○	○		○	○	○
FB series	FB100		✓	✓	✓	○	○		○		○	○				
	FB400/900	✓	✓	✓	✓	○	○	○	○	○	○	○	○		○	
FZ series	FZ110		✓	✓	✓	○	○	○	○				○		○	
	FZ400/900		✓	✓	✓	○	○	○	○				○		○	
GZ series	GZ400/900		✓	✓	✓	○	○	○	○				○		○	
HA series	HA400/900	✓	✓	✓					○	○	○	○				
	HA430/930	✓	✓	✓					○	○	○	○				
RB series	RB100/400/500/700/900		✓	✓		○	○		○			○				
RD series	RD100/400/500/700/900		✓	✓		○	○		○			○				
RZ series	RZ100/400		✓	✓		○	○		○			○				
SA series *	SA100/200			✓					○			○				
SB1			✓	✓		○	○		○			○				
AG500			✓	✓	✓	○	○	○	○		○	○	○		○	
PG500			✓	✓	✓	○	○	○	○		○	○	○		○	
NWS series *	NWS-COM, NWS-COM-M1		✓	✓		○	○	○	○		○	○		○	○	○
PZ series **	PZ400/900		✓	✓	✓	○	○	○	○		○	○	○		○	
PF series **	PF900/901	✓	✓	✓	✓	○	○	○	○	○	○	○	○		○	
IOPD *			✓	✓		○	○	○	○		○	○		○	○	○
THV-A1			✓	✓		○	○	○	○			○		○	○	○
THV-40					✓	○	○									
THV-10					✓	○	○		○							
COM-KG (NWS wireless) *					✓											
COM-ME series			✓	✓		○	○		○			○				○
COM-ML series			✓	✓	✓	○	○	○	○		○	○	○		○	○

1 Our USB communication converters, RS-232C/RS-422A converters, and communication cables are all optional and sold separately.
2 Our USB communication converters can be also used as a USB/serial communication converter for RS-422A or RS-485.
3 To use the COM-K2, the USB driver must be installed on the PC.
   The USB driver can be downloaded from the official RKC website: https://www.rkcinst.co.jp/english/download-center/
4 If you wish to use a Comercial communication converter, you have to provide it by yourself. For example, Data Link products are shown above.
5 **W-BF-01** (Spade crimp terminal ←→ Modular connector)a   **W-BF-02** (Modular connector ←→ Modular connector)a   **W-BV-02** (Modular connector ←→ Phoenix 5-pin connector)a

   W-BF-28 (D-sub 9-pin connector ←→ Modular connector)a
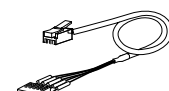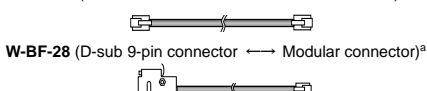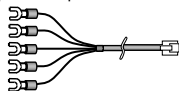
   a The standard length of each communication cable is 3 meters.
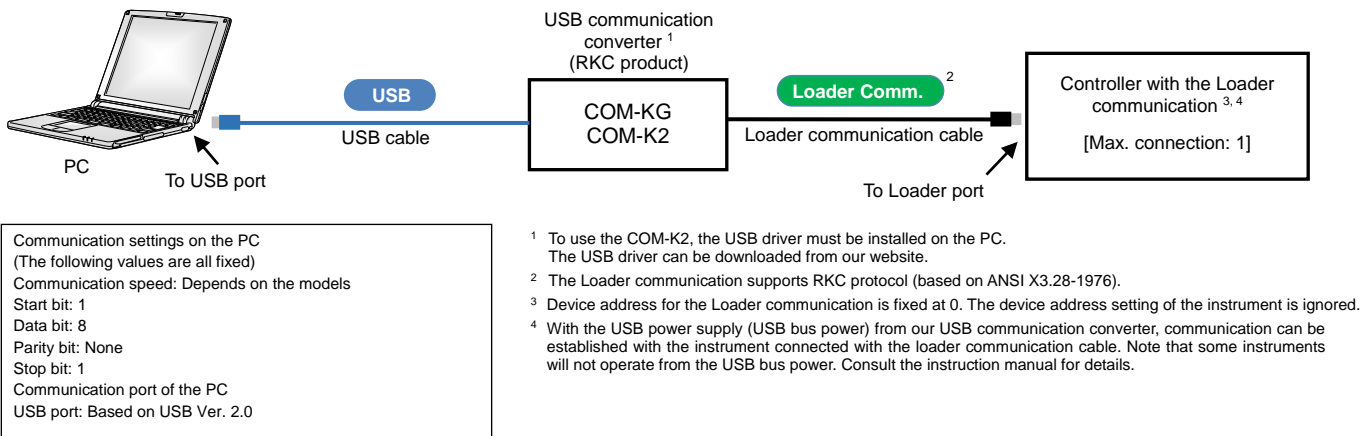   * This model is not supported by PROTEM2 (English edition).
   ** Use Setting tool for the PZ series or the PF900 series which are supported by PROTEM2 (English edition). Base tool (English edition) does not cover this model.

3.2 Connections for Loader Communication

This part of the document will show you an example of setting up the Loader communication using our instrument with the USB loader communication connector, together with our USB communication converter and the PC.
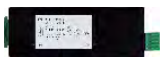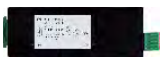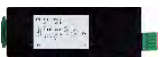
> **Refer to the Instruction Manual of the relevant model for the details of Loader communication of the supported models.**

■ Basic System Configuration

USB communication converter [1] (RKC product)

PC — To USB port — USB — USB cable — COM-KG COM-K2 — Loader Comm. [2] — Loader communication cable — To Loader port — Controller with the Loader communication [3, 4] [Max. connection: 1]

Communication settings on the PC
(The following values are all fixed)
Communication speed: Depends on the models
Start bit: 1
Data bit: 8
Parity bit: None
Stop bit: 1
Communication port of the PC
USB port: Based on USB Ver. 2.0

[1] To use the COM-K2, the USB driver must be installed on the PC. The USB driver can be downloaded from our website.

[2] The Loader communication supports RKC protocol (based on ANSI X3.28-1976).

[3] Device address for the Loader communication is fixed at 0. The device address setting of the instrument is ignored.

[4] With the USB power supply (USB bus power) from our USB communication converter, communication can be established with the instrument connected with the loader communication cable. Note that some instruments will not operate from the USB bus power. Consult the instruction manual for details.

■ Connection Example

List of devices and cables used in the example

	Connection type 1 (P. 3-3)	Connection type 2 (P. 3-4)	Connection type 3 (P. 3-5)
Instruments with Loader communication connector	SRZ System (Z-COM, Z-TIO/DIO/CT, Z-TIO-G) FB series	PF series	FZ series * * Connection to the LOADER port on the PZ series is the same as this.
USB communication converter COM-KG-□N This digit indicates type of loader communication cable. COM-KG (main part) remains the same in each case.	COM-KG-1N	COM-KG-3N	COM-KG-4N
	With Loader communication cable W-BV-01-1500 (Length: 1.5 m)	With Loader communication cable W-BV-03-1500 (Length: 1.5 m)	With Loader communication cable W-BV-05-1500 (Length: 1.5 m)
	USB cable (Cable length: 1 m) [Supplied as standard]		
PC	OS: Windows10 (64 bits) USB port required (USB Ver.2.0)		

● Connection Example 1: ① SRZ (Z-COM, Z-TIO/DIO/CT, Z-TIO-G)

Z-COM module (used standalone):
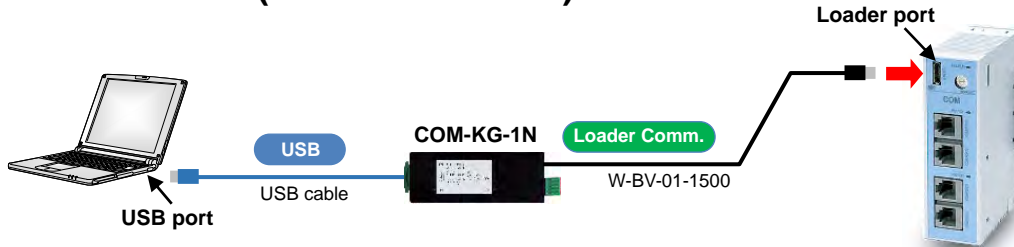
Loader port

USB
USB cable
COM-KG-1N
Loader Comm.
W-BV-01-1500
USB port

TIPS

When connected via the Loader port, the instrument is available for communication even when the instrument power is off.

Z-COM+(Z-TIO/DIO/CT):

NOTE

● When the Z-COM module and two or more function modules (Z-TIO/DIO/CT) are connected, the Loader communication is established only with the module to which the Loader communication cable is connected.
● To establish a communication with all modules connected below the Z-COM, you need to supply power (24Vdc) to the modules.
● Z-COM and Z-TIO-G modules cannot be used linked together.

TIPS

● When connected via the Loader port, the instrument is available for communication even when the instrument power is off. However, measured values such as PV and CT may be uncertain. To do the PV logging, the instrument needs to be powered on.
● To establish a communication link with multiple modules (control units), use the Serial communication (RS-485).

Loader port

USB
USB cable
COM-KG-1N
Loader Comm.
W-BV-01-1500
USB port
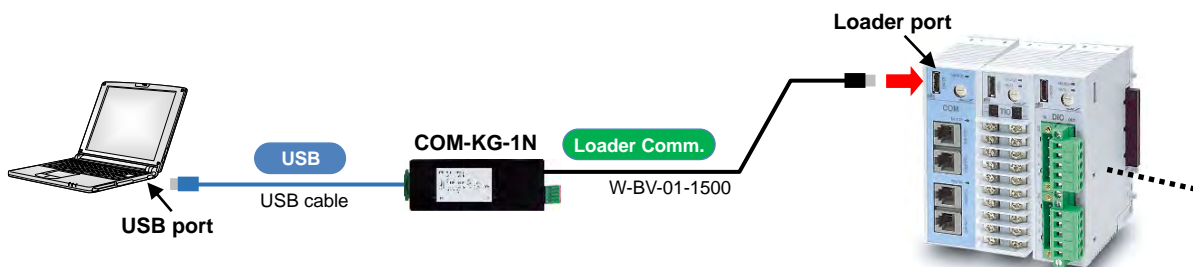
Z-TIO/DIO/CT (stand-alone), Z-TIO-G (stand-alone):
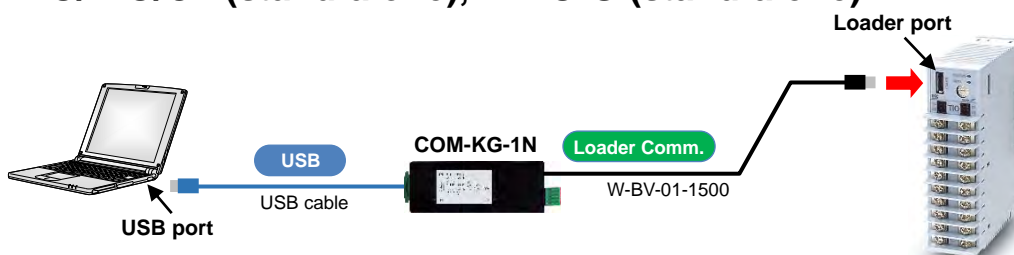
Loader port

USB
USB cable
COM-KG-1N
Loader Comm.
W-BV-01-1500
USB port

TIPS

● When connected via the Loader port, the instrument is available for communication even when the instrument power is off. However, measured values such as PV and CT may be uncertain. To do the PV logging, the instrument needs to be powered on.

● Connection example 1: ② FB series (FB100/400/900)

FB100

Loader port

USB
USB cable

COM-KG-1N

Loader comm.
W-BV-01-1500

USB port
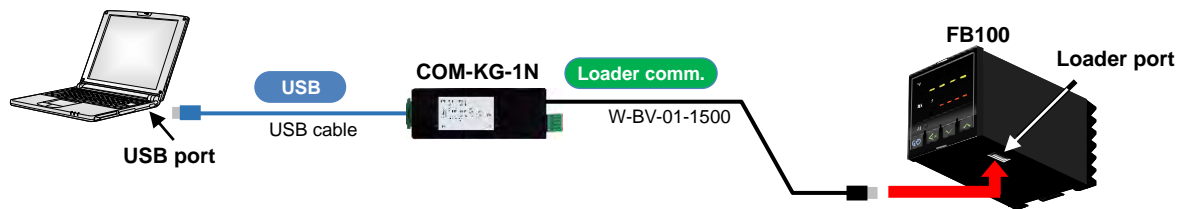
The Loader port of the FB400/900 can be found also at the bottom of the instrument.
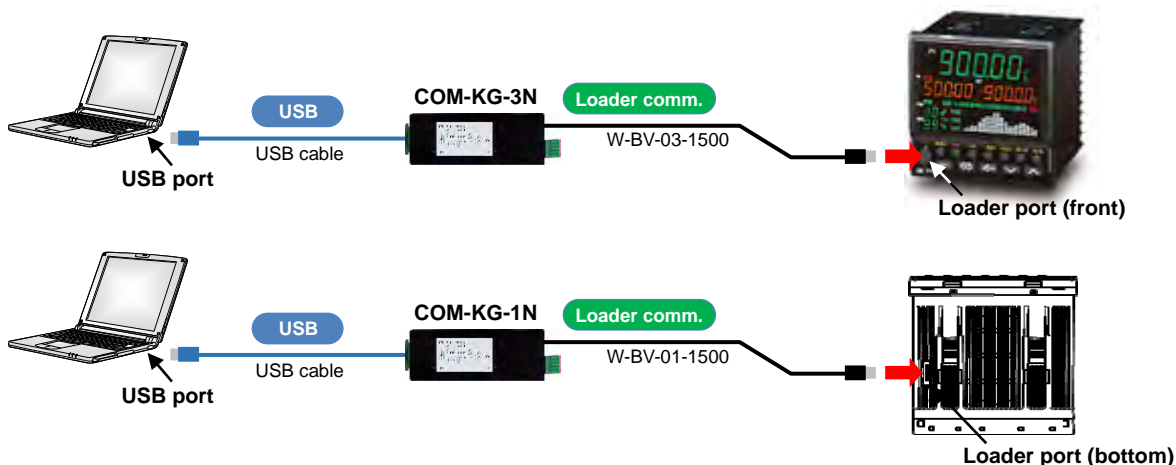
TIPS

● When connected via the Loader port, the instrument can be powered off. However, measured values such as PV may be uncertain. To do the PV logging, the module needs to be powered on.

● Loader communication is for a 1 to 1 connection between the computer and the controller. To establish a communication link with the FB controllers, use the Serial communication (RS-422A/RS-485).

● Connection example 2: PF series (PF900/901)

NOTE

● **Loader communication ports of the PF series are located on the front and on the bottom of the instrument. Both ports cannot be used at the same time. You can only use one of the two at a time.**

● **Be sure to turn ON the PF900/901 when using the Loader communication port on the front panel.**

● **The Loader communication connector on the front panel is different from the one on the bottom of the instrument. When using the Loader communication port on the bottom of the instrument, use the W-BV-01-1500 loader communication cable.**

USB
USB cable

COM-KG-3N

Loader comm.
W-BV-03-1500

USB port

Loader port (front)

USB
USB cable

COM-KG-1N

Loader comm.
W-BV-01-1500

USB port

Loader port (bottom)

TIPS

● When connected via the Loader port on the bottom of the instrument, the instrument is available for communication even when the instrument power is off. However, values such as PV and Pattern monitor may be uncertain. To do the PV logging, the instrument needs to be powered on.

● Loader communication is for a 1 to 1 connection between the computer and the instrument. To establish a communication link with multiple instruments, use the Serial communication (RS-422A/RS-485).

## ● Connection example 3: FZ series (FZ110/400/900)

FZ110

USB port

USB cable

COM-KG-4N   Loader comm.

W-BV-05-1500
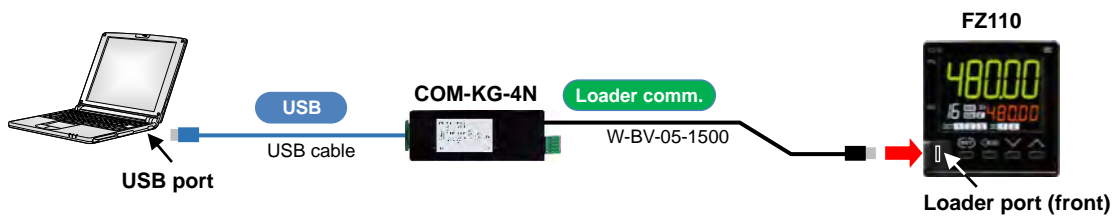
Loader port (front)

Loader port of FZ400/900 is also on the front panel.

TIPS

- When connected via the Loader port, the instrument can be powered off. However, measured values such as PV may be uncertain. To do the PV logging, the instrument needs to be powered on.
- Loader communication is for a 1 to 1 connection between the computer and the controller. To establish a communication link with multiple instruments, use the Serial communication (RS-422A [for FZ400/FZ900 only] or RS-485).

3.3 Connections for Serial Communication

We will show you an example of setting up the Serial communication using our instrument with the USB loader communication connector, together with our USB communication converter and the PC.

> Refer to the Instruction Manual of the relevant model for the details of Serial communication of the supported models.

■ Basic System Configuration

When the serial communication interface is RS-232C:
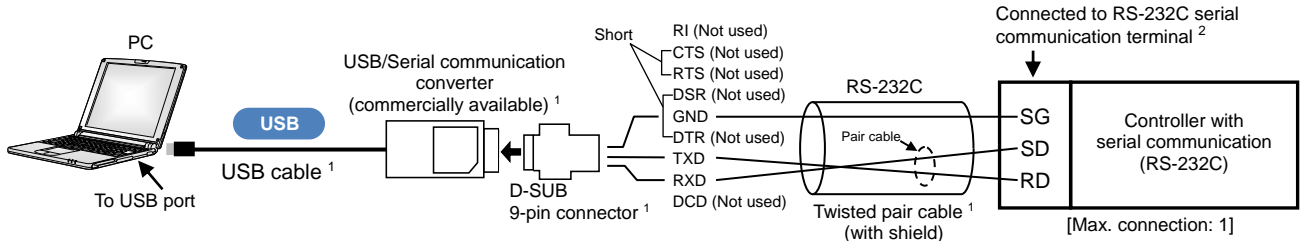
[1] Communication cable, commercial USB/Serial communication converter, and D-sub 9-pin connector must be provided by the customer.
[2] Refer to the relevant document for the terminal screw size, recommended tightening torque, and recommended crimp terminals.

When the serial communication interface is RS-422A:

You can use our communication converter (COM-KG and COM-K2) as a USB/Serial communication converter.

[1] The Communication cable must be provided by the customer.
[2] Refer to the relevant document for the terminal screw size, recommended tightening torque, and recommended crimp terminals.

*R: Termination resistor (Example: 120 Ω 1/2W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.
The termination resistor must be provided by the customer.

TIPS   Wiring example of when a commercial USB/Serial communication converter is used:
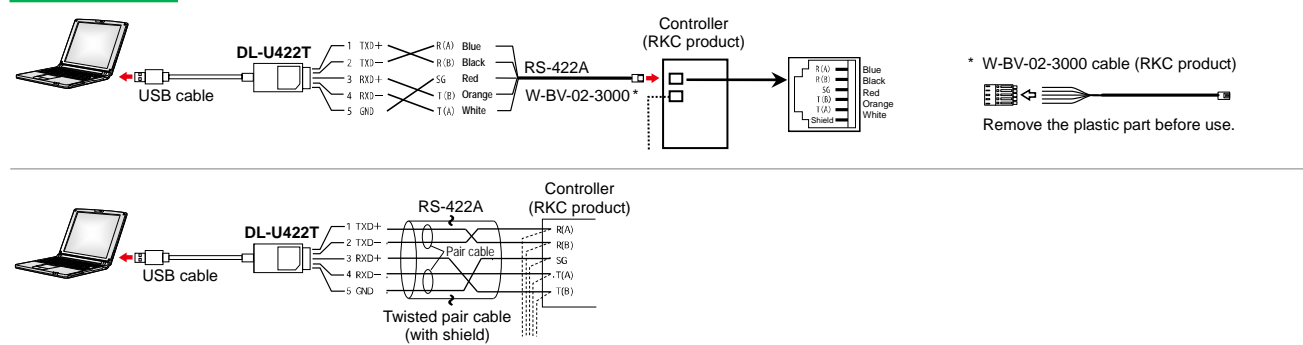
When the serial communication interface is RS-485:

You can use our communication converter (COM-KG and COM-K2) as a USB/Serial communication converter.

[1] The RS-485 communication cable must be provided by the customer.
[2] Refer to the relevant document for the terminal screw size, recommended tightening torque, and recommended crimp terminals.

*R: Termination resistor (Example: 120 Ω 1/2W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.
The termination resistor must be provided by the customer.

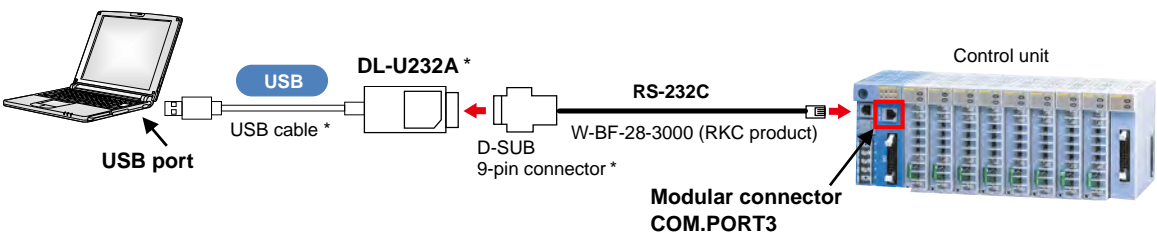**TIPS**   Wiring example of when a commercial USB/Serial communication converter is used:

* W-BV-02-3000 cable (RKC product)

Remove the plastic part before use.
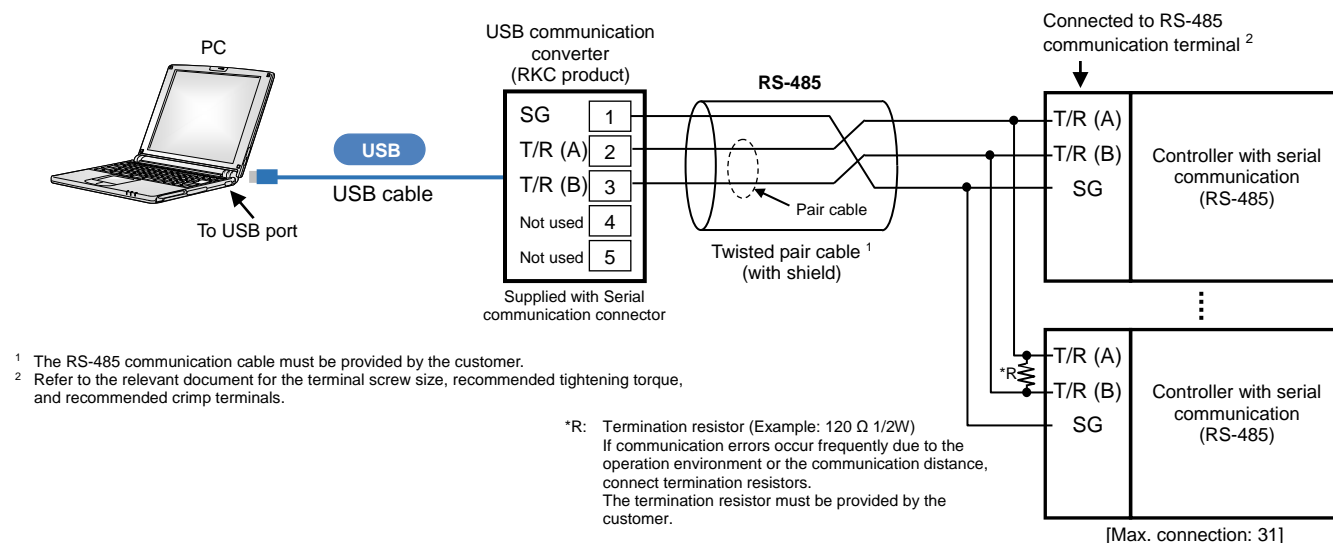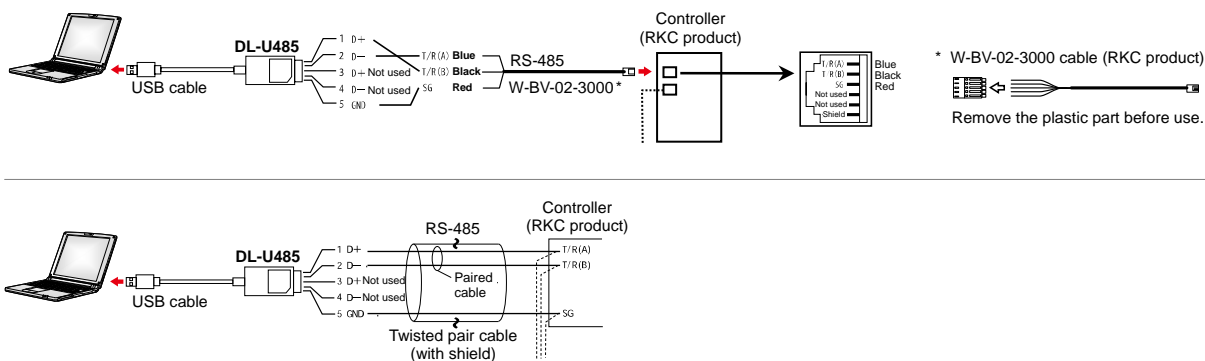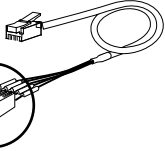
■ Connection Example

List of devices and cables used in the example

	RS-232C connection (P. 3-8)	RS-422A connection (P. 3-9)	RS-485 connection (P. 3-11)
Instruments with Serial communication	SR Mini HG System FB series *1 (FB400/900 only)	SR Mini HG System FZ series *2 (FZ400/900 only) ※2 The configuration of the RS-422A serial communication terminal of the PZ series is the same as the FZ series.	SRZ System (Z-TIO connected) FZ series *3 ※3 The configuration of the RS-485 serial communication terminal of the PZ series is the same as the FZ series.
USB/Serial communication converter	DL-U232A (commercially available) [Data Link KK]	COM-KG-NN (RKC product) Serial communication connector (supplied) USB cable (Cable length: 1 m) [Supplied as standard]	
Communication cable	W-BF-28-3000 (RKC product) *1 The FB series need D-SUB 9-pin connector and RS-232C cable (shielded twist pair cable).	W-BV-02-3000 (RKC product) Connector: When connecting this cable to the COM-KG, use it as it is for RS-422A and disconnect R(A) and R(B) for RS-485.	
PC	OS: Windows10 (64 bits) USB port required (USB Ver.2.0)		

● Connecting over RS-232C: ① SR Mini HG System

* Communication cable for RS-232C, USB/Serial communication converter, and D-sub 9-pin connector must be provided by the customer.
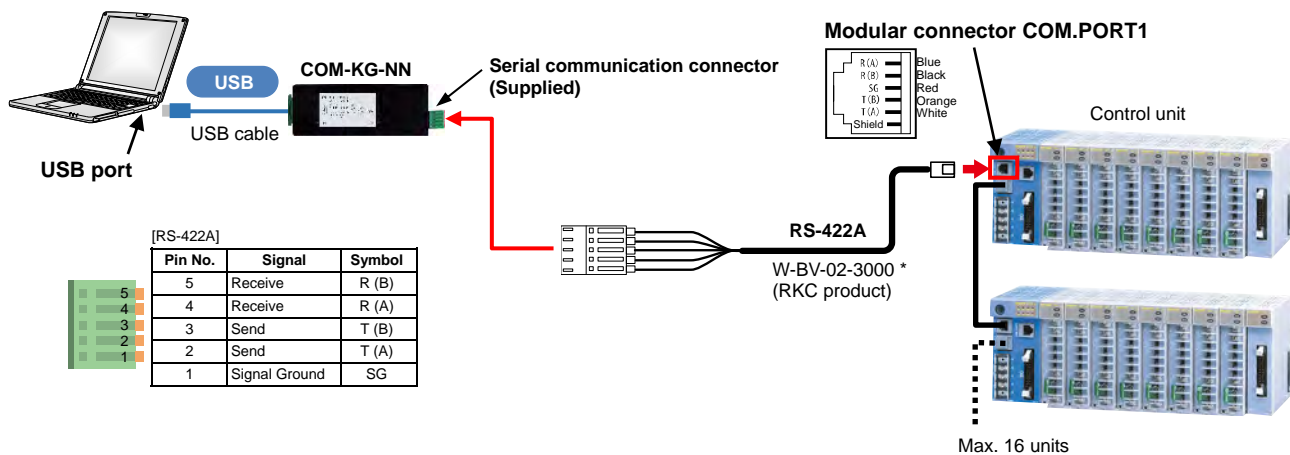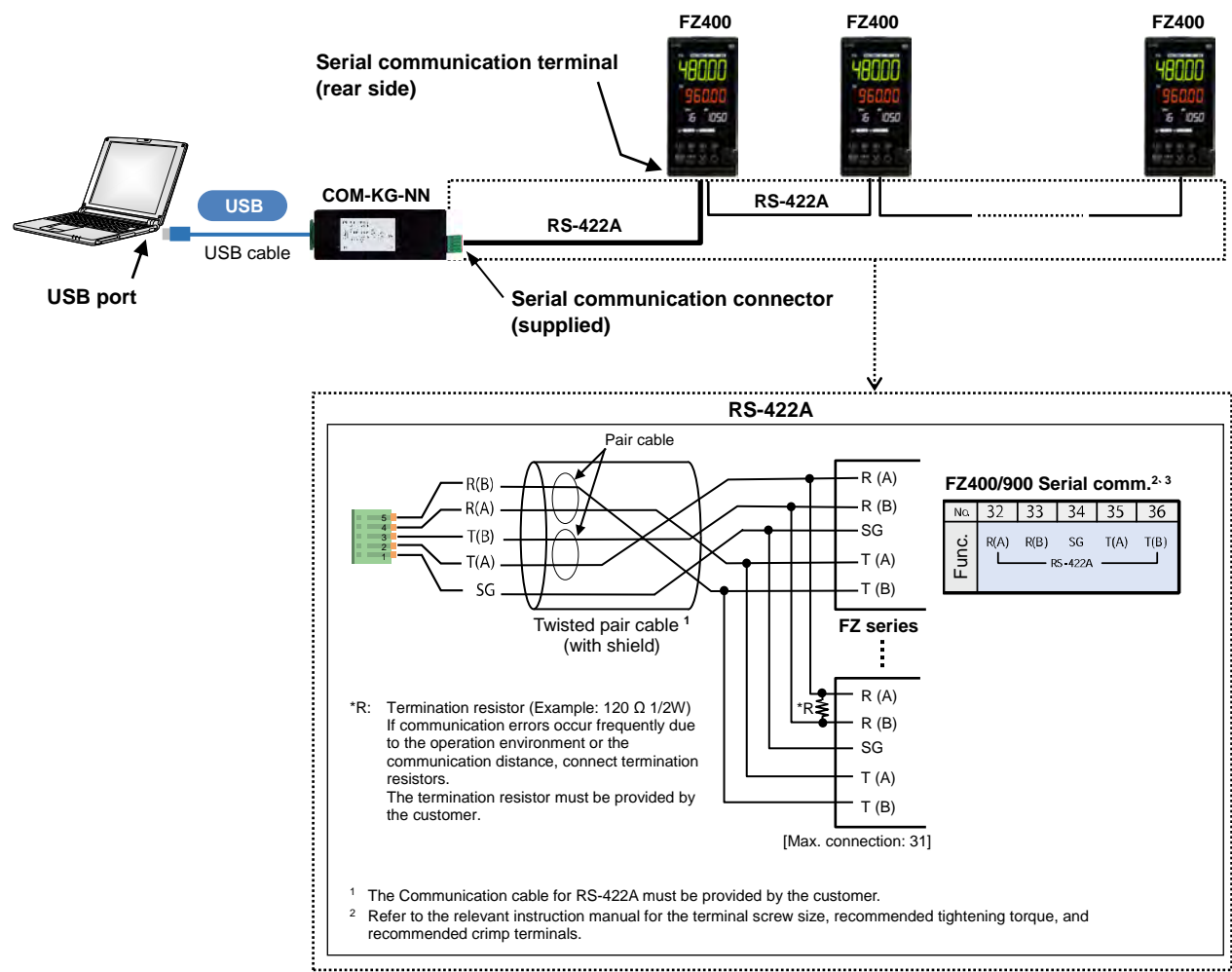
● Connecting over RS-232C: ② FB series (FB400/900 only)

FB400

Serial communication terminal (rear side)

RS-232C

USB port

USB

USB cable

RS-232C

FB400/900 Serial comm.[1]

| No. | 25 | 26 | 27 |

Func. | SG | SD | RD |
RS-232C

FB series

SG
SD
RD

Paired cable

Twisted pair cable [2]
(with shield)

Not used — RI — 9
Not used — CTS — 8
Not used — RTS — 7 — Short
Not used — DSR — 6
— GND — 5
Not used — DTR — 4
— TXD — 3
— RXD — 2
Not used — DCD — 1

DL-U232A [2]

D-SUB
9-pin connector [2]

[1] Refer to the relevant document for the terminal screw size, recommended tightening torque, and recommended crimp terminals.
[2] Communication cable for RS-232C, USB/Serial communication converter, and D-sub 9-pin connector must be provided by the customer.

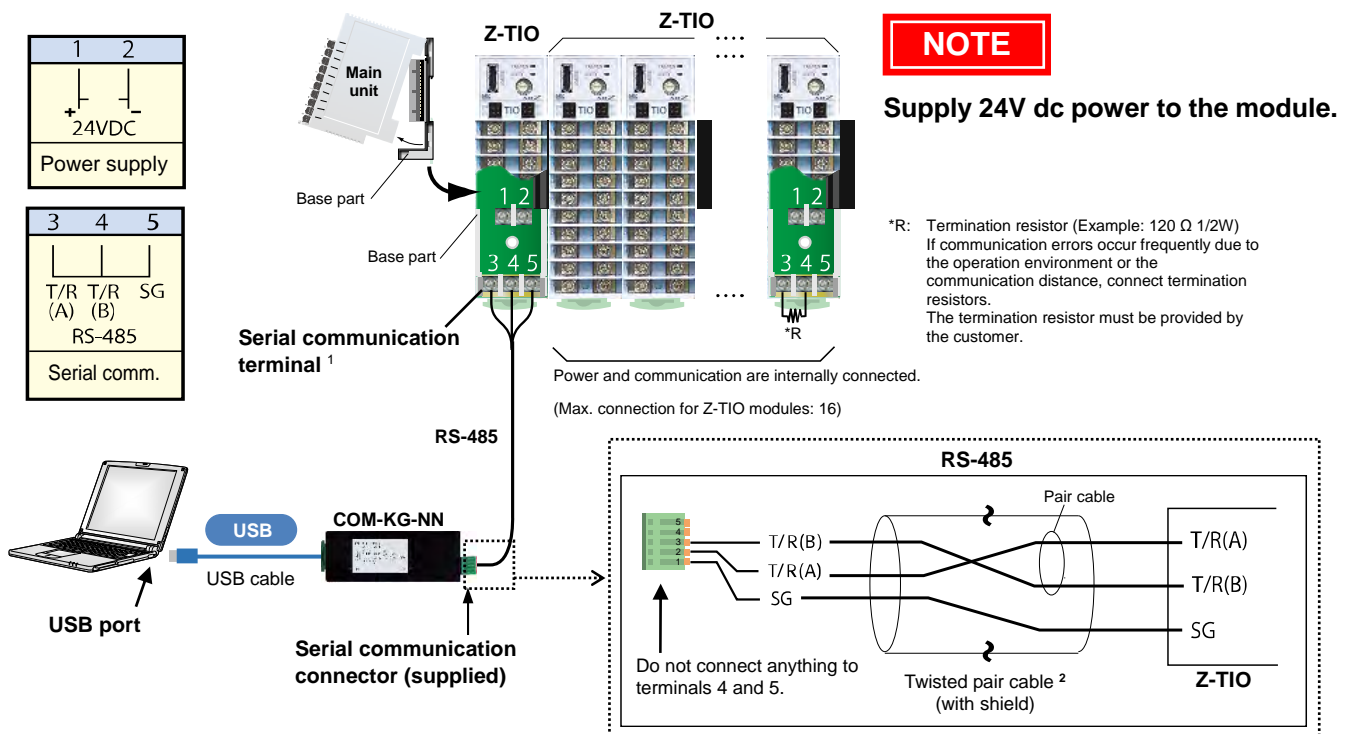## ● Connecting over RS-422A: ① SR Mini HG System
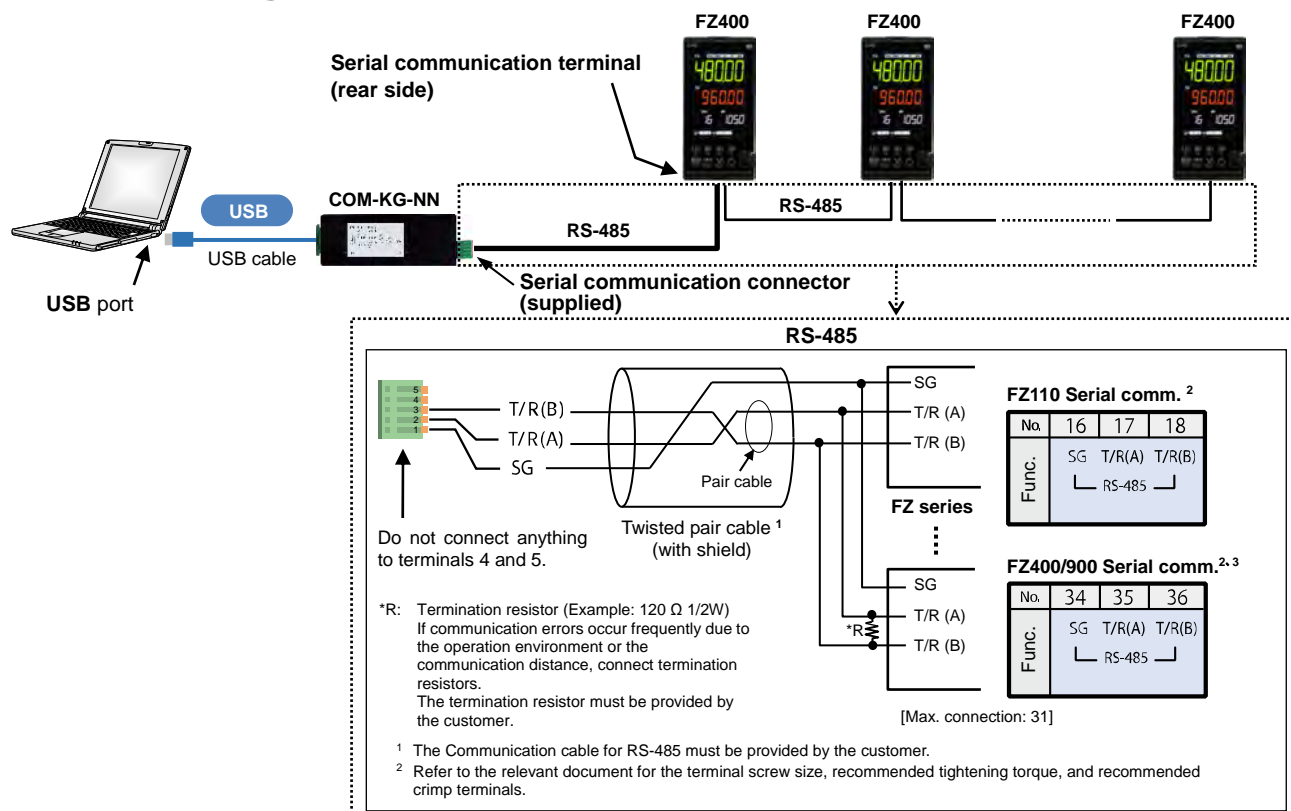

USB

COM-KG-NN

Serial communication connector
(Supplied)

USB cable

USB port

Modular connector COM.PORT1

R (A)	Blue
R (B)	Black
SG	Red
T (B)	Orange
T (A)	White
Shield	

Control unit

RS-422A

W-BV-02-3000 *
(RKC product)

Max. 16 units

[RS-422A]

Pin No.	Signal	Symbol
5	Receive	R (B)
4	Receive	R (A)
3	Send	T (B)
2	Send	T (A)
1	Signal Ground	SG

● Connecting over RS-422A: ② FZ series (FZ400/900 only)

RS-422A

*R: Termination resistor (Example: 120 Ω 1/2W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.
The termination resistor must be provided by the customer.

Pair cable

Twisted pair cable [1]
(with shield)

FZ series

FZ400/900 Serial comm.[2, 3]

№	32	33	34	35	36
Func.	R(A)	R(B)	SG	T(A)	T(B)
			RS-422A		

[Max. connection: 31]

[1] The Communication cable for RS-422A must be provided by the customer.
[2] Refer to the relevant instruction manual for the terminal screw size, recommended tightening torque, and recommended crimp terminals.

● Connecting over RS-485: ① SRZ System (Z-TIO connected)

Power supply

1	2
+	−
24VDC	

Serial comm.

3	4	5
T/R (A)	T/R (B)	SG
RS–485		

Main unit

Base part

Base part

Serial communication terminal [1]

RS-485

USB port

USB

COM-KG-NN

USB cable

Serial communication connector (supplied)

Z-TIO   Z-TIO ....

NOTE

Supply 24V dc power to the module.

*R: Termination resistor (Example: 120 Ω 1/2W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.
The termination resistor must be provided by the customer.

*R

Power and communication are internally connected.
(Max. connection for Z-TIO modules: 16)

RS-485

Pair cable

T/R(B)
T/R(A)
SG

Do not connect anything to terminals 4 and 5.

Twisted pair cable [2]
(with shield)

T/R(A)
T/R(B)
SG

Z-TIO

[1] Refer to the relevant document for the terminal screw size, recommended tightening torque, and recommended crimp terminals.
[2] The Communication cable for RS-485 must be provided by the customer.

● Connecting over RS-485: ② FZ series (FZ110/400/900)

Serial communication terminal (rear side)

FZ400   FZ400   FZ400

USB port

USB

COM-KG-NN

USB cable

Serial communication connector (supplied)

RS-485   RS-485

RS-485

T/R(B)
T/R(A)
SG

Do not connect anything to terminals 4 and 5.

Twisted pair cable [1]
(with shield)

Pair cable

SG
T/R (A)
T/R (B)

FZ series

SG
T/R (A)
T/R (B)

*R

FZ110 Serial comm. [2]

No.	16	17	18
Func.	SG	T/R(A)	T/R(B)
		RS-485	

FZ400/900 Serial comm. [2, 3]

No.	34	35	36
Func.	SG	T/R(A)	T/R(B)
		RS-485	

[Max. connection: 31]

*R: Termination resistor (Example: 120 Ω 1/2W)
If communication errors occur frequently due to the operation environment or the communication distance, connect termination resistors.
The termination resistor must be provided by the customer.

[1] The Communication cable for RS-485 must be provided by the customer.
[2] Refer to the relevant document for the terminal screw size, recommended tightening torque, and recommended crimp terminals.

Memo

4.1 Starting PROTEM2

Proceed as follows to start PROTEM2.

(This procedure is based on Installer version 2.0.3.0)

① Double click the icon on the desktop.

PROTEM2 will start and show the first screen.

② Click [Base Tool]

A dialog box for "Start-up type selection" is displayed.
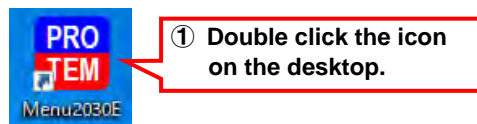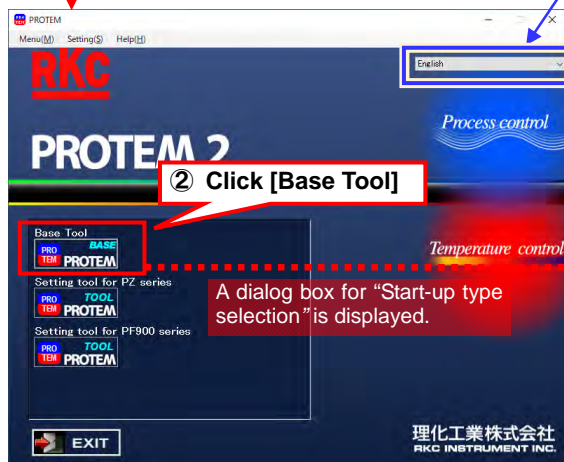
TIPS

You can also start PROTEM2 through clicking PROTEM2 in the Windows start menu.

Click
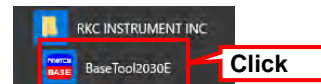
NOTE

Changing the language on the Main menu (shown left) is temporary.
To make a complete change of the language, go to "Environment setting" under "Setting" in each tool and change the font at "Change font" to the font to be used in the selected language.

You can switch the language from Japanese to [English] or [Chinese (simplified characters)]. It should be noted, however, that the switched language may not support all models.
To see if your instrument is supported by the selected language, refer to the List of supported languages (P. A-1).

③ Click [Select a model]
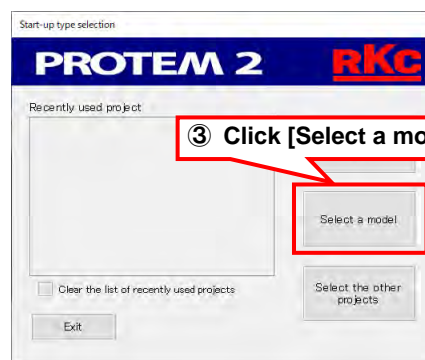
A dialog box, "Select a model", appears.

For example,
when you choose the FZ series and the Loader communication, the screen should look as shown left.

Selecting the Loader communication will automatically select the RKC communication.

④ Choose "Model", "Communication", and "Communication protocol"
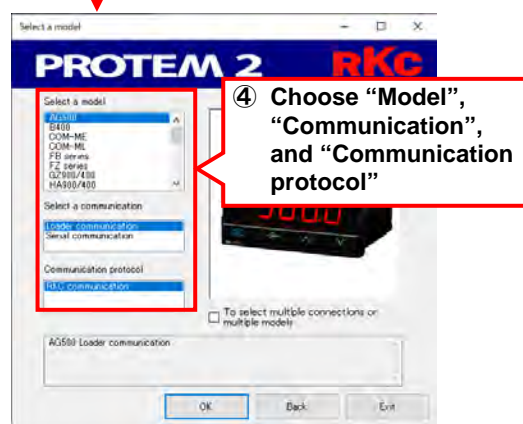
(Initial display status)

⑤ Click [OK]

The Base tool will start.
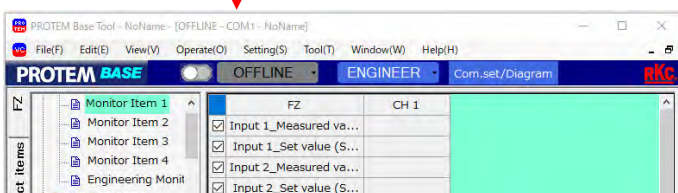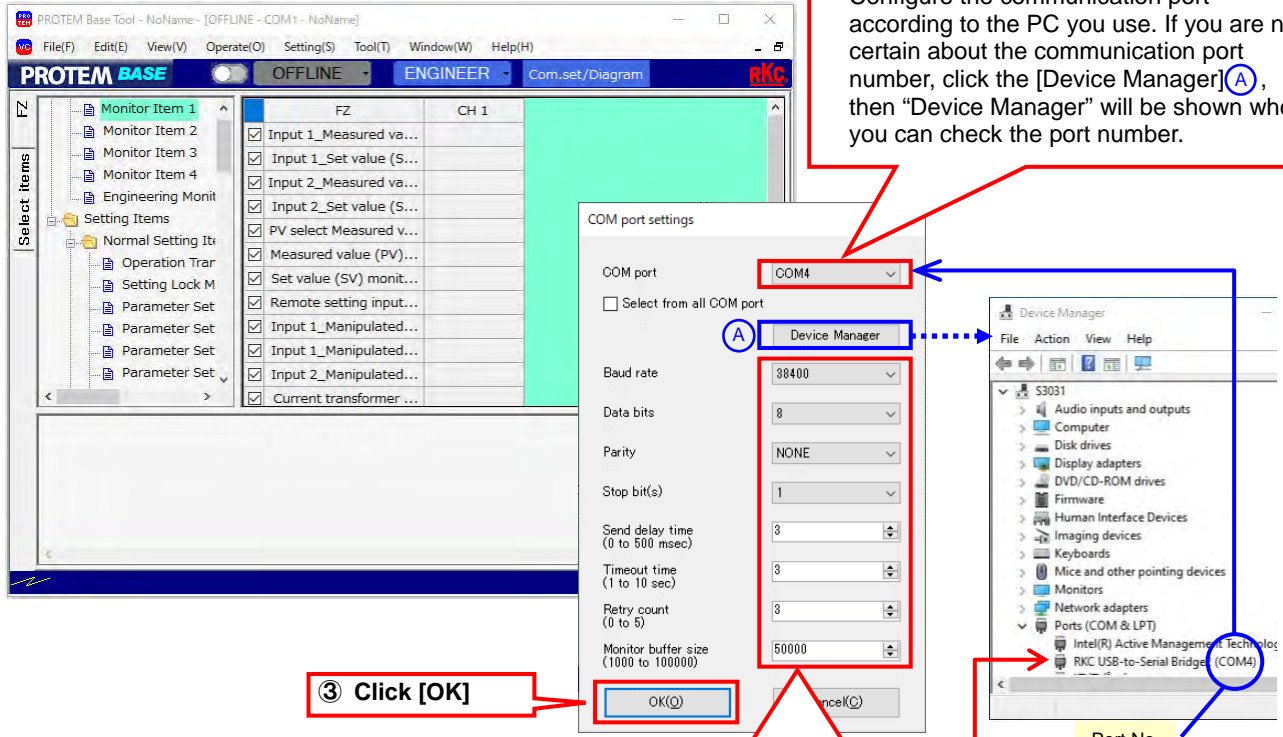
The Base tool screen will appear.

We will next set the Communication configuration.
(Refer to Next page)

4.2 Configuring the Communication

Proceed as follows to configure the communication.

(This Base tool screen is for the FZ series.)

① **Configure the Communication port** *

* Configure the communication port according to the PC you use. If you are not certain about the communication port number, click the [Device Manager]Ⓐ, then "Device Manager" will be shown where you can check the port number.

③ **Click [OK]**

Port No.

② **Configure the communication environment** *

* For the Loader communication, set values will be displayed according to the instrument used.
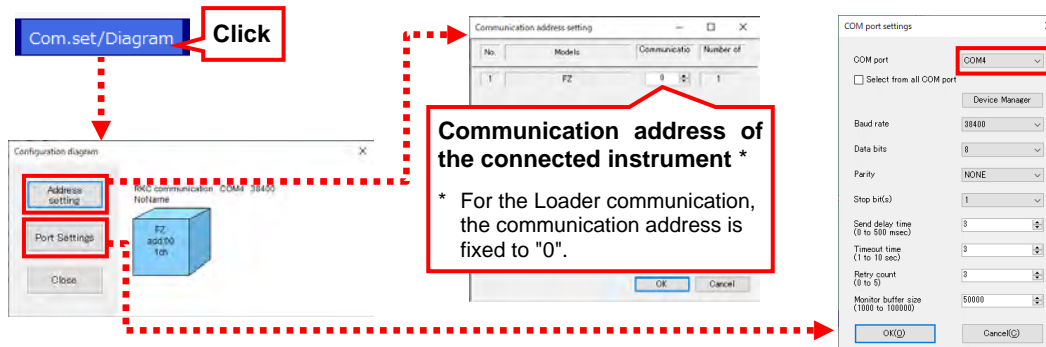
Communication port number to which the COM-KG or COM-K2 is connected.

TIPS

If you want to see or set the communication address and communication port after closing the communication parameter setting screen, click the [Com.set/Diagram], then you will find relevant screens.

Click

Communication **address of the connected instrument** *

* For the Loader communication, the communication address is fixed to "0".

Next, you need to check the operation of communication.

4.3 Checking the Operation of Communication

Proceed as follows to see if the communication can be properly established.

1. Click the ONLINE/OFFLINE button to select an online status.

Online/offline status is toggled on each click

Click [ONLINE/OFFLINE] button
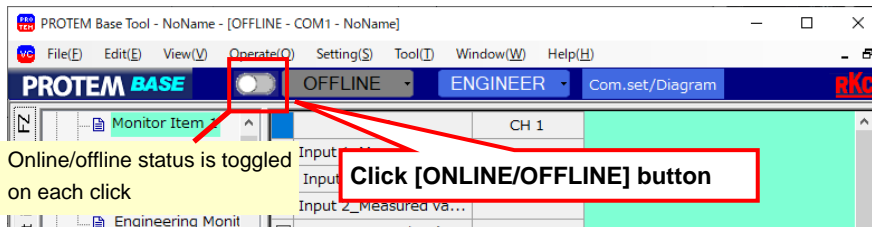
The mode is switched to Online from Offline.
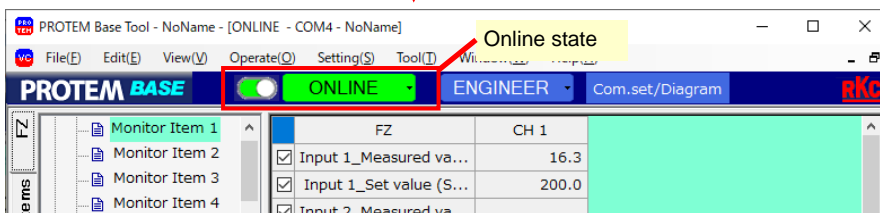
Online state

TIPS

You can also switch to the Online status from the pulldown menu displayed when clicking the [OFFLINE].
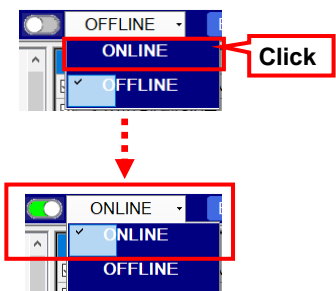
Click

2. Make sure the mode is online state.

Data must be displayed when "Monitor item 1" is clicked.

Communication status is displayed with an animated icon.
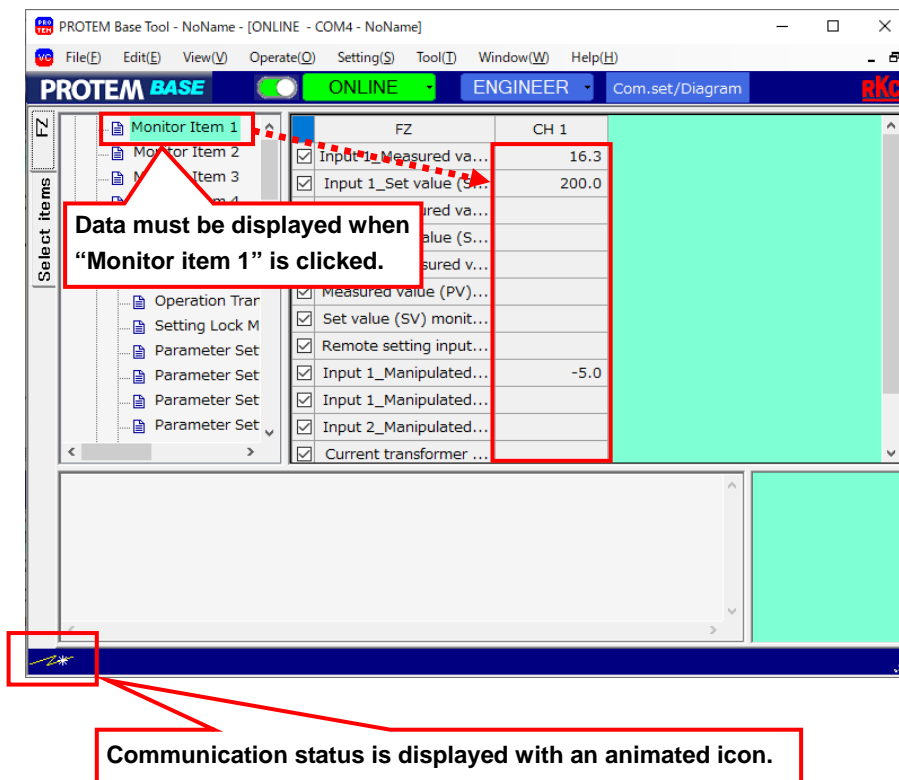
4.4 Ending PROTEM2

Proceed as follows to end PROTEM2.

End PROTEM2 after designating the location where the data is saved：

① Click "File" – "Save as" in the menu bar.
When you have started PROTEM2 by selecting a model, you are unable to overwrite the project.

② When the dialog box, "Specify the project name", is displayed, enter the project name, and click [OK].

③ Click "File", "Quits this application" in the menu bar.
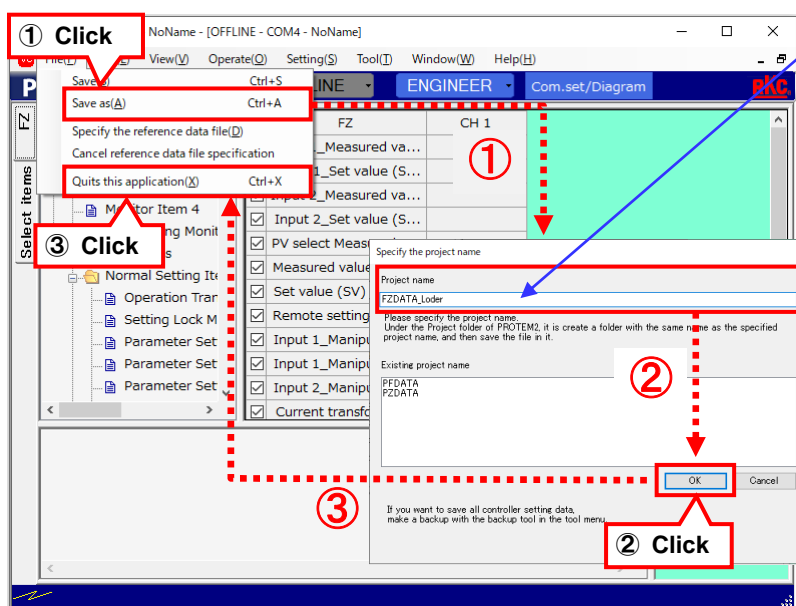
PROTEM2 manages the instruments in the unit of projects. The project name you enter here will be the folder name where the project file is saved.

You are unable to designate the location of the project file.
The project file will be saved to the following folder.

¥RKC_TOOL¥PROTEM_v2030E¥Project

A folder with the same name as the project file will be automatically created under the project folder, and the project file is saved in this folder.
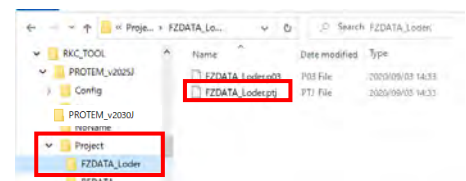
NOTE

Set values in the instrument will not be saved by saving a project file only. To save the data, use **Recipe Tool** (Refer to P. 6-1) or **Backup Tool** (Refer to P. 6-21).

TIPS

When the Base Tool is started, recently used projects will be displayed in Recently used project in the Start-up type selection dialog. Select a desired project and click [OK].

TIPS

• **To delete the project file**
Delete the whole folder that has a folder name same as the project to be deleted.

• **Back up the project**
It is recommended to regularly back up the project folder where the project is stored.
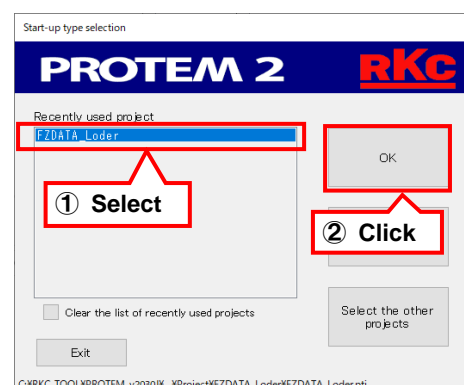
End PROTEM2 without designating the location where the data is saved：

① Click "File", then "Quits this application" in the menu bar.

② When the dialog box for "Save project" is displayed, click [No].

This dialog box appears when PROTEM2 was started after selecting a model or when the project was modified.

③ Click "EXIT" in the menu.
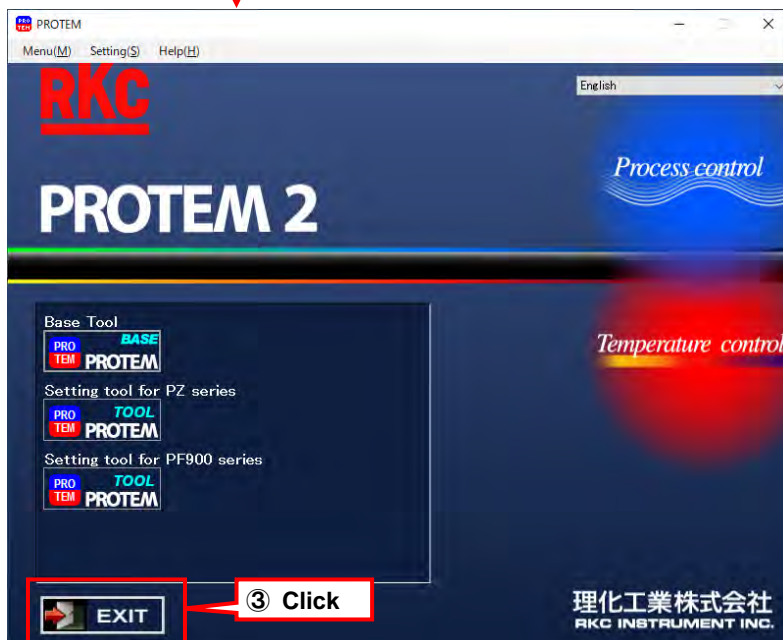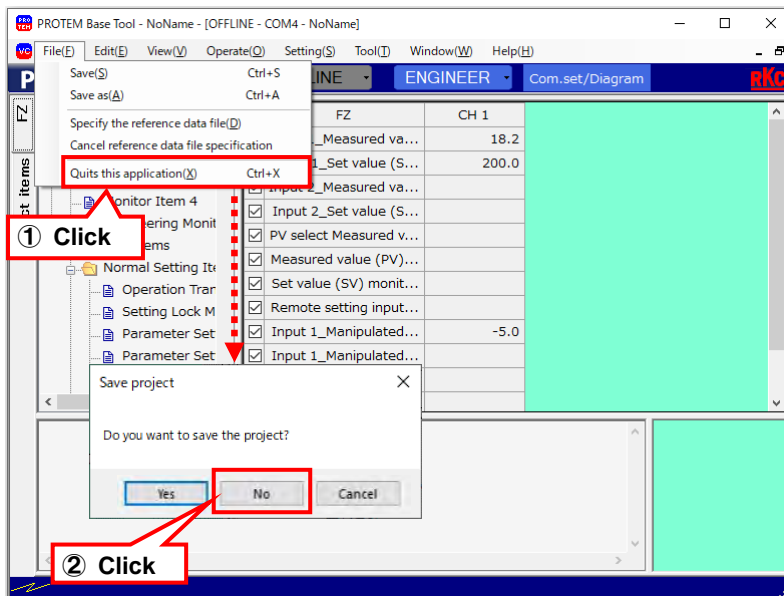
The Menu screen will be displayed.

Memo

5. Getting Started with Base Tool

5.1 Basic Setting for Loader Communication

This part of the document explains the basic setting for the Loader communication when the Base tool of PROTEM2 is used for the first time.

> This part of the document describes a setting example when the Z-TIO is connected through the Loader communication.
> (In this example, PROTEM2 (English edition) version 2.0.3.0 is used.)
>
> ☞ For the details of connection through the Loader communication, refer to **3.2 Connections for Loader communication (P. 3-1)**.
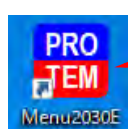
Loader port

■ Starting the Base Tool

① **Double click the icon on the desktop**

Menu2030E

PROTEM2 will start and show the first screen.

② **Click [Base Tool]**

A dialog box for "Start-up type selection" is displayed.

③ **Click [Select a model]**

Select Z-TIO for model, Loader communication for communication, and click [OK].

④ **Select Z-TIO and Loader communication**

⑤ **Click [OK]**

Base tool

The Base tool screen will appear.
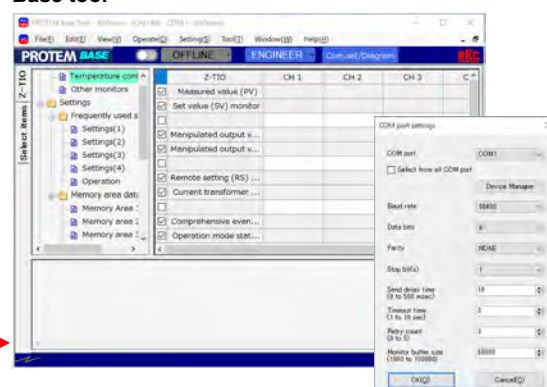
Next, you will set up the Communication Port. (Continued on the next page)

■ Setting up Communication Port

Base Tool
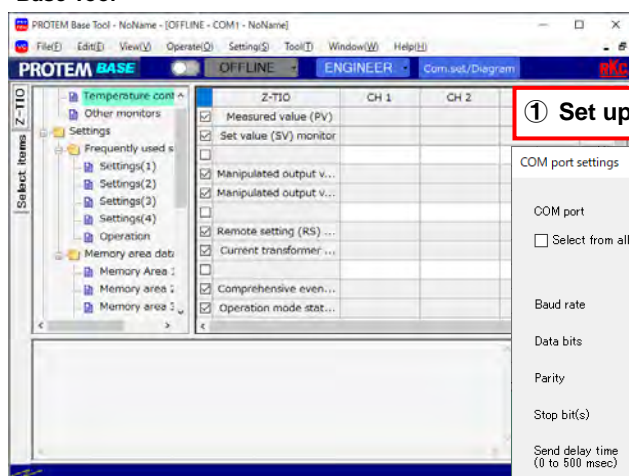
The COM port (communication port) number depends on the computer you use.
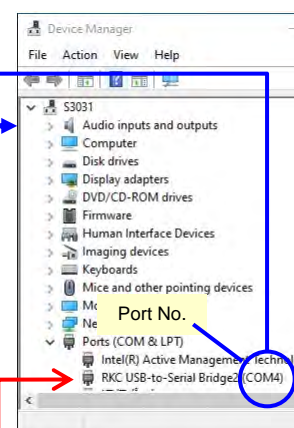
① **Set up Communication port**

② **Click [OK]**

If you are uncertain of the port number setting, click button Ⓐ.
The Device Manager appears and you can check the port number of your computer.

Port No.

Communication port to number which the COM-KG or COM-K2 is connected.

TIPS

Appropriate setting is displayed for the environmental setting of the loader communication, and the users do not need to set it up.

Click the ONLINE/OFFLINE button (3) to select an online status.
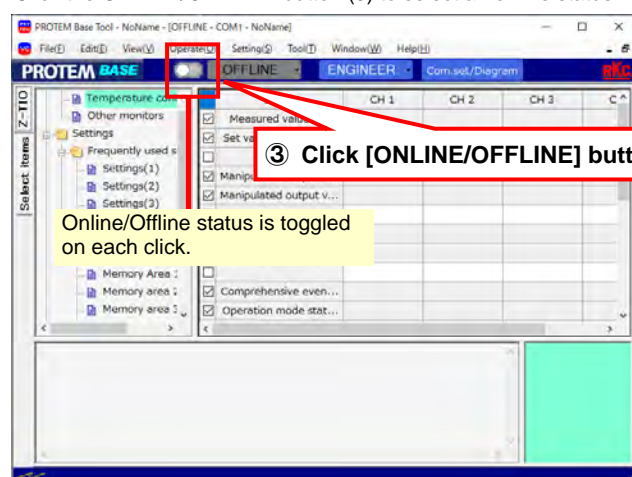
③ **Click [ONLINE/OFFLINE] button**

Online/Offline status is toggled on each click.

Next, you need to check the Operation of Communication.

■ Checking the Operation of Communication

Ensure that the system is online.

Data must be displayed when "Temperature control monitor" is clicked.

Base Tool

PROTEM Bas... ...e - [ONLINE - COM4 - NoName]   —   □   ×

File(F)   Edit...   ...(V)   Operate(O)   Setting(S)   Tool(T)   Window(W)   Help(H)   _ ⊟

PROTEM ...E   ⬤ ○ ONLINE ▾   ENGINEER ▾   Com.set/Diagram   RKC.

Z-TIO	CH 1	CH 2	CH 3	C
☑ Measured value (PV)	32.8	17.7	43.6	
☑ Set value (SV) monitor	50.0	50.0	50.0	
☐				
☑ Manipulated output v...	-5.0	-5.0	-5.0	
☑ Manipulated output v...	0	0	0	
☐				
☑ Remote setting (RS) ...	32.9	32.9	32.9	
☑ Current transformer ...	0.0	0.0	0.0	
☐				
☑ Comprehensive even...	0000000	0000000	0000000	
☑ Operation mode stat...	0000001	0000001	0000001	

Select items — Z-TIO

- Temperature cont...
- Other monitors
- Settings
  - Frequently used s...
    - Settings(1)
    - Settings(2)
    - Settings(3)
    - Settings(4)
    - Operation
  - Memory area data
    - Memory Area 1
    - Memory area 2
    - Memory area 3

Communication status is displayed with an animated icon.

Data on the Z-TIO modules can be set and monitored now.

☞ To save the Base tool to end, refer to **4.4 Ending PROTEM2 (P. 4-4)**.

How to set data, save a project file, and check other useful tips.

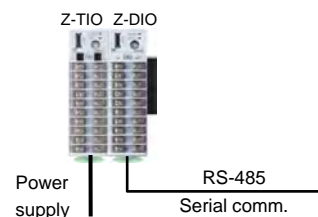⟶   **Refer to Page 5-21 and followig**

How to use various tools (e.g. Saving set data, backup of instrument, data logging and reporting functions)

⟶   **Refer to Page 6-1 and followig**

5.2 Basic Setting for Serial Communication

This part of the document explains the basic setting for the Serial communication when the Base tool of PROTEM2 is used for the first time.

<Example 1>

Example 1 shows a setting example of when a single FZ400 is connected through the Serial communication.
(In this example, PROTEM 2 (English edition) version 2.0.3.0 is used.)

☞ For the details of connection through the Serial communication, refer to **3.3 Connections for Serial Communication (P. 3-6)**.

RS-485
Serial communication

■ Starting the Base Tool
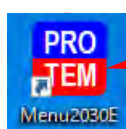
① **Double click the icon on the desktop**

| NOTE | **When you use the serial communication, apply power to the FZ400.** |

PROTEM2 will start and show the first screen.
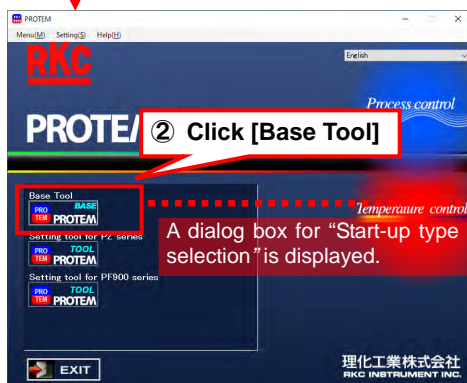
② **Click [Base Tool]**

A dialog box for "Start-up type selection" is displayed.

③ **Click [Select a model]**
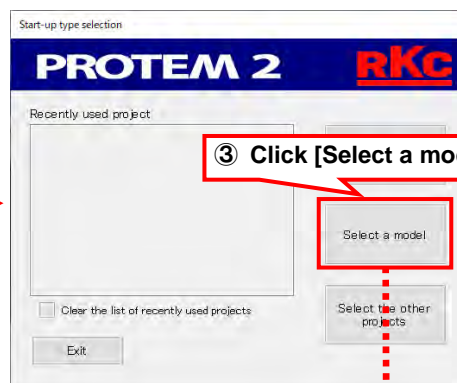
In the step of [Select a model], you need to select the FZ series, serial communication and the communication protocol which you use now. After selecting these, click [OK].

④ **Select the FZ series, Serial communication, and RKC communication**

Base tool

⑤ **Click [OK]**
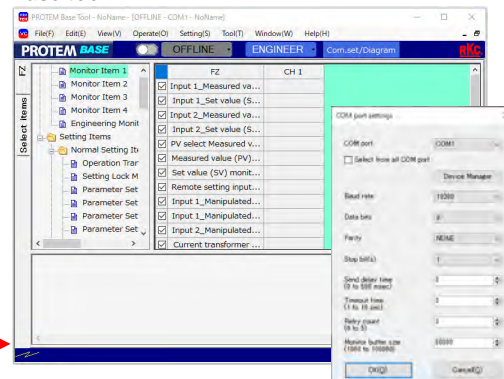
The Base tool screen will appear.

Next, you need to set up the Communication Condition.
(Continued on the next page)

■ Setting up the Communication Condition

③ **Click [Com.set/Diagram]**

Base Tool

The COM port (communication port) number depends on the computer you use.

① **Set up Communication port**

If you are uncertain of the port number setting, click button Ⓐ.
The Device Manager appears and you can check the port number of your computer.

Port No.

② **Click [OK]**

Communication port to number which the COM-KG or COM-K2 is connected.

④ **Click [Address setting]**

You can check the communication settings, communication address and number of channels.

Communication speed and Data bit configuration:
Set the settings same as the FZ connected to the system.

⑦ **Click [Close]**

⑤ **Set the Communication address**

Click the ONLINE/OFFLINE button (8) to select the Online status.

⑥ **Click [OK]**

⑧ **Click [ONLINE/OFFLINE] button**

Online/Offline status is toggled on each click.

Next, you need to check the Operation of Communication.

■ Checking the Operation of Communication

Ensure that the system is online.

Data should be displayed when [Monitor item 1] is clicked.
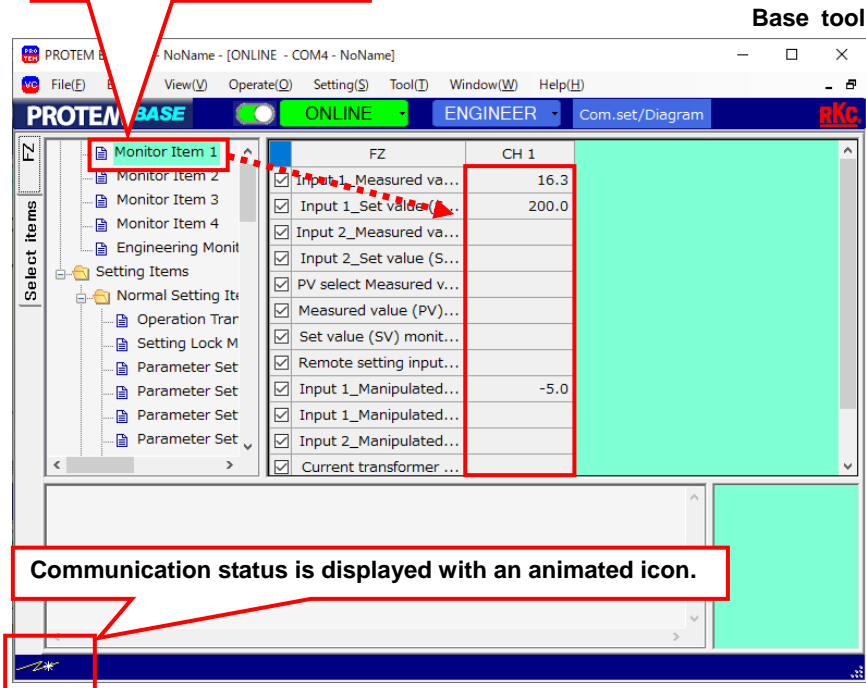
Base tool

Now, you can monitor and/or set the data of the FZ400 controller.

☞ To save the Base tool to end, refer to **4.4 Ending PROTEM2 (P. 4-4)**.

Communication status is displayed with an animated icon.

How to set data, save a project file, and check other useful tips. ⟶ **Refer to page 5-21 and following.**

How to use various tools (to save the set data, back up the instrument data, conduct data logging, use the report function, etc). ⟶ **Refer to page 6-1 and following.**

<Example 2>

This part of the document describes a setting example of when the Z-TIO and the Z-DIO modules are connected through the serial communication.
(In this example, PROTEM2 (English edition) version 2.0.3.0 is used.)

☞ For the details of connection through the Serial communication, refer to **3.3 Connections for Serial Communication (P. 3-6)**.

Z-TIO Z-DIO

Power supply

RS-485
Serial comm.

■ Starting the Base Tool

① **Double click the icon on the desktop**

PROTEM2 will start and show the first screen.

② **Click [Base Tool]**

A dialog box for "Start-up type selection" is displayed.

NOTE When the serial communication is used, the module must be powered (24 V DC).
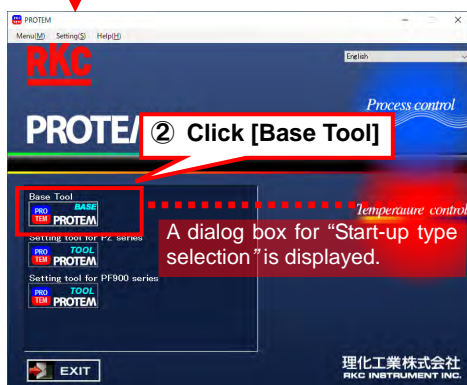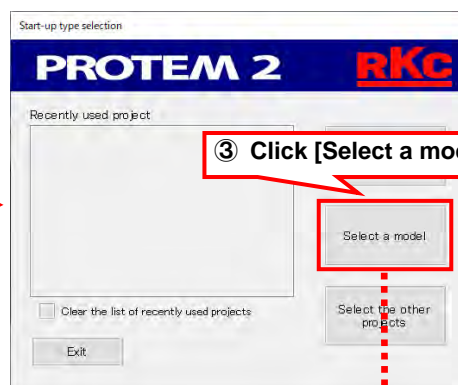
③ **Click [Select a model]**

In the step of [Select a model], you need to select the Z-TIO, Serial communication, and the communication protocol which you use now.
Then, click the check box (⑤), and click [OK].
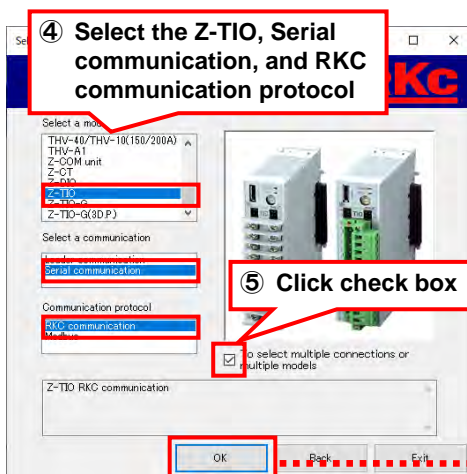
④ **Select the Z-TIO, Serial communication, and RKC communication protocol**

⑤ **Click check box**

⑥ **Click [OK]**

A screen for specifying multiple quantity and/or multiple models will appear.

Screen for "Selected multiple connections or multiple models"

Next, you need to set up the Communication Condition.
(Continued on the next page)

■ Setting up the Communication Condition

Communication setting of Z-TIO
Ensure that the communication address and the number of channels of the Z-TIO are properly set. Correct the settings, if necessary.

① Check "Communication address" and "Number of channels"
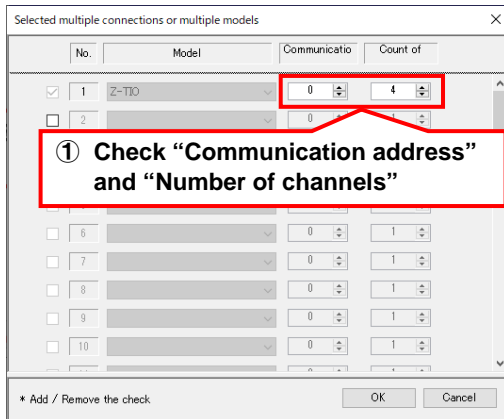
Communication setting of Z-DIO
Click the check box No.2 and select the Z-DIO from the pulldown menu.

② Click check box

③ Select Z-DIO
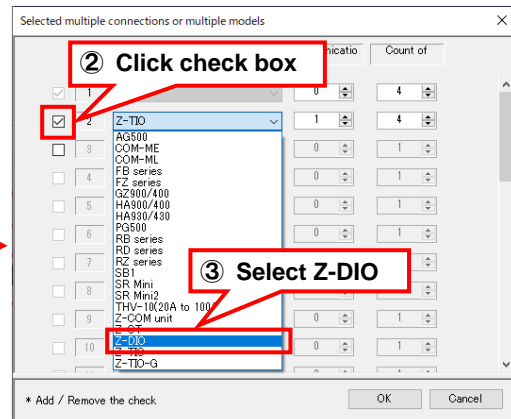
Communication setting of Z-DIO
Set the communication address and the number of channels of the Z-DIO

Base tool

④ Set the communication address and the number of channels of the Z-DIO

The Base tool screen will appear.

⑤ Click [OK]
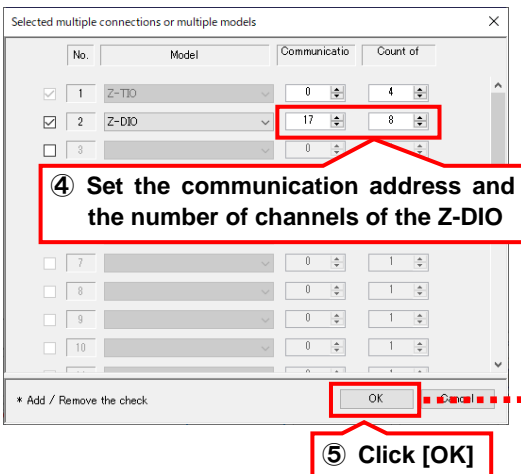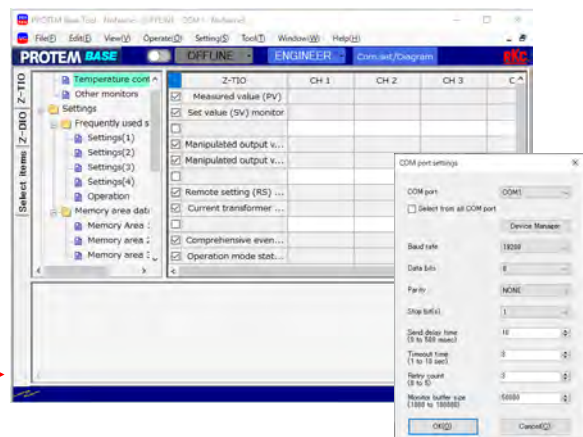
TIPS

When you use multiple SRZ modules, set the address which will be used in the actual program. For the details of the address used in the actual program, refer to the instruction manuals of the instruments.

Example: When the address setting switch of Z-DIO is set to "1"
In the RKC communication, add "16" to the address set on the address setting switch.
In the above example, the address is set to 17.

(Continued from the previous page)

⑧ **Click [Com.set/Diagram]**

Base tool

The COM port (communication port) number depends on the computer you use.

⑥ **Set up Communication port**

⑦ **Click [OK]**

If you are uncertain of the port number setting, click button Ⓐ.
The Device Manager appears and you can check the port number of your computer.

Port No.

Communication port to number which the COM-KG or COM-K2 is connected.

⑨ **Click [Address setting]**

You can check the connection configuration, communication setting, communication address, and the number of channels.

Communication speed and Data bit configuration:
Configure the setting same as the Z-TIO and the Z-DIO already connected.

⑫ **Click [Close]**

⑩ **Make sure Comm. address and the No. of channels are correct.**

⑪ **Click [OK]**

Click the ONLINE/OFFLINE button (13) to select the online status.

⑬ **Click [ONLINE/OFFLINE] button**

Online/offline status is toggled on each click.

Next, you need to check the Operation of Communication.
(Continued on the next page)

■ Checking the Operation of Communication

Ensure that the system is online.

Check communication operation of the Z-TIO
Select "Temperature control monitor" in the tree view window, and make sure that the data is displayed (Communication is working).

If multiple modules (instruments) are connected, there are tabs as many as the types of modules (instruments) connected.
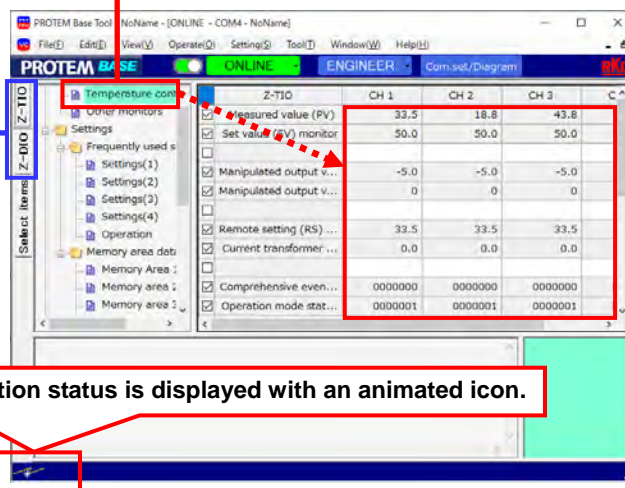
Communication status is displayed with an animated icon.

Check communication operation of the Z-DIO
When "Monitor" is selected in the tree view window, and make sure that the data is displayed (Communication is working)

If the tab of Z-DIO is selected, you can check the communication data of the Z-DIO.
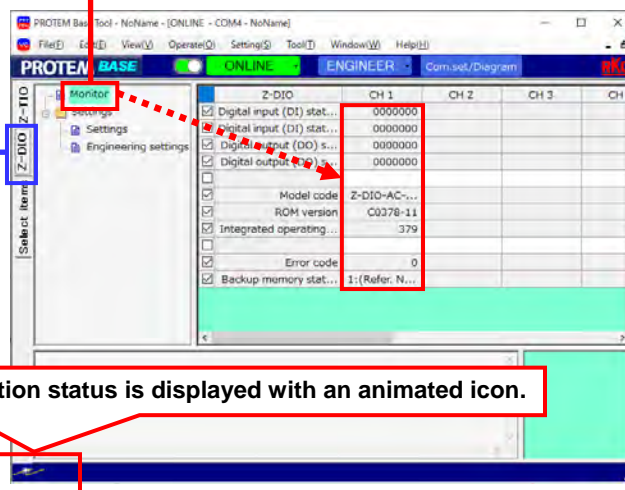
Communication status is displayed with an animated icon.

Now, monitoring and setting of Z-TIO and Z-DIO are enabled.

How to set data, save a project file, and check other useful tips.
⟶ **Refer to 5-21 and following.**

How to use various tools (e.g. Saving set data, backup of instrument, data logging and reporting functions)
⟶ **Refer to 6-1 and following**

5.3 Screen Components and Menu Structure

■ Screen Components

The basic screen of the Base tool is explained below.
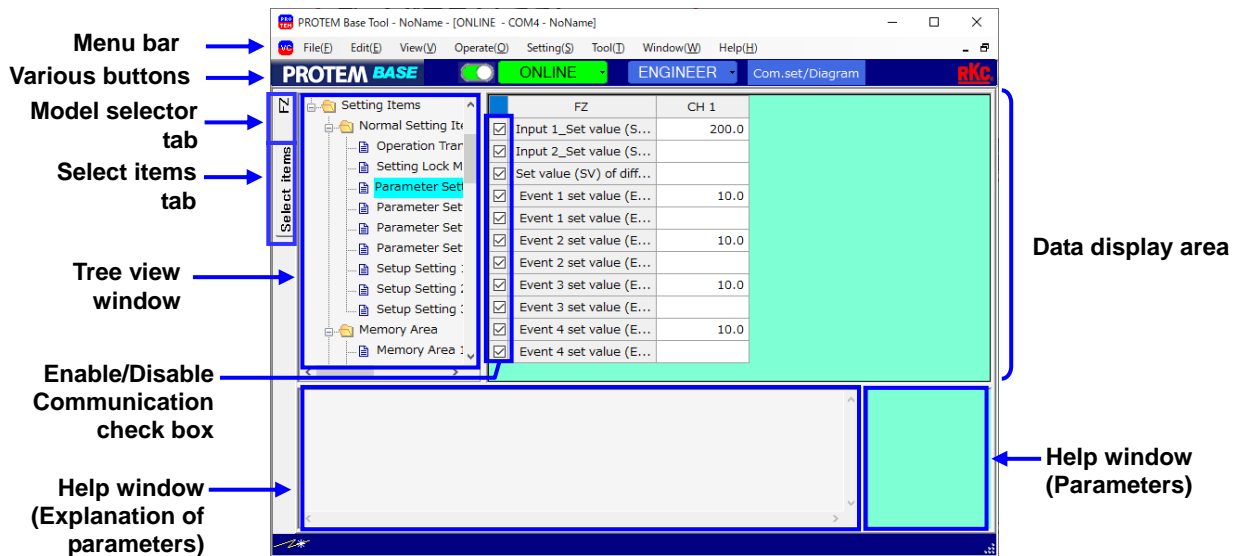
Menu bar: Used to start functions of the Setting tool.

☞   For more details, refer to ■**Menu Structure** (P. 5-13)

Various buttons:
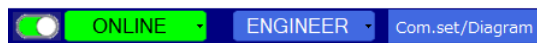
① [ONLINE/OFFLINE] button
Clicking this button enables to switch between and status

② [Select user level] button
Used to select the user level.

MONITOR: Viewing only. Setting is not allowed.
OPERATOR: Allowed to change settings in the modes except the Engineering and the Initial settings.
ENGINEER: Allowed to change parameter settings in all modes including the Engineering and the Initial setting modes.
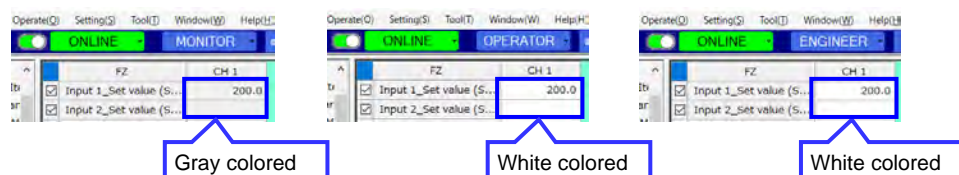
③ [Comm.set/Diagram] button

Displays screens for Communication port, Device address, and Communication speed.

(Continued on the next page)

(Continued from the previous page)

Model selector tab: Shows models connected to the Software.
If two or more instruments of the same type or different types are connected, you can switch the screens between the connected models.

Select items tab: Selected parameters can be grouped for display.

Tree view window: Categorized monitor and set items are displayed in the tree view. Click a desired item to show the screen.

Enable/Disable Communication check box:
Uncheck items that do not need communication. This will increase the display update response of other parameters.

> **TIPS**
>
> In the recipe operation (data transfer), this setting (checked or not) is ignored.
> The data will be sent regardless of the setting.

Data display area: The data of the parameters selected in the tree view are displayed.

Help window (Explanation of parameters):
Function, setting range and other information of the selected parameter are displayed.

Help window (parameters):
Parameter symbol of the selected parameter is displayed.
(Only for the models that show parameter symbols on the front display)

■ Menu Structure

This page explains the commands launched from the menu on the menu bar.

Menu bar `WC    File(F)    Edit(E)    View(V)    Operate(O)    Setting(S)    Tool(T)    Window(W)    Help(H)`

● **File: Shows the File menu.**

```
File(F)   Edit(E)   View(V)   Operate(O)   Settir
   Save(S)                         Ctrl+S
   Save as(A)                      Ctrl+A
   Specify the reference data file(D)
   Cancel reference data file specification
   Quits this application(X)       Ctrl+X
```
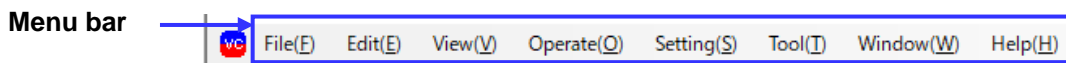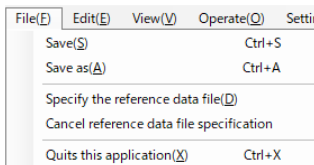
Save:

Saves (overwrite) the data to the existing project.

Save as:

Creates a project and save the data with a different name.

Specify the reference data file:

You can specify the backup file created with the Backup tool as the Reference data file to compare the backed up parameter settings with the current settings.

Cancel reference data file specification:

Cancels the specification of the reference data file.

Quit this application:

Clicking this item ends the application.

● **Edit: Shows the Edit menu.**

```
Edit(E)   View(V)   Operat
   Copy(C)   Ctrl+C
   Paste(P)   Ctrl+V
```
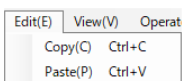
Copy:

Copies the selected area to the clipboard.

Paste:

Pastes the copied area into the data field of the selected parameter.

● **View: Shows the View menu.**

```
View(V)   Operate(O)   Setting(S)   Tool(T)   Window(W)   Help(H
 ✓  Show page tree window(T)
    Show reference data window(R)
 ✓  Show Help window(H)
    Show address and channel number as the channel name(C)
    Optimize the width of the column(W)              Ctrl+W
    Font(Temporary)(F)...
```
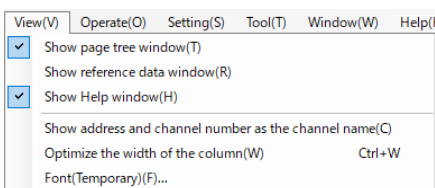
Shows page tree window:

Shows the page tree window. (Refer to example 1 on the following page)

Shows reference data window:

Shows the reference data window. (Refer to example 1 on the following page)

Shows help window:

Shows the help window. (Refer to example 1 on the following page)

Show address and channel number as the channel name:

Replaces the channel name with the address and the channel number.
(Refer to example 1 on the following page)

Optimize the width of the column:

Optimizes the display width according to the width of the characters and the data now displayed. (Refer to example 2 on the following page)

Font:

You can choose a font (font, style, size) for the Base tool screen.
The font specified here is temporary and is not saved.

☞ To specify the font for the whole Base tool, refer to "Environmental Setting" (P. 5-17).

(Continued from the previous page)

Example 1
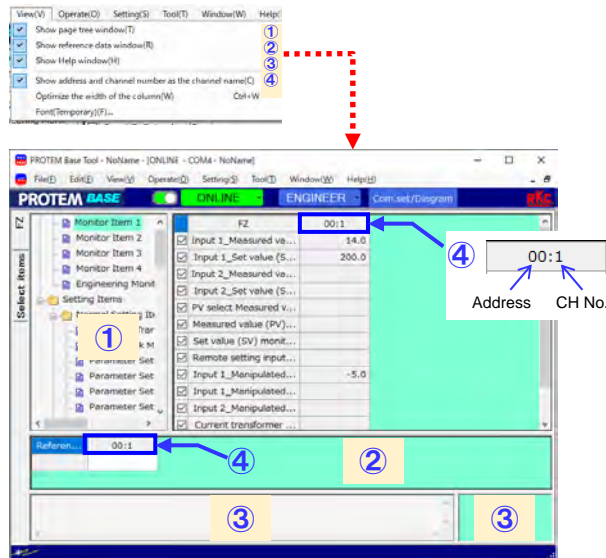
Example 2   Before optimization

After optimization
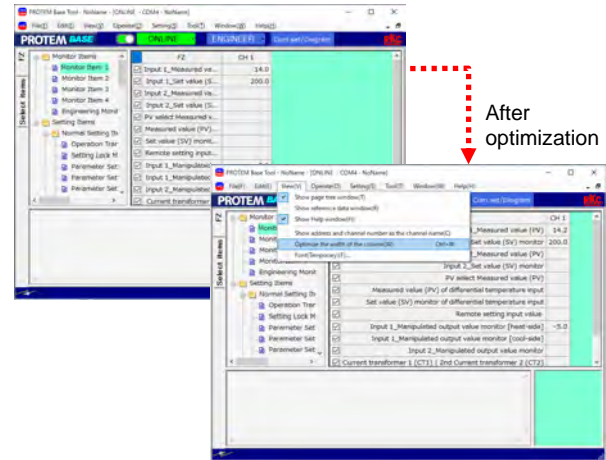
● **Operate: Shows the operation menu.**
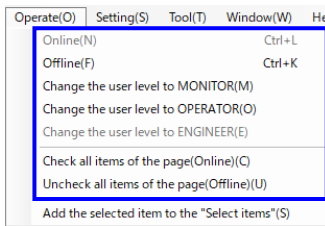
Online :
Sets the communication status to online.

Offline:
Sets the communication status to offline.

Change the user level to MONITOR *:
Changing any parameters is not allowed. (Only monitoring is possible)

Change the user level to OPERATOR *:
The operator is able to change parameters except those in the Engineering and the Initial setting.

Change the user level to ENGINEER *:
The operator is able to change all the parameters including those in the Engineering and the Initial setting.

Check all items of the page (online):
Enables communication of all items.

Uncheck all items on the page (offline)
Disables communication of all items. (same as Offline status)

* The user level selected in the Operation menu is reflected in the displayed data, but is not saved. The user level at the next startup is the user level defined in the User level at startup in the "Environmental Setting" (P.5-17).

(Continued from the previous page)

● **Operate: Shows the Operation menu.**
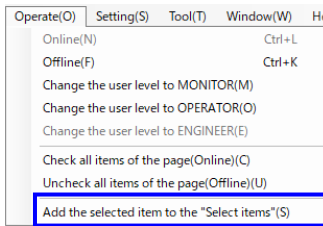
Add the selected item to the "Selected items"

You can collect parameters on different pages and those from another instrument and show them on the same tab.

In addition to adding to the Selection tabs, you can delete the parameter items, insert a blank line, and make cutting and pasting.

Refer to the following for the procedure. The operation is available in both online and offline states.

How to add parameters:

① Select a desired parameter

② Click "Add the selected item to the "Select items""

③ The item will be added to the [Select items] tab
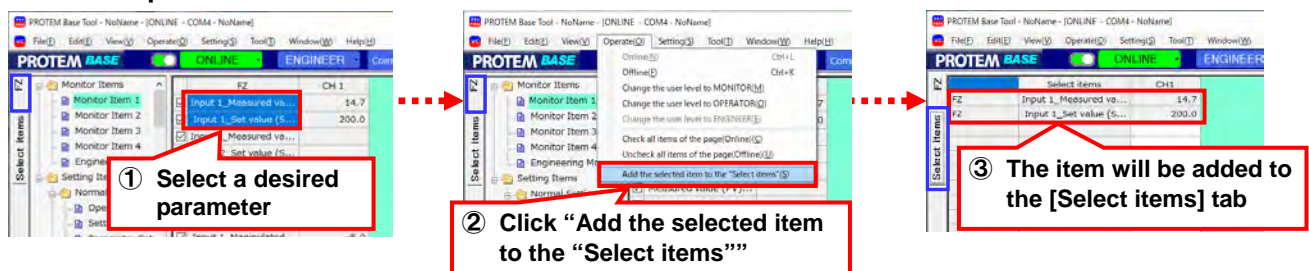
| TIPS | You can also add the selected item(s) to the Select items tab in the following way. |

① Select the parameter (s) to delete, then right click

② Click "Add select items"
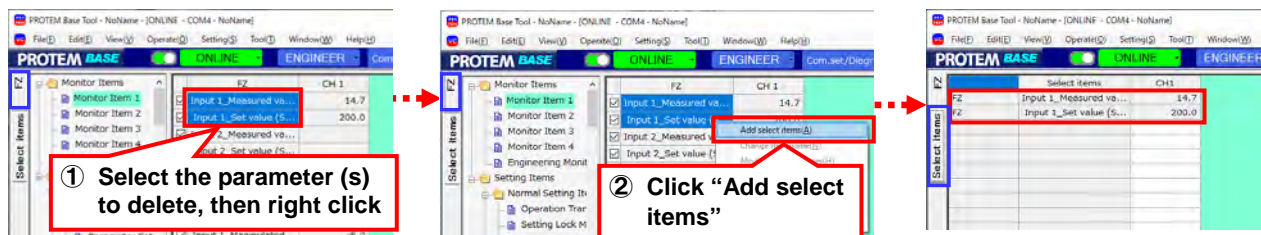
How to delete parameters:

① Select the parameter to delete, then right click

② Click "Delete from select items"

③ The item will be deleted from the [Select items] tab
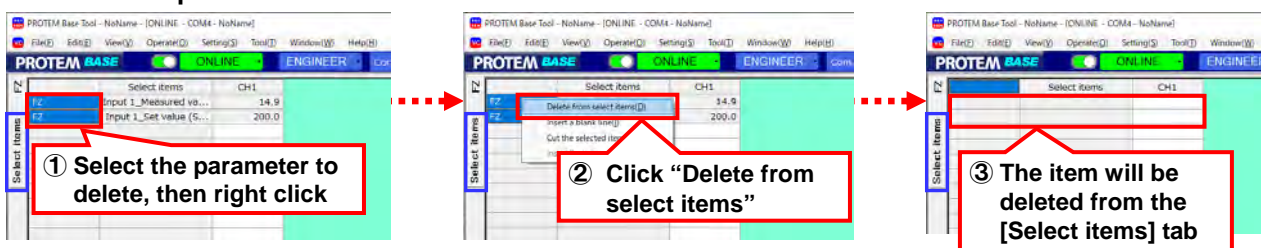
| TIPS | You can also delete the selected item(s) from the Select items tab in the following way. |
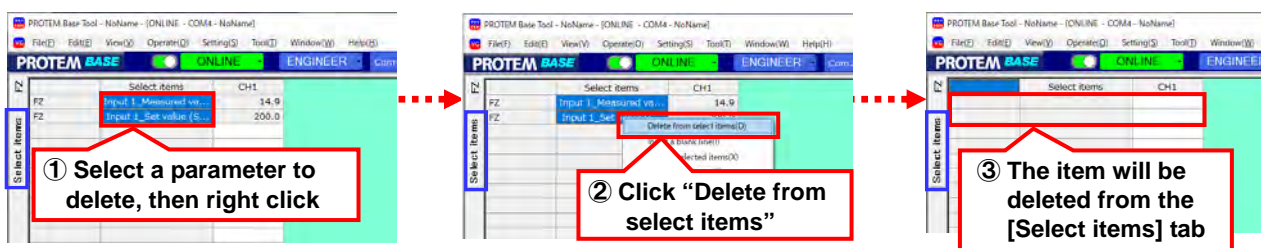
① Select a parameter to delete, then right click

② Click "Delete from select items"

③ The item will be deleted from the [Select items] tab

(Continued on the next page)

(Continued from the previous page)

How to insert a blank line:

① **Select a cell above which a blank line should be inserted, then right click**

② **Click "Insert a blank line"**

③ **A blank line will be inserted to the [Select items] tab** *
* No adding is possible to a blank line.
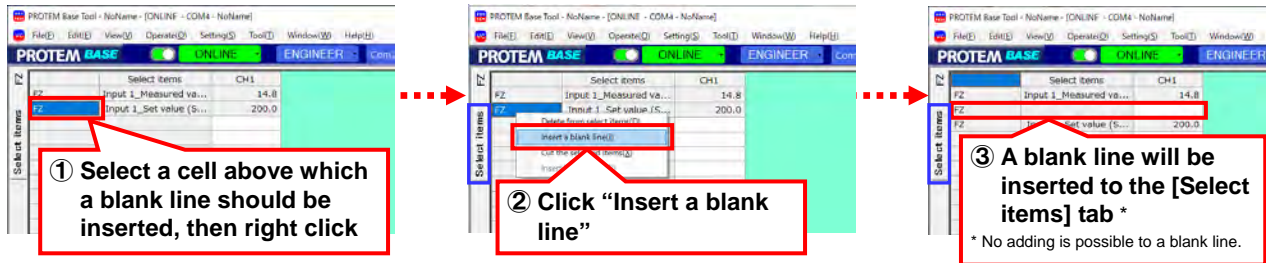
| TIPS | You can also insert a blank line into the "Select items" tab in the following way. |

① **Select a cell above which a blank line should be inserted, then right click**

② **Click "Insert a blank line"**

③ **A blank line will be inserted to the [Select items] tab** *
* No adding is possible to a blank line.
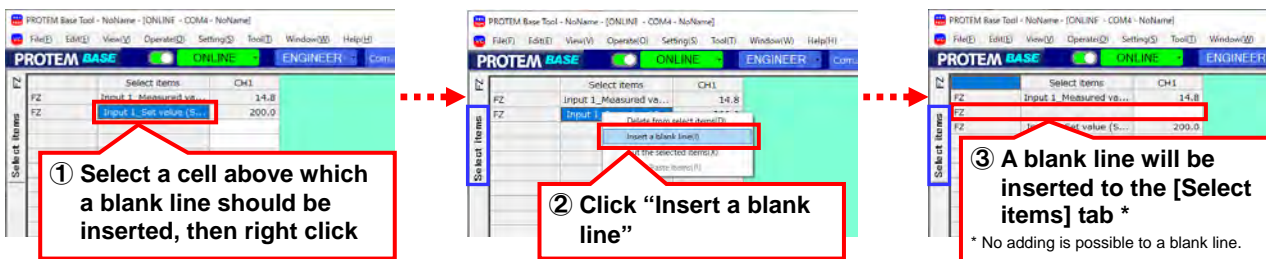
How to cut and insert/paste:

① **Select a parameter to move, then right click**

② **Click "Cut the selected items"**

③ **Click the line to which the cut item should be inserted, then right click**

④ **The item will be pasted to the line where you want to insert it**
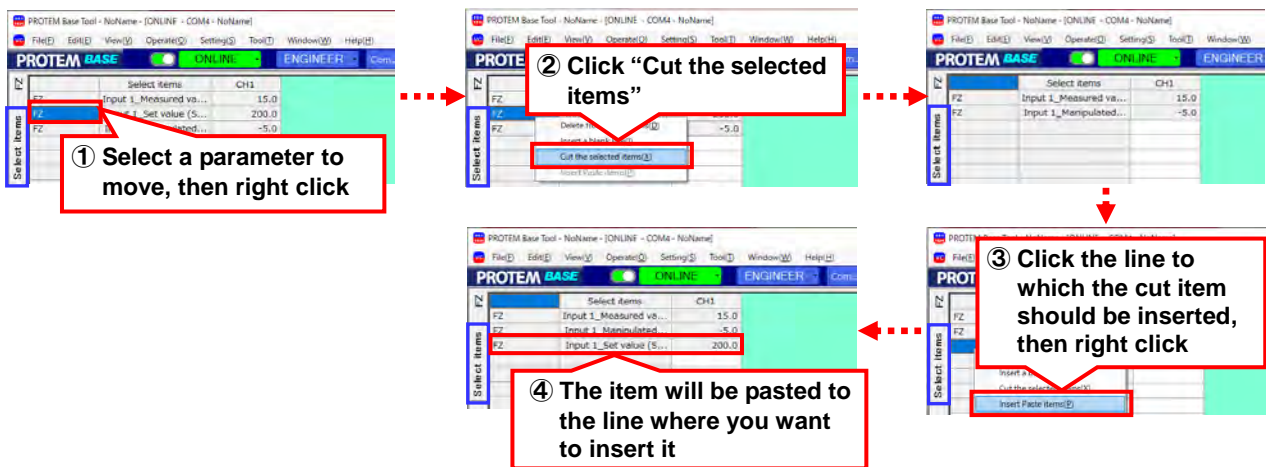
| TIPS | You can also cut and paste in the "Select items" tab in the following way. |
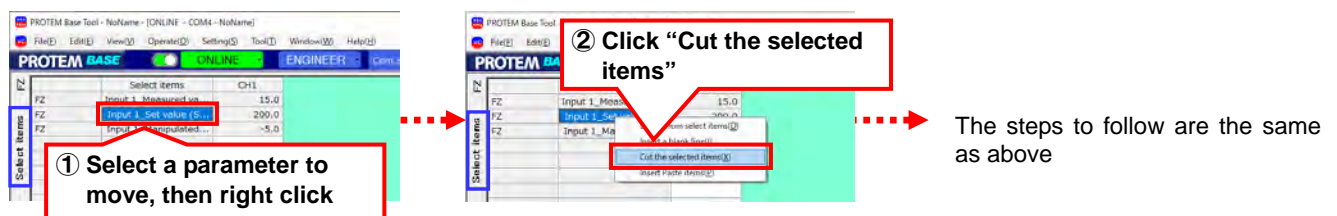
① **Select a parameter to move, then right click**

② **Click "Cut the selected items"**

The steps to follow are the same as above

| TIPS | No adding is possible to a blank line. |

No adding is possible to a blank line. It is skipped.
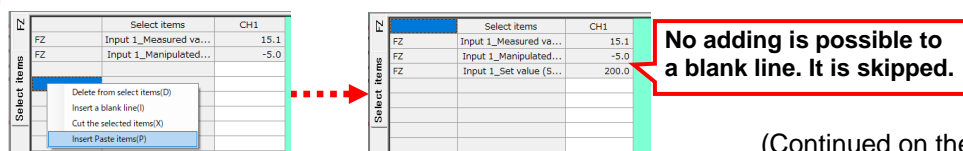
(Continued on the next page)

(Continued from the previous page)

● **Setting: Shows the setting menu.**
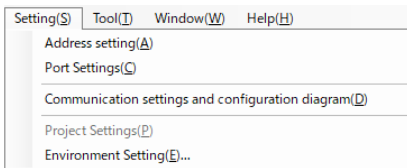
Address setting：

Displays address setting screen.

☞ Communication address setting screen:
Refer to P. 4-2, P. 5-5, or P. 5-9

Port Settings：

Shows the communication parameter setting screen.

☞ Communication parameters setting screen:
Refer to P. 4-2, P. 5-2, P. 5-5, or P. 5-9

Communication settings and configuration diagram:

Shows the controller configuration screen. You can check the communication environment setting and the project. Click "Address setting", "Port Settings" to see the setting dialog box of each item.

☞ Controller configuration screen:
Refer to P. 4-2, P. 5-2, P. 5-5, or P. 5-9

Project Settings：

This item is not available with version 2.0.3.0.

Environment Setting：

You can set the environment setting of the whole Base tool. The new settings will be effective only after reboot.

Display example of Environment setting
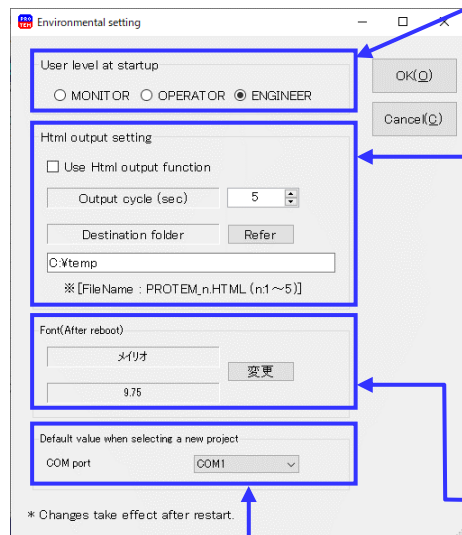
You can set the User level at the startup.

| TIPS | If you want to change the user level temporarily for the displayed data, you can do it using the [Select user level] button (P. 5-11) or in the "Operate" menu (P. 5-14). |

This is a setting for saving the data displayed in the Base tool in the html format. To use the html output function, check "Use Html output function".

Output cycle (sec):
0 to 100 (Default: 5)
The file in the saving location will be overwritten at the output cycle time intervals.

Destination folder:
You can specify the desired folder to which the data is saved. When the file is saved, a file with the name of PROTEM nHTML (n: 1～5) will be automatically created. (Up to 5 files are available)

You can specify the font and size for the whole Base tool.

| TIPS | If you want to temporarily change the font displayed in the Base tool, you can do it in the display menu (P. 5-13). |

You can change the default communication port when you select a new project.
If you change this default communication port, a newly created project after the reboot will use this changed communication port.

(Continued on the next page)

(Continued from the previous page)

● **Tool：Shows the Tool menu.**
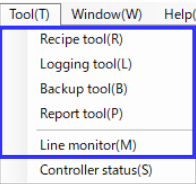
Recipe tool:
Starts the Recipe tool. You can conduct a centralized management of parameter setting (saving to the PC/transferring to the instrument).

☞ Recipe tool: Refer to P. 6-1

Logging tool:
Starts the Logging tool. This function provides visualization of the data as well as data recording in CSV format.

☞ Logging tool: Refer to P. 6-10

Backup tool:
Starts the Backup tool. You can conduct a centralized management of the settings (saving to the PC, transferring to the instrument/verification).

☞ Backup tool: Refer to P. 6-21

Report tool:
Starts the Report tool. This tool is used to create a list (report) of parameters and save the data in CSV/HTML format.

☞ Backup tool: Refer to P. 6-28

Line monitor:
You can check the message just in communication according to the format (ASCII or hexadecimal). The Line monitor during the use requires high communication load. It is advisable to use it only when it is necessary.

(Display example of Line monitor)

Communication port number of the destination

Operation buttons

Stop(P) : Stops updating the messages.

Start(S) : Starts updating the messages.

Erase(E) : Erases the messages on the Line monitor screen.[1]

Save(V) : Saves the monitored messages in the text format.[1,2]

[1] Regardless of start/stop status of the Line monitor, operations such as erase and save can be done.

[2] When you try to save the file, a file name and a destination will be displayed, but you can freely change the file name and the saving location.

Display format (ASCII / HEX):
The display format of message is selectable. To change the format, stop the Line monitor and erase the message before selecting a new format. When you click the [Start] button, the Line monitor will start in the selected format.

Vertical scroll bar:
While the Line monitor is in stop, you can scroll the Line monitor screen up and down.

Communication data (Display format: ASCII)

Monitoring time (HMS or Hour, Minute, Second)

Communication data (Display format: Hexadecimal)

(Continued from the previous page)

● **Tool：Shows the Tool menu.**

Tool(T) Window(W) Help(
   Recipe tool(R)
   Logging tool(L)
   Backup tool(B)
   Report tool(P)
   Line monitor(M)
   Controller status(S)

Controller status:
You can check the connection status of the instrument now in communication and its error status.

(Display example of controller status)
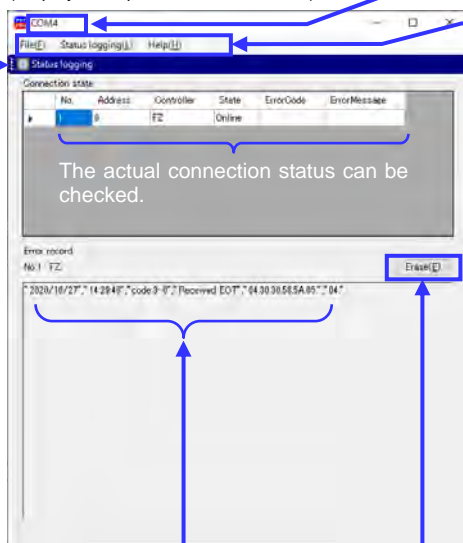
Communication port number of the destination

Operation menu

File(F)   Status log
   Exit(X)
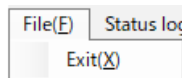
When you click "Exit", the Controller status screen will be closed.

The actual connection status can be checked.

Status logging(L)
   Start(S)
   Stop(T)
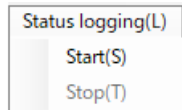
Click "Start" or [Status logging] to save the log data of the controller status.*

The "Stop" operation is enabled after the log data of the control status is saved.

* The name of the file (extension: csv) and the saving location of the file will be displayed. You can freely change the saving location and the file name.

Help(H)
   Error code(C)
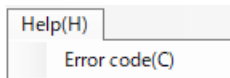
You can check the error code and its meaning.
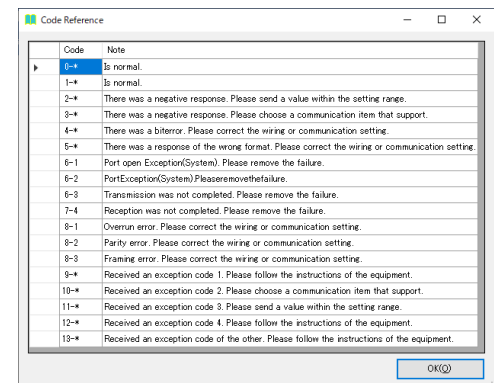
You can check the error status logging in communication.

Click this button to erase the Error status display on the screen.

[Status logging] button

TIPS

Erase operation is available anytime, online or offline. Note that, in the online mode, error logging continues from when the erase operation is done till the error is eliminated.

● **Windows: Shows the window menu.**

Window(W) Help(H)
   Cascade(C)
   Arranged in horizontal(V)
   Arranged in vertical(H)
   NoName
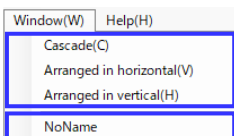
This item is not available in this version.

You can check the project name now open.

TIPS

This item remains "NoName" until the new project is saved after the start of the Base tool.

(Continued from the previous page)

● **Help: Shows the help menu.**

Help(H)
Version information(V)
RKC Home page(W)
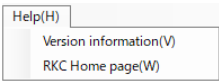
Version information: Displays version information for the Base tool.

RKC Home page: Click to visit our website.

5.4 How to Set Data

This part of the document explains the data setting method (changing numerical value, copy and paste of the data) using the Base tool.

■ Setting Change of the Data

NOTE

● **Setting change must be done online. If you try to change the data offline, the new value will not be reflected on the instrument.**

● Changing the numerical value

Example: Change the set value (SV) of Input 1 from 200.0 to 210.0

TIPS

While the cell is selected, you can change the value by entering the value from the keyboard followed by the ENTER key.

① **Double click the cell you want to change.**

② **A cursor appears and the cell is ready to be edited.**

③ **Use a mouse to choose the digit to change.**

④ **Click after entering "1". (The changed value is accepted) ***

* To accept the changed data, you can also press the ENTER key or move to the other cell in addition to the clicking.

TIPS

If the item you want to change is added to the [Select items] tab, the change will be applicable to the item in the [Select items] tab.

If you changed the item that was added to the [Select items] tab, the change is applicable to the same item in the Model selector tab.

☞ Copy and Paste: Refer to P. 5-23

(Continued from the previous page)

● Selecting the set item

Example: Change the control response of Input 1 from "2: Fast" to "0: Slow"

① Double click the cell you want to change

② Pulldown menu is displayed

③ Select "0:Slow" and click it

④ The value will be changed from "2:Fast" to "0:Slow"

TIPS

If the item you want to change is added to the [Select items] tab, the change will be applicable to the item in the [Select items] tab.

If you changed the item that was added to the [Select items] tab, the change is applicable to the same item in the Model selector tab.

⑤ Press [ENTER] or move to another cell (The changed item is accepted)

(Continued from the previous page)

● Copy and paste (of the data)

Example: Let's assume that the Event 1 set value (EV1) 15.0 is copied and pasted into the data cell of the Event 2 set value (EV2) to change to 15.0 from 10.0.

① Click the cell you want to copy (Select the cell)
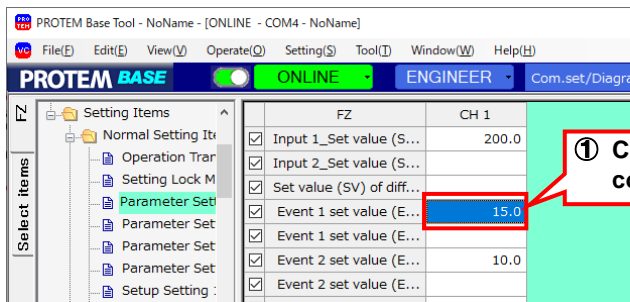
TIPS

When copying and pasting the data cell, you can select two or more cells.

③ Click "Copy"

② Right click on the selected cell. The pulldown menu will be displayed.

④ Click the cell to which you want to paste the data, right click to show the pulldown menu, and then click "Paste"

The pasted data is displayed in bold font until it is accepted.

⑤ Click [OK]

When this data is sent to the instrument and accepted, the bold font state will be released.
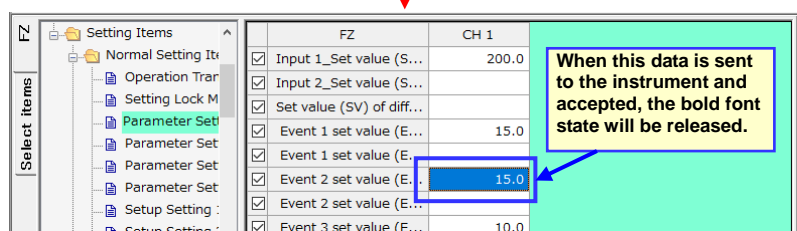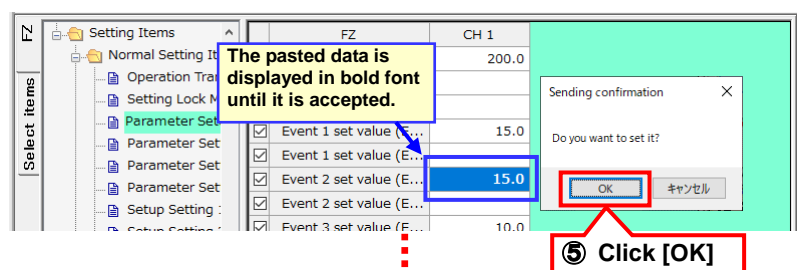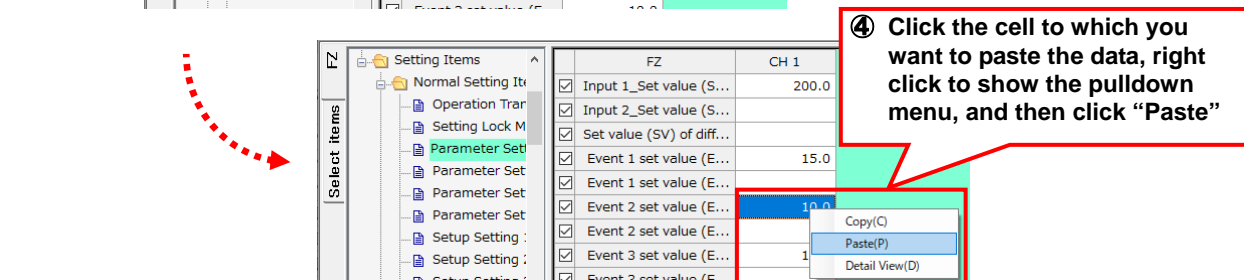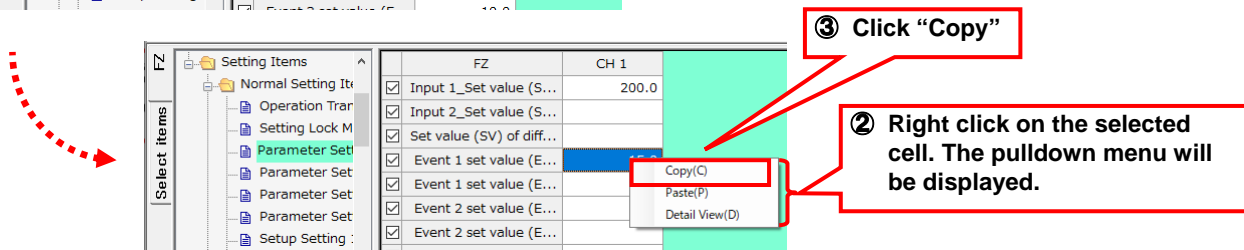
5.5 Saving a Project File

This part of the document explains how to save the project file.

■ Saving a New File

When you save a new project file or save a project file with a different name, proceed as follows.

① Click

③ Click

② Click

PROTEM2 manages the instruments in the unit of projects. The project name you entered here will be the name of the folder where the project file is saved.

You are unable to specify the location of the project file. The project file will be saved to the following folder.

¥RKC_TOOL¥PROTEM_v2030E¥Project

It is recommended to create a project file with a name using the model code, name of machines, and other identifiable name.

TIPS

A folder with the same name as the project file will be automatically created under the project folder, and the project file is stored inside this folder.

A project file contains:
・Communication setting
・Base tool tree configuration (Page tree view)

NOTE

Set values in the instrument will not be saved by saving a project file only. To save these data, use the Recipe Tool (Refer to P. 6-1) or the Backup Tool (Refer to P. 6-21).

TIPS

• Overwrite the existing project file

Click
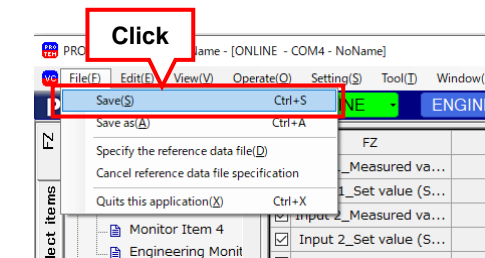
• To delete the project file

Delete the whole folder that has a project file name.

Delete the folder
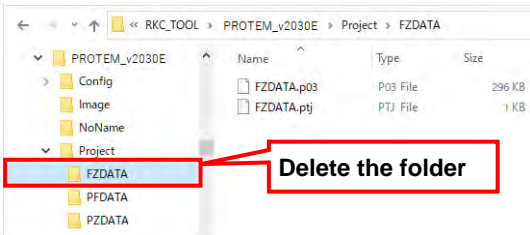
• Back up the project

It is recommended to regularly back up the project folder where project file is stored.

5.6 Opening a Project File

This part of the document explains how to open a project file.

■ Open the Project File Last Saved

① **Click the [Base Tool]**

A dialog box for "Start-up type selection" is displayed.

② **Click [OK]**

The last saved project will be displayed. If multiple projects are displayed, select the one you want to use.
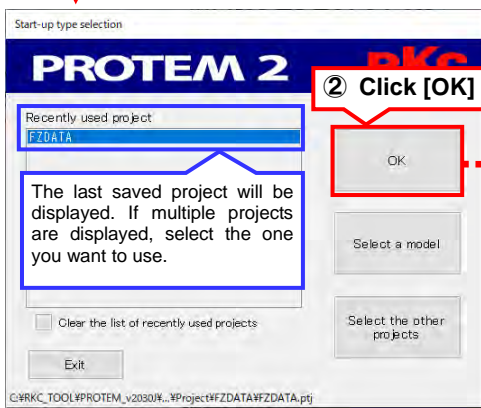
Project file used last time
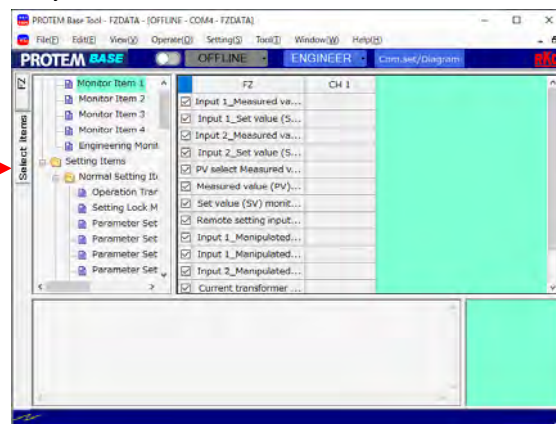
■ Open a Project File not shown in recently used Project

① **Click the [Base Tool]**

A dialog box for "Start-up type selection" is displayed.

② **Click**
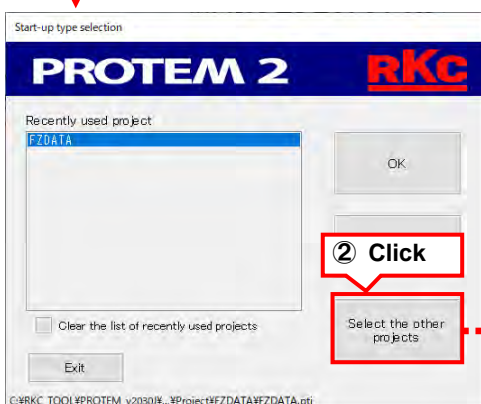
The Project folder is opened.

③ **Click the folder where the project file you want to use is stored**

(Continued on the next page)

IMT01D11-E7

(Continued from the previous page)

④ **Click the file with the extension ptj**

⑤ **Click**

The file name is displayed here

The project file to use will be opened.

TIPS

Communication setting such as port setting and address setting is saved within a project file, and you do not need to set again.

6. Getting Started with Data Management

6.1 Recipe Tool

The Recipe tool is used to save the data set in the instrument on the PC or send the data retrieved from the PC to the instrument. It is recommended to prepare recipes for different processes, products, seasons and other categories. This enables easy configuration of the instrument only by transferring the recipe from the PC. The Recipe tool can be used as follows.

① Save the set data to the recipe file

The data in the instrument and the newly set data can be saved in (downloaded to) a project file as a recipe.

☞ Refer to P. 6-2
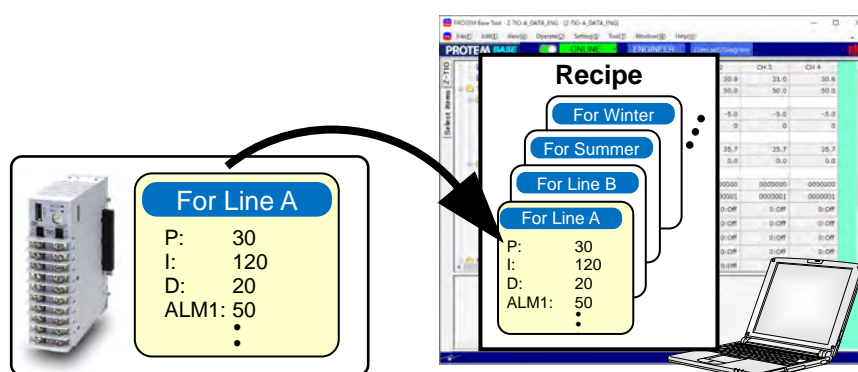
② Transfer the stored recipe file to the instrument

The data in a recipe file stored in a project can be transferred (uploaded) to the instrument.

☞ Refer to P. 6-6
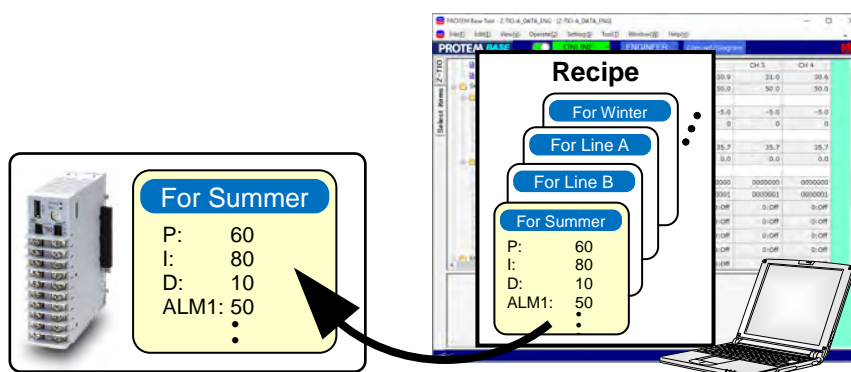
③ Edit the stored recipe file

Retrieve the recipe file stored in the project and edit it on the Recipe tool.

☞ Refer to P. 6-7

IMT01D11-E7
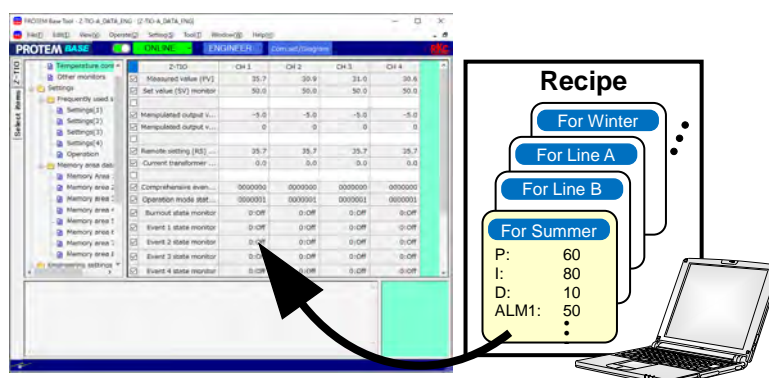
6.1.1 Saving the Set Data in a Recipe File

This is a function to save the data in the instrument to a project in PROTEM2. It is recommended to prepare recipes for different processes, products, seasons and other categories in advance. This enables easy configuration of the instrument only by retrieving the recipe from the computer.

TIPS

- For data protection, it is highly recommended to save the initial set values (factory set values) using the Backup tool (Refer to P. 6-21).
- To transfer the data to the instrument, you need to set the Base tool to online.

① Click "Recipe tool"

② Click [Yes]

③ Specify or enter the project name

④ Click [OK]

⑤ Click [New]

⑥ Click [RECEIVE]

⑦ Click [OK]

⑧ Click [OK]

Continued from the previous page

⑨ Click "Save As"

⑩ Enter the file name

⑪ Click [Save]

Now the data set in the instrument has been saved (downloaded) as a recipe file.

TIPS

The recipe file has a memo function. You can store the file information and others in it. Click [MEMO] button to show the Memo screen. After entering the information, click [OK] to save and close the file.

■ Adding/Deleting Recipe Items

The items that can be saved in the recipe file are marked with ★ in the communication item name in the Base tool. You can add the recipe items in the following procedure.

(Example) Add PV bias to the recipe item

Right click on the "PV bias"

Click "Add to recipe items"

Now, the PV bias has been added to the recipe item.

★ marking added

Add the PV bias to the stored recipe.

Click "Recipe tool"

Select a recipe file

Click [OK]

TIPS

In case of [New] (create a new file), the PV bias is added from the beginning.

Add "PV bias"

Click "Save"

The PV bias has been added to the stored recipe.

(Example) Delete PV bias from the recipe items

Right click on the "PV bias★"

Click "Delete from recipe items"

Delete from recipe items(D)

★ marking deleted
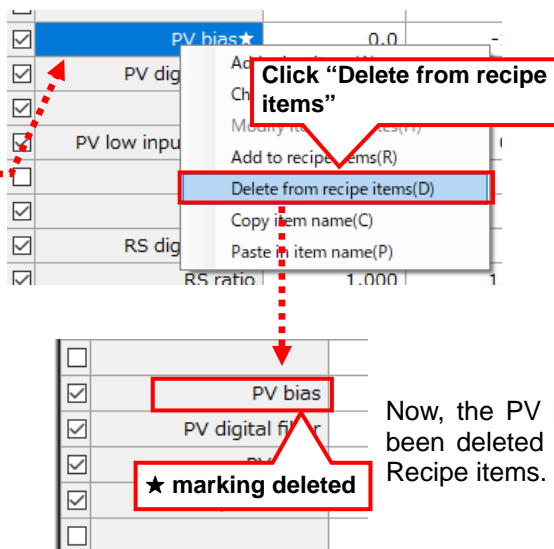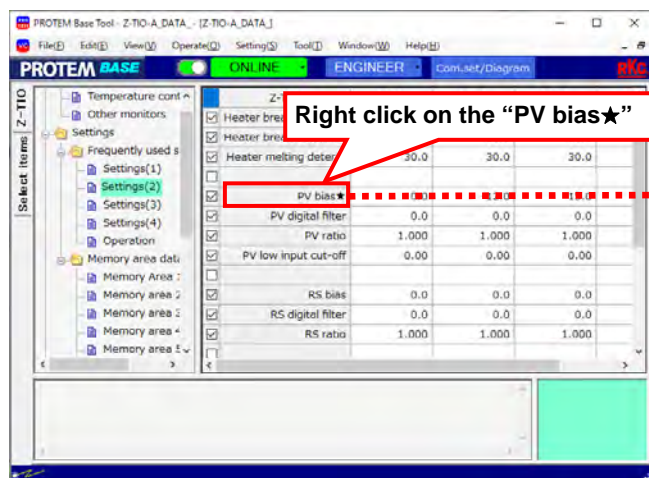
Now, the PV bias has been deleted from the Recipe items.

Simultaneously with the deletion of ★, the PV bias is deleted from the stored recipe file.

6.1.2 Transferring the Stored Recipe File to the Instrument

The recipe file stored in the project on PROTEM2 can be transferred to the instrument. It is recommended to prepare recipes for different processes, products, seasons and other categories in advance. This enables easy configuration of the instrument only by retrieving the recipe from the computer.

The data in the recipe file is sent to the instrument.

Now the data in the recipe file has been transferred (uploaded) to the instrument.

6.1.3 Editing the Stored Recipe File

You can edit the data in the recipe file on the Recipe tool.

① Click "Recipe tool"

② Select a recipe file

③ Click [OK]

④ Change set value

Data setting method is similar to the Base Tool. (Refer to P. 5-21)

After you have changed the settings, be sure to save the recipe file.

■ Menu Structure in the Recipe File

This part of the document explains commands launched from the menu in the recipe file.
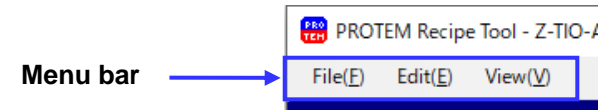
Menu bar

● **File**

Save: The recipe data on the Recipe tool screen will be saved to the recipe file (extension p08) without changing the file name.

Save As: The recipe data in the Recipe tool screen will be saved to the recipe file (extension p08) with a new file name.

Send recipe settings:
The recipe data on the Recipe tool screen will be sent to the instrument.
The same operation can be obtained by clicking the [SEND] button.

[SEND] button
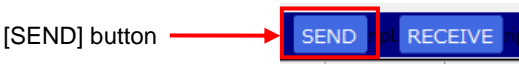
Receive recipe settings:
The recipe data will be loaded on the Recipe tool screen.
The same operation can be obtained by clicking the [RECEIVE] button.

[RECEIVE] button

Remove the recipe you are viewing:
The recipe file now displayed on the Recipe tool screen (extension p08) will be deleted.

Return to the recipe list:
The Recipe tool screen now displayed will be closed and the recipe file list will be displayed.

(Continued from the previous page)

● **Edit**

Edit(E)	View(V)	
	Copy(C)	Ctrl+C
	Paste(P)	Ctrl+V

Copy: The data indicated by the cursor will be copied. Select multiple data by clicking and dragging over the screen to copy.

Paste: The copied data can be pasted to the position of the cursor.

<Operation example>

Copy

② **Click "Copy"**

① **Select items to copy**

Recipe item	CH1	CH2	CH3	CH4
Event 1 set value (EV1)	60.0	50.0	50.0	50.0
Event 2 set value (EV2)	50.0	50.0	50.0	50.0
Event 3 set value (EV3)	0	0	0	0
Event 4 set value (EV4)	50.0	50.0	50.0	50.0

Paste

④ **Click "Paste"**

③ **Move the cursor to the location to paste copied items.**

Recipe item	CH1	CH2	CH3	CH4
Event 1 set value (EV1)	60.0	50.0	50.0	50.0
Event 2 set value (EV2)	50.0	50.0	50.0	50.0
Event 3 set value (EV3)	0	0	0	0
Event 4 set value (EV4)	50.0	50.0	50.0	50.0

Recipe item	CH1	CH2	CH3	CH4
Event 1 set value (EV1)	60.0	50.0	50.0	50.0
Event 2 set value (EV2)	50.0	50.0	50.0	50.0
Event 3 set value (EV3)	50.0	50.0	50.0	50.0
Event 4 set value (EV4)	50.0	50.0	50.0	50.0

The copied items are pasted

● **View**

View(V)	
Optimize column display width(W)	Ctrl+W

Optimize column display width:
Optimize the display width according to the width of the characters and the data in the table.

Before optimization

PROTEM Recipe Tool - Z-TIO-A_DATA_ - Recipe2020_1020_0904

File(F)　Edit(E)　View(V)

PROTEM *RECIPE* | SEND | RECEIVE | MEMO

	Recipe item	CH1	CH2	CH3	CH4
Z-TIO	Event 1 set value (EV1)	60.0	50.0	50.0	50.0
Z-TIO	Event 2 set value (EV2)	50.0	50.0	50.0	50.0
Z-TIO	Event 3 set value (EV3)	0	0	0	0
Z-TIO	Event 4 set value (EV4)	50.0	50.0	50.0	50.0
Z-TIO	Control loop break alarm...	480	480	480	480
Z-TIO	LBA deadband	0.0	0.0	0.0	0.0
Z-TIO	Set value (SV)	50.0	50.0	50.0	50.0
Z-TIO	Proportional band [heat-...	30.0	30.0	30.0	30.0
Z-TIO	Integral time [heat-side]	240	240	240	240

After optimization

PROTEM Recipe Tool - Z-TIO-A_DATA_ - Recipe2020_1020_0904

File(F)　Edit(E)　View(V)

PROTEM *RECIPE* | SEND | RECEIVE | MEMO

	Recipe item	CH1	CH2	CH3	CH4
Z-TIO	Event 1 set value (EV1)	60.0	50.0	50.0	50.0
Z-TIO	Event 2 set value (EV2)	50.0	50.0	50.0	50.0
Z-TIO	Event 3 set value (EV3)	0	0	0	0
Z-TIO	Event 4 set value (EV4)	50.0	50.0	50.0	50.0
Z-TIO	Control loop break alarm (LBA) time	480	480	480	480
Z-TIO	LBA deadband	0.0	0.0	0.0	0.0
Z-TIO	Set value (SV)	50.0	50.0	50.0	50.0
Z-TIO	Proportional band [heat-side]	30.0	30.0	30.0	30.0
Z-TIO	Integral time [heat-side]	240	240	240	240

6.2 Logging Tool

This is a tool to log various data including measured values and set values of the instruments connected via the Base Tool. The data can be graphically displayed on the computer and the logged data is saved in a CSV format which is editable with Excel and other popular software.

ONLINE/OFFLINE button   Select log data button   Print button   Show in graph/ Not show in graph (Check box)

Start/Stop logging button   Show/Hide numerics button   Enable/Disable plotting button   Set data display color   Numeric display

Graph display

＊ The graph display in the picture is just an example. The color of the background and curves is selectable.
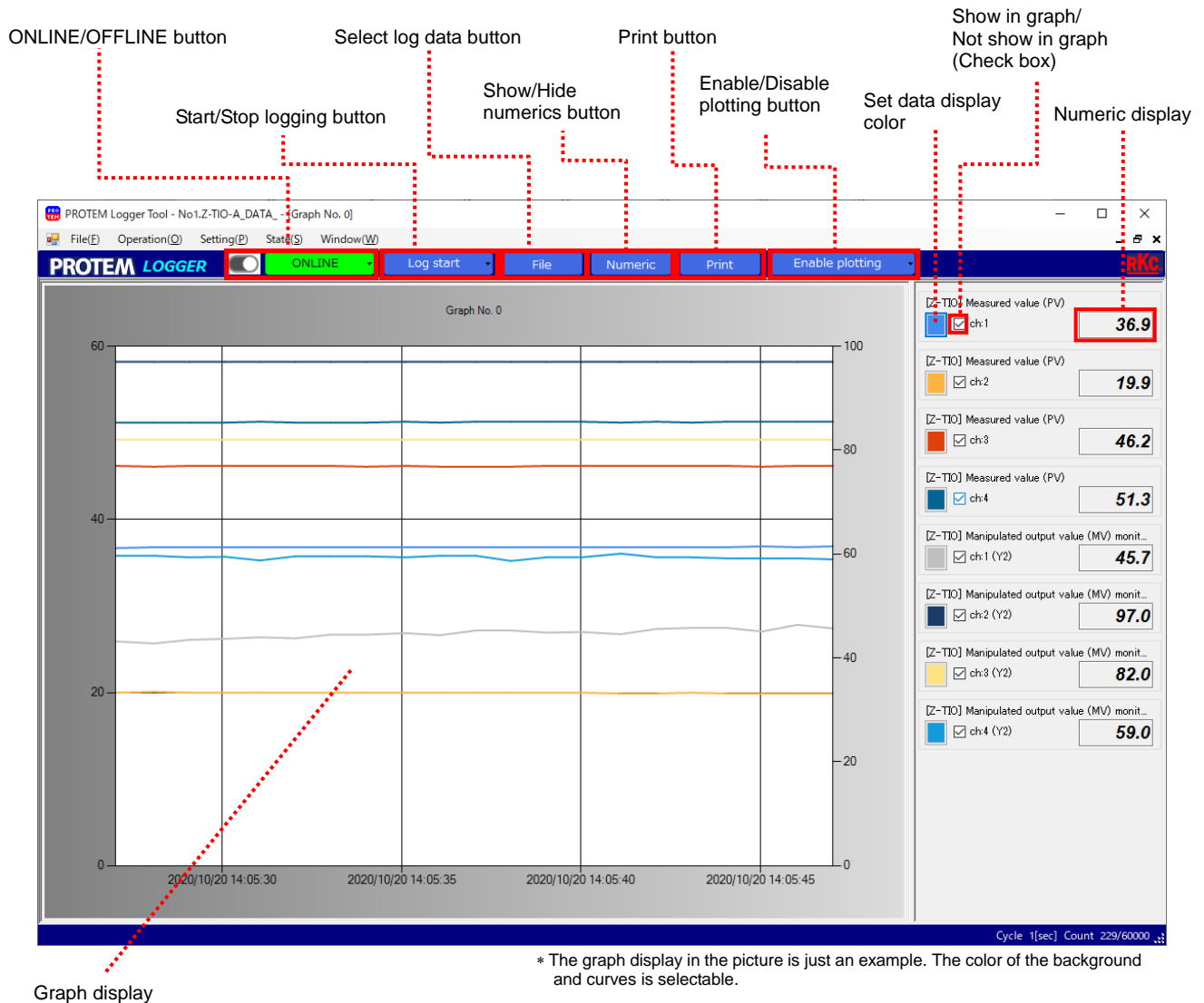
●Major functions of graphic display

- Selection of display items and the number of displays
- Setting a time span
- Automatic setting of data axis
- Selecting the color of the background and the graph axis, Selecting the size of pens.
- Dual Y axis display
- Maximum 10 graphic groups
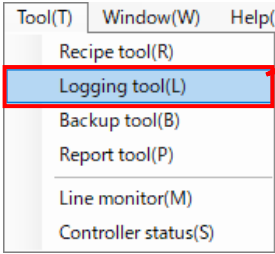
●Major functions of logging

- Setting the logging cycle
- Splitting a log file
- Saving a report in a CSV format
- Display of statistical information
- Display of saved data image

6.2.1 Starting the Logging Tool
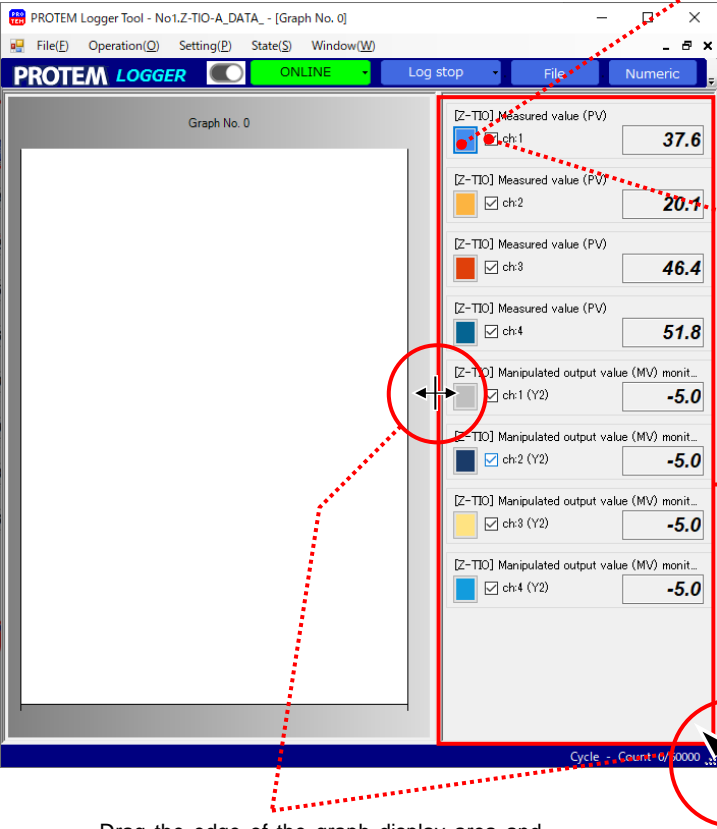
To start the Logging tool, select "Logging tool" on the Tool menu of the Base tool.

Base tool

Click "Logging tool"

- Tool(T) Window(W) Help(
  - Recipe tool(R)
  - Logging tool(L)
  - Backup tool(B)
  - Report tool(P)
  - Line monitor(M)
  - Controller status(S)

Click the box to change the color of the data.

Logging tool

TIPS

To manually change the color, you have to set the "Pen color mode" to "Fix" in the setting of the Logging tool (Refer to P.6-15).

Uncheck to remove the data from the graph.

Data is shown in the number of channels set in the project. The default displayed content (logging item) is a PV (measured value).
Display items are freely selectable (Refer to P. 6-12).

Drag the edge of the graph display area and the logging tool to a desired size.

TIPS

All setting data is saved individually in each project.

6.2.2 Pen Setting

NOTE

Before setting/removing communication items, make sure that the Logging tool is offline. You are unable to change settings online.

To set up detailed settings, select "Pen setting", which enables you to set up display items, graph No. (group), axis number, color and size of the pens, with/without display, etc.

Logging tool

Setting(P)   State(S)   Windo
Logging setting(L)
Pen setting(P)
Enable plotting(E)
Disable plotting(D)

Click "Pen setting"

Tree view of graph display items (communication items)

        <To select communication items> (add items as shown in a. or b.)

        a. Select a desired communication item from the tree view and drag it to the desired pen.

           Use left click to set the communication item of one channel.

           Use right click to set the communication items of plural channels. (You can specify how many channels to set)

        b. Select a desired pen, then double click on the desired communication item in the tree view.

        <To delete the set communication item>

        Select the pen to be deleted, followed by [Delete] key.

List of pens

Unfolded view

Folded view

NOTE

Before changing the settings, make sure that the logging tool is offline.
You are unable to change settings online.

	Pen No.	Item	ID	Channel	Graph	Graph No.	Axis No.	Line width	Color	
▶	0	[Z-TIO] Measured value (PV)	M1	1	☑	0	1	2		
	1	[Z-TIO] Measured value (PV)	M1	2	☑	0	1	2		
	2	[Z-TIO] Measured value (PV)	M1	3	☑	0	1	2		
	3	[Z-TIO] Measured value (PV)	M1	4	☑	0	1	2		
	4	[Z-TIO] Manipulated output value (MV) monitor [heat-side]	O1	1	☑	0	2	2		
	5	[Z-TIO] Manipulated output value (MV) monitor [heat-side]	O1	2	☑	0	2	2		
	6	[Z-TIO] Manipulated output value (MV) monitor [heat-side]	O1	3	☑	0	2	2		
	7	[Z-TIO] Manipulated output value (MV) monitor [heat-side]	O1	4	☑	0	2	2		

Channel numbers of connected devices

Pen color
Specify the pen color (line) used in the graph. Click to select a desired color.

Graph items/Non-graph items
Items without a check (unchecked items) will not be displayed in the graph.

Graph number
Specify the graph number (group) to which the item should belong. You can set up to 10 groups (0 to 9).

Line width
You can set the line width to draw a graph. Setting range: 1 to 9

(Example)

In case of two group configuration (group 0 and 1)

Group 0

Group 1
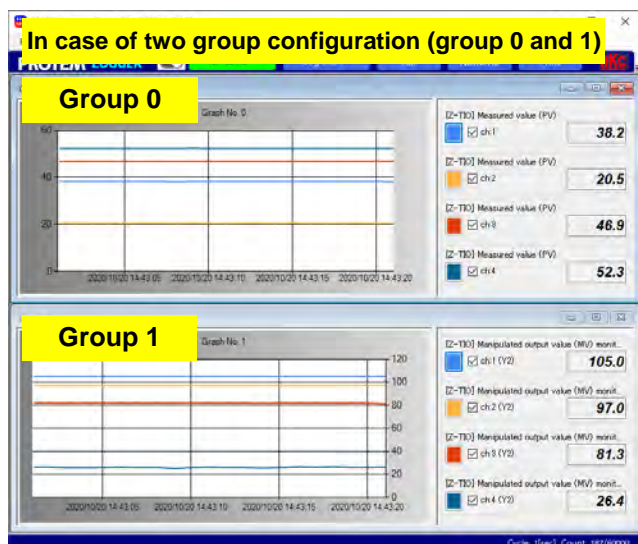
Axis No.
You can set two types of data axes.
Example: Axis 1 (PV), Axis 2 (MV)
Each data axis can be individually scaled.
・・・Refer to P. 6-14 (6.2.3 Logging setting/Display setting)

(Example)

Axis 1 (PV)   **Axis 2 (MV)**
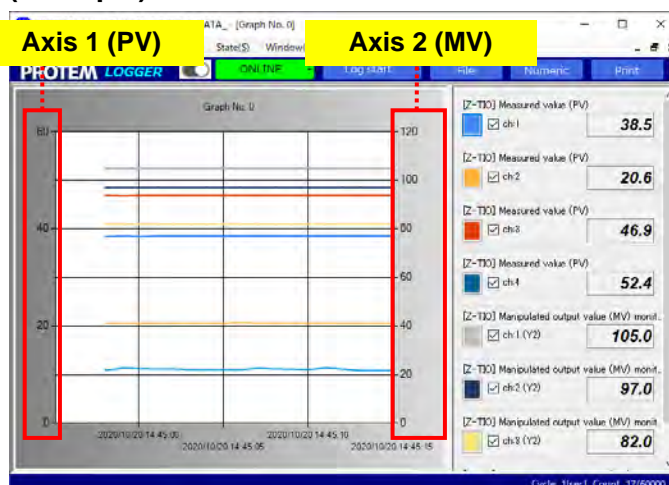
6.2.3 Logging Setting/Display Setting
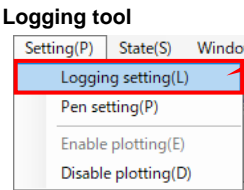
Logging tool

Click "Logging setting"

If you select "Logging setting" in the logging tool menu, you can set up detailed logging and display configuration.

TIPS

During the logging, changing the setting of logging details is invalid.

Logging cycle

For msec : 50 to 1000 msec.
For sec.: 1 to 3600 sec.

You can define the prefix part of the logged data saved in a CSV format.

The strings after the prefix are :
year_month_day_hour_minute_second_division numbers

You can define the title that appears in a logged data file saved in a CSV format.

You can specify the number of the maximum logged data to be split.

Example: If Split is set to 100

You can change fonts used for communication items and channel display.
For the channel display on the graph you can choose from "Channel number" or "Channel name".
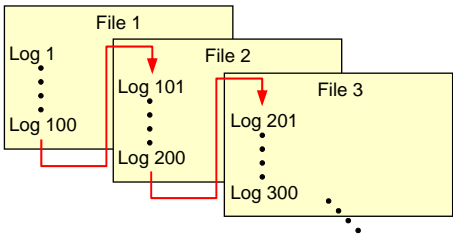
Initialize the setting content of Logging/Display.

(Continued on the next page)

X-axis (Time axis)

For [sec]: 1 to 60 seconds
For [min]: 1 to 60 minutes
For [hour]: 1 to 60 hours
For [day]: 1 to 60 days

Graph axis color

Graph background color

Selection to show/hide (enable/disable) numerical values in the graph.

The same result of operation is obtained when [Numeric] button is clicked.

Show/Hide numerics button ([Numeric] button)

Numeric

Selection of automatic color assignment or manual assignment
If you select "Fix" (manual), you can manually select colors on the graph.

Graph number (group) tab
You can set and assign the above settings individually up to 10 different graphs.
Channel assignment to each graph can be done in Pen setting (Refer to P. 6-13).

TIPS

All setting data is saved individually in each project.

6.2.4 Starting/Stopping Logging and Saving the Logged Data

● Start/Stop logging

Start logging
When you select [Log start] (Start logging) on the Log start/stop button, the logging is started and the graph is drawn.

[Log start/stop] button
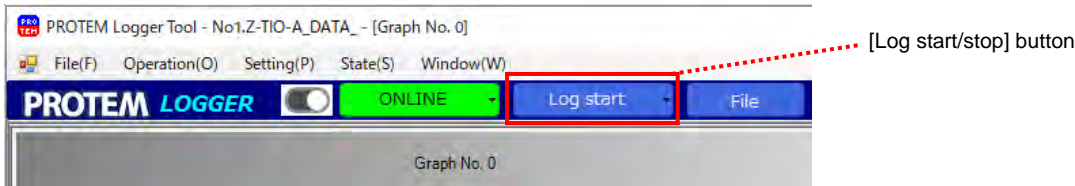
Stop logging
When you select [Log stop] (Stop logging) on the Log start/stop button, a message "Stop logging and communication." is displayed. Click [OK] to accept. Logging stops when [OK] is clicked.
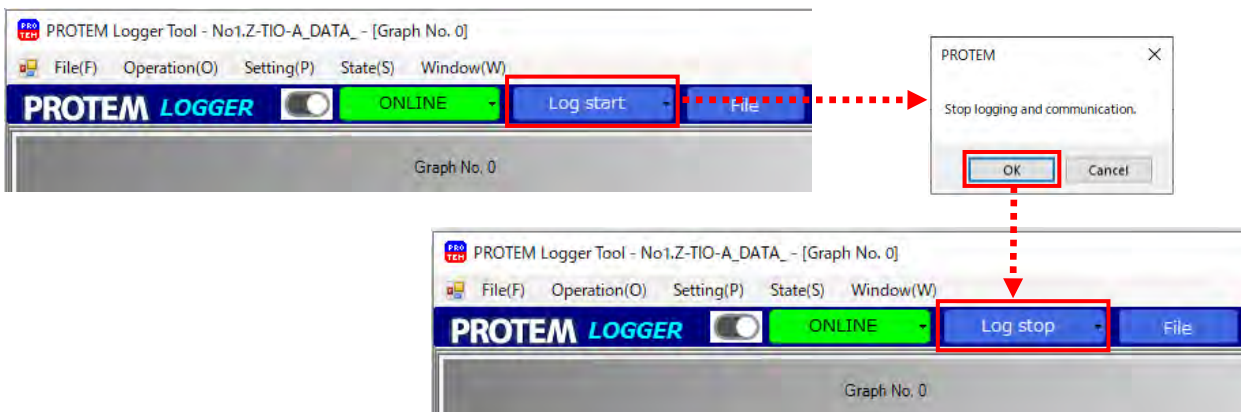
| TIPS |

● Logging can be started/stopped under "Logging Start/Stop" in the Operation menu.

● When you select "Disable plotting" on the [Enable/Disable plotting] button, the display plotting stops. Note that even under this state, data logging continues. When you switch the mode to "Enable plotting", the graph display starts logging, and the data during the stop will be also displayed. You can enable/disable plotting also on the Logging tool setting menu.
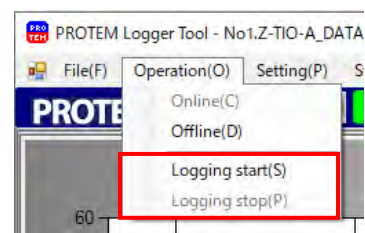
Enable/Disable plotting button
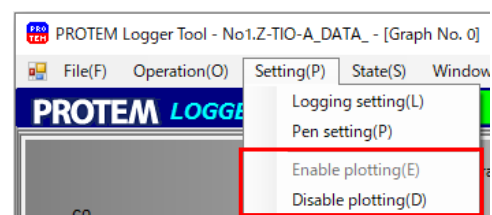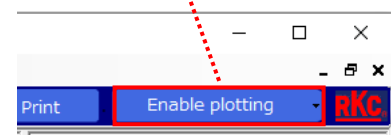
● Save log data

The log data is saved in a single file (in a CSV format) which is created when the log starts and closed when the log stops.

Maximum number of logged data in a single file can be set in "Split size" in the Logging setting. (Refer to P. 6-14)

TIPS

If you abort the Logging tool during the logging, a message "Stop logging and communication." appears. Logging is stopped when [OK] is clicked and data up to that time is saved in a file.

● View logged data

The logged data previously recorded can be displayed on the Logging tool. When you click the [File] button on the Logging tool, a folder containing the data will open. This folder is automatically created when a log is saved and the data is stored in this folder.

① Click [File]

② Select log data

③ Click [Open]

④ The selected log data is displayed

6.2.5 Other Functions

● Statistics

The statistical information includes logging start date/time, number of logging (count), maximum/minimum values, sum, and average.

Click [Statistics]

(Display example)

Pen No.:   Same number as the Pen setting.

Reset   Clicking at □ (one by one) enables reset of the statistical data.
                 The saved logged data will not be reset.
                 When you click the [Reset all] button, all the statistical data will be reset.

Item: Individual log data of each pen.

Start date: Date when the logging was started.

Start time: Time when the logging was started.

Count: Number of the logged data.

Minimum: The minimum value in the log data.

Maximum: The maximum value in the log data.

Sum: Total value of the logged data.

Average: Average value of the logged data.

● Logging data

The logged data is saved in a file (CSV format). You can view the logged data without opening the file in a CSV format as shown below.

Click "Logging data"

(Display example)

Title set in Logging setting (Refer to P. 6-14)

Log data name

Log data channel

Maximum data display:
The latest 32 data will be displayed.

Log data item: Manipulated output (MV) Monitor [Heating] 4 channels

Log data item: [Measured value (PV)] 4 channels

Log data acquisition date (yyyymmdd) and time (hhmmss)
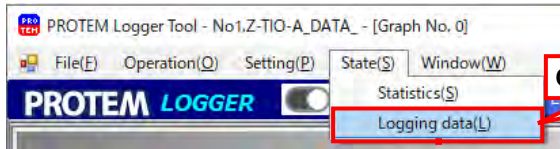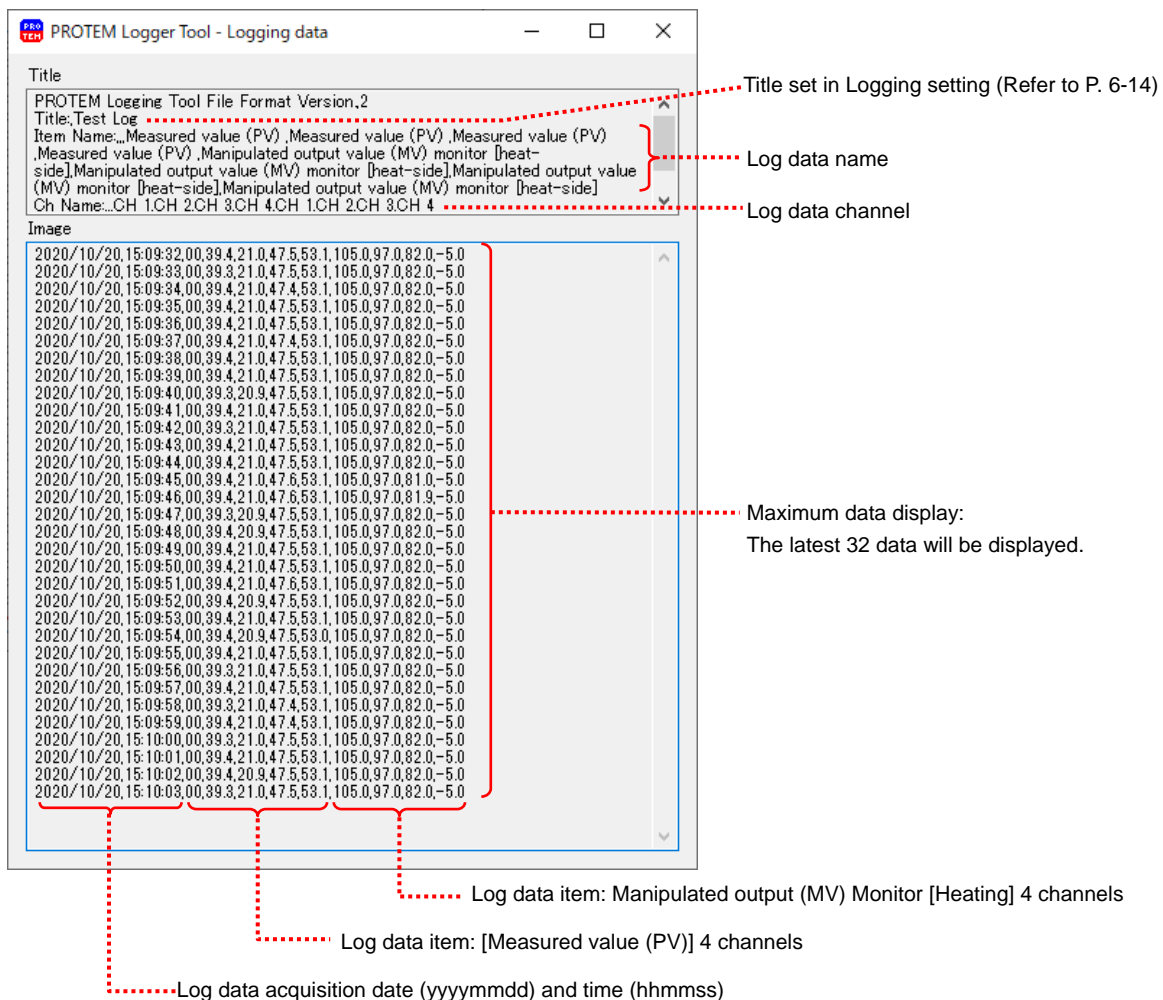
● Print

Print the displayed graph.

Click "Print"

or

Click [Print]

Print
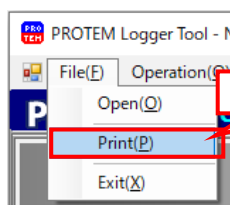
● Changing Layout

When there are multiple graph groups, display style on the screen can be selected.

Select one graph to display in the maximum size (full).
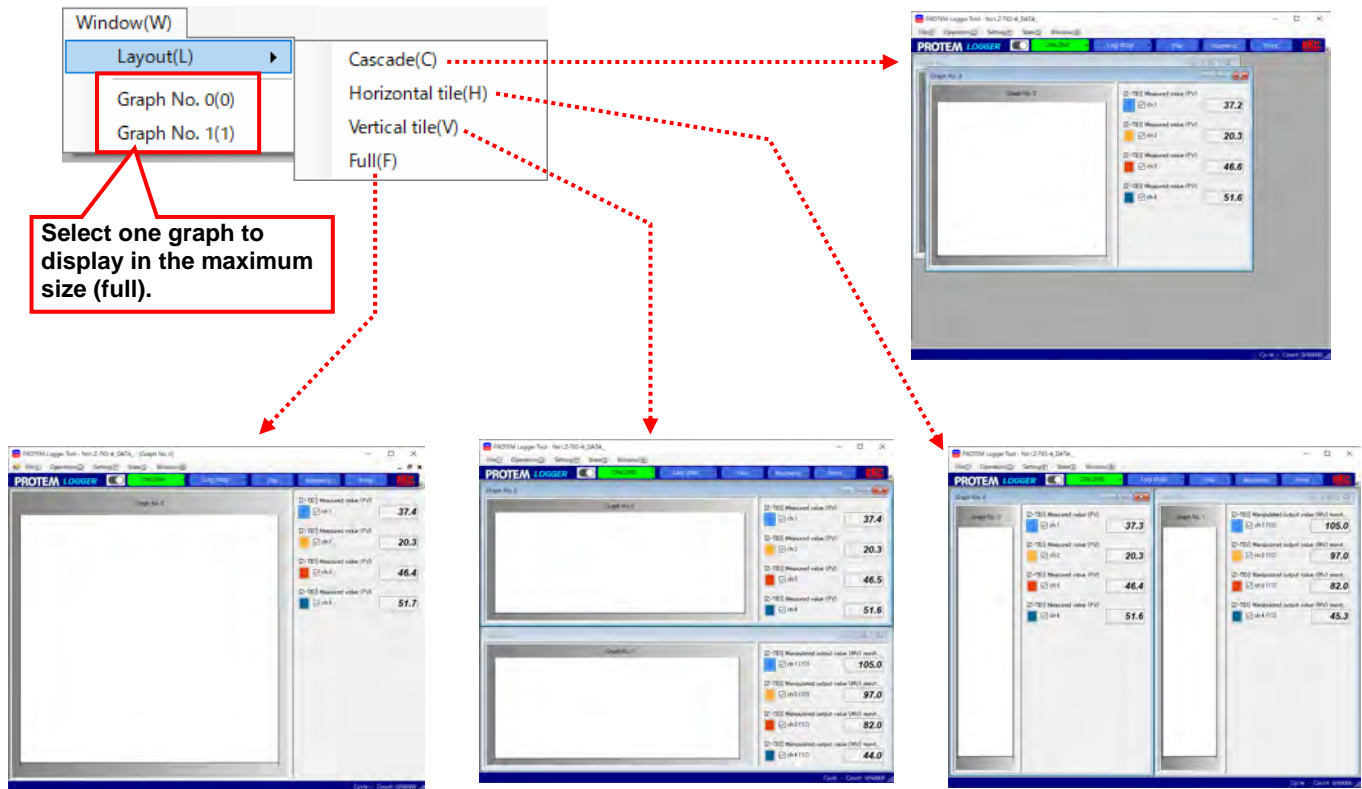
6.3 Backup Tool

The Backup tool is a tool to save the whole data in the instrument into a computer (backup), transfer the stored data back to the instrument (restore), and make comparison between the stored data and the data in the instrument (verify).

This tool may be suitable for transferring the data for replacement, cloning the configuration, verifying the data inside the instrument for checking data falsification and unexpected data change.

It is recommended to back up the configuration at the time of delivery (factory default) so that the instrument can be configured to factory default setting at any time. The backup tool is used at the unit of a project.

① Save all settings as a Backup File (Batch saving)

All the data in the instrument is backed up to a project (batch saving).

Backup

All settings

Backup file

☞ Refer to P. 6-22
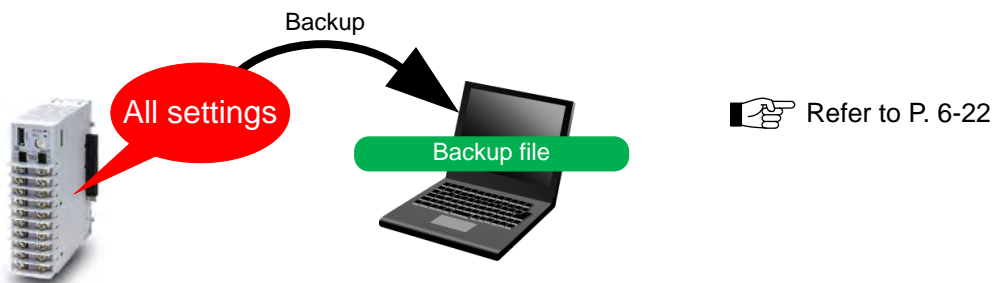
② Restore Backup Files to the Instrument

The data in a backup file stored in a project can be restored (uploaded) to the instrument.

All settings

Restore

Backup file

☞ Refer to P. 6-24
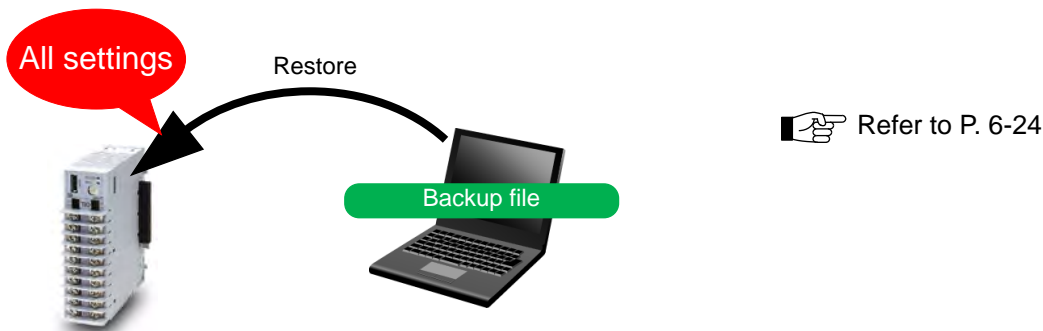
③ Verify the Backup File and the Data in the Instrument

The software verifies the data between the backup data and the data in the instrument for any inconsistency.

All settings

Verify

= ?

Backup file

☞ Refer to P. 6-26

IMT01D11-E7
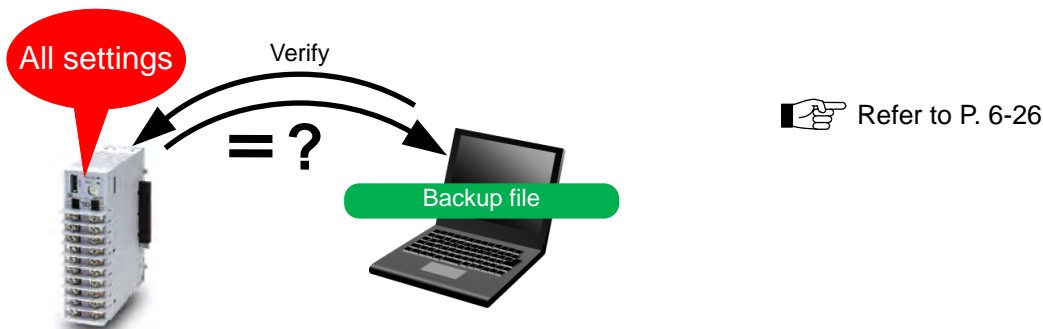
6.3.1 Saving All Settings as a Backup File (Batch Saving)

You can back up the data in the instrument to a project (batch saving).

Backup

All settings → Backup file

① Click "Backup tool"

② Click [OK]

Warning
During start-up of backup tool based tool will stop. you want to run?
OK   Cancel

Backup Tool Screen

Backup – batch save

Restore –

③ Click [Backup - batch save]

Verify – compare the backup file and the controller

☑ ラインモニタ   Close

Check the "Line monitor" to monitor the communication status between the PC and the instrument during the Backup process.

＊ Screen configuration depends on the connected instruments.

Backup

RKC Communication COM4 38400
Z-TIO-A_DATA_

Z-TIO
add:00
4ch

④ Click [Next]

☑ Also create a CSV file.   Next(O)   Cancel(C)

When "Also create a CSV file" is checked, a file in a CSV format will be created simultaneously at the time of Backup.

Continued from the previous page

⑤ Enter a desired file name

⑥ Click [Save]

Confirmation of execution

To start the backup process.

OK   Cancel

⑦ Click [OK]

Backup (Backup2020_1020_1558.p18)

RKC Communication COM4 38400
Z-TIO-A_DATA_

Z-TIO
add:00
4ch

Backup : Controller No.1

1/4 (RECV)   Cancel(C)

Status display

The backup process is complete.

OK

Backup Tool Screen

PROTEM Backup Tool

Backup - batch save

Restore - batch load

Verify - compare the backup file and the controller

☑ ラインモニタ   Close
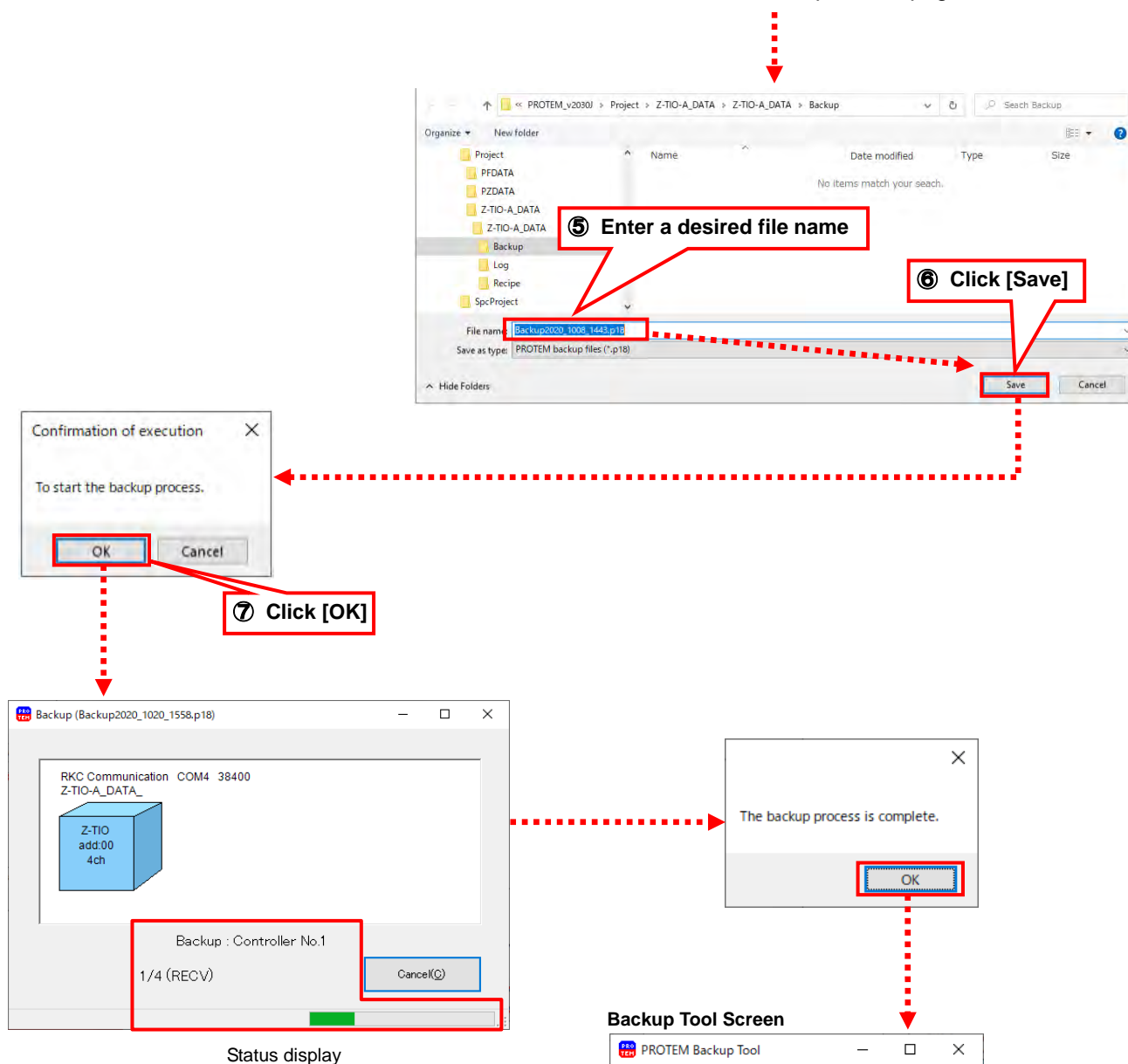
TIPS

The backup file is saved in the project folder with an extension p18.

6.3.2 Restore Backup File to the Instrument (Batch setting)

The data in a recipe file stored in a project can be transferred to the instrument at a time.

All settings

Restore

Backup file

① Click "Backup tool"

② Click [OK]

Warning

During start-up of backup tool based tool will stop. ou want to run?

Backup tool screen

③ Click [Restore - batch load]

④ Select a Backup file

Check the "Line monitor" to monitor the communication status between the PC and the instrument during the Restore process.

⑤ Click [Open]

Continued on the next page

Continued from the previous page

Restore (Backup2020_1008_1443.p18)

RKC Communication COM4 38400
Z-TIO-A_DATA

Z-TIO
add:00
4ch

	Controller	Number of	Address
☑ 1	Z-TIO	4	00

⑥ Click [Next]

Next(O)

☑ Also perform Verify

Cancel(C)

∗ Screen configuration depends on the connected instruments

If "Also perform Verify" is checked, verify is started after restore is completed.

Confirmation of execution

To start the restore proce

⑦ Click [OK]

OK   Cancel

Restore (Backup2020_1020_1558.p18)

RKC Communication COM4 38400
Z-TIO-A_DATA_

Z-TIO
add:00
4ch

Restore : Controller No.1

6/12 (SEND)

Cancel(C)

Status display

If "Also perform Verify" is checked

Verify result

Verify Result

Controller No.1 Z-TIO Address:00 Ch:4
  ID:SR   RUN/STOP transfer   Backupfile:1,,,

OK(O)
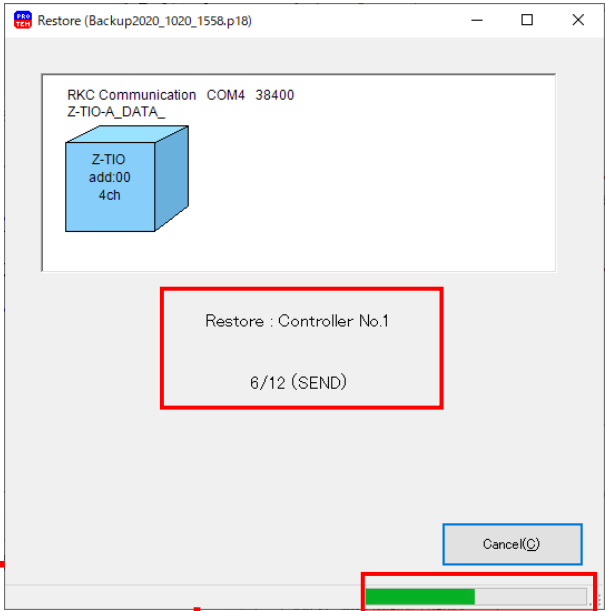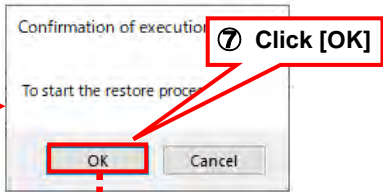
If "Also perform Verify" is not checked

✕

Restore process has ended.

OK

Backup tool screen

PROTEM Backup Tool

Backup - batch save

Restore - batch load

Verify - compare the backup file and the controller

☑ ラインモニタ   Close
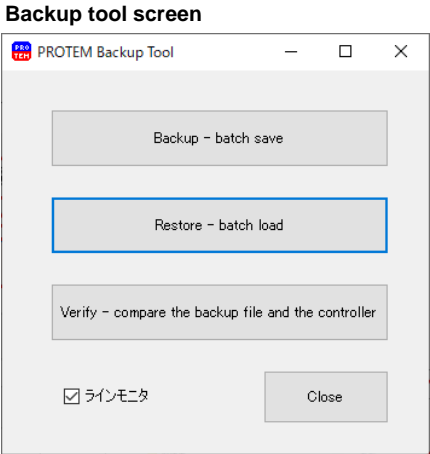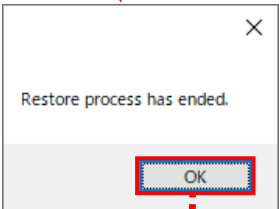
6.3.3 Verifying between the Backup File and the Data in the Instrument

Verification is carried out between the setting data of the instrument and the backup data. This enables verification of the setting to see if the file might have been unintentionally changed.
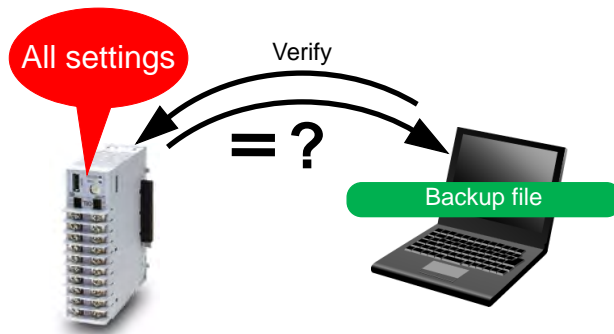
All settings

Verify

= ?

Backup file

① Click "Backup tool"

PROTEM Base Tool - Z-TIO-A_DATA_ - [ONLINE - TIO-A_DATA_]

File(F)   Edit(E)   View(V)   Operate(O)   Setting(S)   T)   Window(W)   Help(H

PROTEM **BASE**   ONLINE

...ipe tool(R)

Logging tool(L)

Backup tool(B)

Report tool(P)

Line monitor(M)

Controller status(S)

Monitors
Temperature cont
Other monitors
Settings
Frequently used s

Z-T
Measured
Set value (

② Click [OK]

Warning

During start-up of backup tool based tool will stop... ou want to run?

OK   Cancel

Backup tool screen

PROTEM Backup Tool

Backup – batch save

③ Click [Verify - Compare the backup file and the controller]

Restore – batch load

Verify – compare the backup file and the controller

☑ ラインモニタ   Close

Check the "Line monitor" to monitor the communication status between the PC and the instrument during the Verify process.

④ Select the backup file

Organize   New folder

Image
NoName
Project
PFDATA
PZDATA
Z-TIO-A_DATA
Z-TIO-A_DATA
Backup
Log
Recipe
SpcProject

Name   Date modified   Type   Size

Backup2020_1008_1443.p18   2020/10/08 14:47   P18 File   35 KB

⑤ Click [Open]

File name: *.p18   P TEM Backup files (*.p18

Open   Cancel

Continued on the next page.

Continued from the previous page

Verify (Backup2020_1020_1558.p18)

RKC Communication COM4 38400
Z-TIO-A_DATA_

Z-TIO
add:00
4ch

Controller	Number of	Address
☑ 1 Z-TIO	4	00

⑥ **Click [Next]**

Next(O)

Cancel(C)

* Screen configuration depends on
the connected controllers.

Confirmation of execution

To start the verify process.

OK   Cancel

⑦ **Click [OK]**

Verify (Backup2020_1020_1558.p18)

RKC Communication COM4 38400
Z-TIO-A_DATA_

Z-TIO
add:00
4ch

Verify : Controller No.1

1/4 (RECV)

Cancel(C)

Status display

Verify result

Verify Result

Controller No.1 Z-TIO Address:00 Ch:4
   ID:SR   RUN/STOP transfer   Backupfile:1,,,

OK(O)

Backup tool screen

PROTEM Backup Tool

Backup – batch save

Restore – batch load

Verify – compare the backup file and the controller

☑ ラインモニタ   Close

6-27   IMT01D11-E7

6.4 Report Tool

The Report tool allows the whole setting data of the instrument to be reported in a format easily viewed. You can choose the data items to be included in your report. The report can be output to the printer or saved in a CSV or HTML format.

6.4.1 Starting the Report and Setting up the Output

Click "Report tool"

Click "Output"

Enter your own report title

Report tool example

Checked items are displayed in the report.

Note that display per group (number of rows) is limited by the setting of number of rows.

TIPS

When "Parameter symbol" is checked, the report tool will add parameter symbols displayed on the instrument to each communication item. For the instruments that have no parameter symbols such as SRZ, no parameter symbol will be displayed even if Parameter symbol is checked.

When checked (Example)

Parameter symbols are displayed in a bracket.

[-] is displayed if there is no parameter symbol.

(Some instruments may display nothing.)

TIPS

Click the [Update] button to update the report with the latest data.

Click [Update]

6.4.2 Outputting Report Data
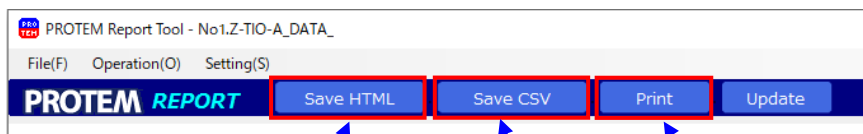
Click to save the file in HTML format.
Save the file in a desired folder.

Click to save the file in CSV format.
Save the file in a desired folder.

Click to send the file to a printer (print a report)

Example of opening an HTML file with Microsoft Edge

Example of opening a CSV file with Microsoft Excel

Report preview screen

Chapter 7

This chapter 7 is not available with PROTEM2 English Edition.

Memo

8. Getting Started With Setting Tool for PZ Series

8.1 Preparation

■ Starting the Setting Tool for the PZ series

Start the Setting Tool for the PZ series in the following procedure.

① Click [Setting tool for PZ series]

TIPS

You can choose a language from the following:
"Japanese (1041)"
"English (1033)"
"Simplified Chinese (2052)"

② Choose a mode
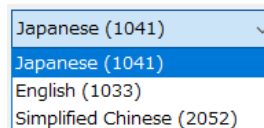
Direct mode: Choose this mode to monitor or modify the data of the PZ400/PZ900 connected to the network. Connect the PZ400/PZ900 to the PC, then click [Direct Mode] button.

☞   ■ **If You Have Chosen the Direct Mode** → Refer to P. 8-2

File mode: Choose this mode to open the settings file (extension p26) of the PZ400/PZ900 stored in the PC. This mode is for maintenance and is used to view the setting data or make a bulk (batch) setting for recovery and copy.

☞   ■ **If You Have Chosen the File Mode** → Refer to P. 8-3

■ If You Have Chosen the Direct mode

Ensure that the PZ400/PZ900 is connected to the PC, then operate as follows. In this example, loader communication is used.

① **Click [Direct mode]**

② **Configure the communication port** *

* Configure the communication port according to the PC you use. If you are not certain about the communication port number, click [Refer to Device Manager] Ⓐ , then "Device Manager" will be shown where you can check the port number.

PROTEM for PZ series English (1033)

Operating the controller with communication connection (direct mode)

Reading and displaying the setting value file (file mode)

Close

③ **Check "Using the loader port"**

PZ Communication settings

| Comm.port name | COM4 | (1～256) | Ok |

Reacquire comm.port list

④ **Click [OK]**

☑ Using the loader port

Cancel

Address	0	(0～99)
Speed	38,400bps	
Data bits	8 bit	
Parity bit	Unuse	
Stop bit	1 bit	
Send delay time	5	

Ⓐ

Refer to Device Manager

RKC standard communication protocol

Device Manager
File Action View Help

∨ 🖳 S3031
  > 🔊 Audio inputs and outputs
  > 💻 Computer
  > 💽 Disk drives
  > 🖥 Display adapters
  > 💿 DVD/CD-ROM drives
  > 📷 Firmware
  > 🔌 Human Interface Devices
  > 📷 Imaging devices
  > ⌨ Keyboards
  > 🖱 Mice and other pointing devices
  > 🖥 Monitors
  > 📶 Network adapters
  ∨ 📶 Ports (COM & LPT)
      💻 Intel(R) Active Management Technology - SOL (COM3)
      💻 RKC USB-to-Serial Bridge2 (COM4)

TIPS

If you check "Using the loader port", the communication environment will be preset for the loader communication. You don't have to set it by yourself.

⑤ **Monitor screen is displayed**

"Direct mode" will come up

PROTEM for PZ series (COM4)

File(F) Setting(S) Mode(M) Help(H)

PROTEM for PZ series   TrendOFF   Direct mode   RESET RUN / FIX MAN   RKC

- monitor
- Driving operation
- Pattern setting (1)
- Pattern setting (2)
- PID group

monitor | Driving operation | Pattern setting (1) | Pattern setting (2) | PID group | Level PID | Setup Setting 1 | Se ◄ ►

Measured value (PV)	30	Execution pattern	1	Event 1 state
Set value (SV) monitor	0	Segment number	1	Event 2 state
MV1[heat-side]	-5.0	Segment remaining time	0:05	Event 3 state

■ If You Have Chosen the File mode

You can read the settings file of the PZ400/PZ900 (extension p26) stored in the PC.

① Click [File mode]

② Select a file and double click it

③ Monitor screen is displayed

"File mode" will come up
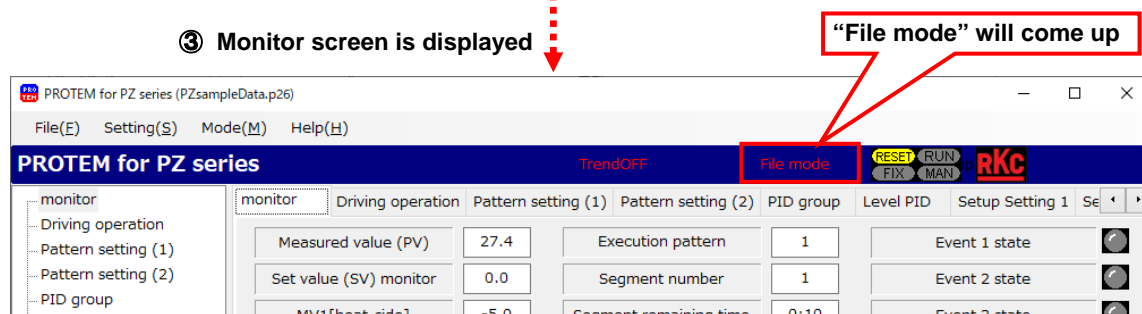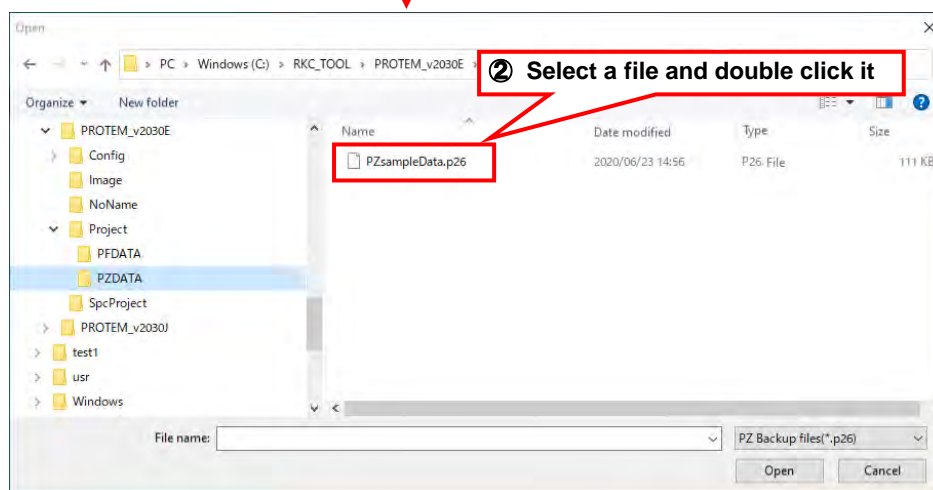
8.2 Screen Components and Menu Structure

■ Screen Components and Functions

Components common to each screen are explained.
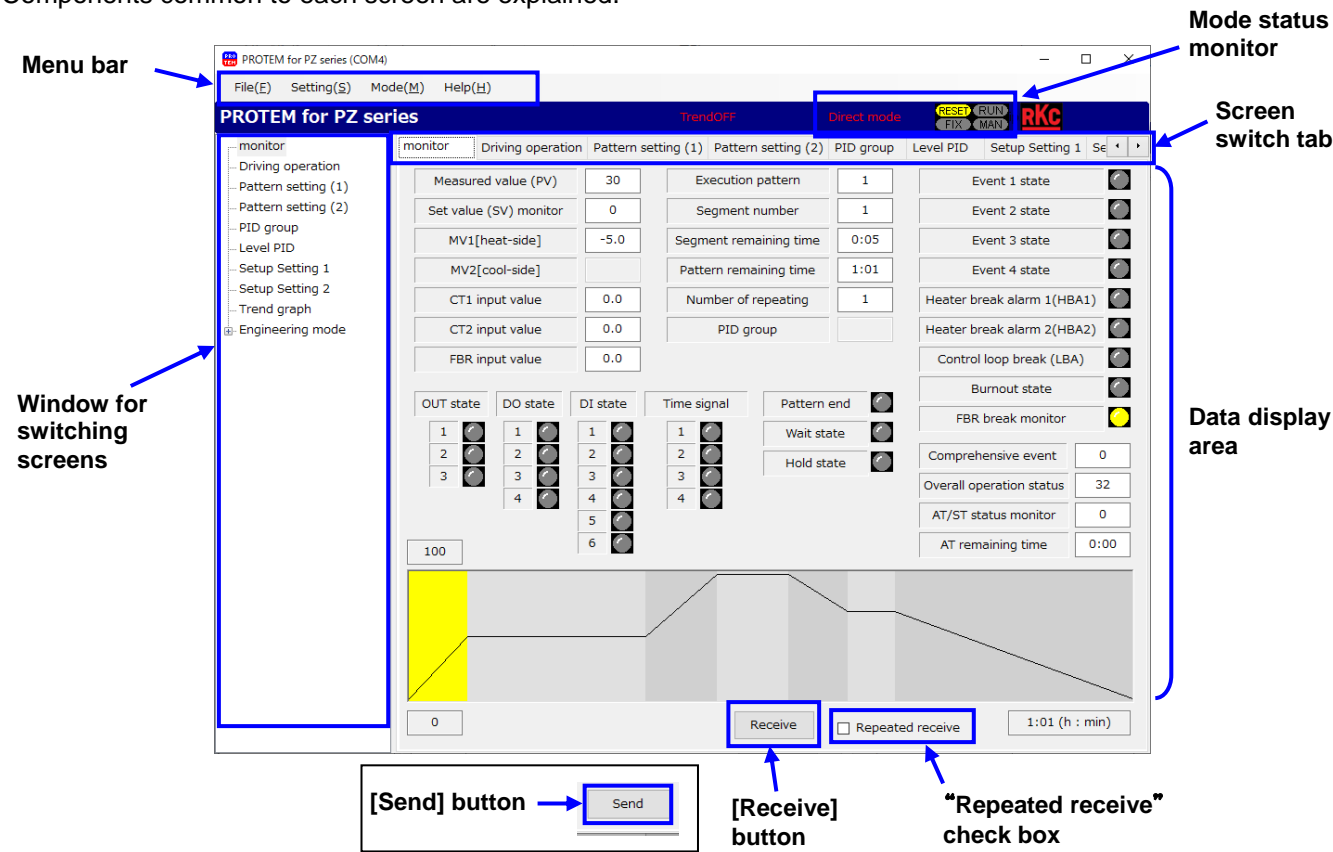
Menu bar: Used to start functions of the Setting tool.

☞   For more details, refer to ■ **Menu Structure** (P. 8-6).

Window for switching screens:
                    Screens in the window can be switched. Click the name of screen in the tree view window to switch screens.

Mode status monitor: Displays the mode status.

                    File mode: Displayed in the File mode.
                    Direct mode: Displayed in the Direct mode.
                    RESET: Lights during the Reset (RESET) mode.
                    RUN: Lights during the Program control (RUN) mode.
                    FIX: Lights during the Fixed setpoint control (FIX) mode.
                    MAN: Lights during the Manual control (MAN) mode.

Screen switch tab: Clicking the tab will switch the screen.

Data display area: Displays various data.

[Send] button: Writes data set with the setting tool to the PZ400/PZ900. This button is displayed in the Direct mode.
                    (This item is not displayed on the monitor screen)

(Screen components continues)

[Receive] button: Used to read the monitor and setting data of the PZ400/PZ900 to the Setting tool. This button is displayed in the Direct mode.

Data is read out from the PZ400/PZ900 when the Setting tool is started, the data is sent, or the screen is switched. If the screen is left as it is, the data will not be read out and the screen will not be updated. To display the latest monitored and set data, click [Receive] button to read out the data.

"Repeated receive" checkbox:

The monitor data of the PZ400/PZ900 is automatically read out to the Setting tool at regular intervals (every few seconds).

To read out the data at the regular intervals, check "Repeated receive". This item is displayed on the Monitor and Driving operation screens.

■ Menu Structure

This page explains the commands launched from the menu on the menu bar.

Menu bar → PROTEM for PZ series (COM4)
File(F)   Setting(S)   Mode(M)   Help(H)

● **File**

Direct mode

File(F)   Setting(S)   Mode(M)   Help(H)
Save setting to file (controller → file)(B)
Read file (file → PC)(L)
Save it as a file with a name (PC → file)(A)
Bulk setting (PC → Controller)(R)
Checking set value (controller ⇔ PC)(V)
Exit(X)

File mode

File(F)   Setting(S)   Mode(M)   Help(H)
Save setting to file (controller → file)(B)
Read file (file → PC)(L)
Save it as a file with a name (PC → file)(A)
Bulk setting (PC → Controller)(R)
Checking set value (controller ⇔ PC)(V)
Exit(X)
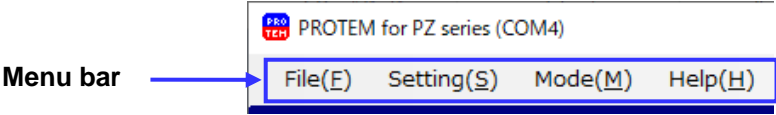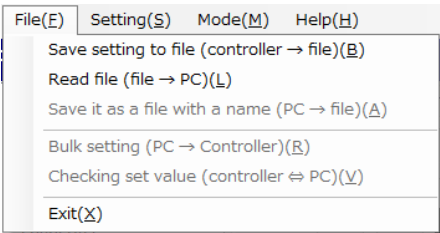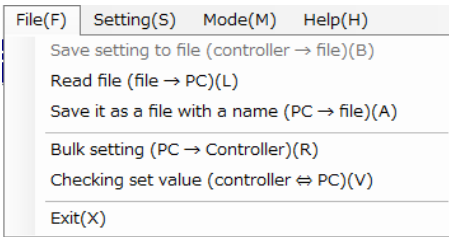
Save settings to file (controller → file) [Direct mode]:
> The setting data is read out from the PZ400/PZ900 and saved to the PC as a settings file (extension p26).
>
> ☞ Refer to ■ **Saving Set Data of the PZ400/PZ900 to the PC** (P. 8-28)

Read file (file → PC) [Direct mode and File mode]:
> Read out the setting data stored in the PC (extension p26) into the Setting tool and switch the mode to the File mode.
>
> ☞ Refer to ■ **Reading the Data of the Settings File into the Setting Tool** (P. 8-30)

Save it as a file with a name (PC → file) [File mode]:
> The setting data of the Setting tool is saved to the PC as a settings file (extension p26).
>
> ☞ Refer to ■ **Saving the Data of the Setting Tool to the PC** (P. 8-31)

Bulk setting (PC → Controller) [File mode]:
> The setting data of the Setting tool is written into the PZ400/PZ900 in batches.
>
> ☞ Refer to ■ **Writing the Data of the Setting Tool to the PZ400/PZ900 in a Batch** (P. 8-33)

Checking set value (Controller <-> PC) [File mode]:
> Verify if the setting data of the settings file (extension p26) will match the setting data of the PZ400/PZ900.
>
> ☞ Refer to ■ **Verifying if the Data of the Setting Tool Matches the Data of the PZ400/PZ900** (P. 8-35)

(Continued from the previous page)
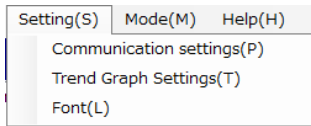
● **Setting**

Setting(S) Mode(M) Help(H)
  Communication settings(P)
  Trend Graph Settings(T)
  Font(L)

Communication settings: Used to set communication parameters. Switch to the Direct mode after the setting is completed.

PZ Communication settings ✕

Comm.port name COM4 (1~256) Ok
Reacquire comm.port list
☐ Using the loader port Cancel
Address 0 (0~99)
Speed 38,400bps Refer to Device Manager
Data bits 8 bit
Parity bit Unuse
Stop bit 1 bit
Send delay time 5
RKC standard communication protocol
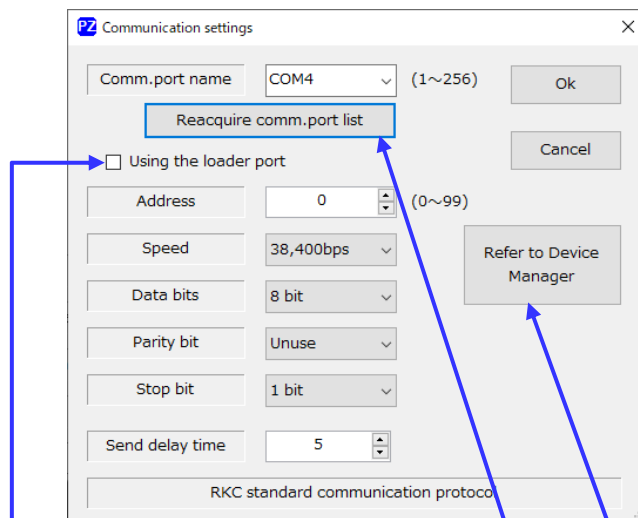
Comm. port name: COM1 to COM256

☞ Refer to P. 8-2 for how to identify the communication port.

Address: 0 to 99 (Maximum connections: 31)

Speed: 2400 bps   19200 bps
        4800 bps   38400 bps
        9600 bps   57600 bps

Data bits: 7 bit, 8 bit

Parity bit: None, even, odd

Stop bit: 1 bit, 1.5 bit, 2 bit

Send delay time: 0 to 500 ms

Check "Using the loader port" for loader communication.

You can check the communication port number in the Device Manager in Windows. Use this option when the data cannot be obtained from the Device Manager.

Trend Graph Settings

Used to set parameters required for the Trend graph display.

☞ Refer to ■ **Setting Up Trend Graph** (P. 8-22).

Font: Used to set the character font to be displayed on the Setting tool screen.

● **Mode**

Mode(M) Help(H)
✓ Direct Mode(D)
  File Mode(F)
  Trend Graph ON(N)
✓ Trend Graph OFF(F)
  Allow change of engineer mode(E)
  Show Extended Engineering Mode Item(X)
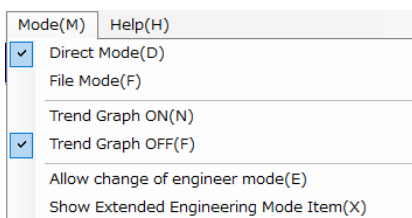
Direct Mode/File Mode

Choose a mode.

Trend Graph ON/Trend Graph OFF:

Used to set on/off the Trend graph.

☞ Refer to ■ **Starting/Stopping Recording the Trend Graph** (P. 8-24)

Allow change of engineer mode:

Choose this option when changing the settings in the Engineering mode.

Show Extended Engineering Mode Item:

Used for maintenance.

(Continued on the next page)

(Continued from the previous page)

● **Help**

Help(H)
Version Information(V)
Note Window(N)
Register Map(R)

Version Information: Displays version information for the Setting tool.

Note Window: When you click the title of the monitor and set items, explanation about the item will be displayed.

Register Map: Displays the data map for each register type during the PLC communication. This option is available when Communication protocol (Engineering mode, Fn60) is "3: PLC communication".

Example of PLC register map

Engineering mode
Setting items in PLC
communication in Fn62

Engineering mode
Setting items of input types in
Fn21

Engineering mode
Setting items in PLC
communication in Fn62

Engineering mode
Setting items in communication
setting in Fn60

Outputs the PLC register map
in the CSV file format.

PLC register map

Register type
0:D register (data register)

Register start number(High-order 4-bit)
0

Register start number(Low-order 16-bit)
1000

Monitor item register bias
12

Setting item register bias
0

Input data type
0:Number of measured value digits: 5

Slave register bias
140

Device address
0

Output to CSV file   Close

register	item name	Remarks
1012 (03F4h)	Measured value (PV)	Monitor item selection 1
1014 (03F6h)	Set value (SV) monitor	Monitor item selection 1
1016 (03F8h)	MV1[heat-side]	Monitor item selection 1
1018 (03FAh)	MV2[cool-side]	Monitor item selection 1
1020 (03FCh)	CT1 input value	Monitor item selection 1
1022 (03FEh)	CT2 input value	Monitor item selection 1
1024 (0400h)	Execution pattern	Monitor item selection 1
1026 (0402h)	Segment number	Monitor item selection 1
1028 (0404h)	Segment level	Monitor item selection 1
1030 (0406h)	Segment time	Monitor item selection 1
1032 (0408h)	Segment remaining time	Monitor item selection 1
1034 (040Ah)	Overall operation status	Monitor item selection 2
1036 (040Ch)	Comprehensive event state	Monitor item selection 2
1038 (040Eh)	Error code	Monitor item selection 3
1040 (0410h)	Execution pattern selection	Setting item selection 1
1042 (0412h)	Operation mode transfer	Setting item selection 1
1044 (0414h)	Step function	Setting item selection 1
1046 (0416h)	Hold state	Setting item selection 1
1048 (0418h)	Autotuning (AT)	Setting item selection 1
1050 (041Ah)	Heater break alarm 1 (HBA1) set value	Setting item selection 3
1052 (041Ch)	Heater break alarm 2 (HBA2) set value	Setting item selection 3
1054 (041Eh)	Proportional band [heat-side]	Setting:PID group 1
1056 (0420h)	Integral time [heat-side]	Setting:PID group 1
1058 (0422h)	Derivative time [heat-side]	Setting:PID group 1
1060 (0424h)	Control response parameter	Setting:PID group 1
1062 (0426h)	Proportional band [cool-side]	Setting:PID group 1
1064 (0428h)	Integral time [cool-side]	Setting:PID group 1
1066 (042Ah)	Derivative time [cool-side]	Setting:PID group 1
1068 (042Ch)	Segment level & time	Setting:Pattern 1
1132 (046Ch)	Pattern end number	Setting:Pattern 1

8.3 Program Setting Example

■ Preparing a Program to be set

We use the following program example to explain the setting procedure.
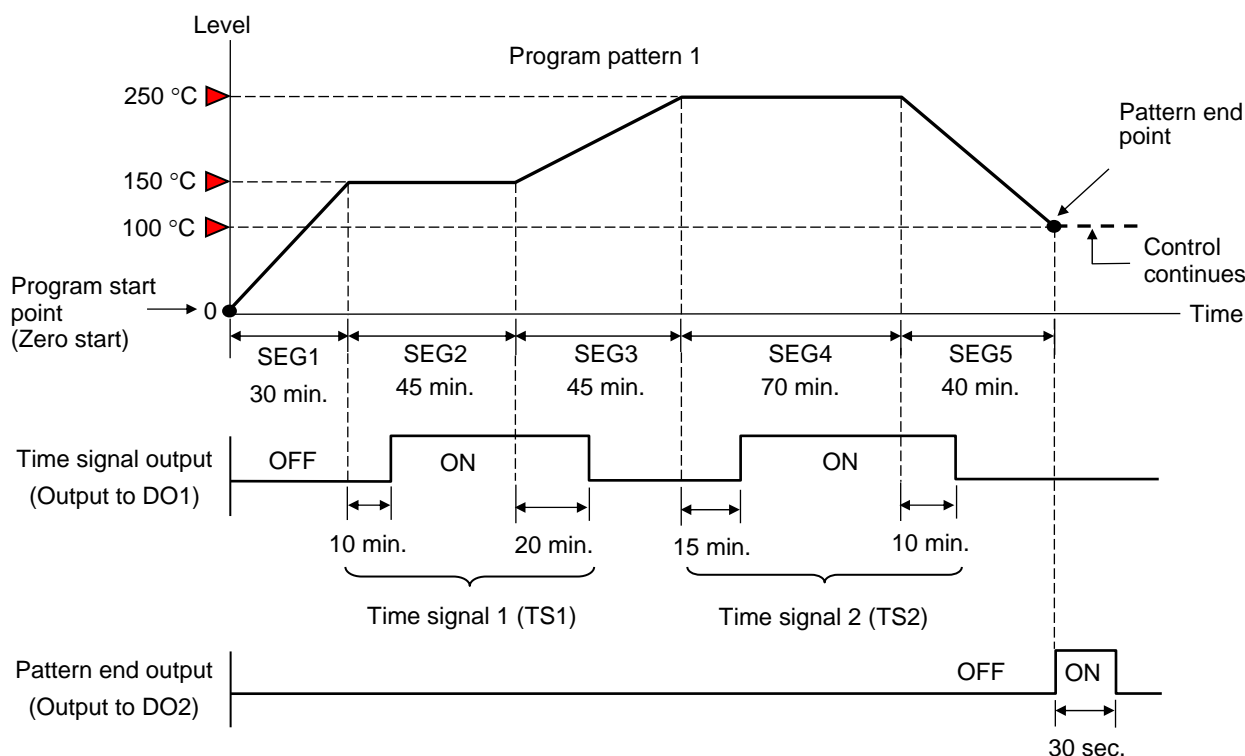
- Event 1 set value: 10°C
- Number of repeating patterns: 2
- Pattern link: No link

The above program pattern consists of the following data.

Pattern number	1				
Segment number	1	2	3	4	5
Segment level	150 °C	150 °C	250 °C	250 °C	100 °C
Segment time	30 min.	45 min.	45 min.	70 min.	40 min.

Time signal number	1	2
Time signal start segment number	2	4
Time signal start time	10 min.	15 min.
Time signal end segment number	3	5
Time signal end time	20 min.	10 min.

Pattern end output time	30 sec.
Event 1 set value	10 °C
Number of repeating patterns	2
Pattern link number	0 (No link)

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8.3 Program Setting Example

The following values are used for the program related initial setting parameters.

- Engineering mode

Fn00, 10 Time unit	
Time unit of the setting	1: minute : second
Segment setting change type	0: Change action 1
Store segment setting change	0: Keep setting change
Fn34 DO Function	
DO1 function selection	7: Time signal
DO2 function selection	8: Pattern end signal
DO1 time signal selection	0011: Time signal 1: Valid Time signal 2: Valid Time signal 3: Invalid Time signal 4: Invalid
Fn41, 42, 43, 44 Event	
Event 1 type	1: Deviation high (SV monitor value)
Event 1 hold action	0: No hold action
Event 1 differential gap	2 °C
Event 1 timer	0.0 seconds
Fn45, 46, 47, 48 CT	
Time signal selection	0011: Time signal 1: Used Time signal 2: Used Time signal 3: Unused Time signal 4: Unused
Pattern end signal selection	1: Used

- Setup setting

Setup setting 1	
Wait zone high	10 °C
Wait zone low	−10 °C
SV selection at Program start	0: Zero start
Control action at Pattern end	0: Control continued
Output action at Pattern end	7: Action continues (Logical calculation output, Retransmission output, Instrument status output)

☞ Refer to Instruction manual for PZ400/PZ900 (IMR03B05-E□) for details of each function.

8.4 Program Setting

■ Setting Program Related Initial Parameters

1. Switch the mode to the Direct mode.

① Click "Direct Mode"

② Ensure that the parameters are properly set, then click [OK]

☞ Refer to P. 8-2 and P. 8-7 for Communication parameters.

2. Set up to allow changes in the Engineering mode.

Click "Allow change of engineer mode"

When this is checked, changes in the Engineering mode is possible.

3. Ensure that the current mode is the Reset mode.

Make sure that the RESET lamp is lit
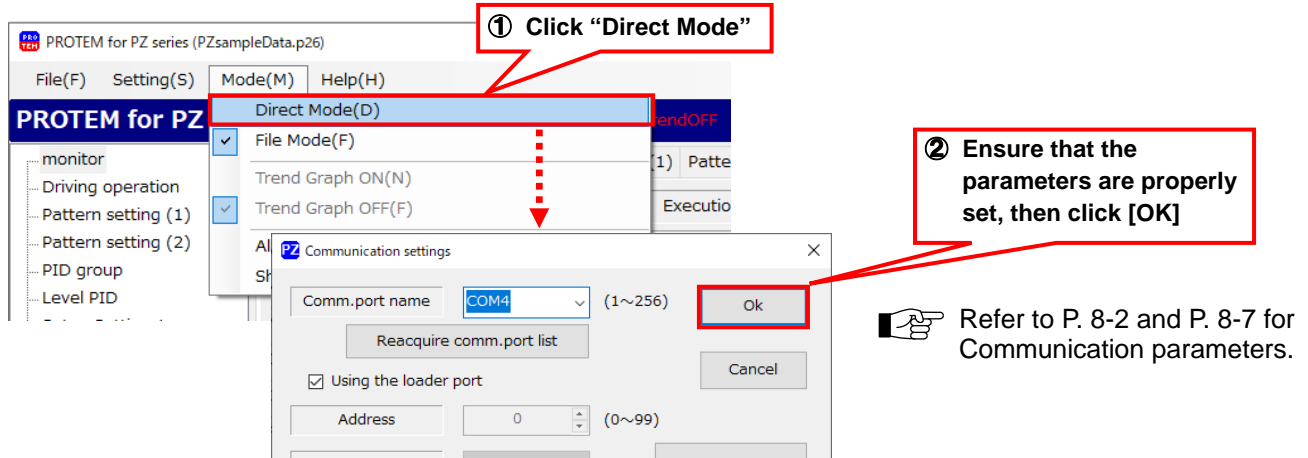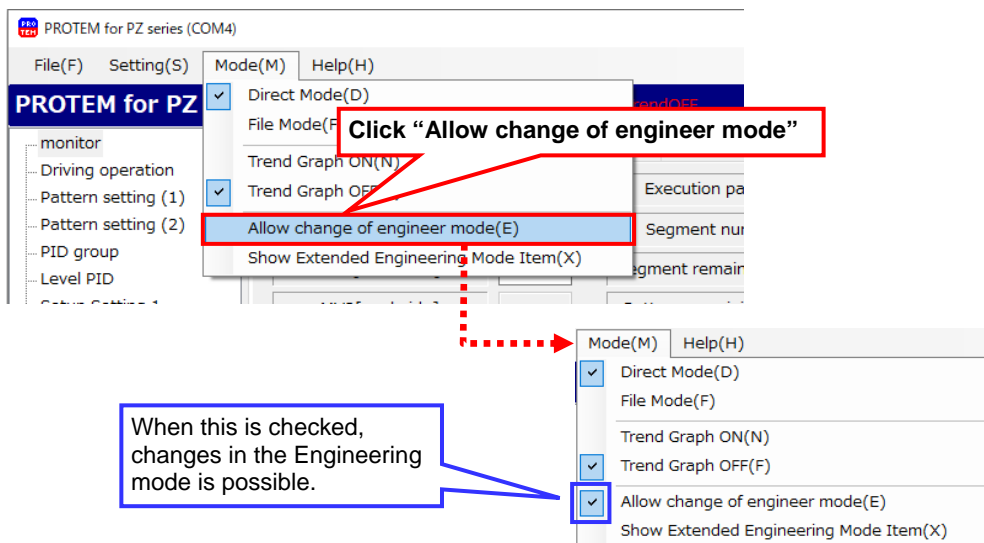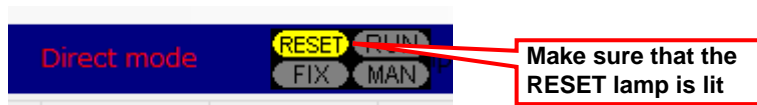
TIPS

If you are not in the RESET mode, switch the mode to "0: Reset mode (RESET)" in the Driving operation screen.

4. Set up the program related initial parameters referring to the setting example on P. 8-10.

TIPS

When you finished setting up each screen, click the [Send] button to write the set data to the PZ400/PZ900.

5. Set other parameters other than the program related parameters, if necessary.

■ Setting Program Pattern

1. Switch to the "Patten setting (1)" screen, and set the program pattern referring to the setting example on page P. 8-9.
   (Enter values in the fields surrounded by a red frame)
   When you finished setting up the program pattern, click the [Send] button to write the set data to the PZ400/PZ900.

Click "Patten setting (1)"

Used to copy a pattern. (See below)

Scroll the displayed segments
< > Scroll by one segment.
<< >> Scroll by 8 segments

Pattern will be displayed according to the Segment (SEG) level.

[Send] button

Pattern Graph
Displays segment level, segment time, and time signals.
(Refer to the next page)

Copy pattern: Copy the pattern currently displayed to another pattern No.

① **Click [Copy pattern]**

② **Select "Copy destination pattern number"**

③ **Click [OK]**

④ **Click [OK] and then [Send] button**

The pattern will not be copied unless the [Send] button is clicked.
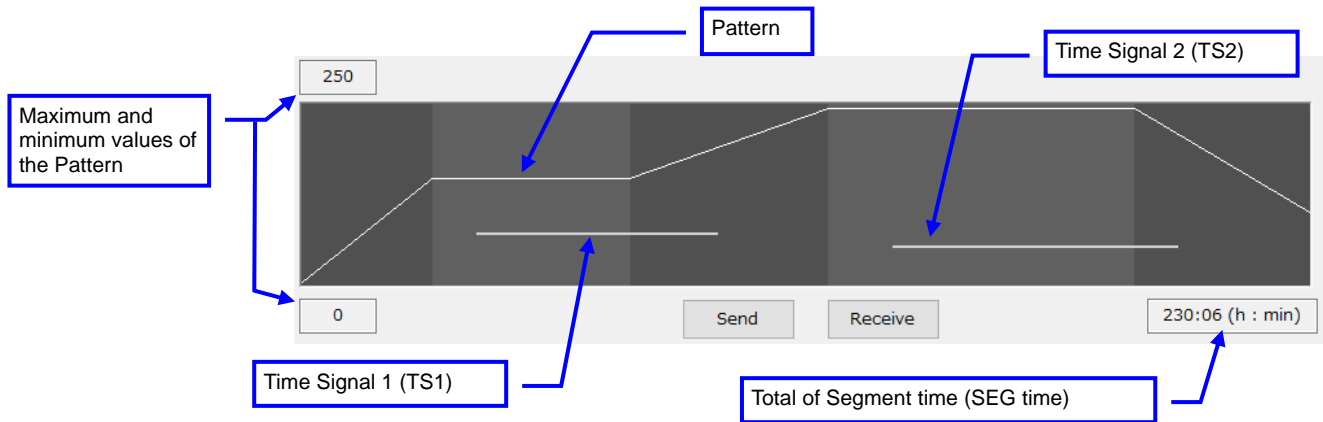
Pattern graph:

Pattern — Displayed according to the segment levels and time (SEG time). The number of displayed segments is determined by the Pattern end SEG number. The Segment width on the graph varies according to the Segment time length.

Maximum and minimum values of the Pattern graph
   The values will be automatically displayed adjusted to the maximum and minimum values of the Segment level.

Time signal
   Time signals are displayed adjusted to the Time signal setting.
   Start/End segments and the status of start/end time can be also displayed.
   Time signals 1 to 4 can be simultaneously displayed.

Total of Segment time (SEG time)
   The total Segment time (Program pattern time) is automatically displayed.

2. Switch the screen to the "Pattern setting (2)" screen, and set the program pattern referring to the setting example on page P. 8-9.
(Enter values in the fields surrounded by a red frame)
When you finished setting up the program pattern, click the [Send] button to write the set data to the PZ400/PZ900.

Click "Patten setting (2)"

Event selection
Events can be enabled/disabled individually in each segment.

[Send] button

8.5 Program Operation

■ Starting Program Operation

● Starting the program operation after completing the program setting

1. Switch the screen to the Driving operation screen, and select a desired execution pattern.

① **Click "Driving operation"**

② **Select "Execution pattern number"**

2. Switch the operation mode to "1: Program control mode (RUN)".

① **Select "1: Program control mode (RUN)"**

② **Click [OK]**

③ **The mode is switched to the Program control mode (RUN), and the program control starts**
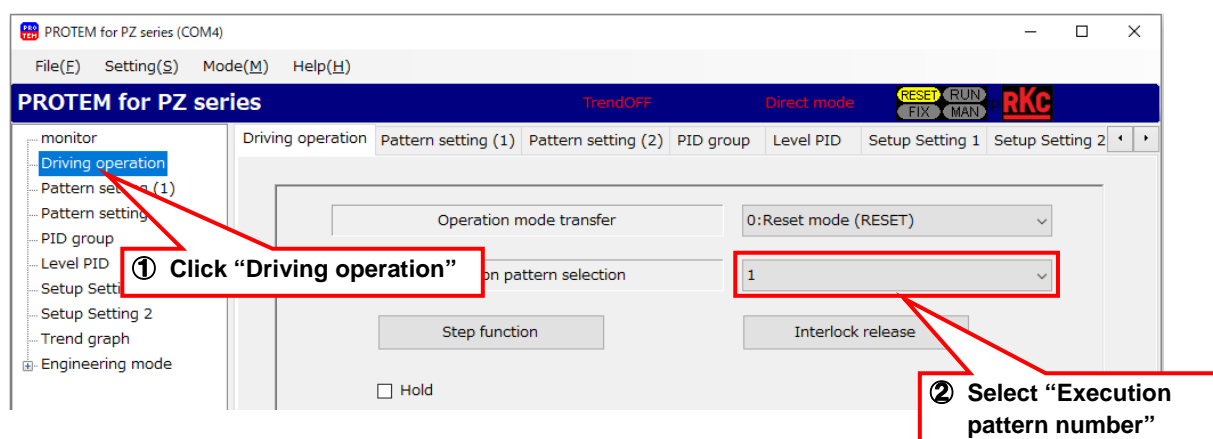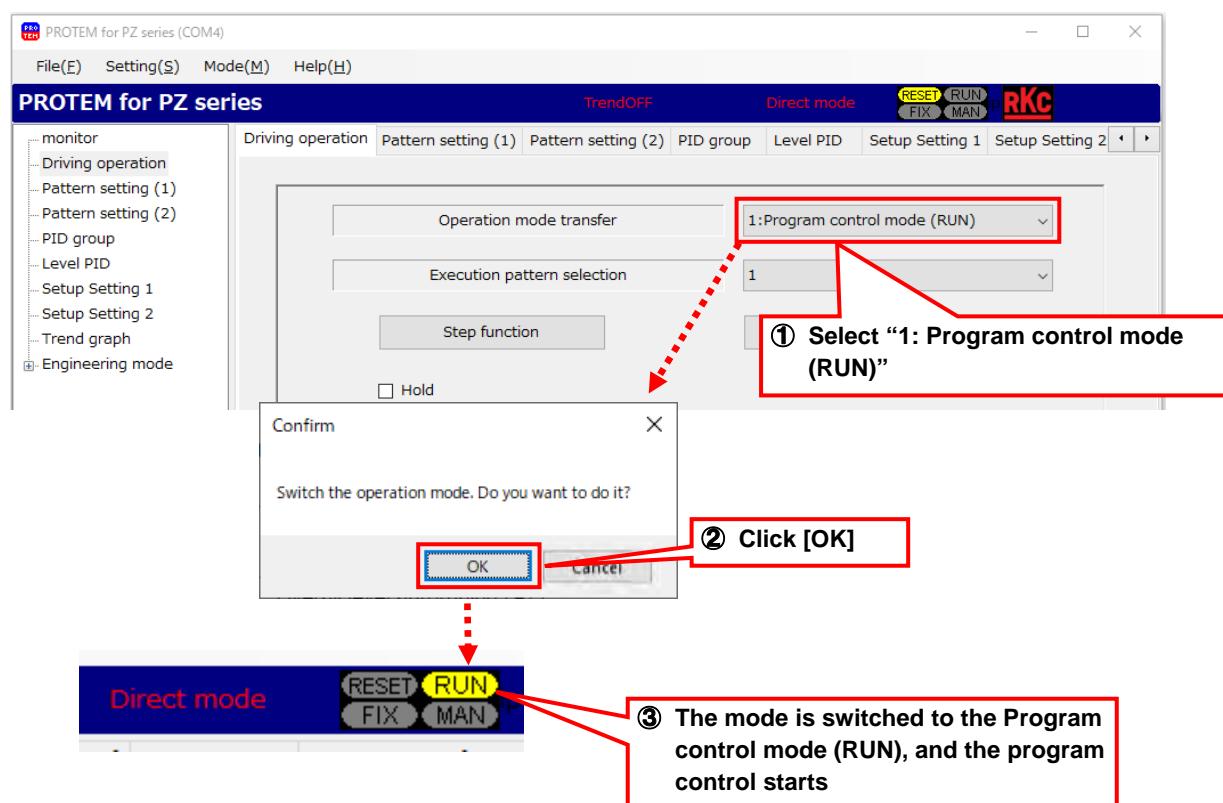
● Starting Program Operation using the Data of PZ400/PZ900

1. Start the software in the Direct mode.
   Starting in the Direct mode will read out the data from the PZ400/PZ900 into the Setting tool.
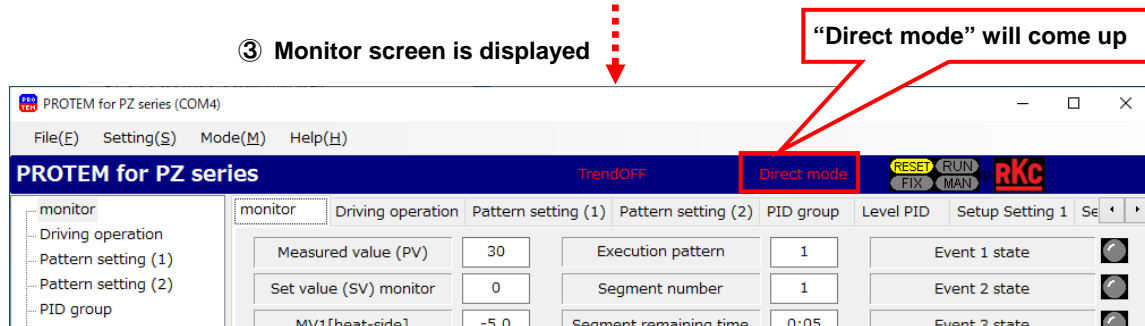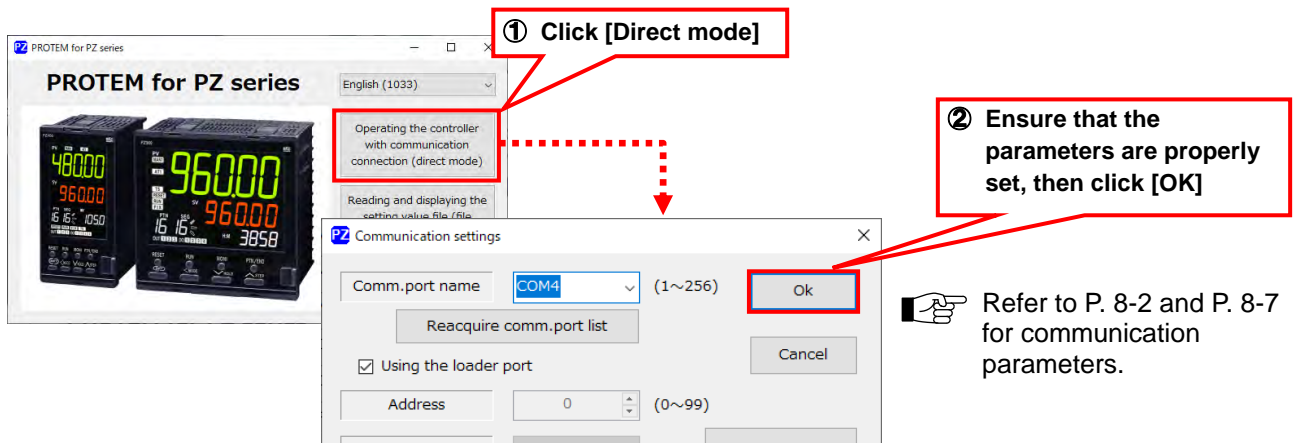
① **Click [Direct mode]**

② **Ensure that the parameters are properly set, then click [OK]**

Refer to P. 8-2 and P. 8-7 for communication parameters.

③ **Monitor screen is displayed**

"Direct mode" will come up

2. Switch the screen to the Driving operation screen, select a desired execution pattern, and switch the mode to the Program control mode (RUN).

③ **Select "1: Program control mode (RUN)"**

① **Click "Driving operation"**

② **Select "Execution pattern number"**

④ **Click [OK] to start the program operation**

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● Starting the program control with the data stored in the settings file

1. Read the settings file of PZ400/PZ900 (extension p26) stored in the PC into the setting tool.

① **Click [File mode]**

② **Select a file and double click it**

③ **Monitor screen is displayed**

"File mode" will come up

2. Make the bulk setting of the data in the settings file (extension p26) extracted in the Setting tool to the PZ400/PZ900.

① **Click "Bulk setting (PC→Controller)"**

② **Click [Yes]**
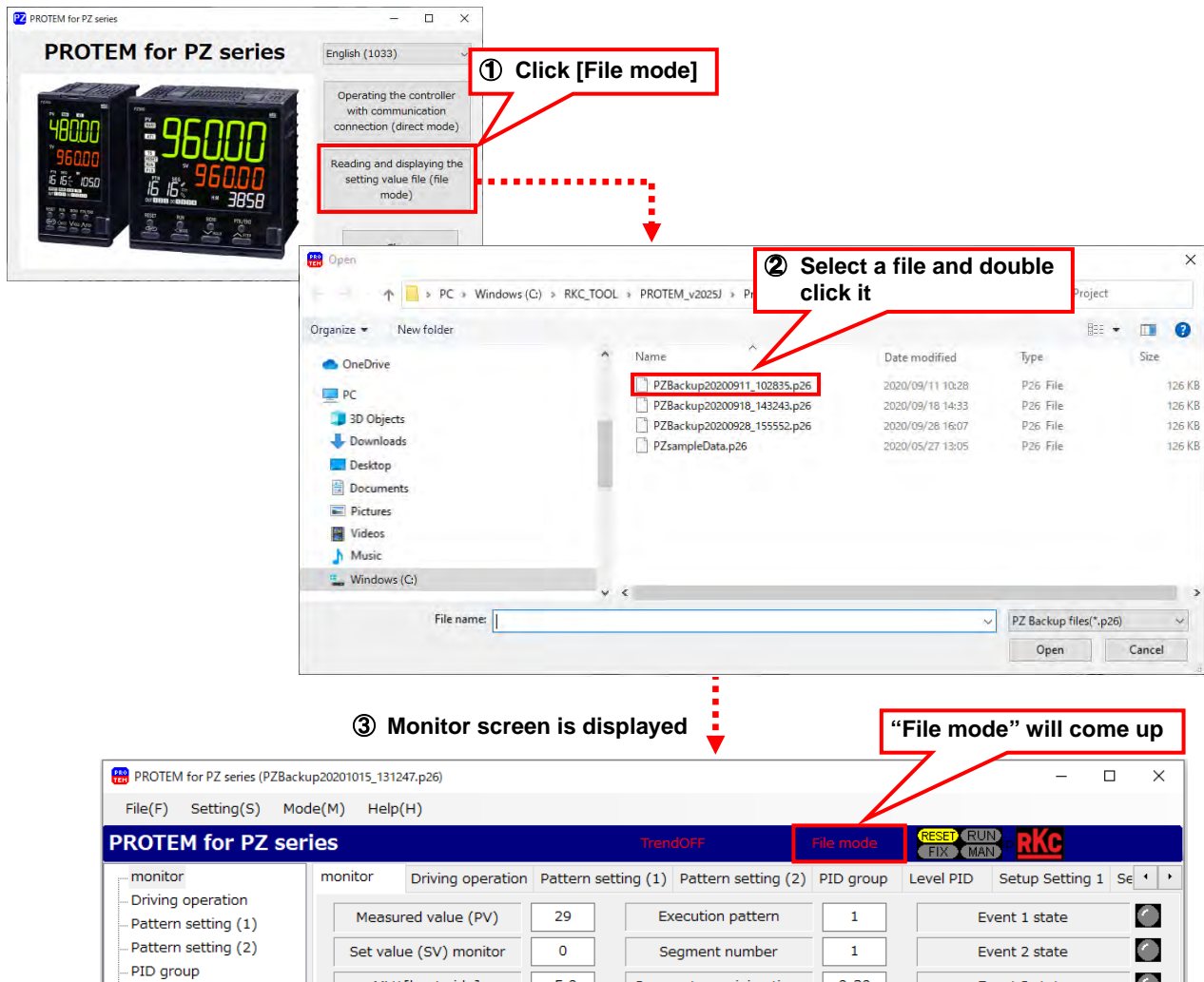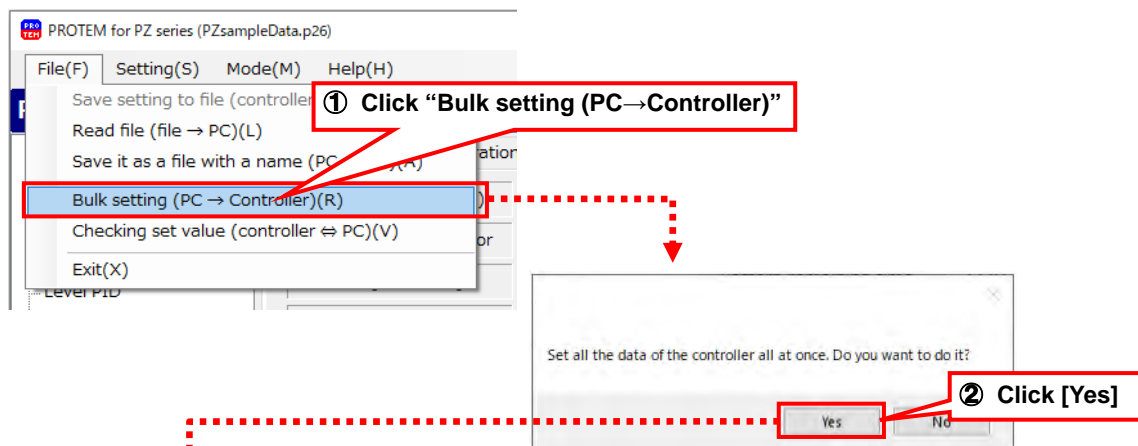
Continued on the next page

Continued from the previous page

③ **Ensure that the parameters are properly set, then click [OK]**

Refer to P. 8-2 and P. 8-7 for communication parameters.

TIPS

Bulk setting of the data may take a few minutes to over 10 minutes.
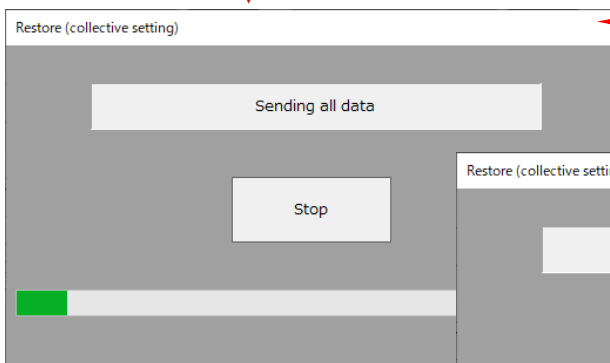
④ **Start sending data from the Setting tool to the PZ400/PZ900**
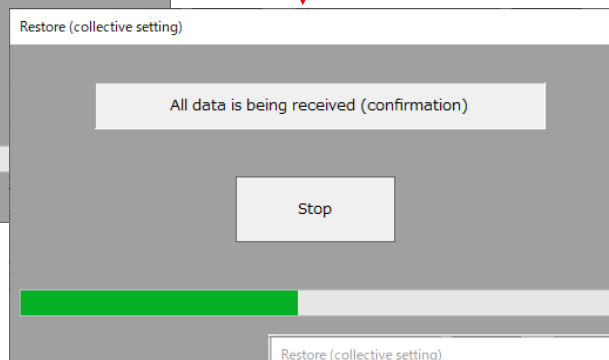
⑤ **Verification results between the sent and the received data will be displayed at the completion of communication**

⑥ **Click [×] to close the verification result**

3. Switch to the Direct mode.

① **Click "Direct Mode"**

② **Ensure that the parameters are properly set, then click [OK]**

☞ Refer to P. 8-2 and P. 8-7 for communication parameters.

③ **Monitor screen is displayed**

"Direct mode" will come up

4. Switch the screen to Driving operation screen, select a desired execution pattern, and switch the mode to the Program control mode (RUN).

③ **Select "1: Program control mode (RUN)"**

① **Click "Driving operation"**

② **Select "Execution pattern number"**

④ **Click [OK] to start the program operation**

■ Monitoring the Program Operation

You can monitor the operation status on the Monitor screen.
In case of Repeated receive, you can monitor the value that changes over time.

Click "monitor"

Lamps will turn on according to the status.

Pattern

Time signal

The segment under execution will be displayed in another color.
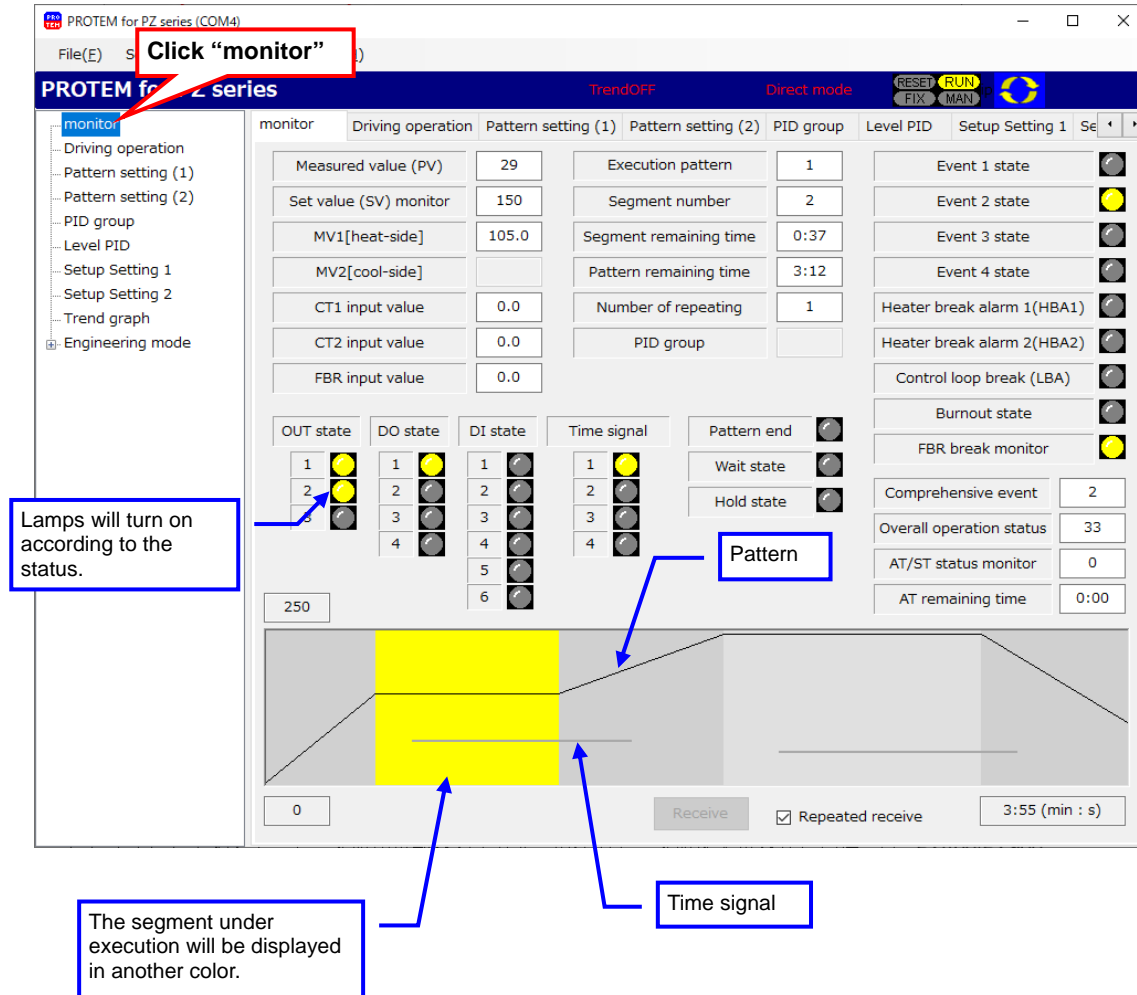
● **Update Monitor screen**

The Monitor screen receives monitored values from the PZ400/PZ900 when the screen is switched. If the Monitor screen is left displayed, the monitored values will not be updated. To show the latest monitored values, read out the new monitored values from the PZ400/PZ900.

Receive

Click the [Receive] button to update the monitor values to the latest ones.

Repeated receive

Check the "Repeated receive" to regularly update the monitor values.

8.6 Trend Graph (Historical Trend)

The Setting tool allows the Measured value (PV), Set value (SV), Manipulated output value (MV) [Heating/Cooling] to be displayed in the historical trend (Trend graph). The historical trend data can be saved to the PC as a data file (in a CSV format).

■ Setting Up Trend Graph

Click "Trend Graph Settings"

Click [OK] after setting is finished

Click here to display options.

Enter a fixed part of your choice.
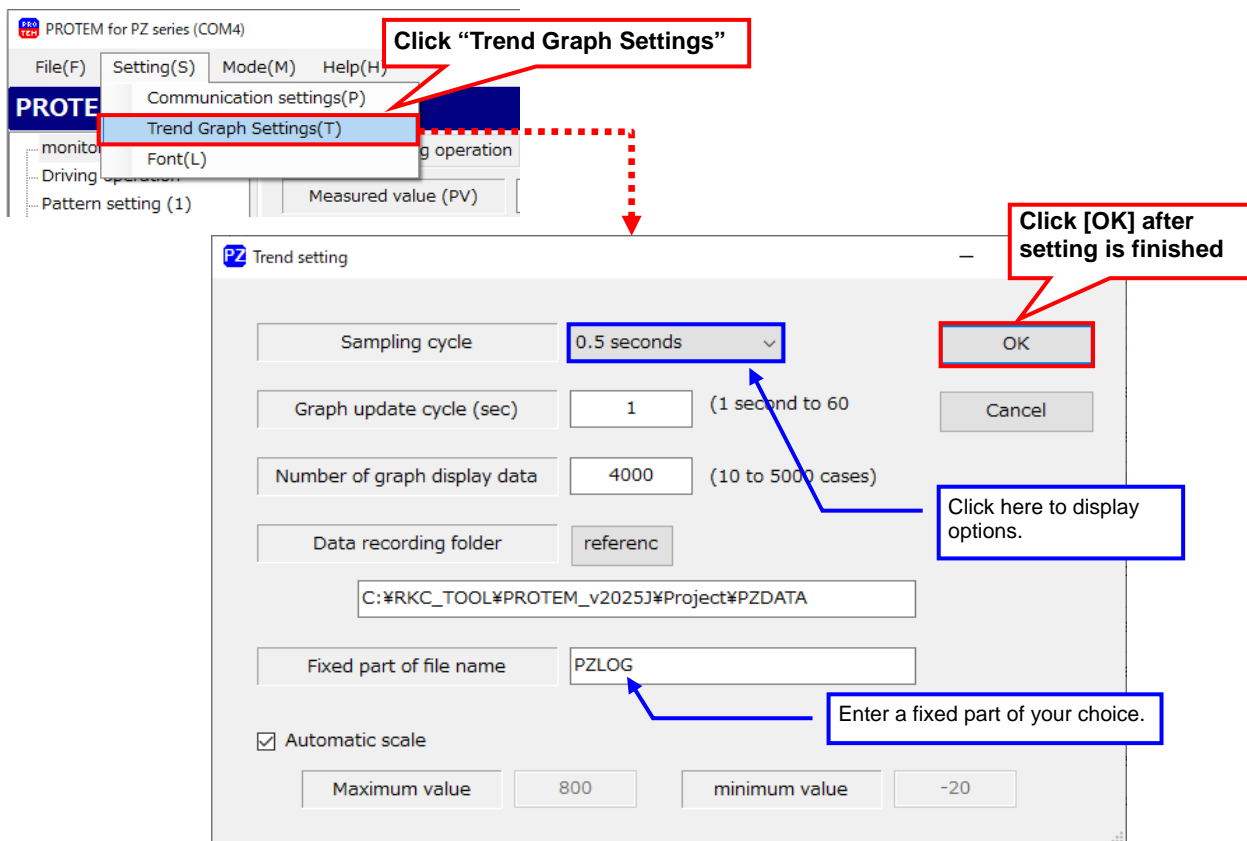
● **Trend graph settings**

Sampling cycle: Set the sampling cycle of the trend graph.
                       Setting range: 0.5 seconds   3 seconds   10 seconds   30 seconds
                                      1 seconds   4 seconds   15 seconds   60 seconds
                                      2 seconds   5 seconds   20 seconds

Graph update cycle (sec):
                       Set the update cycle of the trend graph.
                       Setting range: 1 to 60 sec.

Number of graph display data:
                       Set the maximum number of data in graph that can be displayed in a single trend graph.
                       Setting range: 10 to 5000

Data recording folder: The data in the trend graph can be saved to the PC as a data file (in a CSV format).
                        You can designate a preferred location for the folder. Click [reference (browse)] button to select the folder.

(Continued from the previous page)
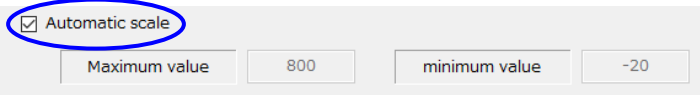
Fixed part of file name: The name of the data saving file (CSV format) consists of the fixed part and the date/time when the trend recording was started. You can define the fixed part to your preference.

File name (example)

PZLOG20200925_164245.csv   Record started at 16:42:45 on September 25th, 2020

Fixed   Date   Time
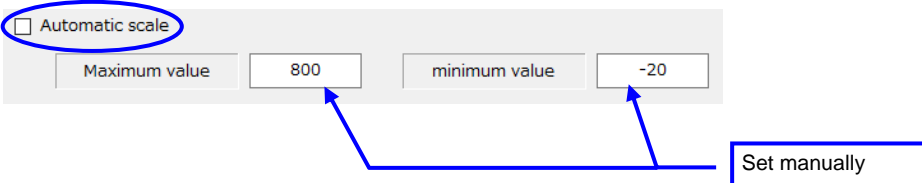
Automatic scale: Check "Automatic scale" to automatically set the trend graph in accordance with the level. When this function is unchecked, you need to manually set the maximum and the minimum value.

• Checked

☑ Automatic scale

Maximum value   800   minimum value   -20

• Unchecked

☐ Automatic scale

Maximum value   800   minimum value   -20

Set manually

■ Starting/Stopping Recording the Trend Graph

The following procedure shows how to record the program progress in the trend graph.
(Assuming that the program setting and the trend graph setting are finished)

1. Switch the mode to the Direct mode.
The trend graph recording cannot be started unless the mode is set to the Direct mode.

Click "Direct Mode"

2. Switch the screen to the Trend graph screen.
You can record four types of data; Set value (SV), Measured value (PV), MV1 (heat-side), and MV2 (cool-side).
You can choose to record or not to record each of the data individually.

Click "Trend graph"

Recording is possible by checking applicable items.

TIPS

Nothing will be displayed when you start the Setting tool and switch the screen to the Trend graph screen for the first time.

3. Start recording the trend graph.
Check the check box of "Recording and graph display", and recording the historical trend will start.
Simultaneously with the start of recording, scales and data will be displayed on the screen.

Check here

4. Start program operation.
Switch the screen to the Driving operation screen, select a desired execution pattern, and switch the mode to the Program control mode (RUN).

③ Select "1: Program control mode (RUN)"

① Click "Driving operation"

② Select "Execution pattern number"

④ Click [OK] to start the program operation

TIPS

If you start the trend graph after you have started the program operation, recording the program operation from the start is not possible.

5. The following is a screen during the trend graph recording.

Set the vertical scale to Automatic, then the scale will automatically change itself according to the maximum and the minimum level.

Lapse of time

Start recording

Start program operation

The trend graph screen shows the historical trend from the start to the stop on a single screen.

In accordance with the accumulation of data over time, the graph will be visually shifted to the left.

6. Stop the Trend graph.
Uncheck the check box of "Recording and graph display", and recording the historical trend will stop.

Uncheck

TIPS

You can also start/stop the Trend graph under "Mode" in the menu.

8.7 Data Management

With the Setting tool you can save the settings of the PZ400/PZ900 to the PC or retrieve a settings file (extension p26) from the PC for a bulk setting. You can also verify if the settings file (extension p26) matches the set data of the PZ400/PZ900.

■ Description of Data Management

The details of the data management of the Setting tool may vary depending on whether you are in the Direct mode or in the File mode. The item in the box shown in the following figure is the executable command found under "File" in the menu.

● In case of Direct mode

PZ400/PZ900
(Controller)

Setting tool

Settings file
(Extension p26)

Receive [1]

Save setting to file
(controller→file)

Send [2]

Refer to P. 8-28

Data from controller
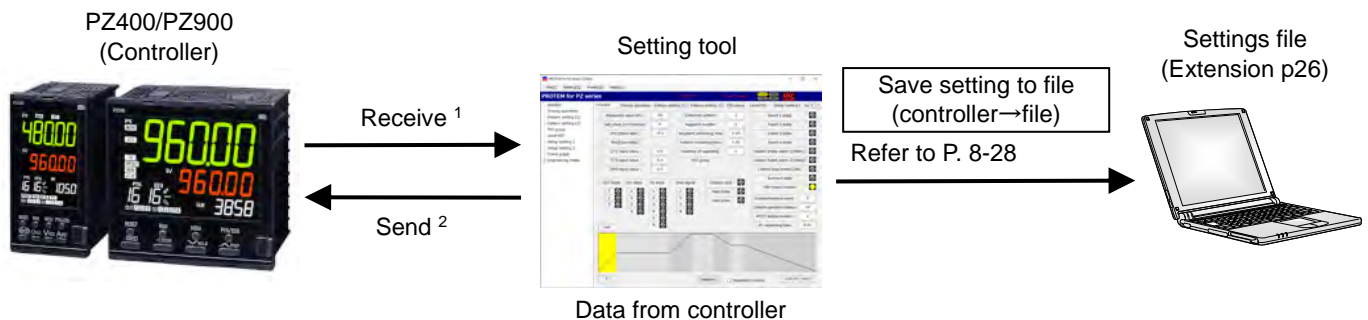
[1] Data will be received when the Direct mode is selected at the start-up, when the screen of the Setting tool has been switched, or when the data is sent.

[2] Data will be sent when the [Send] button in the Setting tool is clicked.
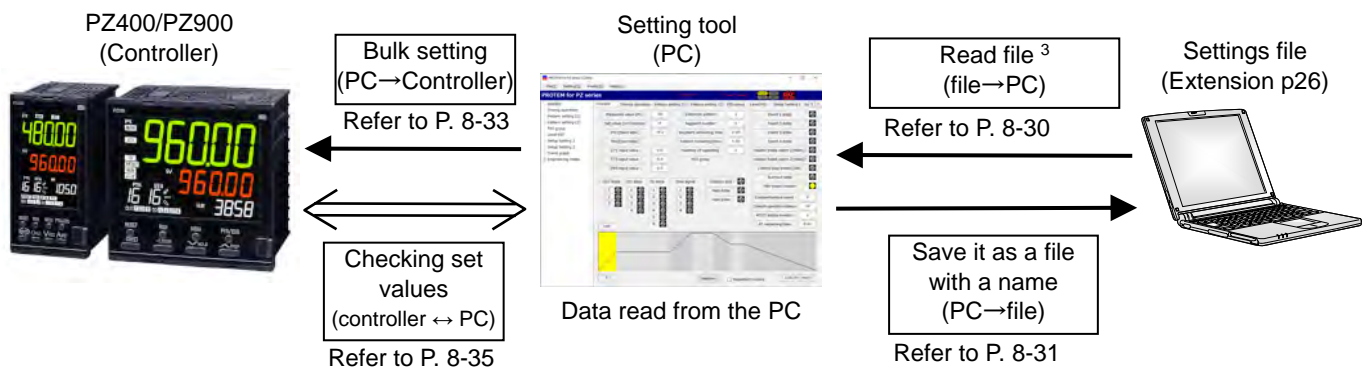
● In case of File mode

PZ400/PZ900
(Controller)

Setting tool
(PC)

Settings file
(Extension p26)

Bulk setting
(PC→Controller)

Read file [3]
(file→PC)

Refer to P. 8-33

Refer to P. 8-30

Checking set
values
(controller ↔ PC)

Data read from the PC

Save it as a file
with a name
(PC→file)

Refer to P. 8-35

Refer to P. 8-31

[3] File will be read when the File mode is selected at the start-up or when the mode is switched from the Direct mode to the File mode, in addition to the "Read file" command.

■ Saving Set Data of PZ400/PZ900 to the PC
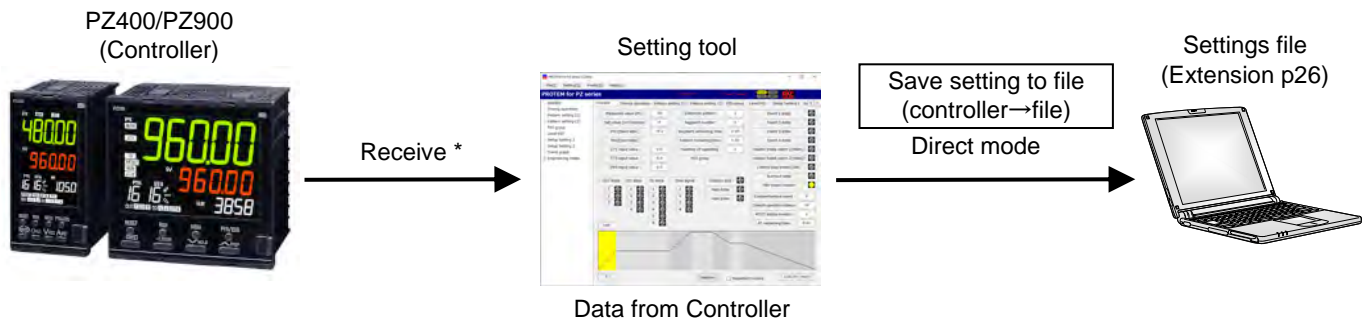
PZ400/PZ900
(Controller)

Setting tool

Save setting to file
(controller→file)
Direct mode

Settings file
(Extension p26)

Receive *

Data from Controller

* Data will be received when the Direct mode is selected at the start-up, when the screen of the Setting tool has been switched, or when the data is sent.

1. Switch the mode from the File mode to the Direct mode. Or you can select the Direct mode at the start.

① Click "Direct Mode"

Mode(M)   Help(H)
  Direct Mode(D)
  File Mode(F)
  Trend Graph ON(N)
  Trend Graph OFF(F)
  Allow change of engineer mode(E)
  Show Extended Engineering Mode Item(X)

① Click [Direct mode]

PROTEM for PZ series

PROTEM for PZ series   English (1033)

Operating the controller with communication connection (direct mode)

Reading and displaying the setting value file (file mode)

Close

② Ensure that the parameters are properly set, then click [OK]

PZ Communication settings

Comm.port name   COM4   (1～256)   Ok

Reacquire comm.port list

☑ Using the loader port   Cancel

Address   0   (0～99)

☞ Refer to P. 8-2 and P. 8-7 for communication parameters.

2. Click "File" → "Save setting to file (controller → file)" in the menu.

① Click "Save setting to file (controller → file)"

PROTEM for PZ series (COM4)

File(F)   Setting(S)   Mode(M)   Help(H)
  Save setting to file (controller → file)(B)
  Read file (file → PC)(L)
  Save it as a file with a name (PC → file)(A)
  Bulk setting (PC → Controller)(S)
  Checking set value (con...)
  Exit(X)

It reads all data of the controller and saves it in a file. Do you want to do it?

② Click [Yes]

Yes   No

TIPS

Reception of the data may take a few minutes.

3. The screen of "Backup (file save)" appears and the PC starts receiving the data of the PZ400/PZ900.
The screen of "Save As" will be displayed. Save the data with a desired file name to a desired folder.
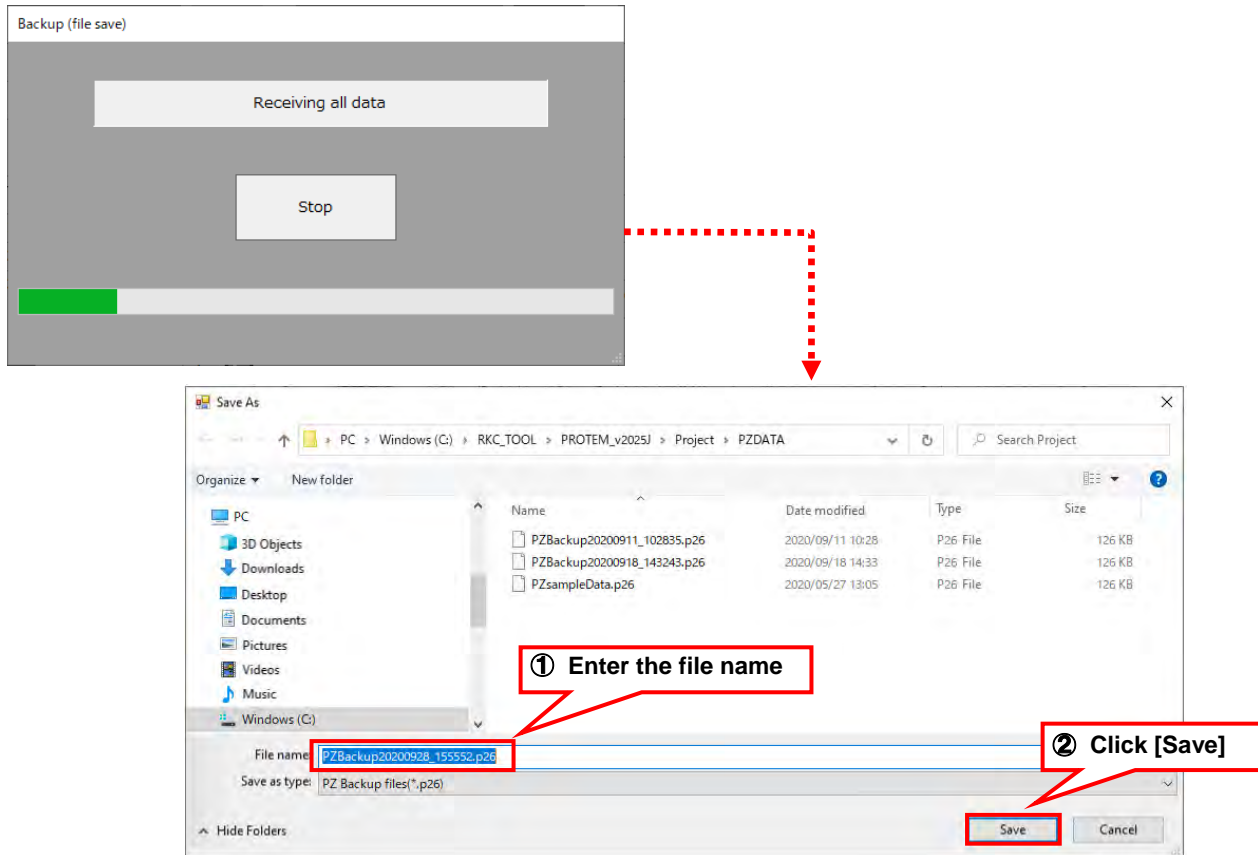
This completes the saving of the settings file (extension p26).

■ Reading the Data of the Settings File into the Setting Tool

Settings file
(Extension p26)

Read file
(file→PC)

Direct mode *
File mode

Read the data of the settings file stored in the PC
into the Setting tool.

* When "Read file" is executed in the Direct
mode, the mode will be automatically switched
to the File mode.

Setting tool
(PC)

Screen after reading a file

● Click "File" → "Read file (file→PC)" in the menu.
  The screen of "Open" will be displayed. Select a file and double click it.

[Direct mode]

PROTEM for PZ series (COM4)

File(F)   Setting(S)

① **Click "Read file (file → PC)"**

Save setting to file (contro...→...file)(B)
Read file (file → PC)(L)
Save it as a file with a name (PC → file)(A)
Bulk setting (PC → Controller)(R)
Checking set value (controller ⇔ PC)(V)
Exit(X)

Level PID

[File mode]

PROTEM for PZ series (P...

File(F)   Setting(S)

① **Click "Read file (file → PC)"**

Save setting to file (contro...→...file)(B)
Read file (file → PC)(L)
Save it as a file with a name (PC → file)(A)
Bulk setting (PC → Controller)(R)
Checking set value (controller ⇔ PC)(V)
Exit(X)

Level PID

Open

PC → Windows (C:) → RKC_TOOL → PROTEM_v2025J → Project → PZDATA   Search Project

Organize ▾   New folder

OneDrive
PC
3D Objects
Downloads
Desktop
Documents
Pictures
Videos
Music
Windows (C:)

Name   Date
PZBackup20200911_102835.p26
PZBackup20200918_143243.p26   2020/09/18 14:33   P26 File   126 KB
PZBackup20200928_155552.p26   2020/09/28 16:07   P26 File   126 KB
PZsampleData.p26   2020/05/27 13:05   P26 File   126 KB

② **Select a file and double click it**

File name: | ▾   PZ Backup files(*.p26) ▾
                                          Open   Cancel

This completes reading the setting tool of the settings file (extension p26).

■ Saving the Data of the Setting Tool to the PC

This function is used to modify and save the data read from the data of the settings file stored in the PC (extension p26).

Setting tool
(PC)

Save it as a file with a
name (PC→file)

Settings file
(Extension p26)

File mode

Save the setting data of the Setting tool
to the PC

Screen after reading a file

1. Switch the mode from Direct mode to File mode. Alternatively, read the settings file of PZ400/PZ900 (extension p26) stored in the PC into the Setting tool when starting the Setting tool. The screen of "Open" will be displayed. Select a file and double click it.

① Click "File Mode"

Mode(M)   Help(H)
✓ Direct Mode(D)
   File Mode(F)
   Trend Graph ON(N)
✓ Trend Graph OFF(F)
   Allow change of engineer mode(E)
   Show Extended Engineering Mode Item(X)

① Click [File mode]

Reading and displaying the
setting value file (file
mode)

② Select a file and double click it

Open
PC › Windows (C:) › RKC_TOOL › PROTEM_v2025J › Project › PZDATA

Name
PZBackup20200911_102835.p26
PZBackup20200918_143243.p26   2020/09/18 14:33   P26 File   126 KB
PZBackup20200928_155552.p26   2020/09/28 16:07   P26 File   126 KB
PZsampleData.p26   2020/05/27 13:05   P26 File   126 KB

File name: PZ Backup files(*.p26)
                                              Open   Cancel
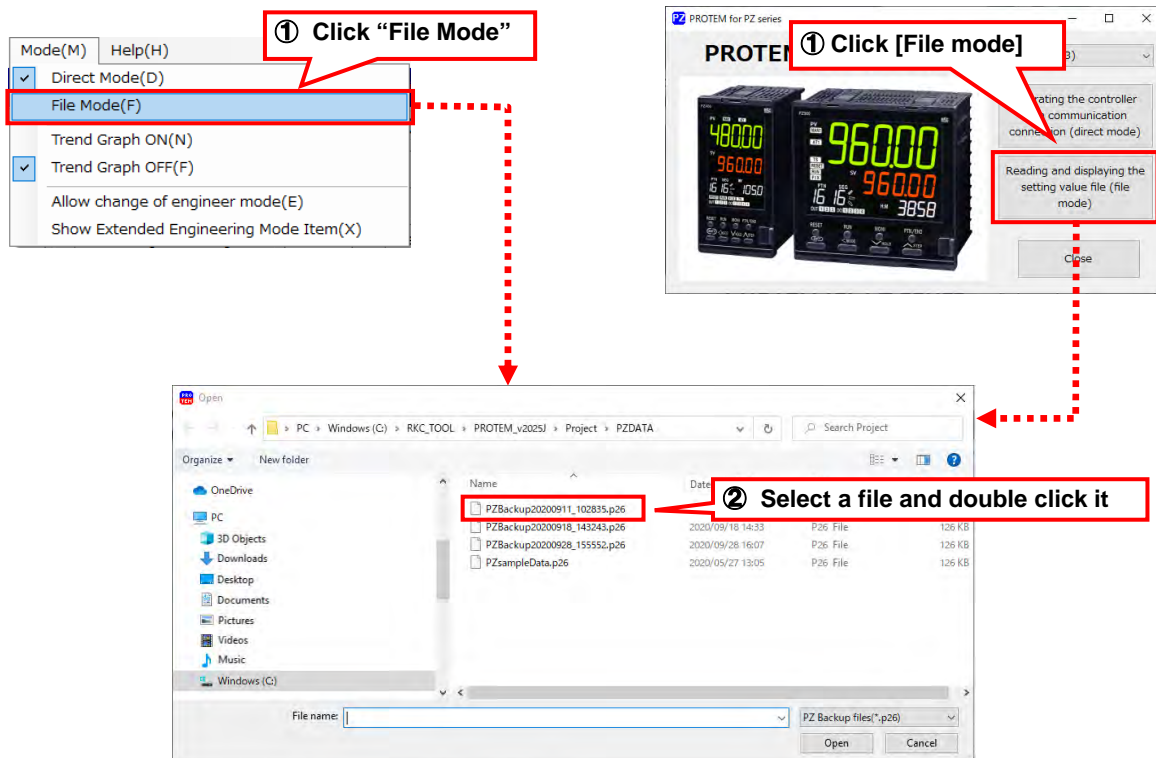
2. Make necessary setting changes of the data.

3. Click "File" → "Save it as a file with a name (PC → file)" in the menu.
   The screen of "Save As" will be displayed. Save the file to any desired folder.

This completes the saving of the settings file (extension p26).

■ Writing the Data of the Setting Tool to the PZ400/PZ900 in a Batch

Setting tool
(PC)

Bulk setting
(PC→Controller)

File mode

PZ400/PZ900
(Controller)

Screen after reading data

Write the data of the setting tool to
the PZ400/PZ900 in a batch

1. Switch the mode from Direct mode to File mode. Alternatively, read the settings file of PZ400/PZ900 (extension p26) stored in the PC into the Setting tool when starting the Setting tool. The screen of "Open" will be displayed. Select a file and double click it.

Mode(M)   Help(H)

① Click "File Mode"

✓ Direct Mode(D)

File Mode(F)

Trend Graph ON(N)

✓ Trend Graph OFF(F)

Allow change of engineer mode(E)

Show Extended Engineering Mode Item(X)

PROTEM for PZ series

PROTEM for

① Click [File mode]

Connect the controller with communication connection (direct mode)

Reading and displaying the setting value file (file mode)

Close

Open

PC › Windows (C:) › RKC_TOOL › PROTEM_v2025J › Project › PZDATA

Search Project

Organize ▾   New folder

OneDrive

PC

3D Objects

Downloads

Desktop

Documents

Pictures

Videos

Music

Windows (C:)

Name	Date
PZBackup20200911_102835.p26
PZBackup20200918_143243.p26	2020/09/18 14:33 P26 File 126 KB
PZBackup20200928_155552.p26	2020/09/28 16:07 P26 File 126 KB
PZsampleData.p26	2020/05/27 13:05 P26 File 126 KB

② Select a file and double click it

File name:

PZ Backup files(*.p26)

Open   Cancel

2. Make the bulk setting of the data in the settings file (extension p26) extracted in the Setting tool to the PZ400/PZ900.

PROTEM for PZ series (PZBackup20201015_131247.p26)

File(F)   Setting(S)   Mode(M)   Help(H)

Save setting to file (controller → file)(B)

Read file (file → PC)(L)

Save it as a file with a name (PC→...)(...)

Bulk setting (PC → Controller)(R)

Checking set value (controller ⇔ PC)(V)

Exit(X)

Lever PID

① Click "Bulk setting (PC → Controller)"

IMT01D11-E7

Continued from the previous page

Set all the data of the controller all at once. Do you want to do it?

Yes No

② **Click [Yes]**

③ **Ensure that the parameters are properly set, then click [OK]**

PZ Communication settings ×

Comm.port name COM4 (1~256) Ok

Reacquire comm.port list

☑ Using the loader port

Address 0 (0~99)

Cancel

☞ Refer to P. 8-2 and P. 8-7 for communication parameters.

TIPS

Bulk setting of the data may take a few minutes to over 10 minutes.

④ **The data will be started to be sent to the PZ400/PZ900 from the Setting tool**

Restore (collective setting)

Sending all data

Stop

Restore (collective setting)

All data is being received (confirmation)

Stop

Restore (collective setting)

Communication completed

Stop

⑤ **Verification results between the sent and the received data will be displayed at the completion of communication**

PZ Verification result — □ ×

The comparison result of the transmitted setting value and the received setting value for confirmation

All matched.

⑥ **Click [×] to close the verification results**

This completes the bulk setting of the settings file (extension P26).

■ Verifying if the Data of the Setting Tool Matches the Data of the PZ400/PZ900

PZ400/PZ900
(Controller)

Checking set values
(Controller↔PC)

File mode

Verify the data of the Setting tool
and the data of the PZ400/PZ900

Setting tool
(PC)

Screen after reading data

1. Switch the mode from Direct mode to File mode. Alternatively, read the settings file of PZ400/PZ900 (extension p26) stored in the PC into the Setting tool when starting the Setting tool. The screen of "Open" will be displayed. Select a file and double click it.

① Click "File Mode"

Mode(M) Help(H)
✓ Direct Mode(D)
    File Mode(F)
    Trend Graph ON(N)
✓ Trend Graph OFF(F)
    Allow change of engineer mode(E)
    Show Extended Engineering Mode Item(X)

① Click [File mode]

PROTEM for PZ series

PROTE

...ating the controller
communication
conne...on (direct mode)

Reading and displaying the
setting value file (file
mode)

Close

Open

PC ▸ Windows (C:) ▸ RKC_TOOL ▸ PROTEM_v2025J ▸ Project ▸ PZDATA

Search Project

Organize ▾   New folder

OneDrive
PC
3D Objects
Downloads
Desktop
Documents
Pictures
Videos
Music
Windows (C:)

Name

PZBackup20200911_102835.p26
PZBackup20200918_143243.p26
PZBackup20200928_155552.p26
PZsampleData.p26

Da

20

2020/09/28 16:07   P26 File   126 KB
2020/05/27 13:05   P26 File   126 KB

② Select the file to compare and double click it

File name:

PZ Backup files(*.p26)

Open   Cancel

2. Click "File" → "Checking set value (controller ↔ PC)" in the menu.

① **Click "Checking set value (controller ↔ PC)"**

PROTEM for PZ series (PZBackup20201015_131247.p26)

File(E)   Setting(S)   Mode(M)   Help(H)

Save setting to file (controller...)
Read file (file → PC)(L)
Save it as a file with a name (PC → ...)
Bulk setting (PC → Controller)(K)
Checking set value (controller ⇔ PC)(V)
Exit(X)

② **Click [Yes]**

Read and compare all data of the controller. Do you want to do it?

Yes   No

③ **Ensure that the parameters are properly set , then click [OK]**

Communication settings

Comm.port name   COM4   (1~256)   Ok
            Reacquire comm.port list   Cancel
☑ Using the loader port
Address   0   (0~99)

☞ Refer to P. 8-2 and P. 8-7 for communication parameters.

TIPS

Verification of the data may take a few minutes.

Verify (set value verification)

Receiving all data

Stop

Verify (set value verification)

Communication completed

Stop

④ **Display verification result**

Click [×] to close the verification result.

Verification result

Comparison result between PC screen setting value and received setting value

Set value (SV) in Fixed set point control mode(S1) personal computer: 0.0 controller: 0
Wait zone high(ZW) personal computer: 0.0 controller: 0
Wait zone low(ZX) personal computer: 0.0 controller: 0
PV bias(PB) personal computer: 0.0 controller: 0
AT bias(GB) personal computer: 0.0 controller: 0
Determination point of external disturbance(G8) personal computer: -1.0 controller: -1
Time unit of the setting(X0) personal computer: 0 controller: 1
Decimal point position(XU) personal computer: 1 controller: 0
Input range high(XV) personal computer: 800.0 controller: 800
Input range low(XW) personal computer: 0.0 controller: 0
Input error determination point (high)(AV) personal computer: 840.0 controller: 840
Input error determination point (low)(AW) personal computer: -40.0 controller: -40
Retransmission output 3 scale high(EV) personal computer: 800.0 controller: 800
Retransmission output 3 scale low(EW) personal computer: 0.0 controller: 0
DO1 function selection(E4) personal computer: 1 controller: 7
DO2 function selection(E5) personal computer: 1 controller: 8
DO3 function selection(E6) personal computer: 7 controller: 0
DO4 function selection(E7) personal computer: 8 controller: 0
DO1 logic calculation selection(W4) personal computer: 1 controller: 0
DO2 logic calculation selection(W5) personal computer: 2 controller: 0

TIPS

The verification result cannot be saved. If necessary, copy the text data and save it in a proper manner.

9. Getting Started With Setting Tool for PF900 Series

9.1 Preparation

■ Starting Setting Tool for the PF900 Series

Start the Setting Tool for PF900 series in the following procedure.

① Click [Setting Tool for PF900 series]

TIPS

You can choose a language from the following:
"Japanese (1041)"
"English (1033)"
"Simplified Chinese (2052)"

② Choose a mode
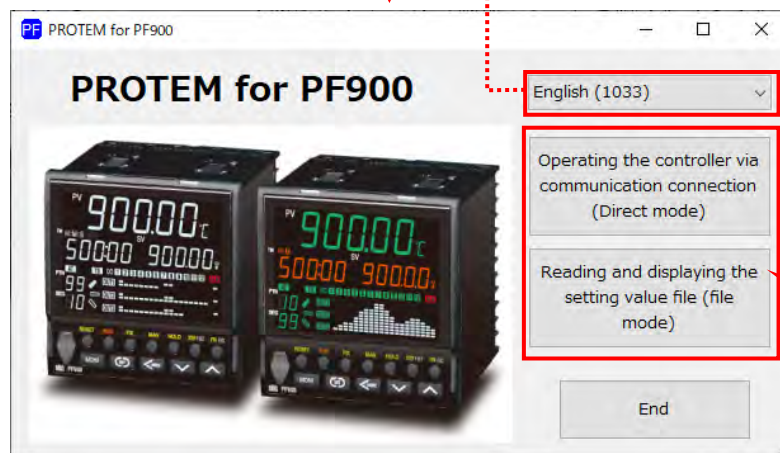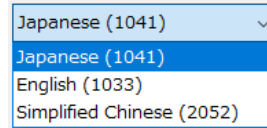
Direct mode: Choose this mode to monitor or modify the data of the PF900/PF901 connected to the network. Connect the PF900/PF901 to the PC, then click the [Direct Mode] button.

☞   ■ **If You Have Chosen the Direct mode** → Refer to P. 9-2

File mode: Choose this mode to open the settings file (extension p27) of the PF900/PF901 stored in the PC. This mode is for maintenance and is used to view the setting data or make a batch setting for recovery and copy.

☞   ■ **If You Have Chosen the File mode** → Refer to P. 9-3

■ If You Have Chosen the Direct Mode

Ensure that the PF900/PF901 is connected to the PC, then operate as follows. In this example, loader communication is used.

① **Click [Direct mode]**

② **Configure the communication port ***

  * Configure the communication port according to the PC you use. If you are not certain about the communication port number, click [See Device Manager] Ⓐ , then the "Device Manager" will be shown where you can check the port number.

③ **Check "Use loader port"**

④ **Click [OK]**

Communication parameters

Com.port name	COM4	(1~256)

Reacquisition of com.port list

☑ Use loader port

Address	0	(0~99)
Speed	38,400bps	
Data bits	8 bit	
Parity	None	
Stop bit	1 bit	
Send delay time	1	

Ⓐ See Device Manager

RKC standard communication protocol

Ok / Cancel

Device Manager
File Action View Help
- S3031
  - Audio inputs and outputs
  - Computer
  - Disk drives
  - Display adapters
  - DVD/CD-ROM drives
  - Firmware
  - Human Interface Devices
  - Imaging devices
  - Keyboards
  - Mice and other pointing devices
  - Monitors
  - Network adapters
  - Ports (COM & LPT)
    - Intel(R) Active Management Technology - SOL (COM3)
    - RKC USB-to-Serial Bridge2 (COM4)

TIPS

If you check "Use loader port", the communication environment will be preset for the loader communication. You don't have to set it by yourself.

⑤ **Monitor screen is displayed**

"Direct mode" will come up

PROTEM for PF900 (COM4)
File(F) Setting(S) Mode(M) Help(H)

PROTEM for PF900 Graph OFF [lblScrpLabel] Direct mode RESET RUN FIX MAN RKC

Monitor	Monitor	Operation	Set pattern 1	Set pattern 2	Time signal	PID memory	Event memory	Wait memory	Out

Operation
Parameter setting
  Set pattern 1
  Set pattern 2
  Time signal

Execution pattern selection	1	Hold state	Measured value (PV)	29
Segment number	1	Pattern end state	Set value (SV) monitor	0
Segment remaining time	0:30	Wait condition monitor	MV1 [heat-side]	-5.0

■ If You Have Chosen the File Mode

You can read the settings file of the PF900/PF901 (extension p27) stored in the PC.

① Click [File mode]

② Select a file and double click it

③ Monitor screen is displayed

"File mode" will come up
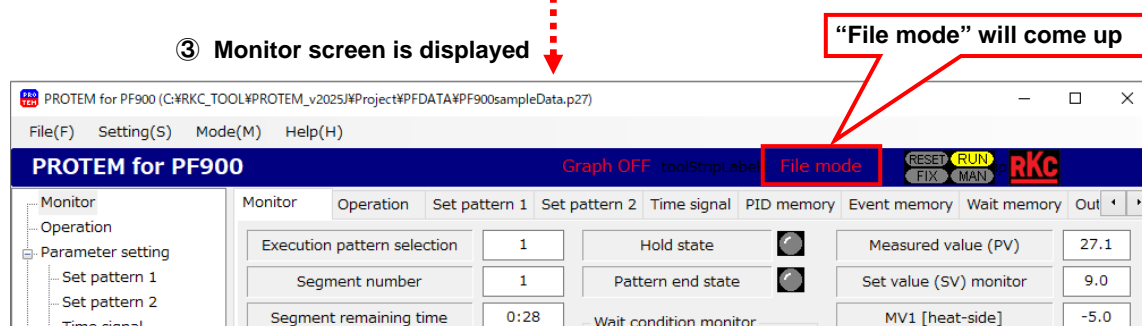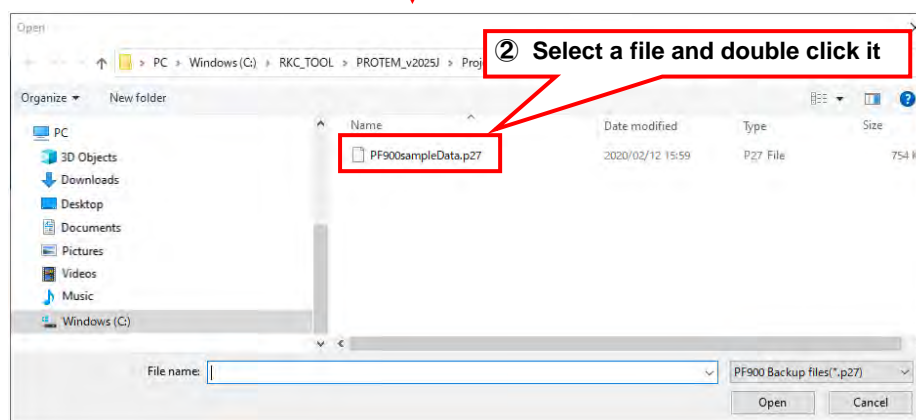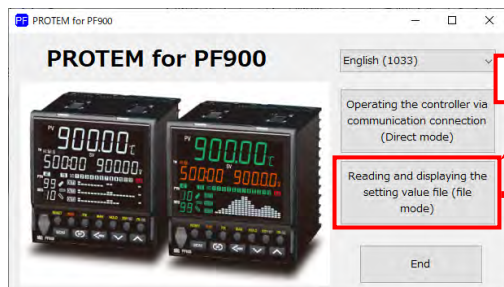
9.2 Screen Components and Menu Structure

■ Screen Components and Functions

Components common to each screen are explained.
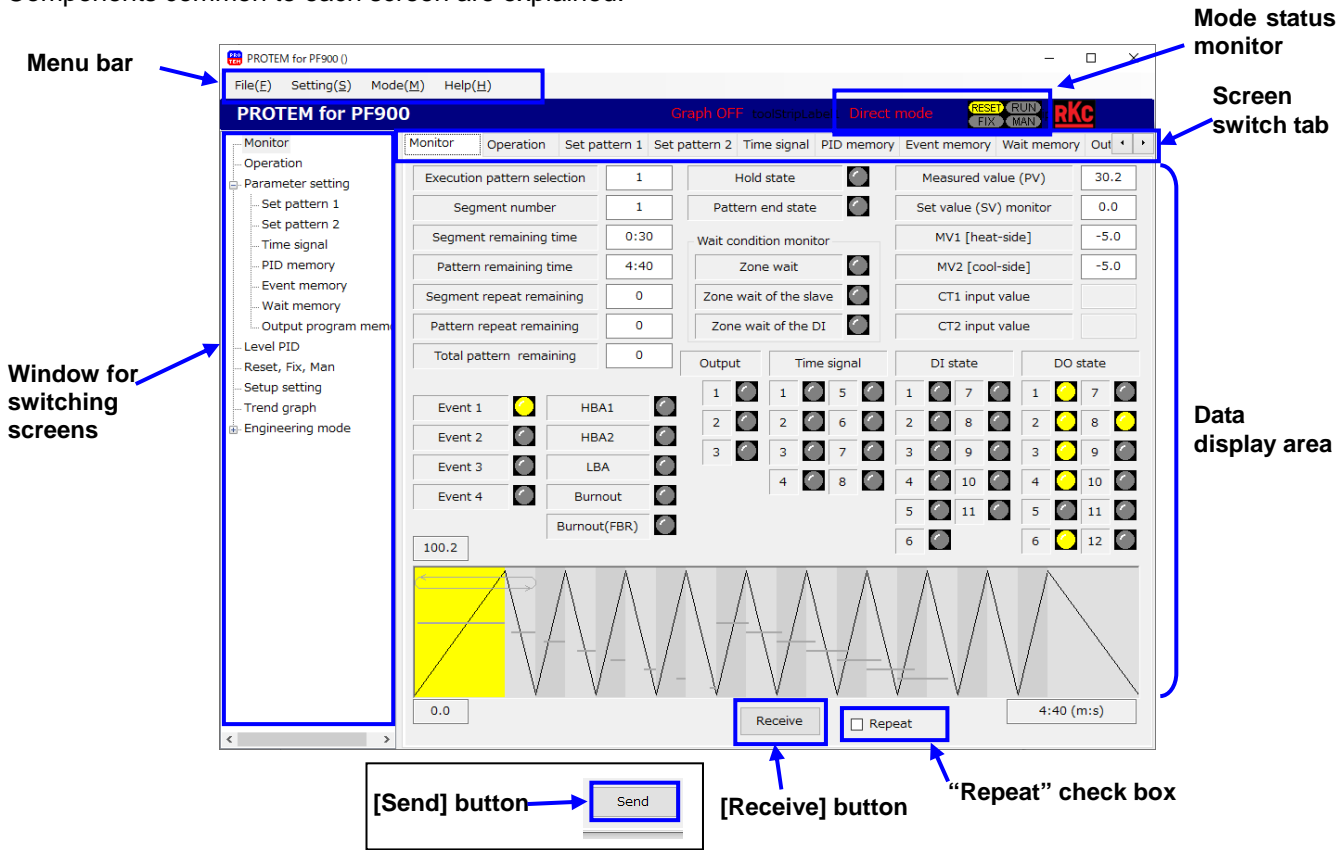
Menu bar: Used to start functions of the Setting tool.

☞ For more details, refer to ■ **Menu Structure** (P. 9-6)

Window for switching screens:
　　Screens in the window can be switched. Click the name of screen in the tree view window to switch screens.

Mode status monitor: Displays the mode status.
　　File mode: Displayed in the File mode.
　　Direct mode: Displayed in the Direct mode.
　　RESET: Lights during the Reset (RESET) mode.
　　RUN: Lights during the Program control (RUN) mode
　　FIX: Lights during the Fixed setpoint control (FIX) mode.
　　MAN: Lights during the Manual control (MAN) mode.

Screen switch tab: Clicking the tab will switch the screen.

Data display area: Displays various data.

[Send] button: Writes data set with the setting tool to the PF900/PF901. This button is displayed in the Direct mode.
　　(This button is not displayed on the Monitor screen and Operation screen.)

(Screen components continues)

[Receive] button   Used to read monitor and setting data of the PF900/PF901 to the Setting tool. This button is displayed in the Direct mode.

Data is read out from the PF900/PF901 when the Setting tool is started, the data is sent, or the screen is switched. If the screen is left as it is, the data will not be read out and the screen will not be updated. To display the latest monitored and set data, click [Receive] button to read out the data.

"Repeat" checkbox: The monitor data of the PF900/PF901 is automatically read out to the Setting tool at regular intervals (every few seconds).

To read out the data at the regular intervals, check "Repeat". This item is displayed on the Monitor and Operation screens.

■ Menu Structure

This page explains the commands launched from the menu on the menu bar.

Menu bar →

```
PROTEM for PF900 (COM4)
File(F)   Setting(S)   Mode(M)   Help(H)
```

● Files

Direct mode

```
File(F)   Setting(S)   Mode(M)   Help(H)
    Save settings to a file (controller → file)(B)
    Read file (File → PC)(L)
    Save as a file with a name (PC → File)((A)
    Batch setting (PC → Controller)(R)
    Set value comparison (controller ⇔ PC)(V)
    Exit(X)
```

File mode

```
File(F)   Setting(S)   Mode(M)   Help(H)
    Save settings to a file (controller → file)(B)
    Read file (File → PC)(L)
    Save as a file with a name (PC → File)((A)
    Batch setting (PC → Controller)(R)
    Set value comparison (controller ⇔ PC)(V)
    Exit(X)
```

Save settings to a file (Controller→File) [Direct mode]:

The setting data is read out from the PF900/PF901 and saved to the PC as a settings file (extension p27).

☞ Refer to ■ **Saving Set Data of the PF900/PF901 to the PC** (P. 9-29)

Read file (File→PC) [Direct mode and File mode]:

Read out the setting data stored in the PC (extension p27) into the Setting tool and switch the mode to the File mode.

☞ Refer to ■ **Reading the Data of the Settings File into the Setting Tool** (P. 9-31)

Save as a file with a name (PC→File) [File mode]:

The setting data of the Setting tool is saved to the PC as a settings file (extension p27).

☞ Refer to ■ **Saving the Data of the Setting Tool to the PC** (P. 9-32)

Batch setting (PC→Controller) [File mode]:

The setting data of the Setting tool is written into the PF900/PF901 in batches.

☞ Refer to ■ **Writing the Data of the Setting Tool to the PF900/PF901 in a Batch** (P. 9-34)

Set value comparison (Controller↔PC) [File mode]:

Verify if the setting data of the settings file (extension p27) will match the setting data of the PF900/PF901.

☞ Refer to ■ **Verify if the Data of the Setting Tool Matches the Data of the PF900/PF901** (P. 9-37)

(Continued from the previous page)
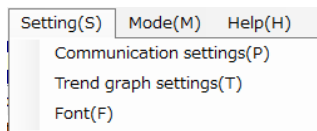
● **Setting**

Setting(S)   Mode(M)   Help(H)
  Communication settings(P)
  Trend graph settings(T)
  Font(F)

Communication settings: Used to set communication parameters. Switch to the Direct mode after the setting is completed.

Comm port name: COM1 to COM256

☞ Refer to P. 9-2 for how to identify the communication port.

Address: 0 to 99
(Maximum connections: 31)

Speed: 2400 bps   19200 bps
4800 bps   38400 bps
9600 bps   57600 bps

Data bits: 7 bit, 8 bit

Parity: None, even, odd

Stop bit: 1 bit, 1.5 bits, 2 bits

Send delay time: 0 to 500 ms
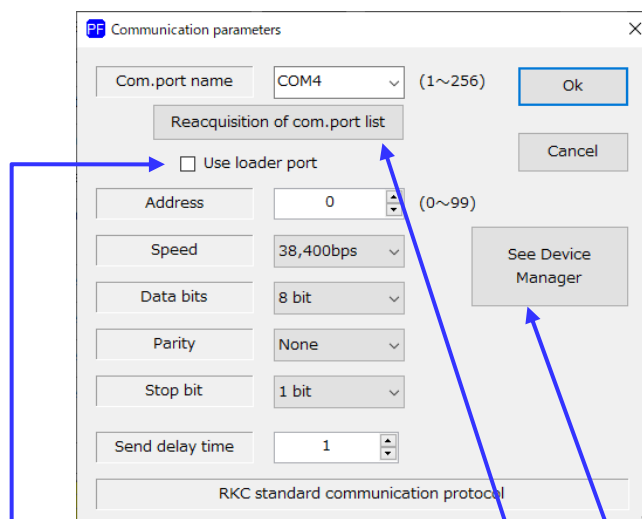
Check "Use the loader port" for loader communication.

You can check the communication port number in the Device Manager in Windows.

Use this option when the data cannot be obtained from the Device Manager.

Trend graph settings:

Used to set parameters required for the Trend graph display.

☞ Refer to ■ **Setting Up Trend Graph** (P. 9-23)

Font: Used to set the character font to be displayed on the Setting tool screen.

(Continued from the previous page)

(Continued from the previous page)

● **Mode**

Direct mode/File mode:
Choose a mode.

Graph ON/Graph OFF:
Used to set on/off the Trend graph.

☞ Refer to ■ **Starting/Stopping Recording the Trend Graph** (P. 9-25)

Allow engineering mode change:
Choose this option when changing the settings in the Engineering mode.

When this is checked, the change of the Engineering mode is possible

● **Help**

Version Information: Displays version information for the Setting tool.

Item description: When you click the title of the monitor and set items, explanation about the item will be displayed.

9.3 Program Setting Example

■ Preparing a Program to be set

We use the following program example to explain the setting procedure.
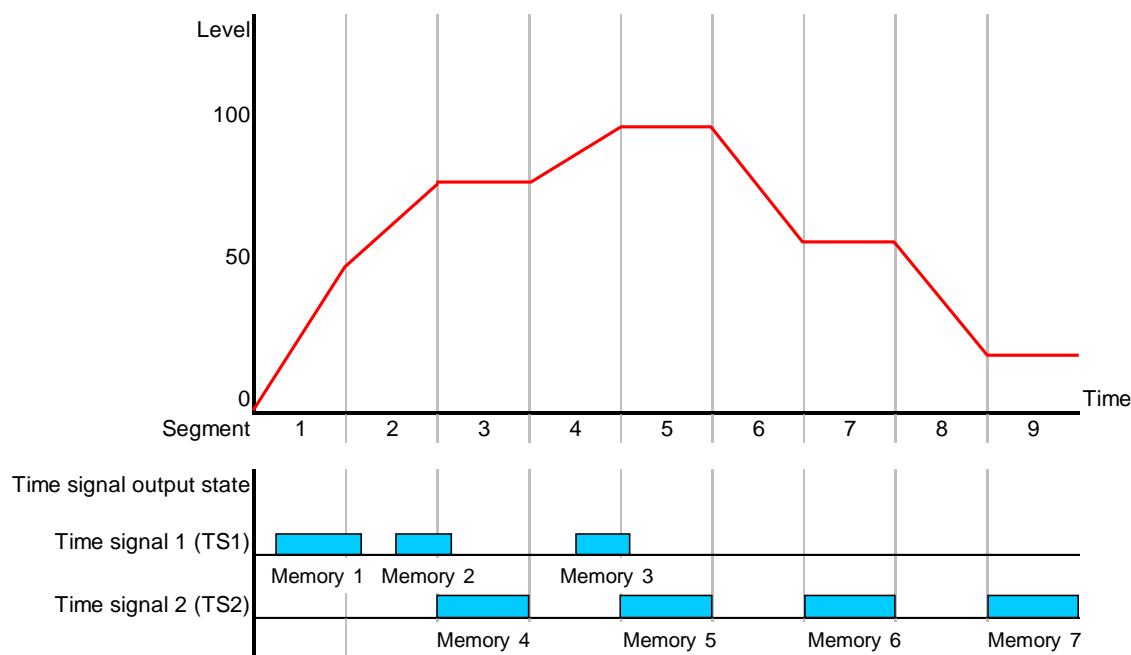
The above program pattern consists of the following data.

Execution pattern number	1								
Segment number	1	2	3	4	5	6	7	8	9
Segment level	50	80	80	100	100	60	60	20	20
Segment time (hour: minute)	0:30	0:20	0:40	0:20	1:00	0:30	0:40	0:30	0:20
PID memory group number	1	1	2	3	2	1	2	1	2
Event memory group number	1	2	3	2	3	2	3	2	3
Wait memory group number	1	1	2	1	2	1	2	1	2

Segment repeat Start number:	1	Segment repeat: 1
Segment repeat End number:	2	
Number of execution of segment repeat	2	
Number of execution of pattern repeat	1	No pattern repeat
Link pattern number	0	No pattern link
Pattern end output duration (hour: minute)	0:01	
Time signal memory group number	1	

Setting content of Time signal memory group number

Group number	1						
Memory number	1	2	3	4	5	6	7
Output destination (TS)	1	1	1	2	2	2	2
Start segment	1	2	4	3	5	7	9
Start time (hour: minute)	0:10	0:10	0:10	0:00	0:00	0:00	0:00
End segment	2	3	5	4	6	8	9
End time (hour: minute)	0:05	0:05	0:05	0:00	0:00	0:00	0:20

9.3 Program Setting Example

Other program related parameters are set on the following screens.
- Parameter setting…PID memory screen
- Parameter setting…Event memory screen
- Parameter setting…Wait memory screen
- Setup setting screen
- Engineering mode…Screens F71/F80

☞   For more details, refer to Instruction Manual of PF900/PF901 (IMR02L03-E□) or Users Manual
      (IMR02L04-E□).

9.4 Program Setting

■ Setting Program Related Initial Parameters

1. Switch the mode to the Direct mode.

① **Click "Direct mode"**

② **Ensure that the parameters are properly set, then click [OK]**

☞ Refer to P. 9-2 and P. 9-7 for Communication parameters.

2. Set up to allow changes in the Engineering mode.

Click "Allow engineering mode change"

When this is checked, changes in the Engineering mode is possible.

3. Ensure that the current mode is the Reset mode.

Make sure that the RESET lamp is lit
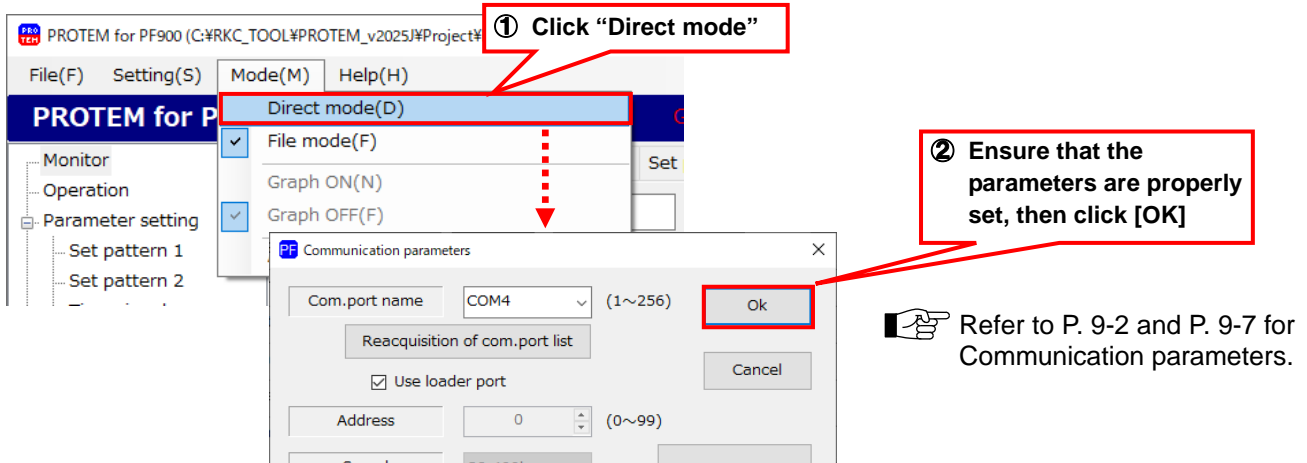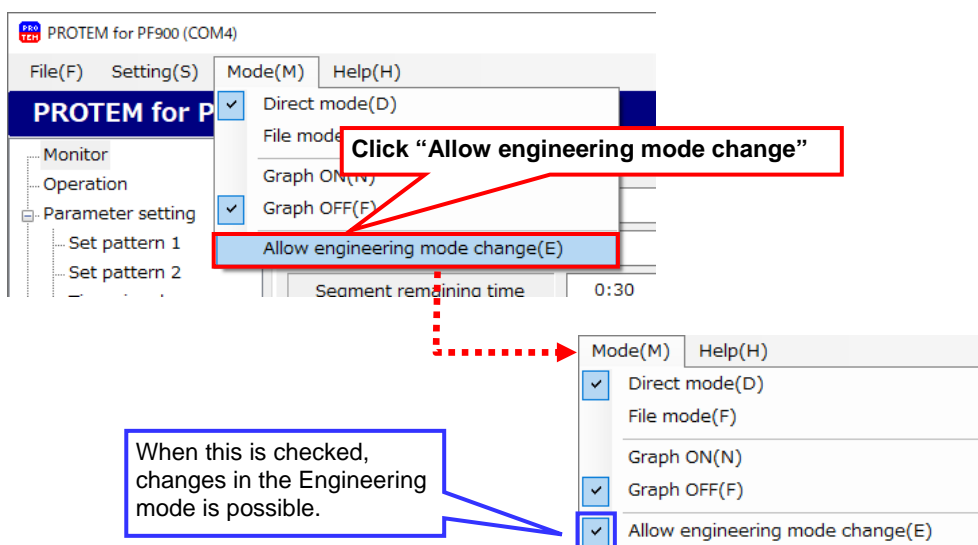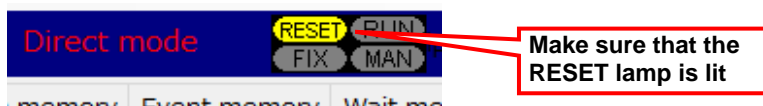
TIPS

If you are not in the RESET mode, switch the mode to "0: RESET mode (RESET)" in the Operation screen.

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4. Set the following program related parameters.
- Parameter setting…PID memory screen
- Parameter setting…Event memory screen
- Parameter setting…Wait memory screen
- Setup setting screen
- Engineering mode…Screens F71/F80

TIPS

When you finished setting up each screen, click the [Send] button to write the set data to the PF900/PF901.

5. Set other parameters other than the program related parameters, if necessary.

■ Setting Program Pattern

1. Switch the screen to the "Set Pattern 1" screen, and set the program pattern referring to the setting example on page P. 9-9.
   (Enter values in the fields surrounded by a red frame)
   When you finished setting up on each screen, click the [Send] button to write the set data to the PF900/PF901.

You can set a pattern name for each pattern
(max.11 characters)

Pattern will be displayed according to the Level.

Click "Set pattern 1"

Scroll the displayed segments
< > Scroll by one segment
<< >> Scroll by 8 segments

[Send] button

Pattern Graph
Displays segment level, segment time, and time signals.
(Refer to the next page)

Pattern Display:

Pattern Displayed according to segment levels and segment time (Time). The number of displayed segments is determined by the Pattern End Segment. The Segment width on the graph varies according to the Segment time length.

Maximum and minimum values of the Pattern

Check "Auto scale", then the values will be automatically displayed adjusted to the maximum and minimum values of the Segment level.

When "Auto scale" is unchecked, you need to manually set the maximum and the minimum values.
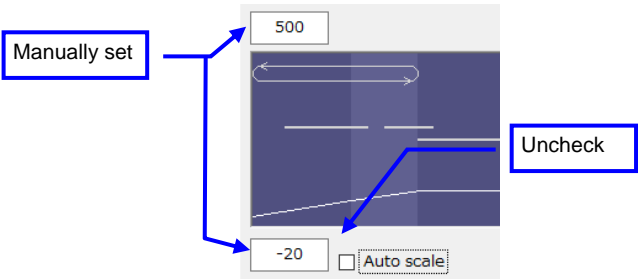
Segment repeat

Indicated in the segment to be repeated.

Memory Displayed according to the memory setting of time signal. Start/End segments and the status of start/end time can be also displayed.

Total of Segment time

The total Segment time (Program pattern time) is automatically displayed.

2. Switch the screen to the "Set pattern 2" screen, and set the program pattern referring to the setting example on page P. 9-9.
   (Enter values in the fields surrounded by a red frame)
   When you finished setting up the program pattern, click the [Send] button to write the set data to the PF900/PF901.

Used to copy a pattern.
(See below)

Used to insert/delete segments.
(Refer to the next page)

Click "Set pattern 2"

[Send] button
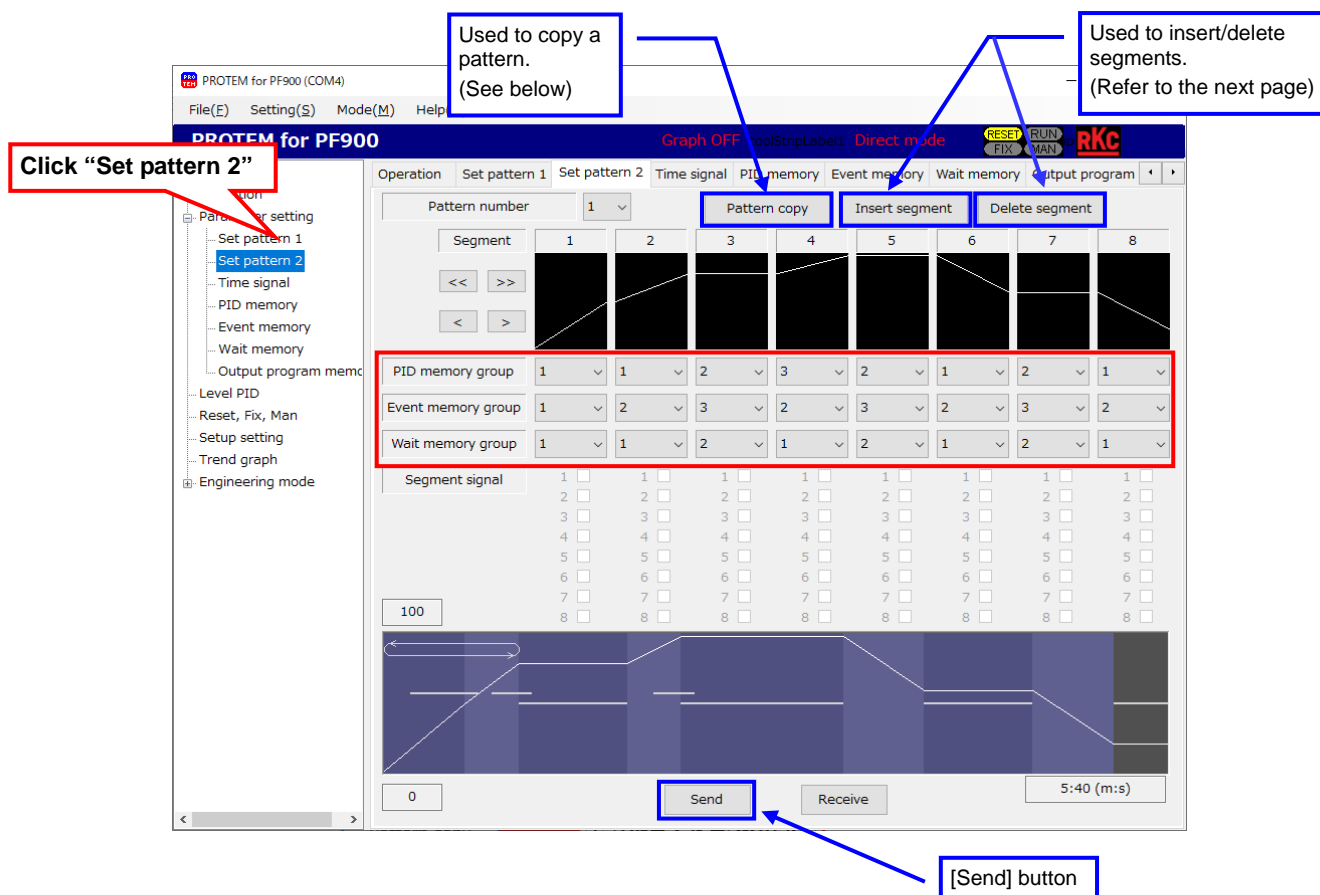
Copy patterns: Copy the pattern currently displayed to another pattern No.

① Click [Pattern copy]

② Select the destination Pattern number

③ Click [Execute copy]

④ Click [OK] and then [Send] button

The pattern will not be copied unless the [Send] button is clicked.
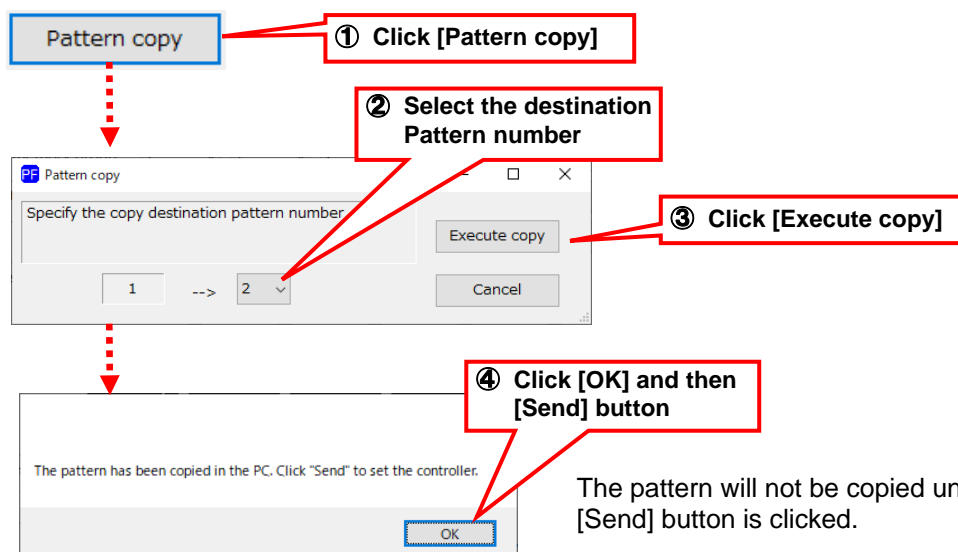
9.4 Program Setting

Insert segment: Insert a new segment into the displayed pattern.

Insert segment

① Click [Insert Segment]

② Select the segment number at the Insert position

④ Click [execution] to insert segment(s) at the designated position

Insert segment

Please specify the insertion position and n...

execution

Cancel

Segment number 1 Insert an empty segment at this position

Number of segments 1

③ Set the number of segments to be inserted
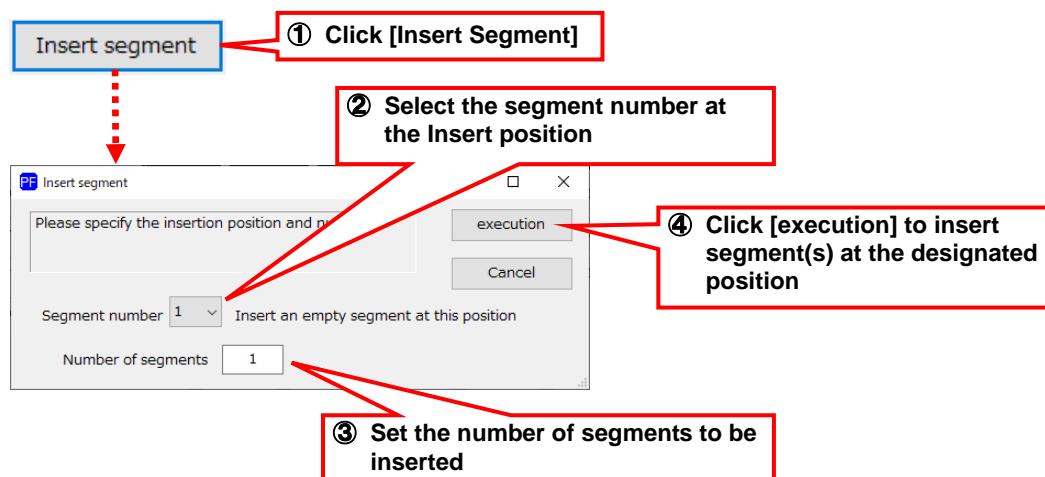
TIPS

Nothing is set in the inserted segment. Ensure to make segment setting after the insertion.

Delete segment: Delete the displayed segment.
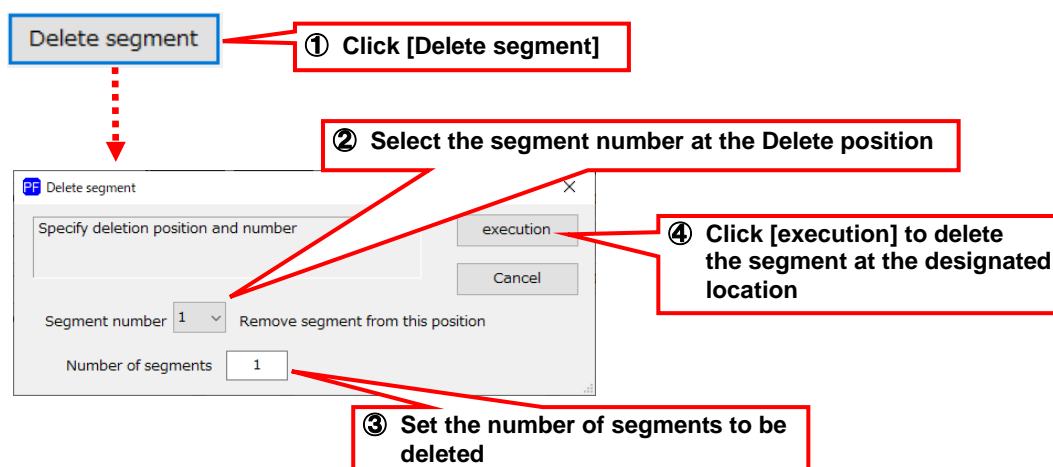
Delete segment

① Click [Delete segment]

② Select the segment number at the Delete position

Delete segment

Specify deletion position and number

execution

Cancel

④ Click [execution] to delete the segment at the designated location

Segment number 1 Remove segment from this position

Number of segments 1

③ Set the number of segments to be deleted

9.5 Program Operation

■ Starting Program Operation

● Starting the program operation after completing the program setting

1. Switch the screen to the Operation screen, and select a desired execution pattern.
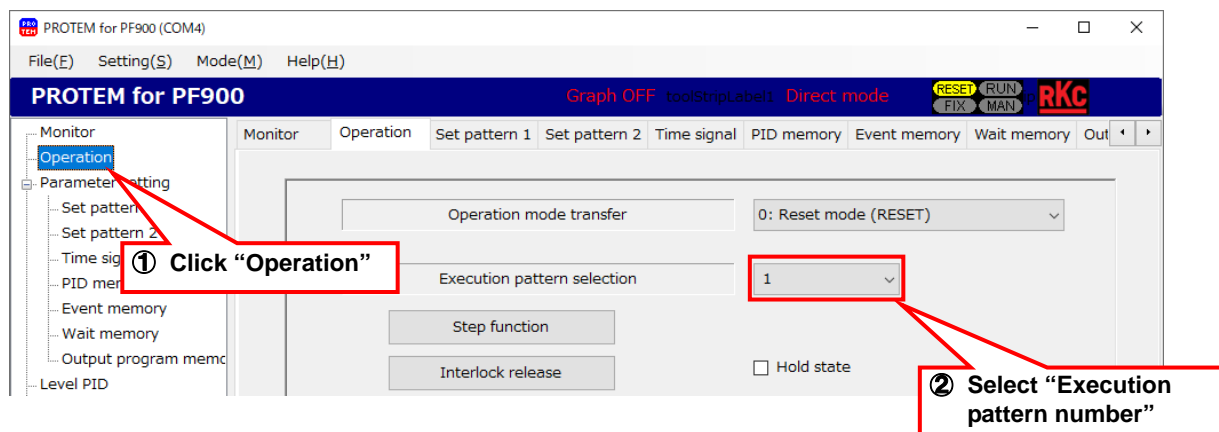
2. Switch the operation mode to "1: Program control mode (PROG)".
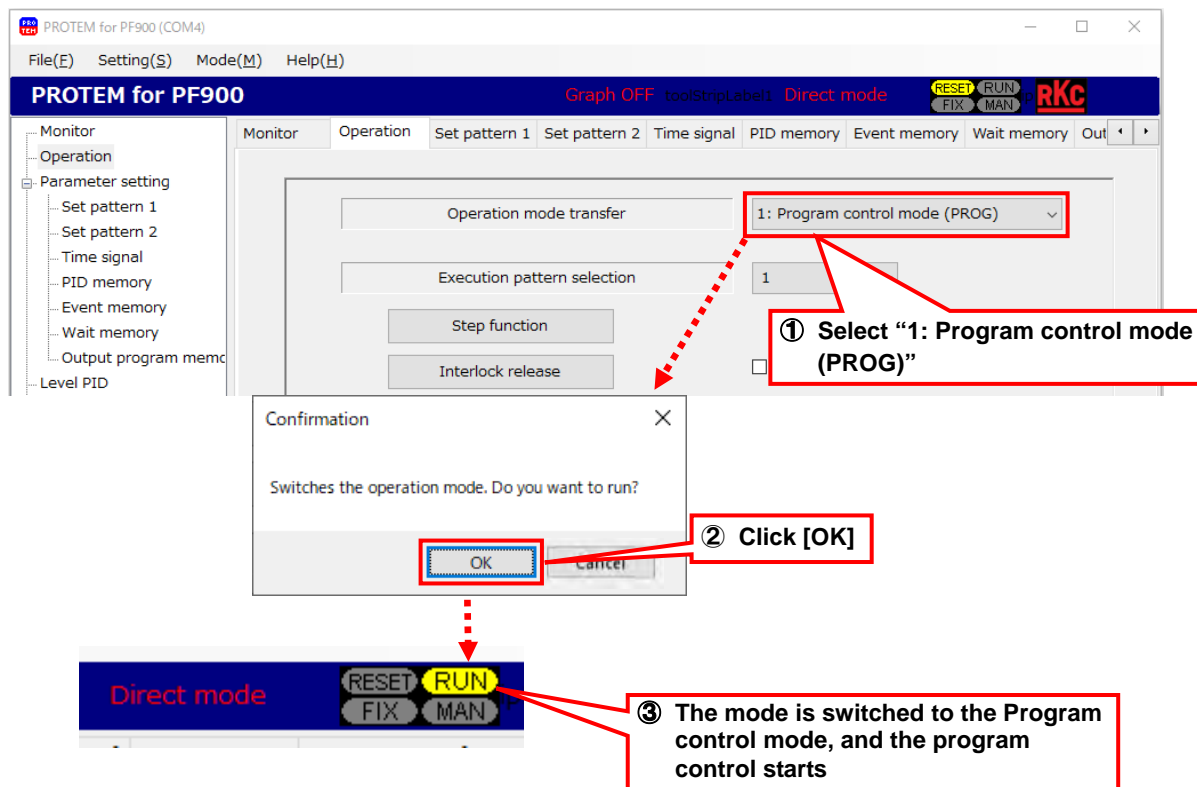
● Starting the program operation using the data of PF900/PF901

1. Start the software in the Direct mode.
   Starting in the direct mode will read out the data from the PF900/PF901 into the Setting tool.

① Click [Direct mode]

② Ensure that the parameters are properly set, then click [OK]

☞ Refer to P. 9-2 and P. 9-7 for communication parameters.

"Direct mode" will come up

③ Monitor screen is displayed

2. Switch the screen to the Operation screen, select a desired execution pattern, and switch the mode to the Program control mode (PROG).

③ Select "1: Program control mode (PROG)"

① Click "Operation"

② Select "Execution pattern number"

④ Click [OK] to start the program operation

● **Starting the program control with the data stored in the settings file**

1. Read the settings file of PF900/PF901 (extension p27) stored in the PC into the setting tool.

① **Click [File mode]**

② **Select a file and double click it**

③ **Monitor screen is displayed**

"File mode" will come up

2. Make the batch setting of the data in the settings file (extension p27) extracted in the Setting tool to the PF900/PF901.

② **Choose items to be set in a batch**

③ **Click [OK]**

① **Click "Batch setting (PC→Controller)"**

Continued on the next page

9.5 Program Operation

Continued from the previous page
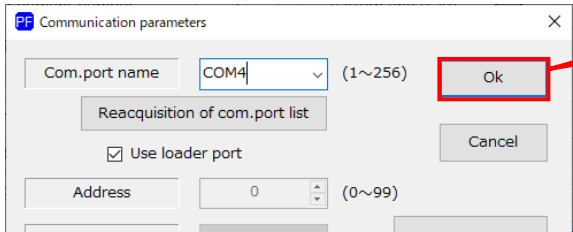
④ **Ensure that the parameters are properly set, then click [OK].**

PF Communication parameters ✕

Com.port name COM4 (1～256) Ok

Reacquisition of com.port list

☑ Use loader port Cancel

Address 0 (0～99)

☞ Refer to P. 9-2 and P. 9-7 for communication parameters.

TIPS

Batch setting of the data may take a few minutes to over 10 minutes.

⑤ **Start sending data from the Setting tool to the PF900/PF901**

Restore (batch setting)

Sending pattern data (03)

Cancel

Restore (batch setting)

Receiving pattern data confirmation (18)

Cancel

Restore (batch setting)

Communication completed

Cancel

⑥ **Verification results between the sent and the received data will be displayed at the completion of communication**

⑦ **Click [×] to close the verification result**

PF Verify result — □ ✕

Comparison result of the sent setting value and the setting value received for confirmation

<<Operation>>
<<Set pattern 1 Set pattern 2>>
<<Time signal>>
<<PID memory>>
<<Event memory>>
<<Wait memory>>
<<Output program memory>>
<<Level PID>>
<<Reset, Fix, Man>>
Manual manipulated output value(ON) Sent:3.0 Recieved:0.0
Set value (SV) in Manual control mode(S3) Sent:29.0 Recieved:0.0
<<Setup setting>>
<<F10>>
<<F11>>

3. Switch the mode to the Direct mode.

① **Click "Direct mode"**

② **Ensure that the parameters are properly set, then click [OK]**

☞ Refer to P. 9-2 and P. 9-7 for communication parameters.

③ **Monitor screen is displayed**

"Direct mode" will come up

4. Switch the screen to the Operation screen, select a desired execution pattern, and switch the mode to the Program control mode (RUN).

③ **Select "1: Program control mode (PROG)"**

① **Click "Operation"**

② **Select "Execution pattern number"**

④ **Click [OK] to start the program operation**

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IMT01D11-E7

■ Monitoring the Program Operation

You can monitor the operation status on the Monitor screen.
In case of Repeated receive, you can monitor the value that changes over time.

● **Update Monitor screen**

The Monitor screen receives monitored values from the PF900/PF901 when the screen is switched. If the "Monitor" screen is left displayed, the monitored values will not be updated. To show the latest monitored values, read out the new monitored values from the PF900/PF901.

Receive

Click the [Receive] button to update the monitor values to the latest ones.

Repeat

Check the "Repeate" to regularly update the monitor values.

9.6 Trend Graph (Historical Trend)

The Setting tool allows the Measured value (PV), Set value (SV), Manipulated output value (MV) [Heating/Cooling] to be displayed in the historical trend (Trend graph). The historical trend data can be saved to the PC as a data file (in a CSV format).

■ Setting Up Trend Graph
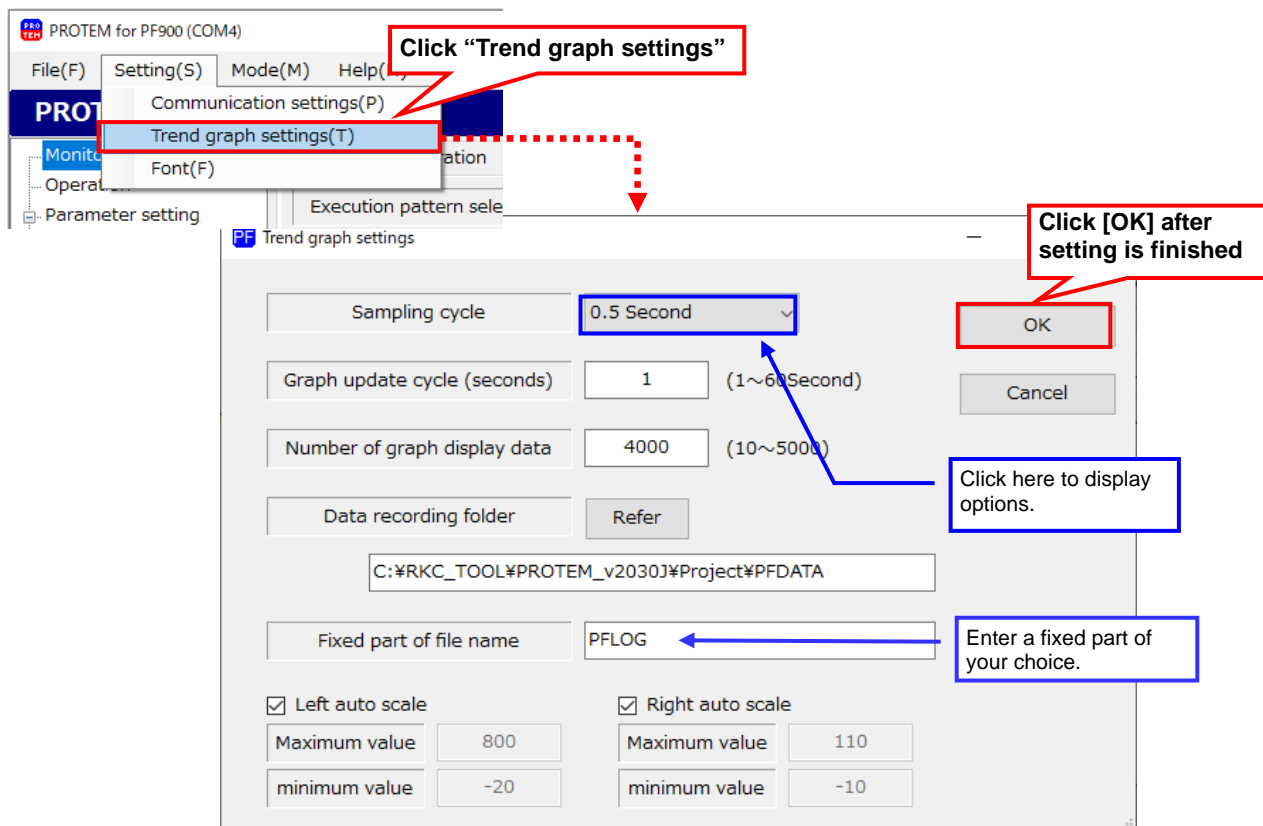
● **Trend graph settings**

Sampling cycle: Set the sampling cycle for the trend graph.
                       Setting range: 0.5 seconds   3 seconds   10 seconds   30 seconds
                                       1 seconds   4 seconds   15 seconds   60 seconds
                                       2 seconds   5 seconds   20 seconds

Graph update cycle (secconds)
:   Set the update cycle of the trend graph.
                       Setting range: 1 to 60 sec.

Number of graph display data:
                       Set the maximum number of data in graph that can be displayed in a single trend graph.
                       Setting range: 10 to 5000

Data recording folder: The data in the trend graph can be saved to the PC as a data file (in a CSV format).
                          You can designate a preferred location for the folder. Click the [Refer] button to select
                          the folder.

(continued from the previous page)

Fixed part of the file name: The name of the data saving file (CSV format) consists of the fixed part and the date/time when the trend recording was started. You can define the fixed part to your preference.

File name (example)

PFLOG20200925_164245.csv   Record started at
                               16:42:45 on September 25, 2020

Fixed   Date   Time

Automatic scale (Left): Check "Left auto scale" to automatically set the trend graph in accordance with the level. When this function is unchecked, you need to manually set the maximum and the minimum value of the left scale.

Unchecked

☐ Left auto scale
Maximum value   800
minimum value   -20

Set manually

Automatic scale (Right): Check "Right auto scale" to automatically set the trend graph in accordance with the Manipulated output. When this function is unchecked, you need to manually set the maximum and the minimum value of the right left scale.

Unchecked

☐ Right auto scale
Maximum value   105
minimum value   -10

Set manually

■ Starting/Stopping Recording the Trend Graph

The following procedure shows how to record the program progress in the trend graph.
(Assuming that the program setting and the trend graph setting are finished)

1. Switch the mode to the Direct mode.
The trend graph recording cannot be started unless the mode is set to the Direct mode.

2. Switch the screen to the Trend graph screen.
You can record four types of data; Set value (SV), Measured value (PV), MV1 (heat-side), and MV2 (cool-side).
You can choose to record or not to record each of the data individually.

Recording is possible by checking applicable items.

TIPS

Nothing will be displayed when you start the Setting tool and switch the screen to the Trend graph screen for the first time.

3. Start recording the trend graph.
   Check the check box of "Data recording and graph display", and recording the historical trend will start.
   Simultaneously with the start of recording, scales and data will be displayed on the screen.

Check here

4. Start program operation.
   Switch the screen to the Operation screen, select a desired execution pattern, and switch the mode to the Program control mode.
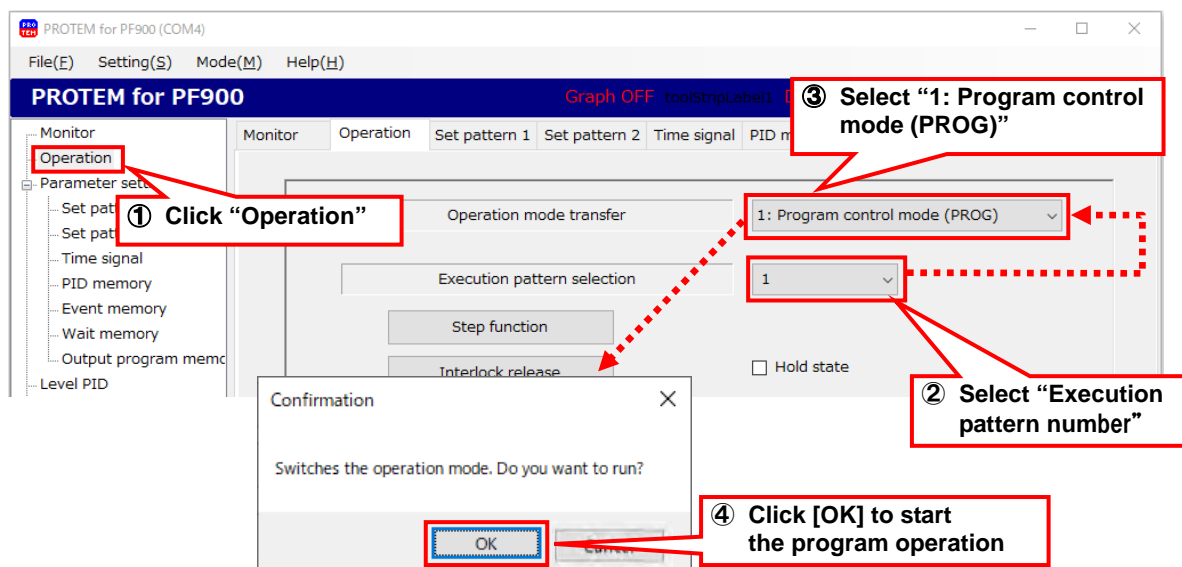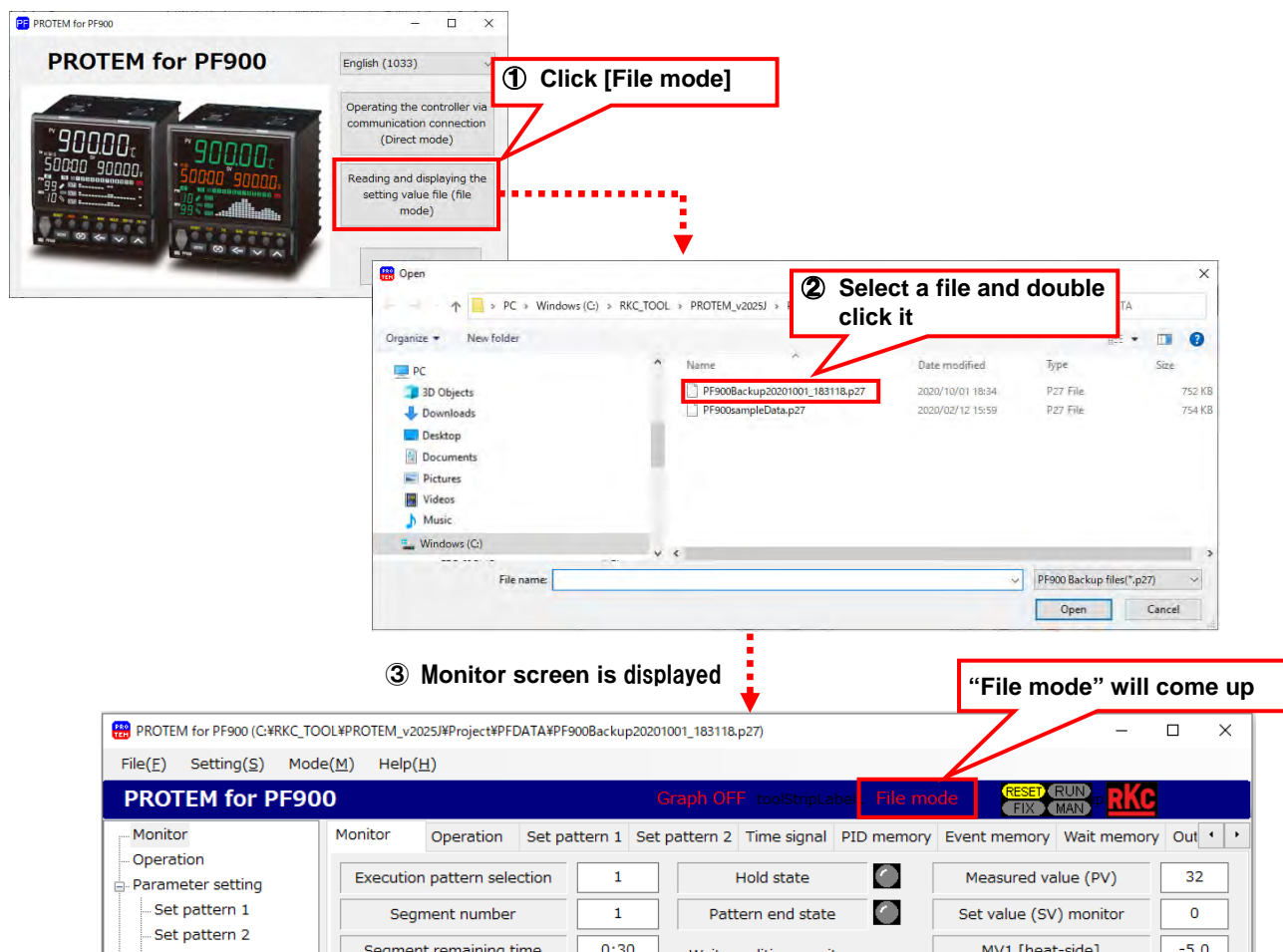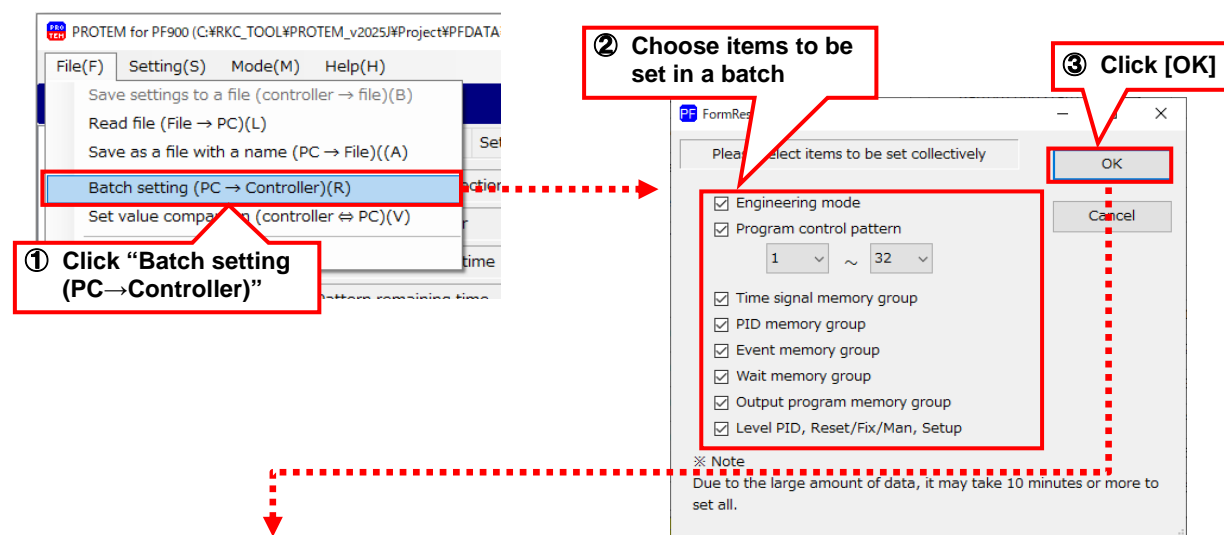

③ Select "1: Program control mode (PROG)"

① Click "Operation"

② Select "Execution pattern number"

④ Click [OK] to start the program operation

> **TIPS**
>
> If you start the trend graph after you have started the program operation, recording the program operation from the start is not possible.

5. The following is a screen during the trend graph recording.

Set the left scale to Automatic scaling (Left), then the scale will automatically change itself according to the maximum and the minimum level.

Set the right scale to Automatic scaling (Right), then the scale will automatically change itself according to the maximum and the minimum manipulated output.

Lapse of time

Start recording

Start program operation

The trend graph screen shows the historical trend from the start to the stop on a single screen.

In accordance with the accumulation of data over time, the graph will be visually shifted to the left.

6. Stop the Trend graph.

Uncheck the check box of "Data recording and graph display", and recording the historical trend will stop.

Uncheck

TIPS

You can also start/stop the Trend graph under "Mode" in the menu.

9.7 Data Management

With the Setting tool you can save the settings of the PF900/PF901 to the PC or retrieve a settings file (extension p27) from the PC for a batch setting. You can also verify if the settings file (extension p27) matches the set data of the PF900/PF901.

■ Description of Data Management

The details of the data management of the Setting tool may vary depending on whether you are in the Direct mode or in the File mode. The item in the box shown in the following figure is the executable command found under "File" in the menu.

● In case of Direct mode

PF900/PF901 (Controller)

Setting tool

Settings file (extension p27)

Receive [1]

Send [2]

Save settings to a file (controller→file)
Refer to P. 9-29

Data from controller
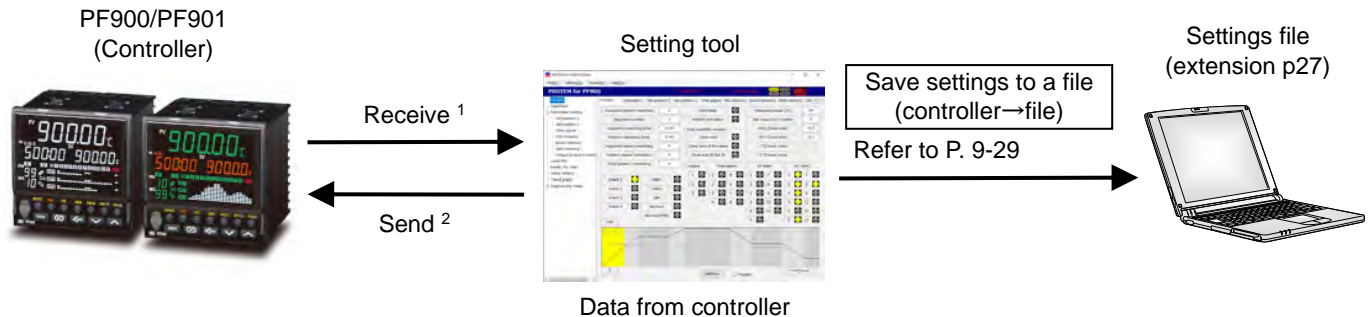
[1] Data will be received when the Direct mode is selected at the start-up, when the screen of the Setting tool has been switched, when the data is sent, or when the [Receive] button is clicked.

[2] Data will be sent when the [Send] button in the Setting tool is clicked.
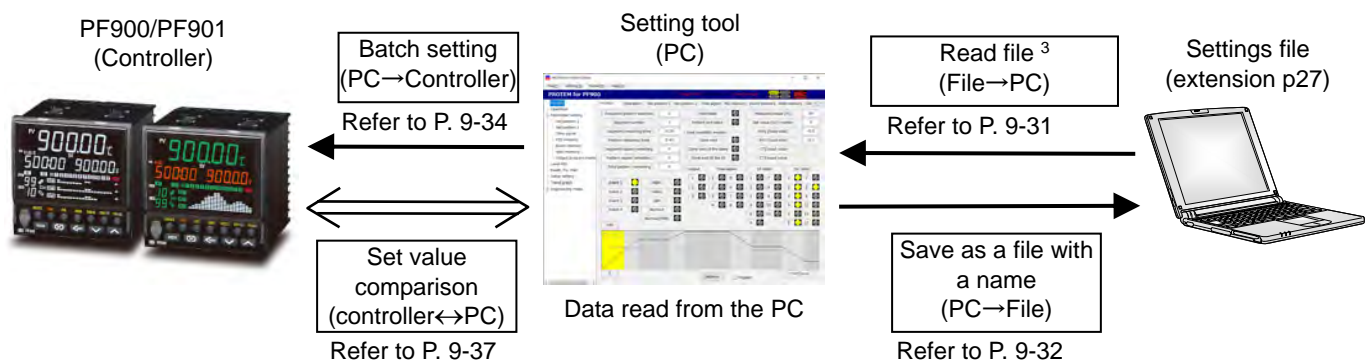
● In case of File mode

PF900/PF901 (Controller)

Setting tool (PC)

Settings file (extension p27)

Batch setting (PC→Controller)
Refer to P. 9-34

Read file [3] (File→PC)
Refer to P. 9-31

Set value comparison (controller↔PC)
Refer to P. 9-37

Data read from the PC

Save as a file with a name (PC→File)
Refer to P. 9-32

[3] File will be read when the File mode is selected at the start-up or when the mode is switched from the Direct mode to the File mode, in addition to the "Read file" command.

■ Saving Set Data of PF900/PF901 to the PC
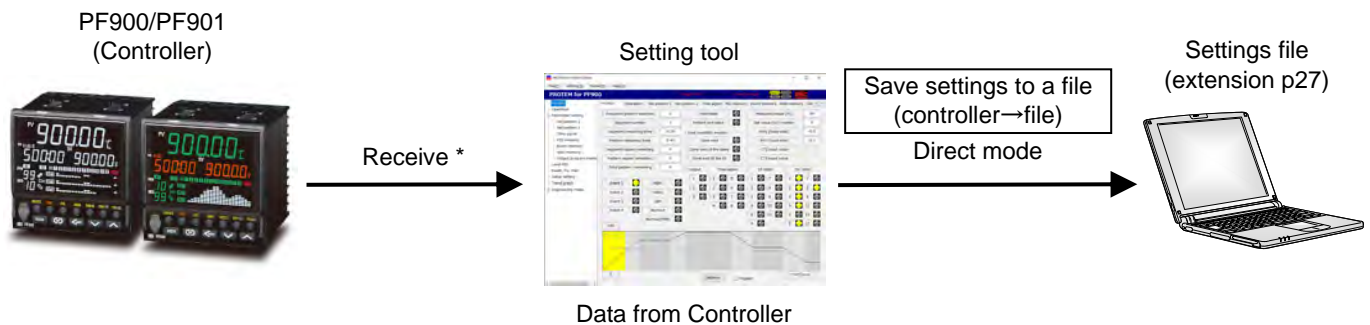
PF900/PF901
(Controller)

Setting tool

Save settings to a file
(controller→file)

Direct mode

Settings file
(extension p27)

Receive *

Data from Controller

* Data will be received when the "Direct mode" is selected at the start-up, when the screen of the Setting tool has been switched, when the data is sent, or when the [Receive] button is clicked.

1. Switch the mode from the File mode to the Direct mode. Or you can select the Direct mode at the start.

① **Click "Direct mode"**

Mode(M)   Help(H)

Direct mode(D)

✓ File mode(F)

Graph ON(N)

✓ Graph OFF(F)

Allow engineering mode change(E)

① **Click [Direct mode]**

PROTEM for PF900

English (1033)

Operating the controller via communication connection (Direct mode)

Reading and displaying the setting value file (file mode)

End

② **Ensure that the parameters are properly set, then click [OK]**

Communication parameters

Com.port name   COM4   (1~256)   Ok

Reacquisition of com.port list

☑ Use loader port   Cancel

Address   0   (0~99)

Speed

👉 Refer to P. 9-2 and P. 9-7 for communication parameters.

2. Click "File" → "Save settings to a file (controller → file)" in the menu.

① **Click "Save settings to a file (controller → file)"**

PROTEM for PF900 (COM4)

File(F)   Setting(S)   Mode(M)   Help(H)

Save settings to a file (controller → file)(B)

Read file (File → PC)(L)

Save as a file with a name (PC → File)((A)

Batch setting (PC → Controller)(R)

Set value comparison (controller ⇔ PC)(\

Exit(X)

Time signal

Confirmation

Reads all controller data and saves it to a file. It may take 5 minutes or more due to the large amount of data. Do you want to run?

② **Click [Yes]**

Yes   No

TIPS

Data receive may take over five minutes.

3. The screen of "Backup (Save File)" appears and the PC starts receiving the data of the PF900/901.
The screen of "Save As" will be displayed. Save the data with a desired file name to a desired folder.
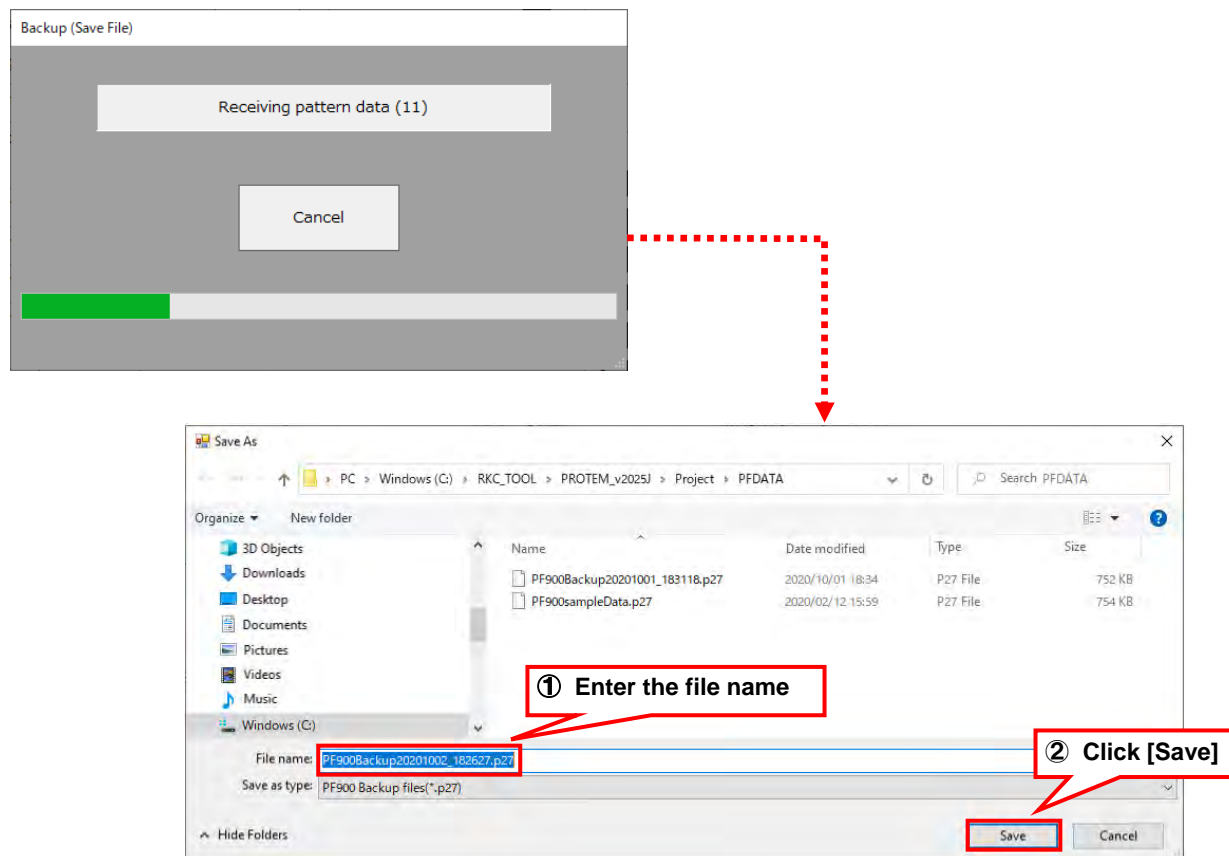
This completes the saving of the settings file (extension p27).

■ Reading the Data of the Settings File into the Setting Tool

Settings file
(extension p27)

Read file
(File→PC)

Direct mode *
File mode

Read the data of the settings file stored in the PC into the Setting tool.

* When "Read file" is executed in the Direct mode, the mode will be automatically switched to the File mode.

Setting tool
(PC)

Screen after reading a file

● Click "File" → "Read file (File→PC)" in the menu.
The screen of "Open" will be displayed. Select a file and double click it.

[Direct mode]

PROTEM for PF900 (COM)

File(F)   Setting(S)   ① Click "Read file (File →PC)"

Save settings to a file (controller → file)(B)

Read file (File → PC)(L)

Save as a file with a name (PC → File)((A)

Batch setting (PC → Controller)(R)

Set value comparison (controller ⇔ PC)(V)

Exit(X)

[File mode]

PROTEM for PF900 (C:XRKC_TOOLXPROTEM_v2025JXProjectXPED

File(F)   Setting(S)   ① Click "Read file (File →PC)"

Save settings to a file (controller → file)(B)

Read file (File → PC)(L)

Save as a file with a name (PC → File)((A)

Batch setting (PC → Controller)(R)

Set value comparison (controller ⇔ PC)(V)

Exit(X)

Open

PC > Windows (C:) > RKC_TOOL > PROTEM_v2025J > Project > PFDATA

② Select a file and double click it

PF900Backup20201001_183118.p27   2020/10/01 18:34   P27 File   752 KB
PF900sampleData.p27   2020/02/12 15:59   P27 File   754 KB

File name: PF900 Backup files(*.p27)

Open   Cancel

This completes the reading of the settings file (extension p27).

■ Saving the Data of the Setting Tool to the PC

This function is used to modify and save the data read from the data of the settings file stored in the PC (extension p27).

Setting tool
(PC)

Save as a file with a name
(PC→File)

File mode

Save the setting data of the Setting tool
to the PC

Settings file
(Extension p27)

Screen after reading data

1. Switch the mode from Direct mode to File mode. Alternatively, read the settings file of PF900/PF901 (extension p27) stored in the PC into the Setting tool when starting the Setting tool. The screen of "Open" will be displayed. Select a file and double click it.

① Click "File mode"

① Click [File mode]
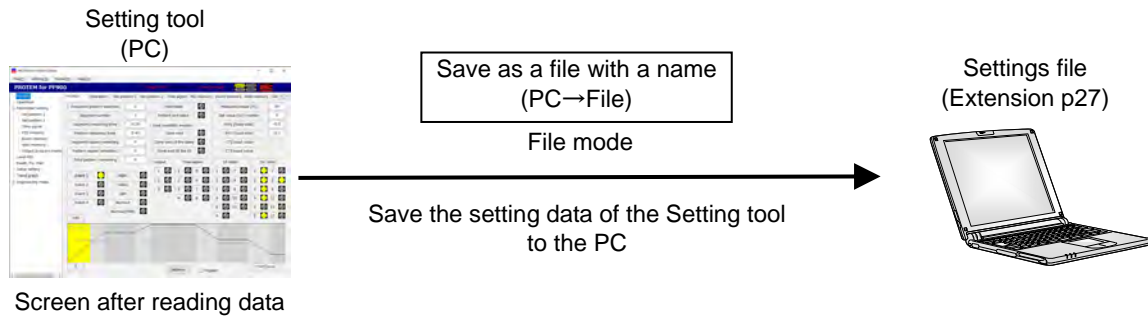
② Select a file and double click it
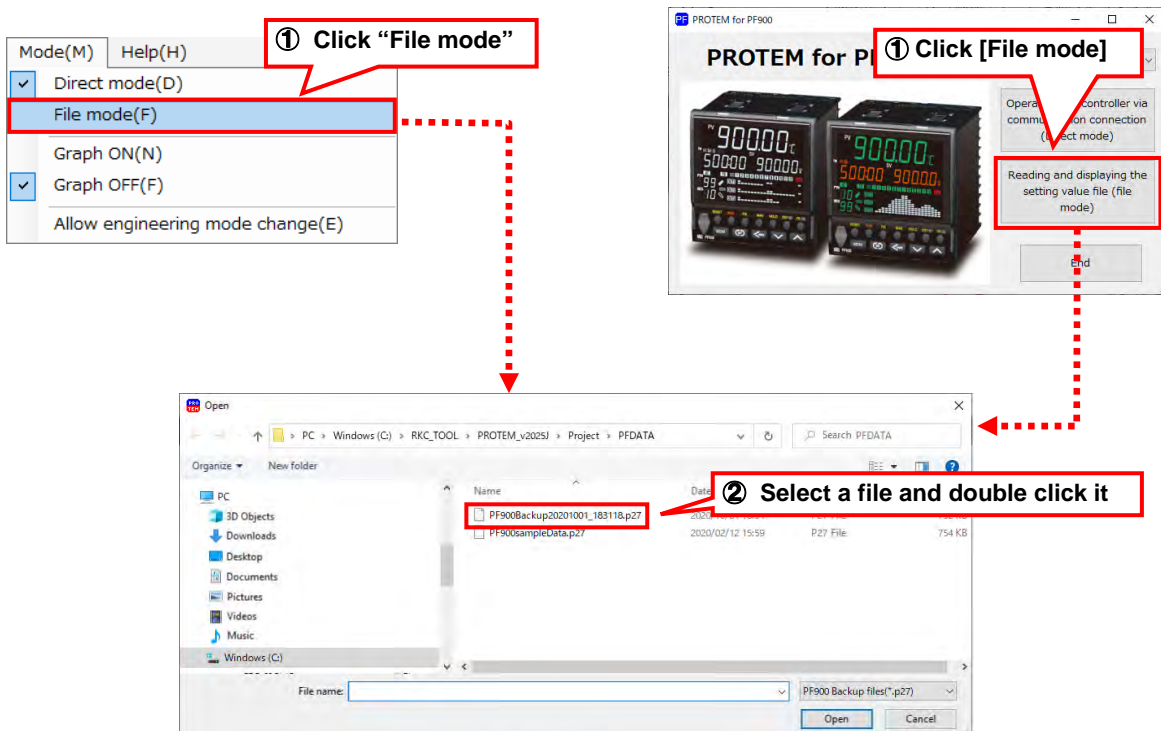
2. Make necessary setting changes of the data.

3. Click "File" → "Save as a file with a name (PC→File)" in the menu.
The screen of "Save As" will be displayed. Save the file to any desired folder.

① Enter the file name

② Click [Save]

This completes saving the settings file (extension p27).

■ Writing the Data of the Setting Tool to the PF900/PF901 in a Batch

Setting tool
(PC)

Screen after reading data

Batch setting
(PC→Controller)

File mode

Write the data of the setting tool to
the PF900/PF901 in a batch.

PF900/PF901
(Controller)

1. Switch the mode from Direct mode to File mode. Alternatively, read the settings file of PF900/PF901 (extension p27) stored in the PC into the Setting tool when starting the Setting tool. The screen of "Open" will be displayed. Select a file and double click it.

① Click "File mode"

① Click [File mode]

② Select a file and double click it

2. Make the batch setting of the data in the settings file (extension p27) extracted in the Setting tool to the PF900/PF901.

① Click "Batch setting (PC → Controller)"

Continued on the next page

Continued from the previous page

③ Click [OK]

FormRestoreSelect

Please select items to be set collectively   OK

Cancel

☑ Engineering mode
☑ Program control pattern
   1 ~ 32

② **Select items to be set in batches**

☑ Time signal memory group
☑ PID memory group
☑ Event memory group
☑ Wait memory group
☑ Output program memory group
☑ Level PID, Reset/Fix/Man, Setup

※ Note
Due to the large amount of data, it may take 10 minutes or more to set all.

④ **Ensure that the parameters are properly set, then click [OK]**

Communication parameters   ✕

Com.port name   COM4   (1~256)   Ok

Reacquisition of com.port list

☑ Use loader port   Cancel

Address   0   (0~99)

Speed   38.400bps

☞ Refer to P. 9-2 and P. 9-7 for communication parameters.

TIPS

Batch setting of the data may take a few minutes to over 10 minutes.

⑤ **The data will be started to be sent to the PF900/PF901 from the Setting tool**

Restore (batch setting)

Sending pattern data (03)

Cancel

Restore (batch setting)

Receiving pattern data confirmation (18)

Cancel

Restore (batch setting)

Communication completed

Cancel

Continued from the previous page

⑥ **Verification results between the sent and the received data will be displayed at the completion of communication**
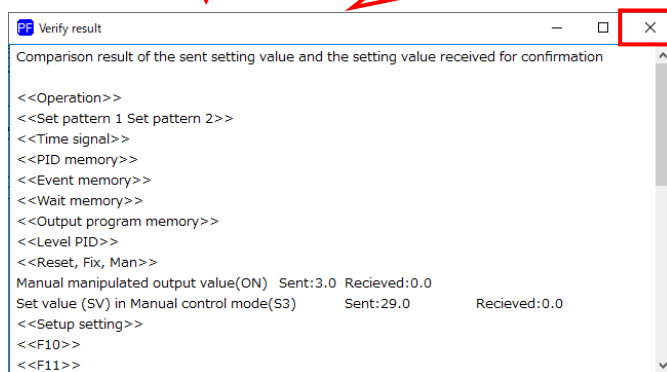
⑦ **Click [×] to close the verification results**

This completes the batch setting of the settings file (extension p27).

■ Verifying if the Data of the Setting Tool Matches the Data of the PF900/PF901

PF900/PF901
(Controller)

Set value comparison
(controller⇔PC)

File mode

Verify the data of the Setting tool
and the data of PF900/PF901

Setting tool
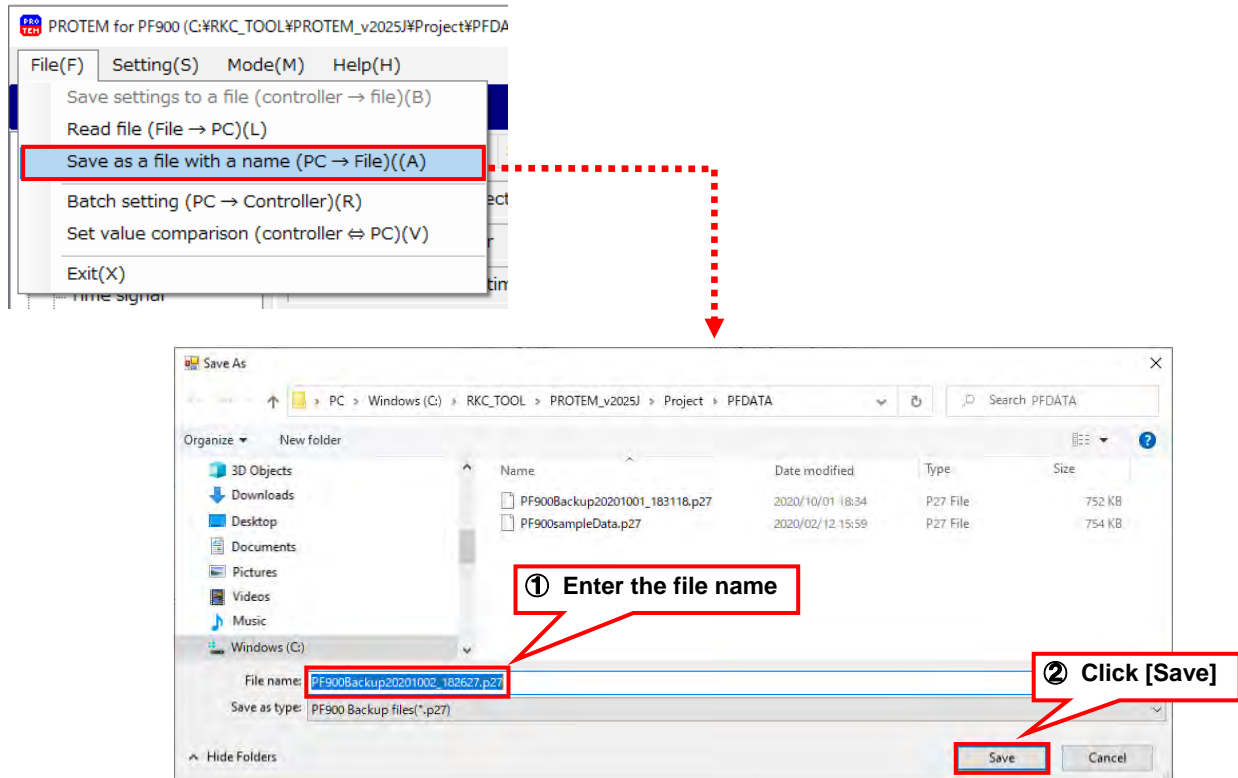(PC)

Screen after reading data

1. Switch the mode from Direct mode to File mode. Alternatively, read the settings file of PF900/PF901 (extension p27) stored in the PC into the Setting tool when starting the Setting tool. The screen of "Open" will be displayed. Select a file and double click it.
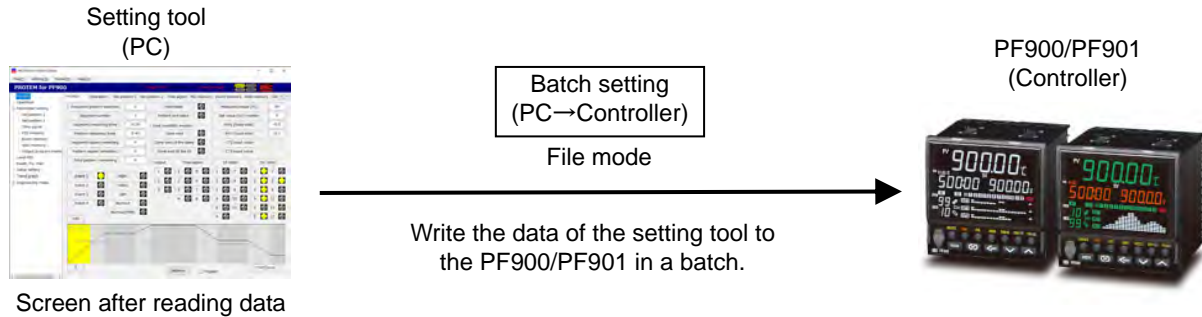
① Click "File mode"

Mode(M)   Help(H)
☑ Direct mode(D)
   File mode(F)
   Graph ON(N)
☑ Graph OFF(F)
   Allow engineering mode change(E)

① Click [File mode]

PROTEM for PF900

PROTEM

...ing the controller via
co...nication connection
...irect mode)

Reading and displaying the
setting value file (file
mode)

End

Open

PC > Windows (C:) > RKC_TOOL > PROTEM_v202SJ > Project > PFDATA

Search PFDATA

Organize   New folder

② Select a file to compare and
double click it

PC
3D Objects
Downloads
Desktop
Documents
Pictures
Videos
Music
Windows (C:)

Name
PF900Backup20201001_183118.p27
PF900sampleData.p27

File name:

PF900 Backup files(*.p27)

Open   Cancel

2. Click "File" → "Set value comparison (controller ↔ PC)" in the menu.

① **Click "Set values comparison (controller↔PC)"**

② **Click [Yes]**
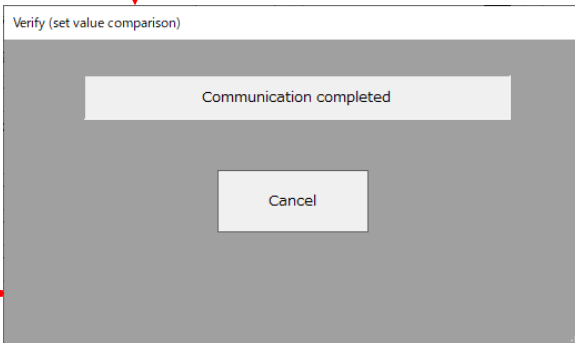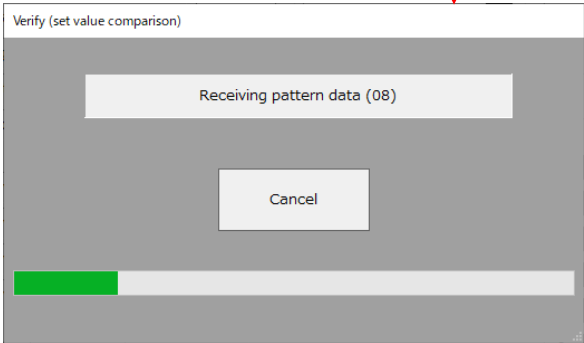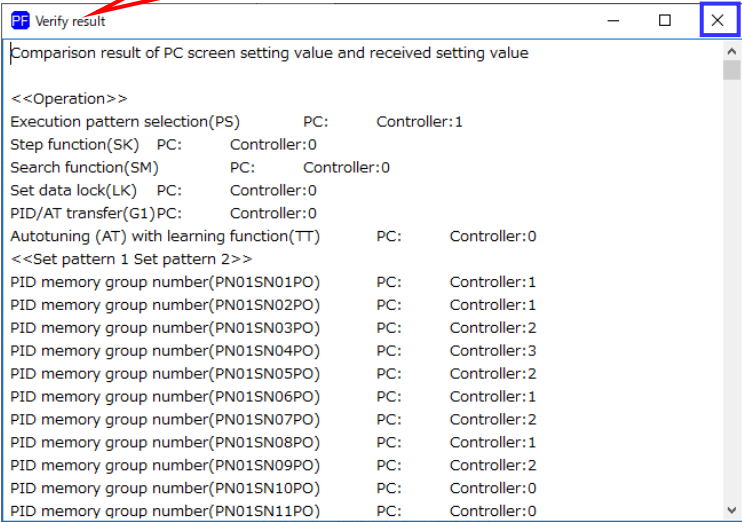
Read out all controller data and compare. Do you want to run?

③ **Ensure that the parameters are properly set, then click [OK]**

Communication parameters

- Com.port name COM4 (1～256) Ok
- Reacquisition of com.port list
- ☑ Use loader port Cancel
- Address 0 (0～99)
- Speed

☞ Refer to P. 9-2 and P. 9-7 for communication parameters.

TIPS

Verification of the data may take a few minutes.

Verify (set value comparison)

Receiving pattern data (08)

Cancel

Verify (set value comparison)

Communication completed

Cancel

④ **Display verification result**

Click [×] to close the verification result.

Verify result

Comparison result of PC screen setting value and received setting value

<<Operation>>
Execution pattern selection(PS)   PC: Controller:1
Step function(SK)   PC: Controller:0
Search function(SM)   PC: Controller:0
Set data lock(LK)   PC: Controller:0
PID/AT transfer(G1)PC: Controller:0
Autotuning (AT) with learning function(TT)   PC: Controller:0
<<Set pattern 1 Set pattern 2>>
PID memory group number(PN01SN01PO)   PC: Controller:1
PID memory group number(PN01SN02PO)   PC: Controller:1
PID Damory group number(PN01SN03PO)   PC: Controller:2
PID memory group number(PN01SN04PO)   PC: Controller:3
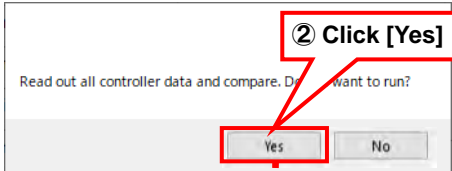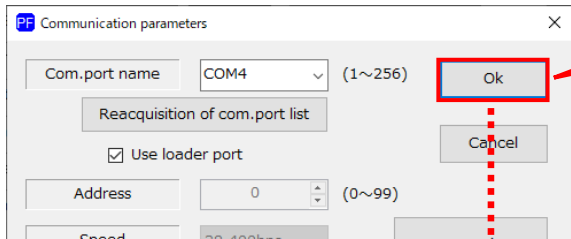PID memory group number(PN01SN05PO)   PC: Controller:2
PID memory group number(PN01SN06PO)   PC: Controller:1
PID memory group number(PN01SN07PO)   PC: Controller:2
PID memory group number(PN01SN08PO)   PC: Controller:1
PID memory group number(PN01SN09PO)   PC: Controller:2
PID memory group number(PN01SN10PO)   PC: Controller:0
PID memory group number(PN01SN11PO)   PC: Controller:0

TIPS

The verification result cannot be saved. If necessary, copy the text data and save it in a proper manner.

A.1 List of Supported Languages

Languages supported by PROTEM2 depend on models and communication types. Refer to the following list for the supported languages.

☞ Languages can be switched in the main menu. (Refer to P. 4-1)

● List of supported languages for PROTEM2 (English)

[Base Tool]

Supported models		English RKC comm. *	English Modbus	English Loader comm.	Japanese RKC comm. *	Japanese Modbus	Japanese Loader comm.	Simplified Chinese RKC comm. *	Simplified Chinese Modbus	Simplified Chinese Loader comm.
SRZ System	Z-COM-A	○	○	○	○	○	○	○	○	○
	Z-TIO-A/B/C/D	○	○	○	○	○	○	○	○	○
	Z-DIO-A	○	○	○	○	○	○	○	○	○
	Z-CT-A	○	○	○	○	○	○	○	○	○
	Z-TIO-G	○	○	○	○	○	○	●	●	●
	Z-TIO-G (D.P.: 3 digits)		○			○			●	
SR Mini [SR Mini System/SR Mini HG System]		○	○		○	○		●	●	
SR Mini 2 [SR Mini System/SR Mini HG System] (without memory area)		○	○		○	○		●	●	
SRJ	J-TI				○	○				
B400			○		○				●	
FB series	FB100	○	○	○	○	○	○	○	○	○
	FB400/900	○	○	○	○	○	○	○	○	○
FZ series	FZ110	○	○	○	○	○	○	○	○	○
	FZ400/900	○	○	○	○	○	○	○	○	○
GZ series	GZ400/900	○	○	○	○	○	○	○	○	○
HA series	HA400/900	○	○		○	○		●	●	
	HA430/930	○	○		○	○		●	●	
RB series	RB100/400/500/700/900	○	○	○	○	○	○			
RD series	RD100/400/500/700/900	○	○	○	○	○	○	○	○	○
RZ series	RZ100/400	○	○	○	○	○	○			
SA series	SA100/200				○	○				
SB1		○	○	○	○	○	○	●	●	●
AG500		○	○	○	○	○	○	●	●	●
PG500		○	○	○	○	○	○	●	●	●
NWS series	NWS-COM					○				
	NWS-COM-M1					○				
PZ series	PZ400/900 (for Logger)				○		○			
PF series	PF900/901 (for Logger)				○		○			
IOPD						○				
THV-A1			○			○			●	
THV-40/THV-10 (150/200A)				○			○			●
THV-10 (20~100A)		○	○	○	○	○	○	●	●	●
COM-KG (NWS Wireless communication)						○				
COM-ME series		○	○	○	○	○	○	○	○	○
COM-ML series		○	○	○	○	○	○	○	○	○

○: Supported   ●: Menu / Commands: Simplified Chinese, Data name: English   * Serial communication

TIPS

The "Modbus/TCP" communication protocol supports COM-ML-1 and COM-ME-1.

A.1 List of Supported Languages

[Setting tool for Program control]

The Setting tool for the PZ series and the Setting tool for the PF900 require the language to be switched on the first screen (P. 8-1 or P. 9-1) as well as the language switch in the Menu screen (Refer to P. 4-1).

Supported languages / Supported models		English			Japanese			Simplified Chinese		
		RKC comm. *	Modbus	Loader comm.	RKC comm. *	Modbus	Loader comm.	RKC comm. *	Modbus	Loader comm.
PZ series	PZ400/900	○		○	○		○	○		○
PF series	PF900/901	○		○	○		○	○		○

○: Supported   * Serial communication

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