REMOTE GRAPHIC PANEL
FOR POWER MONITORING
Model: RGP30-W

USERS MANUAL

MG CO., LTD. www.mgco.jp
5-2-55 Minamitsumori, Nishinari-ku, Osaka 557-0063 JAPAN

Table of Contents

1. Introduction

Thank you for choosing us.
Before use, check the following information.

1.1 Before use...

This product is for use in general industrial environments, therefore may not be suitable for applications which require higher level of safety (e.g. safety or accident prevention systems) or of reliability (e.g. vehicle control or combustion control systems).
For safety, installation and maintenance of this product must be conducted by qualified personnel.

■PACKAGE INCLUDES:

Remote Graphic Panel....(1)

■MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■SD CARD

To store the data, prepare an SD card. (For the specified SD card, refer to 7.2.1 SD card.)

1.2 Corresponding versions

This Users Manual corresponds to the following versions of our products.

■HOW TO CONFIRM PRODUCT VERSION

- Remote Graphic Panel (model: RGP30-W): Refer to 2.7 Confirming RGP30-W firmware version.
- Graphic Panel Designing Software for RGP30 series (model: RGP-Designer): Refer to the RGP-Designer Users Manual (EM-8581-B).
- PC Configurator Software (model: PMCFG): Refer to the PMCFG Users Manual (EM-9194-C).

MODEL	VERSION
RGP30-W	1.3.x.x or later
RGP-Designer	1.*.x.x or later
PMCFG	1.2.x or later

1.3 Trademarks

Company names and product names mentioned in this manual may be the trade names and trademarks (including registered trademarks) of the respective companies.
Individual indications of these rights have been omitted in the displays and descriptions in this document.

Microsoft, Windows, Windows Vista, Windows Server, Internet Explorer, Windows Media, Excel, Visio, DirectX, Visual Basic, Visual C++, and Visual Studio are trademarks or registered trademarks of Microsoft® Corporation in the United States and other countries.

Intel, Pentium, and Xeon are trademarks of Intel Corporation or its subsidiaries in the United States and other countries.

■ The following product is referred to in short in this manual.

REFERRED TO AS IN THIS MANUAL	OFFICIAL TRADE NAME
Windows 10	Microsoft(R) Windows(R) 10 Operating System

1.4 Points of cautions

■ GENERAL PRECAUTIONS

- Before removing the device or mount it, turn off the power supply for safety.

■ ENVIRONMENT

- Indoor use.
- When heavy dust or metal particles are present in the air, install the device inside proper housing with sufficient ventilation.
- Do not install the device where it is subjected to continuous vibration. Do not subject the device to physical impact.
- Environmental temperature must be within -10 to 50°C (14 to 122°F) with relative humidity within 30 to 90% RH in order to ensure adequate life span and operation.
- Use in clean atmosphere. Do not expose the device for a prolonged period of time to an atmosphere containing vapor of organic solvent or acidic gases, such as paint thinner, acetone, formalin or sulfurous acid gas.
- Do not expose the device to direct sunlight.

■ WIRING

- Do not install cables close to noise sources (relay drive cable, high frequency Line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

■ CALENDAR CLOCK

- A primary lithium battery is incorporated for calendar clock IC backup.
  Backup period without external power supply is approx. 10 years at 25°C.
- The battery does not wear while the external power is supplied.
  As the total elapsed time without power supply exceeds 10 years, the calendar clock data can no longer be backed up, and the calendar clock cannot keep correct date and time.
- The battery is not replaceable by customer. When replacement is required, consult us.

■ BROWSER INSTALLED IN RGP30-W

- Internet Explorer 11 is preinstalled in RGP30-W and ready to be used.
  However, we strongly recommend NOT to use Internet Explorer 11 as it is no longer updated and may involve functional and security problems.
- Install a browser such as Microsoft Edge, Google Chrome, or Firefox.

■ APPLICATION PROGRAMS

RGP30-W employs "Windows 10 IoT Enterprise 2016 LTSB" as an operating system.

- Windows Update is factory-set to OFF.
- Basically, do not install any Windows 10 application programs other than web browsers and dedicated PC Configuration Software programs (7.2.2 Setting of power measuring device).
  We do not guarantee correct operation if an application program other than the above applications are installed. Nevertheless, if an application program such as an anti-virus security software needs to be installed, confirm the system requirements of the software and do so at your own risk.

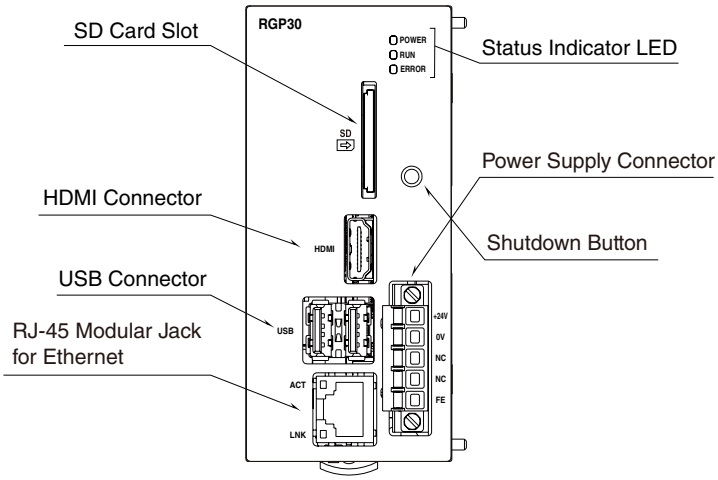
■ SD CARD

- Confirm the sides and the connector position of the SD card when inserting one to the card slot.
- Do not touch the metal terminal with your hands or metallic tools.
- SD cards have a life span. Back up your important data.

■ APPLICATION

- RGP30-W is for use in general industrial environments, therefore may not be suitable for applications which require higher level of safety such as safety instrumentation, accident prevention systems, life-support, environmental protection, etc. or of reliability such as vehicle control or combustion control systems.

1.5 Component identification



RGP30-W

■ STATUS INDICATOR LED

ID	COLOR	FUNCTION	
POWER	Green	ON	Power supply is connected.
		OFF	Power supply is disconnected.
RUN	Green	ON	The device is in normal operation or in the shutdown process (approx. 30 seconds).
		OFF	The device has been shut down.
ERROR	Red	BLINKING	Communication error with slave device / Setting file error *1
		OFF	Operation is normal.

*1 ERROR LED blinks 3 or 4 times when the Power is turned ON.

■ ETHERNET INDICATOR LED

ID	COLOR	FUNCTION
ACT	Amber	The LED turns ON during communication.
LNK	Green	The LED turns ON when Link is established.

■ BUTTON

ID	FUNCTION
SHUTDOWN	Pressing the button for 3 seconds or longer shuts down the device.

■ TERMINAL ASSIGNMENT

NO.	ID	FUNCTION
1	24V	Power supply (24V DC)
2	0V	Power supply (0V DC)
3	NC	No connection
4	NC	
5	FE	Functional earth

1.6 RGP30-W general descriptions

- Graphic windows can be created by using Graphic Panel Designing Software for RGP30 series (model: RGP-Designer).
- RGP30-W works as a web server and enables data monitoring using browser on the user's terminal.
- RGP30-W can be connected to power measuring devices over Modbus/TCP in addition to the devices already available for connection.
  Refer to the following table for compatible power measuring devices.
- RGP30-W can be connected to remote I/O devices with the Modbus/TCP slave function.
- Totalized energy data can be stored on a daily, monthly, and yearly basis. (An SD card is required for storing.)
- The totalized energy values stored in the RGP30-W can be read by other devices over Modbus/TCP.
- By installing the PC Configurator Software compatible with the RGP30-W, loop test and settings can be performed. PC Configurator Software is downloadable from our web site.

PRODUCT	MODEL / DATA TYPE
Multi Power Monitoring Module	R7EWTU, R7MWTU, R9EWTU, R9MWTU
Multi Power Transducer	M5XWT, M5XWTU, M50XWTU, M50EXWTU
Multi Power Monitor	53U, 54U, 54U2
Multi Power Transducer	L53U
Modbus/TCP	Unsigned, 32-bit integer data The difference from when the power is turned on is accumulated. Operation confirmed devices: DL30 (PI channel), DL8 (PI channel), R3-WTU (active energy), R3-PA8S, R3-PA4A(B)S, R8-WTU (active energy), R8-PA4, R7M(E)-PA8, WL40W1-WTU (active energy)

NOTE

For the procedures to create graphic windows, refer to the Graphic Panel Designing Software for RGP30 series (model: RGP-Designer) Users Manual (EM-8581-B).

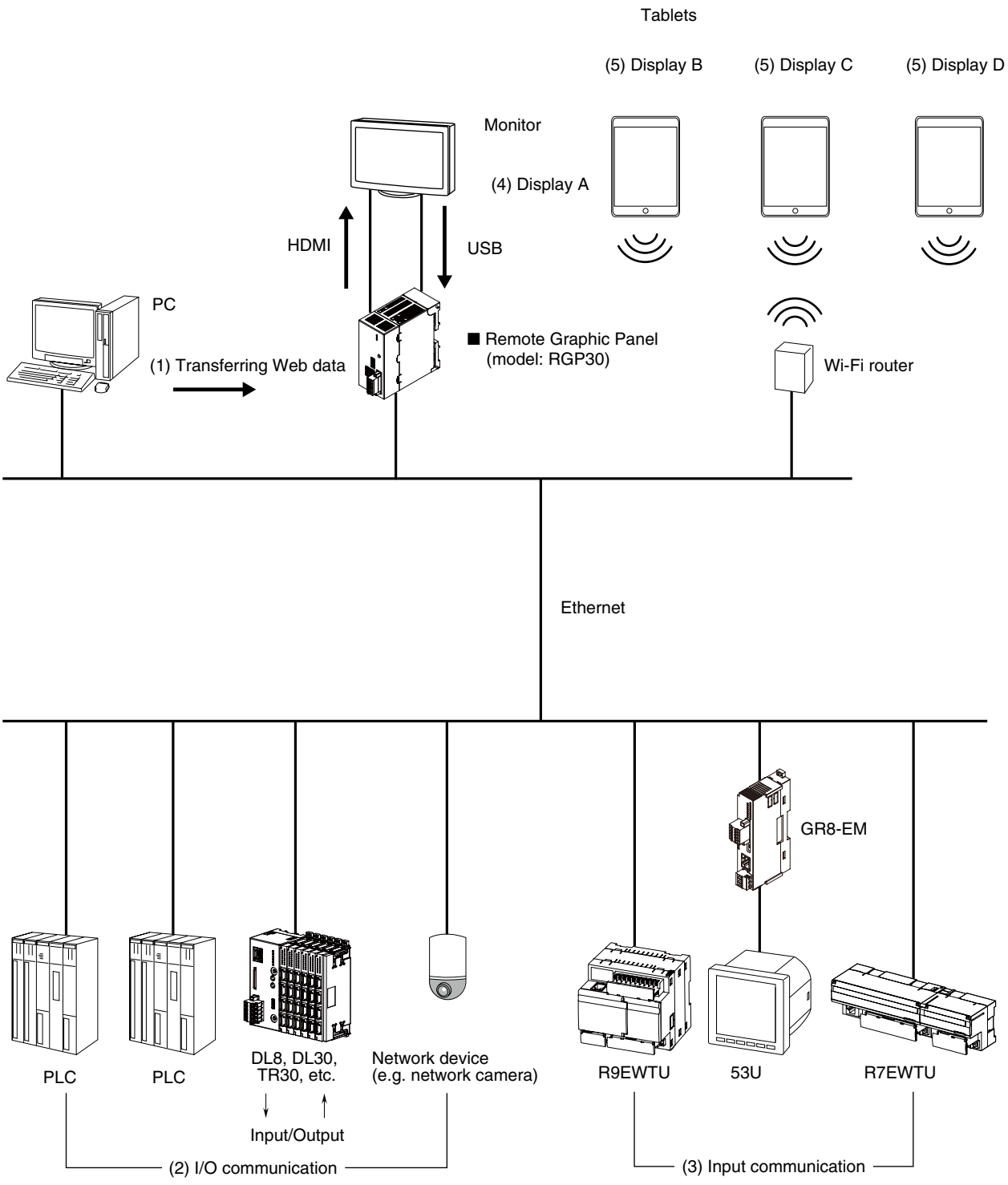
System configuration

■ RGP30-W

■ Designing Software
(model: RGP-Designer)

■ Field monitoring
(Web screen)

■ Field monitoring
(Web screen)



(1) Transfer data of Graphic Panels created on RGP-Designer to the RGP unit.
(2) Perform I/O communication with PLC over Modbus/TCP or SLMP.
(3) Import measurement values from the power measuring device over Modbus/TCP.
(4) Connect to the RGP Web server from browser of the RGP unit by loopback to display on an HDMI monitor.
(Display unit A).
(5) Connect to the RGP Web server from outside via the network to display on a terminal (Display units B, C, D).

1.7 Additional information

1.7.1 Web server

The RGP30-W works as a web server and fulfills function of a display unit using a browser on the user's terminal.
The maximum number of terminals that can be connected is 8.
For details on verified operating systems (OS) and browsers, refer to the RGP30 specifications (ES-8581).
Note that RGP30-W does not support Incognito Mode.

NOTE

- The operation of RGP30-W may be changed without prior notice due to specification change of OS or browser.

1.7.2 Operating system for RGP30-W

RGP30-W uses 'Windows 10 IoT Enterprise 2016 LTSB' as its OS.

Security support for Windows 10 IoT Enterprise 2016 LTSB by Microsoft is scheduled to end in October 2025.

2. Installation and setup

2.1 Preparations

- RGP30-W
- PC
- USB mouse
- USB keyboard
- HDMI cable
- HDMI-compatible display (LCD monitor, etc.)
- SD card (Use an SD card of the recommended model number by us. For details, refer to 7.2.1 SD card.)
- Graphic Panel Designing Software for RGP30 series (model: RGP-Designer) *1

In addition to the above, a router and a fixed IP address contract may be required depending on your system configuration.

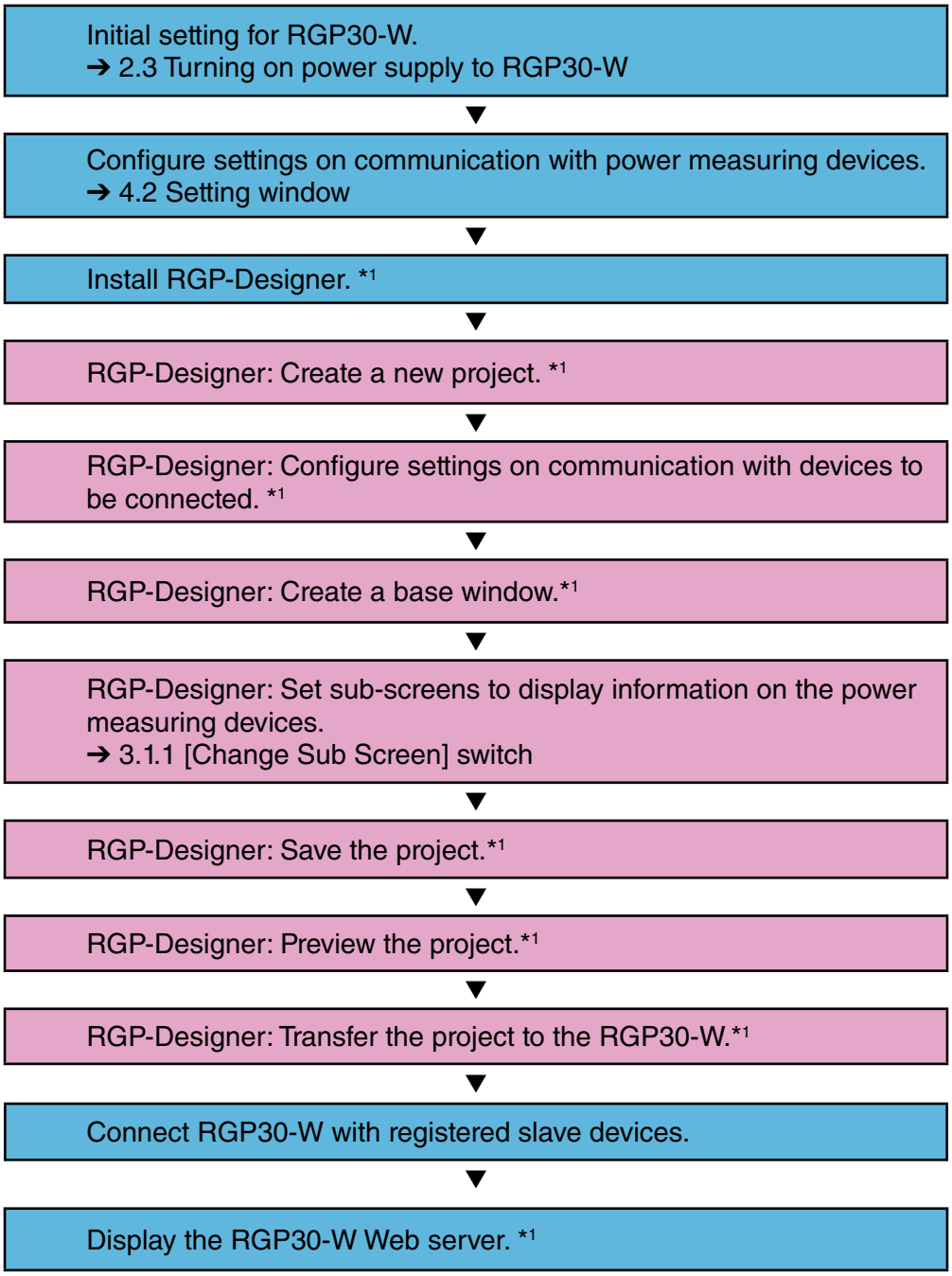
*1 The software program is downloadable from our web site.

2.2 RGP30-W Setup flowchart

Before using the RGP30-W, follow the procedure below to configure the setting.

2.2.1 RGP-Designer

In order to display information on the power measuring devices on the RGP-Designer, follow the setup steps below. For other devices that can be displayed on the RGP-Designer, configure the settings according to the RGP-Designer Users Manual.

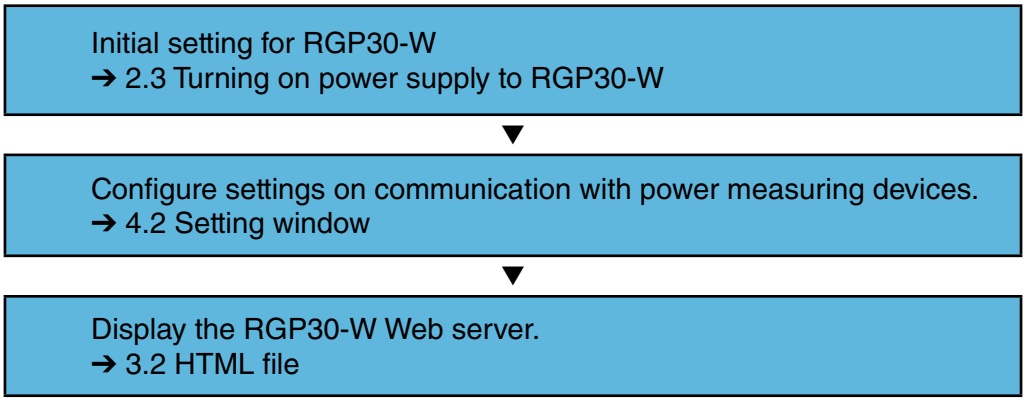


NOTE

For detailed descriptions on the procedures marked *1, refer to the Graphic Panel Designing Software for RGP30 series (model: RGP-Designer) Users Manual (EM-8581-B).

2.2.2 HTML file

In order to directly access to HTML files and display the information on power measuring devices, follow the setup steps below.
For other devices that can be displayed on the RGP-Designer, configure the settings according to the RGP-Designer Users Manual. (no direct access to the device data)



2.3 Turning on power supply to RGP30-W

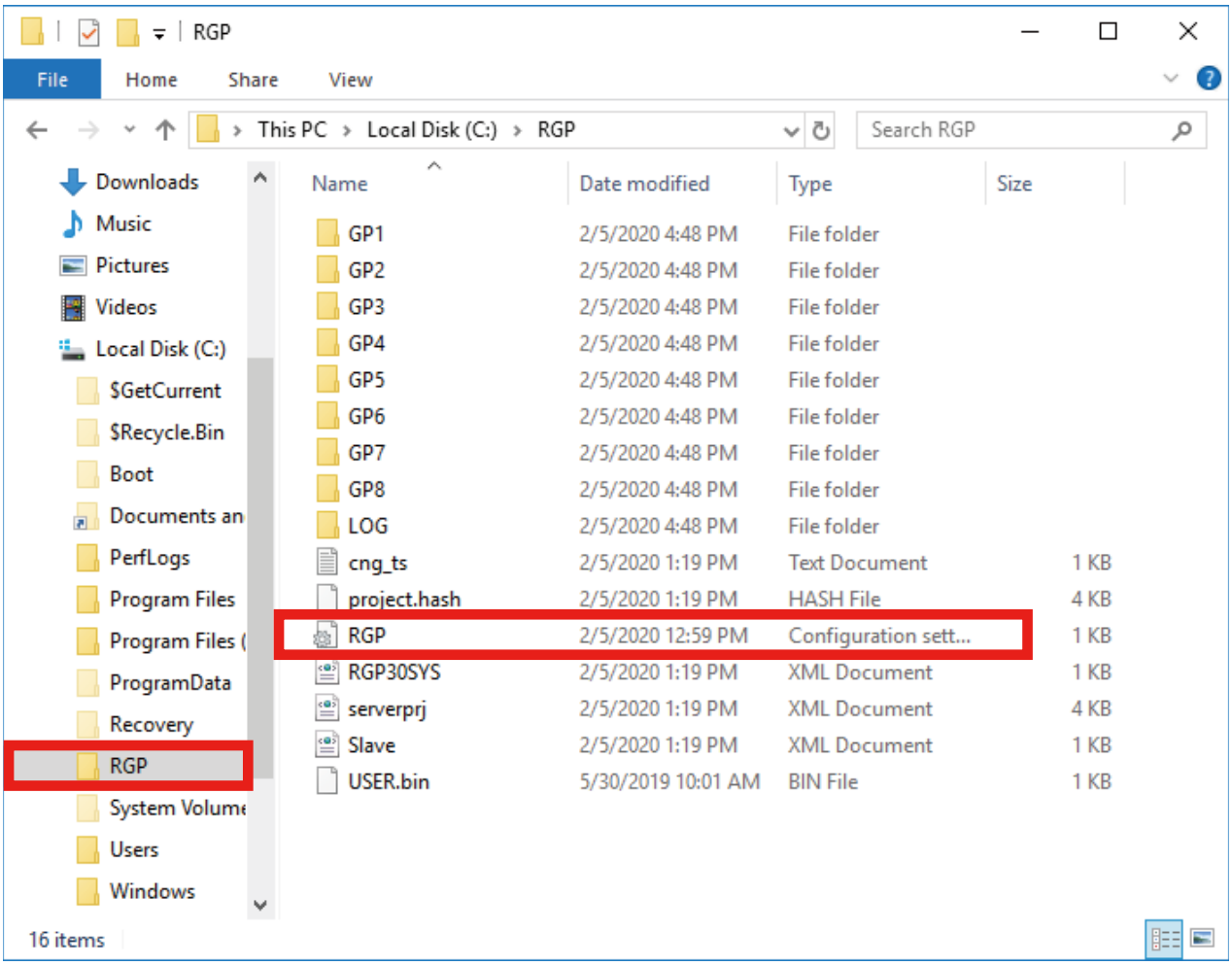
2.3.1 Turning ON power supply and logging in for initial setting

Login is required after turning on RGP30-W to perform initial setting or setting change of the device.

1) Connect a USB mouse and a USB keyboard to the device.
2) Connect the RGP30-W to a display with an HDMI cable and then turn ON the power supply to the device.
3) Wait for about 10 seconds until the Windows login window appears, and enter the user name and the password.

   ■ Default setting

   User name: admin
   Password : admin
4) In order to change Port No. for HTTP or HTTPS connection, edit the file "RGP.ini" located in the "RGP" folder under C drive of the RGP30-W.



The parameters configured in the file "RGP.ini" are shown in the table below.
Edit the file using a text editor such as Windows Notepad.
Turn OFF and ON the power supply to the RGP30-W in order to enable the changes.
If invalid values are set, default values are automatically applied.

ITEM	SETTING VALUE
HTTP Port No.	0 to 65535 (default: 80)
HTTPS Port No.	0 to 65535 (default: 443)
RGP-Designer Port No.	0 to 65535 (default: 30559)
Log folder access level	0 to 7 (default: 0)
TLS certification file access level	0 to 7 (default: 0)
Power monitoring window access level	0 to 7 (default: 0)
Setting window access level	0 to 7 (default: 0)

```
[RGP]
PORT_HTTP=80                : HTTP Port No.
PORT_HTTPS=443              : HTTPS Port No.

[COM]
PORT_DESIGNER=30559         : RGP-Designer Port No.

[LOG]
ACCESS_LEVEL=0              : LOG folder access level (0 to 7)

[SSL]
ACCESS_LEVEL=0              : TLS certification file access level (0 to 7)

[PW]
USER_LEVEL=0                : Power monitoring window access level (0 to 7)
ADMIN_LEVEL=0               : Setting window access level (0 to 7)
```

NOTE

For the details on the access levels, refer to the Graphic Panel Designing Software for RGP30 series (model: RGP-Designer) Users Manual (EM-8581-B).

2.4 Turning off power supply to RGP30-W

2.4.1 Shutdown procedure

1) Hold down [SHUTDOWN] button for more than 3 seconds.
   Wait for approx. 30 seconds until the shutdown is complete and RUN LED turns OFF.
2) Power supply to the device can be safely disconnected only after confirming that RUN LED has turned OFF.

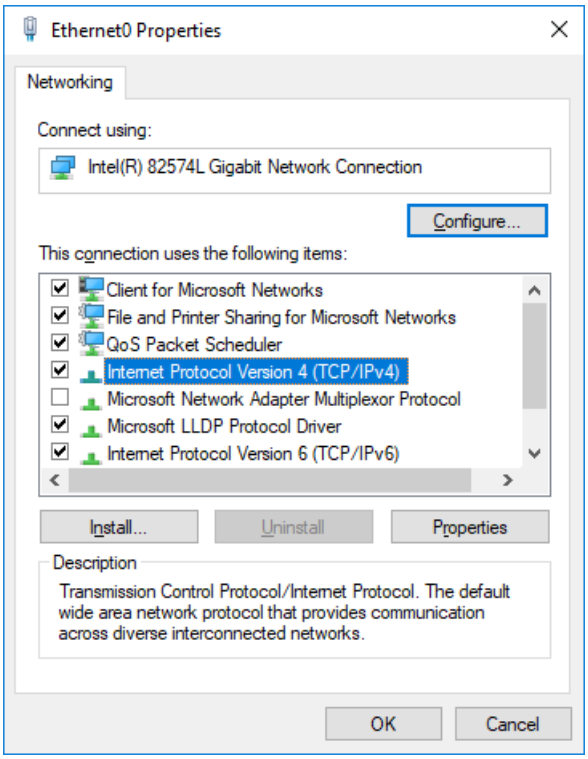
CAUTION

- If the power supply is momentarily or completely lost during normal operation of the RGP30-W, its internal data may be damaged due to the failure of appropriate shutdown process. Protect the device with an UPS or other means as needed.

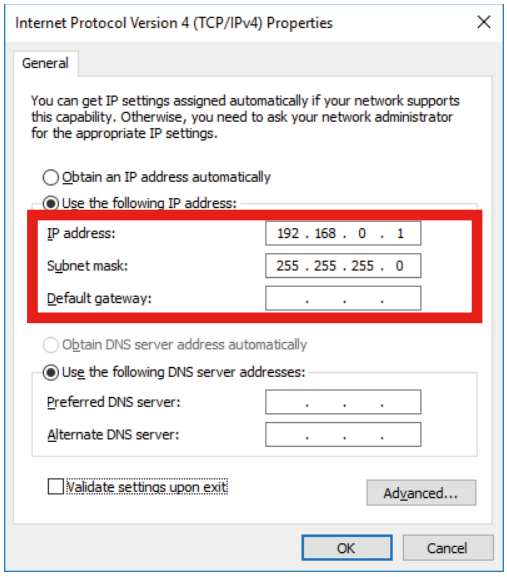
2.5 Setting/changing RGP30-W IP address

Follow the procedure explained below for setting or changing the IP Address of the RGP30-W.

1) Click [Start] > [Windows System Tool] > [Control Panel].
2) Open [Network and Internet] > [Network and Sharing Center], and click [Ethernet].
3) Open [Properties] > [Internet Protocol Version 4 (TCP/IPv4) Properties] window.



4) Configure each parameter if necessary.



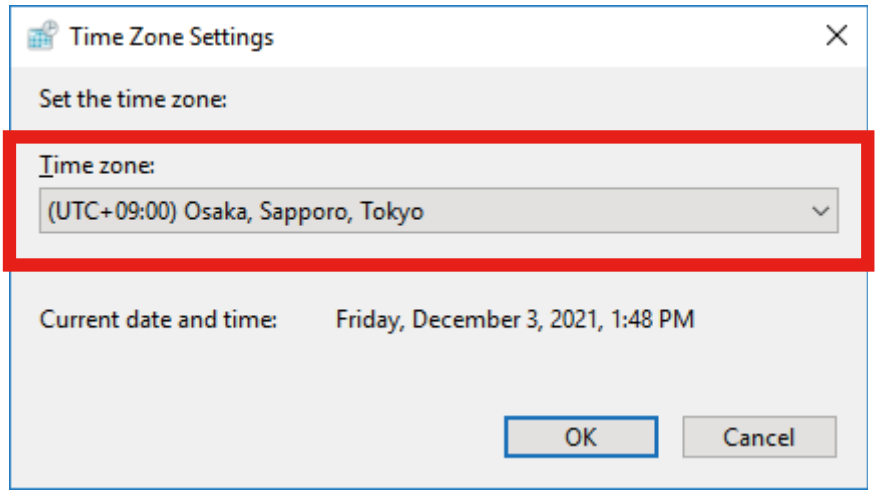
Consult your network administrator for settings for connection via a router.

2.6 Time zone settings

Follow the procedure below for setting or changing the time zone of the RGP30-W.

1) Click [Start] > [Windows System Tool] > [Control Panel].
2) Open [Clock, Language, and Region] > [Date and Time], and click [Change time zone].
3) Open [Time Zone Settings] dialog and change the settings if necessary.

The setting is applied after rebooting the RGP30-W.



CAUTION

RGP30-W does not support the daylight saving time.
If [Automatically adjust clock for Daylight Saving Time] is set to ON, the RGP30-W is out of the warranty scope.

2.7 Confirming RGP30-W firmware version

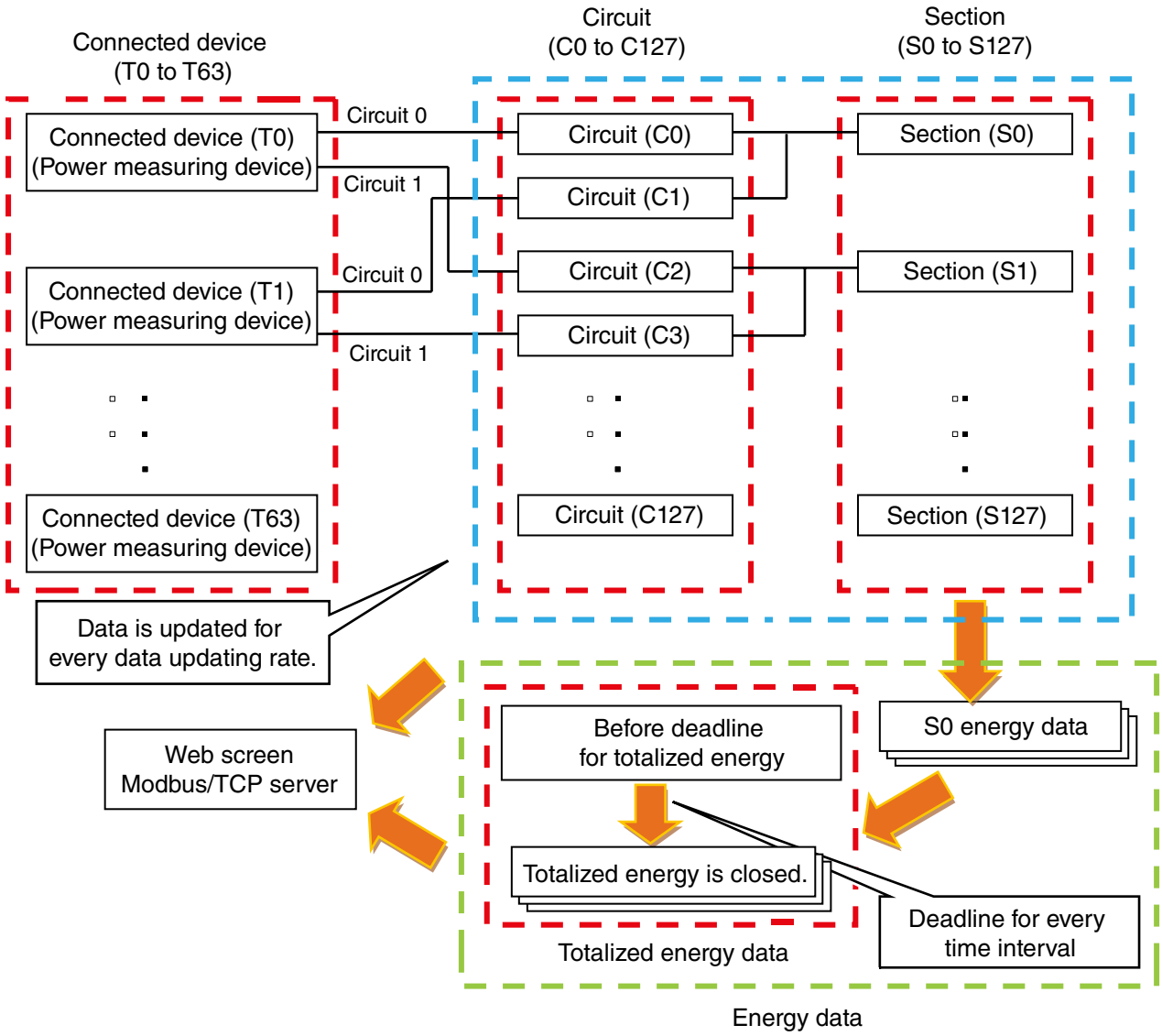
The firmware version of RGP30-W can be confirmed on the Web browser (4.1 Menu window) or by a log file (5.4 System log).

2.8 Installing and starting up RGP-Designer

Install RGP-Designer in order to configure the settings for RGP30-W and to create graphic windows.
For details, refer to the RGP-Designer Users Manual (EM-8581-B).

2.9 Basic operation and terms

The following diagram is the example of combining connected devices, circuits and sections.
RGP30-W operates in the following step.



1) Set connected devices, circuits and sections according to the environment. ➔ 4.2 Setting window
2) The data in each circuit and section is updated for every data updating rate. The updated data can be accessed from 4.6 Section window and 4.7 Circuit window. Set the data updating rate by referring to 4.2.5 General.
3) At the timing of data updating rate, the total value of energy data for each section (in the case of S0, the total value of C0 and C1) is updated. Energy data can be accessed from 4.3 Energy window.
4) The totalized energy are calculated from the energy data, and the progress up to the time interval is recorded and updated. Totalized energy can be accessed from 4.3 Energy window and 4.5 Report. Set the time interval from 4.2.5 General. For totalized energy, refer to 5.2 Totalized energy.
5) The closing process for totalized energy in 4) is performed for each time interval. Totalized energy after closing can be accessed from 4.3 Energy window and 4.5 Report.
6) Data from 2) to 4) can be read by using the Modbus/TCP server function. ➔ 6. Modbus/TCP server

3. Displaying web screen

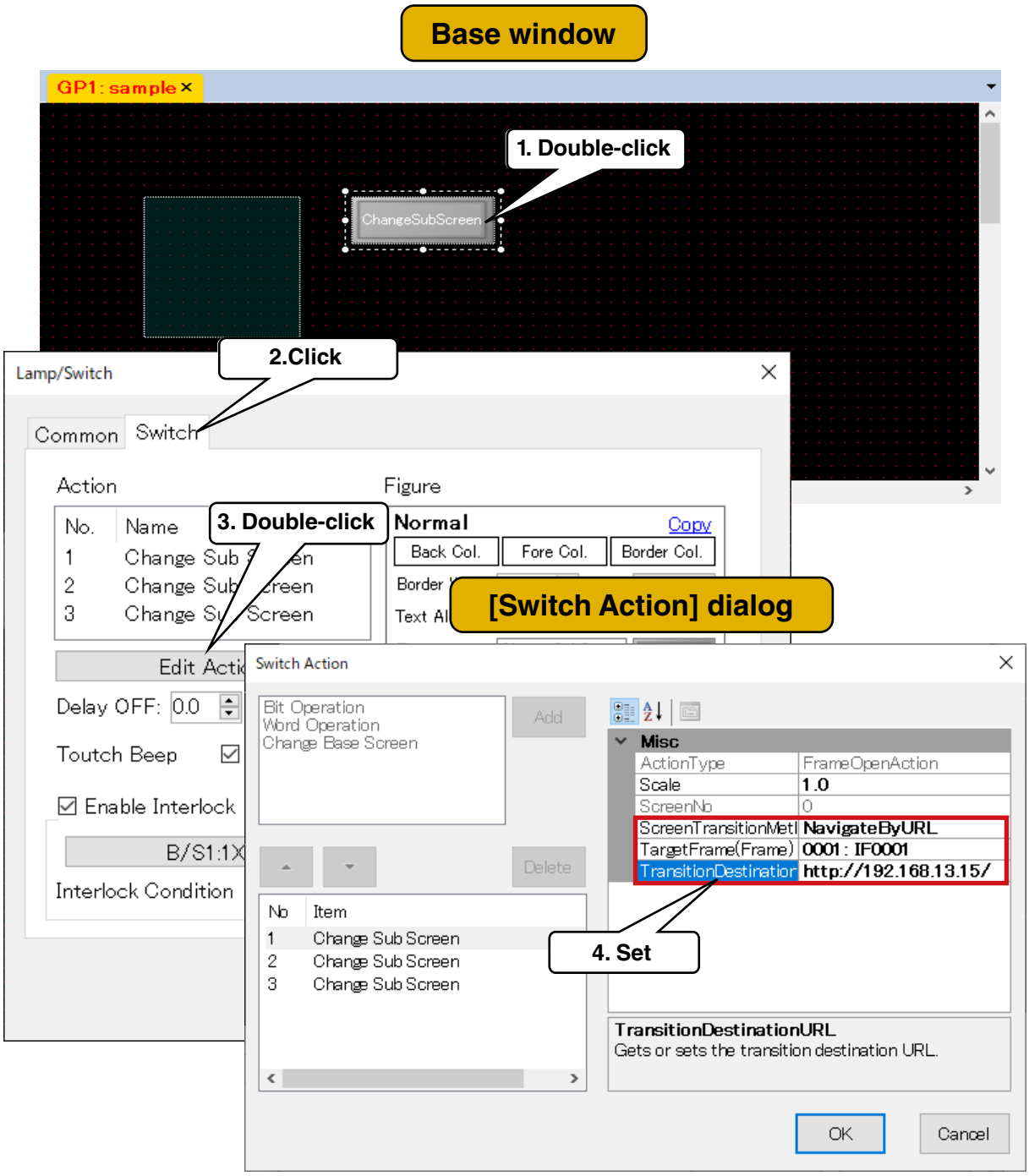
RGP30-W allows for the monitoring of compatible power measuring devices in addition to the conventional remote graphic functions.
The method for monitoring power measuring devices is explained in this chapter.
For details on the conventional remote graphic functions, refer to the RGP-Designer Users Manual (EM-8581-B).

3.1 RGP-Designer

By clicking on [ChangeSubScreen] switch pasted on the base window, information on the connected power measuring devices can be displayed on the sub-screen. For the setting method, see the next page.
For the arrangement and setting of the [Sub-Screen Switch] and [Sub-Screen Display Frame] on the base window, refer to the RGP-Designer Users Manual (EM-8581-B).

3.1.1 [Change Sub Screen] switch

Place [Change Sub Screen] and [Sub Screen Frame] on the base window.



1) Double-click [ChangeSubScreen] switch and then double-click [Edit Action] button in [Switch] tab to display the [Switch Action] dialog.
2) Select [NavigateByUrl] in [ScreenTransitionMethofd] field.
   Select the allocated sub-screen frame in [TargetFrame] field.
3) Enter URL of the window to be displayed in [TransitionDestination] field.
   Regarding the URL and the frame size, refer to 3.1.2 URL of sub screen.
4) Continue with the setting in referring to the RGP-Designer Users Manual (EM-8581-B).

3.1.2 URL of sub screen

For the URLs of windows to be displayed on the sub screen and the frame size, refer to the following table.

URL	Window	Frame size
/PW/s_chart_day.html	Energy window (daily)	1220 × 560
/PW/s_cmp_day.html	Comparison window (daily)	1220 × 600
/PW/s_report_day.html	Daily report	Variable
/PW/s_bar_day.html	Bargraph of the energy window (daily)	900 × 430
/PW/s_chart_month.html	Energy window (monthly)	1220 × 560
/PW/s_cmp_month.html	Comparison window (monthly)	1220 × 600
/PW/s_report_month.html	Monthly report	Variable
/PW/s_bar_month.html	Bargraph of the energy window (monthly)	900 × 430
/PW/s_chart_year.html	Energy window (yearly)	1220 × 560
/PW/s_cmp_year.html	Comparison window (yearly)	1220 × 600
/PW/s_report_year.html	Yearly report	Variable
/PW/s_bar_year.html	Bargraph of the energy window (yearly)	900 × 430
/PW/s_section.html?no=s s: section number ➔ 4.2.4 Section	Section window e.g.: /PW/s_section.html?no=0 ➔ Section No. 0 is specified.	(Variable) × 240
/PW/s_circuit.html?no=c c: circuit number ➔ 4.2.3 Circuit	Circuit window e.g.: /PW/s_circuit.html?no=0 ➔ Circuit No. 0 is specified.	880 × 560

3.2 HTML file

It is possible to access directly to HTML files and to display the information on the connected power measuring devices.
Enter "http://(IP address)/PW/(URL).html" in the address bar of the browser.
(e.g.: In case of the setting window, http://192.168.0.1/PW/cfg/config.html)
Enter IP address of the RGP30-W for (IP address).
It is also possible to use the loopback address "127.0.0.1".
For the URLs assigned to each window, refer to the following table.

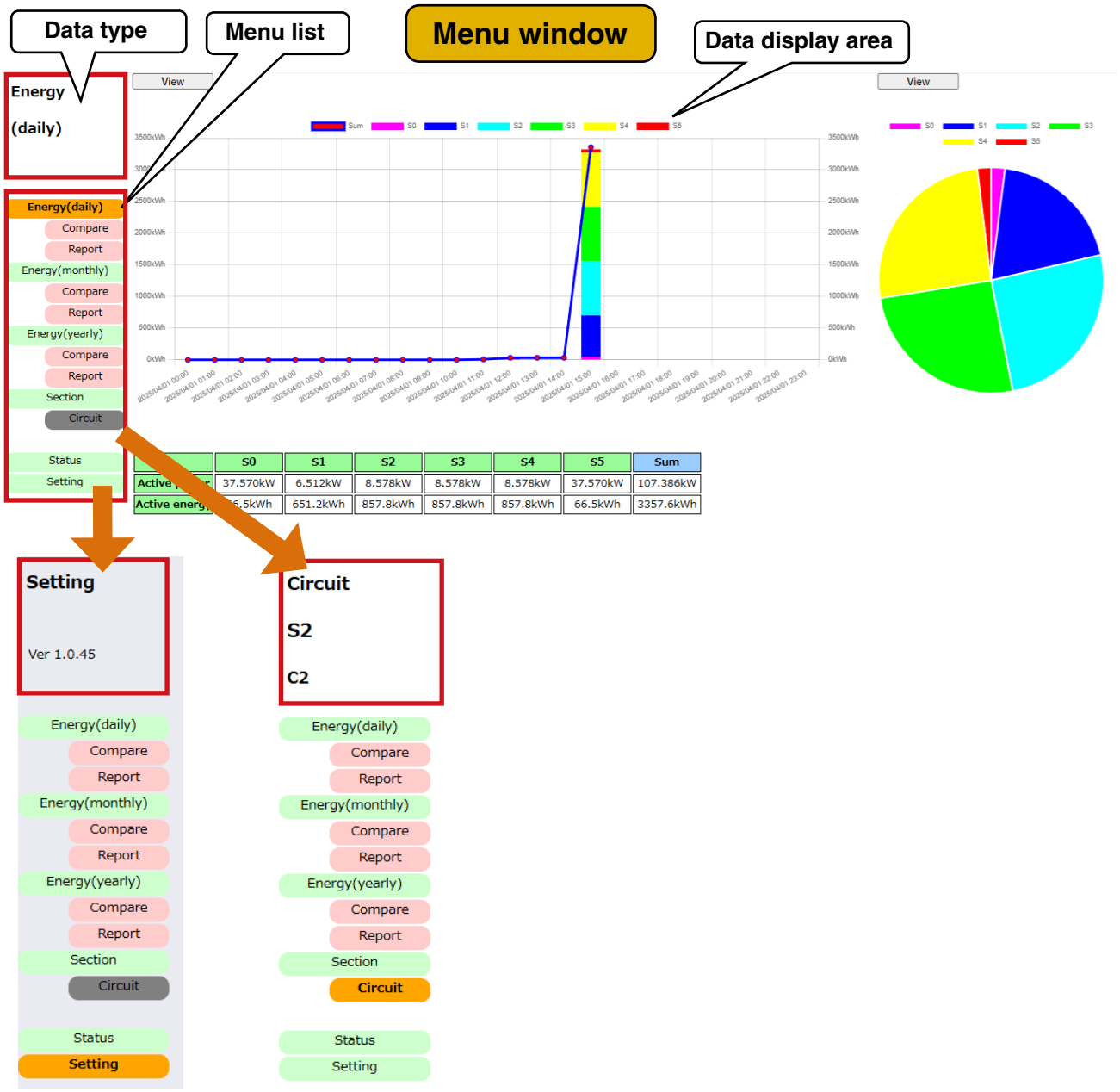
URL	Window
/PW/chart_day.html	Energy window (daily)
/PW/cmp_day.html	Comparison window (daily)
/PW/report_day.html	Report window (daily)
/PW/chart_month.html	Energy window (monthly)
/PW/cmp_month.html	Comparison window (monthly)
/PW/report_month.html	Report window (monthly)
/PW/chart_year.html	Energy window (yearly)
/PW/cmp_year.html	Comparison window (yearly)
/PW/report_year.html	Report window (yearly)
/PW/section.html	Section window
/PW/circuit.html	Circuit window
/PW/status.html	Communication status window
/PW/cfg/config.html	Setting window
/PW/cfg/Log.txt	System log file The year to be displayed can be specified. e.g.: When the system log file in 2024 is displayed: /PW/cfg/Log.txt?year=2024

4. Display

This chapter describes details and operation of the RGP30-W windows related to power measuring devices.

4.1 Menu window

The menu window is displayed only when the user has accessed directly to an HTML file.



1. Click on an item to be displayed in the menu list.
2. The selected data is displayed in the data display area.
   The data type is displayed in the data type area.
3. When [Setting] is selected in the menu list, the RGP30-W version is displayed in the data type area.
4. Circuit data can be available for display only when [Section] is selected.
   The section name and the circuit name are displayed in the data type area.

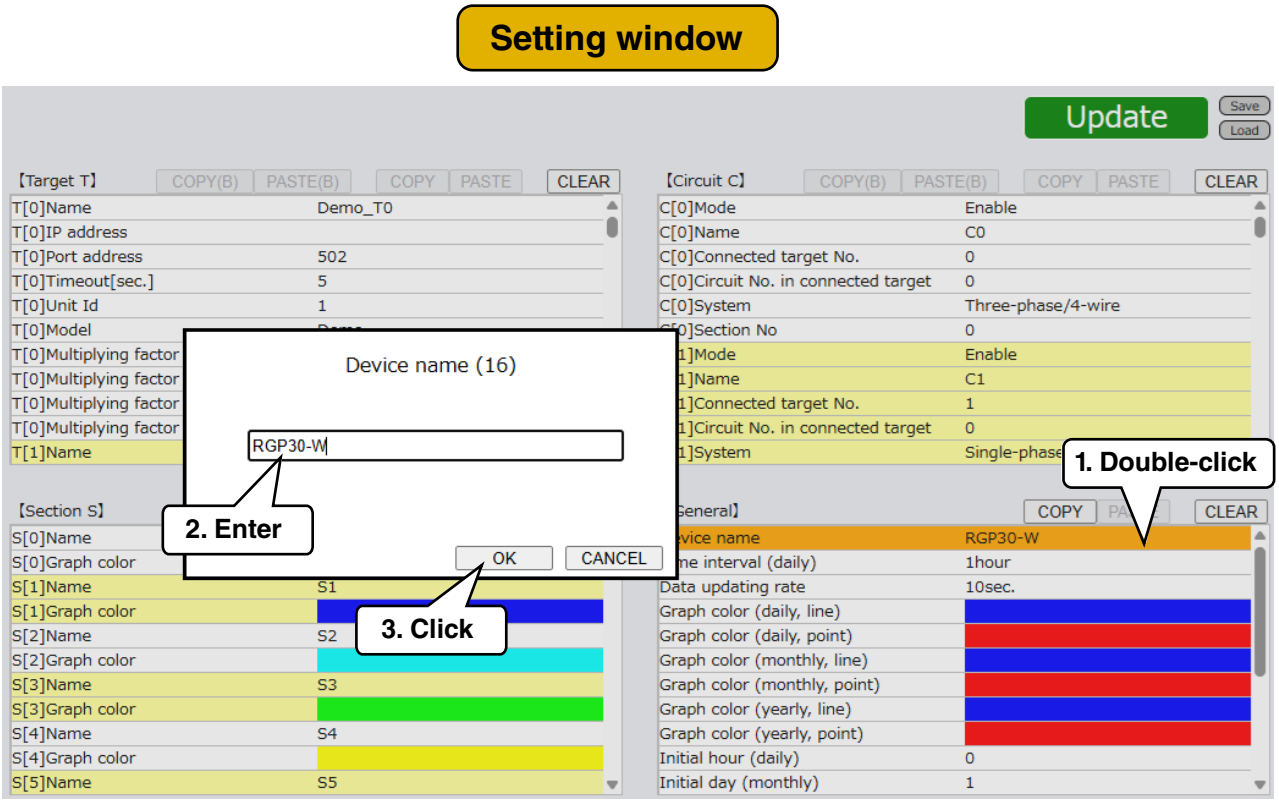
4.2 Setting window

In the initial window, current RGP30-W settings are displayed.
Open the setting window by accessing directly to HTML files.

4.2.1 Common

There are multiple methods to set parameters as explained below.

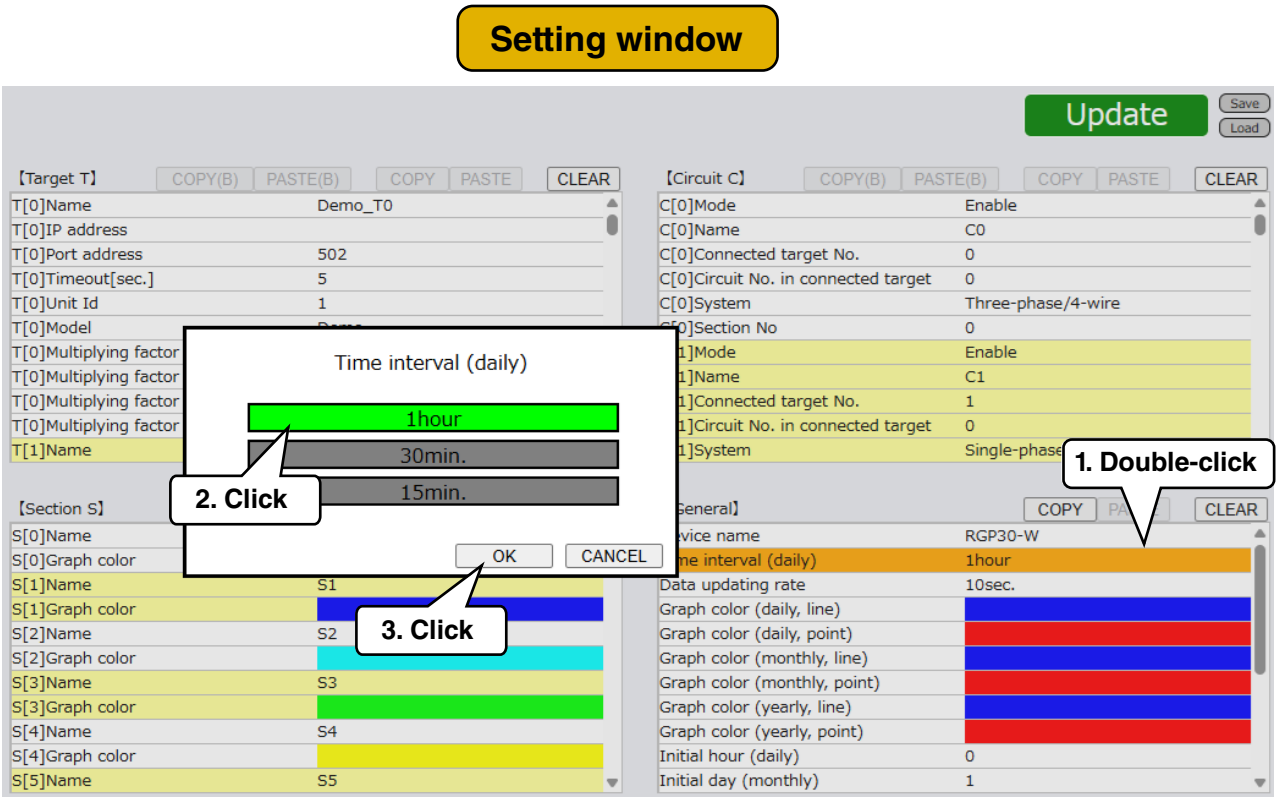
1. Entering text string or numerical figures



1. Double-click on a parameter to be set.
2. When the setting dialog appears, change the setting.
3. Click [OK] button to accept the setting change. (The setting change is not applied until [Update] button is clicked.)

2. Selecting a setting value

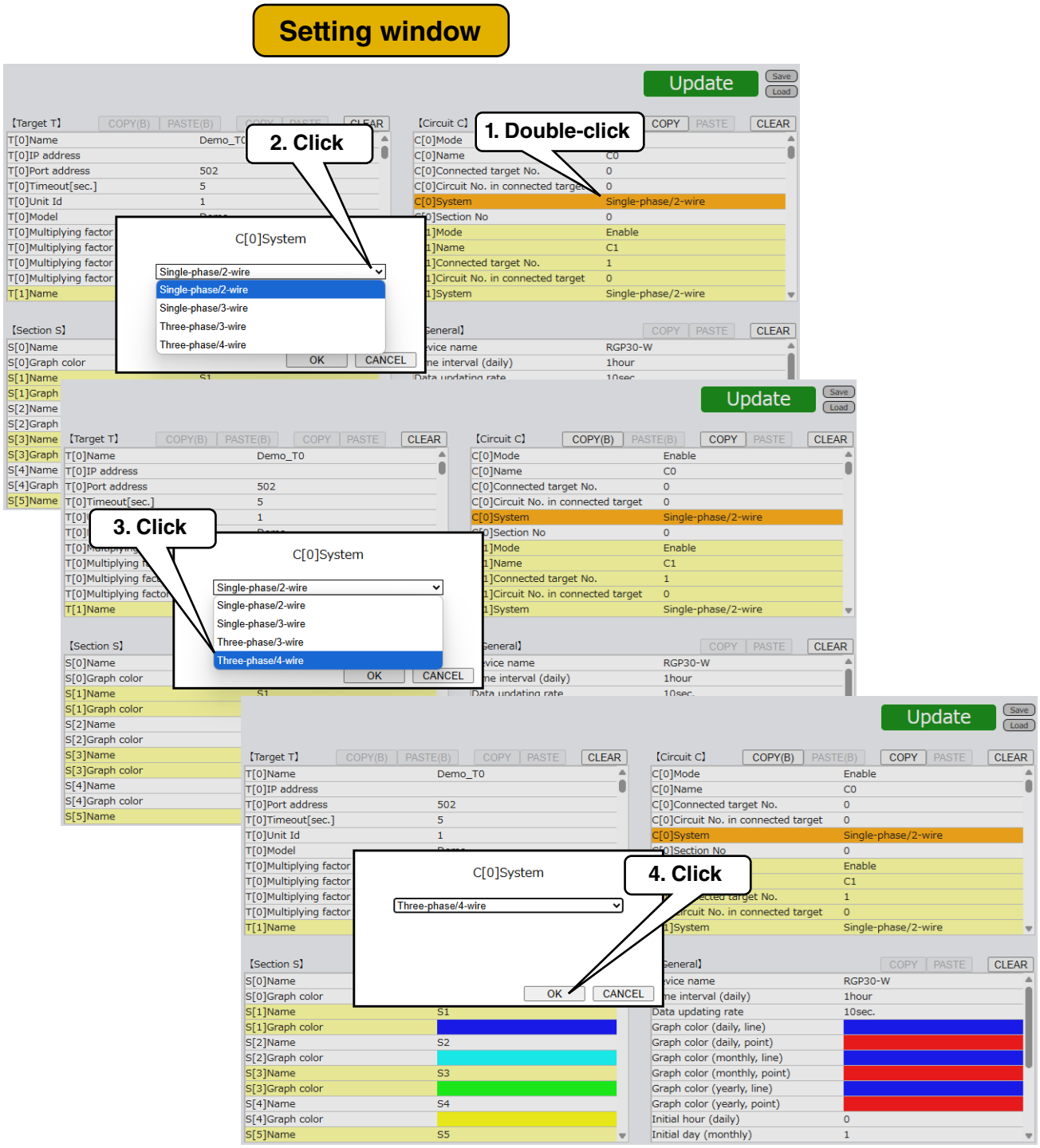
The following window appears when there are multiple options.



1. Double-click on a parameter to be set.
2. When the setting dialog appears, select a value.
3. Click [OK] button to accept the setting change. (The setting change is not applied until [Update] button is clicked.)

3. Drop-down list

A drop-down list as shown in the example below appears when there are many options.



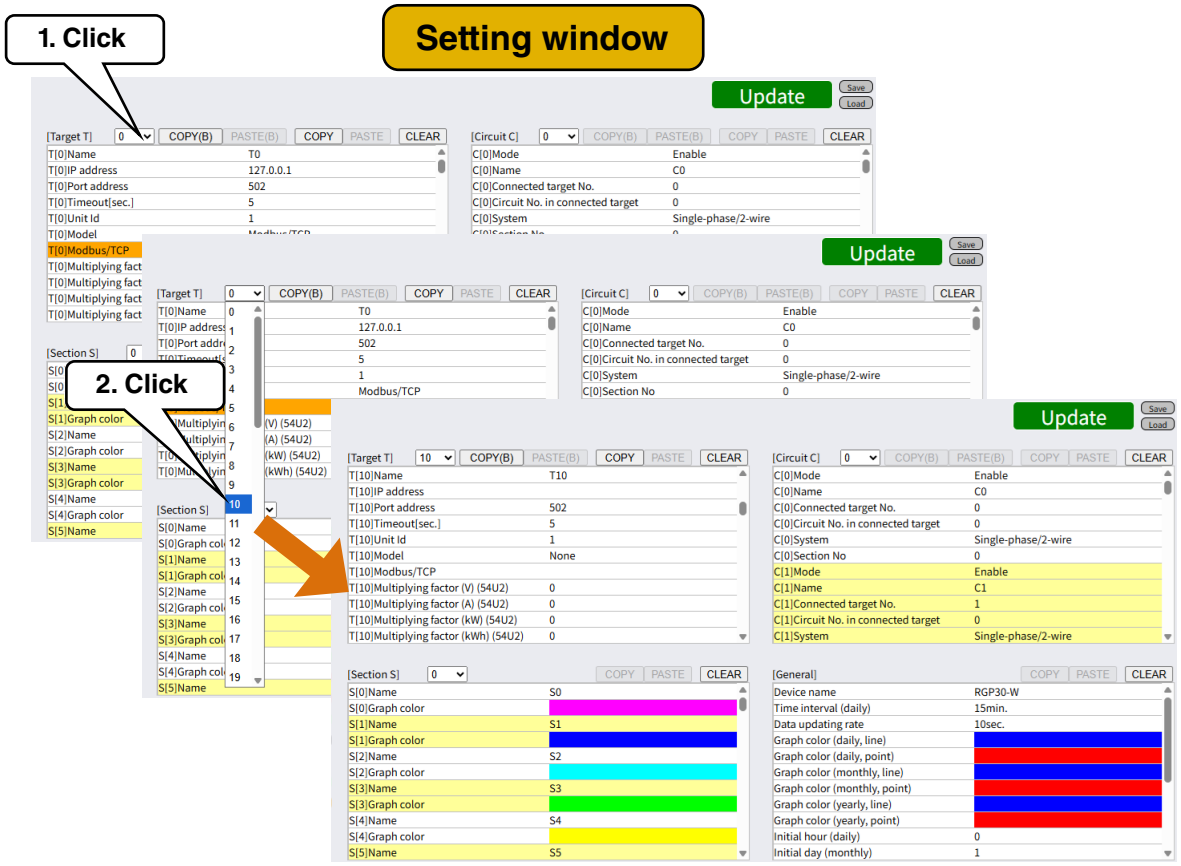
1. Double-click on a parameter to be set.
2. When the setting dialog appears, click [▼] and display the options.
3. Select a value.
   Click [OK] button to accept the setting change. (The setting change is not applied until [Update] button is clicked.)

4. Selecting color

The following window appears when setting graph colors.

1. Double-click on a parameter to be set.
2. When the setting dialog appears, click on the color field to edit it.
3. Click [OK] button to accept the setting change.
   (The setting change is not applied until [Update] button is clicked.)

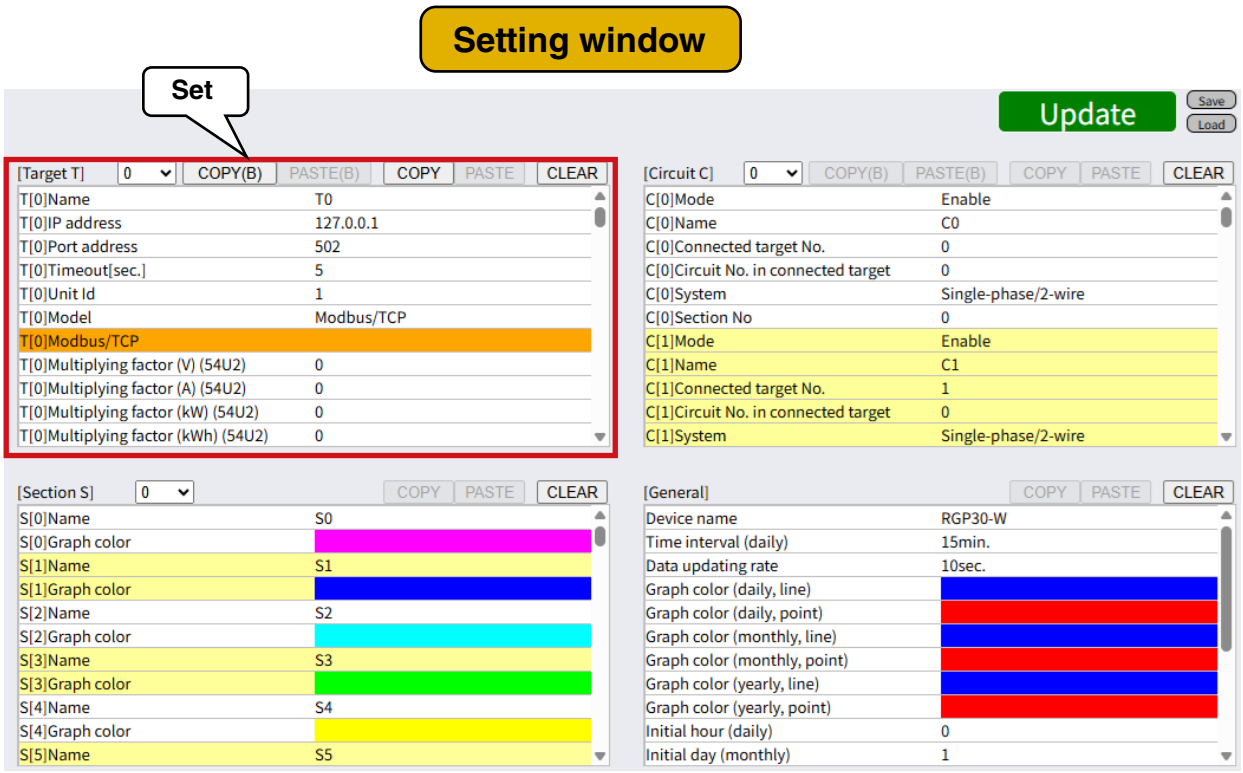
5. Moving to other parameters



1. Click the drop-down list.
2. The window moves to the selected parameter.

4.2.2 Connected device

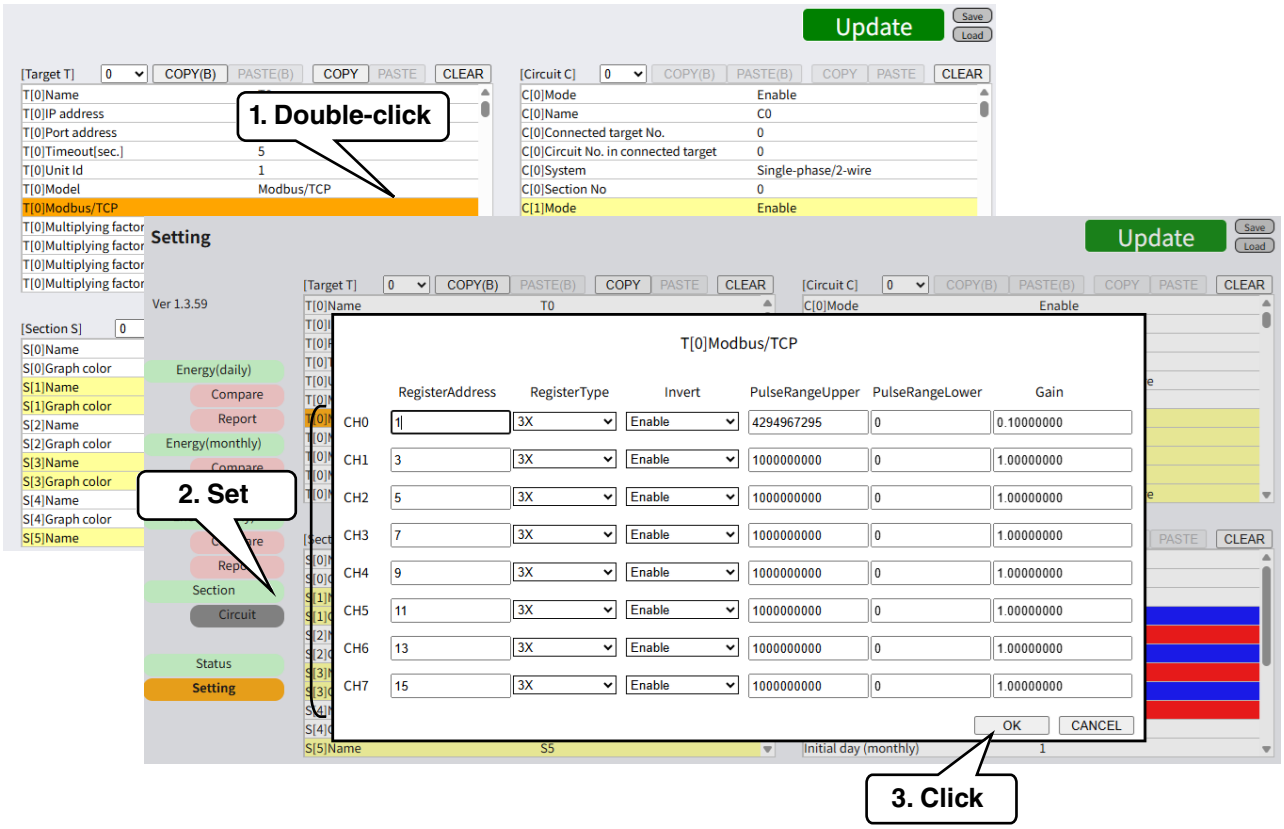
Configure the settings for power measuring devices connected to RGP30-W over Modbus/TCP (client).
A maximum of 64 devices can be connected (T0 to T63).
For the parameters and the details, refer to the following table.



Parameter	Description	Default
Name	Set the connected device name within 16 characters.	T0 to T63
IP address	Set the IP address of the connection destination. (0.0.0.0 to 255.255.255.255)	blank
Port address	Set the port address. (0 to 65535)	502
Timeout [sec.]	Set the communication timeout with the connection destination in seconds. (1 to 30)	5
Unit ID	Set the node number. (1 to 255)	1
Model	Choose the power measuring device. (Unused / Demo / R7EWTU / R7MWTU / R9EWTU / R9MWTU / M5XWT / M5XWTU / M50XWTU_AC / M50XWTU_ABCD / M50EXWTU_AC / M50EXWTU_ABCD / 53U / L53U / 54U / 54U2 / Modbus/TCP) - Select M50XWTU_AC or M50EXWTU_AC when the circuit AC are used. (to connect with 2 circuits of single-phase/3-wire, three-phase/3-wire or three-phase/4-wire system) - Select M50XWTU_ABCD or M50EXWTU_ABCD when the circuit ABCD are used. (to connect with 4 circuits of single-phase/2-wire system)	Unused
Modbus/TCP	Set when Modbus/TCP is selected in [Model].	---
Multiplying factor (voltage, current, power, energy)	Setting is required when 54U2 is selected in [Model]. (-8 to 8:10^{-8}×10^{8})	0 for all parameters

When RGP30-W is connected to a remote I/O module with Modbus/TCP slave function, select [Modbus/TCP] for the model and configure the Modbus/TCP settings.
The read values are handled as 32-bit data integrated pulses (active energy).
For the parameters and the details, refer to the following table. 8 channels can be configured for each connected device.

Setting window



Parameter	Description	Default
Register Address	Set the register address from 1 to 65535. 2 addresses are read consecutively from the address set as 32-bit data. Set the register address with the smaller number.	1
Register Type	Select either [Input Register (3X)] or [Holding Register (4X)].	3X
Invert	Set [Disable] when the upper and lower registers are not inverted. (The specified register address is handled as upper data. The next register address is handled as lower data). Set [Enable] to invert. For assignment of register addresses, refer to the specifications of the device to be used.	Enable
PulseRange Upper/Lower	Set the same value as the pulse range set in the Modbus/TCP device (0 to 4 294 967 295). If the different value is set, an error occurs for accumulated value when overflow occurs. For details, refer to the specifications of the device to be used.	0 to 1 000 000 000
Gain	Set the weight per pulse in a numerical value (0.00000001 to 1 00 000 000.00000000). Set so that the conversion result to active energy is in 1 kWh units.	1.00000000

CAUTION

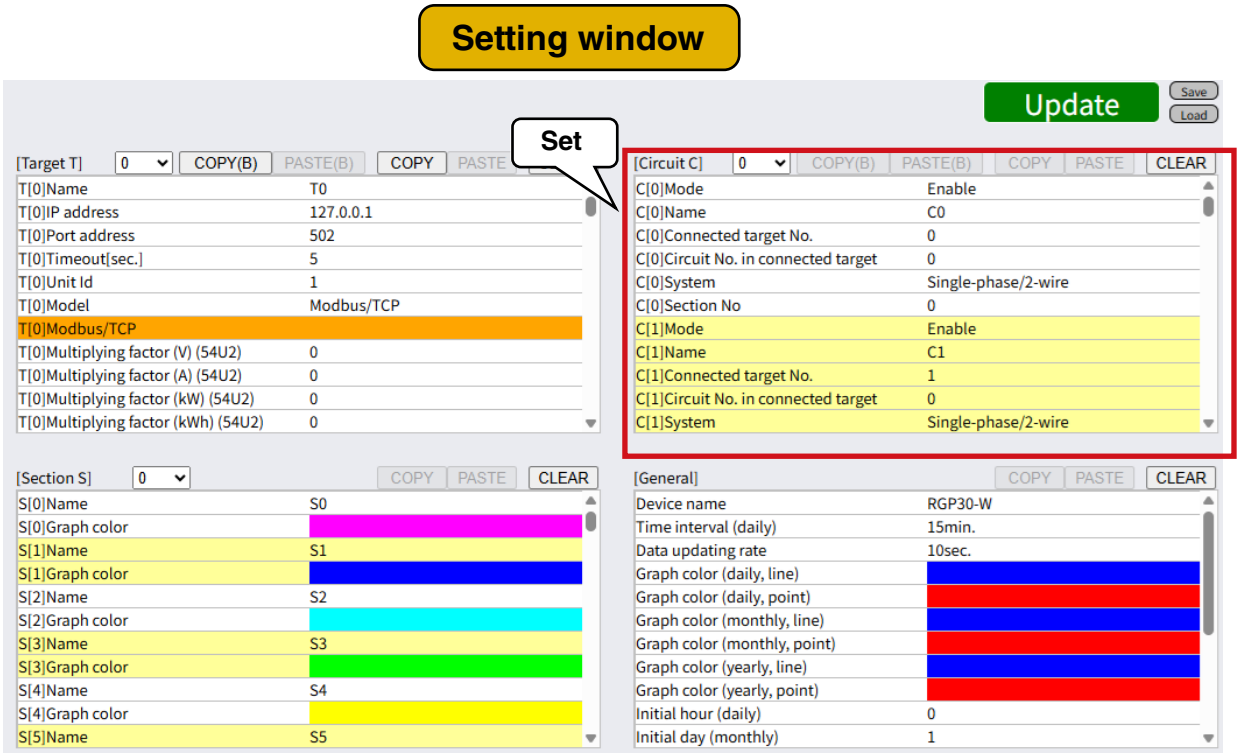
- When setting the gain, note that the conversion result to active energy should not exceed 32 bit (429496729.5).
- The gain is held as a double type (double-precision floating-point number) and the conversion processing to active energy is performed.
  Note that if it exceeds 15 digits, the error in the conversion result may become large.

When [Modbus/TCP] is selected for the model, the data displayed on each window differs from other models. For details, refer to the following table.

Window	Differences compared to other models	Reference
Energy window (daily / monthly / yearly)	Active power is determined as a circuit measurement error.	4.3 Energy window
Comparison window (daily / monthly / yearly)	No difference.	4.4 Comparison window
Report (daily / monthly / yearly)		4.5 Report
Section window	All items are displayed as invalid. (background color: gray, text: blank)	4.6 Section window
Circuit window	All items are displayed as invalid. (background color: gray, text: blank) Harmonic bargraph is not displayed.	4.7 Circuit window
Communication status window	No difference.	4.8 Communication status window

4.2.3 Circuit

Configure the circuit settings for power measuring devices connected to RGP30-W.
A maximum of 128 circuits can be set (C0 to C127).
For the parameters and the details, refer to the following table.



Parameter	Description	Default
Mode	Set [Disable] or [Enable]. When [Disable] is set, the following settings are invalid.	Disable
Name	Set the circuit name within 16 characters.	C0 to C127
Connected target No.	Set the station number of the connected device. (0 to 63) ➔ 4.2.2 Connected device	0
Circuit No. in connected target	Set the circuit number in the connected target. (0 to 15) Refer to the following table for usable circuit numbers.	0
System	Set the circuit system configuration. (single-phase/2-wire, single-phase/3-wire, three-phase/3-wire, three-phase/4-wire)	Single-phase/2-wire
Section No.	Set the section number. (0 to 127) ➔ 4.2.4 Section	0

Model	Circuit number
R7EWTU, R7MWTU	0, 1 (2 circuits)
R9EWTU, R9MWTU	0 to 15 (16 circuits)
M5XWT, M5XWTU	0 (1 circuit)
M50XWTU, M50EXWTU	0 to 3 (4 circuits)
53U, 54U, 54U2	0 (1 circuit)
L53U	0 (1 circuit)
Modbus/TCP	0 to 7 (8 circuits)

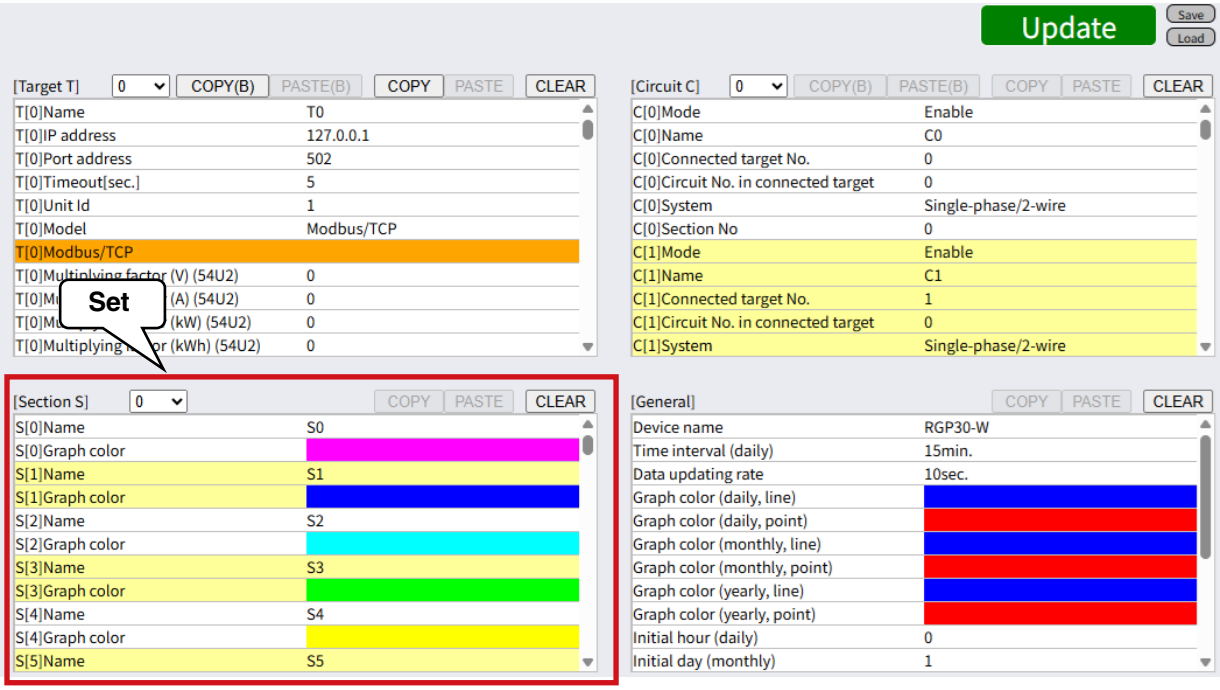
CAUTION

- Ensure that the connected target No., the circuit number and the system are correct.
- For details on the power measuring devices, refer to the users manual of each model.

4.2.4 Section

Configure the section settings to which circuits of power measuring devices (connected devices) belong.
A maximum of 128 sections can be set (S0 to S127).
For the parameters and the details, refer to the following table.

Setting window

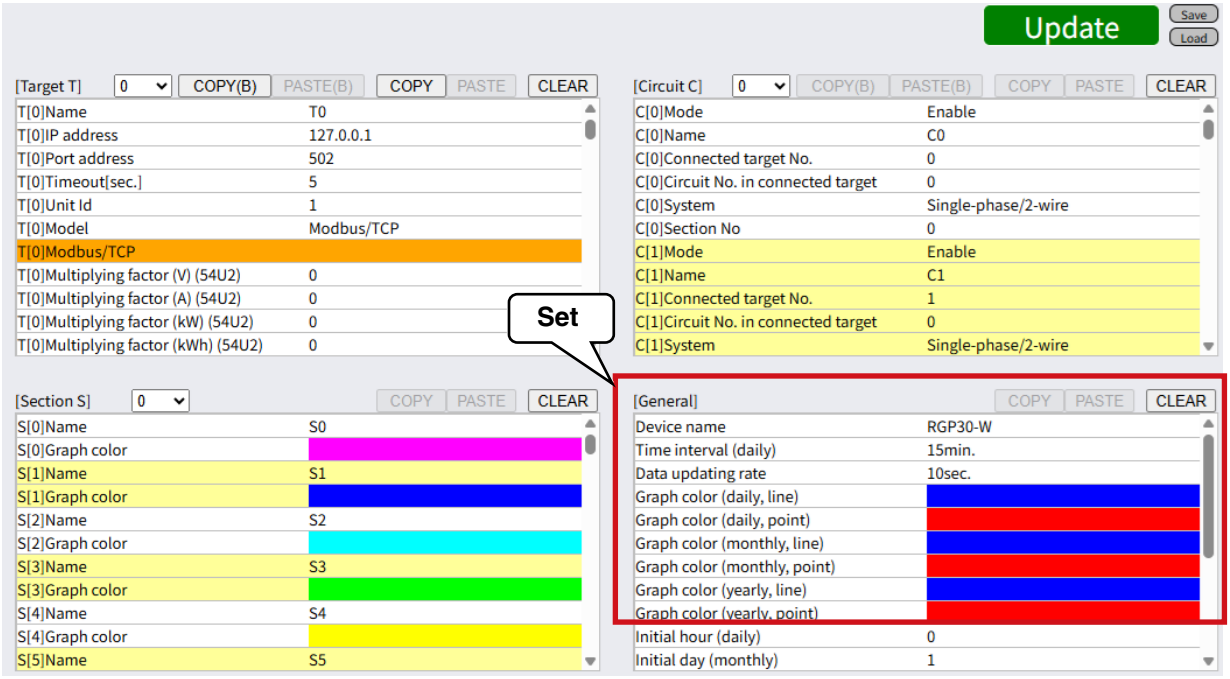


Parameter	Description	Default
Name	Set the section name within 8 characters.	S0 to S127
Graph color	Set the section color.	W3C standard 16 colors

4.2.5 General

Configure the general settings.
For the parameters and the details, refer to the following table.

Setting window



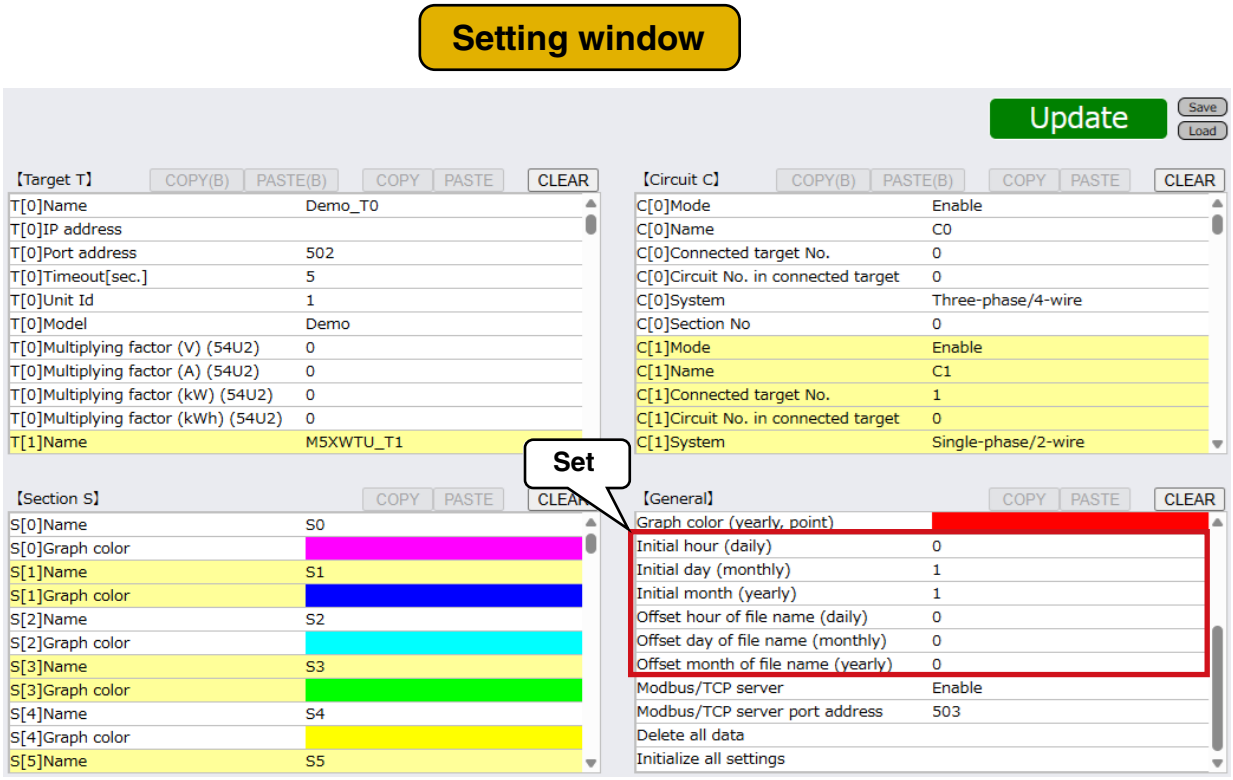
Parameter	Description	Default
Device name	Set the device name within 16 characters.	RGP30-W
Time interval (daily)	Select the time interval from 1 hour / 30 min. / 15 min.. ➔ 5.2 Totalized energy	1 hour
Data updating rate	Select the sampling rate of the measurement data from 10 sec. / 20 sec. / 30 sec. / 1 min. / 2 min. / 5 min..	10 sec.
Graph color	Set the colors of line and point for daily, monthly and yearly graphs.	line: blue point: red

CAUTION

When the data updating rate is set to 5 min. and the time interval is set to 15 min., error may be larger than the actual measurement value.

4.2.6 Report

Configure the report settings.
For the parameters and the details, refer to the following table.

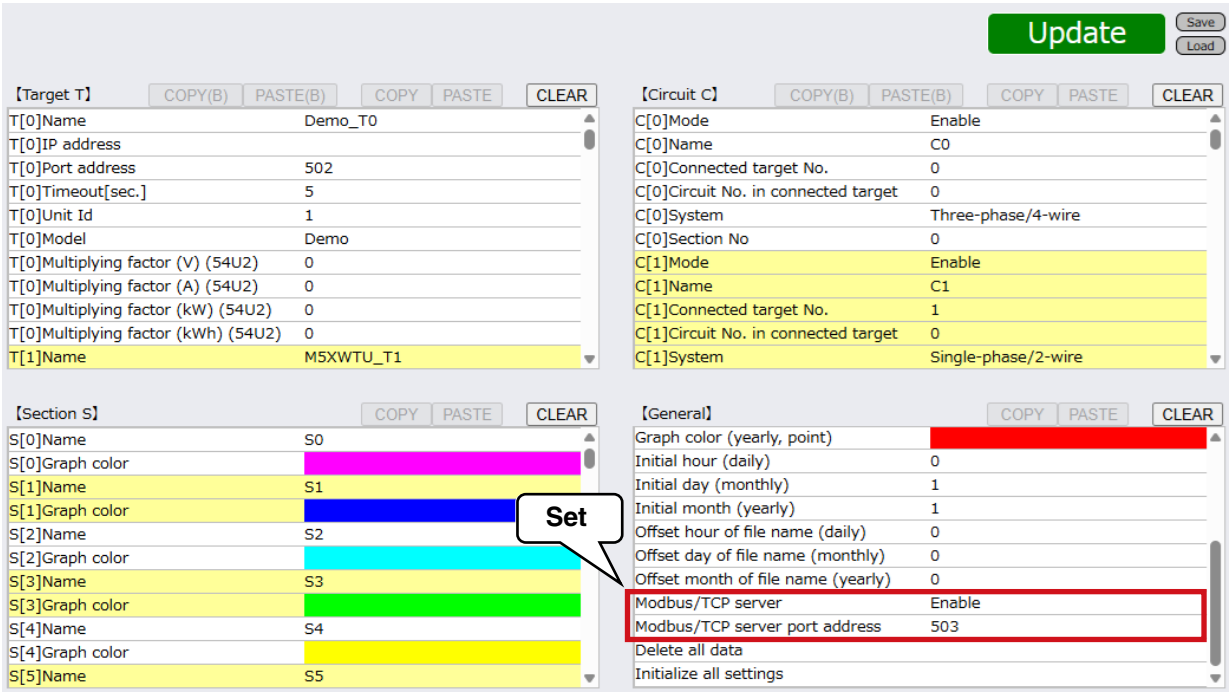


Parameter	Description	Default
Initial hour (daily) Initial day (monthly) Initial month (yearly)	Set the hour/day/month to begin a daily/monthly/yearly report. The initial hour can be selected within 0 to 23. The initial day can be selected within 1 to 28. The initial month can be selected within 1 to 12.	Hour: 0 Day: 1 Month: 1
Offset hour of file name (daily) Offset day of file name (monthly) Offset month of file name (yearly)	Set the offset of file name for the daily/monthly/yearly reports. Select 0 or 1. ➔ 5.3.1 Overview	Hour: 0 Day: 0 Month: 0

4.2.7 Modbus/TCP server

Configure the Modbus/TCP server setting.
For the parameters and the details, refer to the following table.

Setting window

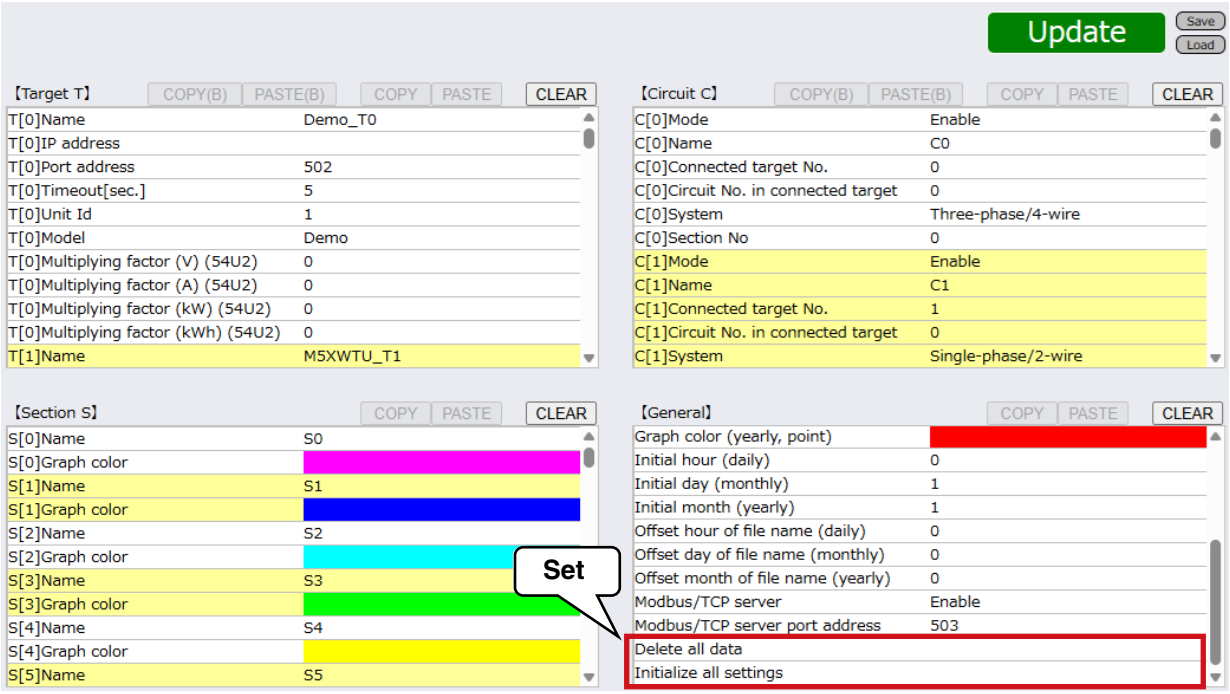


Parameter	Description	Default
Modbus/TCP server	Set [Disable] or [Enable] of the Modbus/TCP server function.	Disable
Modbus/TCP server port address	Set the Modbus/TCP server port address within 0 to 65535.	502

4.2.8 Erase

The device data and settings can be completely deleted.

Setting window



Parameter	Description
Delete all data	All measuring data is deleted. Double-click on the parameter field to display the message [Are you sure to delete all data?]. Click [Yes] to confirm and proceed to clear all data.
Initialize all settings	All settings are initialized to default values. Double-click on the parameter field to display the message [Are you sure to initialize all settings?]. Click [Yes] to confirm and proceed to clear all settings. For the default values, refer to each section.

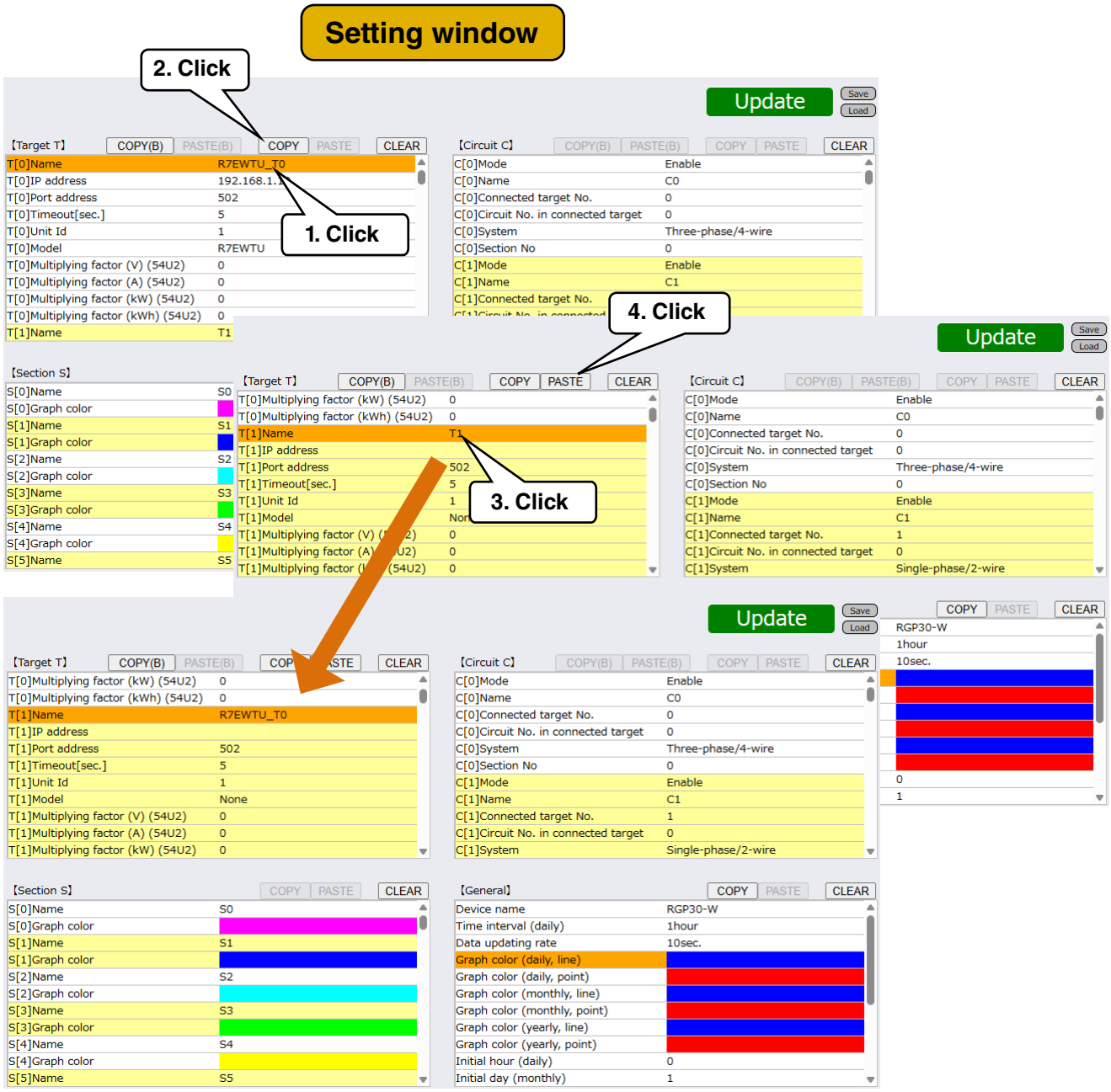
CAUTION

Be sure to secure a copy of the necessary report data as backups by replacing the SD card or downloading the data in CSV format before performing [Delete all data]. ➔ 4.5 Report

4.2.9 Copy and paste

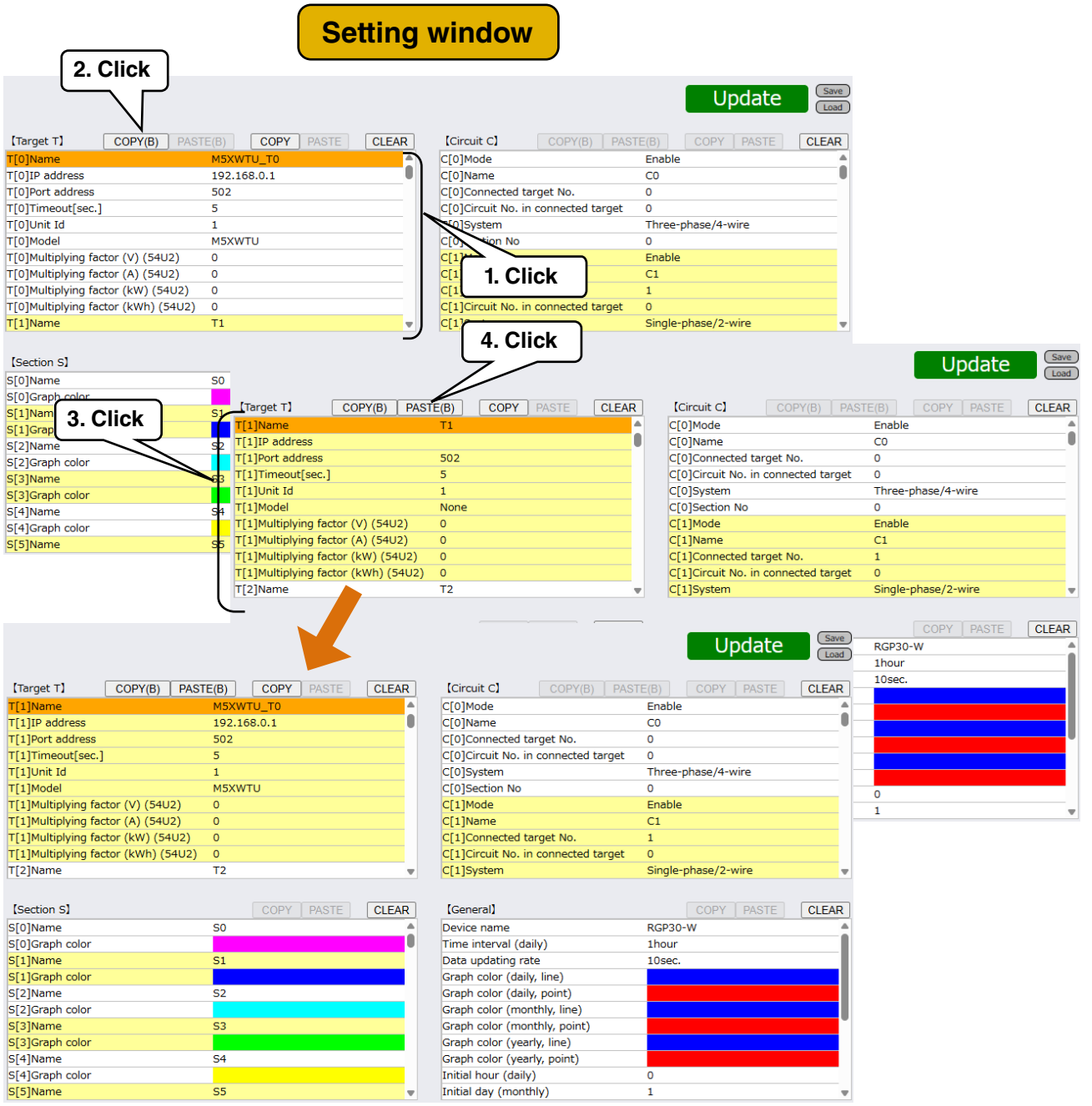
Copying and pasting are possible by each parameter or by block.

1. Copy and paste (single parameter)



1. Click on the source parameter field to select it. (background color turns orange)
2. Click [COPY] button.
3. Click on the destination parameter field to select it. (background color turns orange)
4. Click [PASTE] button to paste the source data.
5. Click [CLEAR] button to delete the data from the clipboard.

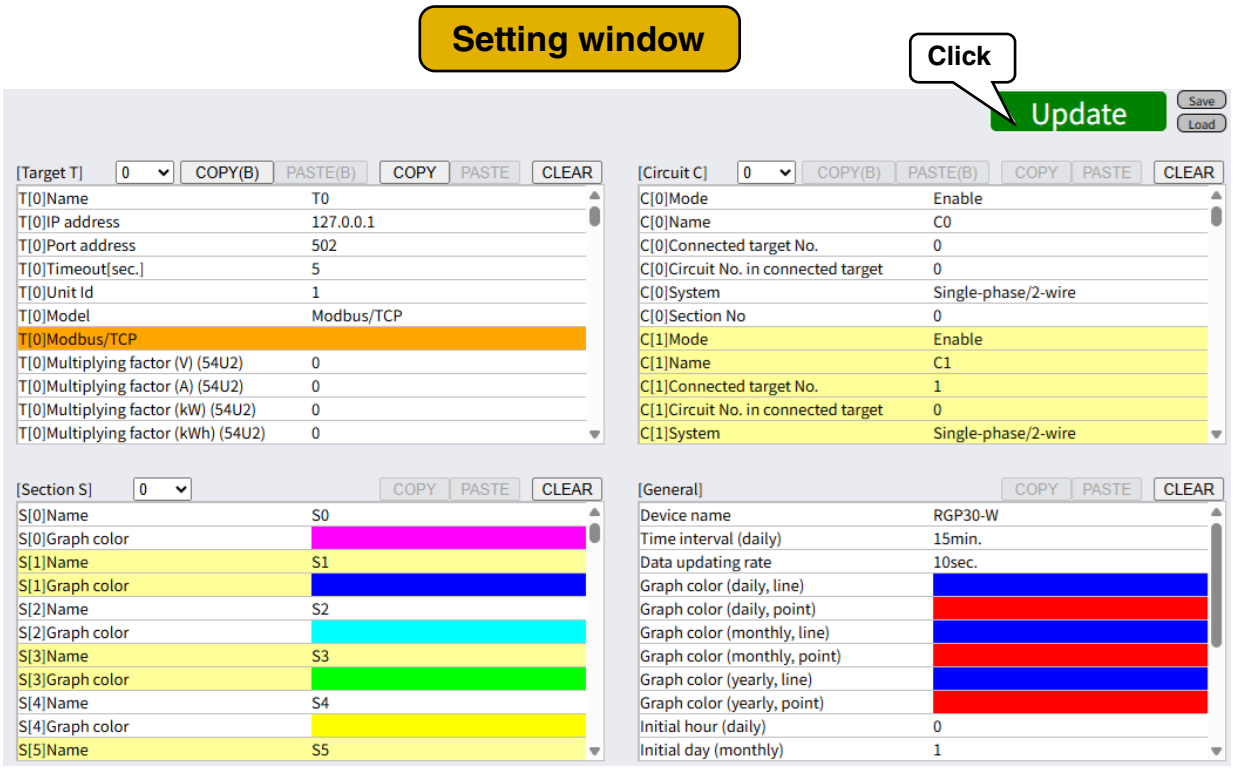
2. Copy and paste (block)



1. Click on any parameter field in the source block to select it. (background color turns orange)
2. Click [COPY (B)] button.
3. Click on any parameter field in the destination block to select it. (background color turns orange)
4. Click [PASTE (B)] button to paste the data of the source block.
5. Click [CLEAR] button to delete the data from the clipboard.

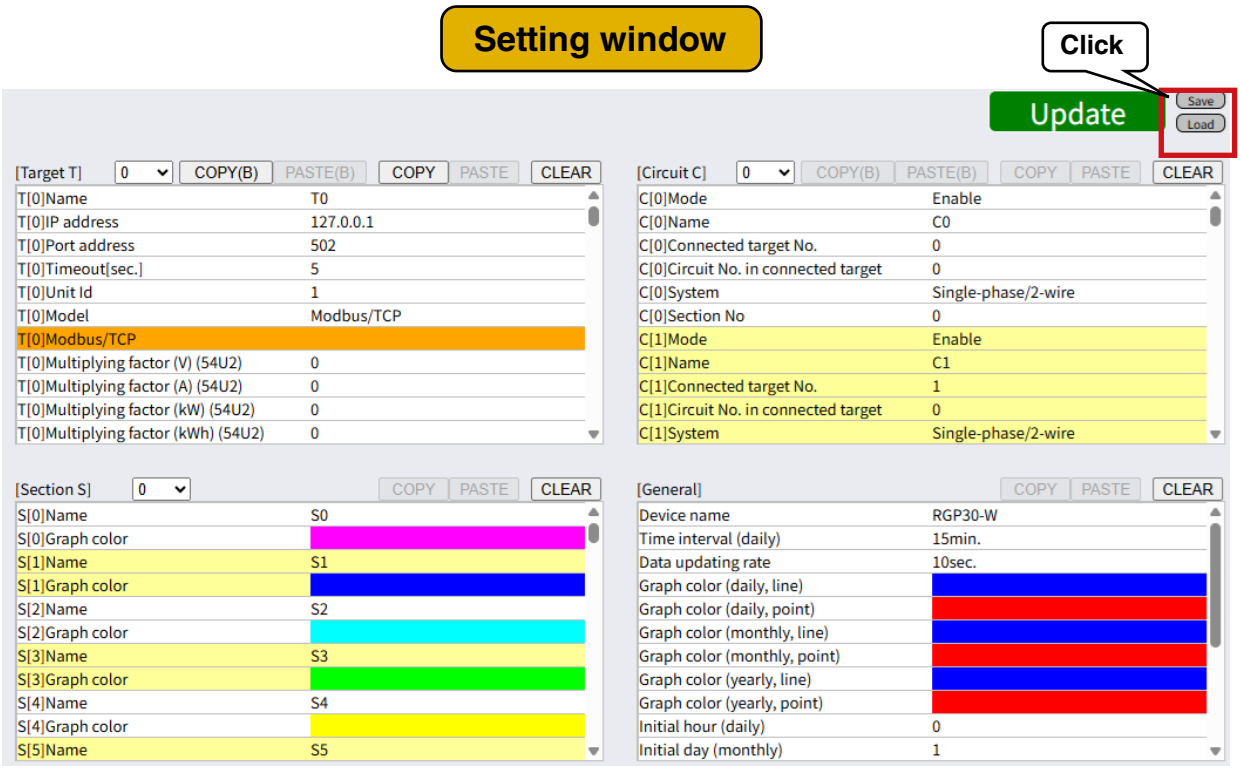
4.2.10 Update

Click [Update] button to apply the settings once they are ready.



4.2.11 Setting data

Setting data can be stored to a file and reloaded to the setting window.



1. Click [Save] button to download and save in json format the current setting on the browser screen.
2. Click [Load] button to open a file selection dialog.
   Select the file to be loaded into the setting window and click [Open] button.
   Click [Update] button to apply the settings to the setting window.

CAUTION

- The data saved by clicking the [Save] button is the one currently displayed on the setting window. Be aware that it may not be identical to the data set actually in use for operation.
- Do not edit the downloaded json file.
- The settings loaded on the setting window by clicking [Load] button are not applied to the device until you click [Update] button.

4.3 Energy window

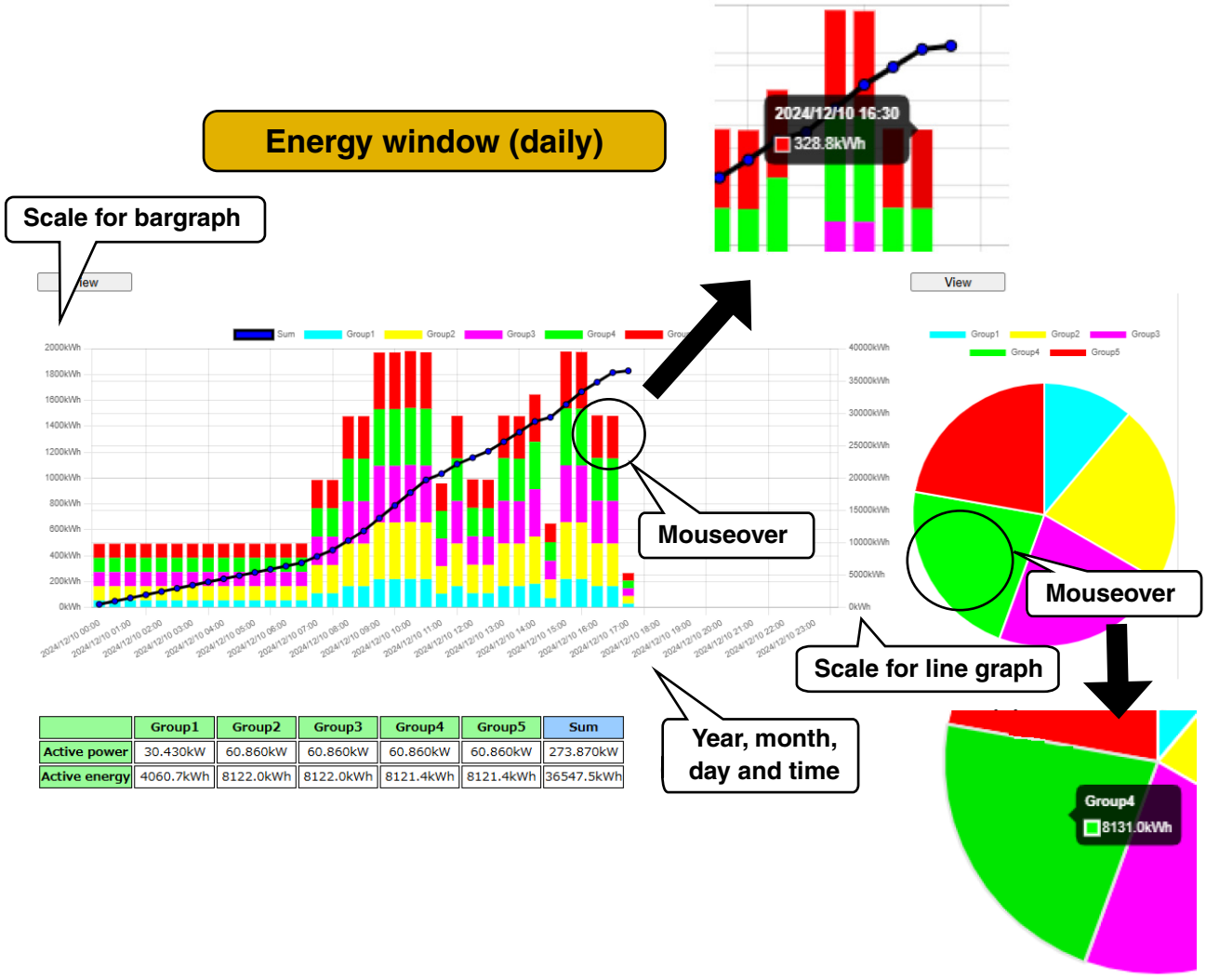
Energy consumption by sections configured in the setting window is displayed on a daily, monthly and yearly basis.

CAUTION

The maximum number of sections displayed in bargraph, line graph, and pie chart is 16.
Note that if the configured sections exceed 16, sections beyond 16 may not be displayed.

4.3.1 Energy window (daily)

Daily energy is displayed by the sections configured in the setting window.
The window is updated automatically.

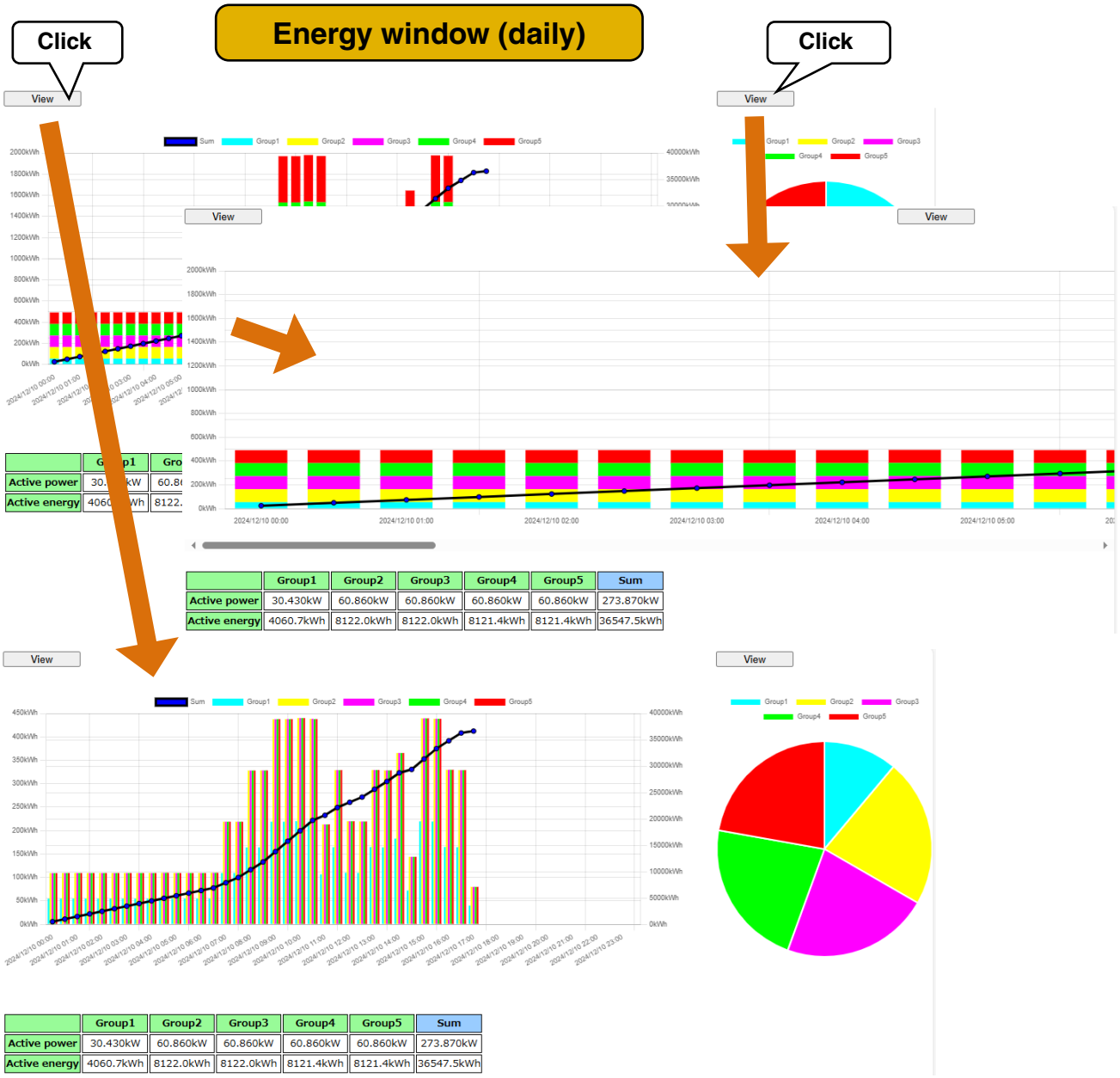


1. For the display contents, refer to the following table.

Parameter	Description
Bargraph	Active energy for each section is identified by colors and displayed as a bargraph every time interval. Set the display colors and sections in the setting window. ➔ 4.2.4 Section Vertical axis (left): active energy per time interval Horizontal axis: year, month, day and time
Line graph	Accumulated active energy for the day is displayed as a line graph every time interval. Set the colors of lines and points in the setting window. ➔ 4.2.5 General Vertical axis (right): active energy for the day Horizontal axis: year, month, day and time
Pie chart	The proportion of each section's active energy for the day is displayed.
Value (table)	Momentary active power (kW) and accumulated active energy (kWh) for the day are displayed numerically for each section. Display changes as explained in the following if there are missing data. Active power: If certain circuits belonging to a section have some data missing, only the values with valid data are displayed, with the cell color turning blue. If all circuits are missing, "-----" is displayed. Active energy: If some data is missing, the cell color is blue.

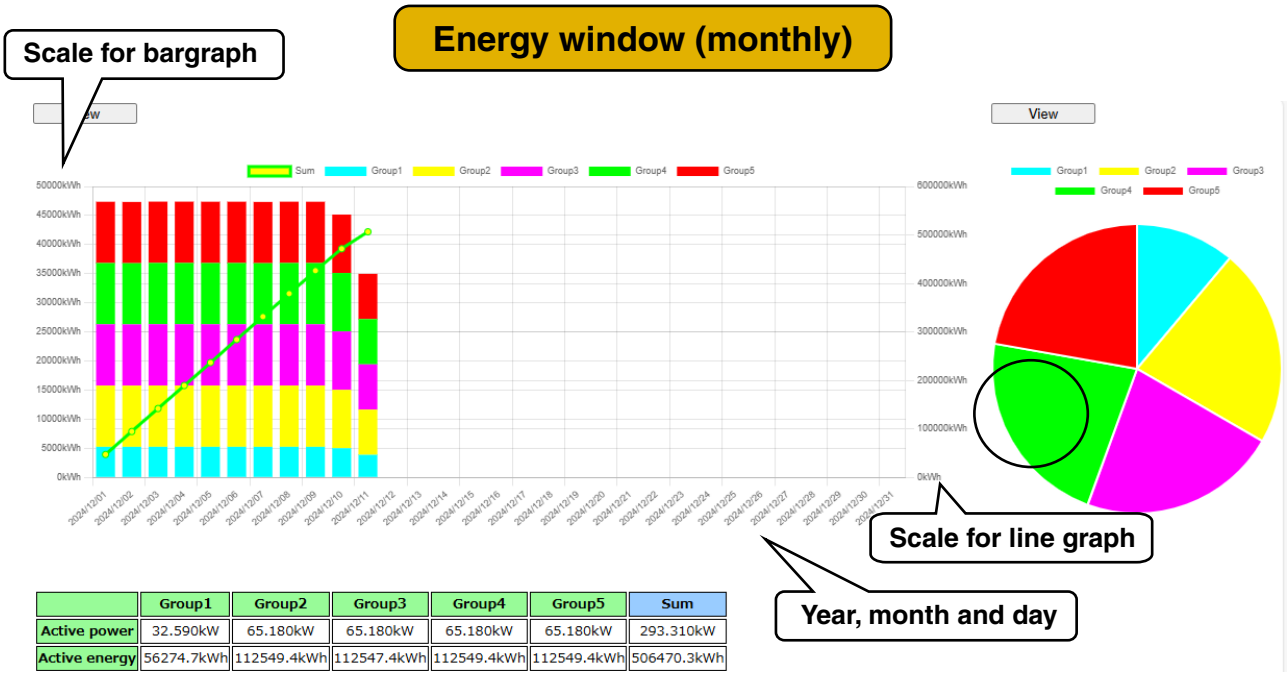
2. When the mouse cursor is placed over a segment of the bargraph or pie chart, the value for the segment is displayed. (Depending on the environment, the values may not be displayed.)

3. Click [View] button to switch the display.
   The left [View] button switches the display between the stacked bargraph and the grouped one.
   The right [View] button switches the display to show the pie chart or to hide it.



4.3.2 Energy window (monthly)

Monthly energy is displayed by the sections configured in the setting window.
The window is updated automatically.
The operation is same as the "Energy window (daily)".



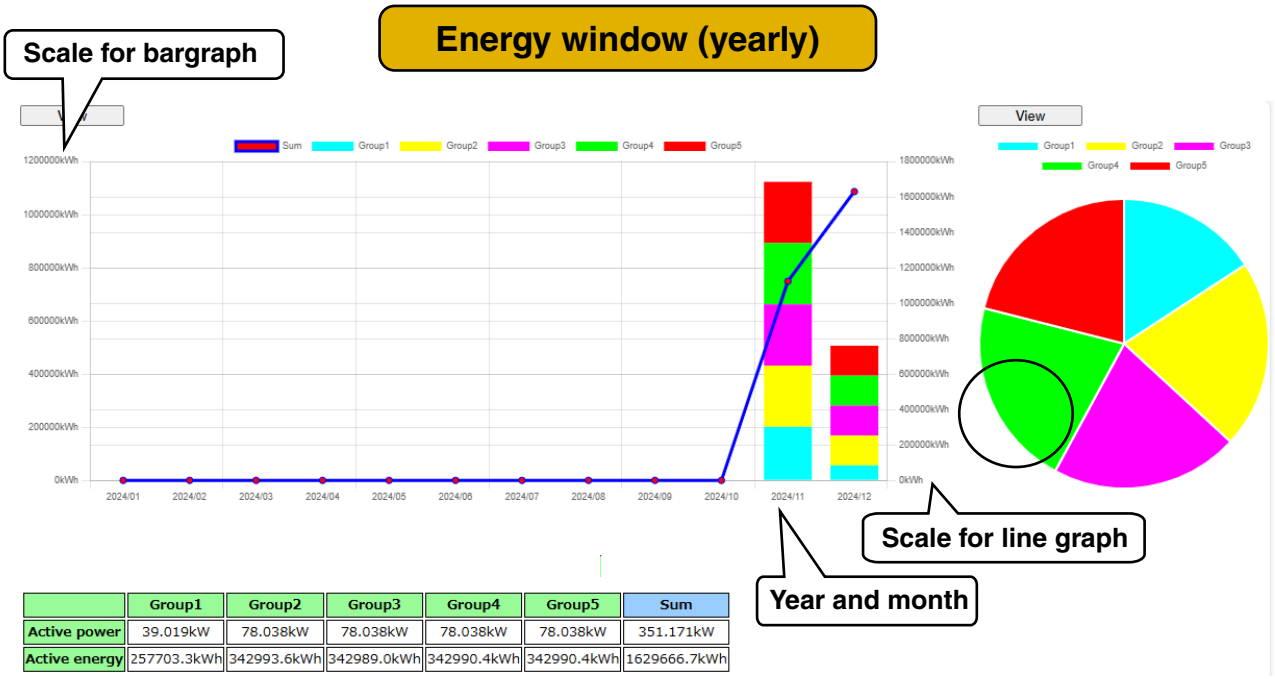
	Group1	Group2	Group3	Group4	Group5	Sum
Active power	32.590kW	65.180kW	65.180kW	65.180kW	65.180kW	293.310kW
Active energy	56274.7kWh	112549.4kWh	112547.4kWh	112549.4kWh	112549.4kWh	506470.3kWh

1. For the display contents, refer to the following table.

Parameter	Description
Bargraph	Active energy for each section is identified by colors and displayed as a bargraph per day. Set the display colors and sections in the setting window. ➔ 4.2.4 Section Vertical axis (left): active energy per day Horizontal axis: year, month and day
Line graph	Accumulated active energy for the month is displayed as a line graph per day. Set the colors of lines and points in the setting window. ➔ 4.2.5 General Vertical axis (right): active energy for the month Horizontal axis: year, month and day
Pie chart	The proportion of each section's active energy for the month is displayed.
Value (table)	Momentary active power (kW) and accumulated active energy (kWh) for the month are displayed numerically for each section. Display changes as explained in the following if there are missing data. Active power: If certain circuits belonging to a section have some data missing, only the values with valid data are displayed, with the cell color turning blue. If all circuits are missing, "-----" is displayed. Active energy: If some data is missing, the cell color is blue.

4.3.3 Energy window (yearly)

Yearly energy is displayed by the sections configured in the setting window.
The window is updated automatically.
The operation is same as the "Energy window (daily)".



	Group1	Group2	Group3	Group4	Group5	Sum
Active power	39.019kW	78.038kW	78.038kW	78.038kW	78.038kW	351.171kW
Active energy	257703.3kWh	342993.6kWh	342989.0kWh	342990.4kWh	342990.4kWh	1629666.7kWh

1. For the display contents, refer to the following table.

Parameter	Description
Bargraph	Active energy for each section is identified by colors and displayed as a bargraph per month. Set the display colors and sections in the setting window. ➔ 4.2.4 Section Vertical axis (left): active energy per month Horizontal axis: year and month
Line graph	Accumulated active energy for the year is displayed as a line graph per month. Set the colors of lines and points in the setting window. ➔ 4.2.5 General Vertical axis (right): active energy for the year Horizontal axis: year and month
Pie chart	The proportion of each section's active energy for the year is displayed.
Value (table)	Momentary active power (kW) and accumulated active energy (kWh) for the year are displayed numerically for each section. Display changes as explained in the following if there are missing data. Active power: If certain circuits belonging to a section have some data missing, only the values with valid data are displayed, with the cell color turning blue. If all circuits are missing, "-----" is displayed. Active energy: If some data is missing, the cell color is blue.

4.4 Comparison window

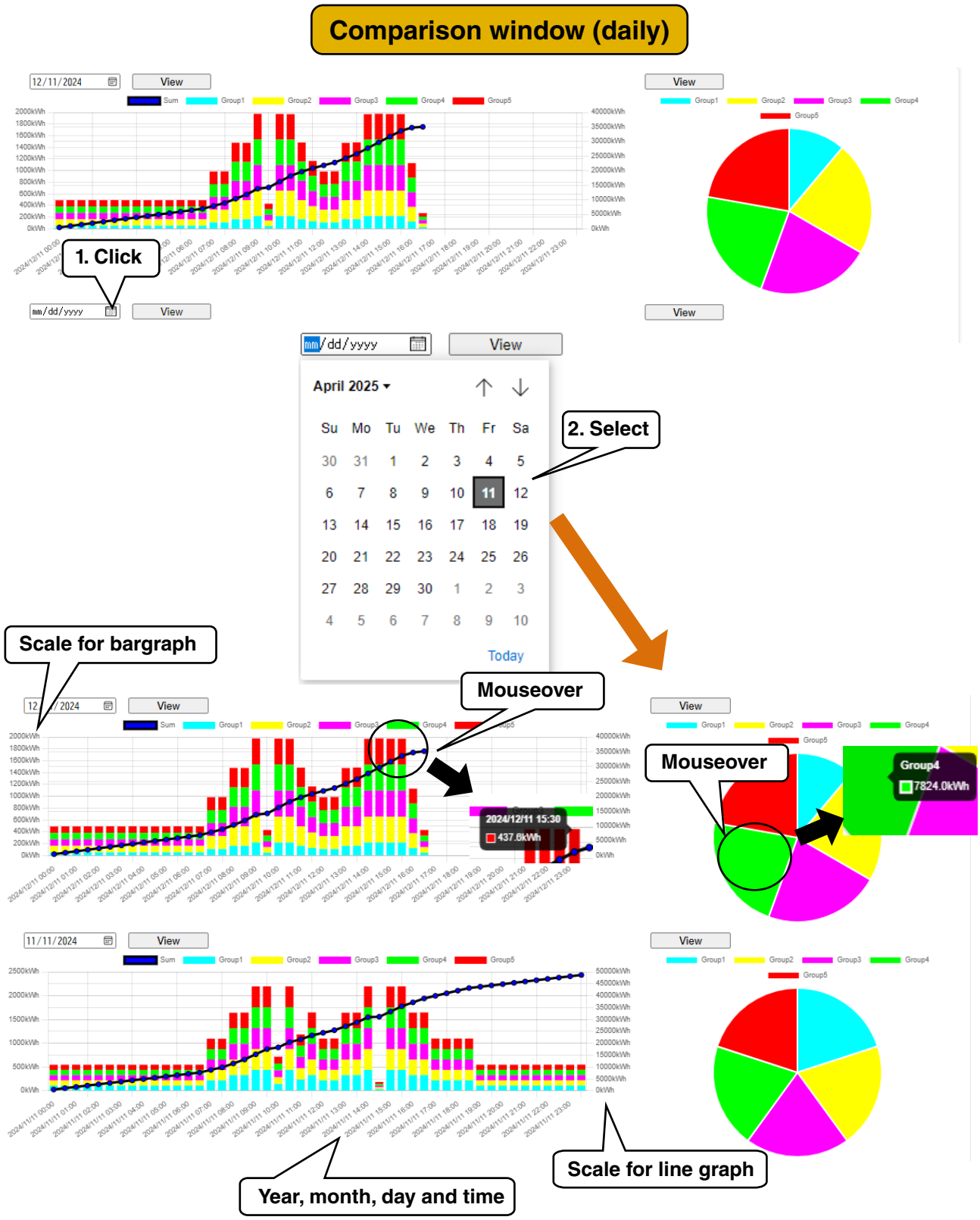
Two energy windows can be arranged vertically on the screen for comparison.

CAUTION

The maximum number of sections displayed in bargraph, line graph, and pie chart is 16.
Note that if the configured sections exceed 16, sections beyond 16 may not be displayed.

4.4.1 Comparison window (daily)

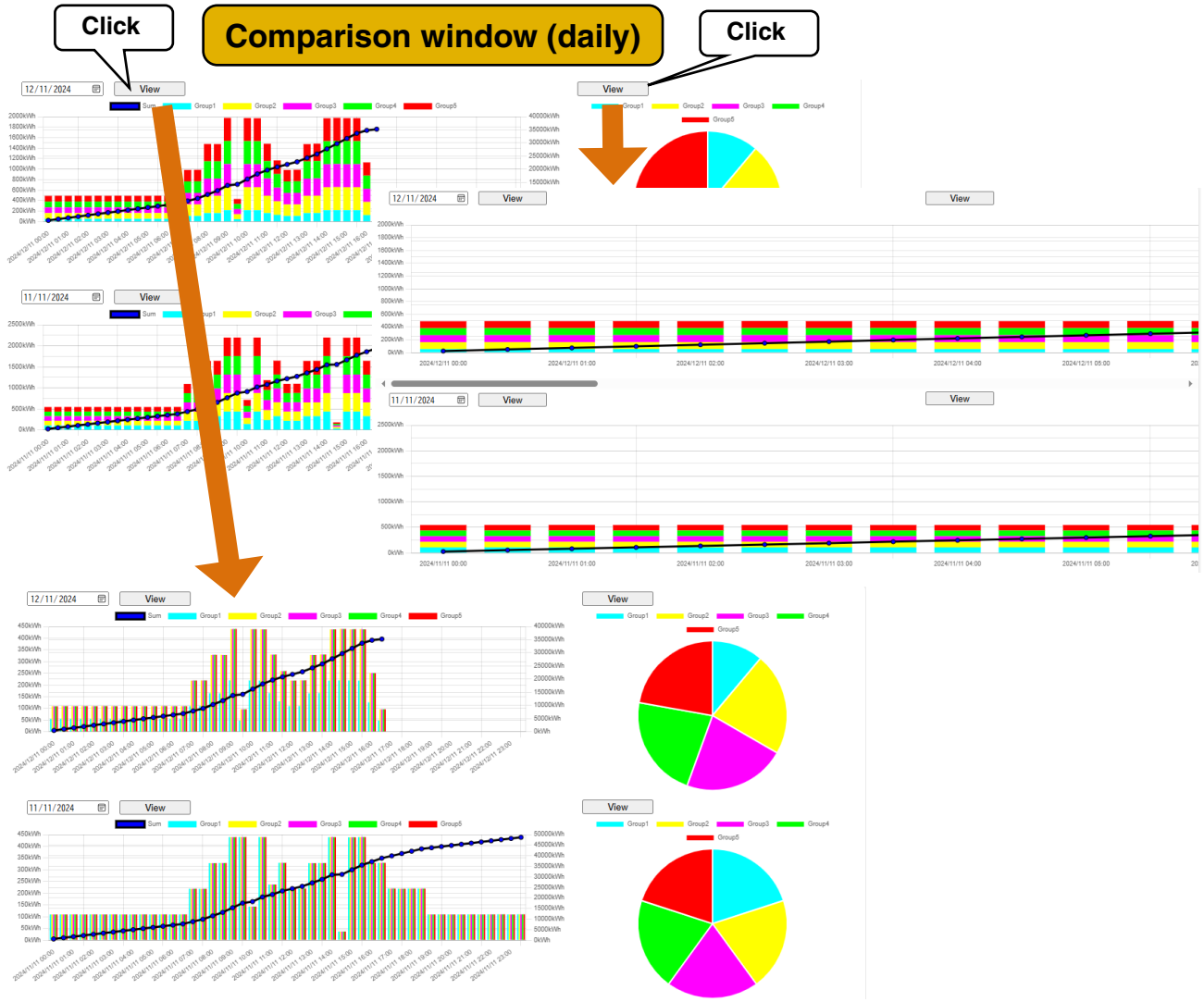
The daily energy graphs of two separate dates for each section configured on the setting window are displayed vertically.
The window is not updated automatically.



1. Click the calendar icon to open the calendar dialog.
   Select the date to be displayed.
   A message appears if a date with no data has been specified.
2. If a date in the past is specified, the data confirmed for the entire day is displayed.
   If the current date is specified, the temporary data up to the present time is displayed.
3. For the display contents, refer to the following table.

Display	Description
Bargraph	Active energy for each section is identified by colors and displayed as a bargraph per time interval. Set the display colors and sections in the setting window. ➔ 4.2.4 Section Vertical axis (left): active energy per hour Horizontal axis: year, month, day and time
Line graph	Accumulated active energy for the day is displayed as a line graph per hour. Set the colors of lines and points in the setting window. ➔ 4.2.5 General Vertical axis (right): active energy for the day Horizontal axis: year, month, day and time
Pie chart	The proportion of each section's active energy for the day is displayed.

4. When the mouse cursor is placed over a segment of the bargraph or pie chart, the value for the segment is displayed. (Depending on the environment, the values may not be displayed.)
5. Click [View] button to switch the display.
   The left [View] button switches the display between the stacked bargraph and the grouped one.
   The right [View] button switches the display to show the pie chart or to hide it.



4.4.2 Comparison window (monthly)

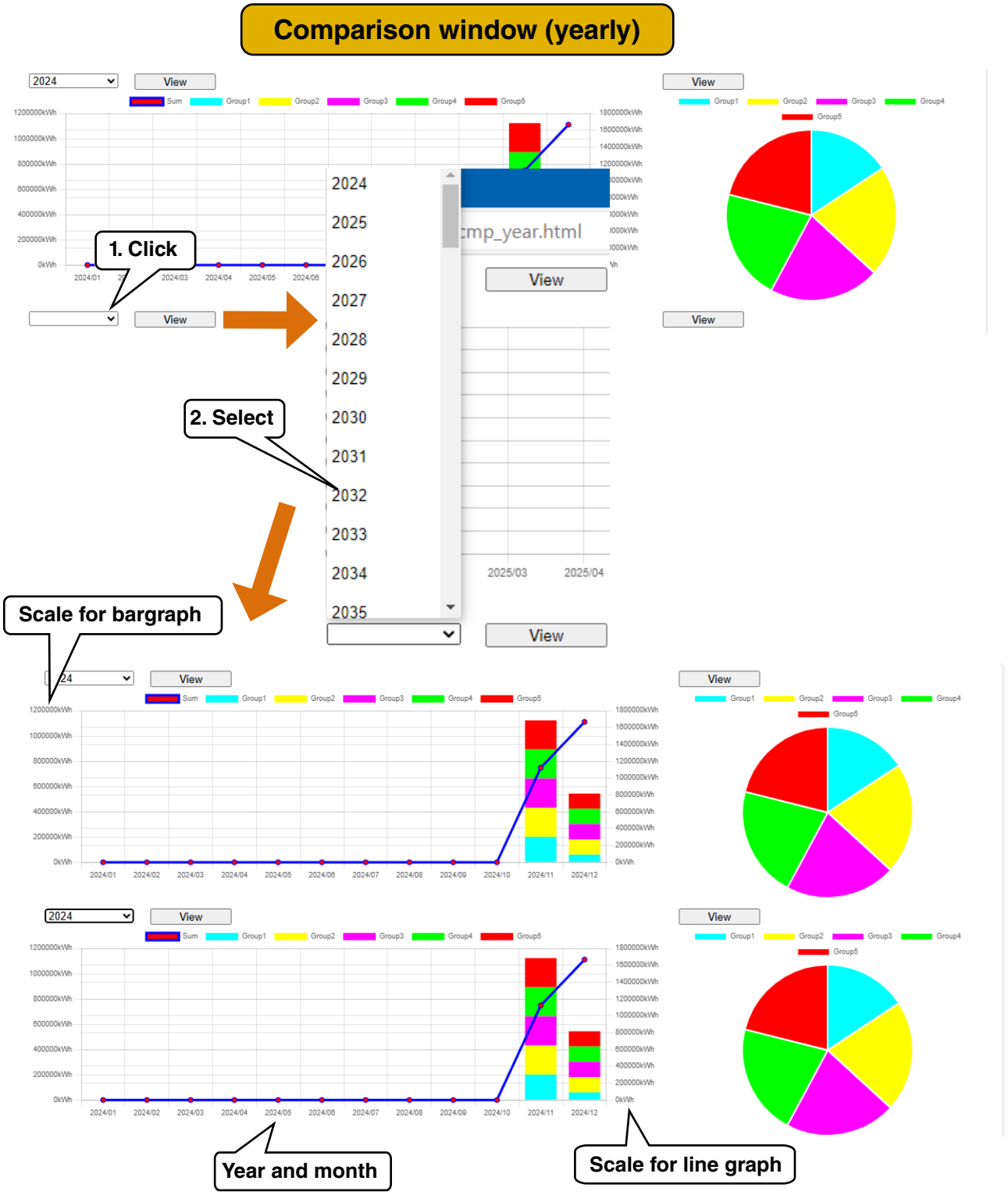
The monthly energy graphs of two separate months for each section configured on the setting window are displayed vertically.
The window is not updated automatically.
The operation is same as the "Comparison window (daily)".

1. Click the calendar icon to open the calendar dialog.
   Select the month to be displayed.
   A message appears if a month with no data has been specified.
2. If a month in the past is specified, the data confirmed for the entire month is displayed.
   If the current month is specified, the temporary data up to the present time is displayed.
3. For the display contents, refer to the following table.

Display	Description
Bargraph	Active energy for each section is identified by colors and displayed as a bargraph per day. Set the display colors and sections in the setting window. ➔ 4.2.4 Section Vertical axis (left): active energy per day Horizontal axis: year, month and day
Line graph	Accumulated active energy for the month is displayed as a line graph per day. Set the colors of lines and points in the setting window. ➔ 4.2.5 General Vertical axis (right): active energy for the month Horizontal axis: year, month and day
Pie chart	The proportion of each section's active energy for the month is displayed.

4.4.3 Comparison window (yearly)

The yearly energy graphs of two separate years for each section configured on the setting window are displayed vertically.
The window is not updated automatically.
The operation is same as the "Comparison window (daily)".



1. Click the drop-down list to select the year to be displayed.
   A message appears if a year with no data has been specified.
2. If a year in the past is specified, the data confirmed for the entire year is displayed.
   If the current year is specified, the temporary data up to the present time is displayed.
3. For the display contents, refer to the following table.

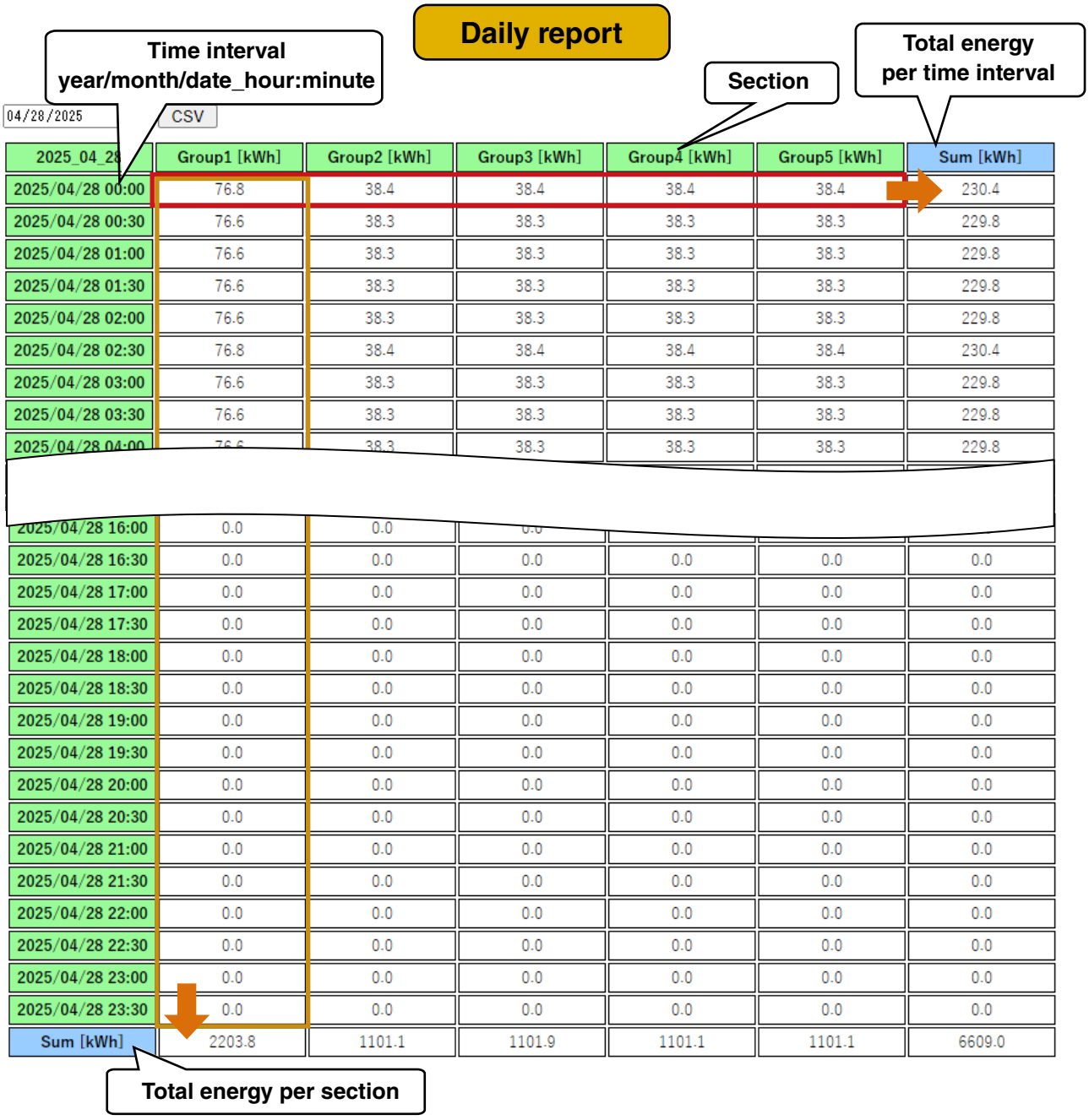
Display	Description
Bargraph	Active energy for each section is identified by colors and displayed as a bargraph per month. Set the display colors and sections in the setting window. ➔ 4.2.4 Section Vertical axis (left): active energy per month Horizontal axis: year and month
Line graph	Accumulated active energy for the year is displayed as a line graph per month. Set the colors of lines and points in the setting window. ➔ 4.2.5 General Vertical axis (right): active energy for the year Horizontal axis: year and month
Pie chart	The proportion of each section's active energy for the year is displayed.

4.5 Report

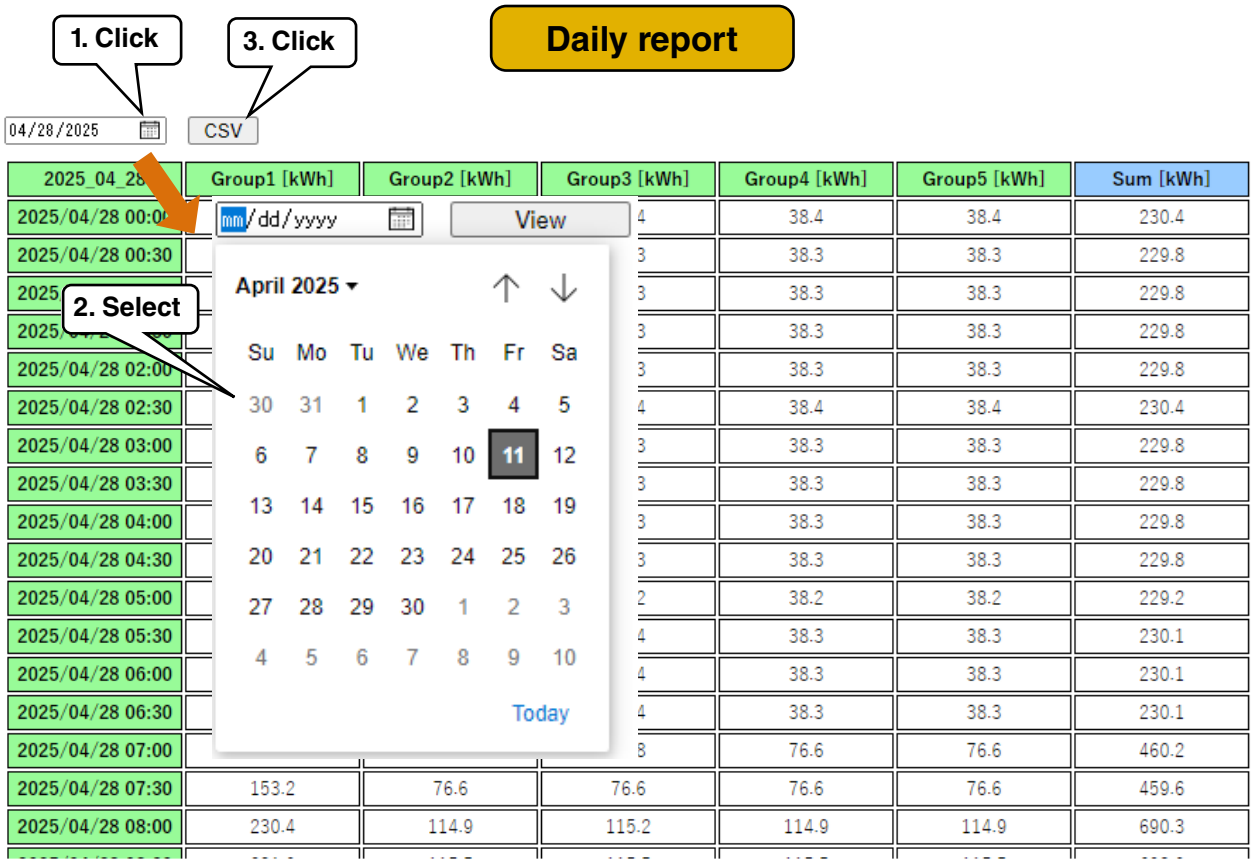
Energy consumption data by the specified time intervals for each section is displayed in a list.

4.5.1 Daily report

Daily energy data for each section is displayed in a list.
The window is not updated automatically.
The row corresponding to the current time shows interim report.
The rightmost column displays the total energy of all sections by the time interval.
The last row displays the total energy for each section.
If there are unmeasured elements (e.g. in case of unfinished time intervals of the current day), they are filled with "0.0".



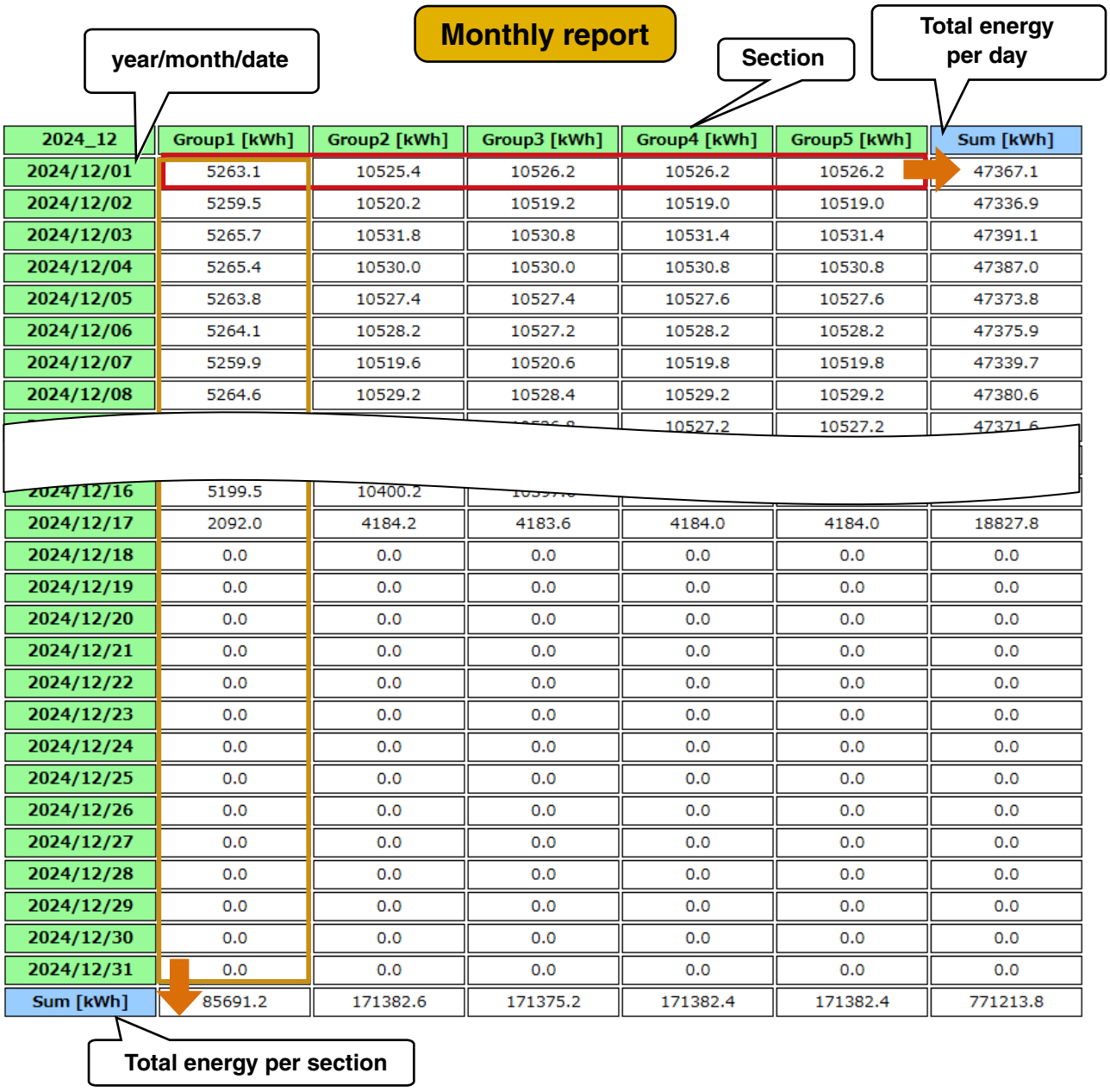
2025_04_28	Group1 [kWh]	Group2 [kWh]	Group3 [kWh]	Group4 [kWh]	Group5 [kWh]	Sum [kWh]
2025/04/28 00:00	76.8	38.4	38.4	38.4	38.4	230.4
2025/04/28 00:30	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 01:00	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 01:30	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 02:00	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 02:30	76.8	38.4	38.4	38.4	38.4	230.4
2025/04/28 03:00	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 03:30	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 04:00	76.6	38.3	38.3	38.3	38.3	229.8
2025/04/28 16:00	0.0	0.0	0.0			
2025/04/28 16:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 17:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 17:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 18:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 18:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 19:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 19:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 20:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 20:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 21:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 21:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 22:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 22:30	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 23:00	0.0	0.0	0.0	0.0	0.0	0.0
2025/04/28 23:30	0.0	0.0	0.0	0.0	0.0	0.0
Sum [kWh]	2203.8	1101.1	1101.9	1101.1	1101.1	6609.0



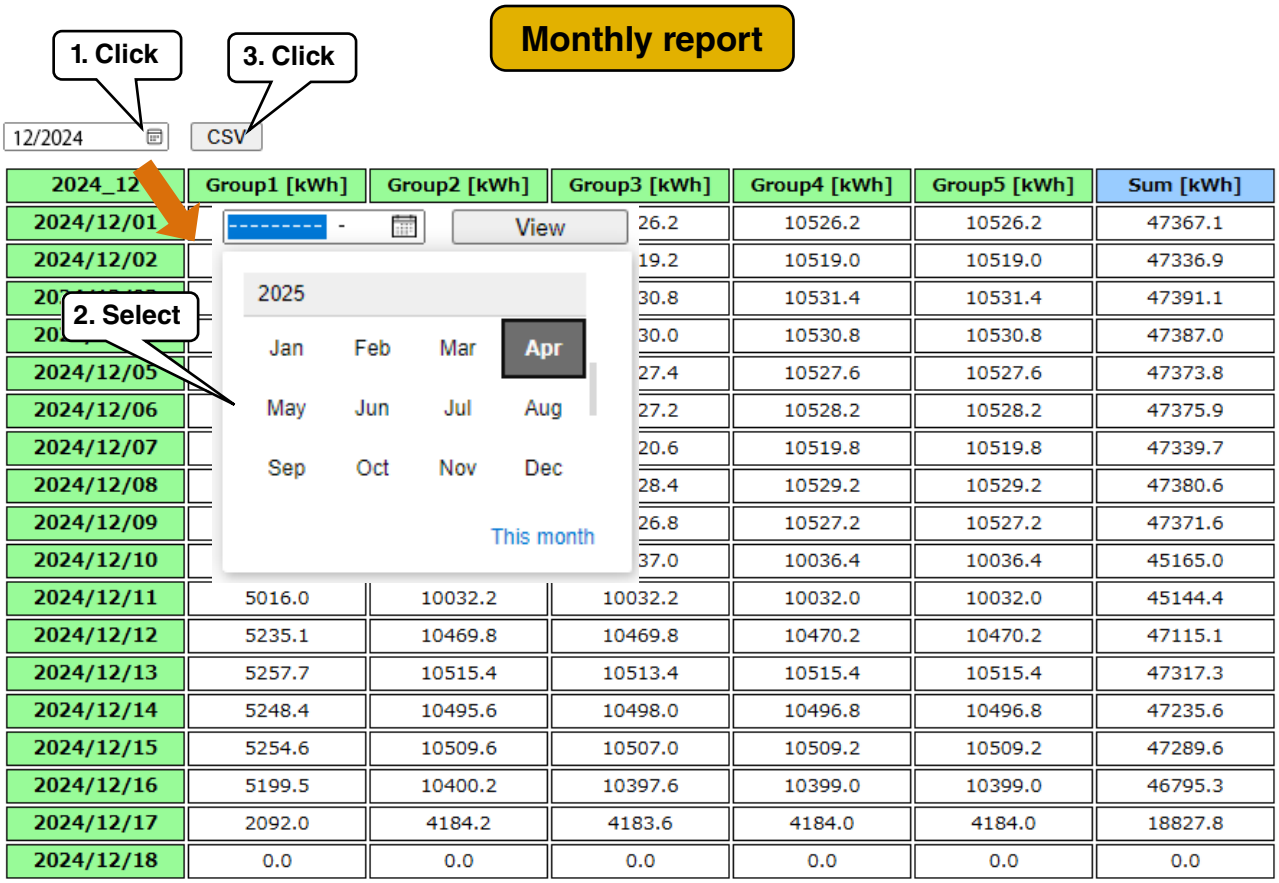
1. Click the calendar icon to open the calendar dialog.
   Select the date to be displayed.
   A message appears if a date with no data has been selected.
2. Click [CSV] button to download and save in CSV format the daily report displayed on the browser screen.

4.5.2 Monthly report

Monthly energy data for each section is displayed in a list.
The window is not updated automatically.
The row corresponding to the current date shows interim report.
The rightmost column displays the total energy of all sections per day.
The last row displays the total energy for each section.
If there are unmeasured elements (e.g. in case of unfinished days of the current month), they are filled with "0.0".



2024_12	Group1 [kWh]	Group2 [kWh]	Group3 [kWh]	Group4 [kWh]	Group5 [kWh]	Sum [kWh]
2024/12/01	5263.1	10525.4	10526.2	10526.2	10526.2	47367.1
2024/12/02	5259.5	10520.2	10519.2	10519.0	10519.0	47336.9
2024/12/03	5265.7	10531.8	10530.8	10531.4	10531.4	47391.1
2024/12/04	5265.4	10530.0	10530.0	10530.8	10530.8	47387.0
2024/12/05	5263.8	10527.4	10527.4	10527.6	10527.6	47373.8
2024/12/06	5264.1	10528.2	10527.2	10528.2	10528.2	47375.9
2024/12/07	5259.9	10519.6	10520.6	10519.8	10519.8	47339.7
2024/12/08	5264.6	10529.2	10528.4	10529.2	10529.2	47380.6
				10527.2	10527.2	47371.6
2024/12/16	5199.5	10400.2				
2024/12/17	2092.0	4184.2	4183.6	4184.0	4184.0	18827.8
2024/12/18	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/19	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/20	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/21	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/22	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/23	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/24	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/25	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/26	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/27	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/28	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/29	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/30	0.0	0.0	0.0	0.0	0.0	0.0
2024/12/31	0.0	0.0	0.0	0.0	0.0	0.0
Sum [kWh]	85691.2	171382.6	171375.2	171382.4	171382.4	771213.8

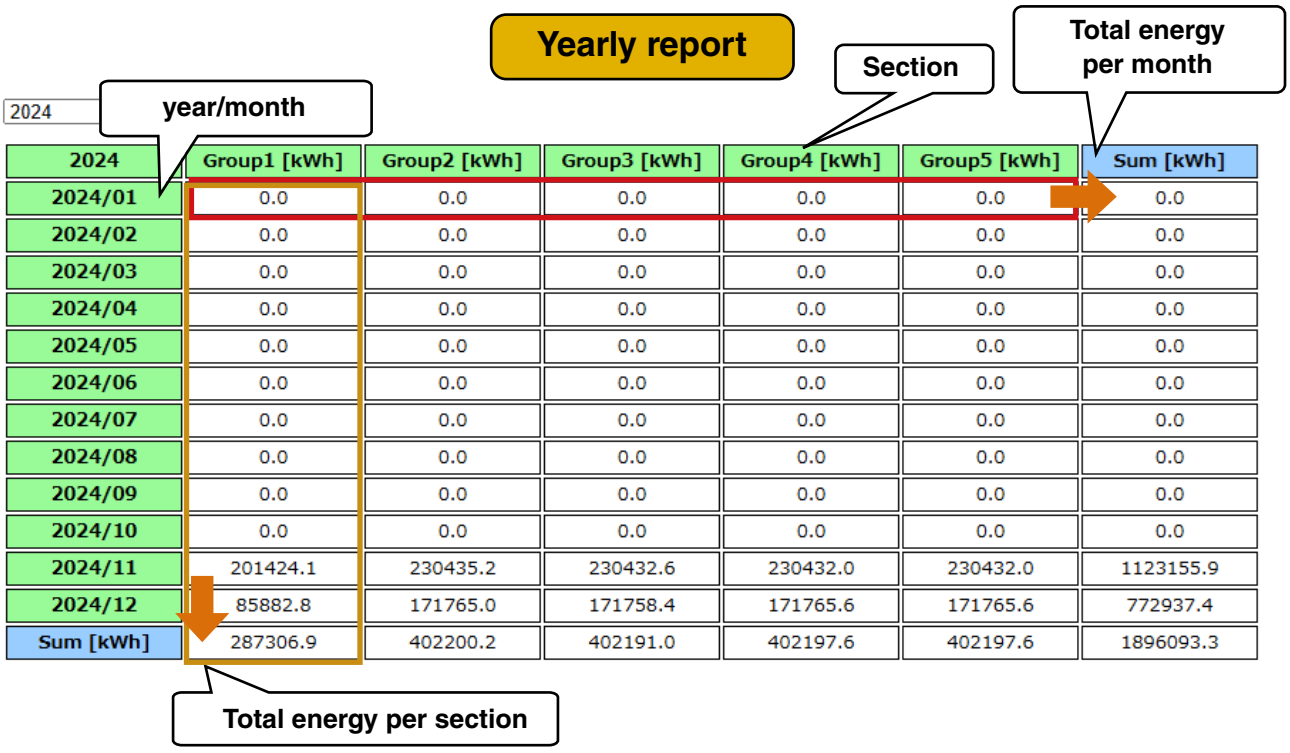


2024_12	Group1 [kWh]	Group2 [kWh]	Group3 [kWh]	Group4 [kWh]	Group5 [kWh]	Sum [kWh]
2024/12/01			26.2	10526.2	10526.2	47367.1
2024/12/02			19.2	10519.0	10519.0	47336.9
2024/12/03			30.8	10531.4	10531.4	47391.1
2024/12/04			30.0	10530.8	10530.8	47387.0
2024/12/05			27.4	10527.6	10527.6	47373.8
2024/12/06			27.2	10528.2	10528.2	47375.9
2024/12/07			20.6	10519.8	10519.8	47339.7
2024/12/08			28.4	10529.2	10529.2	47380.6
2024/12/09			26.8	10527.2	10527.2	47371.6
2024/12/10			37.0	10036.4	10036.4	45165.0
2024/12/11	5016.0	10032.2	10032.2	10032.0	10032.0	45144.4
2024/12/12	5235.1	10469.8	10469.8	10470.2	10470.2	47115.1
2024/12/13	5257.7	10515.4	10513.4	10515.4	10515.4	47317.3
2024/12/14	5248.4	10495.6	10498.0	10496.8	10496.8	47235.6
2024/12/15	5254.6	10509.6	10507.0	10509.2	10509.2	47289.6
2024/12/16	5199.5	10400.2	10397.6	10399.0	10399.0	46795.3
2024/12/17	2092.0	4184.2	4183.6	4184.0	4184.0	18827.8
2024/12/18	0.0	0.0	0.0	0.0	0.0	0.0

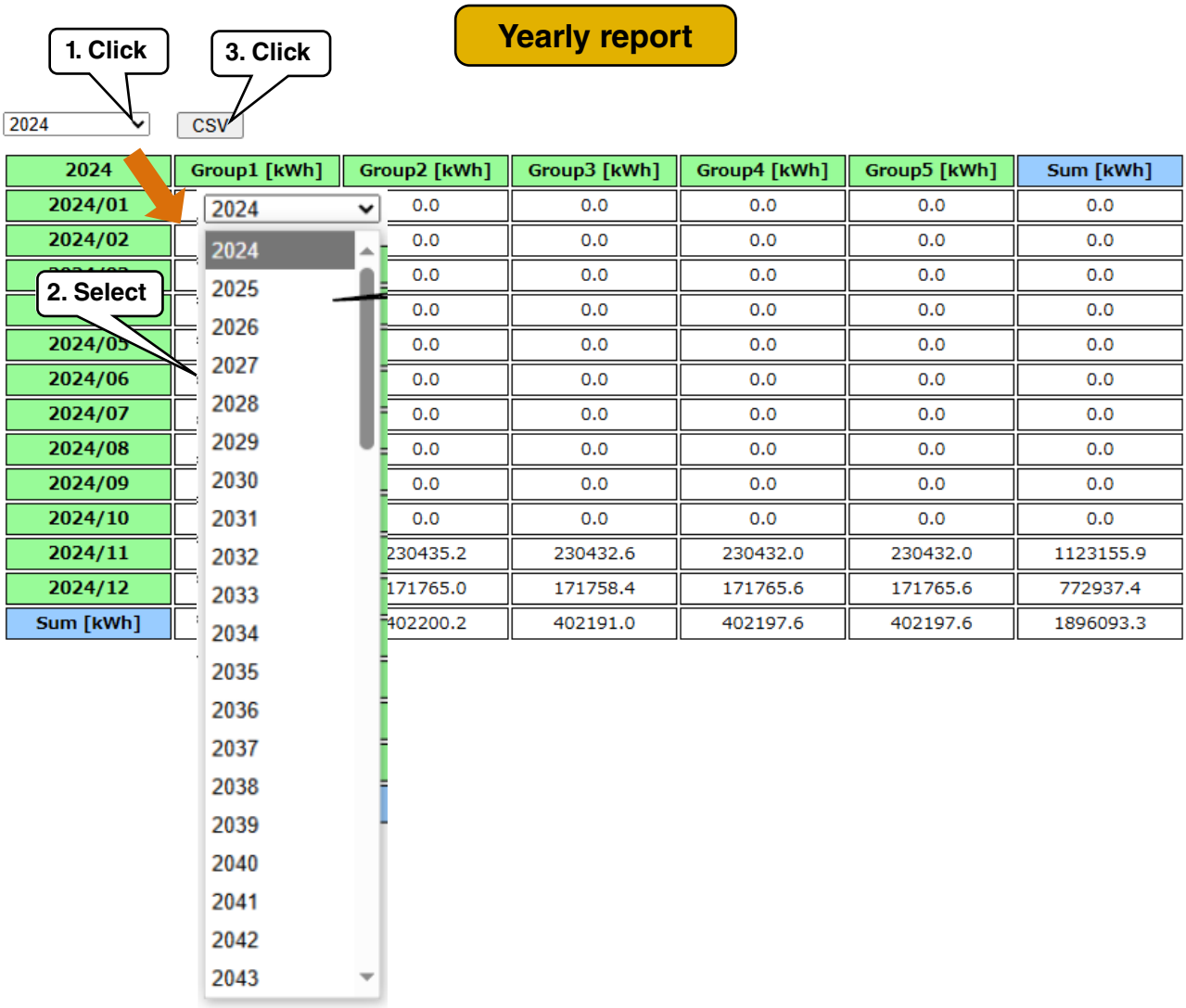
1. Click the calendar icon to open the calendar dialog.
   Select the month to be displayed.
   A message appears if a month with no data has been selected.
2. Click [CSV] button to download and save in CSV format the monthly report displayed on the browser screen.

4.5.3 Yearly report

Yearly energy data for each section is displayed in a list.
The window is not updated automatically.
The row corresponding to the current month shows interim report.
The rightmost column displays the total energy of all sections per month.
The last row displays the total energy for each section.
If there are unmeasured elements (e.g. in case of unfinished months of the current year), they are filled with "0.0".



2024	Group1 [kWh]	Group2 [kWh]	Group3 [kWh]	Group4 [kWh]	Group5 [kWh]	Sum [kWh]
2024/01	0.0	0.0	0.0	0.0	0.0	0.0
2024/02	0.0	0.0	0.0	0.0	0.0	0.0
2024/03	0.0	0.0	0.0	0.0	0.0	0.0
2024/04	0.0	0.0	0.0	0.0	0.0	0.0
2024/05	0.0	0.0	0.0	0.0	0.0	0.0
2024/06	0.0	0.0	0.0	0.0	0.0	0.0
2024/07	0.0	0.0	0.0	0.0	0.0	0.0
2024/08	0.0	0.0	0.0	0.0	0.0	0.0
2024/09	0.0	0.0	0.0	0.0	0.0	0.0
2024/10	0.0	0.0	0.0	0.0	0.0	0.0
2024/11	201424.1	230435.2	230432.6	230432.0	230432.0	1123155.9
2024/12	85882.8	171765.0	171758.4	171765.6	171765.6	772937.4
Sum [kWh]	287306.9	402200.2	402191.0	402197.6	402197.6	1896093.3



2024	Group1 [kWh]	Group2 [kWh]	Group3 [kWh]	Group4 [kWh]	Group5 [kWh]	Sum [kWh]
2024/01	2024	0.0	0.0	0.0	0.0	0.0
2024/02		0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0
		0.0	0.0	0.0	0.0	0.0
2024/05		0.0	0.0	0.0	0.0	0.0
2024/06		0.0	0.0	0.0	0.0	0.0
2024/07		0.0	0.0	0.0	0.0	0.0
2024/08		0.0	0.0	0.0	0.0	0.0
2024/09		0.0	0.0	0.0	0.0	0.0
2024/10		0.0	0.0	0.0	0.0	0.0
2024/11		230435.2	230432.6	230432.0	230432.0	1123155.9
2024/12		171765.0	171758.4	171765.6	171765.6	772937.4
Sum [kWh]		402200.2	402191.0	402197.6	402197.6	1896093.3

1. Click the drop-down list to select the year to be displayed.
   A message appears if a year with no data has been selected.
2. Click [CSV] button to download and save in CSV format the yearly report displayed on the browser screen.

4.6 Section window

Active/reactive/apparent power, voltage, current, power factor and frequency data per circuit of a selected section are displayed in real time.
The window details of a sub-screen generated by RGP-Designer are different from those of a directly accessed HTML file.

CAUTION

If there is no data corresponding to Modbus measurement values for power measuring device, the displayed value will be shown as invalid (background color: gray, text: blank).
Regarding Modbus measurement value, refer to the instruction manual of the power measuring device.

4.6.1 RGP-Designer sub-screen

Assign the section window and section number to the [Change Sub Screen] switch. ➔ 3.1.1 [Change Sub Screen] switch
If the data is missing, "-----" is displayed.

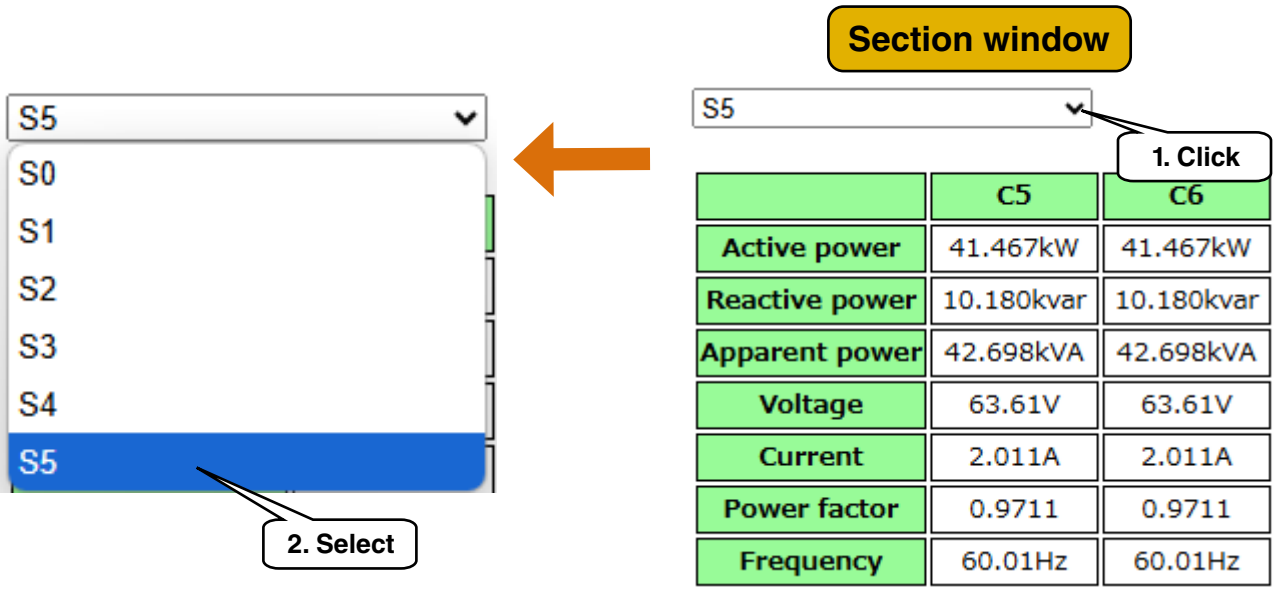
Section window

S5

	C5	C6
Active power	41.467kW	41.467kW
Reactive power	10.180kvar	10.180kvar
Apparent power	42.698kVA	42.698kVA
Voltage	63.61V	63.61V
Current	2.011A	2.011A
Power factor	0.9711	0.9711
Frequency	60.01Hz	60.01Hz

4.6.2 HTML file

Click on the drop-down list to select the section to be displayed.
If the data is missing, "-----" is displayed.



4.7 Circuit window

Detailed line current, phase voltage, line voltage and power factor of a selected circuit are displayed.
Display contents differ depending on the wiring configuration of the selected circuit. ➔ 4.2.3 Circuit
THD and harmonic contents by order are displayed in a bargraph in real-time.
The window details of a sub-screen generated by RGP-Designer are different from those of a directly accessed HTML file.

CAUTION

If there is no data corresponding to Modbus measurement values for power measuring device, the displayed value will be shown as invalid (background color: gray, text: blank).
The bargraph of harmonic contents is not displayed when there is no corresponding data.
Regarding Modbus measurement value, refer to the instruction manual of the power measuring device.

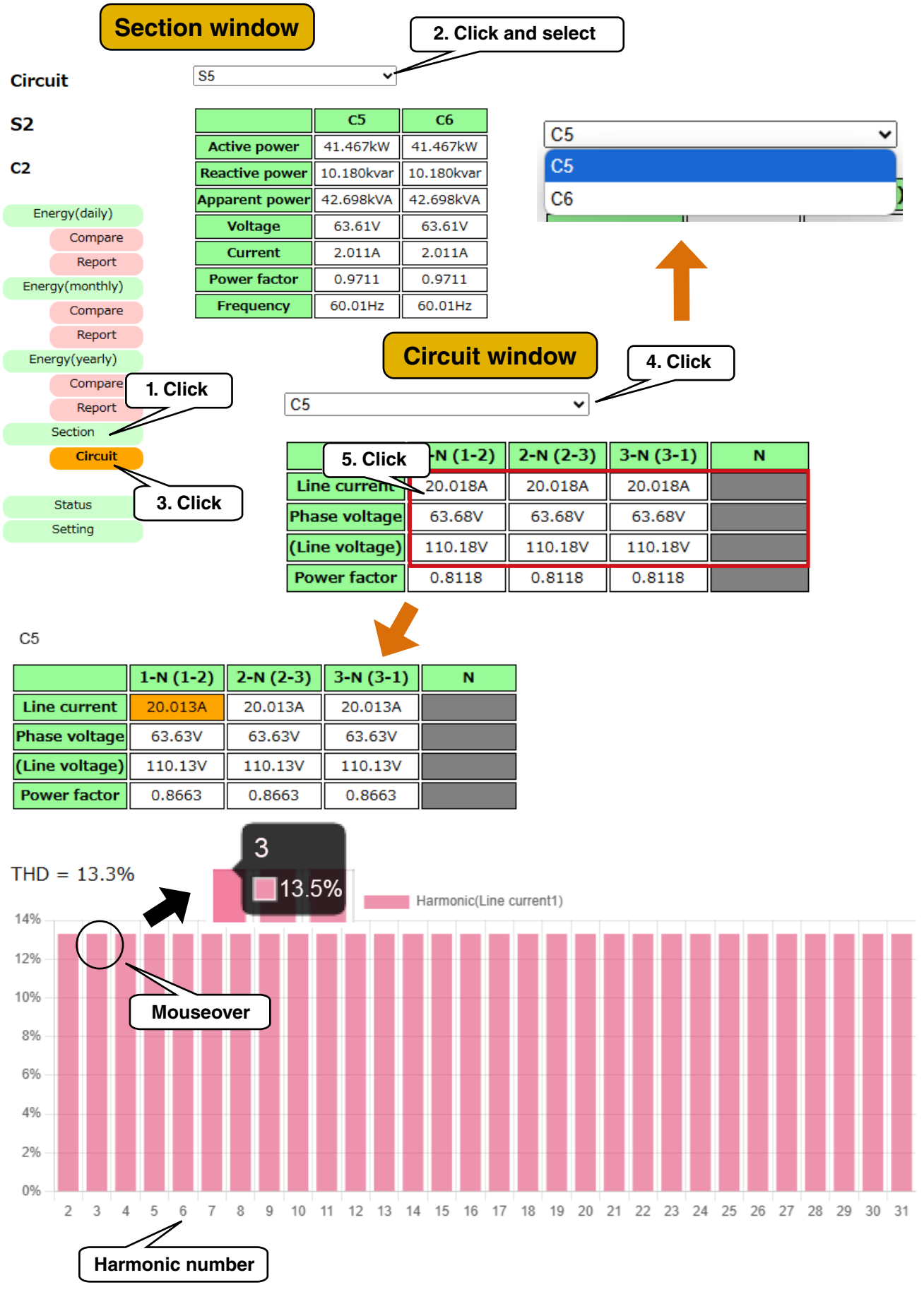
4.7.1 RGP-Designer sub-screen

Assign the circuit window and circuit number to the [Change Sub Screen] switch.
➔ 3.1.1 [Change Sub Screen] switch

1. Click on a cell of the line or phase data of the circuit belonging to the section.
   The selected cell color turns orange.
2. The total harmonic distortion (THD) and the harmonic contents by order are displayed in the bargraph.
3. When the mouse cursor is placed over a bar, the engineering unit value pops up.
   (Depending on the environment, the values may not be displayed.)
4. If data is missing, "-----" is displayed.

4.7.2 HTML file

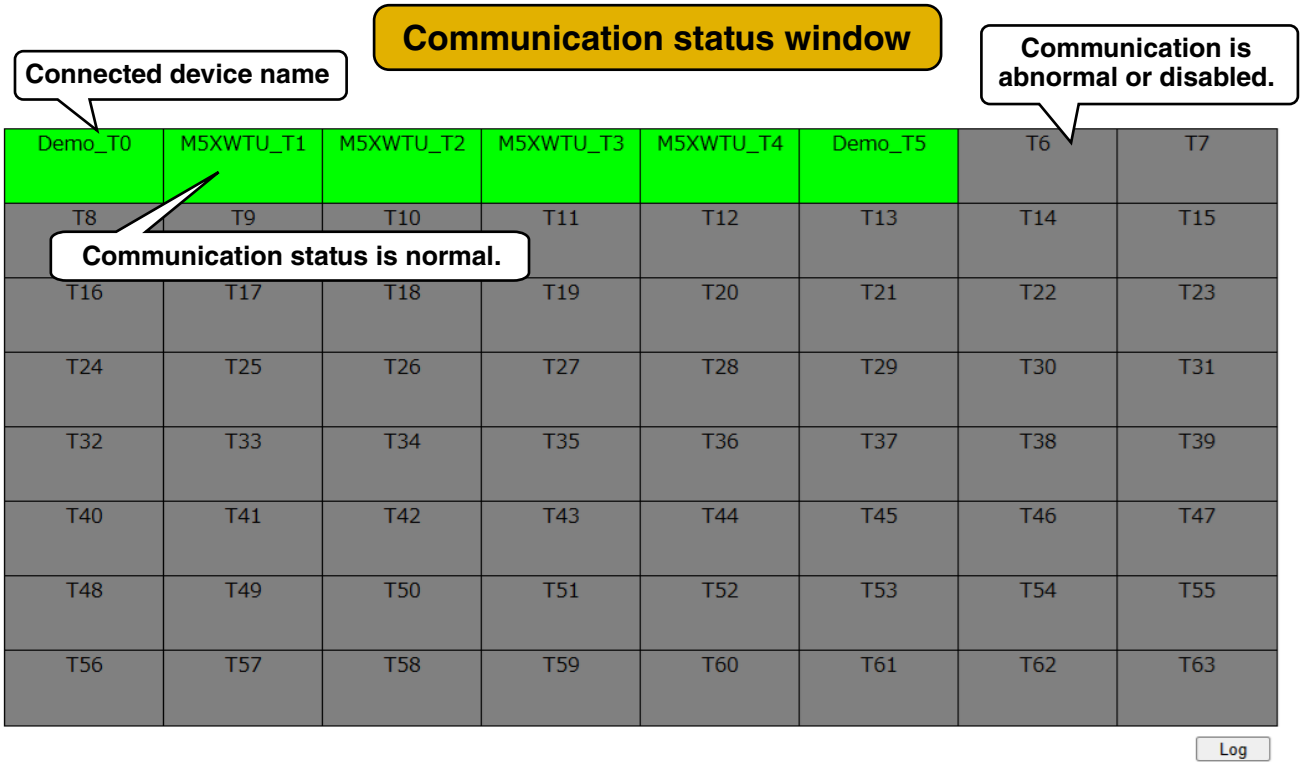
The circuit information belonging to a section is displayed.



1. Select a section in the section window. ➔ 4.6.2 HTML file
2. Click [Circuit] in the menu list to open the circuit window.
3. The circuit information belonging to the selected section is displayed.
   Click on the drop-down list to select the circuit to be displayed.
4. The displayed circuit information appears.
   Click on a cell of the line or phase data of the circuit. The selected cell color turns orange.
5. The total harmonic distortion (THD) and the harmonic contents by order of the clicked item are displayed in a bargraph.
6. When the mouse cursor is placed over a bar, the engineering unit value pops up.
   (Depending on the environment, the values may not be displayed.)
7. If data is missing, "-----" is displayed.

4.8 Communication status window

Real-time communication status of the RGP30-W with each connected device is displayed.
Access directly to the communication status window HTML file.
Green color means the communication is in normal status.
Gray color means it is in abnormal status or disabled.
Devices without assigned [Connected target No.] or [Circuit No. in connected target] are also displayed in gray.
(➔ 4.2.3 Circuit)



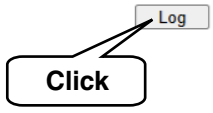
4.9 System log file

Display the system log.

1. Access directly to the HTML file to display the communication status window.
2. Click [Log] button to display the log data for the current year.
   For details on the log, refer to 5.4 System log.
3. To display log data for years other than this year, type the path to the txt file directly.
   Refer to 3.2 HTML file for the path detail.

Communication status window

Demo_T0	M5XWTU_T1	M5XWTU_T2	M5XWTU_T3	M5XWTU_T4	Demo_T5	T6	T7
T8	T9	T10	T11	T12	T13	T14	T15
T16	T17	T18	T19	T20	T21	T22	T23
T24	T25	T26	T27	T28	T29	T30	T31
T32	T33	T34	T35	T36	T37	T38	T39
T40	T41	T42	T43	T44	T45	T46	T47
T48	T49	T50	T51	T52	T53	T54	T55
T56	T57	T58	T59	T60	T61	T62	T63



System log file

```
2025/01/27 13:38:11 Target[1] Read error.
2025/01/27 13:38:17 Target[2] Read error.
2025/01/27 13:38:17 Target[1] Disconnect
2025/01/27 13:38:19 Target[1] Connect
2025/01/27 13:38:20 Target[1] Read ok.
2025/01/27 13:38:20 Target[2] Read ok.
2025/01/27 13:44:48 Target[0] Disconnect
2025/01/27 13:44:48 Target[1] Disconnect
2025/01/27 13:44:49 RGP30-W Shutdown.
2025/01/27 13:52:39 RGP30-W Start.(1.0.23)
2025/01/27 13:52:39 Target[0] Connect
2025/01/27 13:52:39 Target[1] Connect
```

4.10 Displayed unit and decimal place

Displayed measurement data has a fixed unit and number of decimal places.
Refer to the following table.

Parameter	Unit	Decimal place
Active power	kW	3rd
Reactive power	kvar	3rd
Apparent power	kVA	3rd
Energy	kWh	1st
Voltage	V	2nd
Current	A	3rd
Power factor	–	4th
Frequency	Hz	2nd
Harmonic	%	1st

5. Recorded data

Energy data aggregated by section is stored on a yearly, monthly or daily basis.

5.1 Overview of energy data

For details on the energy data, refer to the following table.

Item	Description
Format	JSON text format (extension: json)
Measuring segment	Section ➔ 4.2.4 Section
Recording media	Built-in SSD
Updating rate	Select from 10 sec., 20 sec., 30 sec., 1 min., 2 min. or 5 min. ➔ 4.2.5 General
Daily	Folder: C:\RGP30W\REPORT\YYYY\MM File name: YYYY_MM_DD.json YYYY: 4-digit year (e.g. 2024) MM: 2-digit month (e.g. 04) DD: 2-digit date (e.g. 21)
Monthly	Folder: C:\RGP30W\REPORT\YYYY\MM File name: YYYY_MM.json YYYY: 4-digit year (e.g. 2024) MM: 2-digit month (e.g. 11)
Yearly	Folder: C:\RGP30W\REPORT\YYYY File name: YYYY.json YYYY: 4-digit year (e.g. 2024)
Offset of file name	Offset of the above file names can be set. (0 or 1) ➔ 4.2.6 Report - Daily 0: The day of the first data record 1: The next day of the first data record - Monthly 0: The month of the first data record 1: The next month of the first data record - Yearly 0: The year of the first data record 1: The next year of the first data record
Deleting data	When [Delete all data] is performed, all data is deleted. ➔ 4.2.8 Erase If settings are changed or initialized, data is not deleted and recording is continued. If the following setting changes affect the data being recorded, a deleting operation is performed. - When the time interval is changed, the daily report is deleted. ➔ 4.2.5 General - When the initial day, month or year is changed, the corresponding daily, monthly or yearly data is deleted. ➔ 4.2.6 Report - When the offset of file name is changed, the corresponding daily, monthly or yearly data is deleted. ➔ 4.2.6 Report

CAUTION

- Never modify the recorded data.
  If changes are made, the energy data and report data may not be recorded or displayed correctly.
- If the file is corrupted due to unexpected power outages, the data will be deleted.

5.2 Totalized energy

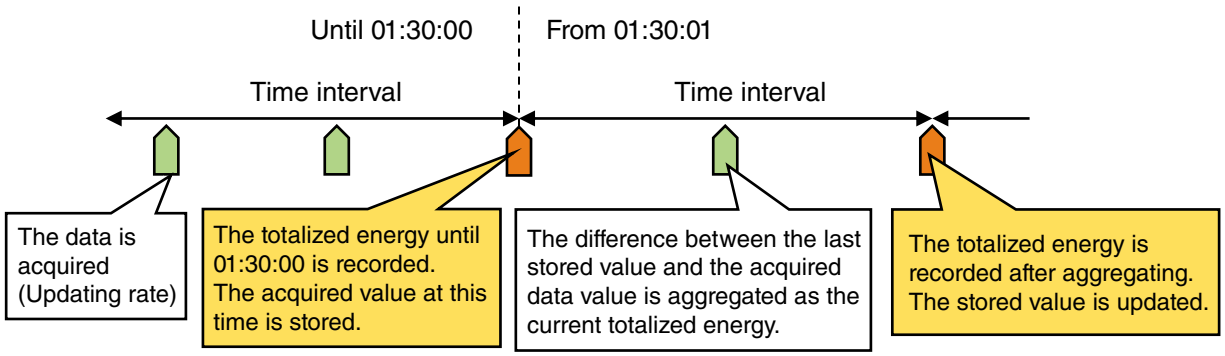
The totalizing process of energy is performed depending on the energy data.
The energy data is displayed on the daily report or on the energy window.
The totalized value starts from 0 after power-up. (The value is not maintained after power failure.)

5.2.1 Normal operation

Difference of energy values per time interval unit is recorded. ➔ 4.2.5 General
Refer to the following table for the timing of aggregation and reset by specified time intervals.

Time interval	Timing of aggregation and reset
1 hour	0 min. 0 sec. of every hour
30 min.	0 min. 0 sec. and 30 min. 0 sec. of every hour
15 min.	0 min. 0 sec., 15 min. 0 sec., 30 min. 0 sec. and 45 min. 0 sec. of every hour

When the time interval is set to 30 min., the operation is as follows.



CAUTION

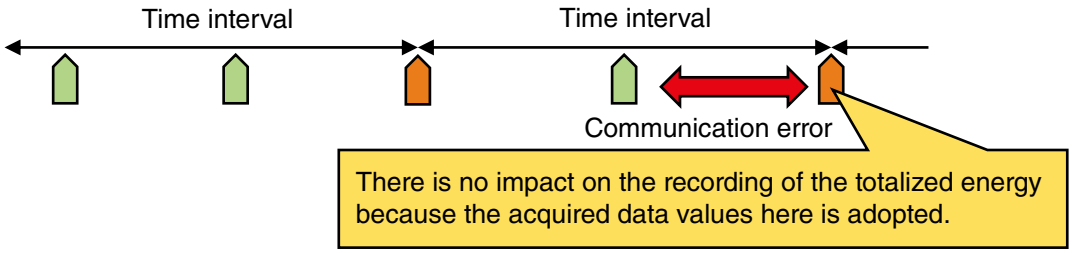
- Do not reset aggregated values or preset energy of the power measuring devices while the RGP30-W is starting up.
- If you want to use the preset function, shut down the RGP30-W, apply a preset value and then start up the device again.
  It is recommended to back up the report data in the SD card to be safe.

5.2.2 Operation in a communication error

If a communication error occurs between power measuring devices and RGP30-W, the operation is as follows.

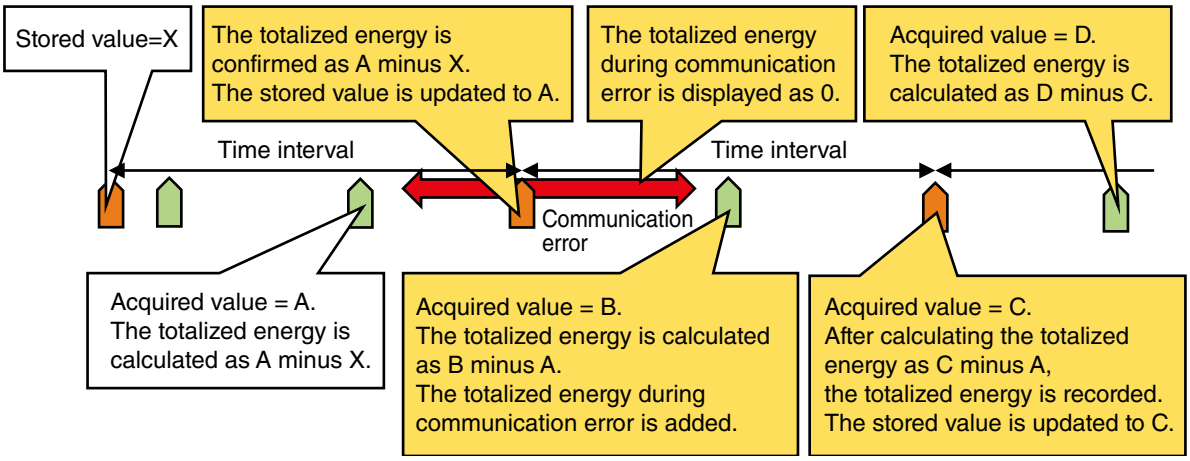
1. When the error is within a single time interval

There is no impact on the recording of the totalized energy.



2. When the error steps over time intervals

The totalized energy is displayed as 0 during a communication error.
Once the communication is restored, the confirmed values are displayed.



CAUTION

- If the communication is error in all time intervals, the totalized energy is recorded as 0.
- The RGP30-W judges any loss of communication with the power measuring devices including those by power outages as a communication error.
- If configuration changes or setting changes are made to the power measuring devices while the RGP30-W is starting up, the values may change significantly.
- The RGP30-W cannot recognize an overflow of acquired values during communication errors, causing the recorded values to change abruptly.

5.2.3 Time correction

When the time is corrected, the RGP30-W adjusts the updating rate to be uniform within a certain time period in order to secure continued data records.

Corrected range	Process
Within 0 to -180 sec.	The updating rate is extended until the corrected current time catches up with the time in the process of data being recorded. After catching up, the updating rate is restored.
Within 0 to 180 sec.	The data for missing updating cycles are complemented. In addition, the updating rate is shortened until the time in the process of recording catches up with the corrected current time. After catching up, the updating rate is restored.
Other than those above	The time change is applied immediately and the active energy is reset.

NOTE

If the time correction is performed again during the equalizing process and the difference between the corrected current time and the lastly corrected time is reduced, the equalizing process continues. In other cases, the time changes are applied immediately.

5.3 Report data

Report data is created based on the totalized energy data and stored to an SD card in CSV format.

5.3.1 Overview

Item	Description
Data format	CSV text format (extension: csv)
Encode	UTF-8 (saved as CSV with BOM, viewable with Excel 2016 or later.)
Measuring segment	Section
Recording media	SD card (D drive is fixed.)
Unit	Fixed at kWh
Updating rate	Select from 10 sec., 20 sec., 30 sec., 1 min., 2 min., or 5 min. ➔ 4.2.5 General
Daily	Folder: D:\REPORT\YYYY\MM File name: YYYY_MM_DD.csv YYYY: 4-digit year (e.g. 2024) MM: 2-digit month (e.g. 07) DD: 2-digit date (e.g. 01)
Monthly	Folder: D:\REPORT\YYYY\MM File name: YYYY_MM.csv YYYY: 4-digit year (e.g. 2024) MM: 2-digit month (e.g. 07)
Yearly	Folder: D:\REPORT\YYYY File name: YYYY.csv YYYY: 4-digit year (e.g. 2024)
Offset of file name	Offset of the above file names can be set. (0 or 1) ➔ 4.2.6 Report - Daily 0: The day of the first data record 1: The next day of the first data record - Monthly 0: The month of the first data record 1: The next month of the first data record - Yearly 0: The year of the first data record 1: The next year of the first data record
Deleting data	When [Delete all data] is performed, all data is deleted. ➔ 4.2.8 Erase If settings are changed or initialized, data is not deleted and recording is continued. If the following setting changes affect the data being recorded, a deleting operation is performed. - When the time interval is changed, the daily data is deleted. ➔ 4.2.5 General - When the initial day, month or year is changed, the corresponding daily, monthly or yearly data is deleted. ➔ 4.2.6 Report - When the offset of file name is changed, the corresponding daily, monthly or yearly data is deleted. ➔ 4.2.6 Report

CAUTION

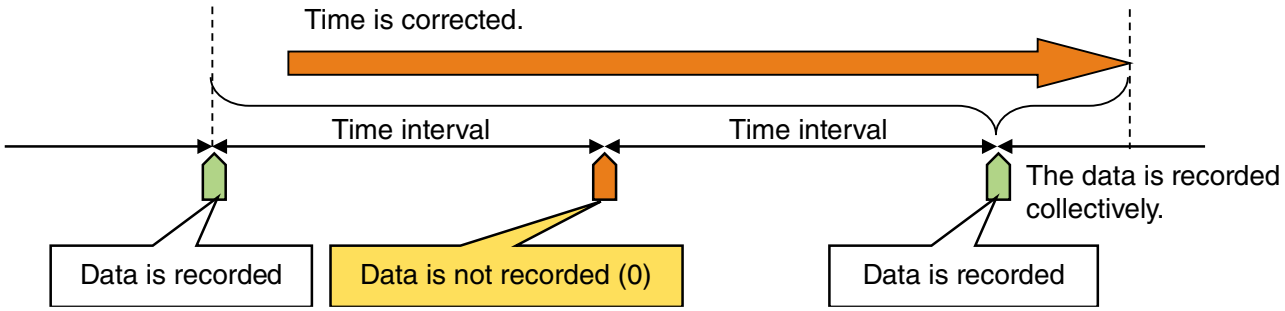
- If data before changing settings or initializing is needed, be sure to secure a copy of necessary report data as backups by replacing the SD card or downloading the data in CSV format. (➔ 4.5 Report)
- An SD card is required to record report data. Prepare one.
- Report data is saved to the D drive.
  If an SD card and a USB memory are used at the same time, the data may not be stored correctly depending on your environment.
  We recommend using only an SD card.

5.3.2 Time correction

If time correction crosses over a timing of report aggregation and reset (➔ 5.2.1 Normal operation), affected report data are adjusted as explained below.

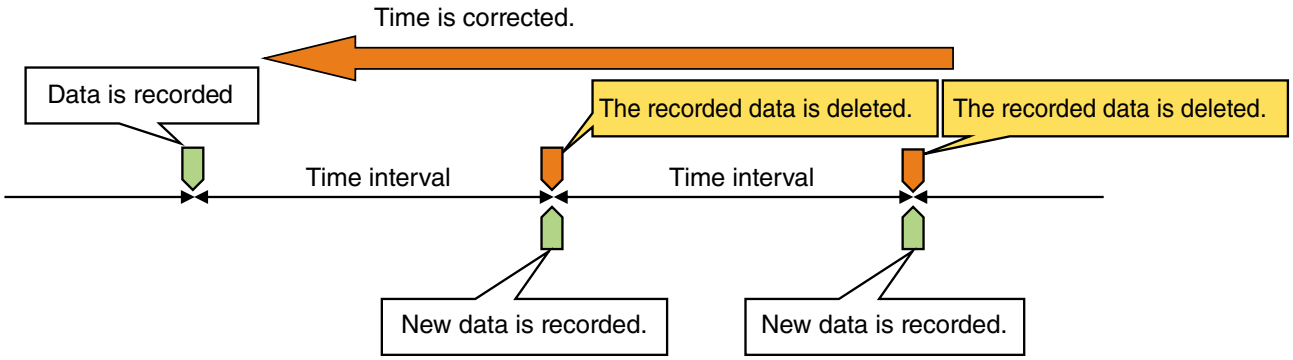
1. When the time is advanced beyond the aggregation and reset timing

Recording continues.
The data at the missed aggregation and reset timing is 0.
It is recorded collectively at the timing of next data recording.
If the time is advanced beyond the current report file's time span, a corresponding file is generated to save the data accordingly.



2. When the time is moved back to a point before the aggregation and reset timing

After deleting the recorded data of the overlapping time period, the recording continues.
If the time is moved back before the current report file's time span, a corresponding file is generated to save the data accordingly.
If a file already exists, it is overwritten.



5.3.3 Report data format

Data is recorded sequentially by sections.
Each data is recorded with one decimal place.
Sections where circuits are not registered are not recorded.

1. Daily report

The following report format shows an example of daily report set to:
initial hour = 0, offset hour of file name = 0 (➔ 4.2.6 Report), and time interval = 30 min. (➔ 4.2.5 General).
The total values by row and by column are recorded respectively.
If the initial hour is 8, data starts from "2024/12/13 8:00" and ends at "2024/12/14 7:30".

2024_12_13	Group1 [kWh]	…	Group128 [kWh]	Sum [kWh]
2024/12/13 00:00	Group1 data	…	Group128 data	Total
2024/12/13 00:30	Group1 data	…	Group128 data	Total
…	…	…	…	…
2024/12/13 23:00	Group1 data	…	Group128 data	Total
2024/12/13 23:30	Group1 data	…	Group128 data	Total
Sum [kWh]	Total of Group1	…	Total of Group128	Total

2. Monthly report

The following report format shows an example of monthly report set to:
initial day = 1, offset month of file name = 0 (➔4.2.6 Report).
The total values by row and by column are recorded respectively.
If the initial day is 15, data starts from "2024/12/15" and ends at "2025/01/14".

2024_12	Group1 [kWh]	…	Group128 [kWh]	Sum [kWh]
2024/12/01	Group1 data	…	Group128 data	Total
2024/12/02	Group1 data	…	Group128 data	Total
…	…	…	…	…
2024/12/30	Group1 data	…	Group128 data	Total
2024/12/31	Group1 data	…	Group128 data	Total
Sum [kWh]	Total of Group1	…	Total of Group128	Total

3. Yearly report

The following report format shows an example of yearly report set to:
initial month = 1, offset year of file name = 0 (➔4.2.6 Report).
The total values by row and by column are recorded respectively.
If the initial month is 4, data starts from "2024/04" and ends at "2025/03".

2024	Group1 [kWh]	…	Group128 [kWh]	Sum [kWh]
2024/01	Group1 data	…	Group128 data	Total
2024/02	Group1 data	…	Group128 data	Total
…	…	…	…	…
2024/11	Group1 data	…	Group128 data	Total
2024/12	Group1 data	…	Group128 data	Total
Sum [kWh]	Total of Group1	…	Total of Group128	Total

5.4 System log

System logs are stored in txt format in the folder "C:\RGP30W\Log".
A new log entry is added to the last one in the same file (no file deletion).

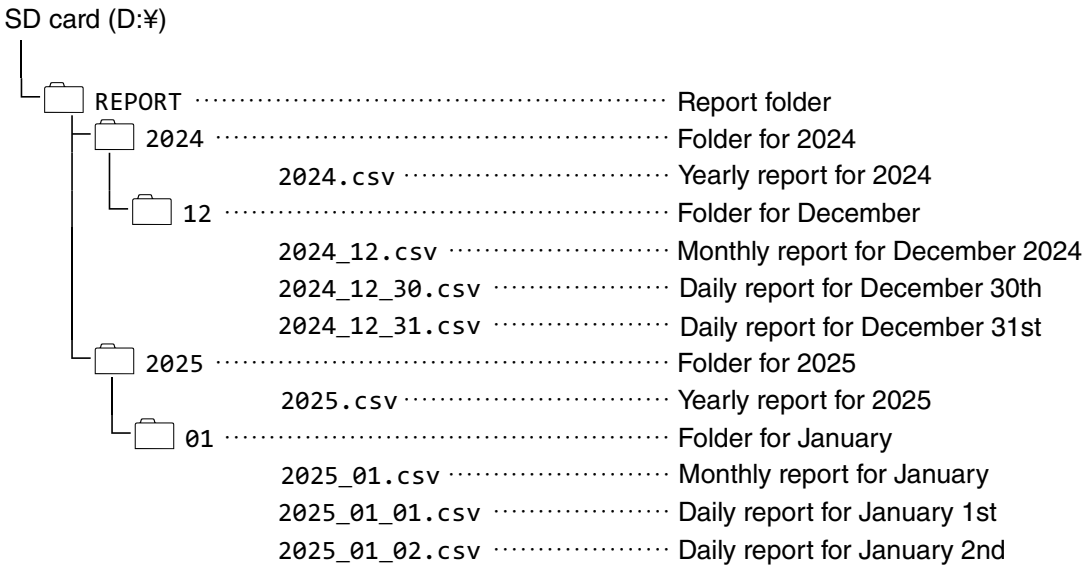
Item	Description
Data format	Text format (Extension: txt)
Encoding	ASCII
Recorded content	Each row is recorded as "YYYY/MM/DD hh:mm:ss Message".
File name	LogYYYY.txt YYYY: 4-digit year (e.g.: 2025)

Refer to the following table for details of the messages.

Item	Description
RGP30-W Start. (XX.YY.ZZ)	RGP30-W was turned on. XX: Major version YY: Minor version ZZ: Build version
RGP30-W Shutdown.	RGP30-W was turned off.
Data erase.	[Delete all data] command was executed in the setting window. (➔ 4.2.8 Erase)
Setting init.	[Initialize all settings] command was executed in the setting window. (➔ 4.2.8 Erase)
Change settings.	Settings were changed on the setting window.
Target[0 – 63] Connect.	The device [0 to 63] was connected to Modbus/TCP network.
Target[0 – 63] Disconnect.	The device [0 to 63] was disconnected from Modbus/TCP network.
Target[0 – 63] Read error.	The RGP30-W failed in reading the connected device [0 to 63].
Target[0 – 63] Read ok.	The RGP30-W recovered from a state of reading failure.
Target[0 – 63] Scan error.	There is a communication error between the device [0 to 63] and Modbus/TCP network.
FILE ERROR (file path\file name)	A file could not be created. (➔ 7.1.1 SD card)

5.5 Folder structure

Report files are stored in an SD card.
The folder structure is as shown below. Year and month folders are automatically created as the number of saved files increases.



6. Modbus/TCP server

The totalized energy aggregated with the RGP30-W can be read out by devices of MG Co., Ltd. via Modbus/TCP.

6.1 General specification

Item	Description
Protocol	Modbus/TCP
Port address	Variable (Default: 502) (➔ 4.2.7 Modbus/TCP)
Number of simultaneous connections	Up to 4
Connectable device	DL30, DL8, TR30, JC-IO

CAUTION

Refer to the users manuals of connected devices for detailed information.

6.2 Register map

■ **64-bit data 3X, (4X)**

Address	Section	Details
0001	Section 0	Momentary active power (lower)
0002	:	Momentary active power (mid-lower)
0003	:	Momentary active power (mid-upper)
0004	:	Momentary active power (upper)
0005	:	Totalized active energy of the day (lower)
0006	:	Totalized active energy of the day (mid-lower)
0007	:	Totalized active energy of the day (mid-upper)
0008	:	Totalized active energy of the day (upper)
0009	:	Totalized active energy of the month (lower)
0010	:	Totalized active energy of the month (mid-lower)
0011	:	Totalized active energy of the month (mid-upper)
0012	:	Totalized active energy of the month (upper)
0013	:	Totalized active energy of the year (lower)
0014	:	Totalized active energy of the year (mid-lower)
0015	:	Totalized active energy of the year (mid-upper)
0016	:	Totalized active energy of the year (upper)
0017 (+0)	Section 1	Momentary active power
0021 (+4)	:	Totalized active energy of the day
0025 (+8)	:	Totalized active energy of the month
0029 (+12)	:	Totalized active energy of the year
0033	Section 2	Same as above
0049	Section 3	Same as above
0065	Section 4	Same as above
0081	Section 5	Same as above

Address	Section	Details
0097 (+0)	Section 6	Momentary active power
0101 (+4)	:	Totalized active energy of the day
0105 (+8)	:	Totalized active energy of the month
0109 (+12)	:	Totalized active energy of the year
0113	Section 7	Same as above
0129	Section 8	Same as above
0145	Section 9	Same as above
0161	Section 10	Same as above
0177	Section 11	Same as above
0193	Section 12	Same as above
0209	Section 13	Same as above
0225	Section 14	Same as above
0241	Section 15	Same as above
0257	Section 16	Same as above
0273	Section 17	Same as above
0289	Section 18	Same as above
0305	Section 19	Same as above
0321	Section 20	Same as above
0337	Section 21	Same as above
0353	Section 22	Same as above
0369	Section 23	Same as above
0385	Section 24	Same as above
0401	Section 25	Same as above
0417	Section 26	Same as above
0433	Section 27	Same as above
0449	Section 28	Same as above
0465	Section 29	Same as above
0481	Section 30	Same as above
0497	Section 31	Same as above
0513	Section 32	Same as above
0529	Section 33	Same as above
0545	Section 34	Same as above
0561	Section 35	Same as above
0577	Section 36	Same as above
0593	Section 37	Same as above
0609	Section 38	Same as above
0625	Section 39	Same as above
0641	Section 40	Same as above
0657	Section 41	Same as above
0673	Section 42	Same as above
0689	Section 43	Same as above
0705	Section 44	Same as above
0721	Section 45	Same as above
0737	Section 46	Same as above

Address	Section	Details
0753 (+0)	Section 47	Momentary active power
0757 (+4)	:	Totalized active energy of the day
0761 (+8)	:	Totalized active energy of the month
0765 (+12)	:	Totalized active energy of the year
0769	Section 48	Same as above
0785	Section 49	Same as above
0801	Section 50	Same as above
0817	Section 51	Same as above
0833	Section 52	Same as above
0849	Section 53	Same as above
0865	Section 54	Same as above
0881	Section 55	Same as above
0897	Section 56	Same as above
0913	Section 57	Same as above
0929	Section 58	Same as above
0945	Section 59	Same as above
0961	Section 60	Same as above
0977	Section 61	Same as above
0993	Section 62	Same as above
1009	Section 63	Same as above
1025	Section 64	Same as above
1041	Section 65	Same as above
1057	Section 66	Same as above
1073	Section 67	Same as above
1089	Section 68	Same as above
1105	Section 69	Same as above
1121	Section 70	Same as above
1137	Section 71	Same as above
1153	Section 72	Same as above
1169	Section 73	Same as above
1185	Section 74	Same as above
1201	Section 75	Same as above
1217	Section 76	Same as above
1233	Section 77	Same as above
1249	Section 78	Same as above
1265	Section 79	Same as above
1281	Section 80	Same as above
1297	Section 81	Same as above
1313	Section 82	Same as above
1329	Section 83	Same as above
1345	Section 84	Same as above
1361	Section 85	Same as above
1377	Section 86	Same as above
1393	Section 87	Same as above

Address	Section	Details
1409 (+0)	Section 88	Momentary active power
1413 (+4)	:	Totalized active energy of the day
1417 (+8)	:	Totalized active energy of the month
1421 (+12)	:	Totalized active energy of the year
1425	Section 89	Same as above
1441	Section 90	Same as above
1457	Section 91	Same as above
1473	Section 92	Same as above
1489	Section 93	Same as above
1505	Section 94	Same as above
1521	Section 95	Same as above
1537	Section 96	Same as above
1553	Section 97	Same as above
1569	Section 98	Same as above
1585	Section 99	Same as above
1601	Section 100	Same as above
1617	Section 101	Same as above
1633	Section 102	Same as above
1649	Section 103	Same as above
1665	Section 104	Same as above
1681	Section 105	Same as above
1697	Section 106	Same as above
1713	Section 107	Same as above
1729	Section 108	Same as above
1745	Section 109	Same as above
1761	Section 110	Same as above
1777	Section 111	Same as above
1793	Section 112	Same as above
1809	Section 113	Same as above
1825	Section 114	Same as above
1841	Section 115	Same as above
1857	Section 116	Same as above
1873	Section 117	Same as above
1889	Section 118	Same as above
1905	Section 119	Same as above
1921	Section 120	Same as above
1937	Section 121	Same as above
1953	Section 122	Same as above
1969	Section 123	Same as above
1985	Section 124	Same as above
2001	Section 125	Same as above
2017	Section 126	Same as above
2033	Section 127	Same as above

Address	Section	Details
2049 (+0)	All sections in total	Momentary active power
2053 (+4)	:	Totalized active energy of the day
2057 (+8)	:	Totalized active energy of the month
2061 (+12)	:	Totalized active energy of the year

Both 3X and 4X can be used to read data, but the 4X cannot be used as a write command (4X is read-only).
Each data size is 64 bits. The byte order is little endian.
If there are no circuits belonging to a section, all values in the corresponding sections are 0.
For details on the sections, refer to 4.2.4 Section.

■ 32-bit data 3X, (4X)

Address	Circuit	Details
4001	Circuit 0	Active power (lower)
4002	:	Active power (upper)
4003	:	Reactive power (lower)
4004	:	Reactive power (upper)
4005	:	Apparent power (lower)
4006	:	Apparent power (upper)
4007	:	Voltage (lower)
4008	:	Voltage (upper)
4009	:	Current (lower)
4010	:	Current (upper)
4011	:	Frequency (lower)
4012	:	Frequency (upper)
4013	:	Power factor (lower)
4014	:	Power factor (upper)
4015	:	Reserved
4016	:	Reserved
4017 (+0)	Circuit 1	Active power
4019 (+2)	:	Reactive power
4021 (+4)	:	Apparent power
4023 (+6)	:	Voltage
4025 (+8)	:	Current
4027 (+10)	:	Frequency
4029 (+12)	:	Power factor
4031 (+14)	:	Reserved
4033	Circuit 2	Same as above
4049	Circuit 3	Same as above
4065	Circuit 4	Same as above
4081	Circuit 5	Same as above
4097	Circuit 6	Same as above
4113	Circuit 7	Same as above
4129	Circuit 8	Same as above
4145	Circuit 9	Same as above
4161	Circuit 10	Same as above

Address	Circuit	Details
4177 (+0)	Circuit 11	Active power
4179 (+2)	:	Reactive power
4181 (+4)	:	Apparent power
4183 (+6)	:	Voltage
4185 (+8)	:	Current
4187 (+10)	:	Frequency
4189 (+12)	:	Power factor
4191 (+14)	:	Reserved
4193	Circuit 12	Same as above
4209	Circuit 13	Same as above
4225	Circuit 14	Same as above
4241	Circuit 15	Same as above
4257	Circuit 16	Same as above
4273	Circuit 17	Same as above
4289	Circuit 18	Same as above
4305	Circuit 19	Same as above
4321	Circuit 20	Same as above
4337	Circuit 21	Same as above
4353	Circuit 22	Same as above
4369	Circuit 23	Same as above
4385	Circuit 24	Same as above
4401	Circuit 25	Same as above
4417	Circuit 26	Same as above
4433	Circuit 27	Same as above
4449	Circuit 28	Same as above
4465	Circuit 29	Same as above
4481	Circuit 30	Same as above
4497	Circuit 31	Same as above
4513	Circuit 32	Same as above
4529	Circuit 33	Same as above
4545	Circuit 34	Same as above
4561	Circuit 35	Same as above
4577	Circuit 36	Same as above
4593	Circuit 37	Same as above
4609	Circuit 38	Same as above
4625	Circuit 39	Same as above
4641	Circuit 40	Same as above
4657	Circuit 41	Same as above
4673	Circuit 42	Same as above
4689	Circuit 43	Same as above
4705	Circuit 44	Same as above
4721	Circuit 45	Same as above
4737	Circuit 46	Same as above
4753	Circuit 47	Same as above

Address	Circuit	Details
4769 (+0)	Circuit 48	Active power
4771 (+2)	:	Reactive power
4773 (+4)	:	Apparent power
4775 (+6)	:	Voltage
4777 (+8)	:	Current
4779 (+10)	:	Frequency
4781 (+12)	:	Power factor
4783 (+14)	:	Reserved
4785	Circuit 49	Same as above
4801	Circuit 50	Same as above
4817	Circuit 51	Same as above
4833	Circuit 52	Same as above
4849	Circuit 53	Same as above
4865	Circuit 54	Same as above
4881	Circuit 55	Same as above
4897	Circuit 56	Same as above
4913	Circuit 57	Same as above
4929	Circuit 58	Same as above
4945	Circuit 59	Same as above
4961	Circuit 60	Same as above
4977	Circuit 61	Same as above
4993	Circuit 62	Same as above
5009	Circuit 63	Same as above
5025	Circuit 64	Same as above
5041	Circuit 65	Same as above
5057	Circuit 66	Same as above
5073	Circuit 67	Same as above
5089	Circuit 68	Same as above
5105	Circuit 69	Same as above
5121	Circuit 70	Same as above
5137	Circuit 71	Same as above
5153	Circuit 72	Same as above
5169	Circuit 73	Same as above
5185	Circuit 74	Same as above
5201	Circuit 75	Same as above
5217	Circuit 76	Same as above
5233	Circuit 77	Same as above
5249	Circuit 78	Same as above
5265	Circuit 79	Same as above
5281	Circuit 80	Same as above
5297	Circuit 81	Same as above
5313	Circuit 82	Same as above
5329	Circuit 83	Same as above
5345	Circuit 84	Same as above

Address	Circuit	Details
5361 (+0)	Circuit 85	Active power
5363 (+2)	:	Reactive power
5365 (+4)	:	Apparent power
5367 (+6)	:	Voltage
5369 (+8)	:	Current
5371 (+10)	:	Frequency
5373 (+12)	:	Power factor
5375 (+14)	:	Reserved
5377	Circuit 86	Same as above
5393	Circuit 87	Same as above
5409	Circuit 88	Same as above
5425	Circuit 89	Same as above
5441	Circuit 90	Same as above
5457	Circuit 91	Same as above
5473	Circuit 92	Same as above
5489	Circuit 93	Same as above
5505	Circuit 94	Same as above
5521	Circuit 95	Same as above
5537	Circuit 96	Same as above
5553	Circuit 97	Same as above
5569	Circuit 98	Same as above
5585	Circuit 99	Same as above
5601	Circuit 100	Same as above
5617	Circuit 101	Same as above
5633	Circuit 102	Same as above
5649	Circuit 103	Same as above
5665	Circuit 104	Same as above
5681	Circuit 105	Same as above
5697	Circuit 106	Same as above
5713	Circuit 107	Same as above
5729	Circuit 108	Same as above
5745	Circuit 109	Same as above
5761	Circuit 110	Same as above
5777	Circuit 111	Same as above
5793	Circuit 112	Same as above
5809	Circuit 113	Same as above
5825	Circuit 114	Same as above
5841	Circuit 115	Same as above
5857	Circuit 116	Same as above
5873	Circuit 117	Same as above
5889	Circuit 118	Same as above
5905	Circuit 119	Same as above
5921	Circuit 120	Same as above
5937	Circuit 121	Same as above

Address	Circuit	Details
5953 (+0)	Circuit 122	Active power
5955 (+2)	:	Reactive power
5957 (+4)	:	Apparent power
5959 (+6)	:	Voltage
5961 (+8)	:	Current
5963 (+10)	:	Frequency
5965 (+12)	:	Power factor
5967 (+14)	:	Reserved
5969	Circuit 123	Same as above
5985	Circuit 124	Same as above
6001	Circuit 125	Same as above
6017	Circuit 126	Same as above
6033	Circuit 127	Same as above

Both 3X and 4X can be used to read data, but the 4X cannot be used as a write command (4X is read-only).
Each data size is 32 bits. The byte order is little endian.
For the reserved addresses, the values are 0.
If the circuit mode is set to [Disable], all values in the corresponding circuits are 0.
For details on the circuits, refer to 4.2.3 Circuit.

6.3 Data unit

When RGP30-W is used as Modbus/TCP slave, the unit of data sent in response to the Modbus master is as follows.

Data	Unit	Per bit
Momentary active power	W	1 W
Totalized active energy	kWh × 10	0.1 kWh
Voltage	V × 100	0.01 V
Current	mA	1 mA
Frequency	Hz × 100	0.01 Hz
Power factor	× 10000	0.0001

It is possible to read 64-bit data as 32-bit data by specifying the first address of each data. (➔ 6.2 Register map)

CAUTION

If the 64-bit format data read as 32-bit is actually larger than a full 32-bit range, an overflow occurs.

6.4 Command

■ Data and Control Functions

CODE	NAME		
01	Read Coil Status		Digital Output from the slave
02	Read Input Status		Status of digital Inputs to the slave
03	Read Holding Registers	X	General purpose register within the slave
04	Read Input Registers	X	Collected data from the field by the slave
05	Force Single Coil		Digital output from the slave
06	Preset Single Register		General purpose register within the slave
07	Read Exception Status		
08	Diagnostics		
09	Program 484		
10	Poll 484		
11	Fetch Comm. Event Counter		
12	Fetch Comm. Event Log		
13	Program Controller		
14	Poll Controller		
15	Force Multiple Coils		Digital Output from the slave
16	Preset Multiple Registers		General purpose register within the slave
17	Report Slave ID		
18	Program 884/M84		
19	Reset Comm. Link		
20	Read General Reference		
21	Write General Reference		
22	Mask Write 4X Register		
23	Read / Write 4X Registers		
24	Read FIFO Queue		

■ Exception Code

CODE	NAME		
01	Illegal Function	X	Function code is not allowable for the slave
02	Illegal Data Address	X	Address is not available within the slave
03	Illegal Value		
04	Slave Device Failure		
05	Acknowledge		
06	Slave Device Busy		
07	Negative Acknowledge		
08	Memory Parity Error		

■ Diagnostic Subfunctions

CODE	NAME		
00	Return Query Data		
01	Restart Comm. Option		
02	Return Diagnostic Register		
03	Change Input Delimiter Character		
04	Force Slave to Listen Only Mode		

7. Appendix

7.1 Trouble shooting

For the troubles other than the following, refer to RGP-Designer Users Manual (EM-8581-B).

7.1.1 SD card

Problem faced	Checks to be done	Method of handling
Unable to record report data in the SD card.	Has the SD card been inserted? (Is the SD card mounted?)	Insert an SD card specified by us. ➔ 7.2.1 SD card
	Has a USB memory been mounted?	Use only an SD card.
	Is there a space available for storage on the SD card?	Check for space availability, and delete unnecessary data in the SD card.

7.1.2 Modbus/TCP (client)

Problem faced	Checks to be done	Method of handling
Unable to connect from the Modbus client to the RGP30-W.	Has the Modbus/TCP server function enabled?	Enable the Modbus/TCP server function. ➔ 4.2.7 Modbus/TCP
Unable to read the data.	Are the channel register type and address correct?	Check the register type and address. ➔ 6. Modbus/TCP server
Unable to connect via the router.	Has the port number 502 used by Modbus/TCP on the router been opened?	Manually set the IP address and port number 502 of the RGP30-W in the router's NAT settings. (refer to the instruction manual of the router)

7.1.3 Modbus/TCP (server)

Problem faced	Checks to be done	Method of handling
Unable to connect to power measuring devices from the RGP30-W.	Is the LAN cable damaged or has it come out from the HUB?	Connect the LAN cable securely. Check the connection lamp on the HUB.
	Is the IP address of the RGP30-W correct?	Check the IP address. ➔ 2.5 Setting/changing RGP30-W IP address
	Has the same network address been specified in the RGP30-W and in power measuring devices?	Check the network address. [Example] RGP30-W: 192.168.0.1 Slave: 192.168.0.2 Subnet mask: 255.255.255.0
	Does the IP address specified on the setting window match the one for the power measuring device?	Check the IP address. ➔ 4.2.2 Connected device
	Has the IP address been set for the communication adapter connected to power measuring devices?	Set the IP address for the communication adapter. Disconnect and restart the power supply after setting the IP address. (refer to Users Manual of the respective communication adapter for how to set the IP address)

7.2 Reference documents

7.2.1 SD card

Basic specifications

Item	Description
Type	SDHC
Format	FAT32

Specified SD card

Manufacturer	Model	Capacity
Hagiwara Solutions	NSD6-004GH(B21SEI	4 GB

Available for purchase from us. Consult us.

SD card formatter

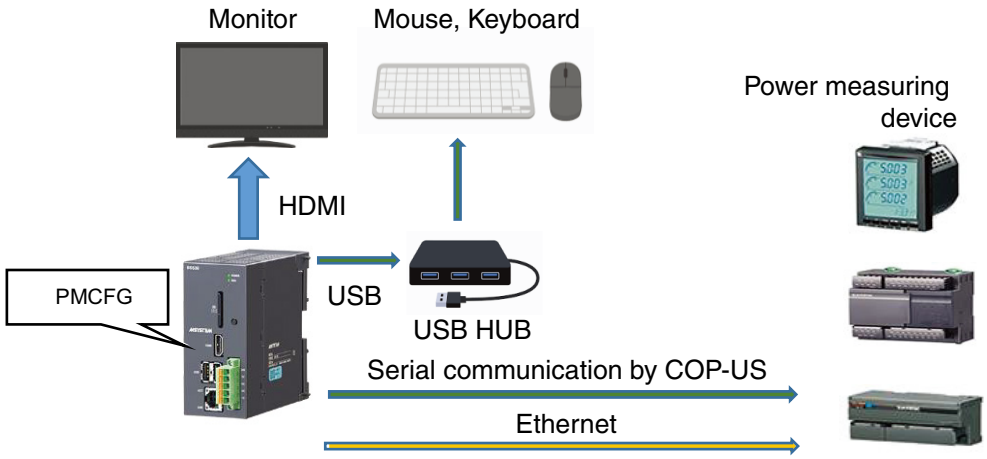
Use a dedicated software “SD Card Formatter”.
“SD Card Formatter” is downloadable from SD Association’s web site.
https://www.sdcard.org

CAUTION

Do not use a formatter other than the one provided by the SD Association.

7.2.2 Setting of power measuring device

Install the PC Configurator Software compatible with RGP30-W to perform loop test and settings for power measuring devices.
For details on the PC Configurator Software, refer to the following table.



Power measuring device	PC Configurator Software	Users Manual
R7EWTU, R7MWTU, R9EWTU, R9MWTU, M5XWT, M5XWTU, M50XWTU, M50EXWTU, 53U, L53U, 54U	PMCFG	PMCFG Users Manual (EM-9194-C)

CAUTION

Depending on the model of power measuring device, PC Configurator Cable of MG Co., Ltd. (model: COP-US) is required.

7.3 Version history

7.3.1 Rev.0

- Initial issue

7.3.2 Rev.1

- 1 min., 2 min., and 5 min. are added to the data updating rate.
- RGP30-W Ver 1.1.x.0
  The data updating rate was changed.
  Minor bugs were fixed.

7.3.3 Rev.2

- RGP30-W Ver 1.2.x.0
  The displayed value were modified to show as invalid when there is no data corresponding to Modbus measurement values for power measuring device.

7.3.4 Rev.3

- RGP30-W Ver 1.3.x.0
  Remote I/O modules with Modbus/TCP slave function were supported. (active energy only)

8. License

Below are the licenses for the functions used in RGP30-W and RGP-Designer.

8.1 License

This software incorporates Chart.js (https://www.chartjs.org/).
Chart.js is distributed under the MIT License.

The MIT License (MIT)

Copyright (c) 2014-2022 Chart.js Contributors

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This software incorporates @kurkle/color (https://github.com/kurkle/color#readme).
@kurkle/color is distributed under the MIT License.

The MIT License (MIT)

Copyright (c) 2018-2021 Jukka Kurkela

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software"), to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT. IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

This software incorporates Jansson (https://github.com/akheron/jansson).
Jansson is distributed under the MIT License.

This software incorporates expat (https://libexpat.github.io/).
expat is distributed under the MIT License.
The following is the copyright notice, license statement, and disclaimer required by the MIT/X Consortium License:

Copyright (c) 1998, 1999, 2000 Thai Open Source Software Center Ltd. and Clark Cooper
Copyright (c) 2001, 2002, 2003, 2004, 2005, 2006 Expat maintainers.

Permission is hereby granted, free of charge, to any person obtaining a copy of this software and associated documentation files (the "Software") to deal in the Software without restriction, including without limitation the rights to use, copy, modify, merge, publish, distribute, sublicense, and/or sell copies of the Software, and to permit persons to whom the Software is furnished to do so, subject to the following conditions:

The above copyright notice and this permission notice shall be included in all copies or substantial portions of the Software.

THE SOFTWARE IS PROVIDED "AS IS", WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED, INCLUDING BUT NOT LIMITED TO THE WARRANTIES OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT.
IN NO EVENT SHALL THE AUTHORS OR COPYRIGHT HOLDERS BE LIABLE FOR ANY CLAIM, DAMAGES OR OTHER LIABILITY, WHETHER IN AN ACTION OF CONTRACT, TORT OR OTHERWISE, ARISING FROM, OUT OF OR IN CONNECTION WITH THE SOFTWARE OR THE USE OR OTHER DEALINGS IN THE SOFTWARE.

RGP30-W incorporates the software subject to the terms and conditions of Camellia license below.

camellia.c ver 1.2.0

Redistribution and use in source and binary forms, with or without
modification, are permitted provided that the following conditions
are met:

1. Redistributions of source code must retain the above copyright notice, this list of conditions and the following disclaimer as the first lines of this file unmodified.
2. Redistributions in binary form must reproduce the above copyright notice, this list of conditions and the following disclaimer in the documentation and/or other materials provided with the distribution.

THIS SOFTWARE IS PROVIDED BY NTT "AS IS" AND ANY EXPRESS OR IMPLIED WARRANTIES, INCLUDING, BUT NOT LIMITED TO, THE IMPLIED WARRANTIES OF MERCHANTABILITY AND FITNESS FOR A PARTICULAR PURPOSE ARE DISCLAIMED.
IN NO EVENT SHALL NTT BE LIABLE FOR ANY DIRECT, INDIRECT, INCIDENTAL, SPECIAL, EXEMPLARY, OR CONSEQUENTIAL DAMAGES (INCLUDING, BUT NOT LIMITED TO, PROCUREMENT OF SUBSTITUTE GOODS OR SERVICES; LOSS OF USE, DATA, OR PROFITS; OR BUSINESS INTERRUPTION) HOWEVER CAUSED AND ON ANY THEORY OF LIABILITY, WHETHER IN CONTRACT, STRICT LIABILITY, OR TORT (INCLUDING NEGLIGENCE OR OTHERWISE) ARISING IN ANY WAY OUT OF THE USE OF THIS SOFTWARE, EVEN IF ADVISED OF THE POSSIBILITY OF SUCH DAMAGE.

RGP30-W incorporates the software subject to the terms and conditions of Svg.dll license below.

Microsoft Public License (Ms-PL)

This license governs use of the accompanying software. If you use the software, you accept this license.
If you do not accept the license, do not use the software.

1. Definitions

The terms "reproduce," "reproduction," "derivative works," and "distribution" have the same meaning here as under U.S. copyright law.

A "contribution" is the original software, or any additions or changes to the software.

A "contributor" is any person that distributes its contribution under this license.

"Licensed patents" are a contributor's patent claims that read directly on its contribution.

2. Grant of Rights

(A) Copyright Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free copyright license to reproduce its contribution, prepare derivative works of its contribution, and distribute its contribution or any derivative works that you create.

(B) Patent Grant- Subject to the terms of this license, including the license conditions and limitations in section 3, each contributor grants you a non-exclusive, worldwide, royalty-free license under its licensed patents to make, have made, use, sell, offer for sale, import, and/or otherwise dispose of its contribution in the software or derivative works of the contribution in the software.

3. Conditions and Limitations

(A) No Trademark License- This license does not grant you rights to use any contributors' name, logo, or trademarks.

(B) If you bring a patent claim against any contributor over patents that you claim are infringed by the software, your patent license from such contributor to the software ends automatically.

(C) If you distribute any portion of the software, you must retain all copyright, patent, trademark, and attribution notices that are present in the software.

(D) If you distribute any portion of the software in source code form, you may do so only under this license by including a complete copy of this license with your distribution. If you distribute any portion of the software in compiled or object code form, you may only do so under a license that complies with this license.

(E) The software is licensed "as-is." You bear the risk of using it. The contributors give no express warranties, guarantees or conditions. You may have additional consumer rights under your local laws which this license cannot change. To the extent permitted under your local laws, the contributors exclude the implied warranties of merchantability, fitness for a particular purpose and noninfringement.