



Data Acquisition PC-Kit

For Mitsubishi Energy Measuring Unit (EcoMonitorPro)

MODEL

EMU2-PK3-EN

User's Manual (Details)

- Before operating the instrument, you should first read thoroughly this operation manual for safe operation and optimized performance of the product.
Deliver this user's manual to the end user.

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Chapter 1

Introduction

About this chapter

This chapter explains the following.

- ◆ Safety precautions
- ◆ Manual notation
- ◆ Features
- ◆ Composition and functions
- ◆ Contents of a package

Chapter 1 Introduction

Thank you very much for purchasing the Data Acquisition PC-Kit for the Mitsubishi Energy Measuring Unit (Model: EMU2-PK3-EN).

This book is an Instruction manual for the Data Acquisition PC-Kit for Energy Measuring Units (EcoMonitorPro). This manual provides an outline of the PC-Kit, connection method, functions, setting method, etc. Please refer to this manual often for correct operations. Please be sure to read thoroughly "protecting for safety," and in particular, in the case of performing a self-install of this apparatus, learn proper installations methods before use.

Moreover, this manual and use of this software is based on Microsoft® Windows and it has been written on the assumption that basic operations of Windows can be performed. When basic operation of Windows is unknown, please refer to the OS (operating system) manual currently in use etc.

1.1 Safety precautions

(a) Precautions concerning working environment and conditions

Please do not use it in the following places. It may lead to malfunction or a reduction in life .

- ◆ Ambient temperature exceeds the specified range (-5 – 50°C).
- ◆ Daily average temperature exceeds 35 °C.
- ◆ Humidity exceeds the specified range (30 – 80%RH), or condensation occurs.
- ◆ There is a substantial amount of dust, corrosive gas, salinity, or lampblack.
- ◆ There is severe vibration or impact.
- ◆ Exposure to rain and water droplets.
- ◆ Place where pieces of metal etc., are dispersed

(b) Installation

- When connecting or removing the USB cable to or from the Energy Measuring Unit, please be sure to connect the portion of the connector.
There is a possibility of receiving an electric shock if the cable that is disconnected when being pulled with the portion of the cable touches a voltage terminal. This is extremely dangerous.
- Please don't bundle a USB cable with the main circuit, a power line, etc., or do not approach. As a result of noise, it becomes the cause of malfunction.
- Please do not employ a USB cable for connection. There is a possibility that the influence of many functions on a Logging Display Unit may arise, and results in becoming a cause, such as incorrect measurement or errant measurement .

(c) Maintenance and checks

- Please wipe surface dirt with a soft dry cloth.
- Please do not make contact with a disposable dust cloth etc., for an extended period of time, nor wipe it with benzene or thinner.
- In order to maintain a long and useful life of this apparatus, please perform the following checks. Please carry, out as everyday check matters, (1) and (2), especially.
 1. Confirm whether this apparatus and cables are damaged.
 2. Confirm whether unusual sounds, odors, and heat generation exist.
 3. Confirm whether any slack in attachment or loose connection of a connector exists.
(Please be sure to check in a state of a power failure.)

(d) Storage of installation CD

- When storing a CD-ROM and a USB cable over an extended period of time, please avoid the following places.
 - ◆ Ambient temperature exceeds the specified range (-5 – 50°C).
 - ◆ Humidity exceeds the specified range (30 – 80%RH) or condensation occurs.
 - ◆ Exposure to rain and water droplets.
 - ◆ There is severe vibration or impact.
 - ◆ There is a substantial amount of dust, corrosive gas, salinity, or lampblack.
 - ◆ Metal pieces and inductive materials are released.
- Please contain and store the CD-ROM in the included plastic case.
- Please contain and store the USB cable in a plastic bag etc.

(e) Disposal

- Please dispose according to prescribed local governmental laws.

(f) After-sales service

- Although this manual and this apparatus are shipped following a severe quality control and product inspection, when a defect occurs due to manufacture of the CD-ROM and instruction manual of this product please contact the distributor for replacement. However, in relation to failures caused by natural disaster or incorrect usage, damage, etc., we shall not be liable for the warranty.
- Please understand beforehand that our company shall not be liable for a failure produced during system trouble by the customer or a third party, problems regarding the law, usage errors with this apparatus, or use and damage which is due to other faults. Pay sufficient attention to the whole system in implementation of all possible measures against redundant design and malfunction preventive measures as well as safe design.
- The Product on which this Program is recorded is warranted from defects in materials and workmanship for 18 months from the date of product or for 1 year from the date you receive this product. If a defect in materials or workmanship in the diskette occurs, contact the Service Network of Mitsubishi Electric Corporation to arrange for a replacement.
- I use the gratis term of a guarantee of a repair article as what is not updated.
Gratis shall be employed in the warranty for repair articles not updated.

1.2 Manual notation

This manual makes explanation according to the following notation rules.

(1) Notation of a button and a window

As follows, each name is enclosed and designated by brackets (“[]”).

- [Save] button

(2) Notation of mouse operation

- Click

Depressing the button of a mouse and releasing it immediately.

- Double click

Clicking the button of a mouse twice quickly.

- Drag

Moving a mouse, with the button of the mouse depressed and releasing the button in the target position. (Normally the left button of a mouse only.)

1.3 Features

Data Acquisition PC-Kit is an exclusive software package that performs data collection from a Logging Display Unit on Microsoft® Windows.

Data, such as the amount of electric power stored by the Logging Display Unit main part, current, voltage, electric power, PF, frequency, harmonics current, harmonics voltage, and invalid electric power can be collected, and can be saved by the CSV file format. Moreover, the clearance (reset function) of various setups (basic setup, alarm setup, clock setup) to an Energy Measuring Unit, an addition value, and the maximum and the minimum value, alarm data, and logging data and the setting (Preset function) of an addition value are also made.

This product includes the following features .

1. Easy operation

By standard interface adoption with Windows, it is simply operated with a mouse.

2. Easy setup

Set up simply by selecting an item from the various settings.

3. Collection data is saved by the CSV file format.

Since collected data is saved by the CSV file format, post-processing is easy by using spreadsheet software (required separately) etc.

4. Collection is possible with a notebook PC *1.

Since carrying is possible, data collection on-the-spot can be performed easily.

*1: USB port (A series connector) is required.

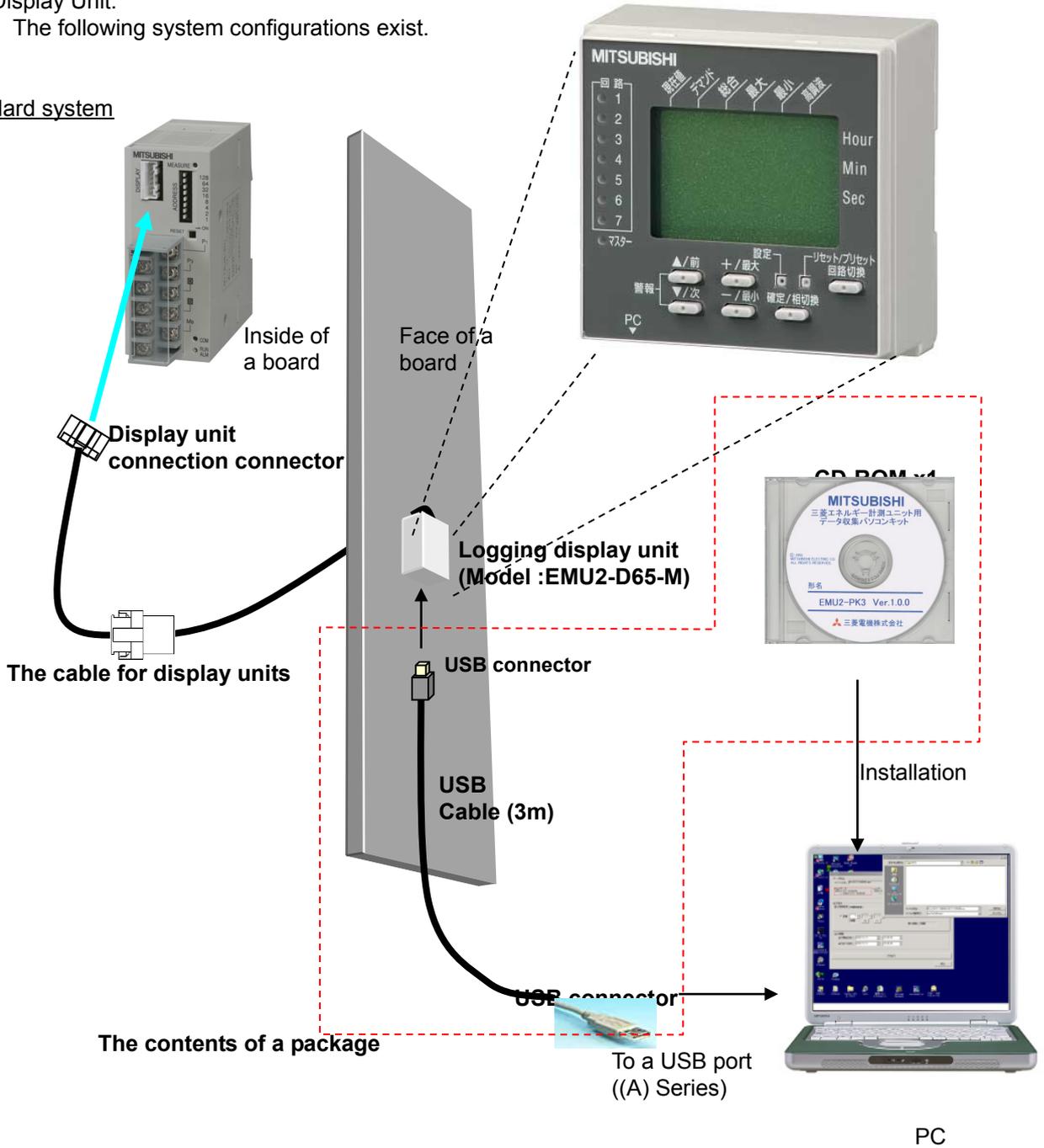
1.4 Composition and functions

(a) Composition

The Data Acquisition PC-Kit is a software package that operates on Microsoft® Windows, and performs data collection for measurement data of an Energy Measuring Unit through a Logging Display Unit.

The following system configurations exist.

Standard system

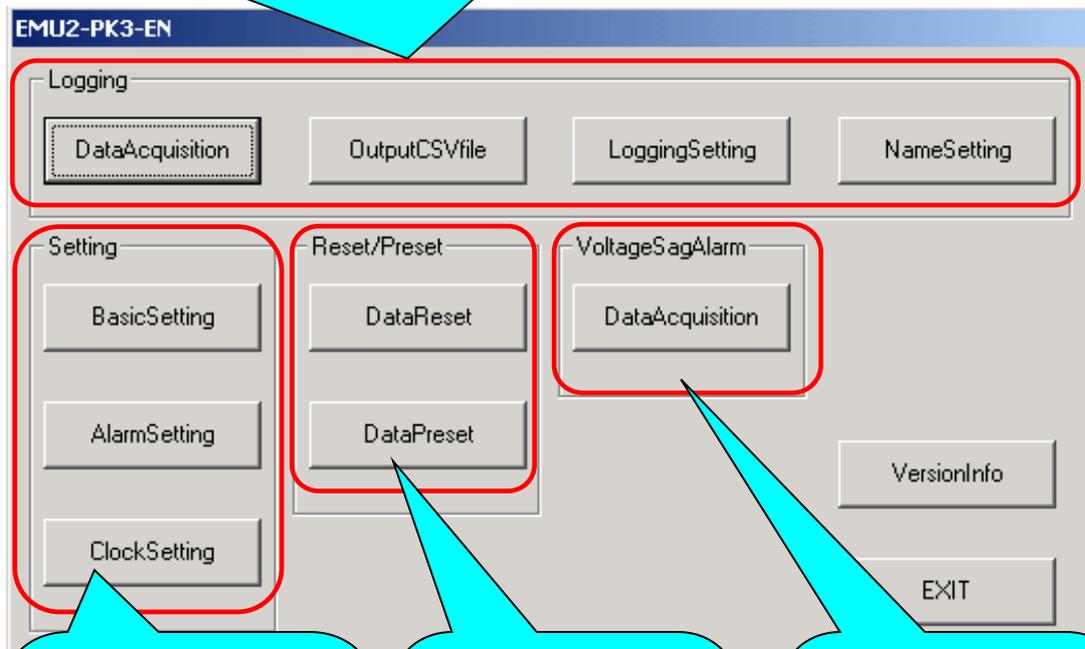


Chapter 1 Introduction

- (b) Function
Divided into a PC-Kit with the following four functions.

(1) Logging

This function performs collection and its setup of the logging data is stored by the logging display unit. (-> P31) It can be saved by the CSV file and collected data with Microsoft® Excel etc., making it possible to edit by spreadsheet software or to create graphs.



(2) Setting

A parameter for an apparatus can be set to an energy measurement unit, or the setting information on an energy measurement unit can be read. (-> P56)

(3) Reset/Preset

Logging holding Logging Display Unit Data is reset and it reaches. It can プリセット to arbitrary data. (86 ->P 91)

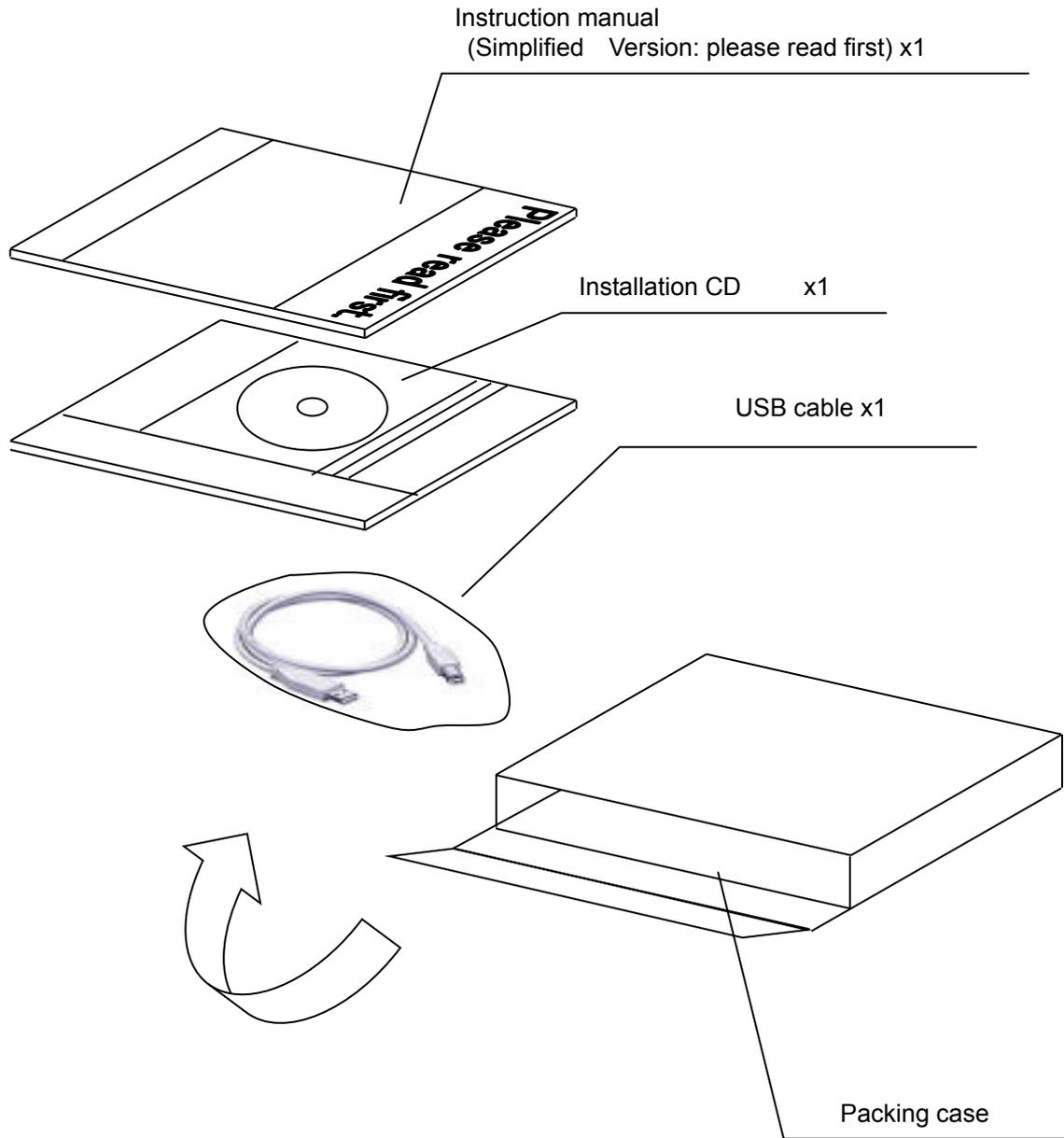
(4) VoltageSagAlarm

VoltageSag alarm history measurement data acquisition
The Sag history data holding an energy measurement unit is collectable. (-> P87)

1.5 Contents of a package

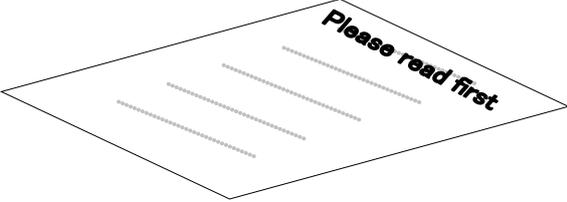
The package form of this product is as follows.

Please confirm the contents, if a product is taken out from its package.



Chapter 1 Introduction

The contents of a product package are as shown below.

| Name | Quantity | Form |
|---|------------|--|
| CD-ROM | X1 |  |
| Instructions manual (Simplified version) "Please read first." | X1 |  |
| USB cable | X1 (3m) |  |

Notice: Please check the above-mentioned package contents after opening.

If there are missing items, disorderly binding, a missing page, etc., please contact our nearest branch office.

Chapter 2

Preparations before use

About this chapter

This chapter explains the following .

- ◆ Recommended system environment
- ◆ Example of use
- ◆ System configurations procedure
- ◆ Registration of a USB driver
- ◆ Deletion of software
- ◆ Connection with logging display unit
- ◆ Notes on use

Chapter 2 Preparations before use

In order to use a PC-Kit, a PC (DOS/V machine) with a USB port (when using EMU-PK2, it is a serial port) is required separately.

Moreover, when collected data is processed, it is convenient if commercial spreadsheet software such as Microsoft® Excel is used.

2.1 Recommended system environment

The recommended system for operating this software is as follows.

(a) Recommended system configuration

| | |
|-----------------------------|--|
| OS (base software) | Windows® 2000 Professional (SP4) Windows® XP Professional (SP1) Windows® XP Home Edition (SP1) |
| The main part of a computer | DOS/V machine (however, a PC98 system is removed) |
| CPU *1 | Pentium® 400MHz and more |
| Memory *1 | At least 128MB or more (256MB or more is recommended) |
| Hard disk *1 | Software: -- about 10MB and data: -- about 100MB or more |
| CD-ROM drive | One set (required for installation) |
| Display resolution | More than SVGA (800x600 dots) is required. |
| Display color | 256 or more colors |
| Input device | A mouse and a keyboard |
| Other | USB port (1.1 or more Ver.) *2 |

*1 Keep in mind that the availability of memory requirements and a hard disk may change with the OS and the system environment to be used.

Moreover, in order to use it in a more reliable environment, please use with an increased memory capacity, upgrading the CPU into a highly efficient product (256MB or more).

*2 USB port is restricted to the item of a series A connector. In the case of another form, please prepare a converter separately.

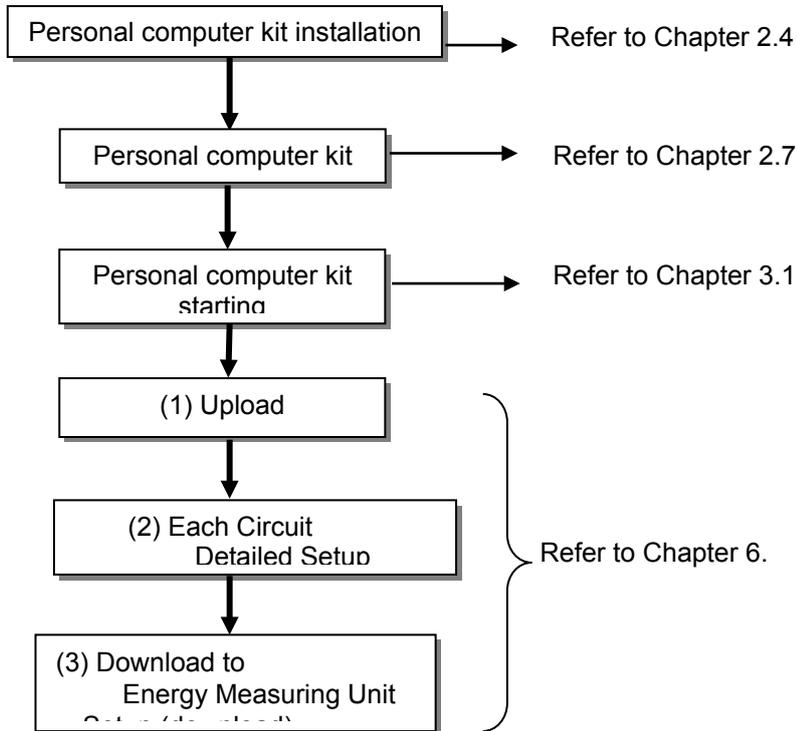
(b) Terminal machine for connection

EMU2-PK3-EN: Only a Mitsubishi Energy Measuring Unit + Logging Display Unit is connectable.

Chapter 2 Preparations before use

2.2 Example of use

When a parameter is set as an Energy Measuring Unit (basic setup)



Basic setting screen

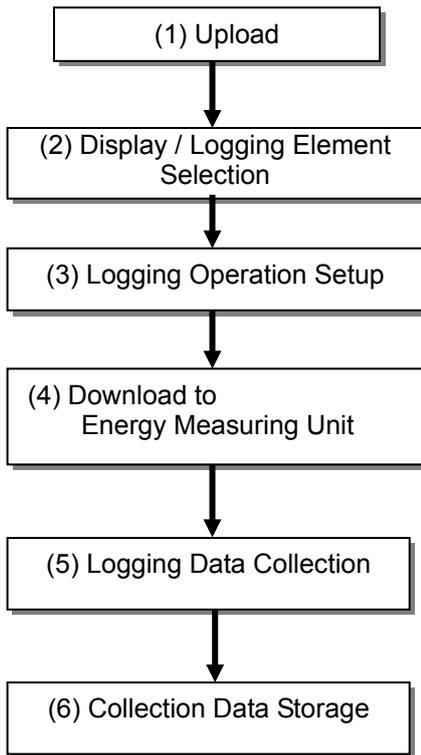
- (3) Perform a setup to an Energy Measuring Unit.
- (1) Upload the existing setup from an Energy Measuring Unit.

Basic Setting Detail dialog box

- (2) Perform a detailed setup of each circuit.

Chapter 2 Preparations before use

When logging data is collected (a Logging Setting, logging data collection function)

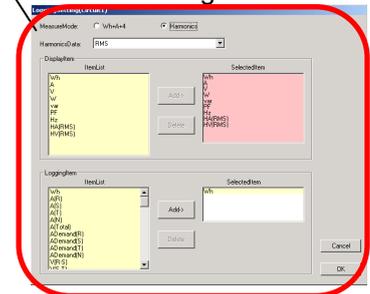


Refer to Chapter 6.

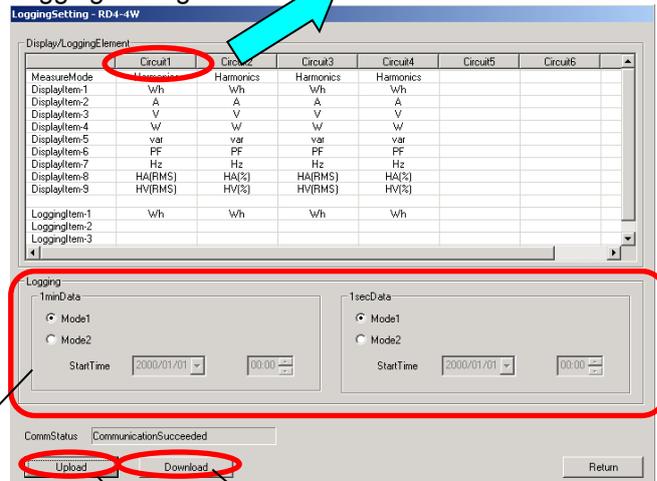
Refer to Chapter 4.

(2) Select the element that performs display/logging.

A display / logging element selection dialog



Logging setting screen

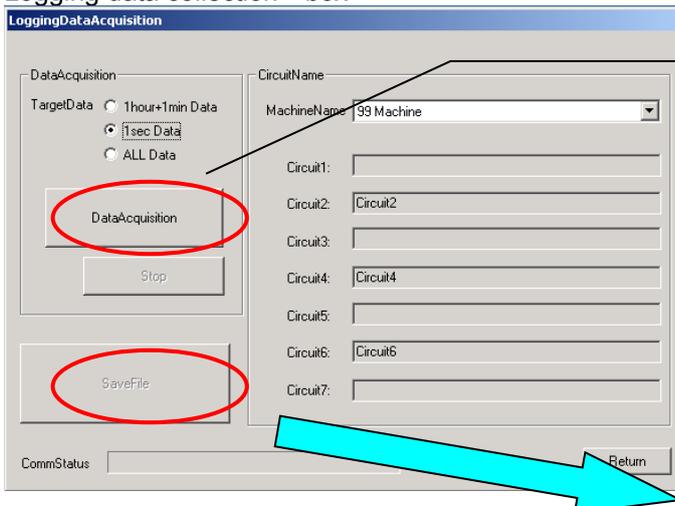


(3) Setup of Logging Operation It carries out.

(4) Transmit the Contents of the Setting to the Main Part., You make it reflected.

(1) The Existing Setting is from the Contents of the Main Part. It reads.

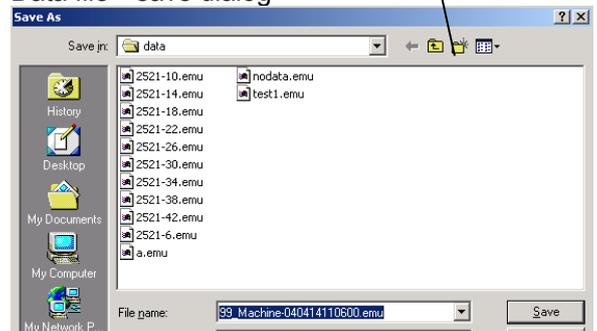
Logging data collection box



(5) Perform logging data collection.

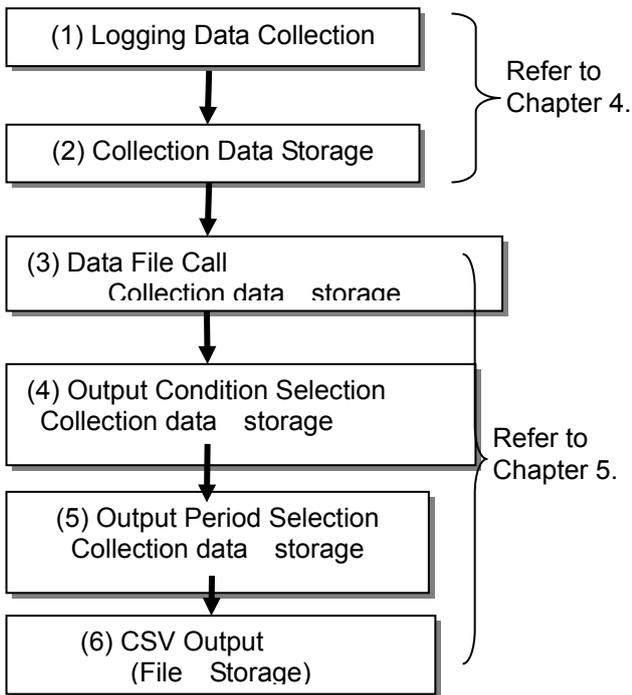
(6) Save collected data.

Data file save dialog



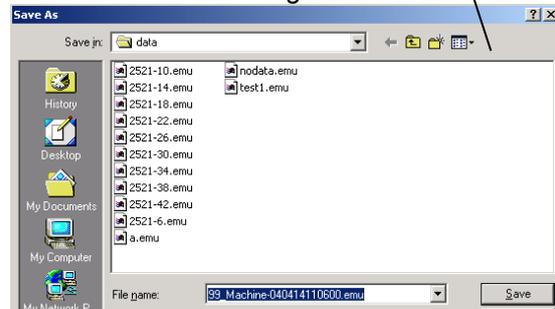
Chapter 2 Preparations before use

When logging data is saved by the CSV file (CSV output).

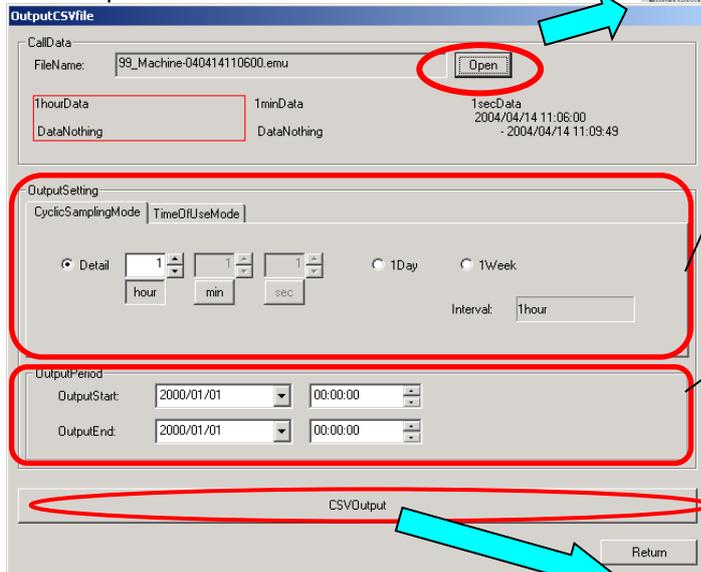


(3) Data File Choose and calls.

Data file selection dialog



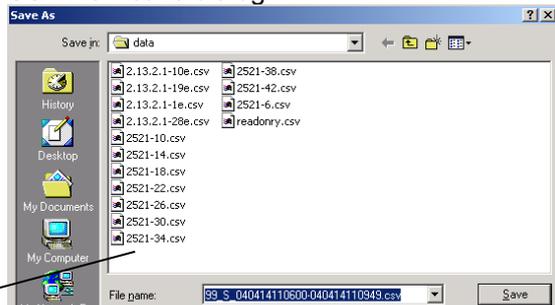
CSV output screen



(4) In the Case of CSV File Generation File output conditions are chosen

(5) Output to CSV File from Called Data File. A period is chosen.

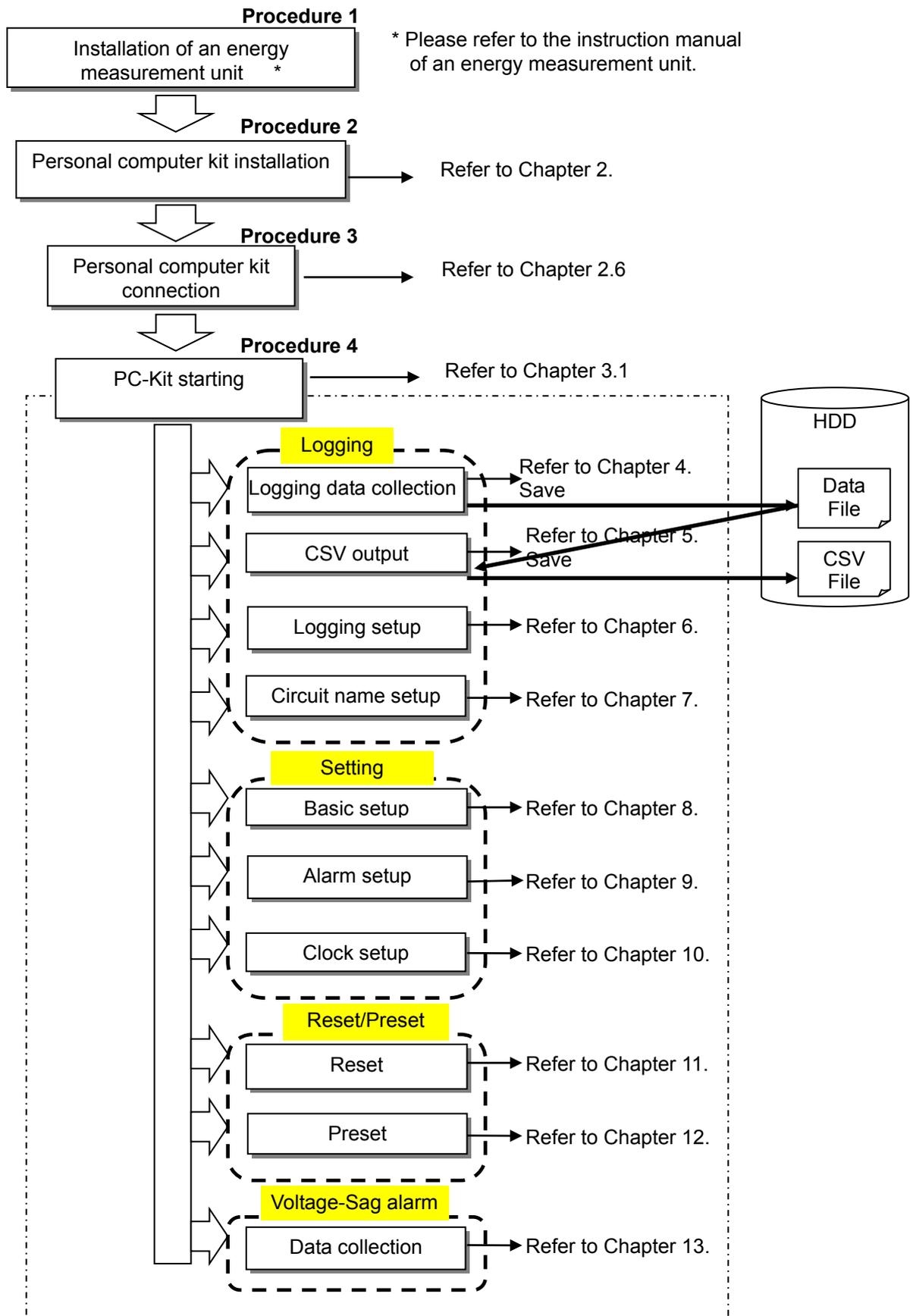
CSV file save dialog



(3) Generated CSV

2.3 System configurations procedure

The following procedure is required to use a PC-Kit and collect data from an Energy Measuring Unit.



Chapter 2 Preparations before use

(a) Installation of software

By using the exclusive installation CD, a PC-Kit can be set up and started simply. Be sure to read this chapter, and when setting up a PC-Kit for the first time, make sure to set it up correctly.

Notes: Please install the latest version after deleting an older version, in the case of currently using an older version.

(1) Insert the PC-Kit installation CD in the CD drive of a PC.

(2) By the automatic reproduction function of a PC, an installation selection screen rises automatically.

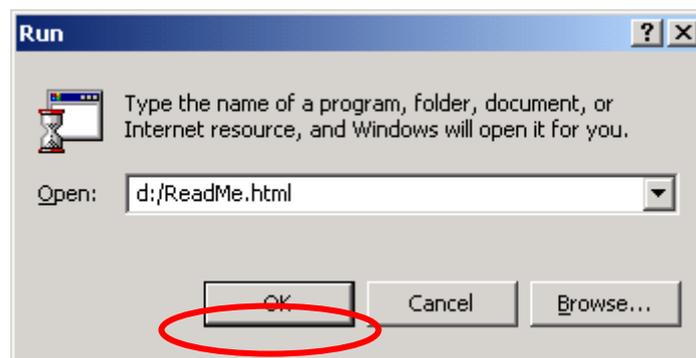
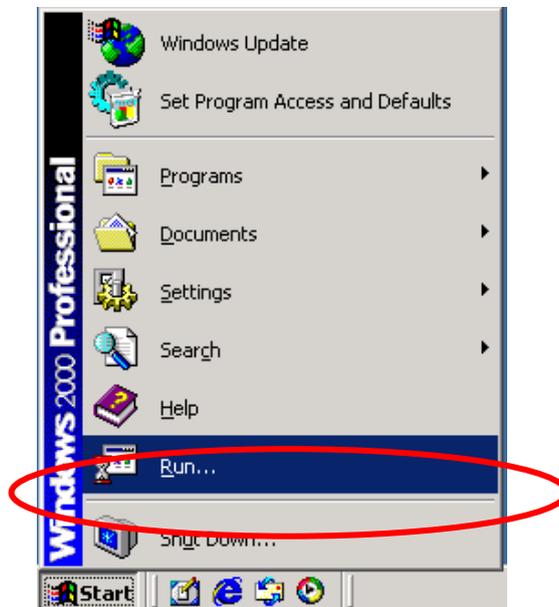
* When an installation selection screen does not start automatically

Perform "Run" from the start menu of Windows,
D:¥ReadMe.html

Click the [O.K.] button and a setup program will be performed, after inputting.

* However, D: is the drive number of the CD drive. Please change the drive according to the use environment.

For example, "F:¥ReadMe.html" is inputted when CD drive is F:.



Chapter 2 Preparations before use

(3) Since an installation selection screen is displayed, click [installation of EMU2-PK3-EN] button.

Data Acquisition PC-Kit for Energy Measuring Unit(EcoMonitorPro)
(Model : EMU2-PK3-EN)

- Please use reading the handling description of Mitsubishi energy measurement unit and a related product correctly.
- After using this installation Disk, please put into a case and keep it carefully.
- Please send this installation CD to last user ,certainly.

| Model(Name) | Content | Connectable Units | |
|---|---|-------------------|---|
| | | Image | Name(Model) |
| Data Acquisition PC-Kit for Energy Measuring Unit (EcoMonitorPro) (Model : EMU2-PK3-EN) | <p>PKKIT_EcoMonitorPro_PK3-EN</p> <p>At the check message displayed after a click please select "Open" (or "Execute").</p> <p>EMU2-PK3-EN instruction_Manual(Detailed)</p> | | Energy Measuring Unit (EMU2-EM1-*)* (EMU2-HM1-*)* (EMU2-PMT-P)* (EMU2-VS1-P)* (EMU2-RD1-*)* (EMU2-RD3-*)* (EMU2-RD5-*)* (EMU2-RD7-*)* (EMU2-RD2-4-*)* (EMU2-RD4-4-*)* + (EMU2-D65-M)* |

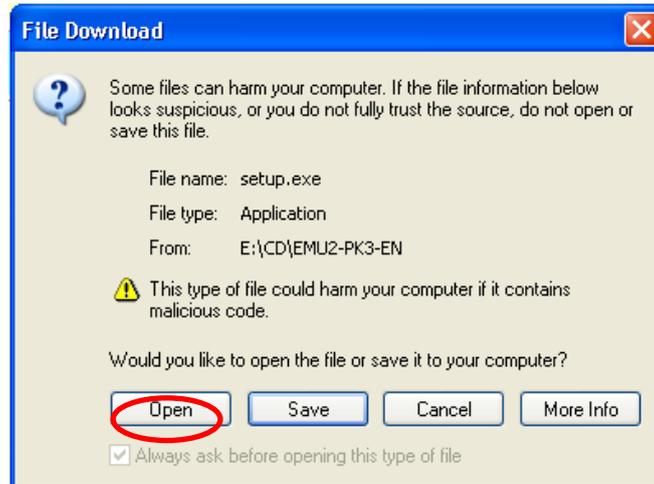
* :*(B/NET) | C(CC-Link) | L(LonWorks) | F(NoneTransmission)

Adobe Reader (5.0 or more Ver(s)) or 6.0 or more AdobeReader(s) is Needed for reading or printing the instruction manual.
download from web-site of Adobe Systems.

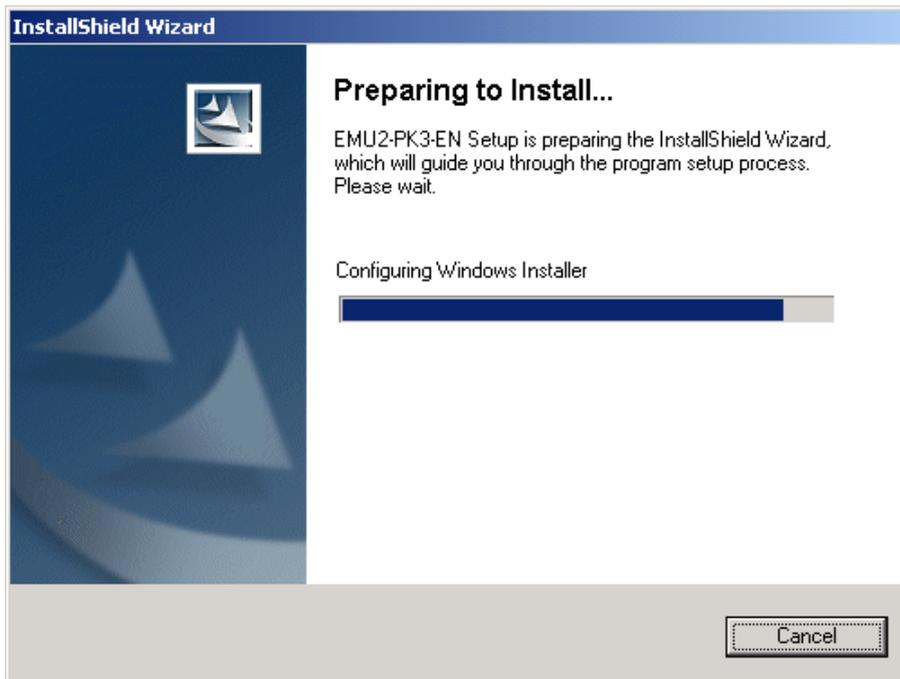
Adobe Reader

(4) Since a message that checks the disposal of an executable file (Setup.exe) is displayed, please click [Open].

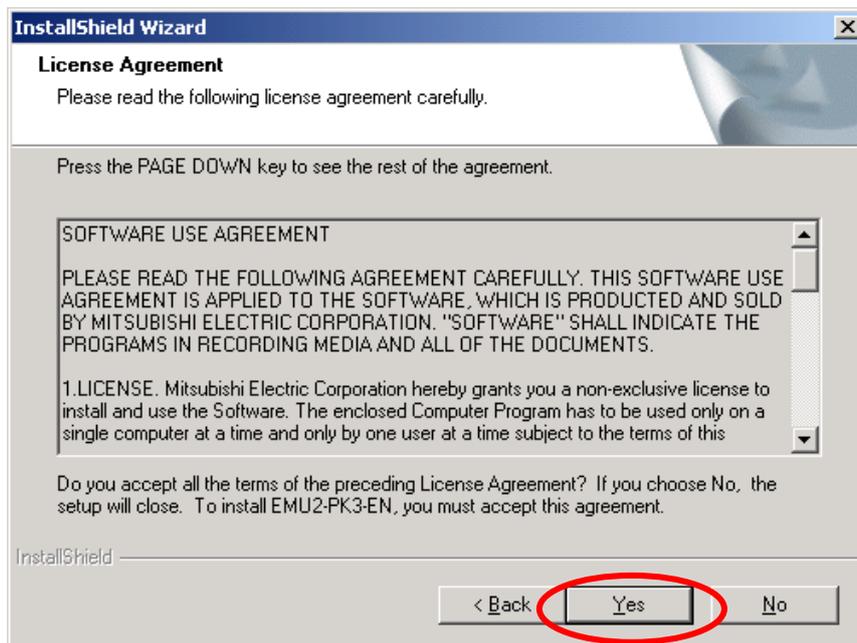
* The following image is an example in the case of making IE6.0 into the standard browser by Windows XP. Depending on the use environment of the PC , the contents of the check message may differ from the form.



(5) If the following screen is displayed, setup will be continued.

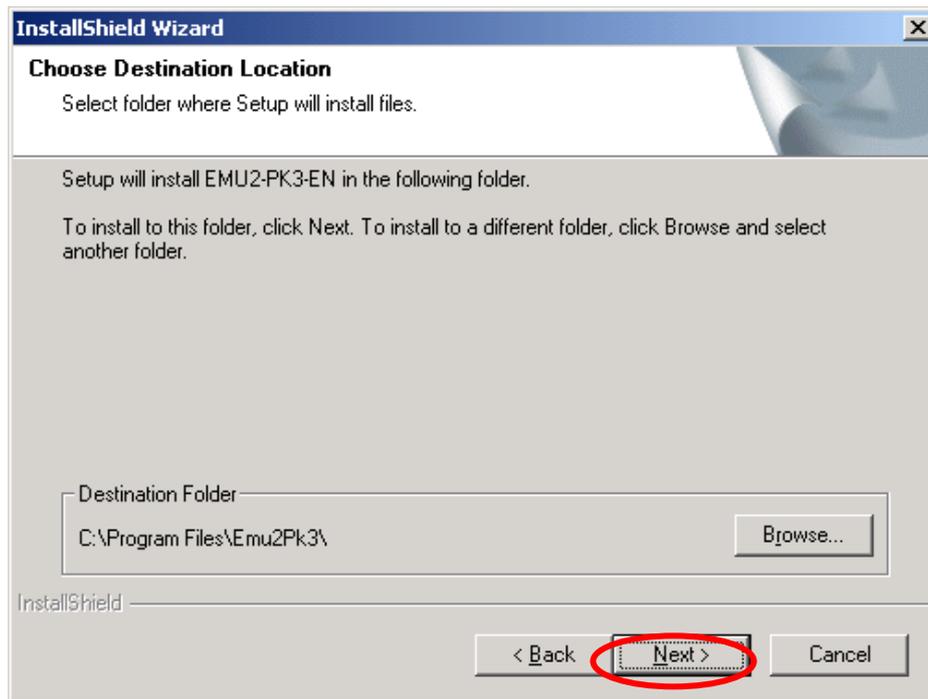


(6) When you read and agree on the SOFTWARE USE AGREEMENT, click the [Yes] button.

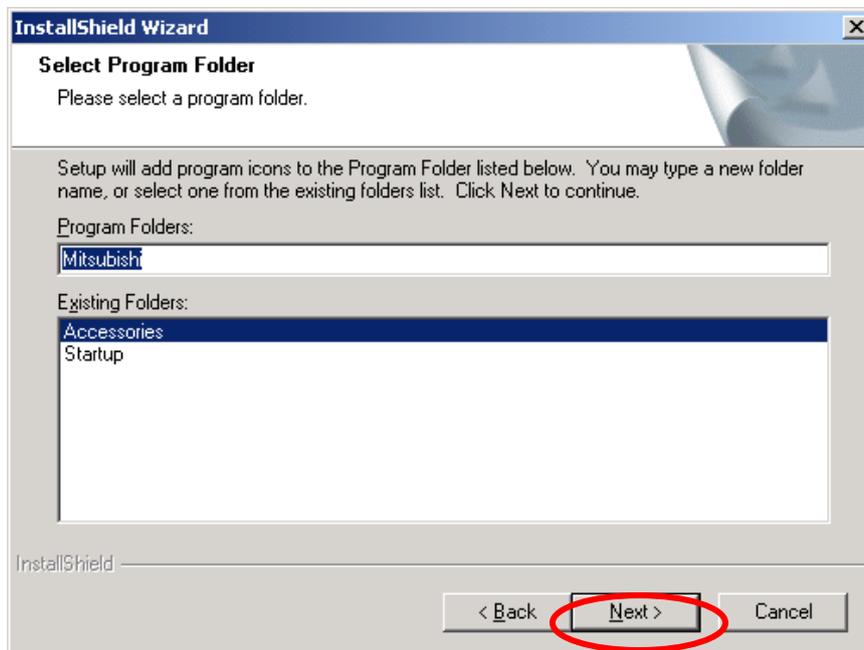


Chapter 2 Preparations before use

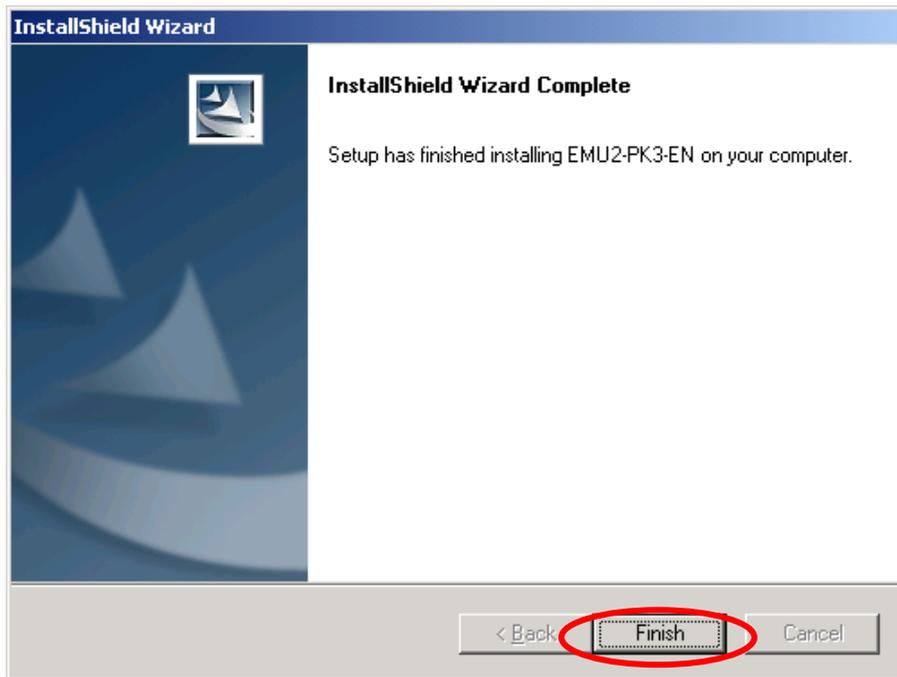
- (7) The check screen of the setup location is displayed.
If you want to change an installation location, please click the [Browse] button.
Please click the [Next>] button, when you want to continue setup.



- (8) Although the registration location of a program can be changed, please do not change this but click the [Next>] button.



(9) If the following screen is displayed, the [Finish] button must be clicked and setup will end.



2.4 Registration of a USB driver

In order to perform communication with a Logging Display Unit, it is necessary to perform driver registration of the USB.

After software installation of a PC-Kit (EMU2-PK3-EN, by connecting by the Logging Display Unit and USB cable linked to an Energy Measuring Unit main part, it can be recognized automatically and a USB driver can be registered.

The registration work procedure of a USB driver is as follows.

- (1) As for the Energy Measuring Unit Main Part and Logging Display Unit, it is a Logging Display Unit Attachment.

It connects with a display unit connecting cable. *1

- (2) Switch on the power supply of an Energy Measuring Unit main part. *1

- (3) Connect the USB cable of the PC-Kit attachment to the USB port of the Logging Display Unit lower part.



- (4) Start the PC installed with the PC-Kit and insert a separate Connector of the USB Cable to the USB Port.

* 2 *3



- (5) Insertion of a cable registers a driver automatically by the plug-and-play function of the OS.



*1 Please read the instruction manual of the Logging Display Unit for details.

*2 Please do not start the installed PC-Kit yet.

*3 Administrator authority is required for registration of a driver.

By users (Administrator etc.) with administrator authority, please log into the PC and start. Please seek instruction from your company system management section about

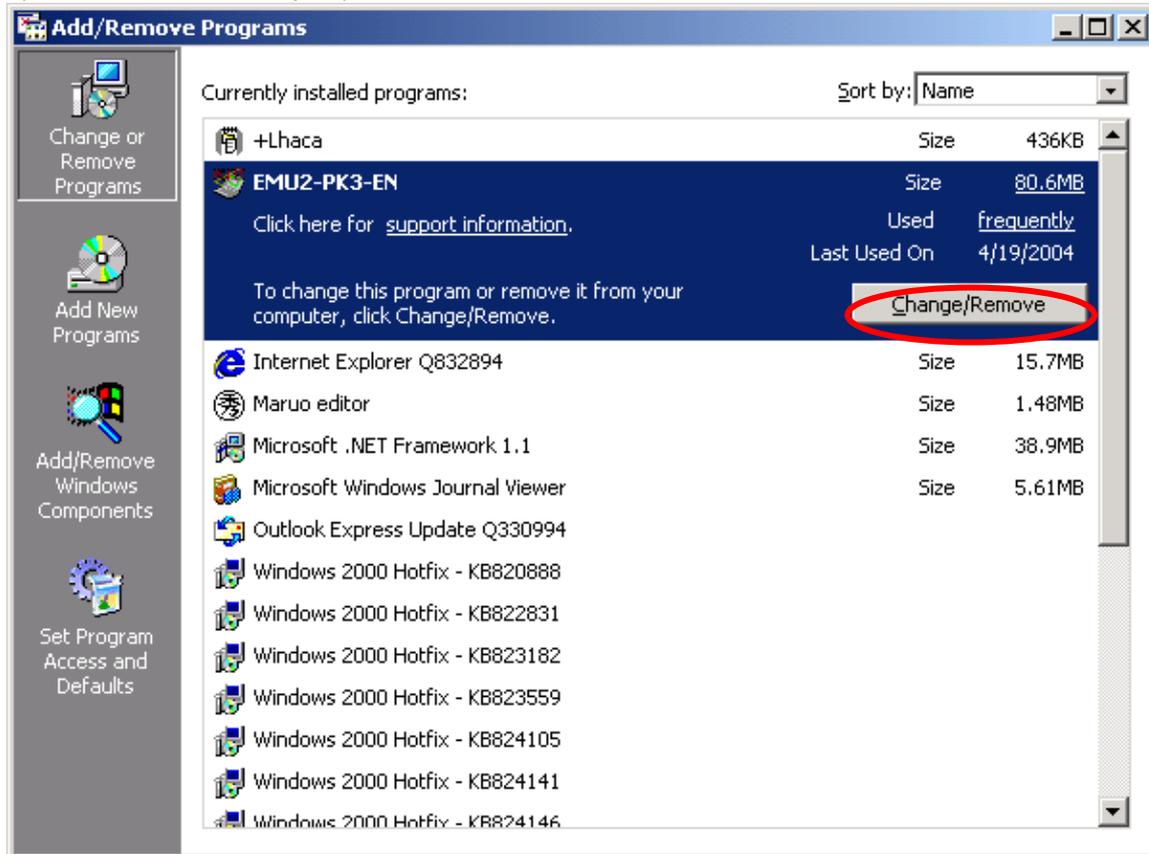
management of PCs, such as administrator authority.

2.5 Deletion of software

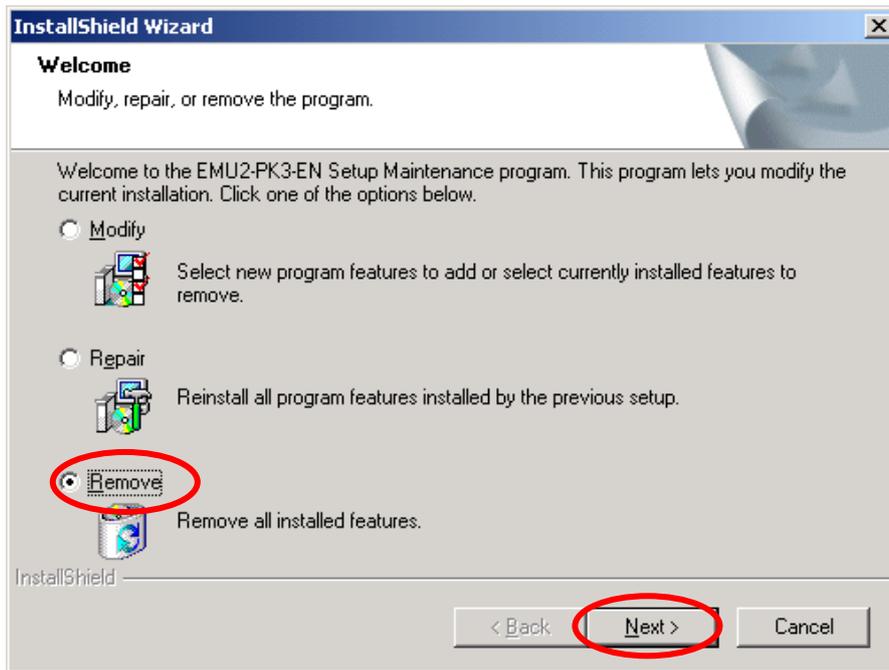
When a PC-Kit becomes unnecessary, it can be deleted from a PC easily by using [the add/remove] application.

- (1) From [control panel]-[Add/Remove Programs] "Change or Remove Programs" section, "EMU2-PK3-EN" is selected and [change/remove] button is clicked.

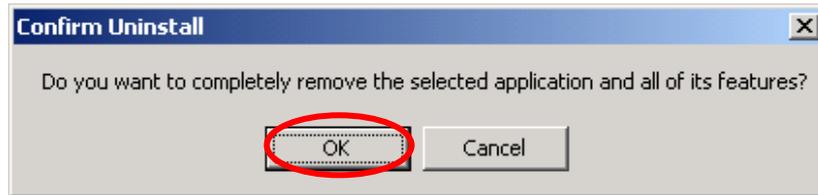
(Windows® 2000 examples)



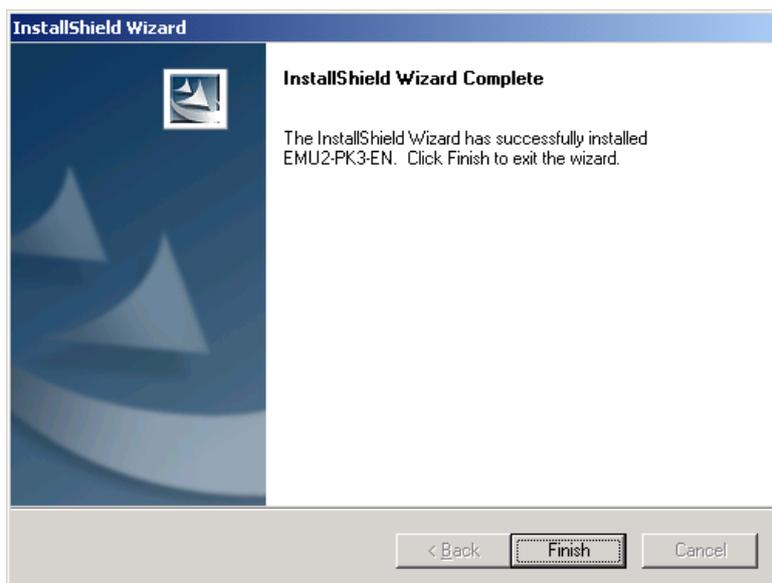
(2) If the following screen is displayed, choose [Remove] and click the [Next >] button.



(3) If the following screen is displayed, click the [OK] button.



(3) When uninstall is completed, the following screen is displayed. Please click [Finish] button.



2.6 Connection with Logging Display Unit

Please connect an attached USB cable to a PC-Kit in the following way.

- (1) Connect the apparatus side connector (series B connector: direction of a trapezoid with a small connector part) of a USB cable to a Logging Display Unit.



Notice: Please connect with the connector portion.
If it is removed and inserted by the cable (lead), it will cause poor disconnection and contact.

- (2) Connect the PC side connector (series A connector: direction of a rectangle with a large connector part) of a USB cable to the USB port of the PC used for collection.



2.7 Notes on use

When using a PC-Kit, be careful regarding the following points.

- (1) **Please avoid parallel operation with other applications** during communication. It may be unable to communicate normally.
- (2) If an application created by Visual C is already installed, an installer may not start normally. Please set up after deleting.
- (3) If the application created by Visual C is installed, it may not operate normally.
(Since mismatching of a runtime library arises.)
- (4) When you communicate, please perform the target Energy Measuring Unit in the **operation mode state**. In the setting mode, it may be unable to communicate normally.
Moreover, **please avoid button operation** of a Logging Display Unit during communication. Due to a shortage of collection data, there is a possibility of causing a functional stop of a Logging Display Unit and a PC-Kit.
- (5) Since there is the possibility of a low communication level depending on the maker and model of the PC to be used, it may not operate normally.
- (6) If you use it in an environment with a large amount of noise, a communication malfunction etc., may cause abnormal operation.
- (7) **Never connect a USB cable** to a Logging Display Unit.
Inadequacies may arise in the function of a Logging Display Unit.
- (8) Use conditions of a PC in which this Software has been installed, installation conditions (Power Supply Voltage and Frequency Conditions), the treatment regarding the existence of grounding etc., are based on conditions provided in the instruction manual of the PC used.
Please refer to this whenever in doubt.
- (9) Short Accident Twists in the case of USB Cable and Other Wiring Work
The upper line of the cautions should be sufficient.

Chapter 3

Basic operations

About this chapter

This chapter explains the following .

- ◆ Starting and ending a PC-Kit
- ◆ Composition of a screen

Chapter 3 Basic operations

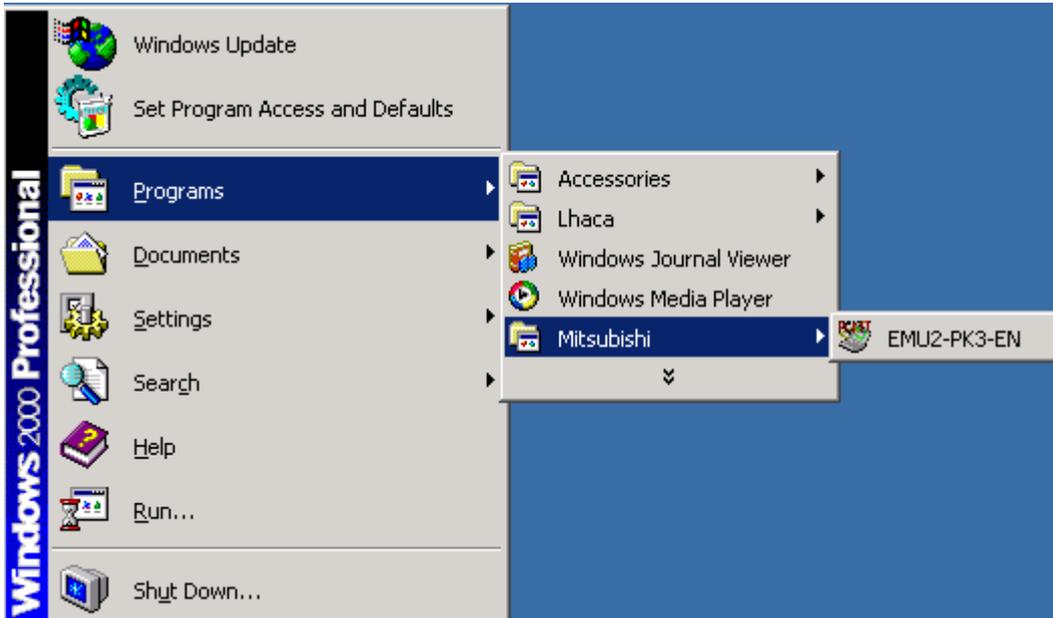
A PC-Kit can have the fundamental user interface of the Windows application, and perform data collection from a Logging Display Unit by easy operation.

This chapter explains the screen of a PC-Kit, and basic operations.

3.1 Starting and ending a PC-Kit

(1) The starting method of a PC-Kit

Select [Programs] - [Mitsubishi] - [EMU2-PK3-EN] of the **start** menu

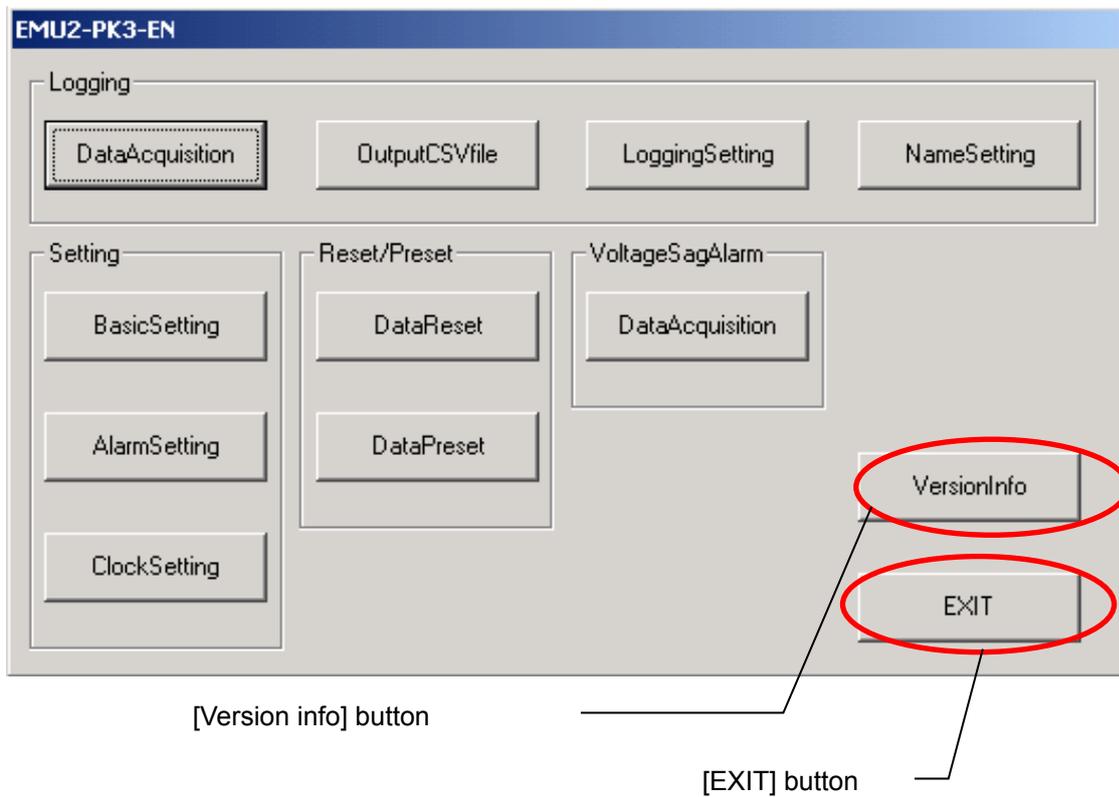


- * In the case of Windows 2000 Professional, it [program] - [Mitsubishi] of the **start** menu is selected for the installation folder.
- * When a registration group is changed on the occasion of installation, please read appropriately.

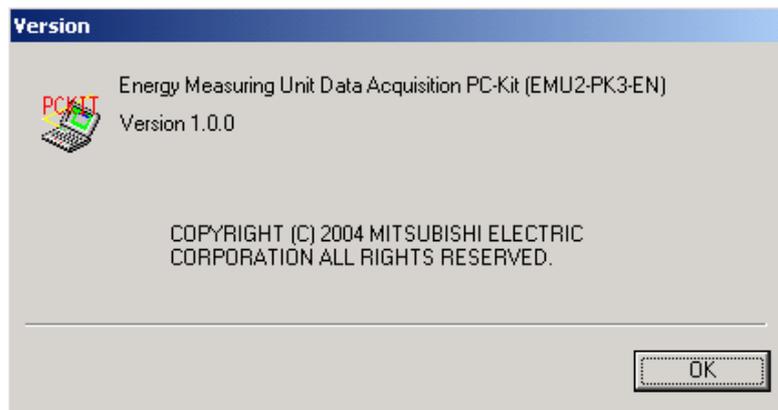
Notes: When the PC-Kit is already started, the following messages are displayed and it cannot be restarted .



- (2) End method of a PC-Kit
The [EXIT] button of a main menu is clicked.



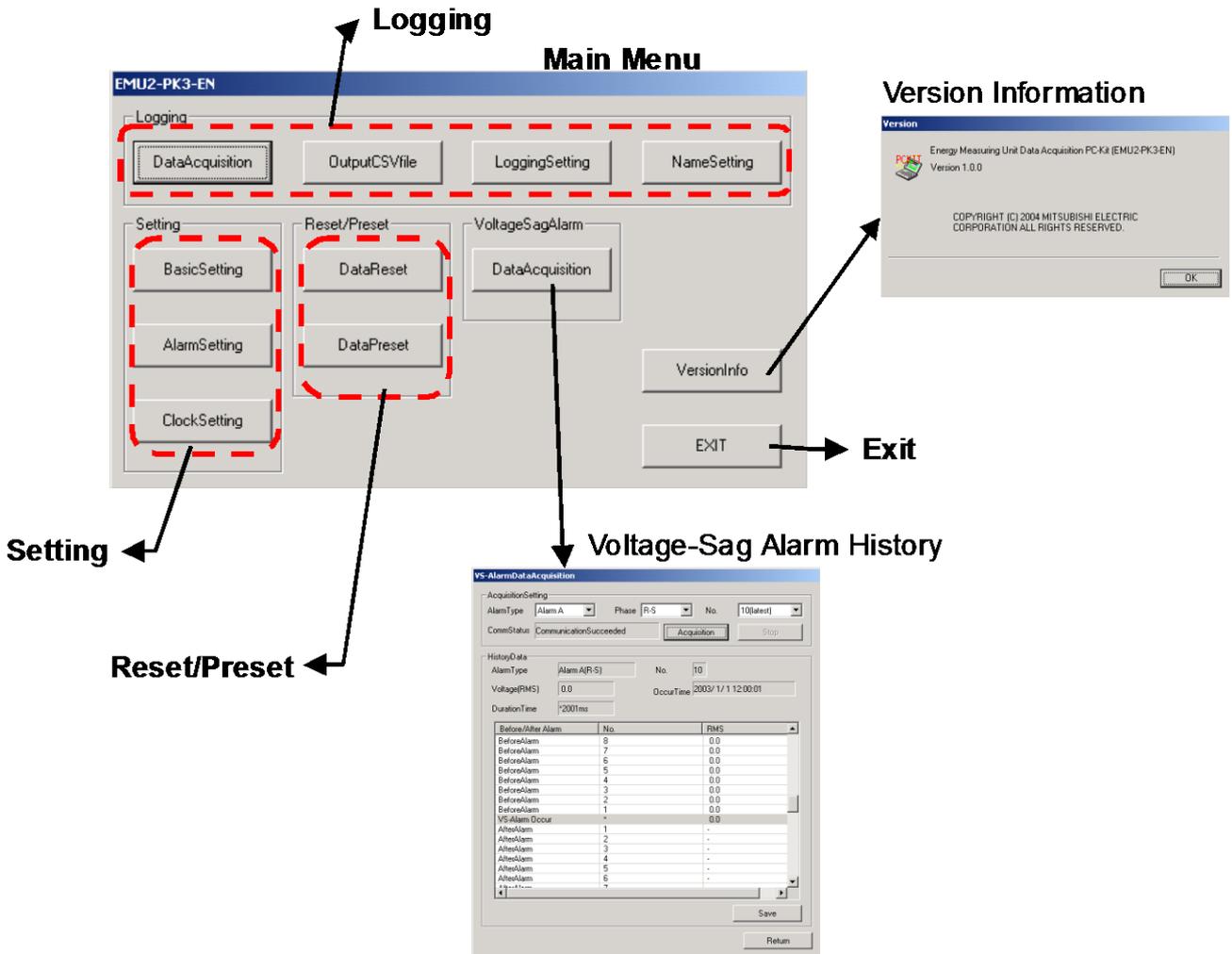
- (3) Check of the version
Clicking on the [VersionInfo] button of the main menu displays version information.



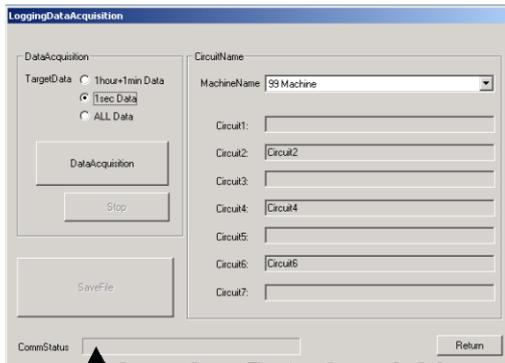
If the [OK] button is clicked, it will return to the main menu.

3.2 Composition of a screen

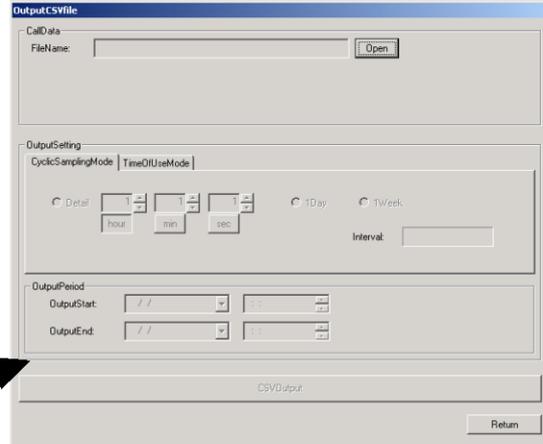
The screen composition of a PC-Kit is as follows.



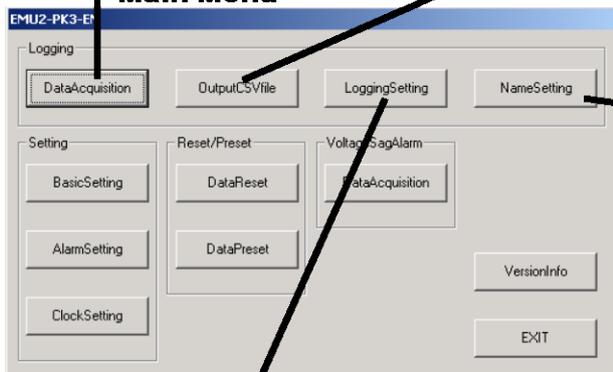
(Logging function)



Logging Data Acquisition

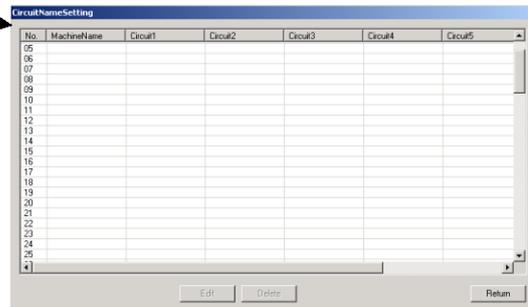


Output CSV file

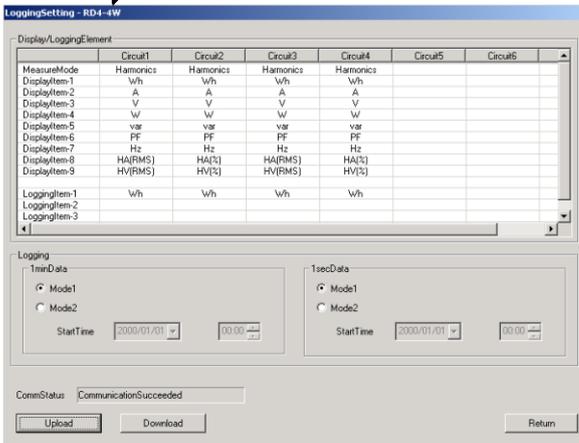


Main Menu

Circuit Name Setting



Logging Setting



(Setting function)

| Item | Circuit1 | Circuit2 | Circuit3 | Circuit4 | Circuit5 | Circuit6 | Circuit7 |
|-----------------|----------|----------|----------|----------|----------|----------|----------|
| PhaseWiring | | | | | | | |
| PrimaryVoltage | | | | | | | |
| SensorType | | | | | | | |
| PrimaryCurrent | | | | | | | |
| DemandPeriod(A) | | | | | | | |
| DemandPeriod(W) | | | | | | | |
| PulseRate | | | | | | | |

CommStatus:

Buttons: Upload, Download, Return

Basic Setting

| Item | Circuit1 | Circuit2 | Circuit3 | Circuit4 | Circuit5 | Circuit6 | Circuit7 |
|----------------|----------|----------|----------|----------|----------|----------|----------|
| UpperLimit(A) | | | | | | | |
| LowerLimit(A) | | | | | | | |
| UpperLimit(V) | | | | | | | |
| LowerLimit(V) | | | | | | | |
| UpperLimit(W) | | | | | | | |
| LowerLimit(W) | | | | | | | |
| UpperLimit(PF) | | | | | | | |
| LowerLimit(PF) | | | | | | | |
| AlarmDelay | | | | | | | |

| Item | Alarm A | Alarm B | Alarm C | Alarm D |
|--------------|---------|---------|---------|---------|
| AlarmCheck | | | | |
| SagRate | | | | |
| DurationTime | | | | |

CommStatus:

Buttons: Upload, Download, Return

Alarm Setting

EMU2-PK3-EN

Logging: DataAcquisition, OutputCSVfile, LoggingSetting, NameSetting

Setting: BasicSetting, AlarmSetting, ClockSetting

Reset/Preset: DataReset, DataPreset

VoltageSagAlarm: DataAcquisition

VersionInfo, EXIT

Main Menu

EMU2-PK3-EN

ClockSetting

Clock: 2004/04/14, 11:29:31

CommStatus:

Buttons: Upload, Download, Return

Clock Setting

(Reset / Preset function)

EMU2-PK3-EN

Logging: DataAcquisition, OutputCSVfile, LoggingSetting, NameSetting

Setting: BasicSetting, AlarmSetting, ClockSetting

Reset/Preset: DataReset, DataPreset

VoltageSagAlarm: DataAcquisition

VersionInfo, EXIT

Main Menu

EMU2-PK3-EN

DataReset

MeasurementData: MAX/MIN, VS-Alarm, LimitAlarm, IntegrationValue

Circuit1, Circuit2, Circuit3, Circuit4, Circuit5, Circuit6, Circuit7

ALLCircuit

LoggingData: ALLCircuit

CommStatus:

Return

DataReset

EMU2-PK3-EN

DataPreset - RD4-4W

Circuit 1: Wh value [19.2] x10¹ kWh, varh value [10.0] x10¹ kvarh, Preset

Circuit 2: Wh value [1.0] x10² kWh, varh value [1.0] x10² kvarh, Preset

Circuit 3: Wh value [0.1] x10³ kWh, varh value [0.1] x10³ kvarh, Preset

Circuit 4: Wh value [0.1] x10³ kWh, varh value [99999.9] x10³ kvarh, Preset

Circuit 5: Wh value [] x10⁰ kWh, varh value [] x10⁰ kvarh, Preset

Circuit 6: Wh value [] x10⁰ kWh, varh value [] x10⁰ kvarh, Preset

Circuit 7: Wh value [] x10⁰ kWh, varh value [] x10⁰ kvarh, Preset

CommStatus: CommunicationSucceeded

Buttons: Upload, Return

DataPreset

Chapter 4

Logging Data Acquisition

About this chapter

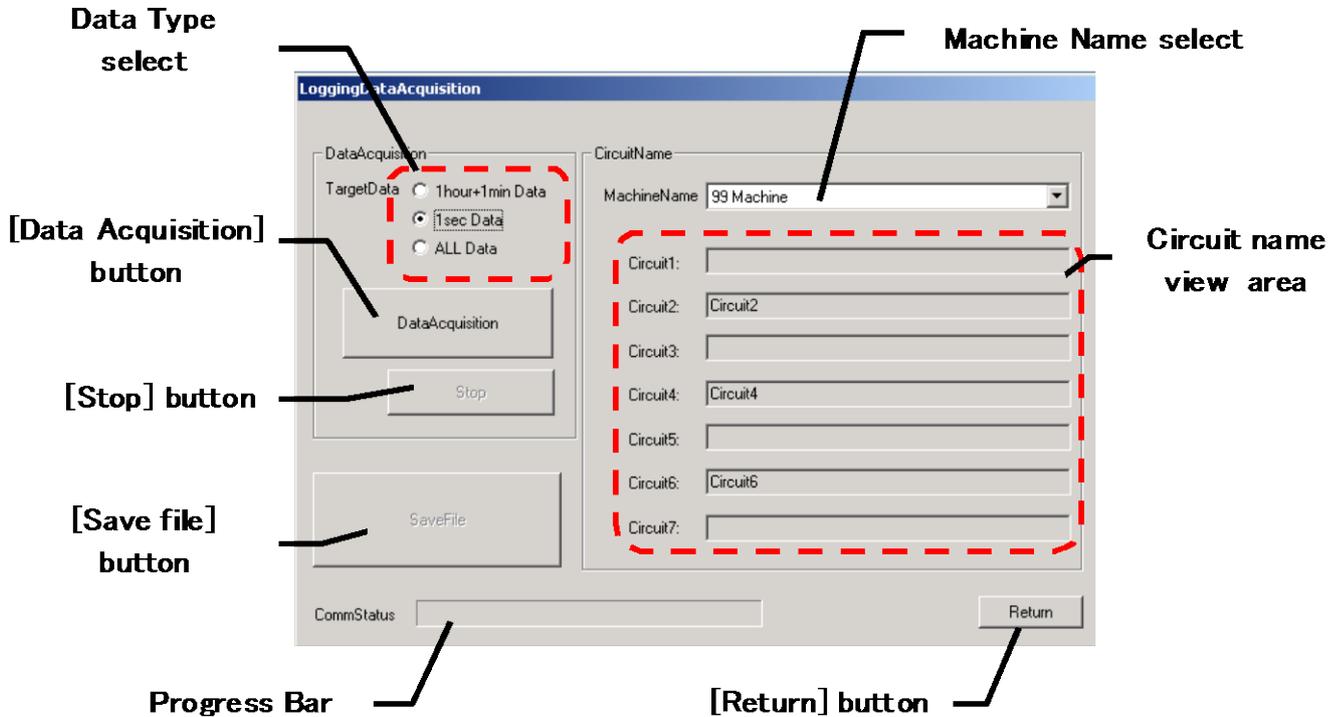
This chapter explains the following .

- ◆ Names of each part
- ◆ Data save

Chapter 4 Logging data Acquisition

On a logging data collection screen, the logging data stored by the Logging Display Unit is collectable. This chapter explains the operation method in a logging data collection screen.

4.1 Names of each part



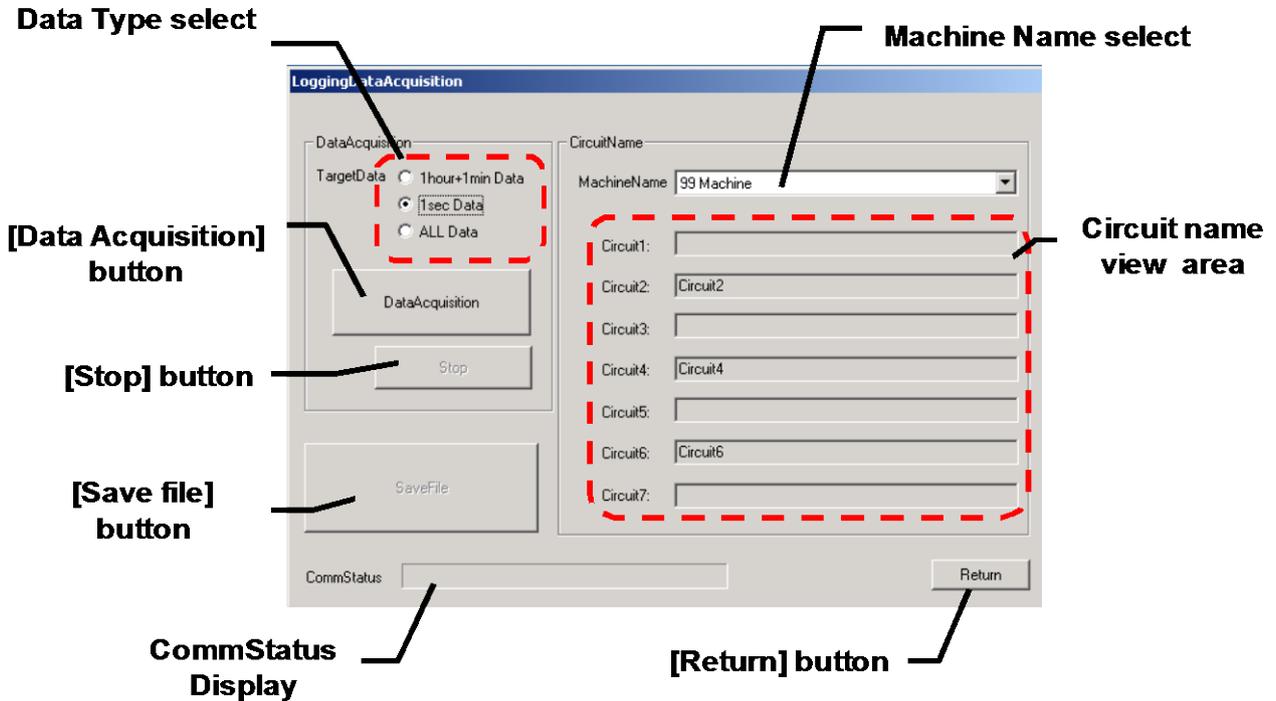
| Name | Function |
|-----------------------------|--|
| Data Type select | Select acquisition data type |
| [Data Acquisition] button | Clicking this button starts Data Acquisition. |
| [Stop] button | Clicking this button during Acquisition of data stops acquisition. |
| [Savefile] button | Clicking this button begins to save collected data. |
| Progress Bar | The progress condition of acquisition is displayed during acquisition of data. |
| Machine Name selection | Select a machine name to add to collection data. |
| Circuit name display column | Name of the circuit selected by machine name selection is displayed.* |
| The button [Return] | Clicking this button ends Logging data Acquisition and returns to the main menu. |

* It is expressed in the equipment selection column as a circuit name setting screen when no circuit name is set.

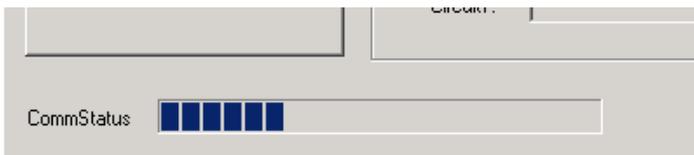
In this case, an initial value (equipment name: a blank, the circuit name:circuit n) is set as the data saved.

4.2 Data Save.

- (1) Connect a PC with a Logging Display Unit by the attached USB cable.
- (2) Start a PC-Kit and open a logging data collection screen.



- (3) Select an object that collects data.
- (4) Clicking on the [Data Acquisition] button starts collection.
The progress condition is displayed with CommStatus Display by the Progress Bar.



* Please avoid button operation of a Logging Display Unit during data collection.
Status mismatch occurred with the Logging Display Unit, a shortage of collection data, and a Logging Display Unit.
There is a possibility of causing a functional stop of the PC-Kit.

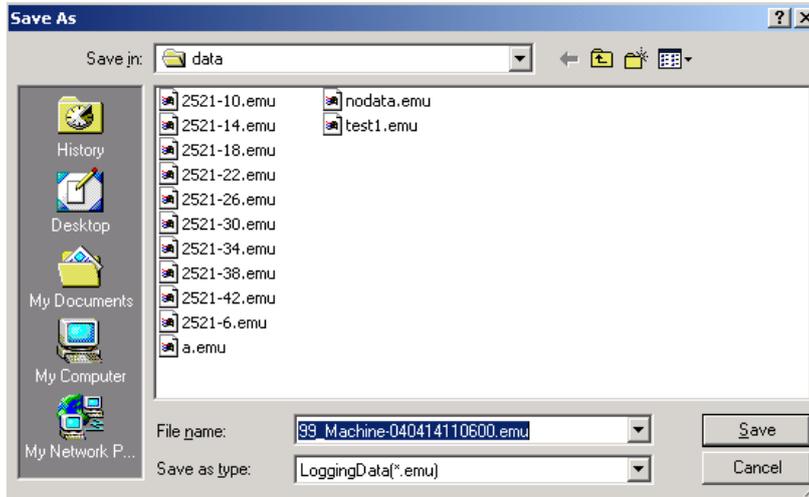
- (5) In midstream, please click the [stop] button to stop collection. The following message is displayed and collection is stopped.



- (6) Completion of processing of data collection displays the following message.



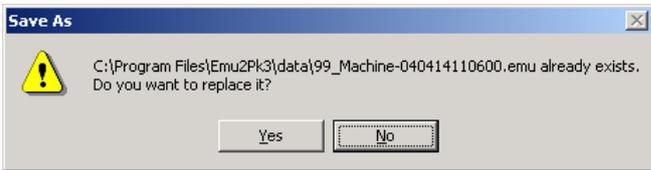
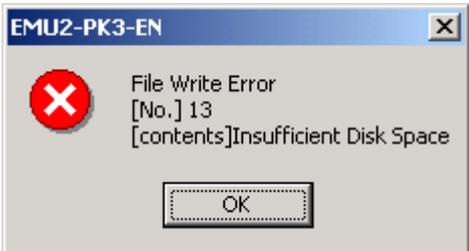
- (7) The [OK] button can be used if data collection is completed normally.
- (8) Select applicable equipment-by-equipment selection.
 * An initial value (equipment name: a blank, the circuit name:circuit n) is set up on a circuit name setting screen when no circuit name is set up.
- (9) Clicking on the [Save] button displays the following dialog box.
 Please specify a Save folder and a save file name and save an "*.emu" file.



The Save folder of an initial value is
 <PC-Kit installation location> ¥Data

- * Here, the saved data is a binary format (it is not CSV).
 It cannot be checked with applications, such as MS-Excel.
 Please generate a CSV file for the section in the following chapter "a CSV output" to reference during a check of data.

* The following messages are displayed in the case of logging data collection.

| Display timing | Display message | Handling method |
|----------------------------------|--|---|
| When collection is started |  | The Logging Display Unit has not started or it does not connect correctly. Please check the power supply of a Logging Display Unit, and connection. |
| When collection is started |  | The cable may have separated during data collection. Please check connection of a Logging Display Unit. |
| When collection is started |  | Logging data is under initialization by Logging items setup or operation of logging data reset and time change. Please collect after time has been set for a while. |
| When save operation is performed |  | It is displayed when the same file name exists in the specified save folder. Please change the file name and save the file. |
| When save operation is performed |  | The error occurred at the time of saving a file. An error number and the contents of an error change with conditions. Please check the availability of the save disk etc. |

Chapter 5

CSV Output

About this chapter

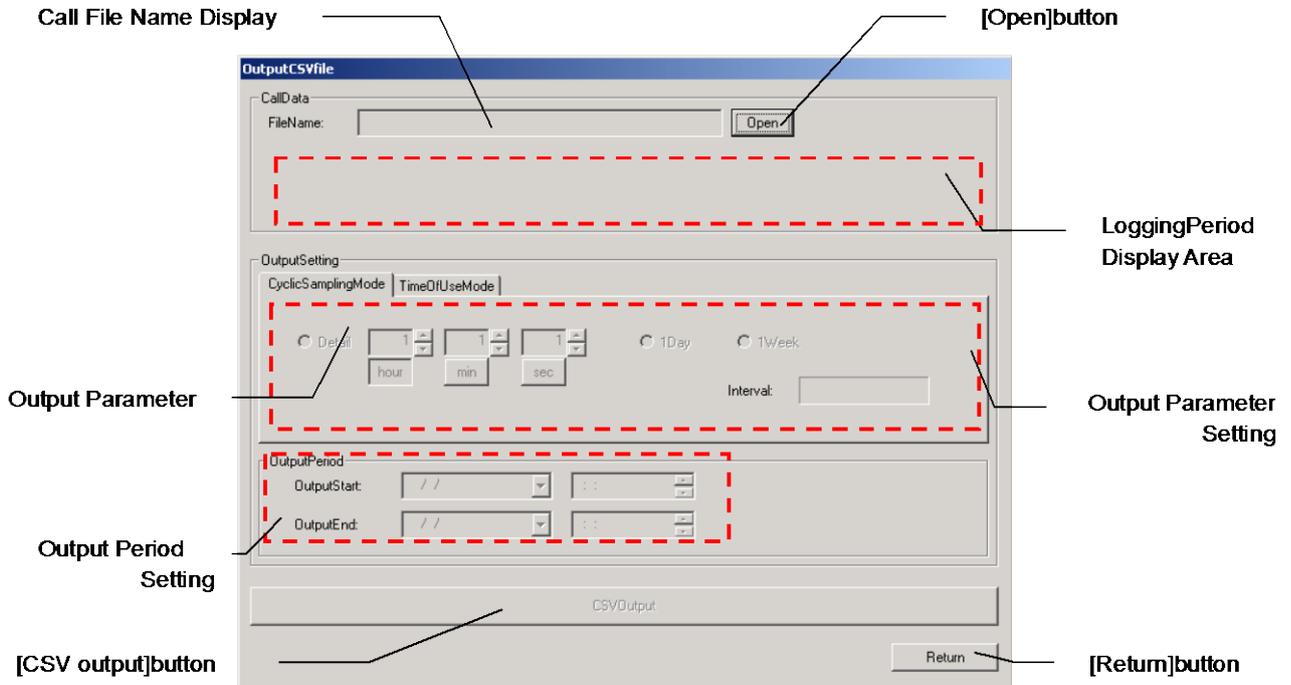
This chapter explains the following .

- ◆ Names of each part
- ◆ Logging data file open
- ◆ Output parameters setting (periodic management differences, time of use mode)
- ◆ Output period set up.
- ◆ CSV output carried out.

Chapter 5 CSV output

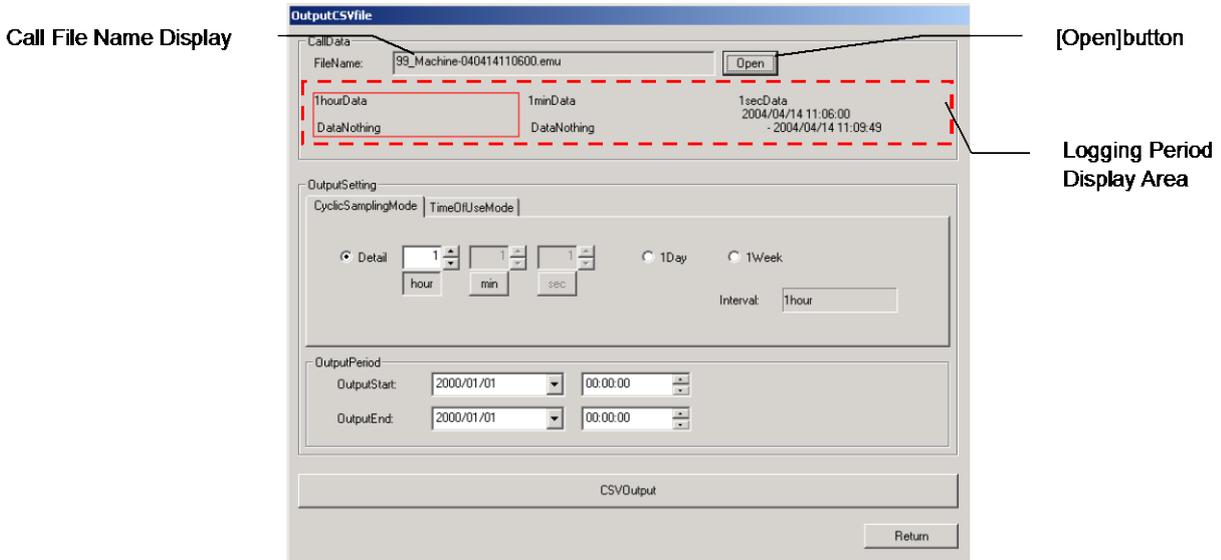
The logging data acquired by logging data collection on the CSV output screen -- origin -- difference -- by the cycle or TimeOfUseMode, CSV data generation can be carried out and a file output can be carried out. This chapter explains the operation method in a CSV output screen.

5.1 Names of each part

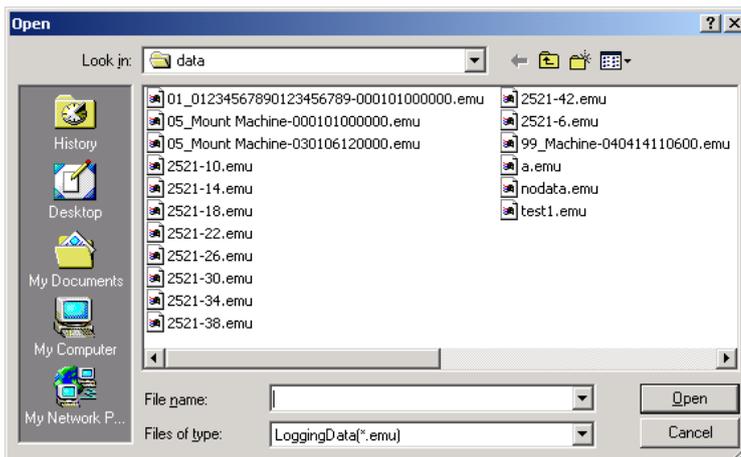


| Name | Function |
|-----------------------------|--|
| Call File Name Display | The name of the file called is displayed by clicking the [Open] button . |
| [Open] button | A logging data file is called. |
| Logging Period Display Area | The logging period of the called logging data is displayed. |
| Output Parameter | CSV output parameters are selected. |
| Output Parameter Setting | CSV output parameters are set up. |
| Output Period Setting area | A CSV output period is set up. |
| [CSV Output] button | A CSV file is outputted for the set-up conditions. |
| [Return] button | A CSV output screen is ended and it returns to the main menu screen. |

5.2 Logging data file open.



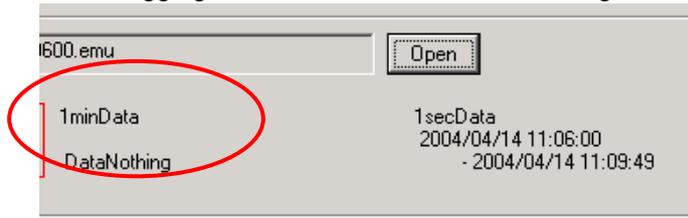
(1) Clicking on the [Open] button displays the following dialog box. Please select the file to be called and click the [Open] open.



The call location of an initial value is
 <PC-Kit installation >location ¥Data

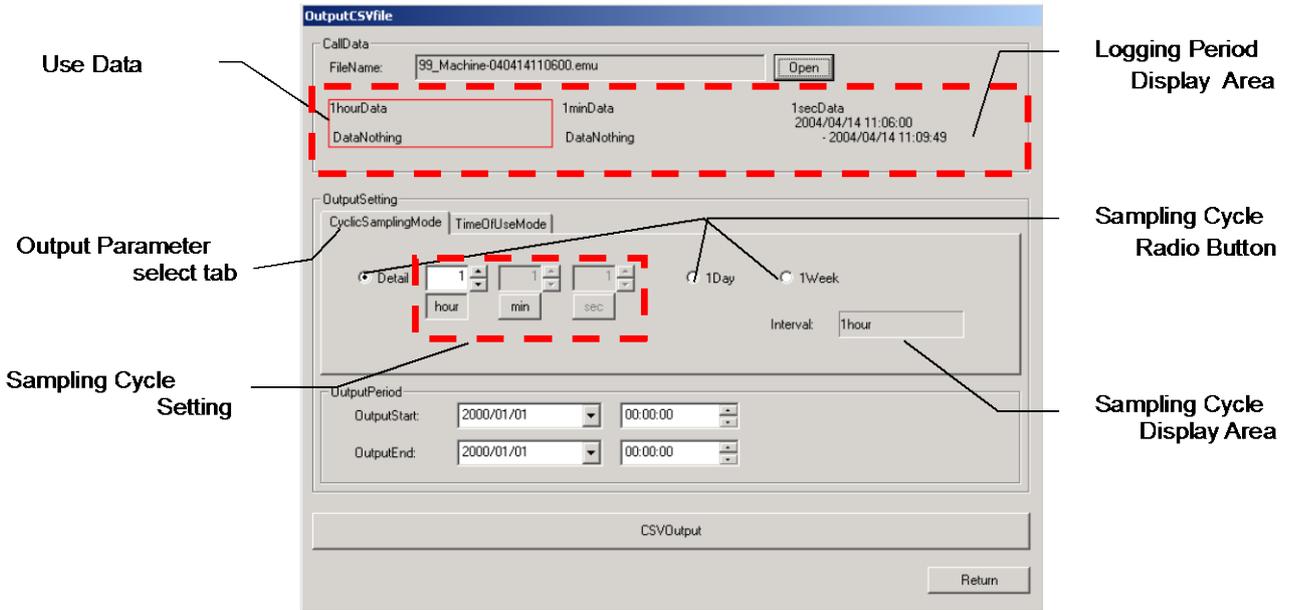
(2) If reading of a file is completed, a file name will be displayed for the called file name display column, and the logging period of the logging data, that called the logging period display area will be displayed.

* When logging data does not exist, "DataNothing" is displayed.



5.3 Output parameters setting (periodic management differences, TimeOfUseMode).

(a) difference(ok) -- periodic management



(1) an output parameter selection “CyclicSamplingMode” tab.

(2) difference -- choose a cycle to perform a difference from a periodic selection radio button. When "details" is selected as a cycle, difference -- a periodic detailed setup can be performed.

(3) the data with which the selection data frame of a logging period display area is used for a CSV output according to the specified cycle -- moving -- difference -- periodic display area -- difference -- a cycle is displayed.

* difference -- the relationship between a cycle and use data is as follows.

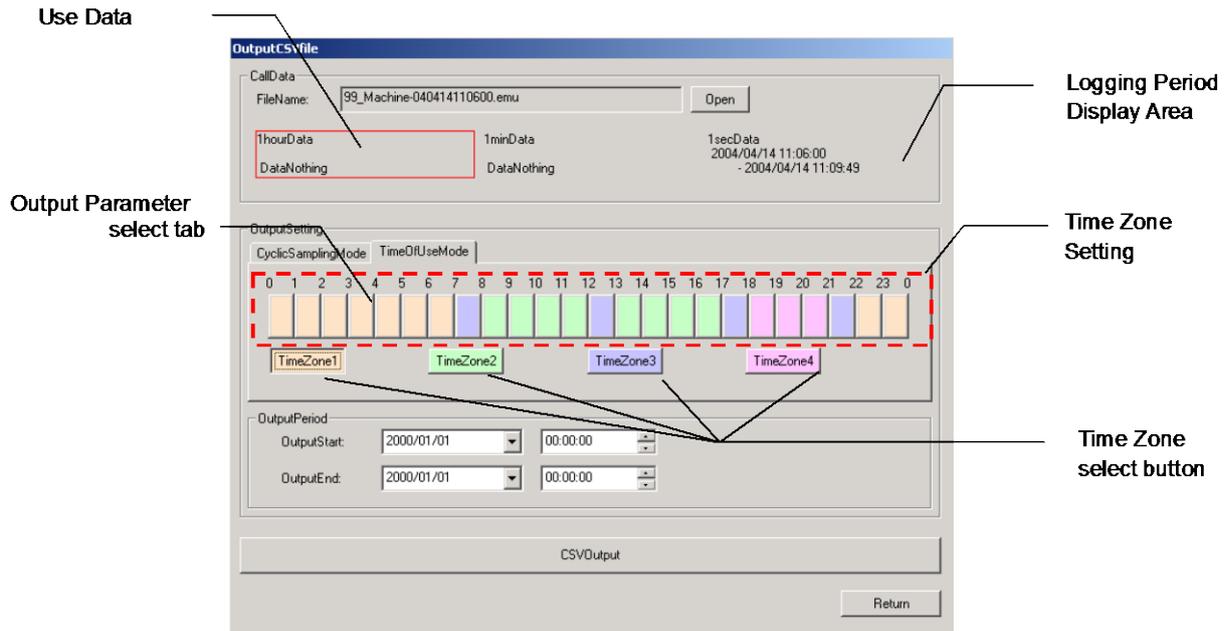
| Sampling Cycle Radio button | Sampling Cycle setting | | | Use data |
|-----------------------------|------------------------|-----|-----|------------|
| | hour | min | sec | |
| Details | hour | min | sec | Nothing |
| | hour | min | sec | 1hour data |
| | hour | min | sec | 1min data |
| | hour | min | sec | 1min data |
| | hour | min | sec | 1sec data |
| | hour | min | sec | 1sec data |
| One day | - | - | - | 1hour data |
| One week | - | - | - | 1hour data |

* The CSV output, which uses the data currently displayed "with no logging data," cannot be performed.

* An output parameter “CyclicSamplingMode” tab is selected -- Electric power “CyclicSamplingMode” tab column

The total period amount used (difference) is calculated and saved.

(b) TimeOfUseMode



(1) Click the "TimeOfUseMode" tab with an output parameter selection tab.

* Selection of TimeOfUseMode selects 1hour data automatically. Change of use data cannot be performed.

(2) Click the time zone selection button of a time zone to be set up, and change it into a state where the button sinks. The time zone for changing a setup in the time zone display area in the desired state is clicked. Change of a setup updates the color of a time zone.

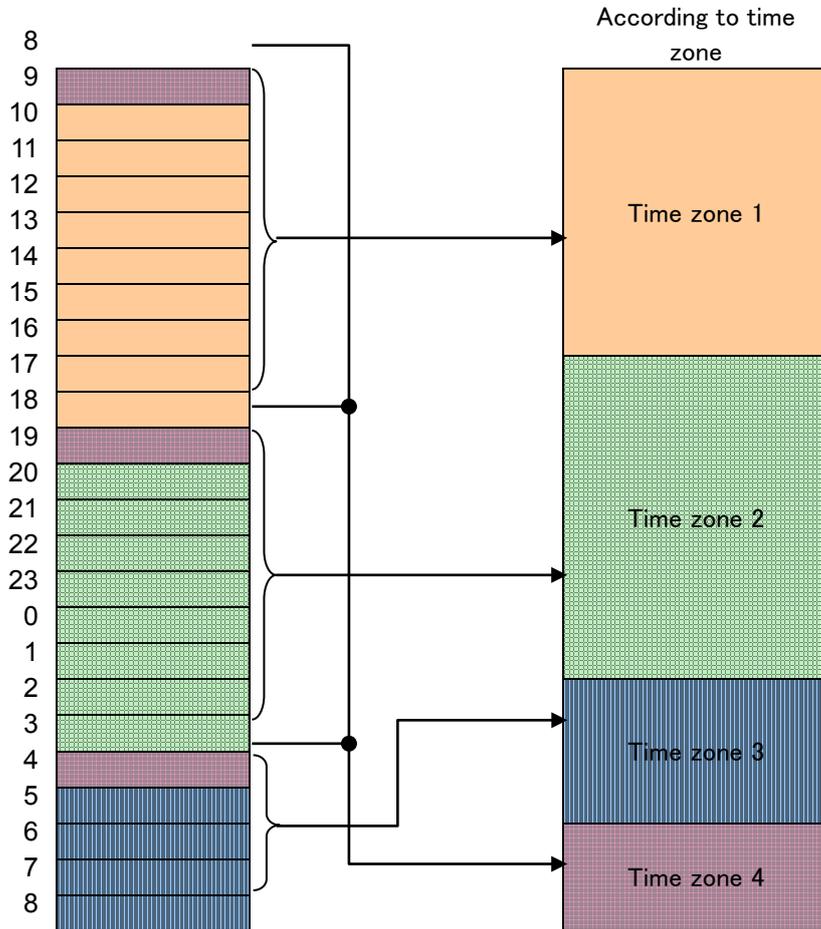
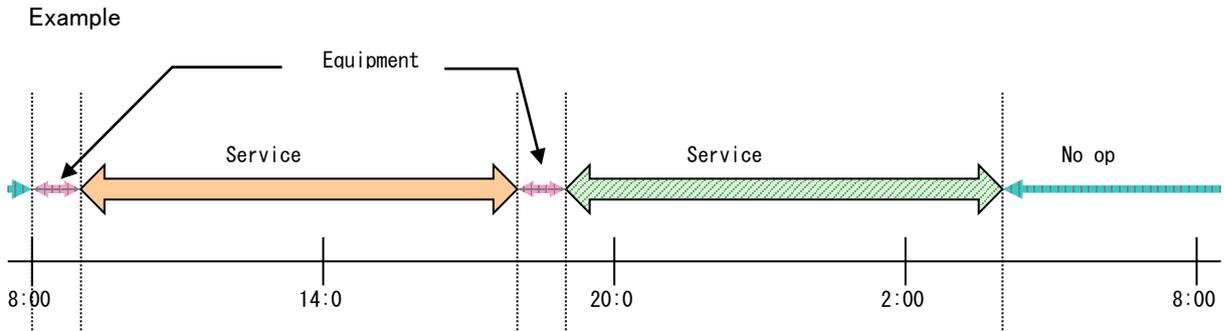
* The time of the output-opening day of an output period determines the standard time (head time) of the time zone display area. It performs "5.4 Output period set up" beforehand to change standard time.

* When "TimeOfUseMode" is selected with an output parameter selection tab, electric power is totaled for each set-up time zone used (difference with the direction value at the time of front positive), and is saved.

* TimeOfUseMode

This mode targets management of electric power in one-day 3 shift operations, and each time zone at the time of a day-and-night 2 time-zone golden contract (golden = band?), Electric power used on the first is distributed at a maximum of 4 time zones, and it can output to the CSV file which is totaled for each time zone. (Output data -- Electric power)

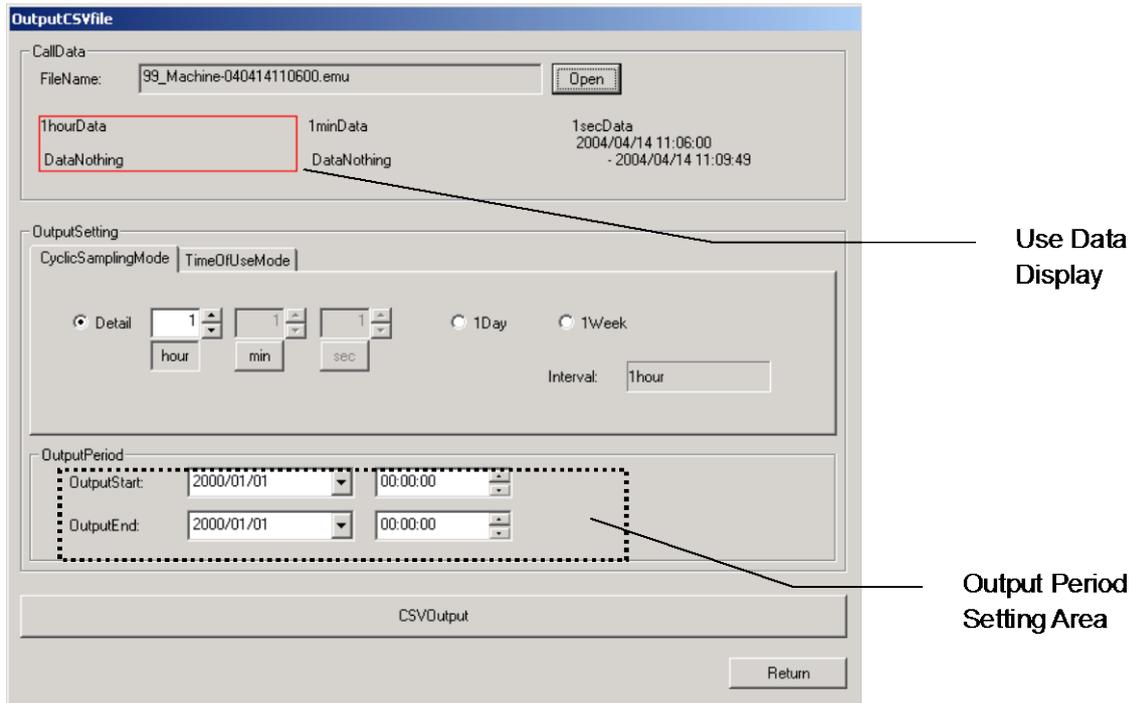
Electric power used for each 1 hour (difference with the amount direction value of electric power at the time of front positive) is totaled as the amount of electric power used of the set-up time zone.



* TimeOfUseMode -- in difference, it is only possible to distribute and total the amount between [used] each hour of a 24-hour day in four time zones.

A separate time zone cannot be overlapped with a time zone change of an in-process (minute unit) time and the same amount of time used cannot be totaled.

5.4 Output period set up.

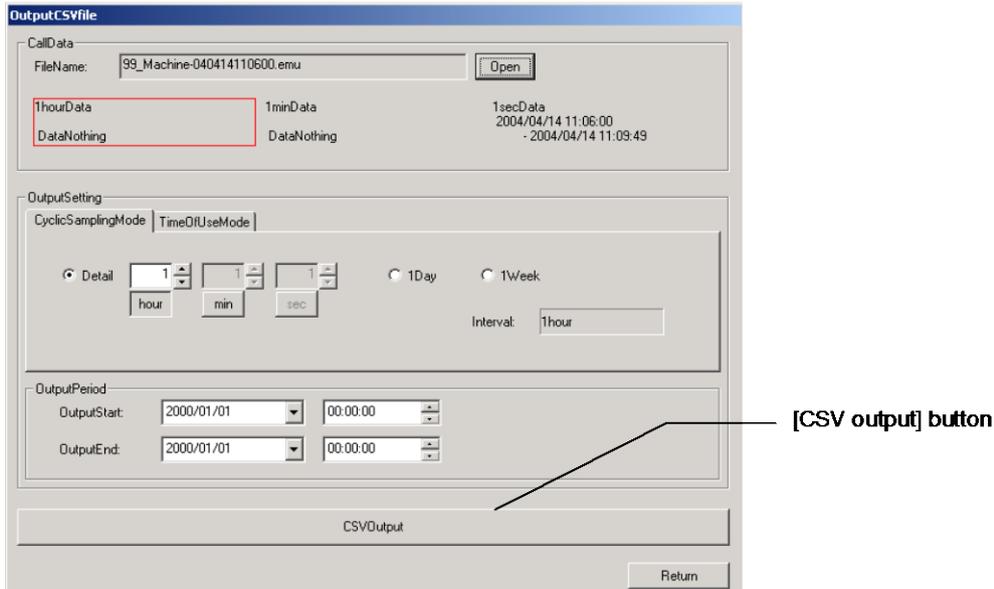


(1) Set up the period that performs a CSV output-by-output end time at the time of the output opening day of the output period setting area.

- * The range of the period in which a CSV output is possible serves as only a logging period of the data enclosed by the use data display frame. When it is set up exceeding the range, the following warning screen is displayed, and the period besides the range is reduced and outputted at the time of a CSV output.

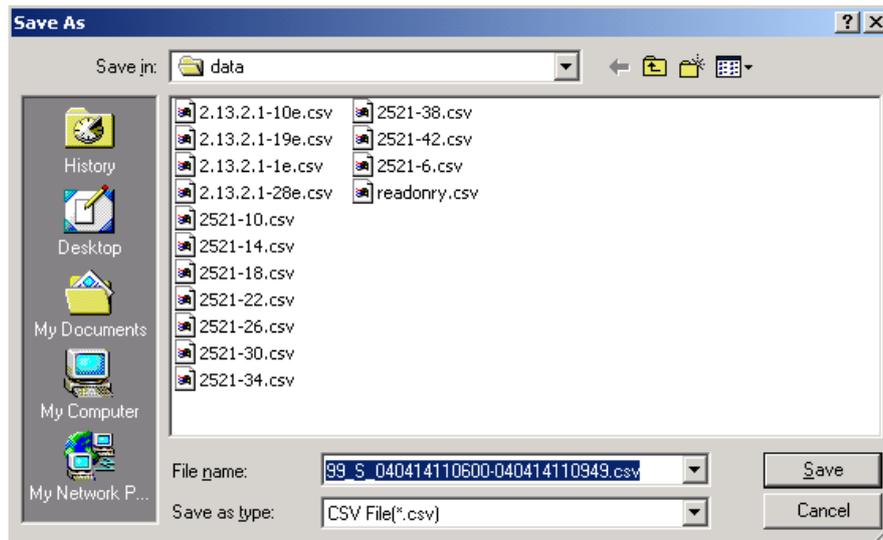


5.5 CSV output carried out.



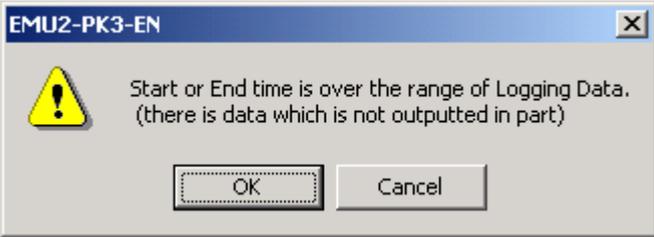
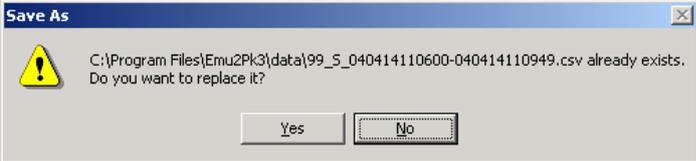
(1) [CSV Output] button becomes usable after calling logging data.

(2) Clicking on the [CSV Output] button displays the following dialog box. Please specify a Save folder and a save file name and save a CSV file.



The Save folder of an initial value is
 <PC-Kit installation location> ¥Data

* The following messages are displayed in the case where a CSV output is performed .

| Display timing | Display message | Handling method |
|--|--|--|
| When data call operation is performed |  | It has broken [whether the logging data file that was going to be called exists, and]. Does the to be called logging data file exist or is it broken? |
| When CSV output operation is performed |  | The setup of an output period exceeds the logging period of use data. Please perform a re-setup of the output period. Although outputting then is also possible, the data outside a period is omitted and outputted. |
| When CSV output operation is performed |  | Ready to perform CSV output without "having logging data." Please perform a CSV output using data that collects required data or exists. |
| When CSV output operation is performed |  | It is displayed when the same file name exists in the specified Save folder. Please change the file name and save the file. |
| When CSV output operation is performed |  | An error occurred at the time of saving a file. Please check the availability of the drive of a CSV output location. |

Chapter 6

Logging Setting

About this chapter

This chapter explains the following .

- ◆ Names of each part
- ◆ Contents of a logging setting of a logging display unit read. (Upload)
- ◆ Logging setup is performed.
- ◆ Logging setting download to logging display unit. (Download)

Chapter 6 Logging Setting

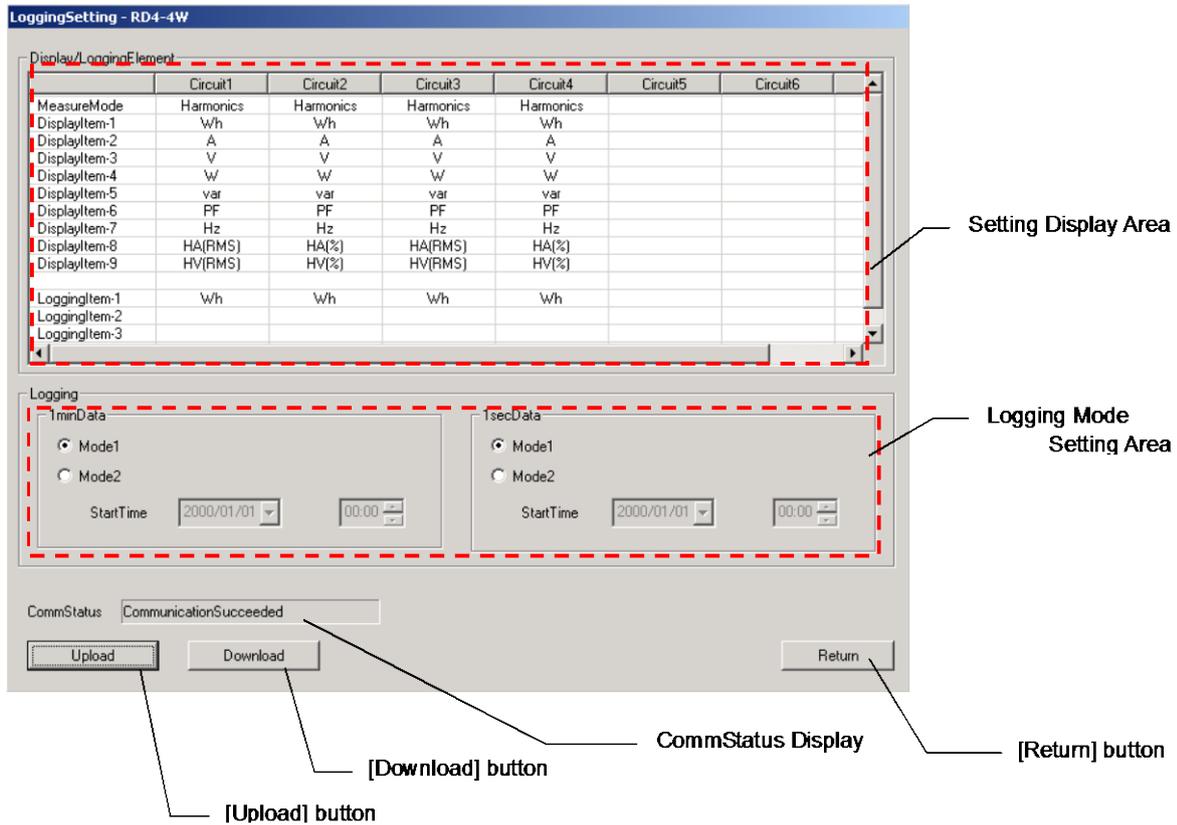
The measurement element set as the object of a screen display and data logging to a Logging Display Unit on a logging setting screen

The setup of selection and logging operation can be performed.

This chapter explains the operation method in a logging setting screen.

6.1 Names of each part

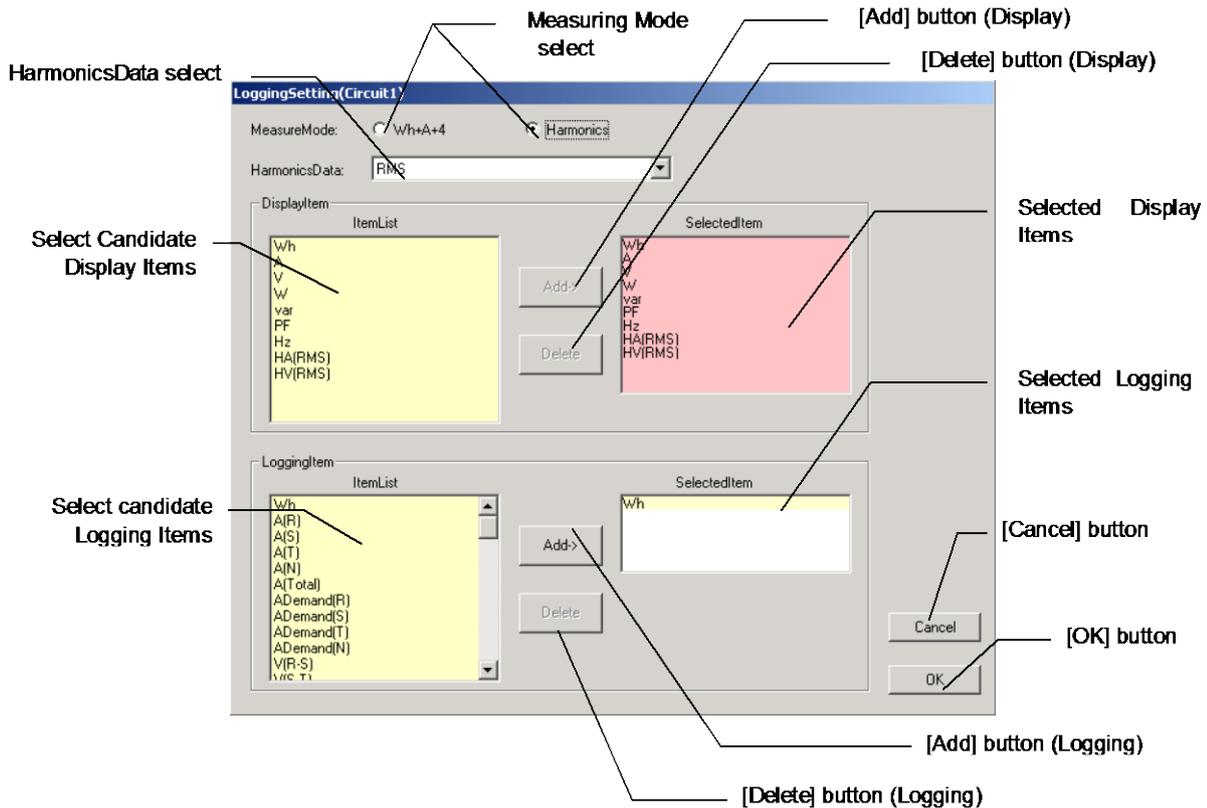
(a) Logging setting screen



| Name | Function |
|---------------------------|---|
| Setting Display Area | The present display and the contents of a setting of Logging items are displayed. |
| Logging Mode Setting Area | Logging Mode is set up. |
| [Upload] button | A setup of a Logging Display Unit is read. |
| [Download] button | A setup is written in a Logging Display Unit. |
| CommStatus Display | The state of the present communication is displayed. |
| [Return] button | A logging setting screen is ended and returns to the main menu screen. |

* Keep in mind that the logging data collected in the Logging Display Unit is cleared in order to maintain the adjustment of data with a change of a Logging Setting.

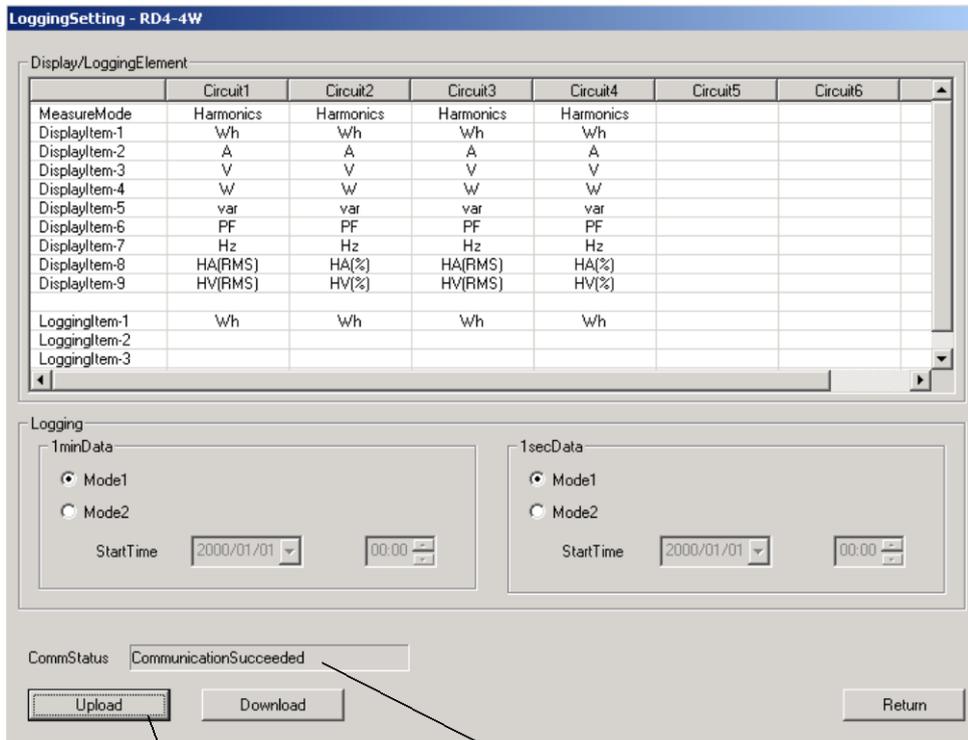
(b) A display / Logging items setting screen



| Name | Function |
|-----------------------------------|---|
| Measuring mode select | Measuring mode is selected. |
| Harmonics data select | Harmonics data is selected. |
| Selection candidate Display items | List of candidate items that can be added to additional display items is displayed. |
| [Add] button (Display) | An additional display item is added. |
| [Delete] button (Display) | An additional display item is deleted. |
| Selected Display Items | The additional selected display items are displayed. |
| Select candidate Logging items | The candidate of an item who can be added to Logging items is displayed. |
| [Add] button (Logging) | Logging items are added. |
| [Delete] button (Logging) | Logging items are deleted. |
| Selected Logging items | The selected Logging items are displayed. |
| [Cancel] button | The contents of a change are canceled and returns to a logging setting screen. |
| [OK] button | It returns to a logging setting screen reflecting the contents of a change. |

6.2 Contents of a logging setting of a Logging Display Unit read (upload).

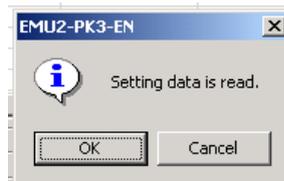
- (1) Connect the PC with a Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the logging setting screen.



[Upload] button

CommStatus Display

- (3) Clicking on the [upload] button displays the following message.
Clicking on the [OK] button starts read-out (upload) of the contents set as the Logging Display Unit.



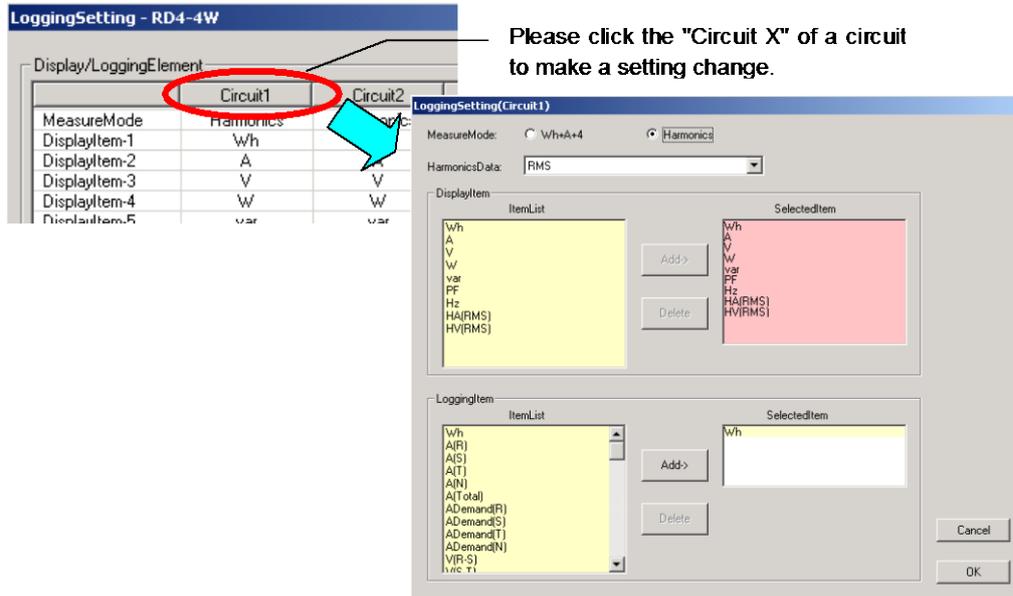
- (4) Messages corresponding to the communication condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | The contents of a setting are read from the Logging Display Unit. |
| Communication success | A setup read from the Logging Display Unit is displayed. |
| Communication error | Communication is not performed normally. Please check connection. |

6.3 Logging setup is performed.

(a) A display / Logging items setup

- (1) If "Circuit *" Portion of Circuit to Change Setup of Setting Display Area after the Completion of Upload is Clicked, A display / Logging items setting screen is displayed.



- (2) A Display / Logging items setting screen performs setup of measuring mode, harmonics data setup, display items, and Logging items. Availability/unavailability of a setup measuring mode and harmonics data by the model of EcoMonitorPro connected to the display logging unit and the items which can be selected as display items may also differ. Moreover, the items for which the Logging items have been selected with the display items differ from the items, which can be set up according to the contents of a setting of a Phase&Wiring type.

(Display items)

The model from which measurement mode and harmonics data are "-" among the table cannot be set up. Item settings attached with "O" in the table are possible for display item selection items.

| | Energy Measuring Unit Model (form name) | BM1 | HM1 | RD1 | | VS1 | PM1 | RD*, RD*-4W | | | |
|------------------------------|---|-----|-----|-----|-----|-----|-----|----------------|-----|-------------------|-----|
| | Measurement mode | - | - | - | - | - | - | Wh+A+4 element | | Harmonics details | |
| | Harmonics data | - | - | EV | D/C | - | - | EV | D/C | EV | D/C |
| Display items selection item | Total energy | O | O | O | O | O | O | O | O | O | O |
| | Current | O | O | O | O | O | O | O | O | O | O |
| | Voltage | | O | O | O | O | O | O | O | O | O |
| | Electric power | | O | O | O | O | | O | O | O | O |
| | Reactive electric power | | | O | O | | | O | O | O | O |
| | PF | | O | O | O | O | | O | O | O | O |
| | Frequency | | | O | O | | | O | O | O | O |
| | Reactive total energy | | | O | O | | | O | O | | |
| | Harmonics current (EV) | | | O | | | | O | | O | |
| | Harmonics voltage (EV) | | | O | | | | O | | O | |
| | Harmonics current (D/C) | | | | O | | | | O | | O |
| | Harmonics voltage (D/C) | | | | O | | | | O | | O |

EV=Effective value, D/C=Distortion/Content

(Logging items)

The items attached with " 0 " in the table can be set up.

| Display items | | Logging items | Phase&Wire type | | |
|--|--|-------------------------|--------------------------|--------------------------|--------------------------|
| | | | 1P2W | 1P3W 3P3W | 3P4W |
| Electric power | | Wh | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Current | | A(R) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | A(S) | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | A(T) | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | A(N) | | | <input type="checkbox"/> |
| | | A(Total) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | ADemand(R) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | ADemand(S) | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | ADemand(T) | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | ADemand(N) | | | <input type="checkbox"/> |
| Voltage | | V(R-S) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | V(S-T) | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | V(T-R) | | <input type="checkbox"/> | <input type="checkbox"/> |
| | | V(R-N) | | | <input type="checkbox"/> |
| | | V(S-N) | | | <input type="checkbox"/> |
| | | V(T-N) | | | <input type="checkbox"/> |
| | | V(Total) | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Electric power | | W | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | WDemand | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Invalid electric power | | Invalid electric power | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| PF | | PF | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Frequency | | Frequency | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Reactive electric power | | Reactive electric power | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| Harmonics current (effective value) | Measurement mode: Wh+A+4 element | HA(R)Total | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(S)Total | | | <input type="checkbox"/> |
| | | HA(T)Total | | <input type="checkbox"/> | <input type="checkbox"/> |
| | Measurement mode: Harmonics details | HA(R)Total | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)1st | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)3rd | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)5th | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)7th | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)9th | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)11th | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(R)13th | <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> |
| | | HA(S)Total | | | <input type="checkbox"/> |
| | | HA(S)1st | | | <input type="checkbox"/> |
| | | HA(S)3rd | | | <input type="checkbox"/> |
| | | HA(S)5th | | | <input type="checkbox"/> |
| | | HA(S)7th | | | <input type="checkbox"/> |
| | | HA(S)9th | | | <input type="checkbox"/> |
| | | HA(S)11th | | | <input type="checkbox"/> |
| | | HA(S)13th | | | <input type="checkbox"/> |
| | | HA(T)Total | | <input type="checkbox"/> | <input type="checkbox"/> |
| | HA(T)1st | | <input type="checkbox"/> | <input type="checkbox"/> | |
| | HA(T)3rd | | <input type="checkbox"/> | <input type="checkbox"/> | |
| | HA(T)5th | | <input type="checkbox"/> | <input type="checkbox"/> | |
| | HA(T)7th | | <input type="checkbox"/> | <input type="checkbox"/> | |
| | HA(T)9th | | <input type="checkbox"/> | <input type="checkbox"/> | |
| | HA(T)11th | | <input type="checkbox"/> | <input type="checkbox"/> | |
| | HA(T)13th | | <input type="checkbox"/> | <input type="checkbox"/> | |

| The element selected as the display items | | Corresponding Logging items | Phase&Wire type | | |
|---|--|-----------------------------|-----------------|--------------|------|
| | | | 1P2W | 1P3W 3P3W | 3P4W |
| Harmonics current (Distortion / Content) | Measurement mode: Wh+A+4 element | HA(R)Total (%) | ○ | ○ | ○ |
| | | HA(S)Total (%) | | | ○ |
| | | HA(T)Total (%) | | ○ | ○ |
| | Measurement mode: Harmonics details | HA(R)Total (%) | ○ | ○ | ○ |
| | | HA(R)3rd(%) | ○ | ○ | ○ |
| | | HA(R)5th(%) | ○ | ○ | ○ |
| | | HA(R)7th(%) | ○ | ○ | ○ |
| | | HA(R)9th(%) | ○ | ○ | ○ |
| | | HA(R)11th(%) | ○ | ○ | ○ |
| | | HA(R)13th(%) | ○ | ○ | ○ |
| | | HA(S)Total (%) | | | ○ |
| | | HA(S)3rd(%) | | | ○ |
| | | HA(S)5th(%) | | | ○ |
| | | HA(S)7th(%) | | | ○ |
| | | HA(S)9th(%) | | | ○ |
| | | HA(S)11th(%) | | | ○ |
| | | HA(S)13th(%) | | | ○ |
| | | HA(T)Total (%) | | ○ | ○ |
| | | HA(T)3rd(%) | | ○ | ○ |
| | | HA(T)5th(%) | | ○ | ○ |
| | | HA(T)7th(%) | | ○ | ○ |
| | HA(T)9th(%) | | ○ | ○ | |
| | HA(T)11th(%) | | ○ | ○ | |
| | HA(T)13th(%) | | ○ | ○ | |
| Harmonics voltage (effective value) | Measurement mode: Wh+A+4 element | HV(R-S)Total | ○ | ○ | ○* |
| | | HV(S-T)Total | | ○ | ○* |
| | | HV(T-R)Total | | | ○* |
| | Measurement mode: Harmonics details | HV(R-S)Total | ○ | ○ | ○* |
| | | HV(R-S)1st | ○ | ○ | ○* |
| | | HV(R-S)3rd | ○ | ○ | ○* |
| | | HV(R-S)5th | ○ | ○ | ○* |
| | | HV(R-S)7th | ○ | ○ | ○* |
| | | HV(R-S)9th | ○ | ○ | ○* |
| | | HV(R-S)11th | ○ | ○ | ○* |
| | | HV(R-S)13th | ○ | ○ | ○* |
| | | HV(S-T)Total | | ○ | ○* |
| | | HV(S-T)1st | | ○ | ○* |
| | | HV(S-T)3rd | | ○ | ○* |
| | | HV(S-T)5th | | ○ | ○* |
| | | HV(S-T)7th | | ○ | ○* |
| | | HV(S-T)9th | | ○ | ○* |
| | | HV(S-T)11th | | ○ | ○* |
| | | HV(S-T)13th | | ○ | ○* |
| | | HV(T-R)Total | | | ○* |
| | | HV(T-R)1st | | | ○* |
| | | HV(T-R)3rd | | | ○* |
| | | HV(T-R)5th | | | ○* |
| | | HV(T-R)7th | | | ○* |
| HV(T-R)9th | | | ○* | | |
| HV(T-R)11th | | | ○* | | |
| HV(T-R)13th | | | ○* | | |

| The element selected as the display items | | Corresponding Logging items | Phase&Wire type | | |
|--|--|-----------------------------|-----------------|--------------|------|
| | | | 1P2W | 1P3W 3P3W | 3P4W |
| Harmonics voltage (Distortion /Content) | Measurement mode: Wh+A+4 element | HV(R-S)Total (%) | ○ | ○ | ○ * |
| | | HV(S-T)Total (%) | | ○ | ○ * |
| | | HV(T-R)Total (%) | | | ○ * |
| | Measurement mode: Harmonics details | HV(R-S)Total (%) | ○ | ○ | ○ * |
| | | HV(R-S)3rd(%) | ○ | ○ | ○ * |
| | | HV(R-S)5th(%) | ○ | ○ | ○ * |
| | | HV(R-S)7th(%) | ○ | ○ | ○ * |
| | | HV(R-S)9th(%) | ○ | ○ | ○ * |
| | | HV(R-S)11th(%) | ○ | ○ | ○ * |
| | | HV(R-S)13th(%) | ○ | ○ | ○ * |
| | | HV(S-T)Total (%) | | ○ | ○ * |
| | | HV(S-T)3rd(%) | | ○ | ○ * |
| | | HV(S-T)5th(%) | | ○ | ○ * |
| | | HV(S-T)7th(%) | | ○ | ○ * |
| | | HV(S-T)9th(%) | | ○ | ○ * |
| | | HV(S-T)11th(%) | | ○ | ○ * |
| | | HV(S-T)13th(%) | | ○ | ○ * |
| | | HV(T-R)Total (%) | | | ○ * |
| | | HV(T-R)3rd(%) | | | ○ * |
| | | HV(T-R)5th(%) | | | ○ * |
| | | HV(T-R)7th(%) | | | ○ * |
| | | HV(T-R)9th(%) | | | ○ * |
| | | HV(T-R)11th(%) | | | ○ * |
| | | HV(T-R)13th(%) | | | ○ * |

* In the case of Model EMU2-RD*-*-4W (3P4W), as for harmonics voltage, Phase Voltage is stored.
Please set up by reading as follows.

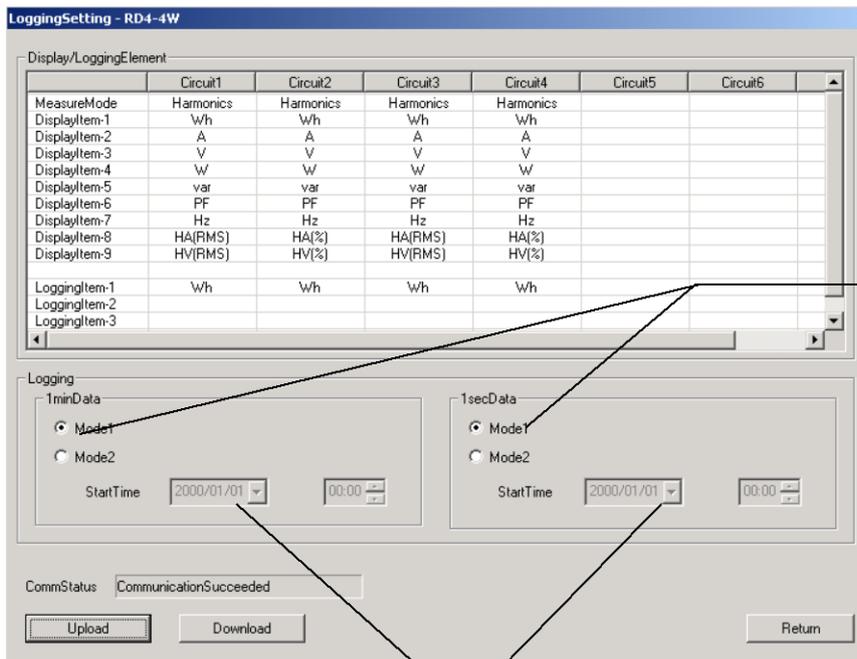
R-S → R-N

S-T → S-N

T-R → T-N

(b) Display / Logging items setup

(1) Perform logging operation and setup at the time of an opening day after the completion of upload.



Logging Mode setting

StartTime Setting

(Logging operation)

| Mode | Explanation |
|-------|---|
| Mode1 | If logging is always performed and logging data stores the maximum, it will overwrite in an order from the oldest logging data. It is used when always carrying out logging of the newest data. |
| Mode2 | Logging operation will be stopped, if logging is started and logging data stores the maximum from the time specified at the time of an opening day. It is used to carry out logging of information at a fixed period from a specified time. |

(At the time of an opening day)

A setup becomes effective only when logging operation is time specified. The time desired to start logging is specified.

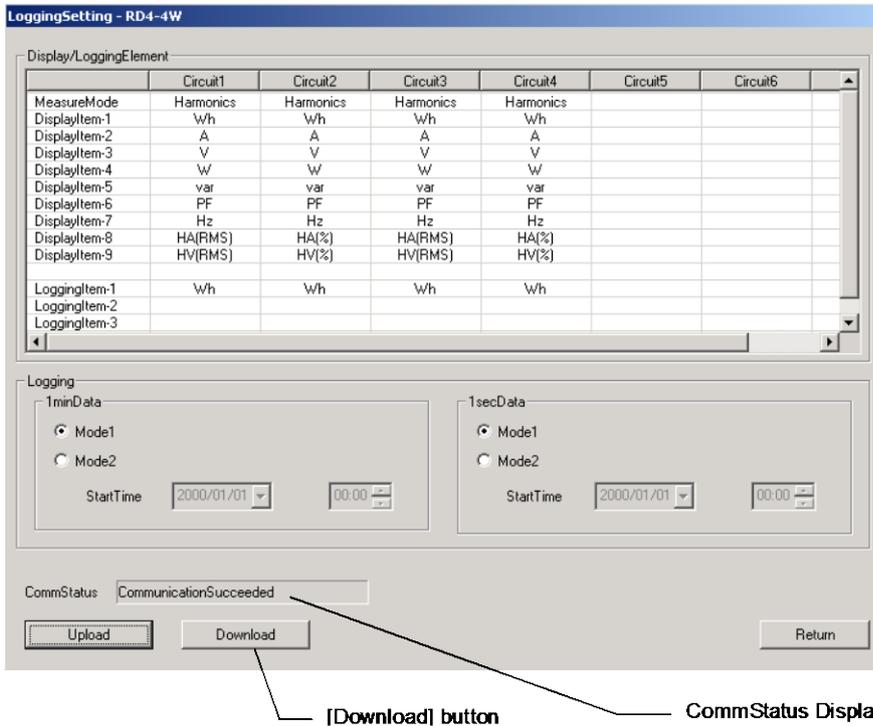
Range that can be set up 2000/1/1 0:00 - 2099/12/31 It is 23:59.

(The amount of maximum data storage for each model)

| The number of circuits | Energy Measuring Unit □ Model (form name) | 1-sec data | 1-min data | 1-hour data |
|------------------------|--|------------|------------|-------------|
| One circuit | EMU2-BM1-△ EMU2-HM1-△ EMU2-RD1-△ EMU2-PM1-△ EMU2-VS1-△ | 48 hours | Ten days | 131 days |
| Two circuits | EMU2-RD2-△4W | 12 hours | | |
| Three circuits | EMU2-RD3-△ | | | |
| Four circuits | EMU2-RD4-△4W | 4 hours | | |
| Five circuits | EMU2-RD5-△ | 2 hours | | |
| Seven circuits | EMU2-RD7-△ | | | |

6.4 Logging Setting download to Logging Display Unit

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the logging setting screen.



- Clicking on (3) [download] button displays the following message.
- If the [is and] button is clicked, it will start the writing (download) of the set-up contents.



* Execution of download eliminates logging data.

- (4) Messages corresponding to the communication condition are displayed in the communication condition display column.

| Display message | Condition |
|-----------------------|--|
| Under communication | The contents of a setting are written in the Logging Display Unit. |
| Communication success | The setting writing to a Logging Display Unit was completed. |
| Communication error | Communication is not performed normally. Please check connection. |

* The following messages are displayed in the case of a Logging Setting being performed .

| Display timing | Display message | The coping-with method |
|----------------------------|--|--|
| When upload is performed |  | <p>The Logging Display Unit has not started or it did not connect correctly. Please check the power supply of a Logging Display Unit, and connection.</p> |
| When download is performed |  | <p>It was acquired at the time of download. The model code of an Energy Measuring Unit differs from the model at the time of upload. Again, please perform setup and download after uploading.</p> |

Chapter 7

Circuit Name Setting

About this chapter

This chapter explains the following .

- ◆ Names of each part
- ◆ Setting names

Chapter 7 Circuit Name Setting

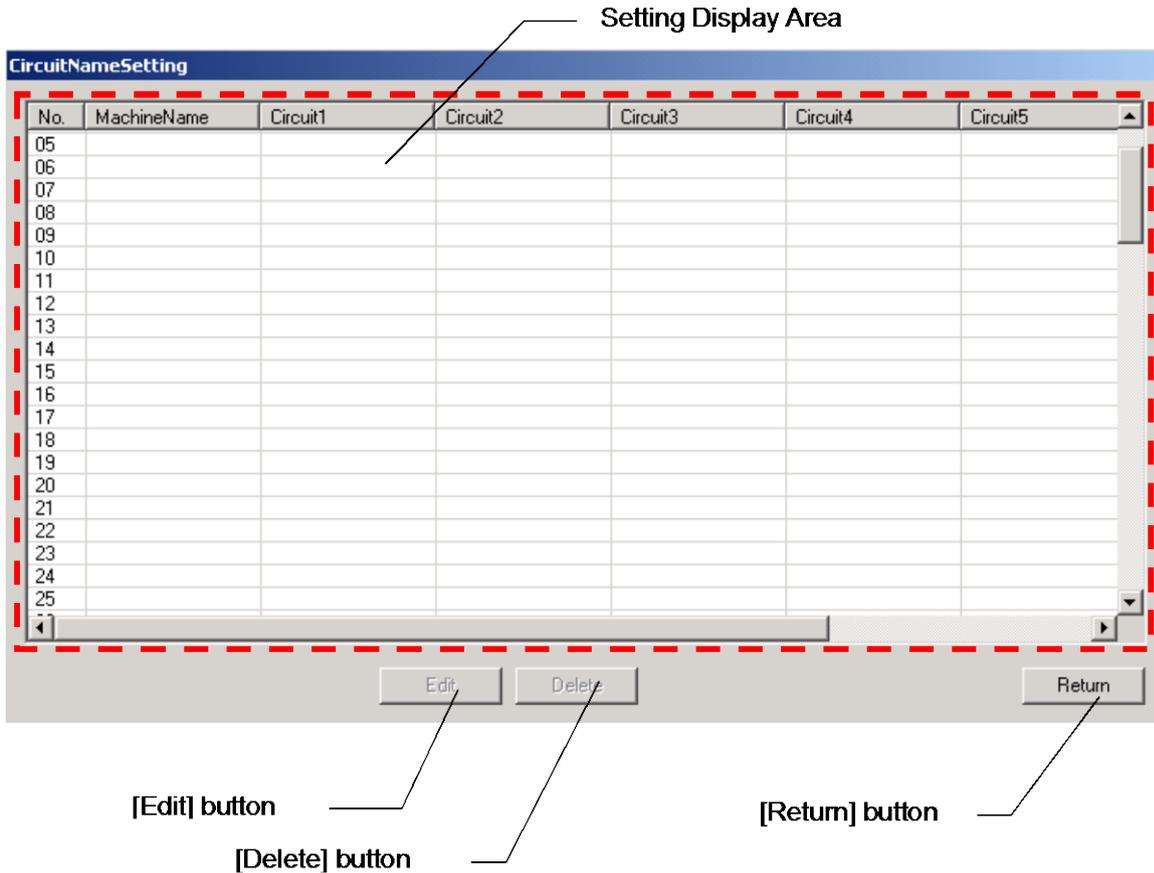
On a circuit name setting screen, the combination of arbitrary circuit names added to the data collected by logging data collection can be set up.

The CSV file generated on a CSV output screen outputs the set-up circuit name outputted as a circuit name.

This chapter explains the operation method in a circuit name setting screen.

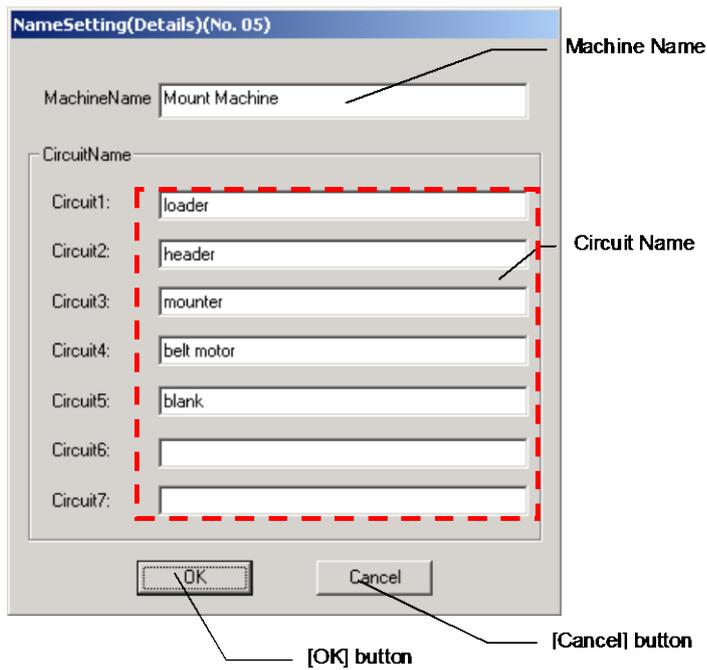
7.1 Names of each part

(a) Circuit setting screen



| Name | Function |
|----------------------|--|
| Setting Display Area | The present contents of a setting are displayed. |
| [Edit] button | Addition/edit of a name setup are performed. |
| [Delete] button | A name setup is deleted. |
| [Return] button | A name setting screen is ended and it returns to the main menu screen. |

(b) Detailed setting screen

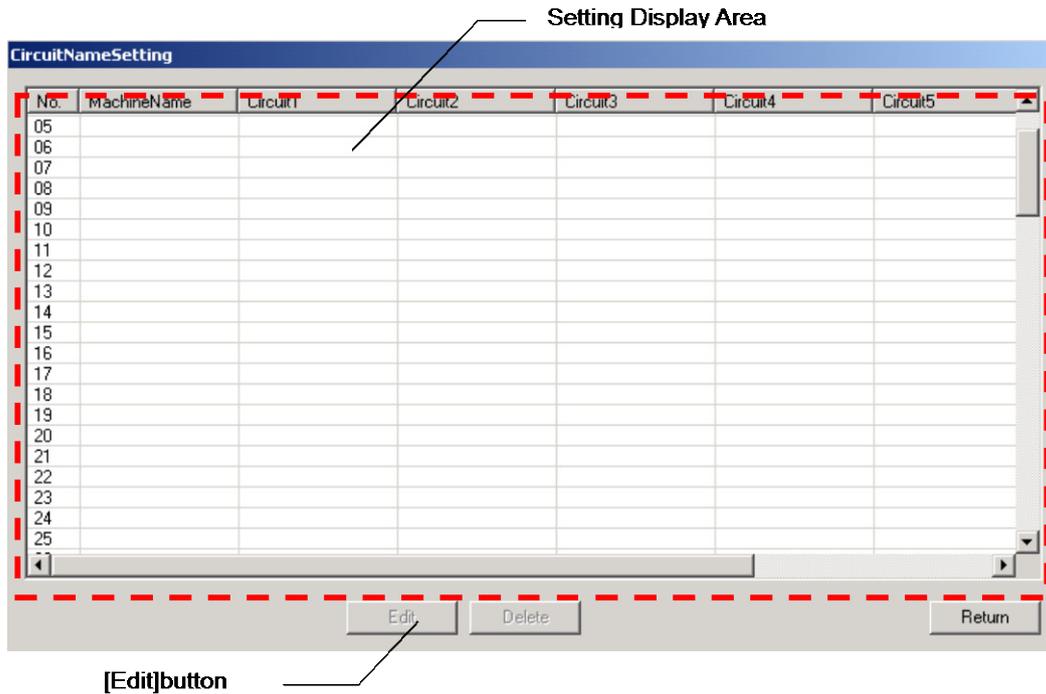


| Name | Function |
|-----------------|--|
| Machine Name | An equipment name is inputted. |
| Circuit Name | A circuit name is inputted. |
| [OK] button | The contents of a setting are registered. |
| [Cancel] button | Returns to a name setting screen, without registering the contents of a setting. |

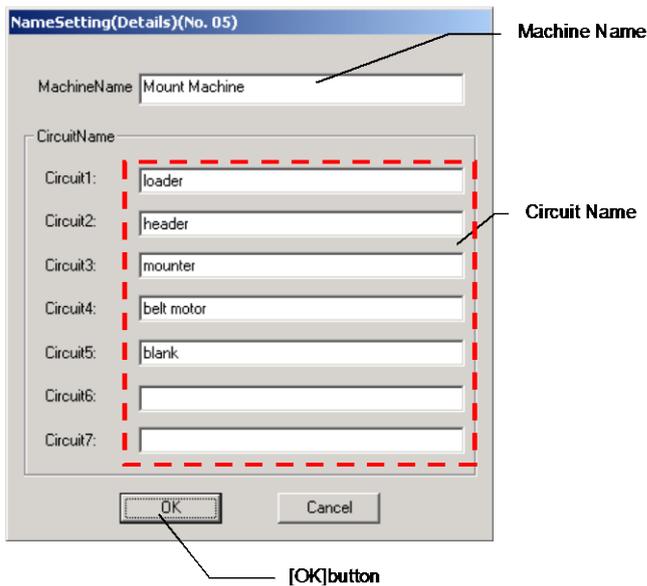
7.2 Setting names

(a) An addition/change of a name

- (1) Choose an item to perform an addition and make a change of a name from the list of the setting display area.
- (2) Click the [Edit] button is .



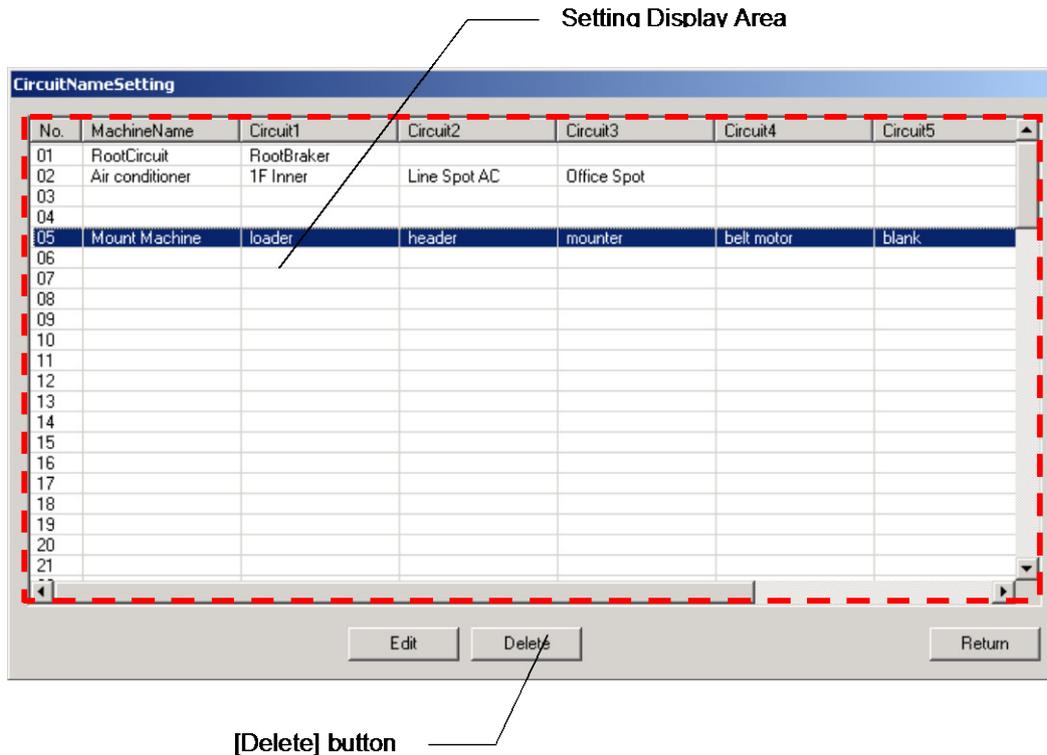
(3) Input an equipment name and a circuit name. (Up to 20 characters can be input, respectively.)



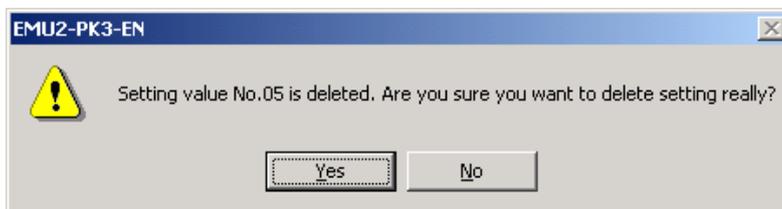
(4) Click the [OK] button .

- * [OK] button is impossible unless an equipment name is input. (Circuit name can be blank.)
- * The circuit where the equipment name and the circuit name are not set up is outputted as a blank and "a circuit n" (n: circuit number), respectively, at the time of a CSV file output.

- (a) Deletion of a name
 - (1) Select the item for name deletion from the list of the setting display area.
 - (2) Click the [Delete] button .



- (3) The following check message is displayed. Registration will be deleted, if the [Delete] button is clicked.



* The following messages are displayed in the case of name setup being performed .

| Display timing | Display message | Handling method |
|--|--|--|
| <p>When [registration] button is clicked</p> |  | <p>It was to be registered in a state where nothing was inputted for the equipment name except a blank character. An equipment name is inputted correctly. Please register.</p> |
| <p>When input of an inaccurate character into the setting name is required</p> |  | <p>It was to be input and registered with a character that cannot be used for an equipment name (circuit name). Please avoid characters that cannot be used, and reinput and register a name. [Characters which cannot be used]</p> <p>[\],[/],[:],[/],[/],[*],[/],["], [<], [>], []</p> |

Chapter 8

Basic Settings

About this chapter

This chapter explains the following .

- ◆ Names of each part
- ◆ Contents of a basic setting read.
(Upload)
- ◆ Basic setup performed.
- ◆ Basic settings download to logging display unit.
(Download)

Chapter 8 Basic settings

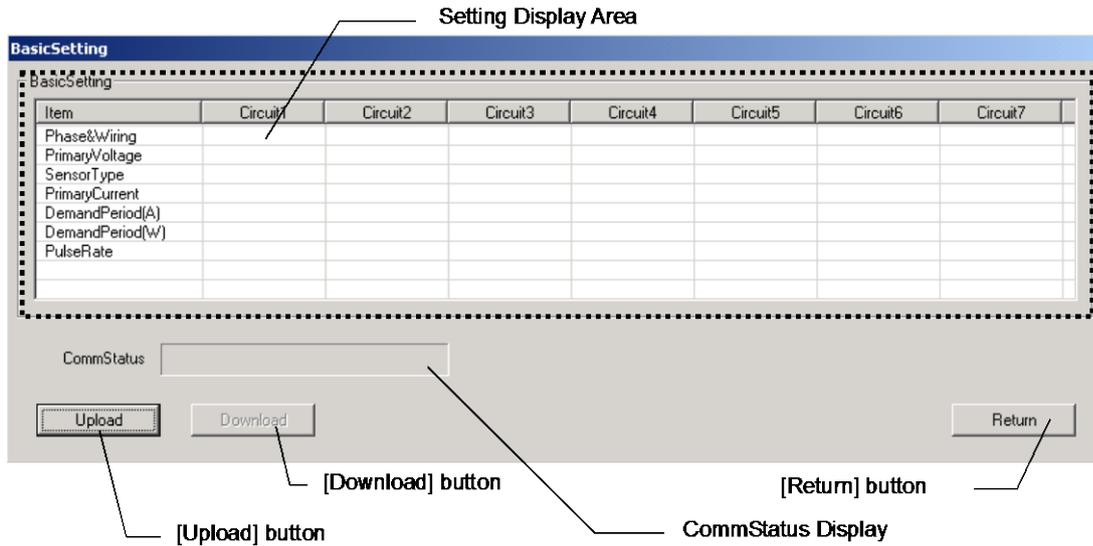
On a basic setting screen, the Energy Measuring Unit main part linked to a Logging Display Unit can be set up.

A setting item reads and displays the value can set up for each model out of a Phase&Wire type, primary voltage, sensor classification, primary current, the demand time limit (current), the demand time limit (electric power), and a pulse unit.

This chapter explains the operation method in a basic setting screen.

8.1 Names of each part

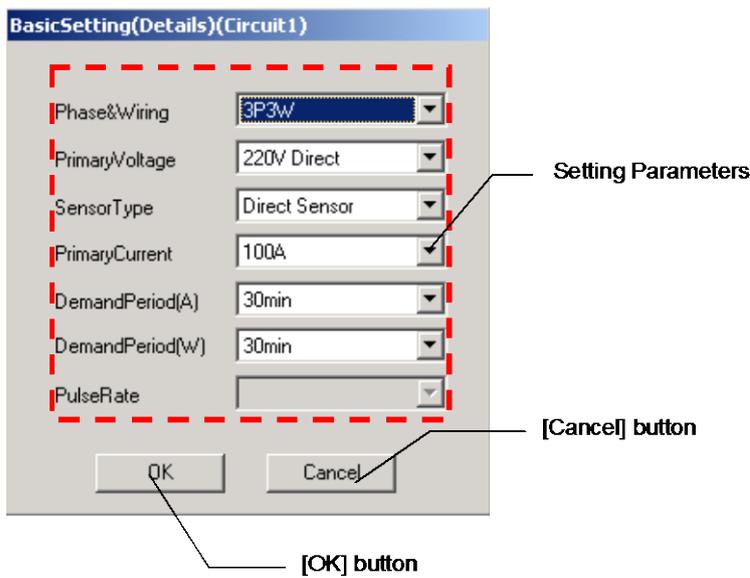
(A) BASIC SETTING SCREEN



| Name | Function |
|----------------------|--|
| Setting display area | The contents of a setting are displayed. |
| CommStatus Display | The present communication state is displayed. |
| [Upload] button | A setup of an Energy Measuring Unit main part is read via a Logging Display Unit. |
| [Download] button | A setup is written in an Energy Measuring Unit main part via a Logging Display Unit. |
| [Return] button | A basic setting screen is ended and returns to the main menu screen. |

* Keep in mind that the logging data collected in the Logging Display Unit is cleared in order to maintain the adjustment of data with a change in the basic setup.

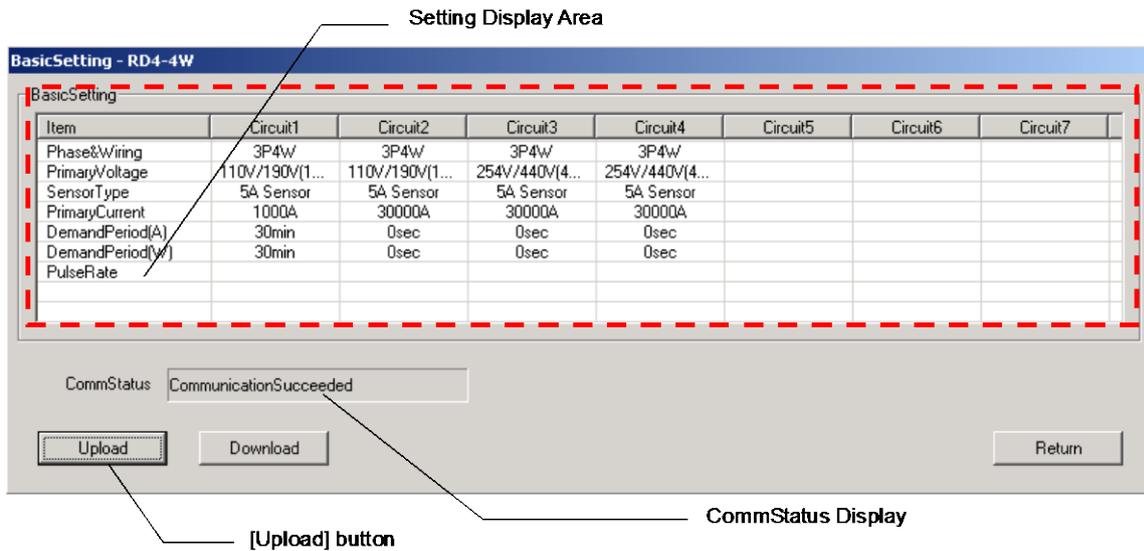
(b) Detailed setting screen



| Name | Function |
|---|---|
| Items setup | The following items are set up. |
| | Phase&Wiring type A Phase&Wiring type is set up. |
| | Primary voltage Primary voltage is set up. |
| | Sensor classification Sensor classification is set up. |
| | Primary current Primary current is set up. |
| | Demand time limit A The demand time limit A is set up. |
| | Demand time limit W The demand time limit W is set up. |
| Pulse unit A pulse unit is set up. | |
| [OK] button | Returns to a basic setting screen reflecting the contents of a change. |
| [Cancel] button | Contents of a change are canceled and return to the basic setting screen. |

8.2 Contents of a basic setting read (upload).

- (1) Connect the PC with a Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the basic setting screen.



Clicking on (3) [upload] button displays the following message.

Clicking on the [O.K.] button starts read-out (upload) of the contents set as the Logging Display Unit and EMU2 main part under connection.



- (4) Messages corresponding to the communication condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | It is from an Energy Measuring Unit main part at a Logging Display Unit course. The contents of a setting are read. |
| Communication success | It is from an Energy Measuring Unit main part at a Logging Display Unit course. A read setup is displayed. |
| Communication error | Communication is not performed normally. Please check connection. |

8.3 Basic setup performed.

(1) After the completion of upload, a click of the "circuit *" portion of a circuit to change a setup of the setting display area displays a detailed setting screen.

| Item | Circuit1 | Circuit2 |
|-----------------|----------------|----------|
| Phase&Wiring | 3P4W | 3P4W |
| PrimaryVoltage | 110V/190V(1... | 110V/190 |
| SensorType | 5A Sensor | 5A Sen |
| PrimaryCurrent | 1000A | 3000C |
| DemandPeriod(A) | 30min | 0sec |
| DemandPeriod(W) | 30min | 0sec |
| PulseRate | | |

Please click the "circuit X" of a circuit to make a setting change.

(2) Set up each item and click the [OK] button.

Setting Parameters

[OK] button

* Items that can be set up, and the range for the model of the Energy Measuring Unit connected to the Logging Display Unit differ according to the related parameters.

"O" becomes the range that can be set up within the table.

| Setting item | Setting conditions | Setting range | Energy Measuring Unit | | | | | |
|-------------------|--|---|-----------------------|-----|-----|-----|-----|-----------------|
| | | | BM1 | HM1 | VS1 | PM1 | RD* | RD* □-4 W |
| Phase&Wiring type | - | 1P2W,1P3W,3P3W | O | O | O | O | O | |
| | | 3P4W | | | | | | O |
| Primary voltage | Phase&Wiring type: 1P2W, 3P3W | 110V directness, 220V directness, 440V | O | O | O | | | |
| | Phase&Wiring type: 1P3W | Direct 110v | | | | | | |
| | Phase&Wiring type: 1P2W, 3P3W | 110V directness, 220V directness, 440V, 690V,1100V,2200V,3300V,6600V, 11000V,13200V,13800V,15000V, 16500V,22000V,24000V,33000V, 66000V,77000V,110000V | | | | O | O | |
| | Phase&Wiring type: 1P3W Phase&Wiring type: 3P4W*1 (Line Voltage / Phase Voltage) | Direct 110v 63.5V/110V,110V/190V,120V/208V, 220V/380V,240V/415V,254V/440V | | | | | | O |
| Sensor type | - | Direct sensor and 5A sensor, | O | O | O | O | O | O |
| Primary current | Sensor type: 5A sensor | 5A,6A,7.5A,8A,10A,12A,15A, 20A,25A,30A,40A,50A,60A, 75A,80A,100A,120A,150A,200A, 250A,300A,400A,500A,600A, 750A,800A,1000A,1200A,1500A, 1600A,2000A,2500A,3000A, 4000A,5000A,6000A,7500A, 8000A,10000A,12000A,20000A, 25000A,30000A | O | O | O | O | O | O |
| | Sensor type : Direct sensor | 50A,100A,250A,400A,600A | O | O | O | O | O | O |
| Pulse unit | all load electric power *2 (kW) (Following AW and brief sketch) | | | | | | | |
| | 12<AW | 0.001, 0.01, 0.1, 1 | | | | | | |
| | 12 <=AW<120 | 0.01, 0.1, 1, 10 | | | | | | |
| | 120 <=AW<1200 | 0.1, 1, 10, 100 | | | O | O | | |
| | 1200 <=AW<12000 | 1, 10, 100, 1000 | | | | | | |
| | 12000 <=AW<120000 | 10, 100, 1000, 10000 | | | | | | |
| 120000 <=AW | 100, 1000, 10000, 100000 | | | | | | | |

※1 Model: EMU2-RD2(4)-Δ-4W (3P4W), a primary voltage setup of a circuit 1 and a circuit 2 (a circuit 3 and circuit 4) are common.

※2 The calculation method of total load electric power is as follows.

(Total load electric power) = (primary voltage setting value) x (primary current setting value) x (Phase&Wiring coefficient)

Phase&Wiring coefficient:1P2W article -> 1.0

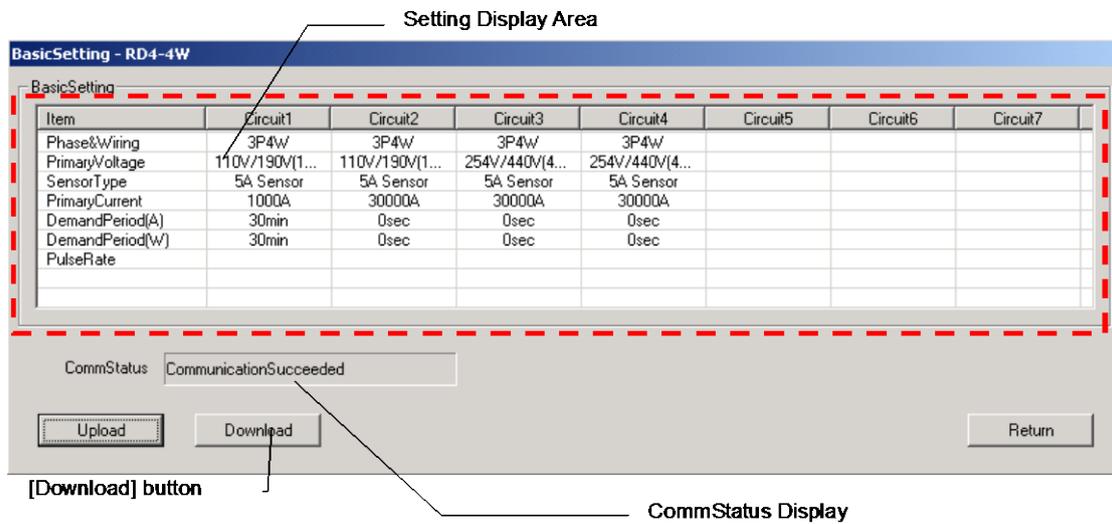
1P3W article -> 2.0

3P3W/3P4W article -> 1.73

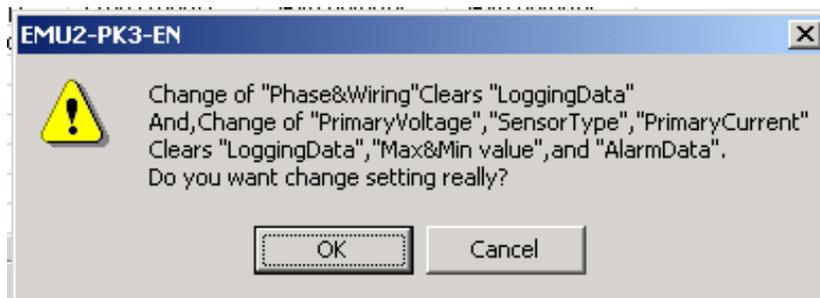
In the case of 3P4W (primary voltage setting value), calculation is made using Phase Voltage.

8.4 Basic settings download to Logging Display Unit.

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the Basic Setting screen.



- (3) Clicking on [Download] button displays the following message. When the [OK] button is clicked, it begins writing (download) of a setup by the Logging Display Unit course on an Energy Measuring Unit main part.



* Logging items are also cleared when a Phase&Wiring type is changed.

- (4) Messages corresponding to the communication condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | It is to an Energy Measuring Unit main part at a Logging Display Unit course. The contents of a setting are written in. |
| Communication success | It is to an Energy Measuring Unit main part at a Logging Display Unit course. Writing was completed. |
| Communication error | Communication is not performed normally. Please check connection. |

* In the case of a basic setup being performed, the following messages are displayed .

| Display timing | Display message | Handling method |
|----------------------------|--|---|
| When upload is performed |  | <p>The Logging Display Unit has not started or it did not connect correctly. Please check the power supply of a Logging Display Unit, and connection.</p> |
| When download is performed |  | <p>It was acquired at the time of download. The model code of an Energy Measuring Unit differs from the model at the time of upload. Again, please perform setting change and download after uploading.</p> |

Chapter 9

Alarm Setting

About this chapter

This chapter explains the following .

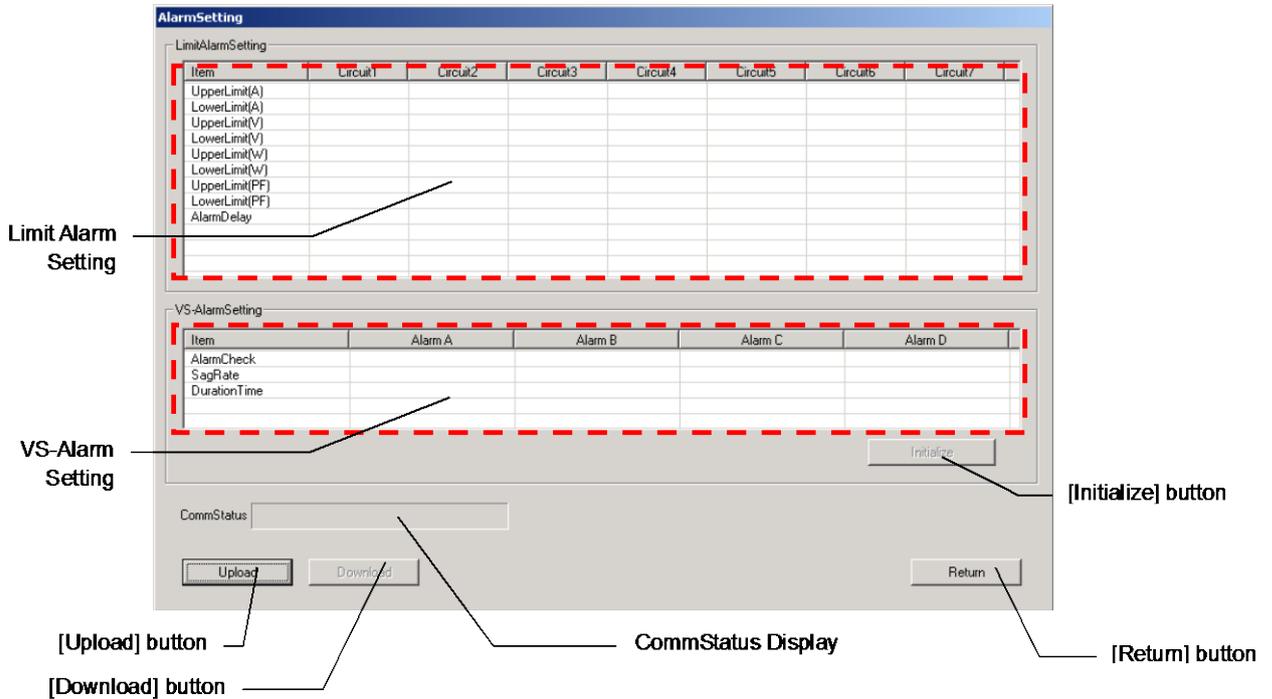
- ◆ Names of each part
- ◆ Contents of an alarm setting read.
(Upload)
- ◆ Alarm setup performed.
- ◆ Alarm setting download to logging display unit.
(Download)

Chapter 9 Alarm setting

The setting value of a monitoring function can be changed on an alarm setting screen. This chapter explains the operation method in an alarm setting screen.

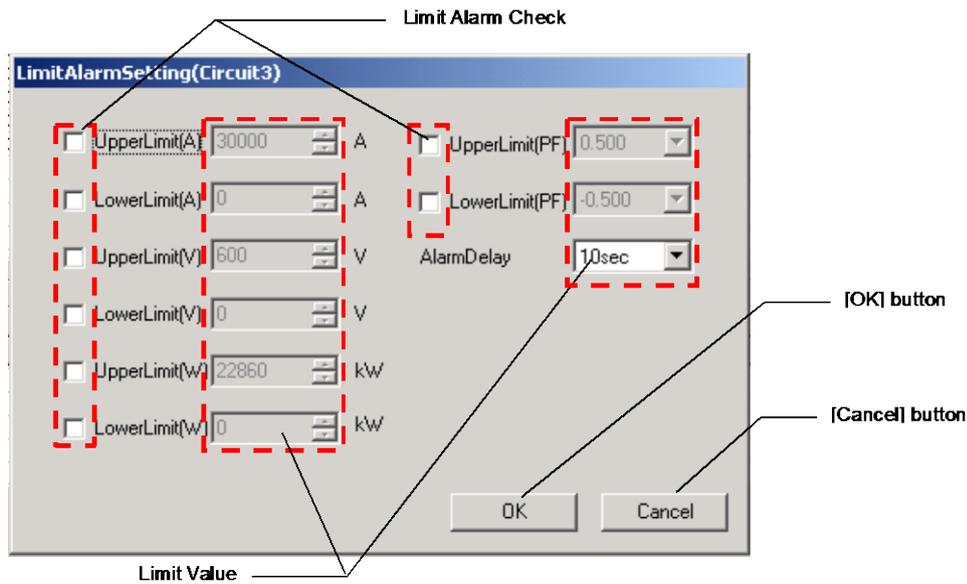
9.1 Names of each part

(A) ALARM SETTING SCREEN



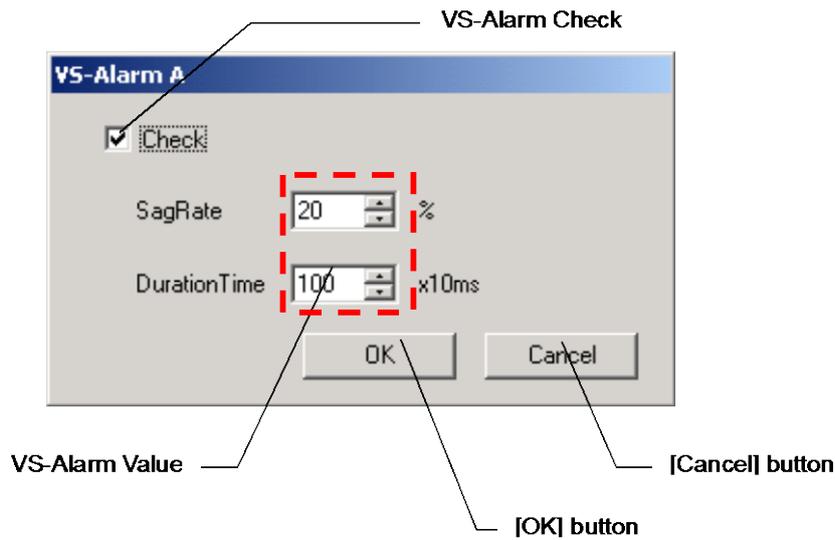
| Name | Function |
|---------------------|---|
| Limit Alarm setting | The contents of a setting of a high and low alarm are displayed. (Only Energy Measuring Unit corresponding to a high and low alarm setup) |
| VS-alarm setting | The contents of a setting of a VS-Alarm are displayed. (Only Energy Measuring Unit corresponding to a VS-Alarm) |
| CommStatus display | The present communication state is displayed. |
| [Upload] button | A setup of an Energy Measuring Unit main part is read via a Logging Display Unit. |
| [Download] button | A setup is written in an Energy Measuring Unit main part via a Logging Display Unit. |
| [Initialize] button | A VS-Alarm setup is returned to a default. |
| [Return] button | A basic setting screen is ended and returns to the main menu screen. |

(B) HIGH AND LOW ALARM SETTING SCREEN



| Name | Function |
|-------------------|---|
| Limit Alarm Check | Please check the checkbox of the item that requires surveillance. (Like <input checked="" type="checkbox"/>) |
| Limit Value | The maximum value or minimum value of each alarm is set up. |
| [O.K.] button | Returns to an alarm basic setting screen reflecting the contents of a change. |
| [Cancel] button | Contents of a change are canceled and returns to an alarm setting screen. |

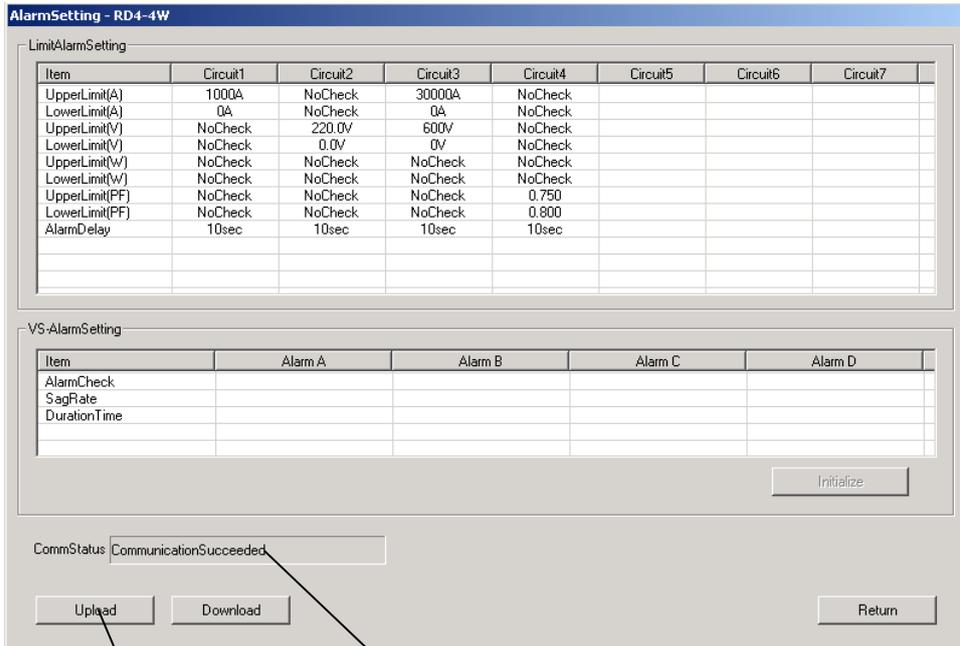
(C) VS-ALARM SETTING SCREEN



| Name | Function |
|-----------------------------|---|
| VS-Alarm surveillance setup | VS-Alarm surveillance or no surveillance is set up. |
| VS-Alarm setup | The rate of sag and continuation time is set up. |
| [OK] button | Returns to an alarm setting screen reflecting the contents of change. |
| [Cancel] button | Contents of a change are canceled and returns to an alarm setting screen. |

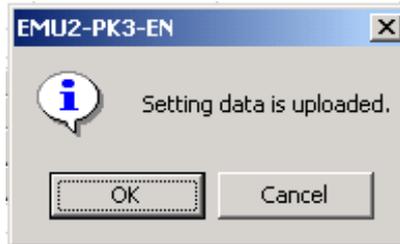
9.2 Contents of an alarm setting read (upload).

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the alarm setting screen.



Upload button Communication state display

- (3) Clicking on the [Upload] button displays the following message. Clicking on the [OK] button starts read-out (upload) of the contents set as the Logging Display Unit.



- (4) Messages corresponding to the communication condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|--|
| Under communication | It is from an Energy Measuring Unit main part at a Logging Display Unit course. The contents of an alarm setting are read. |
| Communication success | It is from an Energy Measuring Unit main part at a Logging Display Unit course. A read alarm setup is displayed. |
| Communication error | Communication is not performed normally. Please check connection. |

9.3 Alarm setup performed.

(a) High and low alarm setup

* This setup can be performed only from the model corresponding to a high and low alarm.

(1) After the completion of upload, a click of the "circuit X" portion of a circuit to change a setup of the high and low alarm setting display area displays a high and low alarm setting screen.

| Item | Circuit1 | Circuit2 |
|----------------|----------|----------|
| UpperLimit(A) | 1000A | NoCheck |
| LowerLimit(A) | 0A | NoCheck |
| UpperLimit(V) | NoCheck | 220.0V |
| LowerLimit(V) | NoCheck | 0.0V |
| UpperLimit(W) | NoCheck | NoCheck |
| LowerLimit(W) | NoCheck | NoCheck |
| UpperLimit(PF) | NoCheck | NoCheck |

Please click the "circuit X" of a circuit to make a setting change.

(2) Perform a high and low alarm surveillance setup of each item, and a setup of an upper minimum value, and click the [O.K.] button.

Limit Alarm Check

Limit Value

[OK] button

(High and low alarm surveillance setup)

A check is made for ON- when surveilling an object item.

(Upper minimum value setup)

The upper minimum value of an object item is inputted. Select a PF and alarm delay time value from a combo box.

(The range of each item that can be set up)

| Item | Range | Step | Initial value |
|------------------------|--|---|---------------------------|
| Current maximum | 0.0-primary current value (A) | 5A-30A : 0.01A step | All load current |
| Current minimum | | 40A-300A : 0.1A step 400A-3000A : 1A step 4000A-30000A : 10A step | 0.0 |
| Voltage maximum | 0.0-primary voltage value x15/11 *1 | 110V ≤ primary voltage < 440V : 0.1V step | Total load voltage |
| Voltage minimum | | 440V ≤ primary voltage < 3300V : 1V step 3300V ≤ primary voltage < 110000V : 10V step | 0.0 |
| Electric power maximum | 0.00- total load electric power *2 | Less than 12kW : 0.01kW step | Total load electric power |
| Electric power minimum | | 12kW or more less than 120kW : 0.1kW step 120kW or more less than 1200kW : 1kW step 1200kW or more less than 12000kW : 10kW step 12000kW or more less than 120000kW : 100kW step | 0.00 |
| PF maximum | - 0.500- -0.950, 1.000-0.500 | 0.050 step | 0.500 |
| PF minimum | | | -0.500 |
| Alarm Delay time | 0sec/5sec/10sec/20sec/ □30sec/40sec/50sec/ □1min/2min/3min/4min/5min | - | 10sec |

※1 Surveillance of the voltage top minimum surveillance of 3P4W on the voltage between lines.

※2 Find the total electric power load by the following formulas.

(Total electric power load) = (primary voltage setting value) x (primary current setting value) x (Phase&Wiring coefficient)

Phase&Wiring coefficient: 1P2W=1
1P3W=2
3P3W=1.73
3P4W=1.73 *3

※3 Use the voltage between lines for calculation of the total electric power load of 3P4W.

Example primary voltage: In the case of 63.5V/110V and primary current: 40A

(Total electric power load) = 110x40x1.73=7612 (W)

<Cautions>

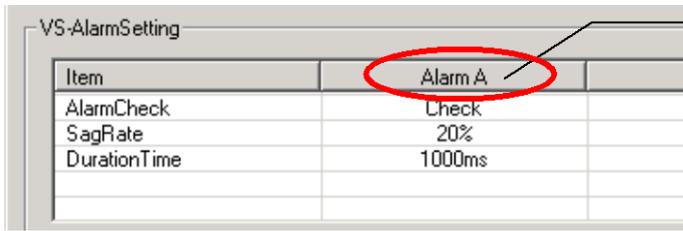
Model EMU2-RD2(4)-Δ-4W (3P4W), an upper minimum setup of the circuit 2 (and circuit 4) voltage cannot be performed.

Although a setting-on screen change is made, it is not reflected in the case of download implementation.

(b) VS-Alarm Setting

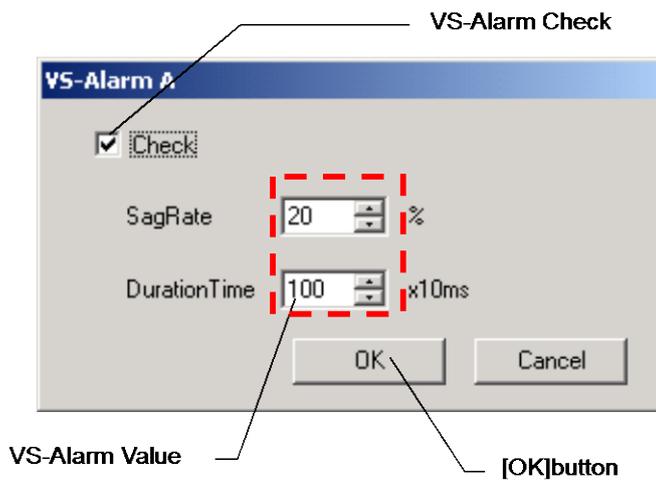
* This setting can be performed only from the model corresponding to a VS-Alarm.

- (1) After the completion of upload, a click of the "alarm **" portion of an alarm to change a setup of VS-Alarm setting display area displays a VS-Alarm setting screen.



Please click the "Alarm X" of an Alarm to make a setting change.

- (2) Perform a high and low alarm surveillance setup of each item, and a setup of an upper minimum value, and click the [O.K.] button.



(VS-Alarm surveillance setup)

A check is made for on-(L) when surveilling.

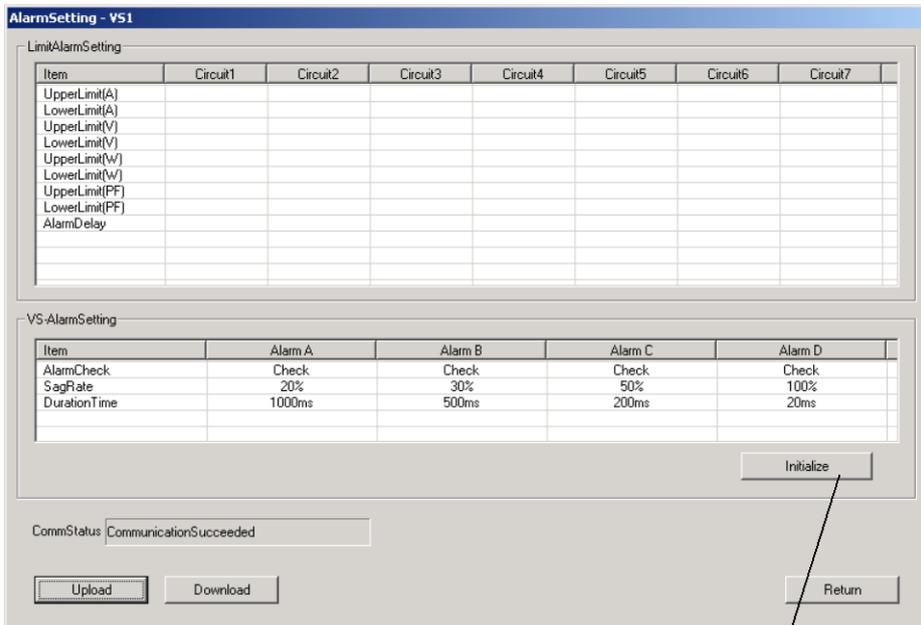
(VS-Alarm setup)

Temporal duration is input as the rate of sag.

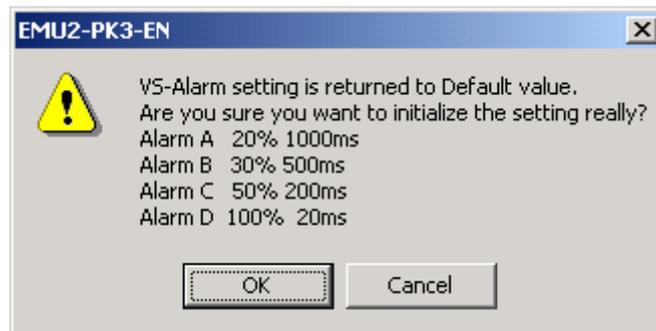
(The range of each item that can be set up)

| Item | Range | Step | Initial value |
|-------------------|----------------|------|---------------|
| Surveillance | On Off (☑ ☐) | - | Off (☐) |
| The rate of sag | 1-100 (%) | 1% | |
| Continuation time | 2-1000 (x10ms) | 10ms | |

- (3) If the [Initialize] button when returning all VS-Alarms to a default value is clicked, a check message will be displayed, and if the [OK] button is clicked, all VS-Alarms will return to a default value.



[Initialize]button



* In the case where an alarm setup is performed, the following message are displayed .

| Display timing | Display message | Handling method |
|---|---|--|
| When upload is performed |  | The Logging Display Unit has not started or it did not connect correctly. Please check the power supply of a Logging Display Unit, and connection. |
| When an upper minimum value setup is performed and when a VS-Alarm setup is performed |  | It was to be set up at an upper minimum value out of the range. Please input the right setting value for the item displayed by the message. |
| When download is performed |  | It was acquired at the time of download. Energy Measuring Unit The model code differs from the model at the time of upload. Again, please perform setting change and download after uploading. |

Chapter 10

Clock Setting

About this chapter

This chapter explains the following .

- ◆ Names of each part
- ◆ Upload clock
- ◆ Clock download to logging display unit and EcoMonitorPro

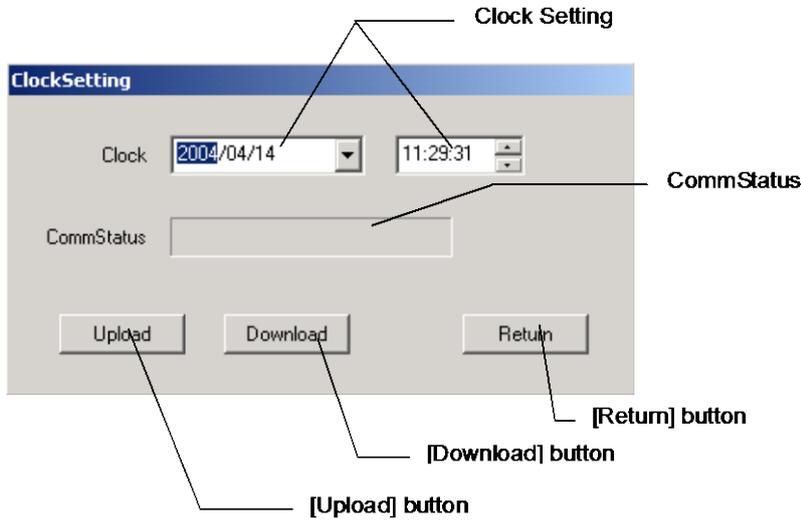
Chapter 10 Clock Setting

On a clock setting screen, a setting change of the internal clock of a Logging Display Unit can be made.

The clock information on a Logging Display Unit has influence on time specification logging, the demand time limit, etc.

This chapter explains the operation method in a clock setting screen.

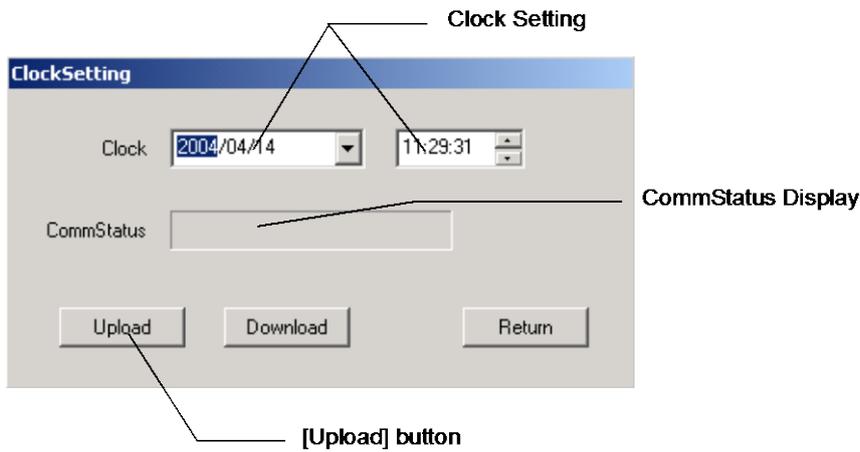
10.1 Names of each part



| Name | Function |
|--------------------|--|
| Date time setup | The date time is set . (When uploaded, display clock of Logging Display Unit) |
| CommStatus Display | The present communication state is displayed. |
| [Upload] button | The time of a Logging Display Unit is read. |
| [Download] button | A time setup is performed for a Logging Display Unit and EMU. |
| [Return] button | The clock setting screen is ended and returns to the main menu screen. |

10.2 Upload Clock

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the Clock Setting screen.

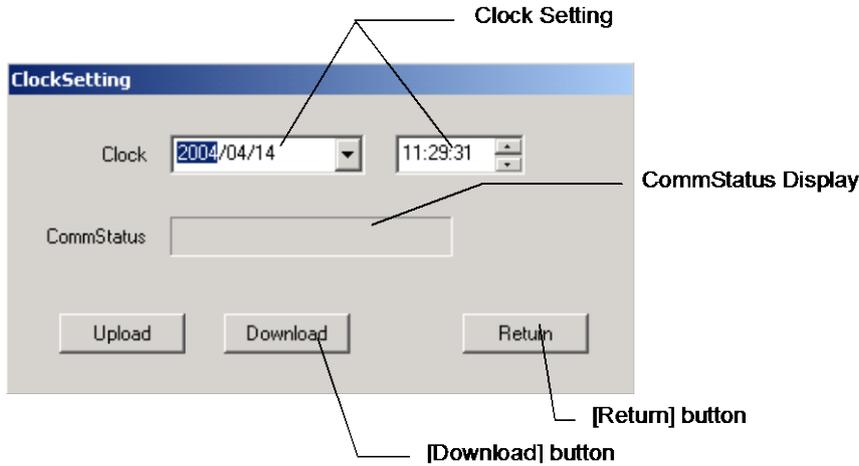


- (3) Clicking on the [Upload] button reads the time.
- (4) Messages corresponding to the communication conditions are displayed on the CommStatus Display.

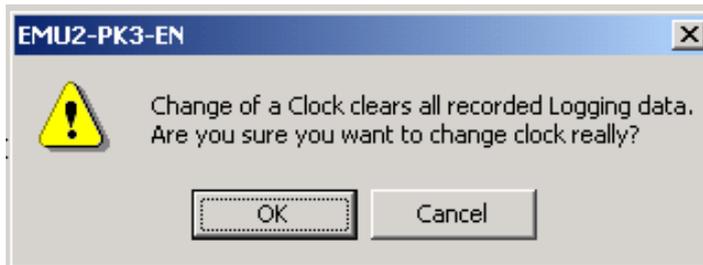
| Display message | Condition |
|-----------------------|---|
| Under communication | Time is read from the Logging Display Unit. |
| Communication success | The time read from the Logging Display Unit is displayed. |
| Communication error | Communication is not performed normally. Please check connection. |

10.3 Clock download to Logging Display Unit and EcoMonitorPro.

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the Clock Setting screen.



- (3) If the [Download] button is clicked, the following check message will be displayed, and time will be set if the [OK] button is clicked.



- (4) Messages corresponding to the communication conditions are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | A Logging Display Unit and the time of EMU are set . |
| Communication success | It succeeded in time setup of the Logging Display Unit and EMU. |
| Communication error | Communication is not performed normally. Please check connection. |

(The range of time that can be set .)
 January 1, 2000 00:00:00 - December 31, 2099 23:59:59

* In a case where time setup is performed, the following messages are displayed .

| Display timing | Display message | Handling method |
|--|---|--|
| When time reading and time setup are performed |  | The Logging Display Unit has not started or it did not connect correctly. Please check the power supply of a Logging Display Unit, and connection. |

Chapter 11

Reset

About this chapter

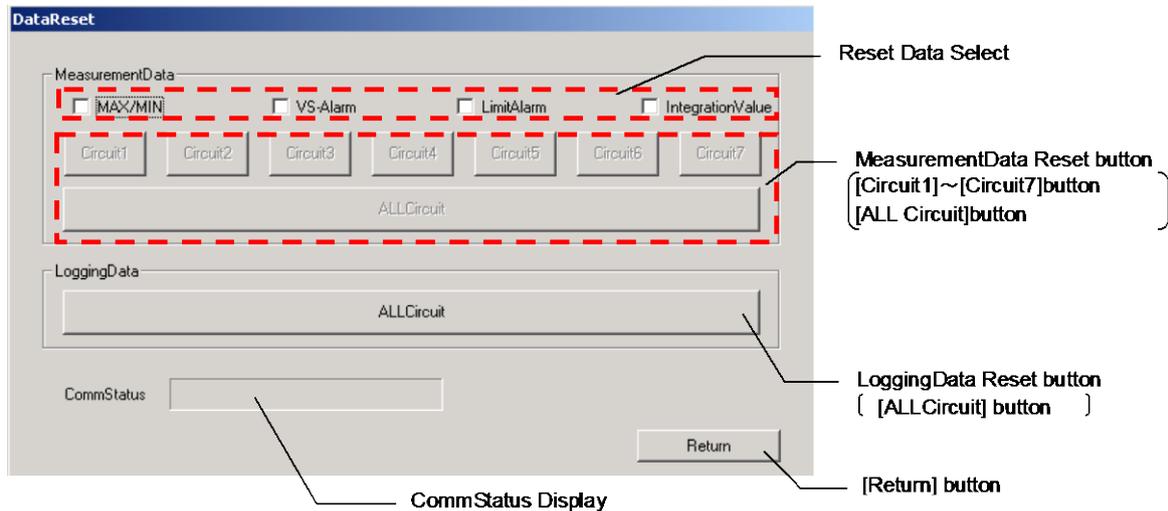
This chapter explains the following .

- ◆ Names of each part
- ◆ Reset data.

Chapter 11 Reset

On a reset screen, reset of the maximum and minimum value stored in a Logging Display Unit, alarm data, an addition value, upper minimum alarm, and logging data can be performed. Reset of logging data can select object data and a circuit number, and can be performed individually. This chapter explains the operation method in a reset screen.

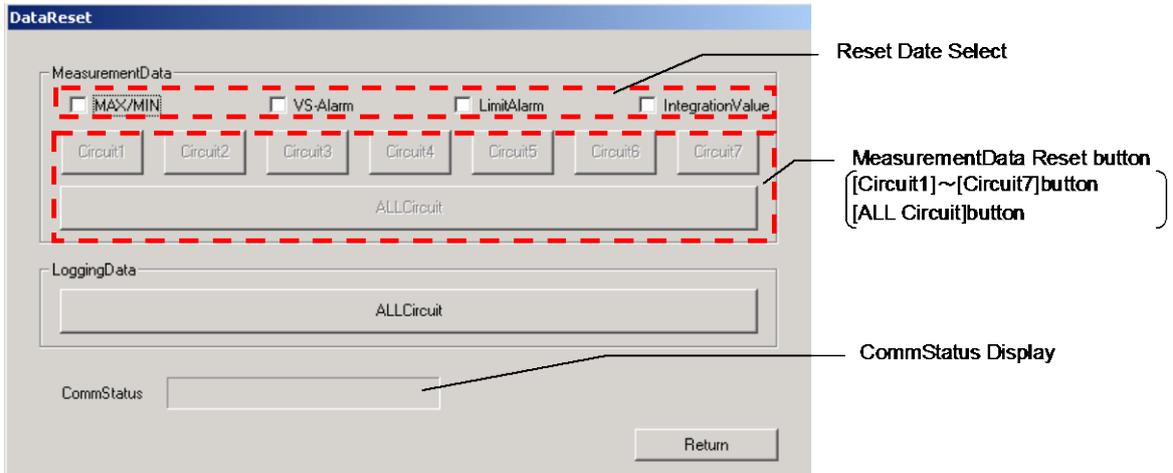
11.1 Names of each part



| Name | Function |
|-----------------------------|--|
| Reset Data Select | Data for reset is set up. |
| MeasurmentData Reset button | Click this button for reset of circuit (?) selected data(原稿). |
| Logging data reset | Click this button for Logging data reset. Reset of logging data is performed by all circuit packages. |
| CommStatus Display | The condition of the present communication is displayed. |
| [Return] button | A reset screen is ended and returns to the main menu screen. |

11.2 Reset measurement value data.

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the reset screen.



- (3) MeasurementData Reset button of the circuit to be reset is clicked for ([Circuit 1] - [Circuit 7] and [ALLCircuit]) displays the following message.)



If the [Yes] button is clicked, it will perform a clearance.

- (4) The following messages corresponding to the communication condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | Reset for [set up] reset is performed. |
| Communication success | Reset for [set up] reset is completed. |
| Communication error | Communication is not performed normally. Please check connection. |

<Cautions>

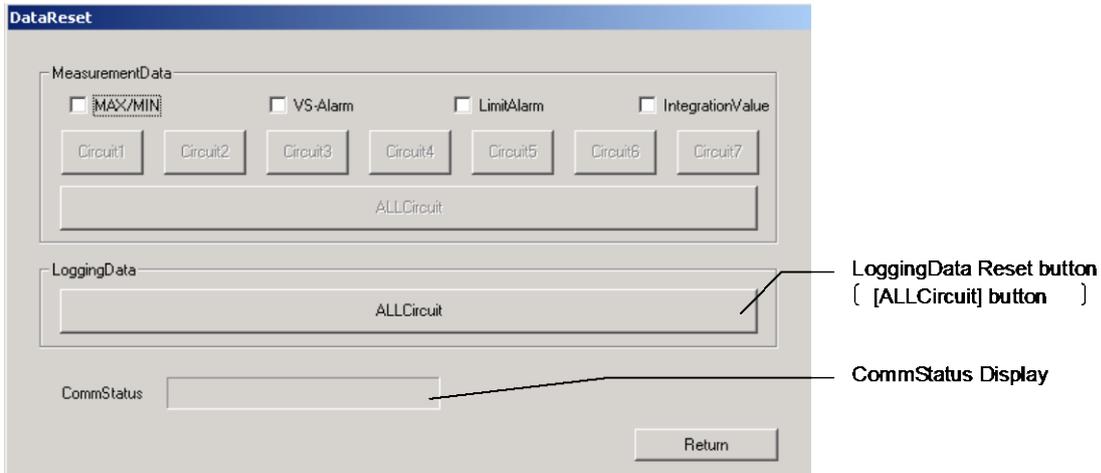
Model EMU2-RD2(4)-*-4W (3P4W), since the voltage input of circuits 1 and 2 (and circuits 3 and 4) is common, at the time of execution, the voltage top minimum AL data of a common circuit is simultaneously reset for the upper minimum AL reset.

Example

Circuit 1 top minimum AL reset -> The voltage top minimum AL data of a circuit 1 and a circuit 2 is reset.

11.3 Reset logging data

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the reset screen.



- (3) Clicking on the logging data reset [ALLCircuits] button displays the following message.



If the [Yes] button is clicked, it will perform a clearance.

- (4) The following messages corresponding to the communicative condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | Reset of logging data is performed. |
| Communication success | Reset of logging data is completed. |
| Communication error | Communication is not performed normally. Please check connection. |

* In the case data reset is performed, the following messages are displayed .

| Display timing | Display message | Handling method |
|--|---|--|
| Reset operation When it is carried out |  | The Logging Display Unit has not started or it did not connect correctly. Check the power supply of the Logging Display Unit, and please check the connection. |
| Reset operation When it is carried out |  | Energy connected An item that is not in a measurement unit has been selected as the candidate for reset. Please check the selection item for reset |

Chapter 12

Preset

About this chapter

This chapter explains the following .

- ◆ Names of each part
- ◆ Present addition value read (Upload)
- ◆ Preset setup performed
- ◆ Preset to Energy Measuring Unit (EcoMonitor

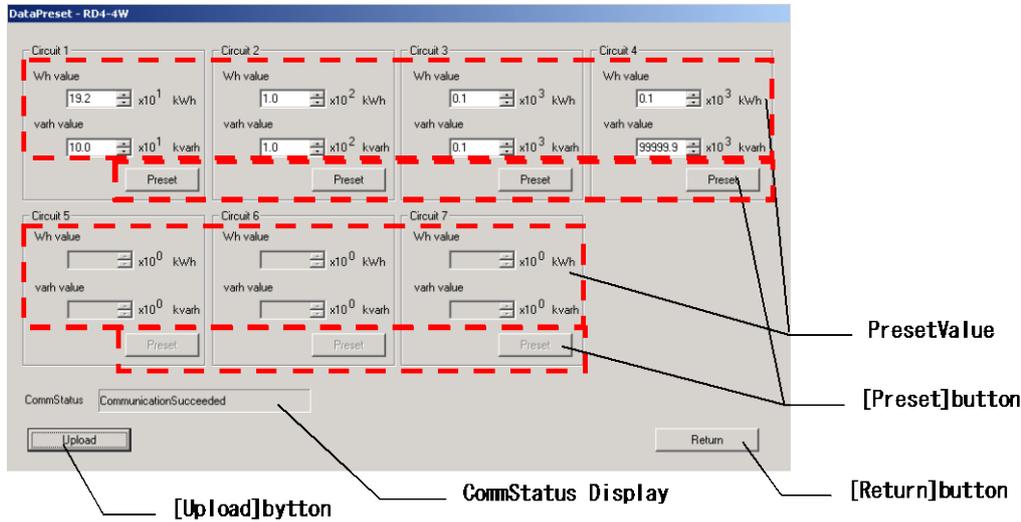
Chapter 12 Preset

On a Preset screen, the direction value of Electric power totaled by the Energy Measuring Unit main part and Reactive electric power can be set (Preset).

Preset can perform a setup of Electric power, and Reactive electric power for each circuit.

This chapter explains the operation method in a Preset screen.

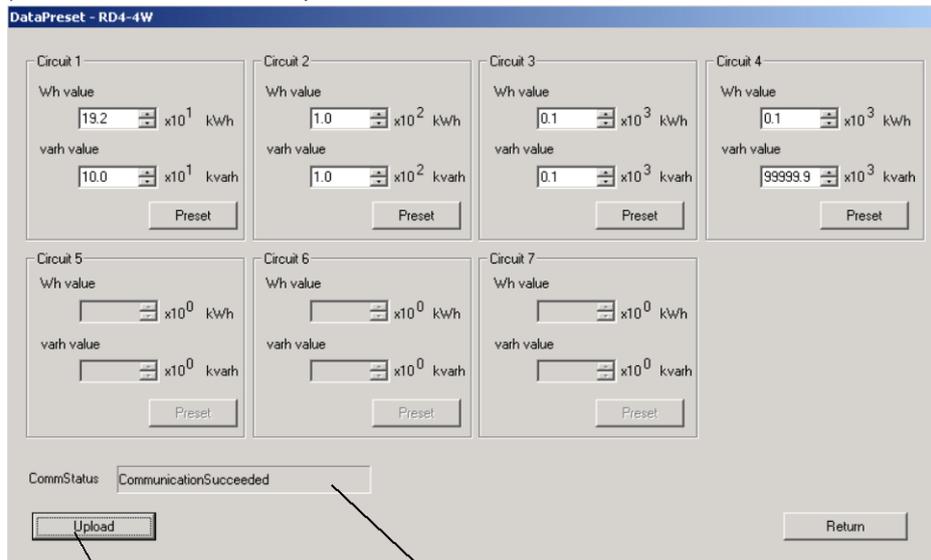
12.1 Names of each part



| Name | Function |
|--------------------|--|
| Preset value setup | A preset value is input. |
| [Preset] button | Preset according to circuit is performed. |
| CommStatus Display | The present communication state is displayed. |
| [Upload] button | It is from an Energy Measuring Unit main part at a Logging Display Unit course. An addition value is read. |
| [Return] button | A Preset screen is ended and returns to the main menu screen. |

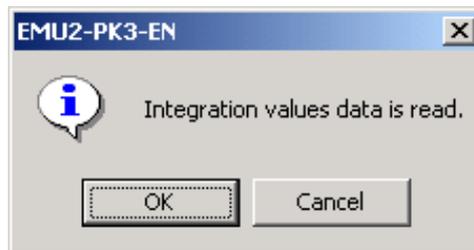
12.2 Present addition value read (upload).

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the Preset screen.



[Upload] button CommStatus Display

- (3) Clicking on the [Upload] button displays the following message. Clicking on the [OK] button starts read-out (upload) of the contents set as the Logging Display Unit.

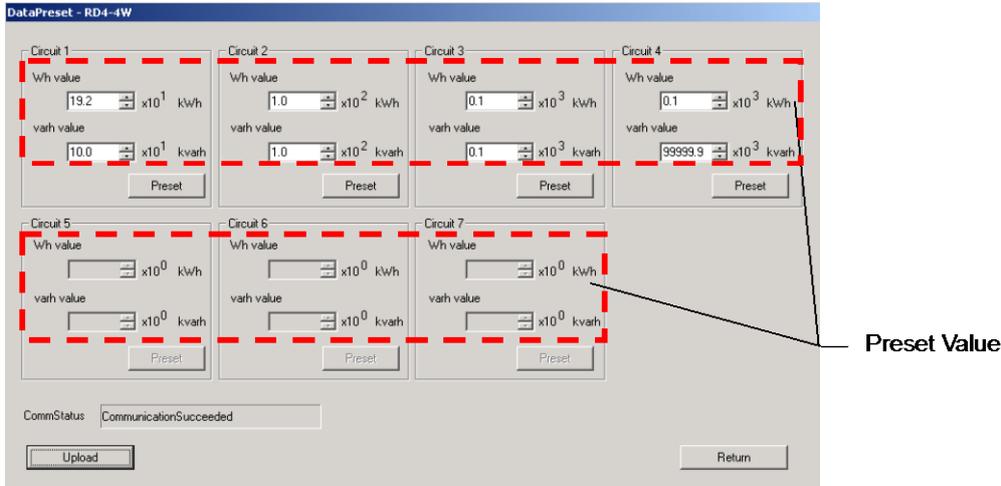


- (4) Messages corresponding to the communication condition are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|--|
| Under communication | The addition value of the present value is read. |
| Communication success | Read-out of the addition value of the present value was completed. |
| Communication error | Communication is not performed normally. Please check connection. |

12.3 Preset setup is performed.

- (1) Since the input of the item in which a Preset setup is possible is attained after the completion of upload, perform a preset value setup of a circuit to perform a Preset setup.



(The range of each item that can be set up)

| Item | Range | Step |
|------------|-----------------------------------|-----------------------|
| Wh value | 0.0 - 999999 x multiplier (kWh) | Multiplier value step |
| varh value | 0.0 - 999999 x multiplier (kvarh) | |

(Total load electric power and multiplier)

| All load electric power ranges | 乘率 |
|--|------|
| 0 ≤ Total load electric power < 12kW | 0.01 |
| 12kW ≤ Total load electric power < 120kW | 0.1 |
| 120kW ≤ Total load electric power < 1200kW | 1 |
| 1200kW ≤ Total load electric power < 12000kW | 10 |
| 12000kW ≤ Total load electric power < 120000kW | 100 |
| 120000kW ≤ Total load electric power < 1200000kW | 1000 |

(The calculation method of total load electric power)

Total load electric power = primary voltage x primary current x Phase&Wiring coefficient

Phase&Wiring coefficient = 1P2W 1.0

1P3W 2.0

3P3W 1.73

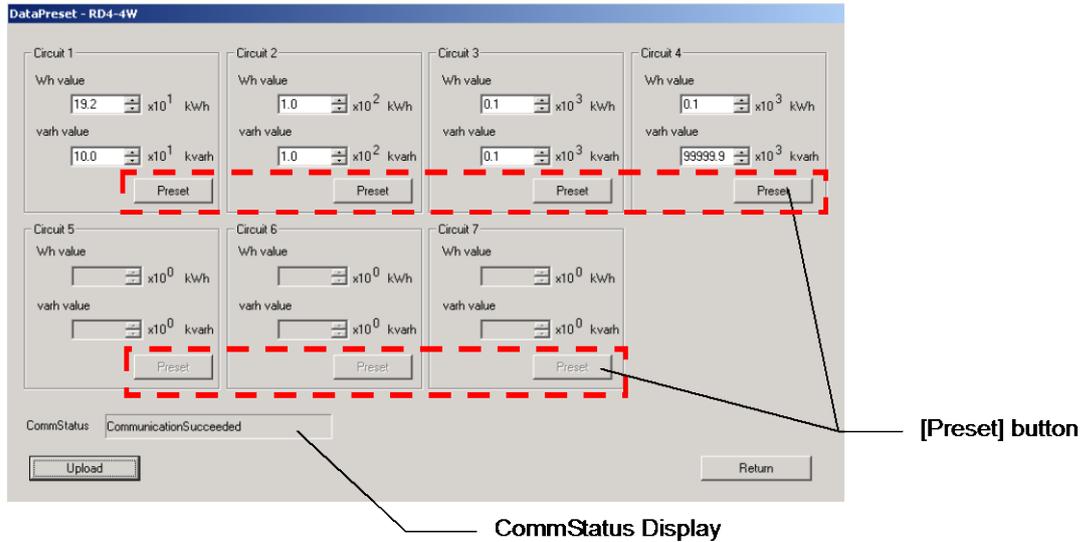
3P4W 1.73*

* 3P4W calculate primary voltage for the voltage between lines.

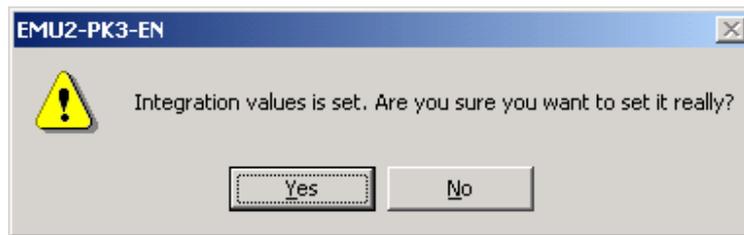
(In calculation of correlation voltage, it is Phase&Wiring coefficient = 3.0)

12.4 Preset data to Energy Measuring Unit (EcoMonitorPro)

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the Preset screen.



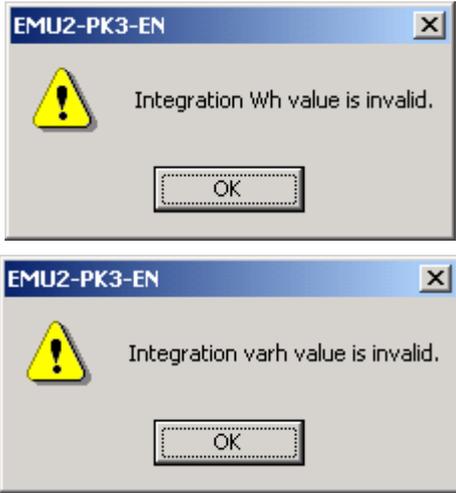
- (3) Click the [Preset] button of an object circuit to perform Preset of an individual circuit. If a check message is displayed, the [Yes] button is clicked, the writing of the set-up contents of Preset will be started.



- (4) Messages corresponding to the communication conditions are displayed on the CommStatus Display.

| Display message | Condition |
|-----------------------|---|
| Under communication | Preset is performed. |
| Communication success | That of Preset was completed. |
| Communication error | Communication is not performed normally. Please check connection. |

* In the case of data reset being performed, the following messages are displayed .

| Display timing | Display message | Handing method |
|--|--|--|
| When upload or Preset operation is performed |  | The Logging Display Unit has not started or it did not connect correctly. Please check the power supply of a Logging Display Unit, and connection. |
| When a Preset setup is performed |  | The inputted (inputted – ok) preset value exceeds the range that can be set up. Please check the setting value. |
| When Preset operation is performed |  | The item which is not EMU connected is selected as the candidate for reset. Please check the selection item for reset. |

Chapter 13

VoltageSag-Alarm History

About this chapter

This chapter explains the following .

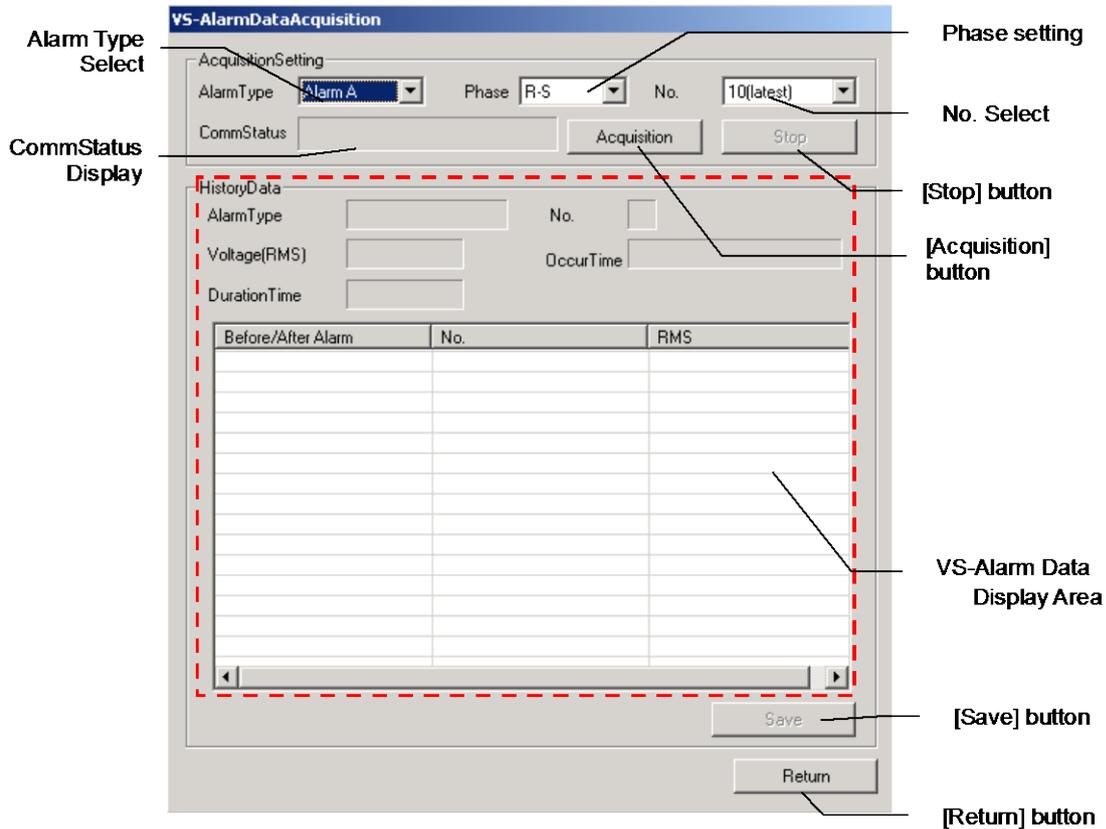
- ◆ Names of each part
- ◆ A Sag history is collected and saved.

Chapter 13 VoltageVS-Alarm history

On a VS-Alarm history data collection screen, the history data of the generating time of the instant sag detected in the VS-Alarm monitoring function of an Energy Measuring Unit main part and the voltage effective value of order is acquirable.

This chapter explains the operation method in a VS-Alarm history data collection screen.

13.1 Names of each part

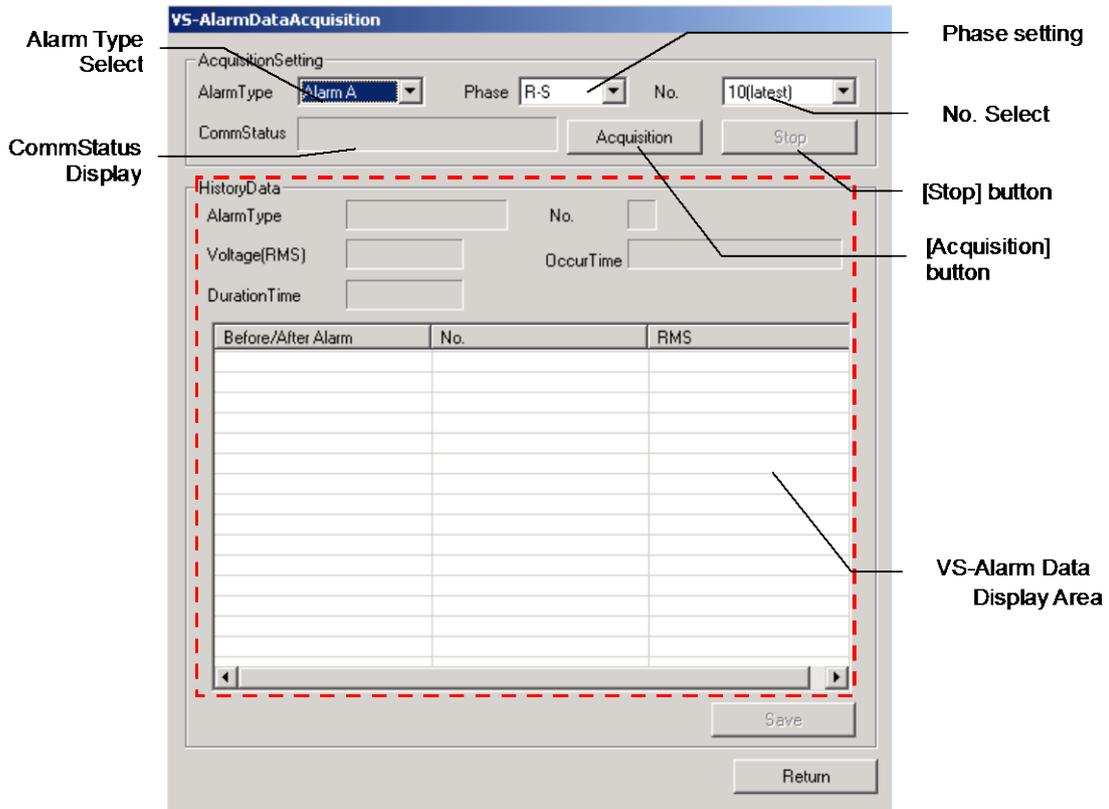


| Name | Function |
|----------------------------|---|
| Alarm Type Select | Alarm Type is selected. |
| Phase Select | The target Phase is selected. |
| No. Select | A Record No. is selected. |
| CommStatus Display | The present communication state is displayed. |
| [Acquisition] button | Acquisition of a VA-Alarm Data is started. |
| [Stop] button | Acquisition is stopped. |
| VS-Alarm Data Display Area | The information on the collected VS-Alarm Data is displayed. The data number changes with power supply frequency, and serves as 60Hz: 60 data and 50Hz: 50 data. |
| [Save] button | The collected Sag histories are saved. |
| [Return] button | A VS-AlarmDataAcquisition screen is ended and it returns to a main menu screen. |

13.2 VS-Alarm history data is collected.

* As for this screen, only the instantaneous stop (ok-?) corresponding to VS-Alarm surveillance functions.

- (1) Connect the PC with the Logging Display Unit with the included USB cable.
- (2) Start the PC-Kit and open the VS-Alarm screen.



(3) Set up the history to be collected by performing alarm classification selection, Phase Select, and history selection.

(4) If the [Acquisition] button is clicked, a check message will be displayed, and collection will be started if the [OK] button is clicked.

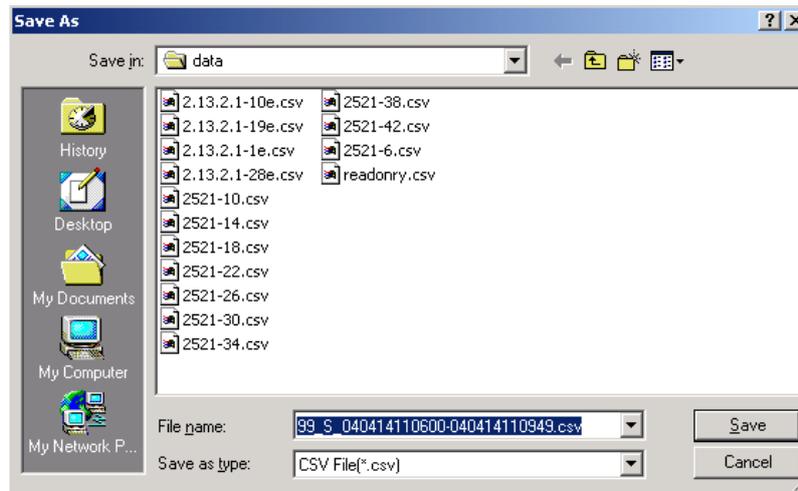


(5) In midstream, please click the [stop] button to stop collection.

(6) Completion of processing of data collection displays the history information collected in the VS-Alarm information display area.

(7) The [Save] button can be used if data collection is completed normally.

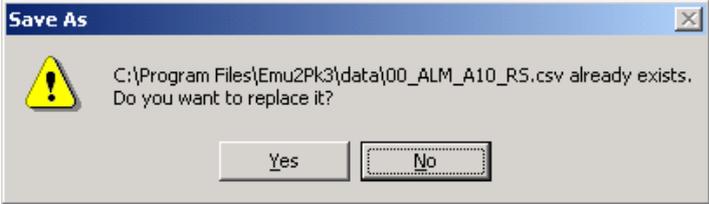
- (8) Clicking on the [Save] button displays the following dialog box.
Please specify a Save folder and a save file name and save the csv file.



The Save folder of an initial value is
<PC-Kit installation location> ¥Data

* In case collection of a VS-Alarm and save are performed, the following messages are displayed .

| Display timing | Display message | Handling method |
|---------------------------------|-----------------|--|
| In the case of being collected. | | The Logging Display Unit has not started or it did not connect correctly. Please check the power supply of a Logging Display Unit, and connection. |
| In the case of being collected. | | The Energy Measuring Unit connected is not VS-Alarm. This function can be used only with Model EMU2-VS1-P |

| Display timing | Display message | Handling method |
|--------------------------------------|--|---|
| When collected |  | There is no specified VS-Alarm data. Please check the collection setup. |
| When save operation is performed |  | It is displayed when the same file name exists in the specified Save folder. Please change the file name and save the file. |
| When the save operation is performed |  | The error occurred at the time of saving a file. An error number and the contents of an error change with the condition. Please refer to a supplementary file error list regarding the details of the error, and the countermeasure method. |

Chapter 14

Appendix

About this chapter

This chapter explains the following .

- ◆ CSV file specification
- ◆ CSV file composition
- ◆ Troubleshooting
- ◆ Specification

Chapter 14 Appendix

14.1 CSV file specification

The specifications of a CSV file are as follows.

| Item | Specification | |
|-----------------------|---|--|
| File format | CSV (comma separated value) file (*.csv) | |
| File size | It changes with output setup, such as a kind of data, and the number of circuits. | |
| File name | Data Type | Default file name |
| | Logging (CyclicSampleMode) | XX_Y_- [YYMMDDhhmmss]-[YYMMDDhhmmss].csv *1 *3 * 4 |
| | Logging (TimeOfUseMode) | XX_TOU_[YYMMDDhhmmss]-[YYMMDDhhmmss].csv *1 *3 * 4 |
| | VS-Alarm | 00_ALM_[AlarmType][No]_[Phase] .csv *2 *3 |
| File storing location | PC-Kit installation location¥Data*3 | |

*1) [YYMMDDhhmmss] shows start time and end time, and is double figures, respectively.

- XX shows the setting number of the equipment name selected on the logging collection screen (01-99).

However, the equipment name is set to "00" when one is not registered.

- Y shows use data type of output data - indicating (1-hour data: H, 1-minute data: M, 1-second data: S)

Ex.) Case of start time is 0:0 0 on January 1, 2003, end time is 23:59 59 on January 31, 2003.and

MachineNameSetting No is 1

01_S_030101000000-030131235959.csv

*2) Selected value of Alarm Type, Phase, and No. is set.

Ex.) Case of Alarm No A, R-S Phase, Data No=10

00_A10_RS.csv

*3) It can be changed each time at the time of a save.

14.2 CSV file composition

Fundamental file composition is as follows.
 (Periodic management difference)

```
"Machine Name", "office"

"Circuit 1", "Circuit 2", "Circuit 3", "Circuit 4", "Circuit 5",
"Wh", "A", "V", "W", "Wh", "A", "V", "W", "Wh", "A", "V" --
",", "R", "R-S", ",",
",", "kWh", "A", "V", "kW", "kWh", "A", "V", "kW", "kWh", "A", "V", "kW", "kWh", "A", "V", "kW",
"2003/11/14 14:41:00",1.54,102.2,0.153,6.13,101.2,0.604,8.2,101.7,0.815,91.4,101.8,9.05,,123,102.0,12.19,
"2003/11/14 14:42:00",0.00254,1.54,102.2,0.153,0.00876,6.13,101.3,0.604,0.01176,8.2,101.7,0.815,0.1512,91.5,101.8,....
"2003/11/14 14:43:00",0.00256,1.54,102.2,0.153,0.00876,6.12,101.3,0.604,0.01176,8.2,101.7,0.815,0.1518,91.5,101.8,....
```

If the tool that opens a csv file is, for example MS-Excel, it will be displayed as follows.

(1) MachineName

(2) CircuitName

(3) DataHeader

(4) TimeStamp

(5) SagFlag

| | A | B | C | D | E | F | G | H | I | J | K | L | M | N |
|----|--------------|---|--------|------------------|---------|-------|-----------|-------|---------|-------|-----------|---------|---------|-------|
| 1 | Machine Name | | office | | | | | | | | | | | |
| 2 | | | | | | | | | | | | | | |
| 3 | | | | | | | | | | | | | | |
| 4 | | | | Circuit 1 | | | Circuit 2 | | | | Circuit 3 | | | |
| 5 | | | | Wh | A | V | W | Wh | A | V | W | Wh | A | V |
| 6 | | | | R | R-S | | R | R-S | | R | R-S | | R | R-S |
| 7 | | | | kWh | A | V | kW | kWh | A | V | kW | kWh | A | V |
| 8 | | | | 2003/11/14 14:41 | 1.54 | 102.2 | 0.153 | 6.13 | 101.2 | 0.604 | | 8.2 | 101.7 | 0.815 |
| 9 | | | | 2003/11/14 14:42 | 0.00254 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.13 | 101.3 | 0.604 | 0.01176 | 8.2 |
| 10 | | | | 2003/11/14 14:43 | 0.00256 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.12 | 101.3 | 0.604 | 0.01176 | 8.2 |
| 11 | | | | 2003/11/14 14:44 | 0.00258 | 1.54 | 102.2 | 0.153 | | 6.12 | 101.4 | 0.604 | | 8.2 |
| 12 | | | | 2003/11/14 14:45 | 0.0026 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.11 | 101.4 | 0.604 | 0.01176 | 8.2 |
| 13 | | | | 2003/11/14 14:46 | 0.00262 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.11 | 101.5 | 0.604 | 0.01176 | 8.2 |
| 14 | | | | 2003/11/14 14:47 | 0.00264 | 1.54 | 102.2 | 0.153 | | 6.1 | 101.5 | 0.604 | | 8.2 |
| 15 | | | | 2003/11/14 14:48 | 0.00266 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.1 | 101.6 | 0.604 | 0.01176 | 8.2 |
| 16 | | | | 2003/11/14 14:49 | 0.00268 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.09 | 101.6 | 0.604 | 0.01176 | 8.2 |
| 17 | | | | 2003/11/14 14:50 | 0.0027 | 1.54 | 102.2 | 0.153 | | 6.09 | 101.7 | 0.604 | | 8.2 |
| 18 | | | | 2003/11/14 14:51 | 0.00272 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.08 | 101.7 | 0.604 | 0.01176 | 8.2 |
| 19 | * | | | 2003/11/14 14:52 | 0.00274 | | | | 0.00876 | | | 0.01176 | | |
| 20 | * | | | 2003/11/14 14:53 | | | | | | | | | | |
| 21 | * | | | 2003/11/14 14:54 | | | | | | | | | | |
| 22 | * | | | 2003/11/14 14:55 | | | | | | | | | | |
| 23 | * | | | 2003/11/14 14:56 | | | | | | | | | | |
| 24 | * | | | 2003/11/14 14:57 | | | | | | | | | | |
| 25 | | | | 2003/11/14 14:58 | 0.00286 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.05 | 102.1 | 0.604 | 0.01176 | 8.2 |

- (1) Machine Name
The Machine name selected at the time of Data Acquisition.
- (2) Circuit Name
The circuit name which was selected on the Data Acquisition screen and which is defined as the Machine name.
* When not set up, "Circuit n" (n shows a circuit number) serves as a name.
- (3) Data Header
Refer to the attached table.
- (4) Time Stamp
Time of data.
- (5) Sag Flag
** The mark is applied to the record, calculated from measurement data in a power failure period.

(TimeOfUseMode)

```

"Machine Name", "office"

,Time, 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 15, 16, 17, 18, 19, 20, 21, 22, 23
,time zone, 3, 3, 3, 3, 3, 3, 3, 3, 4, 1, 1, 1, 1, 4, 1, 1, 1, 4, 2, 2, 2 and 2. .3
,"loader" ,,,, "header" ,,,, "mounter" ,,,, "belt motor" ,,,, "blank" ,,,, "Circuit6" ,,,, "Circuit7" ,,,,
,,1,2,3,4,1,2,3,4,1,2,3,4,1,2,3,4,1,2,3,4
,"kWh", "kWh", --
"2003/11/14",,1.54,102.2,0.153,,6.13,101.2,0.604,,8.2,101.7,0.815,,91.4,101.8,9.05,,123,102.0,12.19,
"2003/11/15",,0.00254,1.54,102.2,0.153,0.00876,6.13,101.3,0.604,0.01176,8.2,101.7,0.815,0.1512,91.5,101.8,....
    
```

If the tool that opens a csv file is, for example, MS-Excel, it will be displayed as follows.

| | A | B | C | D | E | F | G | H | I | J | K | L | M |
|----|---|--------------|----------|-------|-------|--------|---------|-------|-------|---------|---------|-------|-------|
| 1 | | Machine Name | "office" | | | | | | | | | | |
| 2 | | | | | | | | | | | | | |
| 3 | | Time | 0 | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 |
| 4 | | time zone | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 3 | 4 | 1 | 1 |
| 5 | | | loader | | | header | | | | mounter | | | |
| 6 | | | | | | | | | | | | | |
| 7 | | (6)SagFlag | kWh | "kWh" | "kWh" | "kWh" | "kWh" | "kWh" | "kWh" | "kWh" | "kWh" | "kWh" | "kWh" |
| 8 | | 2003/11/14 | 0.00252 | 1.54 | 102.2 | 0.153 | 0.00874 | 6.13 | 101.2 | 0.604 | 0.01197 | 8.2 | 101.7 |
| 9 | | 2003/11/15 | 0.00254 | 1.54 | 102.2 | 0.153 | 0.00876 | 6.13 | 101.3 | 0.604 | 0.01176 | 8.2 | 101.7 |
| 10 | | 2003/11/16 | 0.00256 | 1.54 | 102.2 | 0.153 | 0.00878 | 6.13 | 101.4 | 0.604 | 0.01155 | 8.2 | 101.7 |
| 11 | | 2003/11/17 | 0.00258 | 1.54 | 102.2 | 0.153 | 0.0088 | 6.13 | 101.5 | 0.604 | 0.01134 | 8.2 | 101.7 |
| 12 | | 2003/11/18 | 0.0026 | 1.54 | 102.2 | 0.153 | 0.00882 | 6.13 | 101.6 | 0.604 | 0.01113 | 8.2 | 101.7 |
| 13 | | 2003/11/19 | 0.00262 | 1.54 | 102.2 | 0.153 | 0.00884 | 6.13 | 101.7 | 0.604 | 0.01092 | 8.2 | 101.7 |
| 14 | | 2003/11/20 | 0.00264 | 1.54 | 102.2 | 0.153 | 0.00886 | 6.13 | 101.8 | 0.604 | 0.01071 | 8.2 | 101.7 |
| 15 | | 2003/11/21 | 0.00266 | 1.54 | 102.2 | 0.153 | 0.00888 | 6.13 | 101.9 | 0.604 | 0.0105 | 8.2 | 101.7 |
| 16 | | 2003/11/22 | 0.00268 | 1.54 | 102.2 | 0.153 | 0.0089 | 6.13 | 102 | 0.604 | 0.01029 | 8.2 | 101.7 |
| 17 | | 2003/11/23 | 0.0027 | 1.54 | 102.2 | 0.153 | 0.00892 | 6.13 | 102.1 | 0.604 | 0.01008 | 8.2 | 101.7 |
| 18 | | 2003/11/24 | 0.00272 | 1.54 | 102.2 | 0.153 | 0.00894 | 6.13 | 102.2 | 0.604 | 0.00987 | 8.2 | 101.7 |
| 19 | * | 2003/11/25 | 0.00274 | 1.54 | 102.2 | 0.153 | 0.00896 | 6.13 | 102.3 | 0.604 | 0.00966 | 8.2 | 101.7 |
| 20 | * | 2003/11/26 | | | | | | | | | | | |
| 21 | * | 2003/11/27 | | | | | | | | | | | |
| 22 | * | 2003/11/28 | | | | | | | | | | | |
| 23 | * | 2003/11/29 | | | | | | | | | | | |
| 24 | | 2003/11/30 | 0.00284 | 1.54 | 102.2 | 0.153 | 0.00906 | 6.13 | 102.8 | 0.604 | 0.00861 | 8.2 | 101.7 |
| 25 | | 2003/12/1 | 0.00286 | 1.54 | 102.2 | 0.153 | 0.00908 | 6.13 | 102.9 | 0.604 | 0.0084 | 8.2 | 101.7 |
| 26 | | 2003/12/2 | 0.00288 | 1.54 | 102.2 | 0.153 | 0.0091 | 6.13 | 103 | 0.604 | 0.00819 | 8.2 | 101.7 |

(1) Machine Name

The equipment name selected at the time of data collection.

(2) Time Zones

The time zone for each set up on the setting screen. (Start time turns into output start time.)

(3) Circuit Name

The circuit name which was selected on the logging collection screen and which is defined as the equipment name.

* When not set up, "Circuit n" (n shows a circuit number) serves as a name.

(4) Data Header

Refer to the attached table.

(5) Time Stamp

Time of data.

(6) Sag Flag

*** The mark is applied to the record, calculated from measurement data in a power failure period.

* Please refer to the following table for each header according to data.

The header according to data (1/2)

| Data | | | Line2 | Line3 | Line4 | | |
|------------------|-----------------------|-----------------|------------|------------------|----------|---|---|
| | | | (DataName) | (DataNameDetail) | (Unit) | | |
| Current | PV | R | A | R | A | | |
| | | S | A | S | A | | |
| | | T | A | T | A | | |
| | | N | A | N | A | | |
| | | Total | A(Total) | | A | | |
| | Demand | R | A(Demand) | R | A | | |
| | | S | A(Demand) | S | A | | |
| | | T | A(Demand) | T | A | | |
| | | N | A(Demand) | N | A | | |
| Voltage | PV | R-S | V | R-S | V | | |
| | | S-T | V | S-T | V | | |
| | | T-R | V | T-R | V | | |
| | | R-N | V | R-N | V | | |
| | | S-N | V | S-N | V | | |
| | | T-N | V | T-N | V | | |
| | | Total | V(Total) | | V | | |
| Power | PV | | W | | kW | | |
| | Demand | | W(Demand) | | kW | | |
| Reactive Power | | | var | | kvar | | |
| Power Factor | | | PF | | | | |
| Frequency | | | Hz | | Hz | | |
| Harmonic Current | Total RMS | R | HA(Total) | R | A | | |
| | | S | HA(Total) | S | A | | |
| | | T | HA(Total) | T | A | | |
| | Total Distortion Rate | R | HA(%) | R | % | | |
| | | S | HA(%) | S | % | | |
| | | T | HA(%) | T | % | | |
| | RMS | Basic | R | HA1st | R | A | |
| | | | S | HA1st | S | A | |
| | | | T | HA1st | T | A | |
| | | 3rd | R | HA3rd | R | A | |
| | | | S | HA3rd | S | A | |
| | | | T | HA3rd | T | A | |
| | | 5th | R | HA5th | R | A | |
| | | | S | HA5th | S | A | |
| | | | T | HA5th | T | A | |
| | | 7th | R | HA7th | R | A | |
| | | | S | HA7th | S | A | |
| | | | T | HA7th | T | A | |
| | | 9th | R | HA9th | R | A | |
| | | | S | HA9th | S | A | |
| | | | T | HA9th | T | A | |
| | | 11th | R | HA11th | R | A | |
| | | | S | HA11th | S | A | |
| | | | T | HA11th | T | A | |
| | | 13th | R | HA13th | R | A | |
| | | | S | HA13th | S | A | |
| | | | T | HA13th | T | A | |
| | | Distortion Rate | 3rd | R | HA3rd(%) | R | % |
| | | | | S | HA3rd(%) | S | % |
| | | | | T | HA3rd(%) | T | % |
| | 5th | | R | HA5th(%) | R | % | |
| | | | S | HA5th(%) | S | % | |
| | | | T | HA5th(%) | T | % | |
| | 7th | | R | HA7th(%) | R | % | |
| | | | S | HA7th(%) | S | % | |
| | | | T | HA7th(%) | T | % | |
| | 9th | | R | HA9th(%) | R | % | |
| | | | S | HA9th(%) | S | % | |
| | | | T | HA9th(%) | T | % | |
| | 11th | | R | HA11th(%) | R | % | |
| S | | | HA11th(%) | S | % | | |
| T | | | HA11th(%) | T | % | | |
| 13th | R | | HA13th(%) | R | % | | |
| | S | | HA13th(%) | S | % | | |
| | T | | HA13th(%) | T | % | | |

The header according to data (2/2)

| Data | | | Line2 | Line3 | Line4 | | |
|--------------------------|-----------------------|-----------------|------------|------------------|----------|-----|---|
| | | | (DataName) | (DataNameDetail) | (Unit) | | |
| Harmonic Voltage | Total RMS | R-S | HV(Total) | R-S | V | | |
| | | S-T | HV(Total) | S-T | V | | |
| | | T-R | HV(Total) | T-R | V | | |
| | Total Distortion Rate | R-S | HV(%) | R-S | % | | |
| | | S-T | HV(%) | S-T | % | | |
| | | T-R | HV(%) | T-R | % | | |
| | RMS | Basic | R-S | HV1st | R-S | V | |
| | | | S-T | HV1st | S-T | V | |
| | | | T-R | HV1st | T-R | V | |
| | | 3rd | R-S | HV3rd | R-S | V | |
| | | | S-T | HV3rd | S-T | V | |
| | | | T-R | HV3rd | T-R | V | |
| | | 5th | R-S | HV5th | R-S | V | |
| | | | S-T | HV5th | S-T | V | |
| | | | T-R | HV5th | T-R | V | |
| | | 7th | R-S | HV7th | R-S | V | |
| | | | S-T | HV7th | S-T | V | |
| | | | T-R | HV7th | T-R | V | |
| | | 9th | R-S | HV9th | R-S | V | |
| | | | S-T | HV9th | S-T | V | |
| | | | T-R | HV9th | T-R | V | |
| | | 11th | R-S | HV11th | R-S | V | |
| | | | S-T | HV11th | S-T | V | |
| | | | T-R | HV11th | T-R | V | |
| | | 13th | R-S | HV13th | R-S | V | |
| | | | S-T | HV13th | S-T | V | |
| | | | T-R | HV13th | T-R | V | |
| | | Distortion Rate | 3rd | R-S | HV3rd(%) | R-S | % |
| | | | | S-T | HV3rd(%) | S-T | % |
| | | | | T-R | HV3rd(%) | T-R | % |
| | | | 5th | R-S | HV5th(%) | R-S | % |
| | | | | S-T | HV5th(%) | S-T | % |
| | | | | T-R | HV5th(%) | T-R | % |
| | 7th | | R-S | HV7th(%) | R-S | % | |
| | | | S-T | HV7th(%) | S-T | % | |
| | | | T-R | HV7th(%) | T-R | % | |
| 9th | R-S | | HV9th(%) | R-S | % | | |
| | S-T | | HV9th(%) | S-T | % | | |
| | T-R | | HV9th(%) | T-R | % | | |
| 11th | R-S | | HV11th(%) | R-S | % | | |
| | S-T | | HV11th(%) | S-T | % | | |
| | T-R | | HV11th(%) | T-R | % | | |
| 13th | R-S | | HV13th(%) | R-S | % | | |
| | S-T | | HV13th(%) | S-T | % | | |
| | T-R | | HV13th(%) | T-R | % | | |
| Electric Energy | | | Wh | | kWh | | |
| Reactive Electric Energy | | | varh | | kvarh | | |

(VS-Alarm)

```
Alarm A No.10
OccurrenceTime:2003/01/01 12:00:01
DurationTime:*2001ms
„Voltage
„R-S
„V
60,BeforeAlarm, 0.0
59,BeforeAlarm, 0.0
:
2,BeforeAlarm, 0.0
1,BeforeAlarm, 0.0
>,VS-Alarm Occur, 0.0
1,AfterAlarm,-
2,AfterAlarm,-
:
```

If the tool that opens a csv file is, for example MS-Excel, it will be displayed as follows.

| | A | B | C | D |
|----|-------------------------------|----------------|---------|-----------------------|
| 1 | Alarm A No.10 | | | (1) Alarm Detail Data |
| 2 | OccurTime:2003/01/01 12:00:01 | | | |
| 3 | DurationTime:*2001ms | | | |
| 4 | | | Voltage | (2) Data Header |
| 5 | | | R-S | |
| 6 | | | V | |
| 7 | 60 | BeforeAlarm | 0 | |
| 8 | 59 | BeforeAlarm | 0 | |
| 9 | 58 | BeforeAlarm | 0 | |
| 10 | 57 | BeforeAlarm | 0 | |
| 11 | | : | | |
| 12 | | : | | (3) Data Number |
| 13 | 2 | BeforeAlarm | 0 | |
| 14 | 1 | BeforeAlarm | 0 | |
| 15 | > | VS-Alarm Occur | 0 | |
| 16 | 1 | AfterAlarm | - | |
| 17 | 2 | AfterAlarm | - | |
| 18 | 3 | AfterAlarm | - | |
| 19 | | : | | |
| 20 | | : | | |
| 21 | | : | | |

(1) Alarm Detailed Data

The contents of a VS-Alarm detailed data are displayed.

(2) Data Header

Phase, Unit, etc.

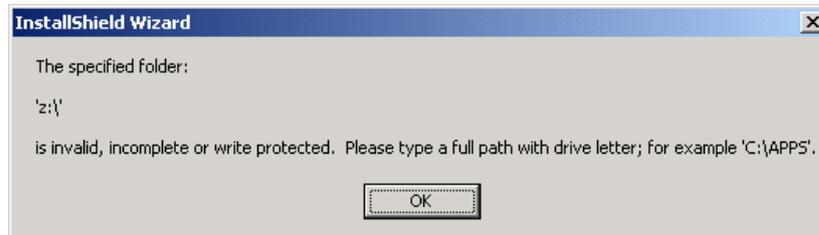
(3) Data Number

The data number before and after VS-Alarm generation.

14.3 Troubleshooting

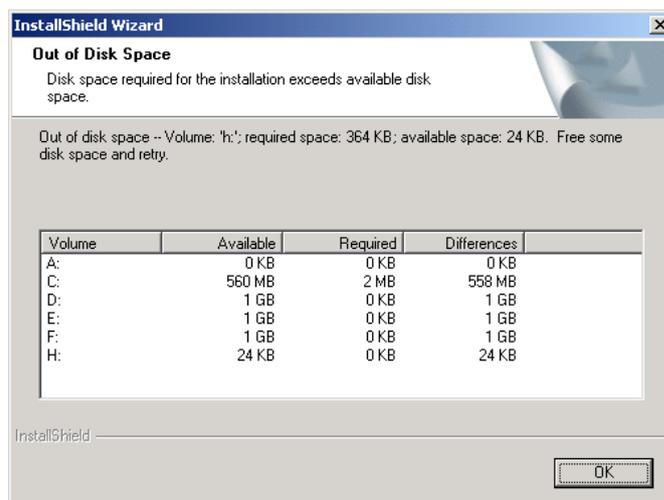
Installation

Q The following error message is displayed at the time of installer execution.



A It is generated when the writing of an installation location is not made. Please check whether the installation location is an invalid specification. Moreover, please check whether the installation location is write-protected.

Q The following error message is displayed at the time of installer execution.



A It is generated when there is not sufficient domain space for an installation location. Please secure domain space for an installation location when changing an installation location.

Q The USB driver was automatic and was not registered.

A The driver currently used by this software is a standard driver for OS. The possibility that the driver is deleted or rewritten can be considered for a certain reason. Please re-install the USB driver using WindowsUpdate etc.

Communication

| | |
|---|---|
| Q | A communication error message is displayed. |
| A | <p>Communication with the Logging Display Unit has not been performed. Please check the following items.</p> <ol style="list-style-type: none"> 1. Is the USB cable Connected Correctly? 2. Is the Power Supply of the Logging Display Unit switched on? (The power supply is not turned on when the cable for display units is not connected correctly.) 3. Is the Power Supply of the Energy Measuring Unit energized correctly? 4. Is equipment that emits remarkable noise in the area? 5. Is a high voltage conductor in the area of the USB cable? <p>The following exists with regards to communication errors.</p> |

[Communication error message]

| The error message displayed | Generating conditions |
|--|--|
| Communication error (*****H) | * Refer to the following table A. |
| Communication error (communication discontinuation) | The stop button was clicked during communication. |
| Communication error (timeout) | A Logging Display Unit has no answering or inaccurate receiving data size. |
| Communication error (****) | Communication data is inaccurate. |

* Table A

| Error code | Generating conditions assumed |
|------------|--|
| 000003e3H | Connection of a USB cable is not proper (it has loosened). |
| 000003e4H | The logging unit or the Energy Measuring Unit has not started. |
| 0000048fH | The USB cable separated during communication. |

General

| | |
|---|--|
| Q | When saving a CSV file, the extension is not attached to the file name in the dialog box. |
| A | On the Windows OS being used, "the extension of the file registered does not display" is effective. Please invalidate. In the file name when saving, although an extension was not displayed on the screen when this setup was effective, it is CSV. <input type="checkbox"/> An extension is attached. |

| | |
|---|---|
| Q | When a CSV file is saved, even if the return button is clicked, it does not return to the menu screen. |
| A | The PC in which PK3 was installed when the CSV file was output which set up the output period for a long time was performed. Depending on the memory capacity, the kind of HDD, and save specification location, the file saved to HDD may take some time. Operation becomes possible as soon as save of a CSV file is completed. Please avoid simultaneous use with other applications in regards to memory capacity. |

14.4 Specification

(a) Common

| Items | Specification |
|-----------------------------------|---|
| Communication means | USB Communication |
| The candidate for communication | Only Logging Display Unit (Model EMU2-D65-M) |
| The number of connections | One set Only |
| The communication port to be used | USB port However, inside OS, it is recognized as a COM port. |
| The contents of a package | Installation CD (x1, instruction manual (details: this book)) USB cable (3m) Instruction manual (Simplified version) |

(b) Logging collection data

| Item | | Specification | | |
|-----------------------------|--------------------|---|---------------|-------------|
| File name | | XX-[MachineName]-[YYMMDDhhmmss] .emu* ¹ * ² | | |
| Maximum period record | Number of circuits | 1-second data | 1-minute data | 1-hour data |
| | One circuit | 48 hours | Ten days | 131 days |
| | Two circuits | 12 hours | Ten days | 131 days |
| | Three circuits | 12 hours | Ten days | 131 days |
| | Four circuits | 4 hours | Ten days | 131 days |
| | Five circuits | 4 hours | Ten days | 131 days |
| | Seven circuits | 2 hours | Ten days | 131 days |
| Save folder | | <PC-Kit installation location> ¥Data * ¹ | | |

*1: Change is possible at the time of a save.

*2: XX shows the setting number of the MachineName selected on the logging collection screen (01-99).

However, an equipment name is set to "00," when one is not registered.

*3: The date, minute and second start times are all expressed with double figures.

(c) LoggingSetting : Display items

| | Model | BM1 | HM1 | RD1 | | VS1 | PM1 | RD*, RD*-4W | | | |
|------------------------------|-------------------------|-----|-----|-----|-----|-----|-----|----------------|-----|-------------------|-----|
| | Measurement mode | - | - | - | - | - | - | Wh+A+4 element | | Harmonics details | |
| | Harmonics data | - | - | EV | D/C | - | - | EV | D/C | EV | D/C |
| Display items selection item | Electric power | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Current | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Voltage | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | Electric power | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| | Invalid electric power | | | 0 | 0 | | | 0 | 0 | 0 | 0 |
| | PF | | 0 | 0 | 0 | 0 | | 0 | 0 | 0 | 0 |
| | Frequency | | | 0 | 0 | | | 0 | 0 | 0 | 0 |
| | Reactive electric power | | | 0 | 0 | | | 0 | 0 | | |
| | Simple demand | | 0 | 0 | 0 | | | 0 | 0 | | |
| | Harmonics current (EV) | | | 0 | | | | 0 | | 0 | |
| | Harmonics voltage (EV) | | | 0 | | | | 0 | | 0 | |
| | Harmonics current (D/C) | | | | 0 | | | | 0 | | 0 |
| | Harmonics voltage (D/C) | | | | 0 | | | | 0 | | 0 |

EV:Effective value , D/C: Distortion/content

(d) Logging Setting : Logging Items

| Display items | Logging items | Phase&Wire type | | |
|-------------------------|-------------------------|-----------------|--------------|------|
| | | 1P2W | 1P3W 3P3W | 3P4W |
| Electric power | Wh | 0 | 0 | 0 |
| Current | A(R) | 0 | 0 | 0 |
| | A(S) | | 0 | 0 |
| | A(T) | | 0 | 0 |
| | A(N) | | | 0 |
| | A(Total) | 0 | 0 | 0 |
| | ADemand(R) | 0 | 0 | 0 |
| | ADemand(S) | | 0 | 0 |
| | ADemand(T) | | 0 | 0 |
| | ADemand(N) | | | 0 |
| | Voltage | V(R-S) | 0 | 0 |
| V(S-T) | | | 0 | 0 |
| V(T-R) | | | 0 | 0 |
| V(R-N) | | | | 0 |
| V(S-N) | | | | 0 |
| V(T-N) | | | | 0 |
| V(Total) | | 0 | 0 | 0 |
| Electric power | W | 0 | 0 | 0 |
| | WDemand | 0 | 0 | 0 |
| Invalid electric power | Invalid electric power | 0 | 0 | 0 |
| PF | PF | 0 | 0 | 0 |
| Frequency | Frequency | 0 | 0 | 0 |
| Reactive electric power | Reactive electric power | 0 | 0 | 0 |

| The element selected as the display items | A corresponding Logging item | Phase&Wire type | | | |
|---|--|---|-------------------------------------|----------------|---|
| | | 1P2W | 1P3W 3P3W | 3P4W | |
| Harmonics current (effective value) | Measurement mode: Wh+A+4 element | HA(R)Total | 0 | 0 | 0 |
| | | HA(S)Total | | | 0 |
| | | HA(T)Total | | 0 | 0 |
| | Measurement mode: Harmonics details | HA(R)Total | 0 | 0 | 0 |
| | | HA(R)1st | 0 | 0 | 0 |
| | | HA(R)3rd | 0 | 0 | 0 |
| | | HA(R)5th | 0 | 0 | 0 |
| | | HA(R)7th | 0 | 0 | 0 |
| | | HA(R)9th | 0 | 0 | 0 |
| | | HA(R)11th | 0 | 0 | 0 |
| | | HA(R)13th | 0 | 0 | 0 |
| | | HA(S)Total | | | 0 |
| | | HA(S)1st | | | 0 |
| | | HA(S)3rd | | | 0 |
| | | HA(S)5th | | | 0 |
| | | HA(S)7th | | | 0 |
| | | HA(S)9th | | | 0 |
| | | HA(S)11th | | | 0 |
| | | HA(S)13th | | | 0 |
| | | HA(T)Total | | 0 | 0 |
| | | HA(T)1st | | 0 | 0 |
| | | HA(T)3rd | | 0 | 0 |
| | | HA(T)5th | | 0 | 0 |
| | | HA(T)7th | | 0 | 0 |
| | | HA(T)9th | | 0 | 0 |
| | | HA(T)11th | | 0 | 0 |
| | | HA(T)13th | | 0 | 0 |
| | | Harmonics current (Distortion / Content) | Measurement mode: Wh+A+4 element | HA(R)Total (%) | 0 |
| HA(S)Total (%) | | | | | 0 |
| HA(T)Total (%) | | | | 0 | 0 |
| Measurement mode: Harmonics details | HA(R)Total (%) | | 0 | 0 | 0 |
| | HA(R)3rd(%) | | 0 | 0 | 0 |
| | HA(R)5th(%) | | 0 | 0 | 0 |
| | HA(R)7th(%) | | 0 | 0 | 0 |
| | HA(R)9th(%) | | 0 | 0 | 0 |
| | HA(R)11th(%) | | 0 | 0 | 0 |
| | HA(R)13th(%) | | 0 | 0 | 0 |
| | HA(S)Total (%) | | | | 0 |
| | HA(S)3rd(%) | | | | 0 |
| | HA(S)5th(%) | | | | 0 |
| | HA(S)7th(%) | | | | 0 |
| | HA(S)9th(%) | | | | 0 |
| | HA(S)11th(%) | | | | 0 |
| | HA(S)13th(%) | | | | 0 |
| | HA(T)Total (%) | | | 0 | 0 |
| | HA(T)3rd(%) | | | 0 | 0 |
| | HA(T)5th(%) | | | 0 | 0 |
| | HA(T)7th(%) | | | 0 | 0 |
| | HA(T)9th(%) | | | 0 | 0 |
| | HA(T)11th(%) | | | 0 | 0 |
| | HA(T)13th(%) | | | 0 | 0 |

| The element selected as the display items | | A corresponding Logging item | Phase&Wire type | | |
|--|--|------------------------------|-----------------|--------------|------|
| | | | 1P2W | 1P3W 3P3W | 3P4W |
| Harmonics voltage (effective value) | Measurement mode: Wh+A+4 element | HV(R-S)Total | 0 | 0 | 0* |
| | | HV(S-T)Total | | 0 | 0* |
| | | HV(T-R)Total | | | 0* |
| | Measurement mode: Harmonics details | HV(R-S)Total | 0 | 0 | 0* |
| | | HV(R-S)1st | 0 | 0 | 0* |
| | | HV(R-S)3rd | 0 | 0 | 0* |
| | | HV(R-S)5th | 0 | 0 | 0* |
| | | HV(R-S)7th | 0 | 0 | 0* |
| | | HV(R-S)9th | 0 | 0 | 0* |
| | | HV(R-S)11th | 0 | 0 | 0* |
| | | HV(R-S)13th | 0 | 0 | 0* |
| | | HV(S-T)Total | | 0 | 0* |
| | | HV(S-T)1st | | 0 | 0* |
| | | HV(S-T)3rd | | 0 | 0* |
| | | HV(S-T)5th | | 0 | 0* |
| | | HV(S-T)7th | | 0 | 0* |
| | | HV(S-T)9th | | 0 | 0* |
| | | HV(S-T)11th | | 0 | 0* |
| | | HV(S-T)13th | | 0 | 0* |
| | | HV(T-R)Total | | | 0* |
| | | HV(T-R)1st | | | 0* |
| | | HV(T-R)3rd | | | 0* |
| | | HV(T-R)5th | | | 0* |
| | HV(T-R)7th | | | 0* | |
| | HV(T-R)9th | | | 0* | |
| | HV(T-R)11th | | | 0* | |
| HV(T-R)13th | | | 0* | | |
| Harmonics voltage (Distortion /Content) | Measurement mode: Wh+A+4 element | HV(R-S)Total (%) | 0 | 0 | 0* |
| | | HV(S-T)Total (%) | | 0 | 0* |
| | | HV(T-R)Total (%) | | | 0* |
| | Measurement mode: Harmonics details | HV(R-S)Total (%) | 0 | 0 | 0* |
| | | HV(R-S)3rd(%) | 0 | 0 | 0* |
| | | HV(R-S)5th(%) | 0 | 0 | 0* |
| | | HV(R-S)7th(%) | 0 | 0 | 0* |
| | | HV(R-S)9th(%) | 0 | 0 | 0* |
| | | HV(R-S)11th(%) | 0 | 0 | 0* |
| | | HV(R-S)13th(%) | 0 | 0 | 0* |
| | | HV(S-T)Total (%) | | 0 | 0* |
| | | HV(S-T)3rd(%) | | 0 | 0* |
| | | HV(S-T)5th(%) | | 0 | 0* |
| | | HV(S-T)7th(%) | | 0 | 0* |
| | | HV(S-T)9th(%) | | 0 | 0* |
| | | HV(S-T)11th(%) | | 0 | 0* |
| | | HV(S-T)13th(%) | | 0 | 0* |
| | | HV(T-R)Total (%) | | | 0* |
| | | HV(T-R)3rd(%) | | | 0* |
| | | HV(T-R)5th(%) | | | 0* |
| | | HV(T-R)7th(%) | | | 0* |
| | | HV(T-R)9th(%) | | | 0* |
| | | HV(T-R)11th(%) | | | 0* |
| | HV(T-R)13th(%) | | | 0* | |

(e) BasicSetting

| Setting item | Setting conditions | Setting range | The EMU model which can be set up | | | | | | |
|-----------------------|-----------------------------------|---|-----------------------------------|-----|-----|-----|-----|-----|--------|
| | | | BM1 | HM1 | RD1 | VS1 | PM1 | RD* | RD*-4W |
| Phase&Wiring type | - | 1P2W,1P3W,3P3W | ○ | ○ | ○ | ○ | ○ | ○ | |
| | | 3P4W | | | | | | | ○ |
| Primary voltage | Phase&Wiring type: 1P2W, 3P3W | 110V directness, 220V directness, 440V | ○ | ○ | | ○ | | | |
| | Phase&Wiring type: 1P3W | Direct 110v | | | | | | | |
| | Phase&Wiring type: 1P2W, 3P3W | 110V directness, 220V directness, 440V, 690V,1100V,2200V,3300V,6600V, 11000V,13200V,13800V,15000V, 16500V,22000V,24000V,33000V, 66000V,77000V,110000V | | | ○ | | ○ | ○ | |
| | Phase&Wiring type: 1P3W | Direct 110v | | | | | | | |
| | Phase&Wiring type: 3P4W | 63.5V/110V,110V/190V,120V/208V, 220V/380V,240V/415V,254V/440V | | | | | | | ○ |
| Sensor classification | - | Direct sensor and 5A sensor, | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Primary current | Sensor Type: 5A sensor | 5A,6A,7.5A,8A,10A,12A,15A, 20A,25A,30A,40A,50A,60A, 75A,80A,100A,120A,150A,200A, 250A,300A,400A,500A,600A, 750A,800A,1000A,1200A,1500A, 1600A,2000A,2500A,3000A, 4000A,5000A,6000A,7500A, 8000A,10000A,12000A,20000A, 25000A,30000A | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| | SensorType: Direct sensor | 50A,100A,250A,400A,600A | ○ | ○ | ○ | ○ | ○ | ○ | ○ |
| Pulse unit | Total load electric power (kW):AW | | | | | | | | |
| | 12<AW | 0.001, 0.01, 0.1, 1 | | | | | | | |
| | 12 <=AW<120 | 0.01, 0.1, 1, 10 | | | | ○ | ○ | | |
| | 120 <=AW<1200 | 0.1, 1, 10, 100 | | | | | | | |
| | 1200 <=AW<12000 | 1, 10, 100, 1000 | | | | | | | |
| | 12000 <=AW<120000 | 10, 100, 1000, 10000 | | | | | | | |
| | 120000 <=AW | 100, 1000, 10000, 100000 | | | | | | | |

(f) Reset

| Item | Specification |
|------------|---|
| Reset item | The maximum and the minimum VS-Alarm data * Logging data Limit Alarm data * Addition value |

* Only when the EcoMonitorPro is compatible.

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Data Acquisition PC-Kit For Mitsubishi Energy Measuring Unit (EcoMonitorPro)

■ Service Network

| Country / Region | Company | Address | Telephone |
|-------------------------------------|--|---|----------------------|
| Australia | Mitsubishi Electric Australia Pty. Ltd. | 348 Victoria Road, Rydalmere, N.S.W. 2116, Australia | + 61-2-9684-7777 |
| USA | Mitsubishi Electric Automation Inc. | 500 Corporate Woods Parkway Vernon Hills, IL 60061, USA | + 1-847-478-2100 |
| Brazil | MELCO-TEC Rep. Com. e Assessoria Tecnica Ltda. | Av. Paulista, 1439-Cj.72, Cerqueira Cesar CEP 01311-200, Sao Paulo, SP, CEP:01311-200, Brazil | + 55-11-3146-2200 |
| Chile | Rhona S.A. | Agua Santa 4211 P.O. Box 30-D Vina del Mar, Chile | + 56-32-2-320-600 |
| China | Mitsubishi Electric Automation (CHINA) Ltd. | No. 1386 Hongqiao Road, Mitsubishi Electric Automation Center Shanghai China, 200336 | + 86-21-2322-3030 |
| China | Mitsubishi Electric Automation (HongKong) Ltd. | 10/F., Manulife Tower, 169 Electric Road, North Point, Hong Kong | + 852-2887-8810 |
| Colombia | Proelectrico Representaciones S.A. | Carrera 53 No 29C-73 - Medellin, Colombia | + 57-4-235-30-38 |
| Egypt | Cairo Electrical Group | 9, Rostoum St. Garden City P.O. Box 165-11516 Maglis El-Shaab, Cairo - Egypt | + 20-2-27961337 |
| Europe | Mitsubishi Electric Europe B.V. | Gothaer Strasse 8, D-40880 Ratingen, Germany | + 49-(0)2102-486-0 |
| India | Mitlite Electric Company Pvt Ltd | Plot No-32, Sector-6, IMT Maneser, | + 91-124-4695300 |
| Indonesia | P. T. Sahabat Indonesia | P.O.Box 5045 Kawasan Industri Pergudangan, Jakarta, Indonesia | + 62-(0)21-6610651-9 |
| Korea | Mitsubishi Electric Automation Korea Co., Ltd | 1480-6, Gayang-Dong, Gangseo-Gu, Seoul, Korea | + 82-2-3660-9572 |
| Laos | Societe Lao Import Co., Ltd. | 43-47 Lane Xang Road P.O. BOX 2789 VT Vientiane Laos | + 856-21-215043 |
| Lebanon | Comptoir d'Electricite Generale-Liban | Cebaco Center - Block A Autostrade Dora, P.O. Box 11-2597 Beirut - Lebanon | + 961-1-240445 |
| Malaysia | Mittrich Sdn Bhd | 5 Jalan Pemberita U1/49, Temasya Industrial Park, Glenmarie 40150 Shah Alam, Selangor, Malaysia | + 603-5569-3748 |
| Myanmar | Peace Myanmar Electric Co.,Ltd. | NO137/139 Botataung Pagoda Road, Botataung Town Ship 11161, Yangon, Myanmar | + 95-(0)1-202589 |
| Nepal | Watt & Volt House | KHA 2-65, Volt House Dillibazar Post Box: 2108, Kathmandu, Nepal | + 977-1-4411330 |
| Middle East Arab Countries & Cyprus | Comptoir d'Electricite Generale-International-S.A.L. | Cebaco Center - Block A Autostrade Dora P.O. Box 11-1314 Beirut - Lebanon | + 961-1-240430 |
| Pakistan | Prince Electric Co. | 1&16 Brandreth Road, Lahore-54000, Pakistan | + 92-(0)42-7654342 |
| Philippines | Edison Electric Integrated, Inc. | 24th Fl. Galleria Corporate Center, Edsa Cr. Ortigas Ave., Quezon City Metro Manila, Philippines | + 63-(0)2-634-8691 |
| Saudi Arabia | Center of Electrical Goods | Al-Shuwayer St. Side way of Salahuddin Al-Ayoubi St. P.O. Box 15955 Riyadh 11454 - Saudi Arabia | + 966-1-4770149 |
| Singapore | Mitsubishi Electric Asia Pte. Ltd. | 307, Alexandra Road, #05-01/02 Mitsubishi Electric Building, Singapore 159943 | + 65-6473-2308 |
| South Africa | CBI-electric: low voltage | Private Bag 2016, Isando, 1600, South Africa | + 27-(0)11-9282000 |
| Taiwan | Setsuyo Enterprise Co., Ltd | 6th Fl., No.105, Wu Kung 3rd, Wu-Ku Hsiang, Taipei, Taiwan, R.O.C. | + 886-(0)2-2298-8889 |
| Thailand | United Trading & Import Co., Ltd. | 77/12 Bamrungmuang Road, Klong Mahanak, Pomrab Bangkok Thailand | + 66-223-4220-3 |
| Uruguay | Fierro Vignoli S.A. | Avda. Uruguay 1274, Montevideo, Uruguay | + 598-2-902-0808 |
| Venezuela | Adesco S.A. | Calle 7 La Urbina Edificio Los Robles Locales C y D Planta Baja, Caracas - Venezuela | + 58-212-241-9952 |
| Vietnam | CTY TNHH-TM SA GIANG | 10th Floor, Room 1006-1007, 255 Tran Hung Dao St., Co Giang Ward, Dist 1, Ho Chi Minh City, Vietnam | + 84-8-8386727/28/29 |

MITSUBISHI ELECTRIC CORPORATION