OMRON

EasyKM-Manager

Version 3.0

User's Manual

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Introduction

Thank you for using the EasyKM-Manager.

EasyKM-Manager is the software designed for easy setting of OMRON's Smart Power Monitor units (KM series) as well as data collection. Also using this software, you can display collected data in graphs.

・ To use EasyKM-Manager, you need other devices such as Smart Power Monitor units.

Access to OMRON's website for the details on OMRON's Smart Power Monitors and other devices:

http://www.ia.omron.com/

Intended Audience

This manual is intended at the following
- Experts with computer and network knowledge and skills
- Facility managers and related operators

Read and Understand this Manual:

This manual includes important information required to use the software. Please read carefully and become familiarized with the information before using the software. Also make sure that the manual is properly maintained in the way you can always refer to it whenever necessary.

Software License Agreement

This agreement sets forth the conditions imposed by OMRON on the user for using EasyKM-Manager.

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Software Name: EasyKM-Manager

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Precautions for Correct Use

The screenshots and operation steps used in this manual belong to Windows 7, unless otherwise specified. If your OS is other than Windows 7, match the description in the manual to the corresponding screens and operation in your OS.

Operating Environment

Take caution for the following when using the software:
- EasyKM-Manager uses the UTF-8 character encoding for the output files. Use an application supporting UTF-8 to view the files. (To view the files in Microsoft Excel, use Microsoft Excel 2003 SP3 or higher.)
- EasyKM-Manager and EasyKM-Manager LE for Demand cannot coexist in the same PC. Make sure that EasyKM-Manager LE for Demand is uninstalled before installing EasyKM-Manager.

Settings of Other Devices

- Required devices and software programs must be installed or connected before using this software.
- To use KM1/KE1, the Unit setting must be completed using the KM1/KE1 setting tool beforehand.
- Some functions of EasyKM-Manager are not supported for some Units. Make sure that "6.1.2. Function Menu Items and Supported Models" (P. 6-4) is referred to before using EasyKM-Manager.

Meanings of Symbols

- This manual uses the following signs and notations for caution and other important information to ensure the correct use of EasyKM-Manager. Also read carefully other information not marked with these signs.

Precautions for Correct Use

Actions or practices that are required or avoided to prevent EasyKM-Manager's functional failure, malfunction, as well as impact on its performance and functions.

Note:　　　**Additional Information**

Tips for use and other important information requiring the user's attention.

[　　　]: EasyKM-Manager menu items and buttons are described in brackets.
Unit: Refers to OMRON's Smart Power Monitor units (KM series) when the first letter (U) is capitalized.

Disclamers:

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- Please note that the illustrations included in this manual may not exactly represent the actual use.

Revision History

The manual revision code is suffixed to the Manual No. attached at the left bottom of both the cover and back cover.

Manual No.: GAMS-003C

Revision code

Revision code	Revised date	Reasons/Revised page
A	August 2010	First edition
B	August 2011	\<Revision due to the software version upgrade (Ver. 2.0.)\> ・Added the capability to select the language during installation. (See "5.1.1. Initial Installation") ・Added the measurement item selection mode in [Environmental setting] - [Communications setting] (See "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page") ・Added the Unit measurement value reset function. (See "6.3.2.8. Unit Setting - [Measurement Value Reset] Tab Page") ・Added the following graph display functions for the individual graph display. (See "6.3.6.3. Integral Power Consumption Graphs - [Individual Graph] Tab Page") ・Charge conversion graph ・Temperature overlaid graph ・Integral regenerated power graph ・Consumption rate graph ・Added the function to match the KM100 or KM50-C/E internal clock to the PC clock time. (See "6.3.2.1. Unit Setting - [Time Setting] Tab Page") ・Added the function to set the pulse input count conversion value name to display in integral power consumption graph tab page. (See "6.3.3.4. Graph Setting - [Conversion Value Name Setting] Tab Page") ・Added the Unit memory graph display capability to the data extract function. (See "6.3.8.2. Data Extract - [Unit Memory Graph Display] Tab Page")
C	November 2012	\<Revision due to the software version upgrade (Ver. 3.0.)\> ・Added the compatibility with some KM1/KE1 Smart Power Monitors. See "1.2. System Configuration" (P. 1-3) for the applicable models. ・Refer to "4. Difference Between Versions" (P. 4-1) for the details of the change from the Ver. 2.0. ・Changed the Ethernet/RS-485 adapter setting values. (See "9.5 Ethernet/RS-485 Adapter Setting Item List" (P. 9-58))

Related Manuals

Manual No.	Model	Manual name	Description
KANC-701	KM1-□□□□-FLK	KM1 Smart Power Monitor User's Manual	Provides the information on the KM1 including the overview, features, functions and settings.
SGTE-717	KE1-□□□□□-FLK KE1-□□□□□	KE1 Smart Power Measurement Monitor User's Manual	Provides the information on the KE1 including the overview, features, functions and settings.
SGTE-719	KM1/KE1	KM1/KE1 Smart Power Monitor/Smart Power Measurement Monitor Communications Manual	Describes the M1/KE1 series communications functions.
SGTE-715	KM50-E	KM50-E Smart Power Monitor User's Manual	Provides the information on the KM50-E including the overview, features, functions and settings.
SGTE-714	KM50-C	KM50-C Smart Power Monitor User's Manual	Provides the information on the KM50-C including the overview, features, functions and settings.
9405620-3 E	KM100	KM100 Power Monitor Operation Manual	Provides the information on the KM100 including the overview, features, functions and settings.
2204892-3B	KM20-B40-FLK	KM20-B40-FLK Compact Power Sensor Operation Manual	Provides the information on the KM20-B40 including the overview, features, functions and settings.
GAMS-010	KM1/KE1	KM1/KE1 Setting Tool (KM1/KE1-Setting) User's Manual	Describes the KM1/KE1 Setting Tool operation and setting procedures.
452186-4D	K3SC-10	K3SC-10 Operation Manual	Describes the K3SC-10 operation and setting procedures.
—	K3SC-10	K3SC-10 Virtual COM Port USB Driver Manual	Describes the installation and operation of the virtual COM port USB for K3SC-10.
—	MOXA NPort 5130	NPort 5100 Series User's Manual	Describes the NPort5130 operation and setting procedures.
—	LINEEYE SI-65	Interface Converter Operation Manual	Describes the SI-65 operation and setting procedures.

Terminology

Definition of Terms

Term	Description
Unit	"Unit" (The first letter capitalized in this manual) is the generic term for OMRON's Smart Power Monitor, Power Monitor, Compact Power Sensor, Smart Measurement Monitor units specifically including the following products. KM50-C1-FLK KM100-T-FLK KM100-TM-FLK KM20-B40-FLK KM1-PMU1A-FLK KM1-PMU2A-FLK KM1-EMU8A-FLK KE1-CTD8E KE1-PGR1C-FLK KE1-ZCT8E
Unit No.	The number to identify individual Units. EasyKM-Manager identifies each Unit using this Unit No.
KM1/KE1	The generic designation for the KM1 and KE1 models.
KM1/KE1 Setting Tool "KM1/KE1-Setting"	The dedicated setting tool for the KM1/KE1 series.
Measurement master Unit	A KM1/KE1 Unit with the standalone capability to measure power or other values and exchanges data with a PC via RS-485 or USB. Slave Units can be connected for system extension.
Slave Unit	A KM1/KE1 Unit connected to a measurement master Unit.
Slave ID	The ID number assigned to each KM1/KE1 slave Unit. A measurement master Unit uses this ID to identify individual slave Units.
Measurement point	Used for KM1/KE1 Units and refers to a group of terminals located at each measurement target location. Measurement points can be classified into the Circuit No. (a group of CT input terminals), Event No. (Event inputs) and ZCT No. (ZCT inputs).
3-STATE function	This function classifies measurement target power consumption into three states: HIGH/MIDDLE/LOW. EasyKM-Manager displays integral power consumption values equals to or higher than the HIGH threshold as "operating power", and the value lower than the LOW threshold as "stopped power". The values equal to higher than the LOW threshold and lower than the HIGH threshold are defined as "standby power". This function is available with the KM50-E, KM1-PMU1A and KM1-PMU2A models.

Contents

7. Data Backup and Restoration 7-1

8. Troubleshooting 8-1

9. Appendix 9-1

1. Overview of EasyKM-Manager

1.1. Overview

EasyKM-Manager is a versatile software package designed to obtain measurement data from OMRON's Smart Power Monitors (Units) for energy saving management and practices. Installed in a PC connected to the Units via Ethernet/RS-485 adapter or RS-232C/RS-485 adapter, EasyKM-Manager provides Unit settings, periodic measurements, the graph display and file output of the obtained measurement.

■**Main Features**

● **Periodic Measurements Data Acquisition**

EasyKM-Manager collects measurement data at the specified communications interval (1 minute/5 minutes/10 minutes) and save it in the PC.

● **Integral Power Consumption Graph Display**

EasyKM-Manager displays daily and monthly integral power consumption graphs arranged in specific tab pages. It also displays individual Unit power consumption graphs, in which you can change the time interval, or combine the pulse input or temperature line graphs using the data from other Units in the same graph area as integral power consumption graphs.
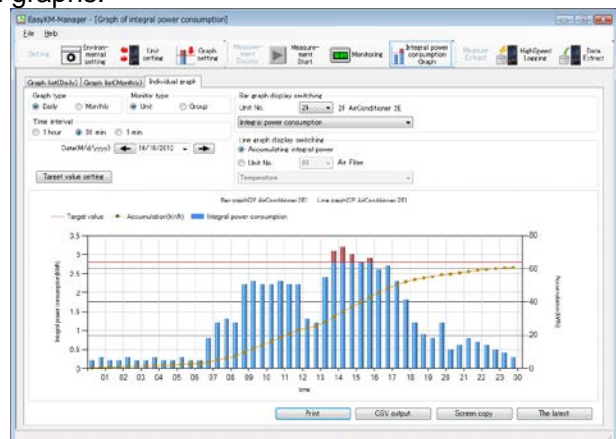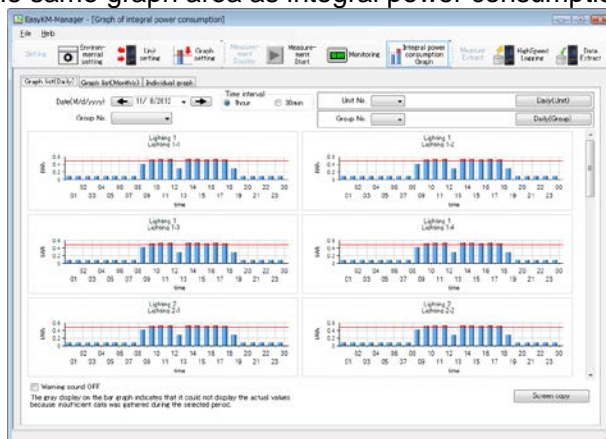
●**Instantaneous Value Display**

EasyKM-Manager displays the active power values from individual Units in a list. It also can display instantaneous voltage and current values in line graphs.
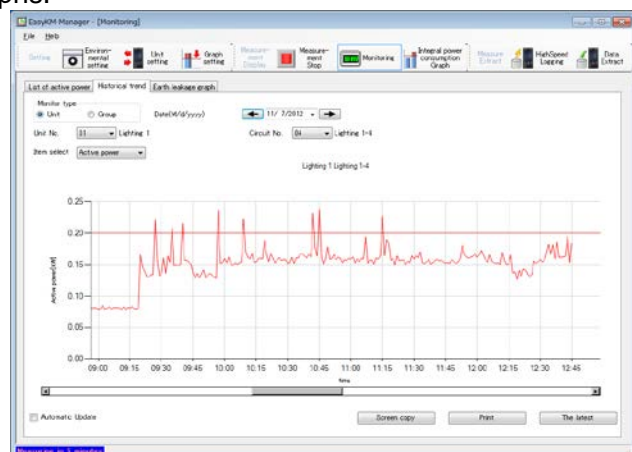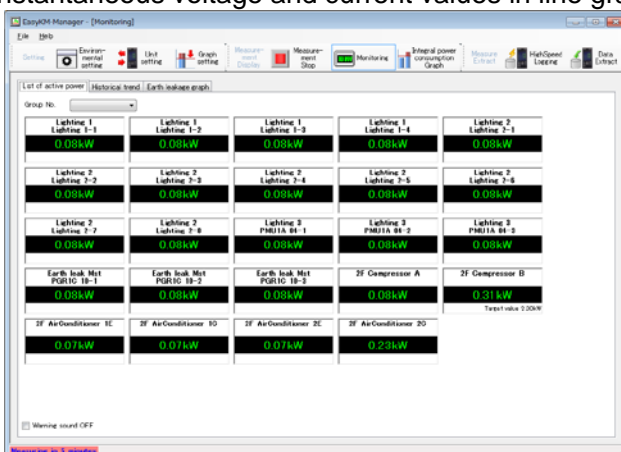
● Unit Setting (KM50-C/KM50-E/KM100/KM20-B40)

EasyKM-Manager can read the measurement and alarm settings from each Unit and set them again after changing. The settings of a specific Unit can be easily transferred to multiple Units.

Note: Settings on the KM1/KE1 are not supported with EasyKM-Manager. Use the dedicated setting tool named "KM1/KE1-Setting".
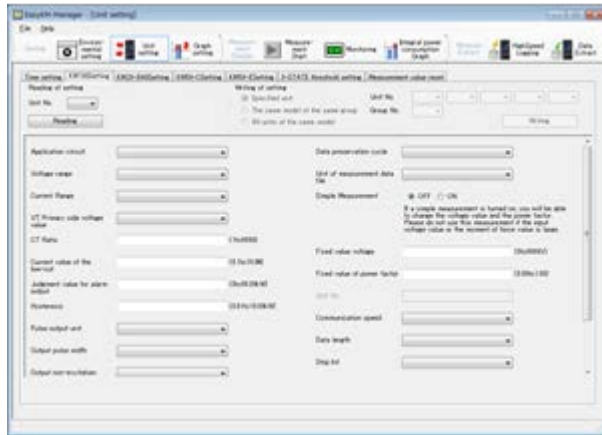
●Measurement Data CSV File Output

EasyKM-Manager can output measurement data in a specified folder at a specified time interval. It also can extract the data stored in KM50/KM100 Units and output it in a file.
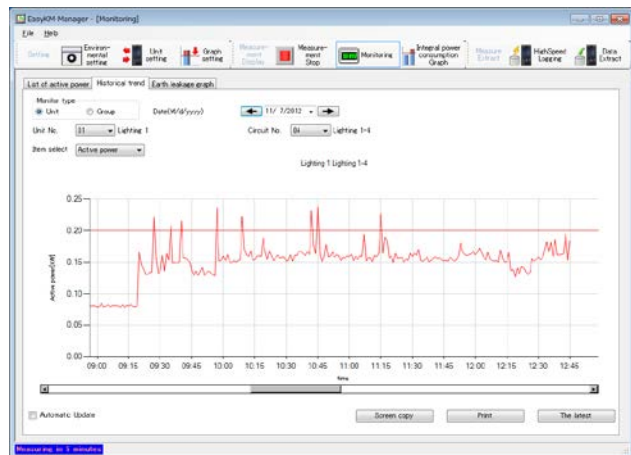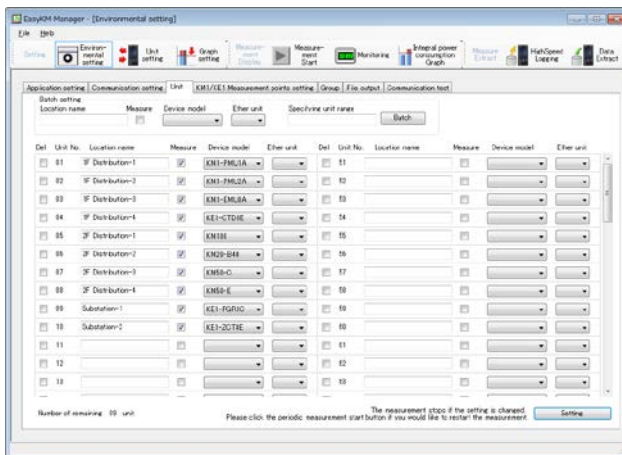
1.2.   System Configuration

This section describes a standard system configuration using Ethernet or RS-232C connection.

Table 1: System Components

Name	Description
EasyKM-Manager	This software application
Ethernet/RS-485 adapter	Device for accessing the RS-485 communications device and computer (PC) through the Ethernet.
RS-232C/RS-485 adapter	Device for accessing the RS-485 communications device and computer (PC) through RS-232C.

Unit	OMRON Power Monitors and Sensors EasyKM-Manager obtain measurement data from. Applicable 11 models (RS-485 communications models only)
	  KM50-E1-FLK (V1/V2) (*1)
	  KM50-C1-FLK (V1/V2) (*1)
	  KM100-T-FLK (without memory card)
	  KM100-T-FLK (with memory card)
	  KM20-B40-FLK
	  KM1-PMU1A-FLK (*2)
	  KM1-PMU2A-FLK (*2)
	  KM1-EMU8A-FLK (Must be linked to the measurement master Unit) (*2)
	  KE1-CTD8E (Must be linked to the measurement master Unit) (*2)
	  KE1-PGR1C-FLK (*2)
	  KE1-ZCT8E (Must be linked to the measurement master Unit) (*2)

*1. Two versions (V1 and V2) are available for the KM50-E1-FLK (KM50-E) and KM50-C1-FLK (KM50-C). Only the version of the KM50 built-in software is different between V1 and V2. However, the setting and measurement parameters differ between V1 and V2.

Make sure that you are aware of the difference when connecting the devices or making settings using EasyKM-Manager.

- Models released before February 2011 are V1, and models released afterward are V2.
- The version can be identified in the EasyKM-Manager startup window, or the product information.

*2. EasyKM-Manager does not support KM1/KE1 Unit settings. Use the KM1/KE1 setting tool ("KM1/KE1-Setting") to make settings on the KM1/KE1.

●System Configuration with Ethernet

EasyKM-Manager collects measurement data from the Units connected via Ethernet. Ethernet/RS-485 adapters are required for Ethernet connection.

Ethernet/RS-485 adapters and Units can be transited along RS-485 communication lines, and a single communications system comprises a single Ethernet/RS-485 adapter and multiple Units wired together along the same RS-485 communication line.
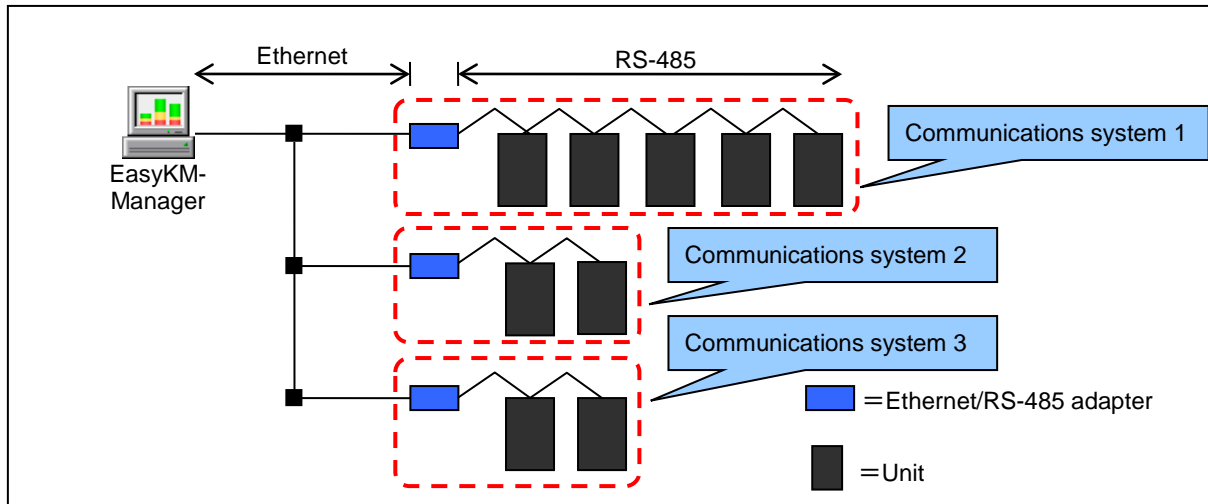
Figure 1: System Configuration with Ethernet

●System Configuration with RS-232C or a USB Virtual COM Port

EasyKM-Manager collects measurement data from the Units connected via RS-232C or a USB virtual COM port. An RS-232C/RS-485 adapter is required for RS-232C connection.

The RS-232C/RS-485 adapter and Units can be transited along RS-485 communication lines, and the communications system comprises the RS-232C/RS-485 adapter and multiple Units wired together along the RS-485 communication line.
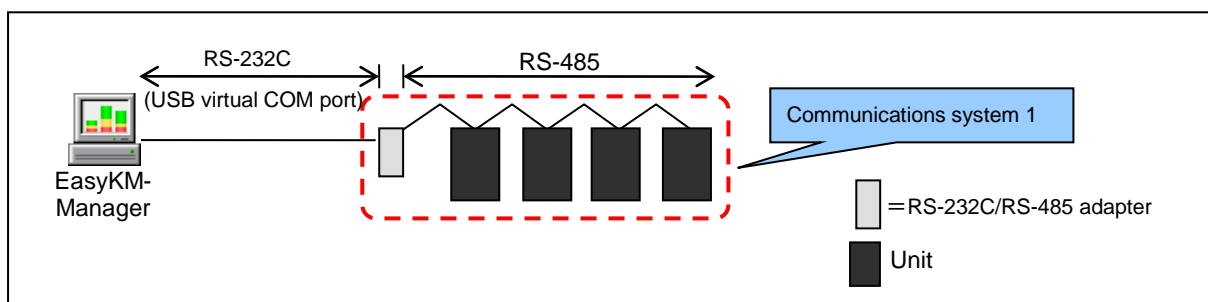
Figure 2: System Configuration with RS-232C

Precautions for Correct Use

● Multiple PCs running EasyKM-Manager cannot obtain measurement data from the same Unit. Configure only one PC to obtain data from the same Unit.

- EasyKM-Manager
- EasyKM-Manager
- ＝RS-232C/RS-485 adapter
- ＝Unit
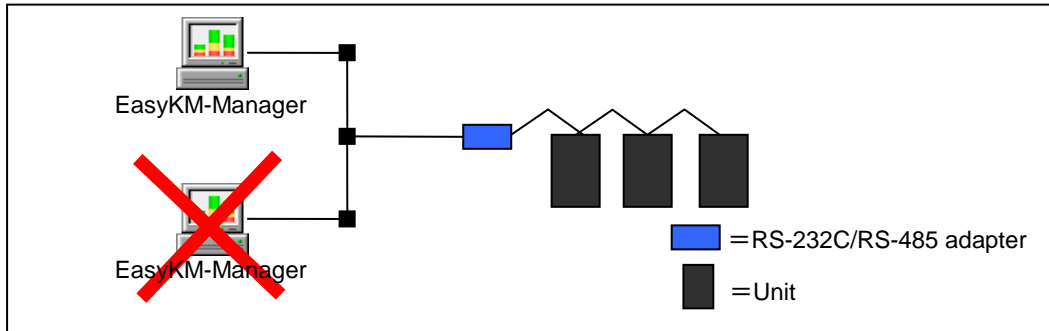
● Ethernet Connection
  • Only one LAN card can be used, even if the PC provides multiple LAN cards.
  • Fixed IP addresses are required for the Ethernet/RS-485 adapters and PC. Do not assign them automatically using DHCP.
● RS-232C Connection
  • Only one COM port can be used even if the PC provides multiple ports.
● Ethernet connection and RS-232C connection cannot coexist in the configuration.
● Units with a communications problem included in the same system may affect the periodic measurements with other normal Units. Make sure that "communications tests" be performed prior to periodic measurements and ensure that EasyKM-Manager can communicate normally with all the Units.

1.3. System Requirements

The following PC requirements must be satisfied to use EasyKM-Manager in a satisfactory manner.

Table 2: Required Environment

Item	Specification
Operating system/service pack (Minimum requirement)	Microsoft Windows XP (32 bit) SP3 or later Microsoft Windows Vista (32 bit) SP2 or later Microsoft Windows 7 (32 bit/64 bit) or later Note: NET Framework 3.5 SP1
CPU	Intel® Core™2 Duo Series (or its equivalent) or higher
Monitor	Resolution of 1,024 × 768 pixels or higher; High color (16-bit) or higher; full-color display

Free hard disk space	Space for the measurement data for one month (30 days)
	■99 Monitors (50 groups) x 5-minute measurements
	    Approx. 750 MB
	■50 Monitors (10 groups) x 1-minute measurements
	    Approx. 1.5 GB (1,500 MB)

Adapter	RS-232C/RS-485 adapter is required for RS-232C connection Ethernet/RS-485 adapter is required for Ethernet connection Adapter operation has been checked as follows: ■Ethernet/RS-485 adapter 　・MOXA NPort 5130 　　(A separately sold miniDB9 Female Terminal Block Adapter is required.) 　・LINEEYE SI-65 ■RS-232C/RS-485 adapter 　・OMRON K3SC-10 Note: Refer to "9.5. Ethernet/RS-485 Adapter Setting Item List" 　　(P. 9-58) for the details on adapters.

Precautions for Correct Use

- Make sure that "Turn off the hard disk power supply", "System Standby" and "Hibernate" are disabled in the Windows power management. EasyKM-Manager is still running to communicate with Units even when you are not operating it.
  The option to turn OFF monitor power supply can be enabled.
- EasyKM-Manager supports the following languages: English, Japanese, Korean, Chinese (Simplified), and Taiwanese (Traditional Chinese). If your OS uses other language than the listed above, EasyKM-Manager uses English.
- A fixed IP address is required for each of the PC and Ethernet/RS-485 adapters.

1.4. Software Specifications

Table 3: Software Specifications

Item	Specification	
Measurement target Units	The following 11 models are applicable (models with RS-485 communications only). KM50-E1-FLK (V1/V2) KM50-C1-FLK (V1/V2) KM100-T-FLK (without memory card) KM100-T-FLK (with memory card) KM20-B40-FLK KM1-PMU1A-FLK KM1-PMU2A-FLK KM1-EMU8A-FLK (Must be linked to the measurement master Unit) KE1-CTD8E (Must be linked to the measurement master Unit) KE1-PGR1C-FLK KE1-ZCT8E (Must be linked to the measurement master Unit)	
Communications protocol	CompoWay/F, Modbus Note: Modbus and CompoWay/F devices cannot coexist.	
Number of terminals	Up to 99 in total in all systems Note 1: Up to 99 Units per system when using Modbus 　　　　　Up to 31 Units per system when using CompoWay/F Note 2: The number of connectable Units varies depending on the adapter specifications.	
Number of communications systems	Ethernet connection: Up to 20 systems RS-232C connection: only 1 system	
Measurement interval	Periodic measurements: 1 minute/5 minutes/10 minutes 3-STATE threshold setting: 1 second/5 seconds/10 seconds/15 seconds/30 seconds High-speed logging: 1 second/5 seconds/10 seconds/15 seconds/30 seconds Note: 3-STATE threshold setting and high-speed logging are not supported with the KM1/KE1.	
CSV file character code	UTF-8 is supported.	
Data retention period and deletion timing	Unit measurement files	1 file per day; retained for 30 days
	Unit/group summary files	1 file per month; retained for 2 years
	Communications log	1 file for 6 hours; retained for 30 days
	Operation log/error log	1 file per month; retained for 30 days (*1)
	Note: Expired data is deleted during periodic measurements, at 0:00 of the day. *1. The data for the 30 days back from the deletion date is always retained.	

Note: The number of connectable Units, communications systems, measurement interval may depend on your operation environment.

Precautions for Correct Use

EasyKM-Manager does not support KM1/KE1 Unit settings. Use the KM1/KE1 setting tool ("KM1/KE1-Setting") to make settings on the KM1/KE1.

1.5.   Communications Type

The communications with Units can be classified in two types: periodic and non-periodic communications.

In periodic communications, EasyKM-Manager communicates with Units at a specified interval (1 minute/5 minutes/10 minutes) to obtain measurement data. The measurement performed in this communications type is defined as "Periodic measurements".

Non-periodic communications refer to the method by which EasyKM-Manager irregularly communicates with Units to check the communications or obtain measurement data.

The table below shows the functions available with each communications type.

Table 4: Communications Types

Communications type	Available functions
Periodic communications (Periodic measurements)	Monitoring - [List of Active Power] Monitoring - [Historical Trend] Monitoring - [Earth Leakage Graph] Integral Power Consumption Graphs - [Graph List (Daily)] Integral Power Consumption Graphs - [Graph List (Monthly)] Integral Power Consumption Graphs - [Individual Graph] File output
Non-periodic communications	Unit Setting - [3-STATE Threshold Setting] Unit Setting - [Measurement Value Reset] Time setting Communications test High-speed logging Data extract

Precautions for Correct Use

<Periodic Measurements Stop for Non-periodic Communications>

Periodic measurements and non-periodic communications cannot be performed simultaneously. Periodic measurements must be stopped for any operation involving non-periodic communications. Resume periodic measurements (if required) after executing process involving non-periodic communications by clicking the [Periodic measurements start] button.

<Number of Units at 1-minute Communication Interval>

Periodic measurements of all the Units may not be completed within the interval depending on the number of Units if the communications interval is set to "1 minute".   If this is the case, specify the interval to 5 minutes or longer.

The table below shows the standard numbers of connectable Units at the baud rate of 9600 bps.

Connection	Protocol	Measurement mode	Number of Units
LAN connection	CompoWay/F	All item collection	Up to 21
		Graph display item collection	Up to 28
	Modbus	All item collection	Up to 18
		Graph display item collection	Up to 20
RS-232C connection	CompoWay/F	All item collection	Up to 23
		Graph display item collection	Up to 28
	Modbus	All item collection	Up to 41
		Graph display item collection	Up to 50

Note 1: The table shows reference values. The number of Units may depend on your operation environment.

Note 2: Refer to "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20) for "measurement interval", "connection method", "protocol" and "measurement mode" settings.

2. Preparations

This section describes the flow of preparations as well as the devices and settings required to start operating EasyKM-Manager.

2.1. Preparation Items

The table below shows the items required to use EasyKM-Manager.

Table 5: Preparation Items

Item	Description
EasyKM-Manager	This application software (*1)
EasyKM-Manager User's Manual	This manual (*1)
Units	Prepare applicable models.
User's Manual of each Unit	Prepare the User's Manuals of individual Unit models. See the footnote (*1) for the manual supply location.
Instruction sheet	Provided with each Unit
PC (Personal computer) (*2)	EasyKM-Manager is installed in this PC.
Dedicated CT	Select this according to the rating of each measurement location. Refer to the User's Manual of each Unit for the applied CTs.
Dedicated CT cable	The cable for the dedicated CT. Model: KM20-CTF-CB3
Power supply cable	Used for the Unit power supply.
Terminating resistance	Connect this to the Unit at the line termination.
Sensor communications line (RS-485)	The communications cable used for RS-485 communications to connect the adapter and individual Units.
Adapter (*2)	Ethernet/RS-485 adapter or RS-232C/RS-485 adapter.
Virtual COM port USB driver for the K3SC-10	Install this in the PC to use the K3SC-10. (*1)
LAN cable	Used to connect the Ethernet/RS-485 adapters and the PC.
USB cable (A- or B-type) or RS-232C cable	Used to connect the RS-232C/RS-485 adapter and the PC.

*1. Software and manual supply location

Download software and manuals at the OMRON component device Internet service website:

http://www.ia.omron.com/

*2. Refer to "1.3 System Requirements" (P. 1-6) for the details on the PC and adapters.

2. Preparations

● **Preparation Items for the KM1/KE1 Series**

To use the KM1/KE1 series, additional items are required as shown below:

Table 6: Preparation Items (KM1/KE1)

Item	Description
KM1/KE1 setting tool KM1/KE1-Setting	The software used to make settings on the KM1/KE1. See the footnote (*) for the software supply location.
KM1/KE1-Setting User's Manual	The User's Manual for the KM1/KE1-Setting. See the footnote (*1) for the manual supply location.
PC for the KM1/KE1-Setting	Install the KM1/KE1 setting tool ("KM1/KE1-Setting") in this PC. Can be installed in the PC running EasyKM-Manager.
Connector	Provided with the KM1/KE1 (except the measurement master Unit)
USB cable (A- or -miniB type)	Used to connect the KM1/KE1 and PC.
Thermistor	Required when measuring temperature. Model: E52-THE5A
ZCT	Required when measuring earth leakage. Models: OTG-L□□, OTG-CN□□, OTG-LA3 0W

*   Software and manual supply location
   Download software and manuals at the OMRON Internet service website.

2.2. Check Items

The following setting values must be checked beforehand, to ensure that EasyKM-Manager can successfully communicate with each Unit and the Ethernet/RS-485 adapters or RS-232C/RS-485 adapter.
Make sure that the communications protocol, baud rate, data bit length, stop bit length, and vertical parity are the same within each system.

Table 7: Check Items

Item	Settable range	Description
Unit No.	01 to 99	Assigned to identify each Unit in communications with EasyKM-Manager. Make sure that all the Unit No.s in the same system are unique and not duplicate.
Communications protocol	CompoWay/F Modbus	Select the communications protocol. Note: The protocol must be set to "CompoWay/F" in a system using the KM100 or KM20-B40. "Modbus" cannot be specified.
Baud rate (bps)	1200 2400 4800 9600 19200 38400	Specify the baud rate for RS-485 communications. The same value must be set for Units, adapters and EasyKM-Manager. Note: 9600 bps or higher must be set when using the KM1/KE1.
Data bit length	7, 8	Specify the data bit length for RS-485 communications. The same value must be set for Units, adapters and EasyKM-Manager. Note: Specify "8" if the communications protocol is set to "Modbus".
Stop bit length	1, 2	Specify the stop bit length for RS-485 communications. Note: Specify "1" if the communications protocol is set to "Modbus", vertical parity to "Even" or "Odd". If the vertical parity is "None", select "2".
Vertical parity	Even Odd Odd	Specify the vertical parity for RS-485 communications. The same value must be set for Units, adapters and EasyKM-Manager.
Slave ID	1 to 5	Slave ID numbers must be assigned to identify individual slave Units when connecting KM1/KE1 Units in series. Make sure that the IDs of all the slaves are unique and not duplicate.

● **Preparation for Using Ethernet/RS-485 Adapter**

Obtain the following information beforehand from your network administrator when using Ethernet/RS-485 adapters.

Note: If you use MOXA or LINEEYE adapters, refer to "9.5. Ethernet/RS-485 Adapter Setting Item List" (P. 9-58) for the items not listed above.

Table 8: Check Items for Using Ethernet/RS-485 Adapter

Item	Description
IP address (PC)	Assign the IP address to the PC running EasyKM-Manager.
IP address (Adapter)	Assign a fixed IP address to the adapter.
Port No. (Adapter)	Check the port No. for the adapter.
Subnet mask	Check the subnet mask.
Default gateway	Check the default gateway.

2.3.   Flow Until Operation Start

This section explains the flow until starting operation using EasyKM-Manager. Refer to this manual or individual Unit manuals for the details of each procedure.

- ・ Refer to the following "2.3.1. Using KM50/KM100/KM20-B40 Series" (P. 2-5) to use the KM50/KM100/KM20-B40.
- ・ To use the KM1/KE1, refer to "2.3.2. Using KM1/KE1 Series" (P. 2-16).

2.3.1.   Using KM50/KM100/KM20-B40 Series

The installation flow for the following Units is explained here.

Measurement target Units	KM50-E1-FLK
	KM50-C1-FLK
	KM100-T-FLK (without memory card)
	KM100-T-FLK (with memory card)
	KM20-B40-FLK

● **KM50/KM100/KM20-B40 Installation Flow**

| 【STEP 1】 Prior Unit preparation and setting | 【STEP 2】 Adapter setting | 【STEP 3】 Wiring/ Installation | 【STEP 4】 EasyKM-Manager setting | 【STEP 5】 Test operation/ Operation start |
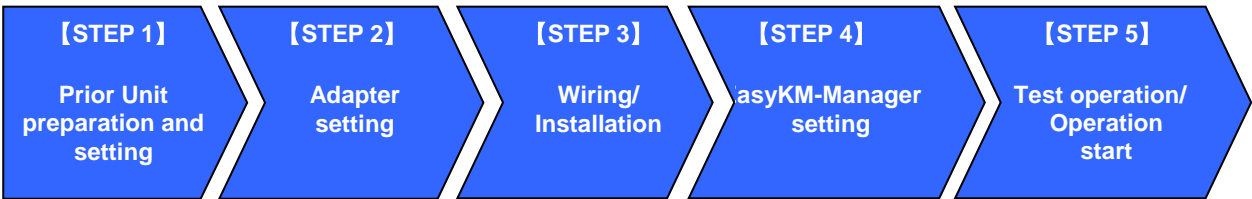
Figure 3: Installation Flow (KM50/KM100/KM20-B40)

【STEP 1】 Prior Unit preparation and setting	Reference
Make necessary settings on each Unit. See "■**KM50-C/E and KM100**" for setting the KM50-C/E or KM100 and "■**KM20-B40**" for setting the KM20-B40 respectively. **Precautions for Correct Use** ・ Unify the protocol and communications settings within a system. ・ The protocol for the KM100 and KM20-B40 is fixed to "CompoWay/F". If you use these models in the same system, specify "CompoWay/F" also for other model Units. ・ Make sure that the Unit No.s are not duplicated among all Units. ■ **KM50-C/E and KM100** 1. Power supply connection Power supply connection is required for communications settings. Connect the Unit to an appropriate power supply according to the Unit rating. 2. Communications setting Specify the following items on the Unit front panel. **Parameters** ・Protocol (*1)　・Unit No.　　　・Baud rate ・Data bit length　・Stop bit length　・Vertical parity *1. Select this when using the KM50-C/E. ■ **KM20-B40** 1. Unit No. setting Specify the Unit No using the Unit rotary switch. **Precautions for Correct Use** ・ Make sure that the KM20-B40 is set with the power supply turned OFF. 2. Communications setting Specify the following items using the Unit DIP switches. **Parameters** ・Baud rate　　　・Data bit length　・Stop bit length ・Vertical parity 3. Priority setting To prioritize the communications settings, turn the priority setting switch ON using the Unit DIP switch.	● User's manual or operation manual of each device

Precautions for Correct Use

The CT type and 5 ACT ratio DIP switch settings are disabled if the communications settings are prioritized.

4. Measurement setting

Specify the following items using the Unit DIP switches.

Parameters

・Phase electrical system setting ・VT ratio

Precautions for Correct Use

The phase electrical system and VT ratio only can be set with the DIP switches.

【STEP 2】 Adapter setting	Reference
EasyKM-Manager and Units can be connected in two ways. Use either method according to the operation environment. Refer to "■ **Ethernet/RS-485 Adapter**" to use Ethernet for Unit measurement with EasyKM-Manager. To use RS-232C or USB Virtual COM port for connection, refer to "■ **RS-232C/RS-485 Adapter**". **Precautions for Correct Use** Unify the communications settings between the RS-485 adapter side and Unit side. ■ **Ethernet/RS-485 Adapter** 1. PC network setting Make the following settings on the PC as required for Ethernet connection. **Parameters** ・IP address　　　　　　・Subnet mask　　　・Default gateway 2. Adapter setting Make necessary settings following the adapter manual instructions. **Parameters** Refer to "9.5. Ethernet/RS-485 Adapter Setting Item List" (P. 9-58) for the parameters required to set. ■ **RS-232C/RS-485 Adapter** If you use the K3SC-10 as the RS-232C/RS-485 adapter, follow the procedure below. When using another adapter, refer to the corresponding instruction manual. 1. Communications setting Specify the following items using the DIP switches on the K3SC-10 unit. Turn OFF other DIP switches not used for these settings. **Parameters** ・Baud rate　　　　・Data bit length　　　・Stop bit length ・Vertical parity 2. Driver installation Install the K3SC-10 driver in the PC.	● Operation manual of the corresponding adapter ● K3SC-10 Operation Manual ● K3SC-10 Virtual COM Port USB Driver Manual

【STEP 3】 Wiring/Installation	Reference
1. Wiring and installation Turn OFF the power to Units and provide CT input and voltage input wirings. Wire the Units and adapter using the RS-485 communications cable. Install the Units and adapter, connect the power supply cable and turn ON the power. 2. PC and adapter connection Connect the adapter to the PC. Use a LAN cable for Ethernet/RS-485 connection. For RS-232C/RS-485 connection, use an RS-232C cable or USB cable.	● User's manual or operation manual of each device

【STEP 4】 EasyKM-Manager setting	Reference
1. EasyKM-Manager installation Install EasyKM-Manager in the PC. **2. EasyKM-Manager startup** Start EasyKM-Manager. **3. Communications setting** Make EasyKM-Manager settings. Click the [Environmental setting] to button display the [Communication setting] tab, and specify the following items. The parameters required for Ethernet or RS-232C connection also must be specified.	• "5.1 Installation" (P. 5-1) • "6.2.1 Starting the Application" (P. 6-5) • "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20) "[1] Network type" "[2] Protocol" "[3] Interval"

Parameters

・Network type ・Protocol ・Interval

Precautions for Correct Use

Specify "5 minutes" to the interval in the initial use of each Unit. Change the setting after checking the successful data acquisition in "STEP 5 Test operation/Operation start".

■ **Ethernet/RS-485 Adapter**

Specify the following items for Ethernet connection.

Parameters

・IP address (PC) ・Ether unit name

・IP address (Adapter) ・Port No.

"[6]-1 IP address"

"[6]-2 Ether unit name"

"[6]-3 IP address"

"[6]-4 Port No."

■ **RS-232C/RS-485 Adapter**

Specify the following items for RS-232C connection.

Parameters

・Port No. ・Baud rate

・Data bit length ・Stop bit length ・Vertical parity

4. Unit registration

Register Unit information.

Click the [Environmental setting] button and the [Unit] tab and specify the Unit location name, measurement necessity and model name of each Unit in the corresponding Unit No.

Parameters

・Location name ・Measure ・Device model

・Ether unit No. (*1)

*1. Set the Ether unit No. specified as the communications partner in the [Communication setting] tab when using an Ethernet/RS-485 adapter.

Precautions for Correct Use

Select the [Measure] check boxes for all the Units including those not for periodic measurements, since communications tests must be performed with all the Units. Remove the check boxes of the Units not requiring periodic measurements after communications tests are successfully completed.

5. Communications check

Check if EasyKM-Manager can communicate with each Unit successfully.

Click the [Environmental setting] button and the [Communication setting] tab. Click the [Start test] button and ensure that communications with all the Units are "success" (Green color).
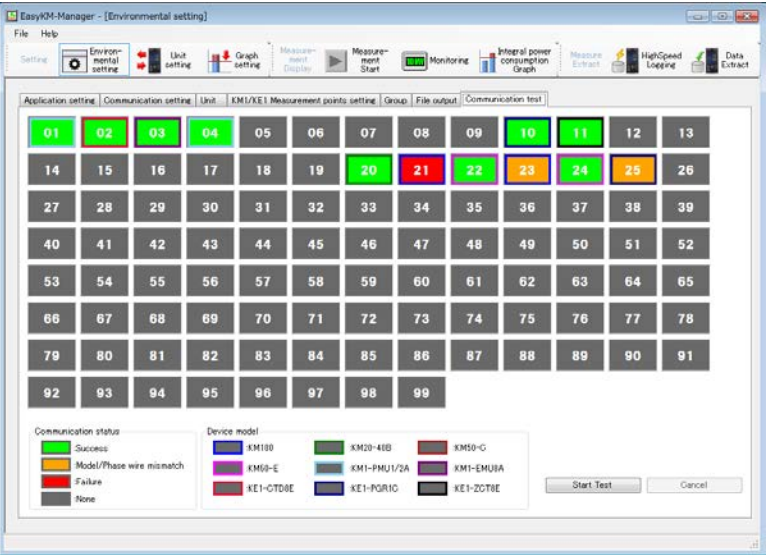
● "6.3.1.7.
Environmental
Setting -
[Communication
Test] Tab Page"
(P. 6-42)

"[1] Unit information"

6. Time setting

Reads the time from a Unit and writes the time to the Unit if necessary.

Select the [Unit setting] - [Time setting] tab for the setting.
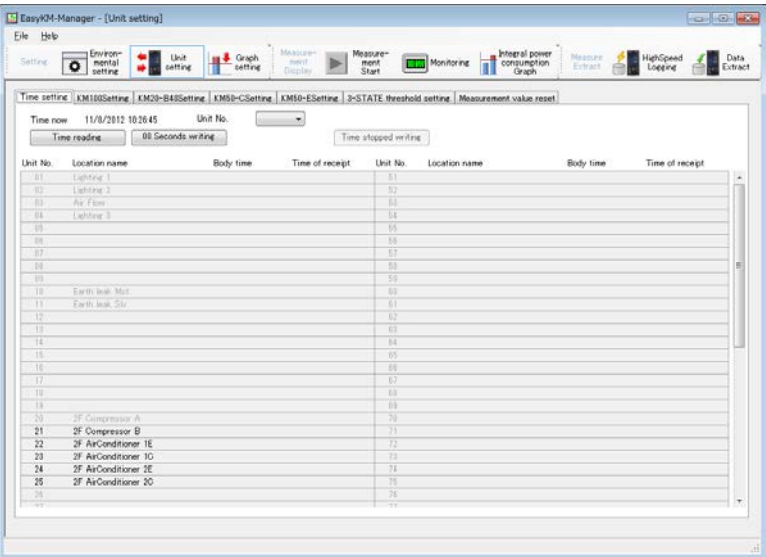
● "6.3.2.1. Unit
Setting - [Time
Setting] Tab
Page " (P. 6-48)

7. Measurement setting

Obtains the measurement settings from a Unit and write them to the Unit after editing.

Select the [Unit setting] - [Time setting] tab and make required settings depending on the model.
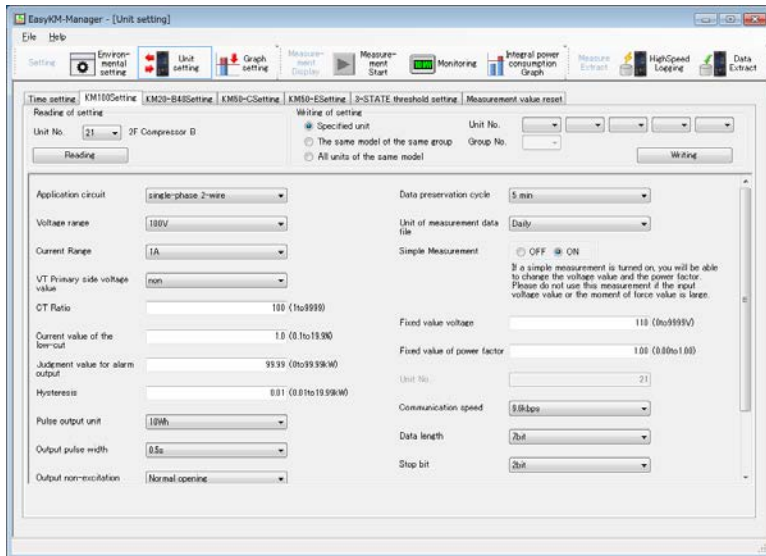
■ KM100

Use the [KM100 setting] tab for settings. The applied circuit and CT ratio settings are required to correctly measure voltage. Also make e.g. voltage range or current range settings required for measurement according to the installation environment.

- "6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50)

■ KM20-B40

Use the [KM20-B40 setting] tab for settings. The dedicated CT type setting is required to correctly measure voltage. Also specify the primary side rated current or zero out current values related to measurement according to the installation environment.

- "6.3.2.3. Unit Setting - [KM20-B40 Setting] Tab Page" (P. 6-53)

■ KM50-C

Use the [KM50-C setting] tab for settings. The applied circuit and dedicated CT type settings are required to correctly measure voltage. Also make the VT setting or pulse conversion setting related to measurement according to the installation environment.

- "6.3.2.4. Unit Setting - [KM50-C Setting] Tab Page" (P. 6-54)

■ KM50-E

Use the [KM50-E setting] tab for settings. The applied circuit and dedicated CT type settings are required to correctly measure voltage. Also make the VT setting or pulse conversion setting related to measurement according to the installation environment.

- "6.3.2.5. Unit Setting - [KM50-E Setting] Tab Page" (P. 6-55)

【STEP 5】 Test operation/Operation start	Reference
1. Measurement start Click the [Periodic measurements start] button and start periodic measurements. **2. Active power check** Click the [Monitoring] button and the [List of active power] tab. Check if EasyKM-Manager correctly obtains active powers. Also check if measurement values are obtained at the interval set in [Interval]. **Precautions for Correct Use** Use a meter on the control board or clamp meter to verify the measurement values obtained by EasyKM-Manager and check that settings and wirings are correct. 	• "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81) • "6.3.5.1. Monitoring - [List of Active Power] Tab Page" (P. 6-85)
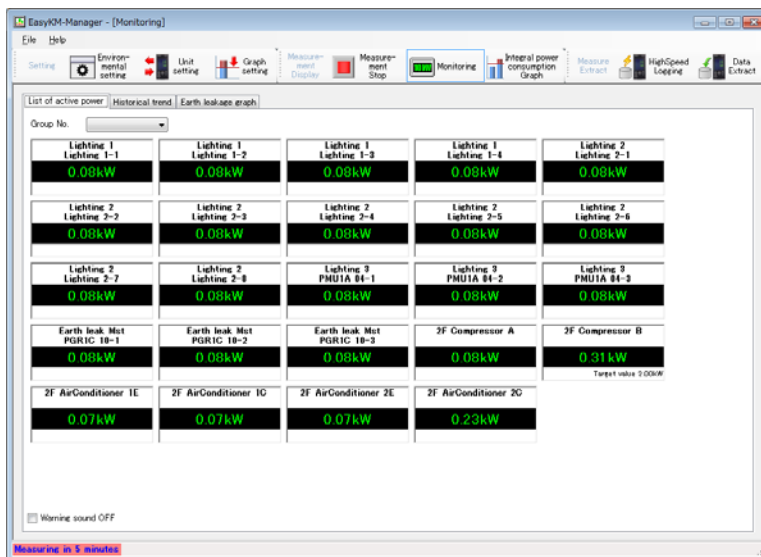
3. Individual measurement value check

Click the [Monitoring] button and the [Historical trend] tab. Check if EasyKM-Manager correctly obtains other measurement values (voltage, current, reactive power and power factor).
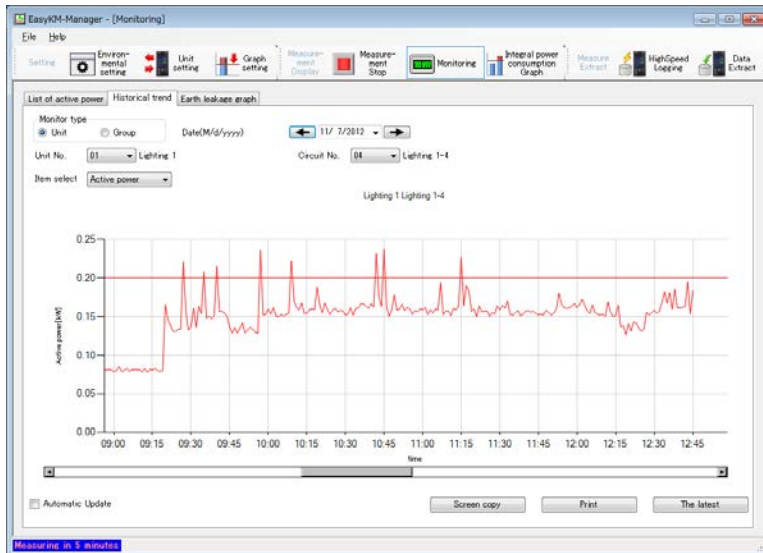
● "6.3.5.2. Monitoring - [Historical Trend] Tab Page" (P. 6-87)

4. Measurement stop

Click the [Measurement Stop] button and stop periodic measurements.

● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)

5. Installation/Setting correction

Correct the installation settings if measurement values are not correctly obtained. Check the active power and other values again.

● "6.3.2.8. Unit Setting - [Measurement Value Reset] Tab Page" (P. 6-63)
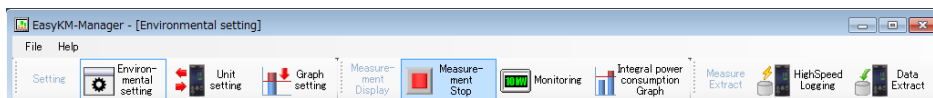
> **Additional Information**
>
> <Resetting measurement values>
>
> Click the [Unit setting] button and the [Measurement value reset] tab. Delete measurement values in test operation if necessary.

This concludes preparations for using EasyKM-Manager. Start operation.

2.3.2.　　Using KM1/KE1 Series

The installation flow for the following Units is explained here.

Measurement target Units	KM1-PMU1A-FLK
	KM1-PMU2A-FLK
	KM1-EMU8A-FLK (Must be linked to the measurement master Unit)
	KE1-CTD8E (Must be linked to the measurement master Unit)
	KE1-PGR1C-FLK
	KE1-ZCT8E (Must be linked to the measurement master Unit)

● Check Before KM1/KE1 Installation

The KM1/KE1 can provide multi-point measurement with a single Unit. To use multi-point measurement data obtained from KM1/KE1 Units on EasyKM-Manager, the data at each point must be specifically related to the Unit No. and terminal.

With EasyKM-Manager, the terminal for each measurement target is grouped as a measurement point, and registration for measurement or graph display is made by the unit of measurement points. If you use KM1/KE1 Units, confirm the measurement points before making settings with EasyKM-Manager.

<Check procedure>

1. Check the following items of the KM1/KE1 Units to install. Refer to "KM1 Smart Power Monitor User's Manual" or "KE1 Smart Measurement Monitor User's Manual" for the input terminals.
   ・Measurement location　　　(e.g. Air Conditioning 1)
   ・Model to install　　　　　　(e.g. KM1-PMU2A)
   ・Phase electrical system of measurement location　　(e.g. System 1,　3-phase 3-wire)
   ・Input terminal　　　　　　(e.g. CT input 1, CT input 2)

2. Refer to "Appendices: 9.1. KM1/KE1 Measurement Points" (P. 9-1) and locate the measurement points (Circuit No./event No., ZCT No.) by checking the items above.

3. Make settings following the procedure in "KM1/KE1 Series Installation Flow" (P. 2-18). The measurement points (Circuit No./event No., ZCT No.) mentioned above are specified in the "Measurement points setting" step in the procedure.

<Installation example>

If KM1-PMU2A Units are installed as shown below, Air Conditioning A (3-phase 3-wire) measured at CT inputs 1 and 2 are identified as "Circuit 1".

To display the measurement data at Air Conditioning A in graph, register the Circuit 1 in the [Environmental setting] - [Measurement points setting] tab page and specify the Unit No. and "Circuit 1" in each graph display page.
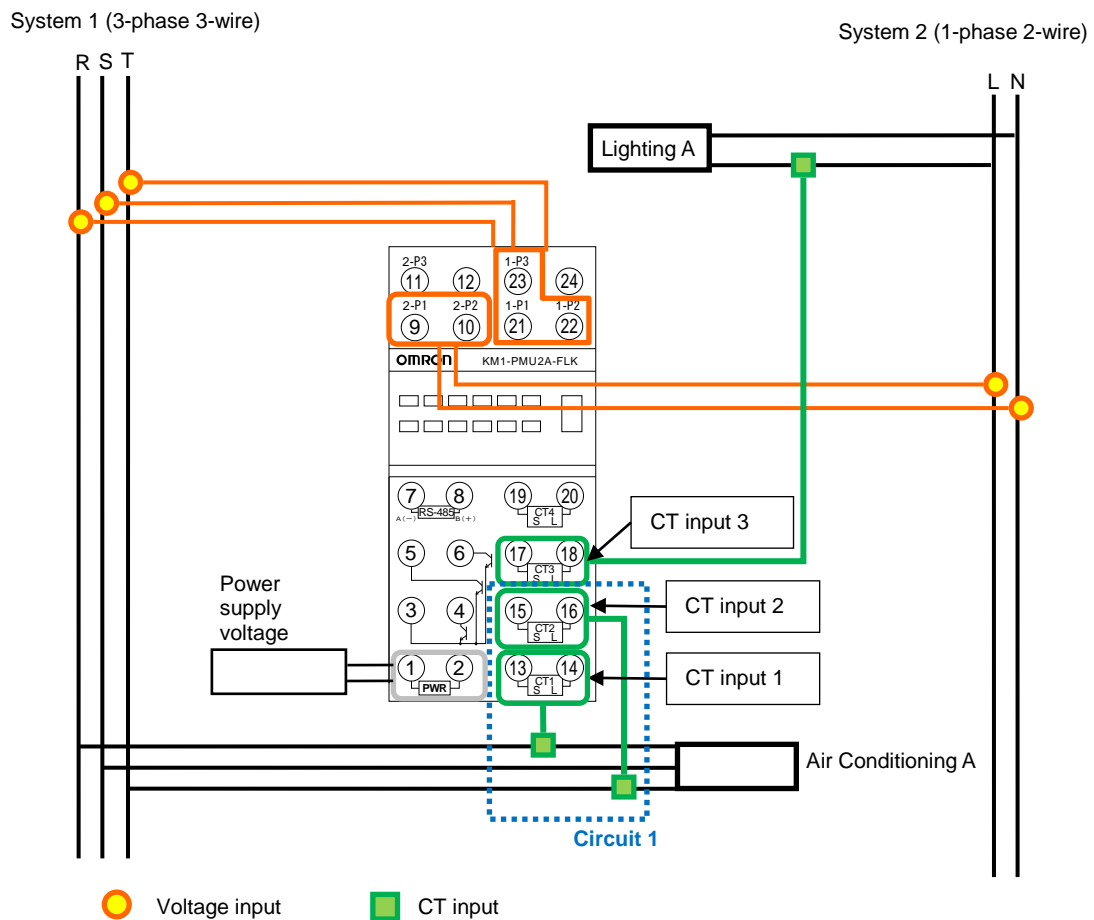
Figure 4: KM1-PMU2A Installation Example

Table 9: Input Terminal and Measurement Points Example

Measurement location	Model	Phase electrical system	Input terminal	Measurement point
Air Conditioning A	KM1-PMU2A	System 1 3-phase 3-wire	⑬⑭ CT input 1 ⑮⑯ CT input 2	Circuit 1
Lighting A	KM1-PMU2A	System 2 1-phase 2-wire	⑰⑱ CT input 3	Circuit 3

● **KM1/KE1 Series Installation Flow**

| 【STEP 1】 Prior Unit preparation and setting | 【STEP 2】 Adapter setting | 【STEP 3】 Installation/ Wiring | 【STEP 4】 EasyKM -Manager setting | 【STEP 5】 Test operation/ Operation start |
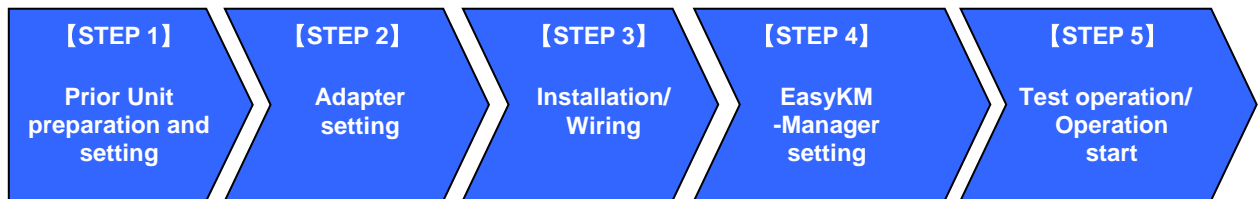
Figure 5: Installation Flow (KM1/KE1)

【STEP 1】 Prior Unit preparation and setting	Reference
This step details the preparations for using EasyKM-Manager. Make settings on KM1/KE1 Units using the KM1/KE1 setting tool ("KM1/KE1-Setting") and install the Units. **(1) Setting up the KM1/KE1-Setting tool** 　1.　KM1/KE1-Setting installation 　Install the KM1/KE1-Setting tool in the PC. 　2.　KM1/KE1-Setting communications setting 　Connect the Units and PC using a USB cable (A- or -miniB type). Start KM1/KE1-Setting and make the communications setting in [Application environmental setting]. 　**Parameters** 　・Communications protocol　・Connection　　・USB virtual COM port **(2) KM1/KE1 Unit setting** 　1.　Unit communications protocol setting 　Disconnect the USB cable (A- or -miniB type) from the Units and specify the communications protocol using the DIP switches on the Unit top panel. 　**Parameters** 　・Communications protocol 　**Precautions for Correct Use** 　Unify the protocol and communications settings within a system.	● User's manual for each Unit ● KM1/KE1-Setting User's Manual

2. Unit communications setting

Connect the PC and Units using a USB cable (A- or -miniB type) and perform [Unit search] on KM1/KE1-Setting. Make Unit No. and RS-485 communications settings in [KM1 Unit setting] or the [KM1 Unit setting] - [Communications setting] tab.

> **Parameters**
>
> ・Unit No.   ・Baud rate   ・Data bit length
>
> ・Stop bit length   ・Vertical parity

> **Precautions for Correct Use**
>
> ・ Make sure that the Unit No.s are not duplicated among all Units.
>
> ・ Check if KM1/KE1-Setting can correctly communicate with the Unit located in [Unit search] after setting the Unit No.

3. Measurement setting

Make the following settings in [KM1 Unit setting] or the [KM1 Unit setting] - [Measurement setting] tab on KM1/KE1-Setting.

The "used phase electrical system" and "dedicated CT type" settings are required for correct power measurement with the KM1/KE1. If the model is "KE1-CTD8E", "measurement block synchronization selection" also must be set. In addition to these settings, make necessary settings such as VT setting or pulse conversion setting in the [Measurement setting] tab.

> **Parameters**
>
> ・Used phase/wire system   ・Dedicated CT type
>
> ・Measurement block synchronized selection (*1)
>
> *1. Specify this if the KE1-CTD8E is used.

4. Time setting

Set the Unit time setting in the [Time setting] tab.

> **Precautions for Correct Use**
>
> The time setting for the KE1-CTD8E and KE1-ZCT8E is not required, since the setting on the measurement master Unit is used.

(3) Measurement setting for Units connected in series

When connecting slave Units to the measurement master Unit, the procedure in "(2) KM1/KE1 Unit setting" must be repeated for all the Units. After the above is completed, make connection configuration settings as follows.

1. Unit series connection

Connect all the Units using horizontal connection hooks and connectors.

2. Slave ID setting

Specify the slave ID for each slave Unit using the rotary switch on the Unit top panel.

Parameters

・Slave ID

Precautions for Correct Use

Make sure that the slave IDs of all the Units are unique and not duplicate.

3. Power supply connection

Connect the measurement master Unit and slave Units to power supply to verify the settings after the series connection configuration setting is completed.

4. Series connection configuration setting

Connect the PC and the measurement master Unit with a USB cable. Select [KM1 Unit setting] or the [KM1 Unit setting] - [Communications setting] tab on KM1/KE1-Setting and specify if the master Unit uses slave Units in [Series connection configuration].

5. Series connection configuration check

The Units restart when the USB cable is disconnected. Make sure that the series connection configuration settings is correct by checking the following.

・The [PWR] and [CONN] indicators are ON after the Units restart.

・Connect the PC and the measurement master Unit with a USB cable. Check if communications are established with all the Units in [Unit search] on KM1/KE1-Setting.

(4) Unit installation and wiring

1. Installation

Install the Units on a DIN rail or the wall surface.

2. Wiring/Turning power ON

Wire the power supply, CT inputs, voltage inputs and turn ON the power.

(5) Measurement value check/reset

1. Measurement value check (Monitoring)

Check measurement values in the [Monitoring] - [Instantaneous value] tab on KM1/KE1-Setting.

Precautions for Correct Use

Use a meter on the control board or clamp meter to verify the obtained measurement values in the KM1/KE1-Setting [Monitoring] tab and check that settings and wirings are correct.

2. Measurement value rest (Unit initialization)

Initialize the data except setting values ([MAX/MIN], [Measurement memory], [Alarm history] and [Integral power consumption]) in the [Unit initialization] tab.

【STEP 2】 Adapter setting	Reference

EasyKM-Manager and Units can be connected in two ways. Use either method according to the operation environment.
 	
Refer to "■**Ethernet/RS-485 Adapter**" to use Ethernet for Unit measurement with EasyKM-Manager.
 	
To use RS-232C or USB Virtual COM port for connection, refer to "■**RS-232C/RS-485 Adapter**".
 	
Precautions for Correct Use
 	
Unify the communications settings between the RS-485 adapter side and Unit side.
 	
■ **Ethernet/RS-485 Adapter**
  1. PC network setting
  Make the following settings on the PC as required for Ethernet connection.
 	
Parameters
 	
・IP address   ・Subnet mask   ・Default gateway
 	
  2. Adapter setting
  Make the settings below following the adapter manual instructions.
 	
Parameters
 	
Refer to "9.5. Ethernet/RS-485 Adapter Setting Item List" (P. 9-58) for the parameters required to set.
 	
■ **RS-232C/RS-485 Adapter**
If you use the K3SC-10 as the RS-232C/RS-485 adapter, follow the procedure below. When using another adapter, refer to the corresponding instruction manual.
 	
  1. Communications setting
  Specify the following items using the DIP switches on the K3SC-10 unit. Turn OFF other DIP switches not used for these settings.
 	
Parameters
 	
・Baud rate   ・Data bit length ・Stop bit length
・Vertical parity
 	
  2. Driver installation
  Install the K3SC-10 driver in the PC.
	● Operation manual of the corresponding adapter
	
	● K3SC-10 Operation Manual
	
	● K3SC-10 Virtual COM Port USB Driver Manual

【STEP 3】 Installation/Wiring	Reference
1. Wiring and installation Wire the measurement Unit and adapter using RS-485 communications cable and install the Unit. 2. PC and adapter connection Connect the adapter to the PC. Use a LAN cable for Ethernet/RS-485 connection. For RS-232C/RS-485 connection, use an RS-232C cable or USB cable.	● User's manual or operation manual of each device

【STEP 4】 EasyKM-Manager setting	Reference
1. EasyKM-Manager installation Install EasyKM-Manager in the PC. 2. EasyKM-Manager startup Start EasyKM-Manager. 3. Communications setting Make EasyKM-Manager settings. Click the [Environmental setting] button and the [Communication setting] tab, and specify the following items. The parameters required for Ethernet or RS-232C connection also must be specified. **Parameters** ・Network type ・Protocol ・Interval **Precautions for Correct Use** Specify "5 minutes" to the interval in the initial use of each Unit. Change the setting after checking the successful data acquisition in "STEP 5 Test operation/Operation start". ■ **Ethernet/RS-485 Adapter** Specify the following items for Ethernet connection. **Parameters** ・IP address (PC) ・Ether unit name ・IP address (Adapter) ・Port No.	● "5.1. Installation" (P. 5-1) ● "6.2.1 Starting the Application" (P. 6-5) ● "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20) "[1] Network type" "[2] Protocol" "[3] Interval" "[6]-1 IP address" "[6]-2 Ether unit name" "[6]-3 IP address" "[6]-4 Port No."

■ RS-232C/RS-485 Adapter

Specify the following items for RS-232C connection.

Parameters

・Port No.   ・Baud rate

・Data bit length   ・Stop bit length   ・Vertical parity

4. Unit registration

Register Unit information.

Click the [Environmental setting] button and the [Unit] tab and specify the Unit location name, measurement necessity and model name of each Unit in the corresponding Unit No.

Parameters

・Location name   ・Measure   ・Device model

・Ether unit No. (*1)

*1. Set the Ether unit No. specified as the communications partner in the [Communication setting] tab when using an Ethernet/RS-485 adapter.

Precautions for Correct Use

Select the [Measure] check boxes for all the Units including those not for periodic measurements, since communications tests must be performed with all the Units. Remove the check boxes of the Units not requiring periodic measurements after communications tests are successfully completed.

5. Measurement point setting Register Unit measurement points. Click the [Environmental setting] button to and the [KM1/KE1 measurement points setting] tab. Make the phase electrical system and [Use Yes/No] and measurement point name settings for each measurement point of each Unit registered in the [Unit] tab. **Parameters** ・Phase electrical system　　・Use Yes/No　　・Name	Environmental Setting - [Measurement Points Setting] Tab Page" (P. 6-32) "[1]-4 phase electrical system" "[1]-6 Use Yes/No" "[1]-7 Name"
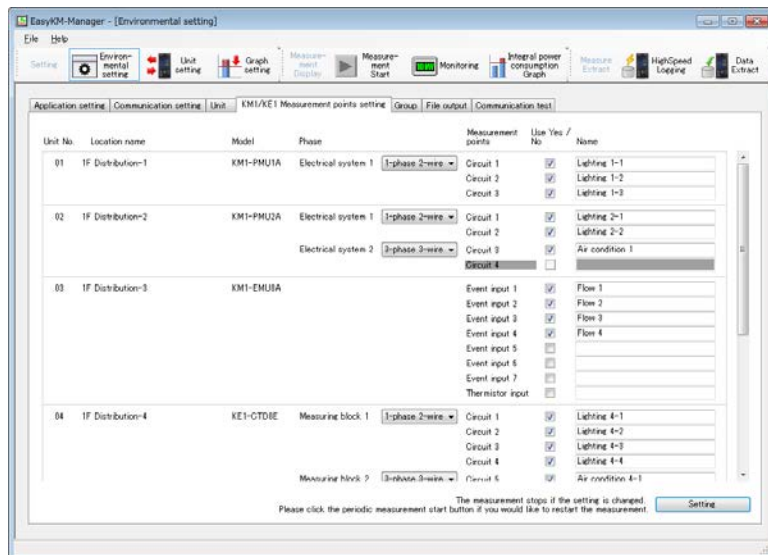
6. Communications check Check if EasyKM-Manager can communicate with each Unit successfully. Click the [Environmental setting] button and the [Communication setting] tab. Click the [Start test] button and ensure that communications with all the Units are "success". **Precautions for Correct Use** The "model/phase electrical system inconsistency" warning is displayed in orange if the phase electrical system settings made on a Unit and in the [KM1/KE1 measurement points setting] tab are not the same. Check and match the settings on the Unit and in the [KM1/KE1 measurement points setting] tab.	● "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42)

【STEP 5】 Test operation/Operation start	Reference
1. Measurement start Click the [Periodic measurements start] button and start periodic measurements. **2. Active power check** Click the [Monitoring] button and the [List of active power] tab. Check if EasyKM-Manager correctly obtains the active power of each circuit. Also check if measurement values are obtained at the interval set in [Interval]. **Precautions for Correct Use** Use a meter on the control board or clamp meter to verify the measurement values obtained by EasyKM-Manager and check that settings and wirings are correct. 	● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81) ● "6.3.5.1. Monitoring - [List of Active Power] Tab Page" (P. 6-85)
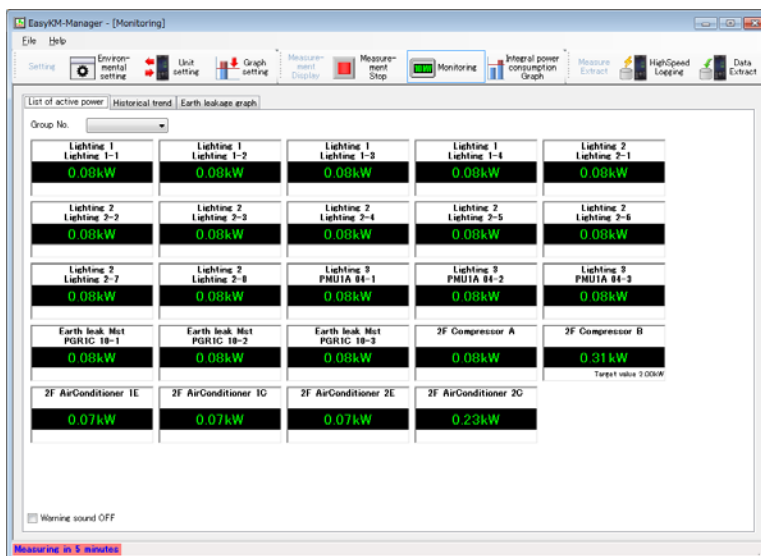
3. Individual measurement value check

Click the [Monitoring] button and the [Historical trend] tab. Check if EasyKM-Manager correctly obtains the other measurement values (voltage, current, reactive power and power factor) from each circuit.

Precautions for Correct Use

Check if values other than the active power are correct. Also check if EasyKM-Manager obtains measured values at the interval specified in [Interval].
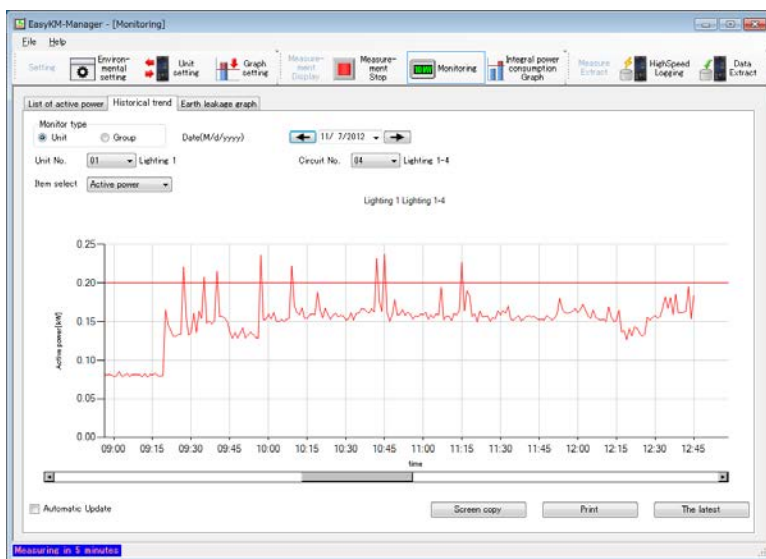
4. Measurement stop

Click the [Measurement Stop] button and stop periodic measurements.

5. Installation/Setting correction

Correct the installation settings if measurement values are not correctly obtained. Check the active power and other values again.

Note

Use the KM1/KE1 setting tool ("KM1/KE1-Setting") to delete measurement data obtained in test operation.

This concludes preparations for using EasyKM-Manager. Start operation.

3. Main Function Operation

This chapter describes the procedures to use the main functions of EasyKM-Manager.

Select the section you want to refer from the page list below. This chapter only shows a simplified version of required operation and settings. Refer to "6.3. Tab Page Operation" (P. 6-15) for detailed explanation when operating individual procedures.

3.1.　Periodic Measurements

Periodic Measurements	Reference
1.　Click the [Environmental setting] button in the Function Menu and the [Communication test] tab. 2.　Click the [Start test] button. A message appears to confirm if you want to start communication test. 3.　Click the [Yes] button. When the test is complete, a message appears indicating that communication test is completed. 4.　Click the [OK] button. 5.　Check that the communications with the Unit for periodic measurements is "success" (Green). 6.　Click the [Environmental setting] button in the Function Menu and the [Communication setting] tab. 	● "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42) "[1] Unit information" ● "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20)
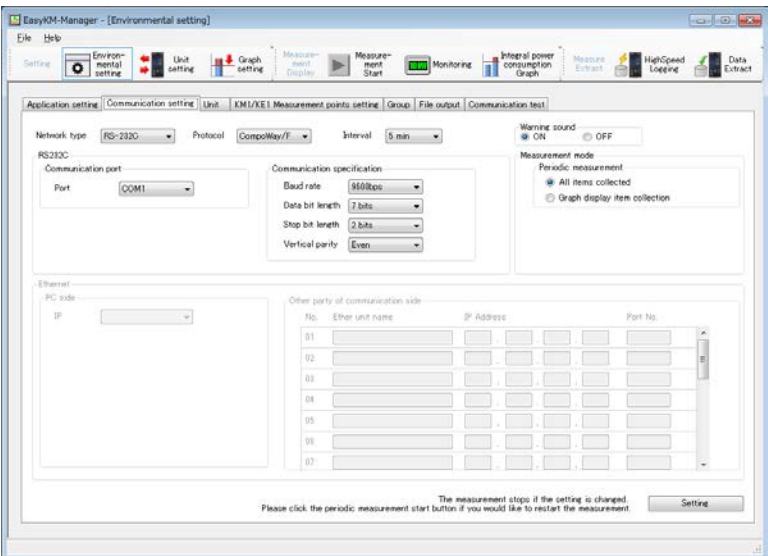
7. Specify the periodic measurements interval (1 minute/5 minutes/10 minutes) in [Interval].	"[3] Interval"
8. Click the [Setting] button. A dialog appears to confirm if you want to apply the setting.	
9. Click [Yes] to apply the setting. The dialog appears indicating that the settings are completed.	
10. Click the [OK] button.	
11. Click the [Measurements start] button in the Function Menu. EasyKM-Manager starts periodic measurements and shows the indication at the left of the page that measurement is being performed at "X" interval ("X" stands for the specified communications interval). 	● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)
12. To stop periodic measurements, click the [Measurement Stop] button and click the [Yes] button in the confirmation dialog. This concludes the periodic measurements procedure.	
Note • Use the [File output] tab to copy and output measurement data. • The file output timing can be selected from 1 minutes, 1 hour and 1 day.	● "6.3.1.6. Environmental Settings - [File Output] Tab Page" (P. 6-40)

3.2. Instantaneous Value Display

Instantaneous Value Display	Reference

■ **Displaying active power instantaneous values in a list**
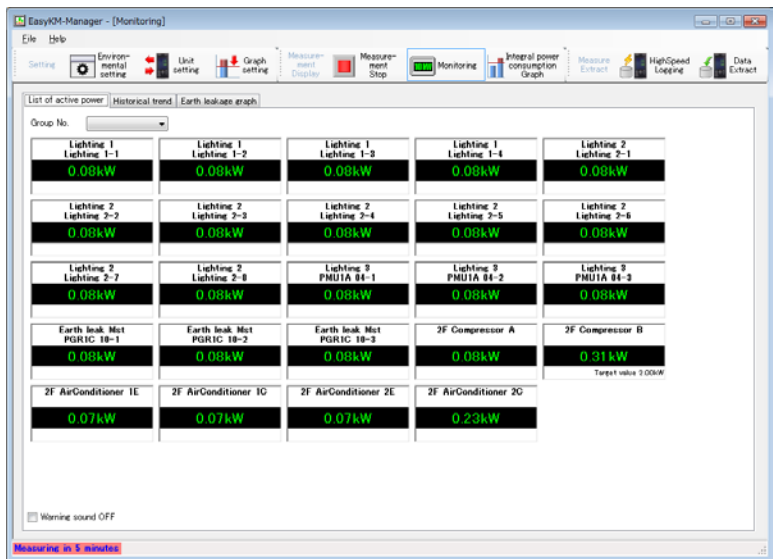
1. Start periodic measurements.

2. Click the [Monitoring] button in the Function Menu and the [List of active power] tab. Active power values obtained with periodic measurements are displayed in green for each Unit or circuit in a list.

   This concludes the procedure to display active power values.

   ┌─────────────┐
   │   **Note**   │
   └─────────────┘

• The Units can be displayed in groups according to the [Group No.] specified for them.
• Units are displayed in red (in the background) if their values exceed the target value or they have a communications problem.

Reference

● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)
● "6.3.5.1. Monitoring - [List of Active Power] Tab Page" (P. 6-85)

"[1] Group No."

"[2]-2 Active power"

■ **Displaying instantaneous values (Active power/voltage/current/reactive power/power factor) in graph**

1. Start periodic measurements.

    ● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)
    ● "6.3.5.2. Monitoring - [Historical Trend] Tab Page" (P. 6-87)

2. Click the [Monitoring] button in the Function Menu and the [Historical trend] tab. Instantaneous active power values obtained with periodic measurements are displayed in graph.

3. To display the graph of a specific measurement target, select [Monitor type], (Unit/Group), [Date], [Unit No.] (or [Group No.]) and [Circuit No.].

    "[1] Monitor type"

    "[2] Date"

    "[3] Unit No. or Group No."

    "[5] Circuit No."

4. The type of instantaneous value can be selected (from active power/voltage/current/reactive power/power factor) in [Item select].

    "[4] Item select"

    This concludes the procedure to display instantaneous values.

3.3. Multiple Integral Power Consumption Graphs Display

Integral Power Consumption Graphs Display	Reference

■ **Displaying multiple daily integral power consumption graphs**

1. Start periodic measurements.

- ● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)

2. Click the [Integral power consumption graph] button in the Function Menu and the [Graph list (Daily)] tab. The daily integral power consumption graphs for individual Units/circuits are displayed in the same tab page.

- ● "6.3.6.1. Integral Power Consumption Graphs - [Graph List (Daily)] Tab Page" (P. 6-96)

3. If you want to change the day, specify the date in [Date]. The display can be changed by specifying [Time interval] (1 hour/30 minutes) or [Group No.].

   This concludes the procedure to display multiple daily integral power consumption graphs in the same tab page.

"[1] Date"

"[2] Time interval"

"[5] Group No."

■ Displaying multiple monthly integral power consumption graphs

1. Start periodic measurements.

   ● "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)

2. Click the [Integral power consumption graph] button in the Function Menu and the [Graph list (Monthly)] tab. The monthly integral power consumption graphs for individual Units/circuits are displayed in the same tab page.

   ● "6.3.6.2. Integral Power Consumption Graphs - [Graph List (Monthly)] Tab Page" (P. 6-101)

3. If you want to change the month, specify the month in [Date]. The graphs for individual groups can be displayed by selecting [Group No.].

   "[1] Date"

   "[4] Group No."

   This concludes the procedure to display multiple monthly integral power consumption graphs.

3.4. Individual Integral Power Consumption Graph Display

Individual Integral Power Consumption Graph Display	Reference

1. Start periodic measurements.

2. Click the [Integral power consumption graph] button in the Function Menu and the [Individual graph] tab.

3. Select [Unit No.] in the "Bar graph switching" list box.

4. Select [Integral power consumption] for the bar graph type.

5. Select [Circuit No.] for a KM1/KE1 Unit.

6. The [Graph type] (Daily/Monthly), [Monitor type] (Unit/Group) and [Time interval] parameters can be changed.

   This concludes the procedure to display an individual integral power consumption graph.

Reference

- "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81)
- "6.3.6.3. Integral Power Consumption Graphs - [Individual Graph] Tab Page" (P. 6-104)

"[5] Bar graph switching"

"[1] Graph type"

"[2] Monitor type"

"[3] Time interval"

Note	"[5]-2　Measurement item (Bar graph)"
■ **Displaying 3-STATE integral power consumption graph**	
(Applicable models: KM50-E, KM1-PMU1A, KM1-PMU2A)	
1. Select [Unit No.] to display in the "Bar graph display switching" list box.	
2. Select "3-STATE integral power consumption" for the bar graph type.	
3. Select [Circuit No.] for a KM1/KE1 Unit.	
■ **Displaying pulse input**	"[6]-3　Measurement item (Line graph)"
1. Select the [Unit No.] radio button from the Line graph display switching options.	
2. Select the [Unit No.] of the Unit used to measure pulse input.	
3. Select the pulse input type to display for the line graph type.	
4. Select [Event No.] for a KM1/KE1 Unit.	

3.5. Group Setting

Group Setting	Reference
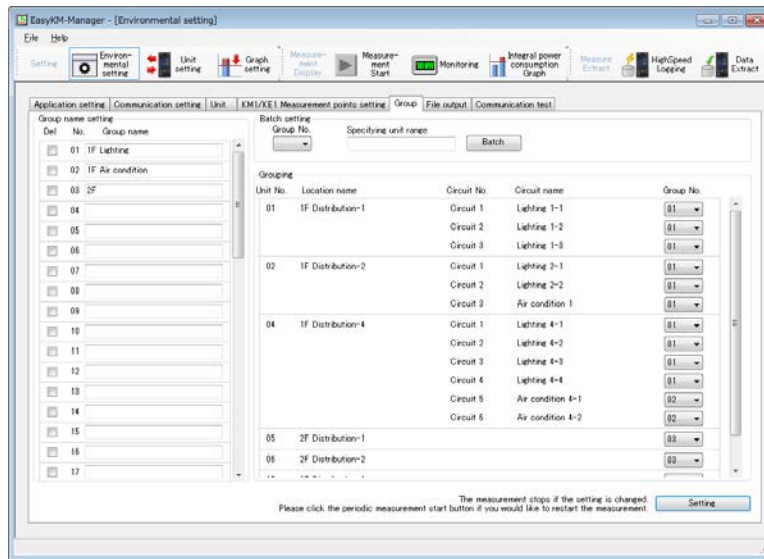
1. Click the [Environmental setting] button in the Function Menu and the [Group] tab.

2. Specify [Group name] in "Group name setting".

3. Click the [Setting] button. A dialog appears to confirm if you want to apply the setting.

4. Click [Yes] to apply the setting. The dialog appears indicating that the setting is completed.

5. Click the [OK] button. Group registration is completed.

6. Specify the [Group No.] of the registered group for the Units/circuits to include in this group in "Grouping".

7. Click the [Setting] button. A dialog appears to confirm if you want to apply the setting.

8. Click [Yes] if you want to register the Units/circuits in the group. The dialog appears indicating that the setting is completed.

9. Click the [OK] button. The group registration of the Units/circuits is completed.

   This concludes the group registration procedure.

Reference column:
- "6.3.1.5. Environmental Setting - [Group] Tab Page" (P. 6-33)
  "[1]-2 Group name"

"[2]-1 Group No."

3.6.   Target Value Setting

Graph Setting	Reference

■ **Setting active power target value**
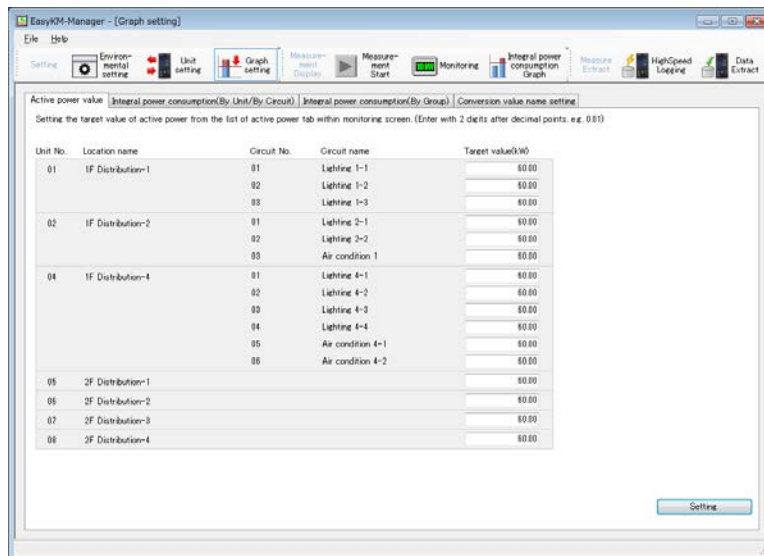
1. Click the [Graph setting] button in the Function Menu and the [Active power value] tab.

2. Specify the target value (kW) for each Unit/circuit.

3. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings.

4. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.

5. Click the [OK] button.

    This concludes the procedure to set active power target values.

    ┌─────────────┐
    │   **Note**   │
    └─────────────┘

    EasyKM-Manager warns, if the specified values are exceeded, by sounding an alarm or changing the display background color in the [Monitoring] - [List of active power] tab page.

Reference

● "6.3.3.1. Graph Setting - [Active Power Value] Tab Page" (P. 6-71)

"[1]-5 Target value (kW)"

■ **Setting Unit/circuit integral power consumption target value**

1. Click the [Graph setting] button in the Function Menu and the [Integral power consumption (By Unit/Circuit)] tab.

2. Specify the target value (kW) for each Unit/circuit.

3. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings.

4. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.

5. Click the [OK] button.

   This concludes the procedure to set integral power consumption value for each Unit/circuit.

   ┌─────────────┐
   │   **Note**   │
   └─────────────┘

   · EasyKM-Manager warns, if the specified values are exceeded, by sounding an alarm or changing the color of the related graph portions in the [Integral power consumption graphs] - [Graph list (Daily)] or [Individual graph] tab page.
   · Group-specific integral power consumption target values can be specified in the [Integral power consumption (By group)] tab.

● "6.3.3.2. Graph Setting - [Integral Power Consumption (By Unit/Circuit)] Tab Page" (P. 6-73)

"[1] Target value setting"

● "6.3.3.3. Graph Setting - [Integral Power Consumption (By Group)] Tab Page" (P. 6-76)

3.7. Measurement Data Acquisition at Interval of Seconds

Measurement Data Acquisition at Interval of Seconds	Reference

1. Click the [High-speed Logging] button in the Function Menu.

- "6.3.7.1. High-speed Logging Tab Page" (P. 6-114)
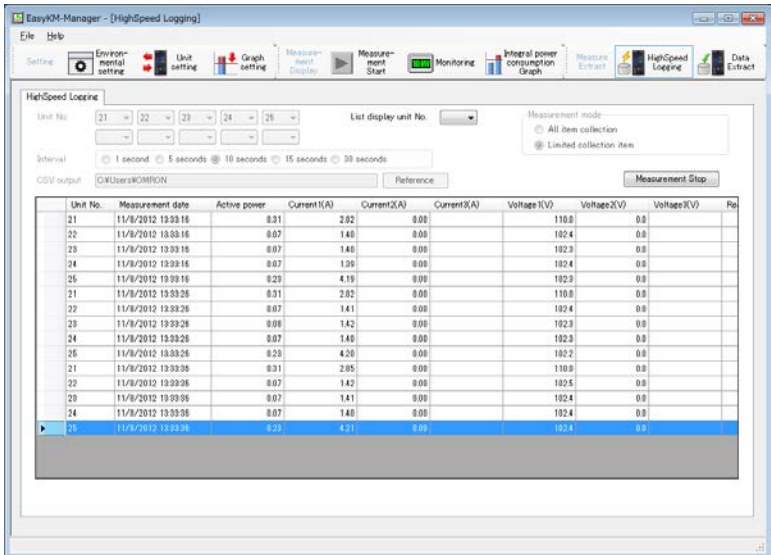
2. Select [Interval] from "1 second", "5 seconds", "10 seconds", "15 seconds" and "30 seconds".

"[1] Interval"

3. Specify the [Unit No.] of the Unit measurement data is obtained from.

"[2] Unit No."

4. Click the [Reference] button to specify the [CSV output] for the obtained measurement data.

"[3] CSV output"

5. Click the [Measurement Start] button. A message appears to confirm if you want to start measurement.

6. Click the [Yes] button to start measurement. The measurement results are shown at every measurement interval.

"[7] Measurement result list"

7. To finish high-speed logging, click the [Measurement Stop] button. A message appears to confirm if you want to stop measurement.

8. Click the [Yes] button. A dialog appears indicating that measurement is stopped.

9. Click the [OK] button.

Precautions for Correct Use

- High-speed logging and periodic measurements cannot be performed concurrently.
- High-speed logging is not supported for the KM1/KE1.

3.8.   KM50/KM100 Data Manual Extraction

Manual KM50/KM100 Data Extraction	Reference

■ **Extracting KM50-C/E measurement data**
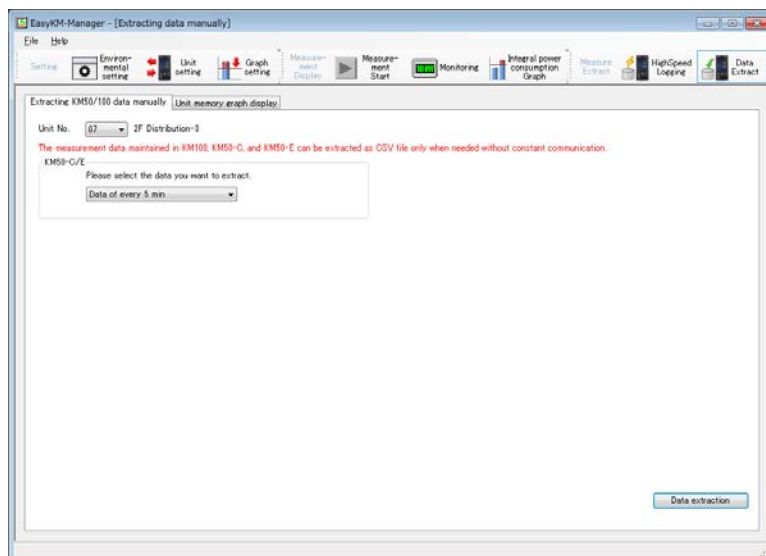
1. Click the [Data Extract] button in the Function Menu and the [Extracting KM50/100 data manually] tab.

2. Select the KM50 Unit No. to extract data from in [Unit No.].

3. Select the measurement data to extract in [KM50-C/E].

4. Click the [Data Extraction] button. A message appears to confirm if you want to extract the time data.

5. Click the [Yes] button. A message appears to confirm if you want to extract the data.

6. Click the [Yes] button. Specify the output folder in [Browse for Folder]. When the process is completed, a message appears to notify that data extraction is completed.

7. Click the [OK] button.

    This concludes the procedure to extract data from a KM50-C/E Unit.

● "6.3.8.1. Data Extract - [Extracting KM50/100 Data Manually] Tab Page" (P. 6-119)

"[1] Unit No."

"[3] KM50-C/E"

"[2] Data extraction"

■ **Extracting KM100 measurement data**
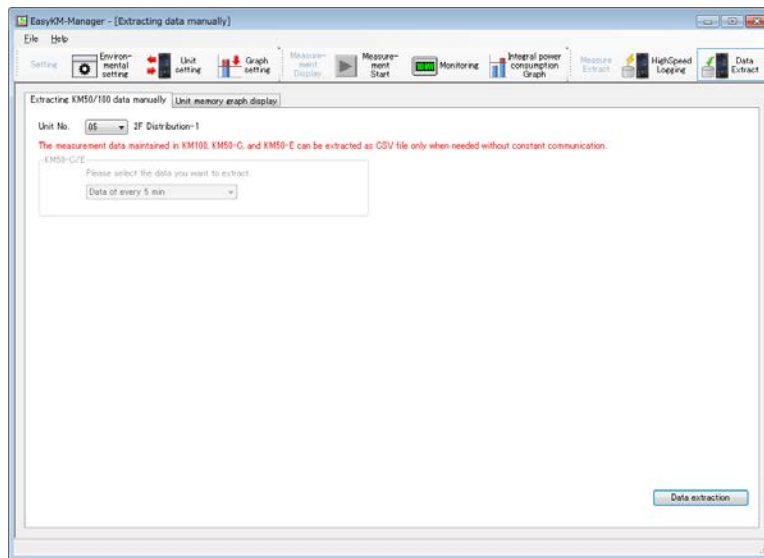
1. Click the [Data Extract] button in the Function Menu and the [Extracting KM50/100 data manually] tab.

2. Select the KM100 Unit No. to extract data from in [Unit No.].

3. Click the [Data extraction] button. A message appears to confirm if you want to extract log data.

4. Click the [Yes] button and wait until the "KM100 Power Monitor" window appears.

5. Select the data period to extract in the "KM100 Power Monitor" window and click the [Data Extraction] button. The [Browse for Folder] appears.

6. Specify the output folder and click the [OK] button. A message appears to notify that data extraction is completed.

7. Click the [OK] button and closes the "KM100 Power Monitor" window using [×] button.

   This concludes the procedure to extract data from a KM100 Unit.

● "6.3.8.1. Data Extract - [Extracting KM50/100 Data Manually] Tab Page" (P. 6-119)

"[1] Unit No."

"[2] Data extraction"

■ **Displaying manually extracted data in graph**
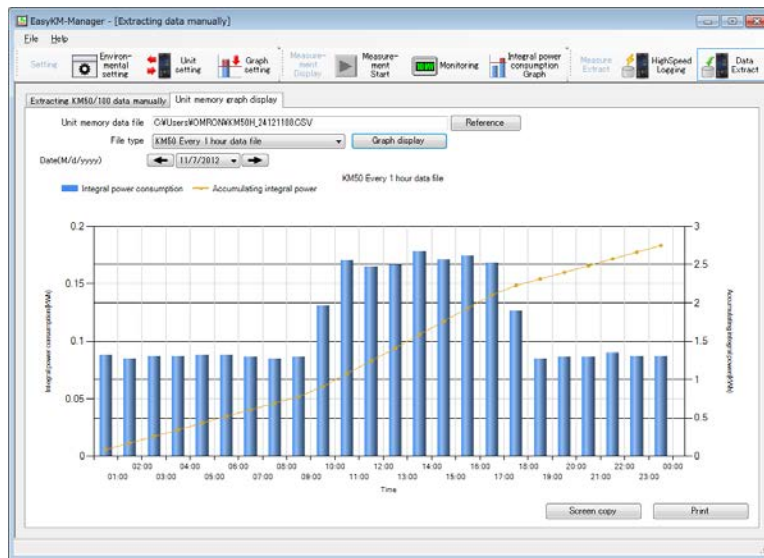
1. Click the [Data Extract] button in the Function Menu and the [Unit memory graph display] tab.

2. Click the [Reference] button and specify the file to display in graph.

3. Specify [File type].

4. Click the [Graph display] button. The graph is displayed.

5. The graph display conditions for KM100 and KM50 models are different. See the reference column for the details.

   This concludes the procedure to display manually extracted data in graph.

● "6.3.8.2.Data Extract - [Unit Memory Graph Display] Tab Page" (P. 6-123)

"[3] File type"

"[5] Graph display conditions (KM100 data)" or "[5] Graph display conditions (KM50 data)"

3.9. 3-STATE Threshold Setting for KM50-E

3-STATE Threshold Setting	Reference
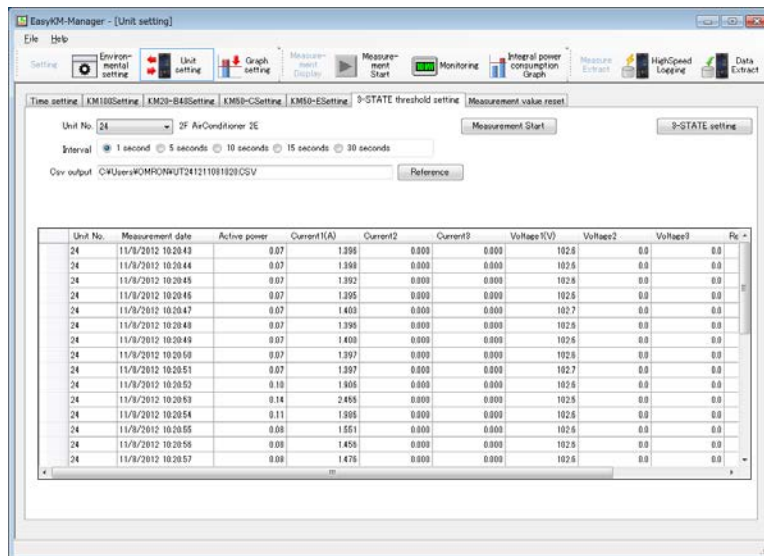
1. Click the [Unit setting] button on the Function Menu and the [3-STATE threshold setting] tab.

2. Specify [Unit No.], [Interval] and [CSV output].

3. Click the [Measurement Start] button. A message appears to confirm if you want to start measurement.

4. Click the [Yes] button. Measurement starts.

5. Click the [Measurement Stop] button when required data for 3-STATE setting is obtained. A message appears to confirm if you want to stop measurement.

6. Click the [Yes] button. A dialog appears indicating that measurement is stopped.

7. Click the [OK] button.

- "6.3.2.6. Unit Setting - [3-STATE Threshold Setting] Tab Page (Data List Window)" (P. 6-56)

"[1] Unit No."

"[2] Interval"

"[3] CSV output"

"[4] Measurement Start"

8. Click the [3-STATE setting] button to switch the display to the 3-STATE Threshold Setting tab page.	"[6] 3-STATE setting"
9. Check that the relevant Unit file is selected in [Reading CSV] and click the [Display] button. The graph is displayed.	● "6.3.2.7. Unit Setting - [3-STATE Threshold Setting] Tab Page (3-STATE Settings Window)" (P. 6.3.2.7)
10. Select the parameter (power/current/voltage) for the graph in [3-STATE judgment]. The graph changes when the parameter is selected.	"[4] 3-STATE judgment"
11. Specify [HIGH threshold] and [LOW threshold] in the graph. To change the graph scale, use [Y-axis display range].	"[5] Threshold inputs"
12. Click the [Threshold setting] button to write the HIGH and LOW thresholds to the KM50-E. A message appears to confirm if you want to write threshold setting.	"[6] Threshold setting"
13. Click the [Yes] button to write the setting. A message appears to indicate that threshold setting is completed.	
14. Click the [OK] button.	
This concludes the procedure to set the 3-STATE thresholds.	

3.10. Earth Leakage Graph Display

Earth Leakage Display in Graph	Reference
	● "6.3.5.3. Monitoring - [Earth Leakage Graph] Tab Page" (P. 6-91)
1. Click the [Monitoring] button in the Function Menu and the [Earth leakage graph] tab.	
2. Specify [Unit No.] and [ZCT No.]. The corresponding earth leakage graph is displayed.	"[3] Unit No." "[4] ZCT No."
3. You can select the graph display period in [Graph type] (1 day/1 month/1 year). A specific date can also be specified in [Date].	"[1] Graph type" "[2] Date"
This concludes the procedure to display an earth leakage graph.	
Note	
If you want to display the earth leakage criteria in the graph, specify [Earth leakage criteria] and click the [Setting] button.	"[5] Earth leakage criteria"

3.11. Unit Setting Value Change

Unit Setting Value Change	Reference

■ Setting Unit clock
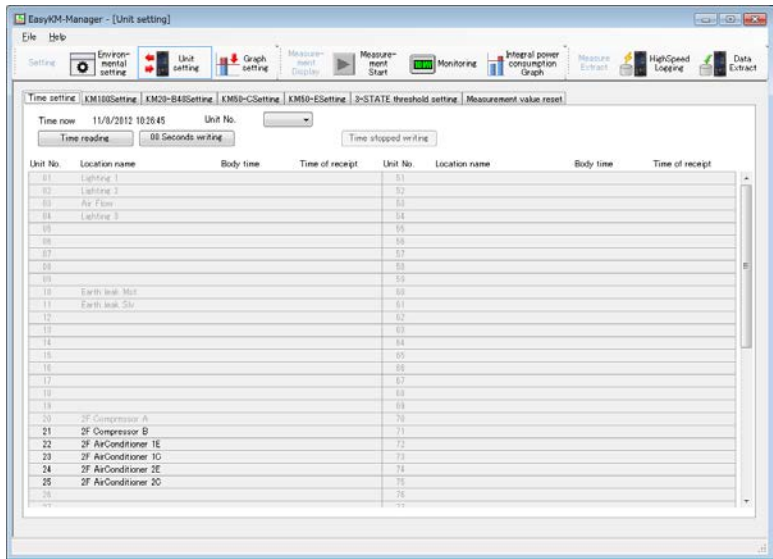
1. Click the [Unit setting] button on the Function Menu and the [Time setting] tab.

- "6.3.2.1. Unit Setting - [Time Setting] Tab Page" (P. 6-48)

2. Click the [Time reading] button. After the Unit internal time is obtained, a message appears indicating that time reading is completed.

"[1] Time reading"

3. Click the [OK] button. [Body time] and [Time of receipt] are displayed in the time reading result list.

"[7] Time reading result list"

4. Click the [00 Seconds writing] button to write time in the Unit. A dialog appears to confirm if you want to apply the setting.

"[4] 00 Seconds writing"

5. Click the [Yes] button to make the setting. Time is counted down until the digit of "second" reaches "00" in [Time now] and the time is written to the selected Unit.

6. When a message appears to indicate that time writing is completed, click the [OK] button.

7. Check that the time is written correctly by reading the Unit time again.

   This concludes the Unit time setting procedure.

■**Changing KM100/KM20-B40/KM50-C/KM50-E setting values**
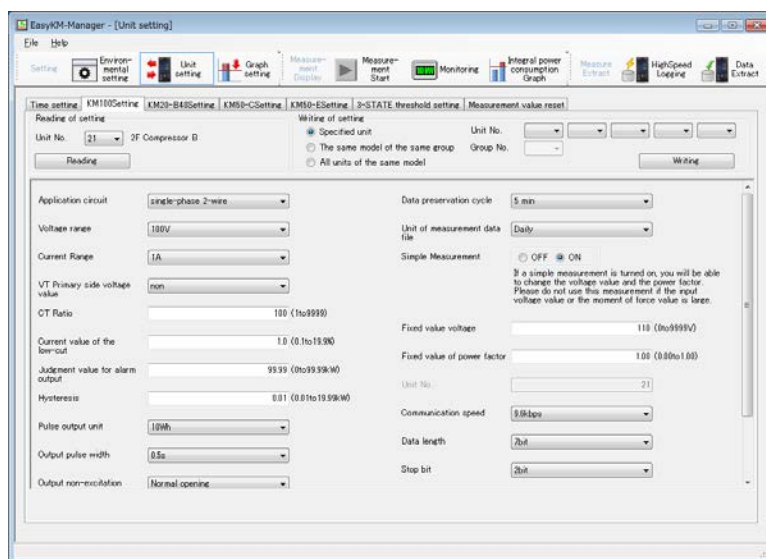
1. Click the [Unit setting] button on the Function Menu and click a specific model setting tab ([KM100 setting] tab, [KM20-B40 setting] tab, [KM50-C setting] tab or [KM50-E setting] tab).

2. Select [Unit No.] in "Reading of setting" and click the [Reading] button.

3. Edit the set information.

4. Select the [Unit No.] of the target Unit to write the setting in "Writing of setting" at the right top of the page.

Note

   You can specify the writing target from the options: "Specified unit", "The same model of the same group" and "All units of the same model".

5. Click the [Writing] button. A message appears to confirm if you want to write the setting.

6. Click the [Yes] button to write the setting. A message appears to indicate that parameter writing is completed.

7. Click the [OK] button.

8. Click the [Reading] button and check that the setting is successfully applied to the Unit.

   This concludes the procedure to change setting values.

- "6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50)
- "6.3.2.3. Unit Setting - [KM20-B40 Setting] Tab Page" (P. 6-50)
- "6.3.2.4. Unit Setting - [KM50-C Setting] Tab Page" (P. 6-54)
- "6.3.2.5. Unit Setting - [KM50-E Setting] Tab Page" (P. 6-55)

■ **Changing KM1/KE1 setting values**	● KM1/KE1-Setting
Use the KM1/KE1 setting tool ("KM1/KE1-Setting") to change the set values of KM1/KE1 Units.	User's Manual

4. Difference Between Versions

This chapter details the difference between EasyKM-Manager Ver. 2.0.1 and Ver. 3.0.0.

If the version of your EasyKM-Manager is Ver. 1.0.0 or Ver. 2.0.1, an upgrade installation is necessary (See 5.1.3. Upgrade Installation" (P. 5-5)). The current setting information and measurement data are retained if EasyKM-Manager is upgraded.

■Changes from Ver. 2.0.1 to Ver. 3.0.0

The new version supports the KM1/KE1 in addition to the KM series supported with the older version, and the functions related to this change have been upgraded. The table below shows the changes made with individual functions.

Table 10: Difference Between Versions

Function		Change	Reference
Environmental setting	Application setting	No functional change.	6.3.1.1. Environmental Setting - [Application Setting] Tab Page (P. 6-17)
	Communication setting	No functional change.	6.3.1.2. Environmental Setting - [Communication Setting] Tab Page (P. 6-20)
	Unit registration	KM1/KE1 Units can be selected.	6.3.1.3. Environmental Setting - [Unit] Tab Page (P. 6-26)
	KM1/KE1 measurement points setting	The KM1/KE1 phase electrical system, measurement points and circuit name settings are added.	6.3.1.4. Environmental Setting - [Measurement Points Setting] Tab Page (P. 6-32)
	Group registration	KM1/KE1 circuits can be registered in a group.	6.3.1.5. Environmental Setting - [Group] Tab Page (P. 6-36)
	File output	KM1/KE1 measurement data can be output in a file.	6.3.1.6. Environmental Settings - [File Output] Tab Page (P. 6-40)
	Communications test	KM1/KE1 Units can be selected for communications test. "Setting mismatch" is added to the result description.	6.3.1.7. Environmental Setting - [Communication Test] Tab Page (P. 6-42)
Unit setting	(Individual functions)	No functional change. Note: The KM1/KE1 is not supported.	6.3.2. Unit Setting Tab Pages (P. 6-46)
Graph setting	Active power value setting	Target values can be set for KM1/KE1 circuits. The page specification function is added to display 101 or more Units/circuits.	6.3.3.1. Graph Setting - [Active Power Value] Tab Page (P. 6-71)

	Integral power consumption target value setting (By Unit/Circuit)	Target values can be set for KM1/KE1 circuits. The page specification function is added to display 101 or more Units/circuits.	6.3.3.2. Graph Setting - [Integral Power Consumption (By Unit/Circuit)] Tab Page (P. 6-73)
	Integral power consumption target value setting (By Group)	No functional change.	6.3.3.3. Graph Setting - [Integral Power Consumption (By Group)] Tab Page (P. 6-76)
	Conversion value name setting	The integral power consumption and pulse conversion names can be specified for KM1/KE1 measurement points. The page specification function is added to display 101 or more Units/circuits.	6.3.3.4. Graph Setting - [Conversion Value Name Setting] Tab Page (P. 6-78)
Periodic measurements		Periodic measurements are available to KM1/KE1 measurement points in addition to existing Units.	6.3.4. Starting and Stopping Periodic Measurements (P. 6-81)
Monitoring	List of active power	KM1/KE1 measurement data can be displayed in a list. The left-align function is added to display the Unit/circuit currently measured.	6.3.5.1. Monitoring - [List of Active Power] Tab Page (P. 6-85)
	Historical trend graph	KM1/KE1 circuit measurement data can be displayed in graph. The display button is replaced with the display condition selection function to switch the display.	6.3.5.2. Monitoring - [Historical Trend] Tab Page (P. 6-87)
	Earth leakage graph	The KE1-PGR1C or KE1-ZCT8E earth leakage data graph display function is added.	6.3.5.3. Monitoring - [Earth Leakage Graph] Tab Page (P. 6-91)
Integral power consumption graphs	Graph list (Daily)	KM1/KE1 circuit measurement data can be displayed in graph. The page specification function is added to display 101 or more graphs.	6.3.6.1.Integral Power Consumption Graphs - [Graph List (Daily)] Tab Page (P. 6-96)
	Graph list (Monthly)	KM1/KE1 circuit measurement data can be displayed in graph. The page specification function is added to display 101 or more graphs.	6.3.6.2. Integral Power Consumption Graphs - [Graph List (Monthly)] Tab Page (P. 6-101)
	Individual graph	KM1/KE1 circuit measurement data can be displayed in graph. The line graph of a non-grouped Unit measurement data can now be overlaid.	6.3.6.3. Integral Power Consumption Graphs - [Individual Graph] Tab Page (P. 6-104)
High-speed logging		No functional change. Note: The KM1/KE1 is not supported.	6.3.7.1. High-speed Logging Tab Page (P. 6-114)
Data extract	(Individual functions)	No functional change. Note: The KM1/KE1 is not supported.	6.3.8. Data Extract Tab Pages (P. 6-118)
Setting screen lock		A password-based lock function is added to setting functions ([Environmental setting], [Unit setting] and [Graph setting]).	6.2.5. Lock Setting Screen (P. 6-10)

5. Installation and Uninstallation
5.1. Installation
5.1.1. Initial Installation

This section shows the procedure to install EasyKM-Manager for the first time. Use the following procedure to install the software.

Precautions for Correct Use

- The same user must install and use EasyKM-Manager.
  Measurement data cannot be shared among multiple users. Assign a single user responsible for measurement, who should install and operate EasyKM-Manager.
  If Windows Vista or Windows 7 is used, enable the user account control (UAC) for installation.
- EasyKM-Manager and EasyKM-Manager LE for Demand cannot be used on the same computer.
  Before installing EasyKM-Manager, EasyKM-Manager LE for Demand must be uninstalled.

■Operation

(1) **Start the Installer.**

Download the installation file from OMRON's website. Extract data from the compressed file (zip file) and execute "Setup.exe".
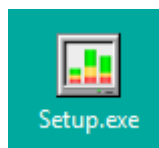
(2) **Select the Installer language.**

Select the language to use for installation and click the [OK] button.
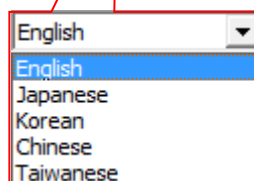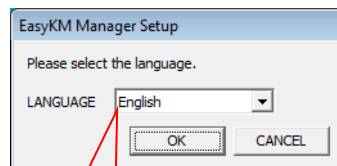
(3) **Start installation.**

Click the [Next] button.

(4) **Confirm the license agreement.**

　　Read the software license agreement, select the [I Agree] option, and click the [Next] button.

> **Precautions for Correct Use**
>
> Make sure that you read through the entire software license agreement.
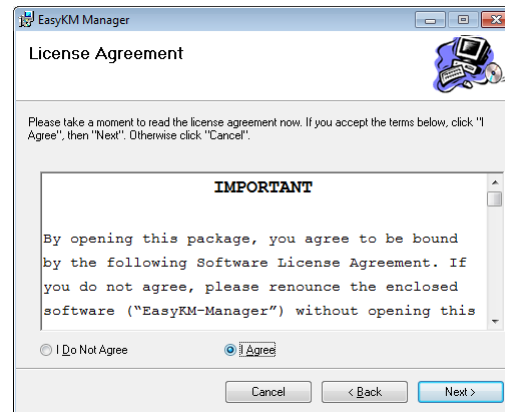
(5) **Select the installation folder.**

　　If you do not change the default installation folder, click the [Next] button.

　Note: To install EasyKM-Manager in the "Program Files" directory, make sure that the log-in user has the write access to the directory.

(6) **Confirm the installation.**

　　Click the [Next] button.

　Note: Click [Yes] if a user account control dialog saying "Do you want to allow the following program from an unknown publisher to make changes to this computer?" appears.

(7) **Installation proceeds.**

Wait until installation is completed.

(8) **Installation finishes.**

Click the [Close] button.

The EasyKM-Manager shortcut icon is created on the Desktop when installation is completed.
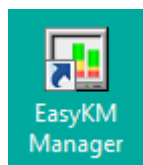
This concludes the installation procedure.

5.1.2. Repair Installation

If EasyKM-Manager is corrupted due to errors (e.g. hard disk error) after installation, or if you want to initialize the communications and Unit settings, follow the repair installation procedure below.
You can return the settings to default while retaining the measurement data.

■Operation

(1) **Start repair installation.**

Execute "Setup.exe" and select the language. In the displayed dialog (shown at the right), select [Repair EasyKM-Manager] and click the [Finish] button.
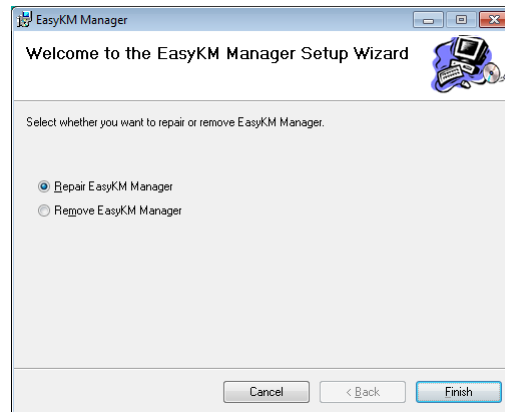
(2) **Installation proceeds.**

Wait until repair installation is completed.

Note: Click [Yes] if a user account control dialog saying "Do you want to allow the following program from an unknown publisher to make changes to this computer?" appears.
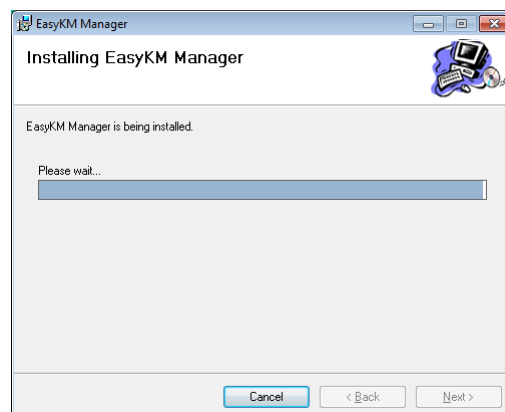
(3) **Installation finishes.**

Click the [Close] button.

This concludes the repair installation procedure.

EasyKM-Manager is repaired and can be used with the setting information cleared.
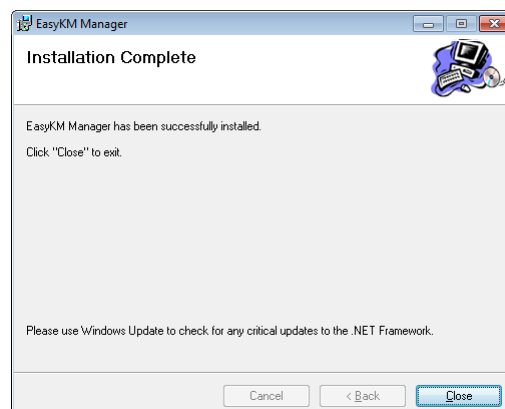
5.1.3. Upgrade Installation

Install an upgraded version of EasyKM-Manager when a new version with upgraded or improved functions is released. Follow the upgrade installation procedure (Basically same as the initial installation procedure).

Upgrade installation retains the settings and measurement data of the previous EasyKM-Manager version.

Precautions for Correct Use

- Upgrade installation must be performed after stopping periodic measurements and quitting EasyKM-Manager. Once periodic measurements are stopped, measurement data cannot be obtained before periodic measurements are started after upgrade installation.
- Do not uninstall the older version of EasyKM-Manager for upgrade installation. If uninstallation is performed before upgrade installation, various setting information cannot be obtained and all the settings must be made again.
- The same user of the previous version must perform upgrade installation. Also specify the same installation folder as for the previous version.

■Operation

(1) **Start the Installer.**

Execute "Setup.exe".
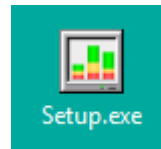
(2) **Select the Installer language.**

Select the language to use for installation and click the [OK] button.
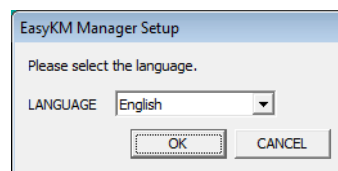
(3) **Start installation.**

Click the [Next] button.
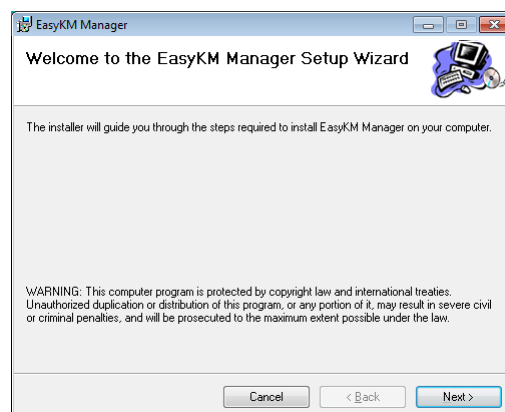
(4) **Confirm the license agreement.**

Read the software license agreement, select the [I Agree] option, and click the [Next] button.

> **Precautions for Correct Use**
> Make sure that you read through the entire software license agreement.
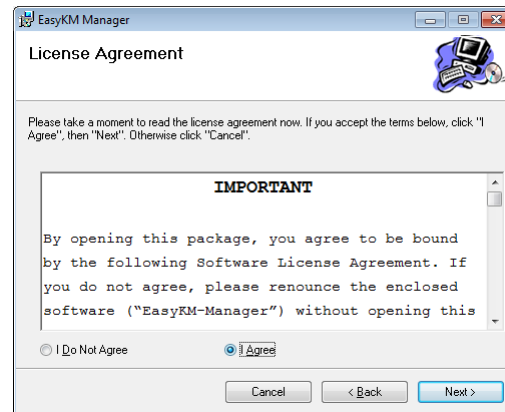
(5) **Select the installation folder.**

Select the same folder as the previous version, and click the [Next] button.
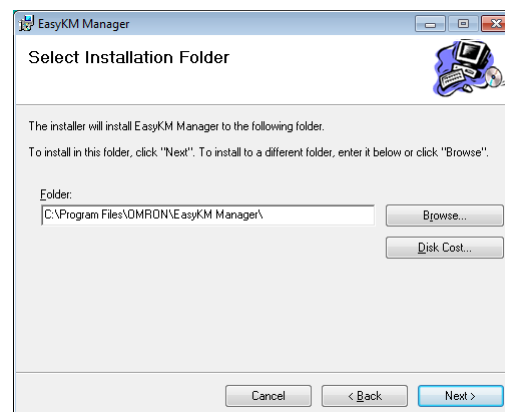
(6) **Confirm the installation.**

Click the [Next] button.

Note: Click [Yes] if a user account control dialog saying "Do you want to allow the following program from an unknown publisher to make changes to this computer?" appears.
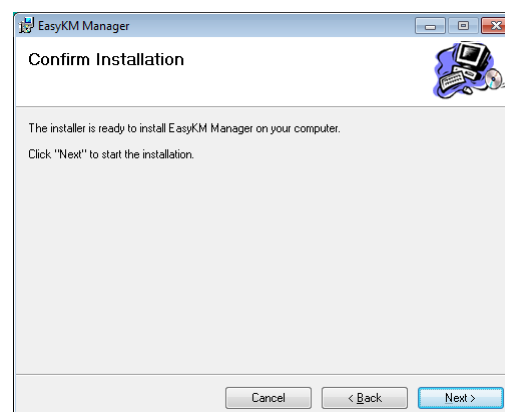
(7) **Installation proceeds.**

Wait until installation is completed.
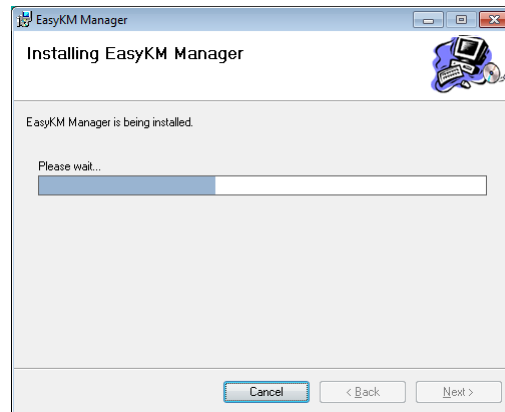
(8) **Installation finishes.**

Click the [Close] button.

This concludes the upgrade installation procedure.

EasyKM-Manager is upgraded and can be used with the setting information retained.
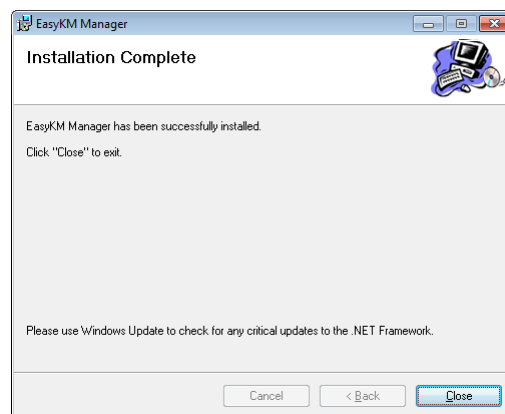
5.1.4.　Folder and File Configuration

Table 11: Folder and File Configuration

Type	Description
Application folder	This is the folder specified during installation.
File folder	Application data folders that are fixed regardless of the installation folder. 【Windows XP】 　C:¥Documents and Settings¥user_account_name¥Application Data¥EasyKM Manager 【Windows Vista, Windows 7】 　C:¥Users¥user_account_name¥AppData¥Roaming¥EasyKM Manager

Application folder	The application is stored here.
File folder	Language files (*1) ・LanguageSetting_ja.xml　・LanguageSetting_en.xml ・LanguageSetting_ko.xml ・LanguageSetting_zh-cn.xml　・LanguageSetting_zh-tw.xml KM-series setup files (*1) ・KMSetup_LineUp.xml　・KMSetup_AddrMap.xml ・KMSetup_DFrameStd.xml ・KMSetup_DFrameExt.xml　・KMSetup_Param.xml Version file ・VersionInfo.dat
01 Fixed	Application settings file (*1) 　・EasyKMInf.ini Network settings file (*1) 　・EasyKMNet.ini Version file 　・VersionInfo.dat
RCV (*2)	Unit measurement files * Individually stored in Unit-specific folders
SUM (*2)	Unit/group summary files * Individually stored in Unit/group-specific folders
LOG (*2)	Communications log, operation log, and error log

*1. Settings files (ini) and definition files (xml) are also stored as hidden files "… _org.ini" and "…_org.xml" for repair installation.
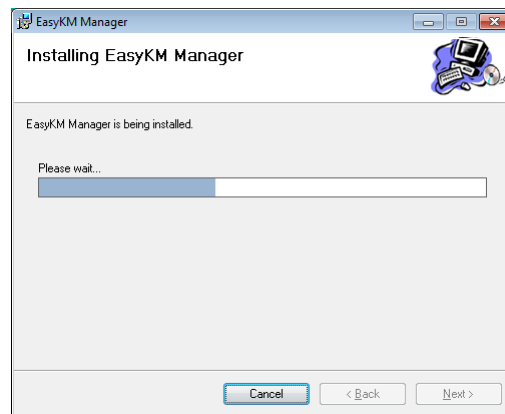
*2. The RCV, SUM, and LOG folders do not exist immediately after a new installation.

Figure 6: Folder and File Configuration

Precautions for Correct Use

Do not operate or open the above folders or files while periodic measurements are in progress.

If any of the files are open, a system error may occur and an error message continue to be displayed.

5.2.　Uninstallation

Precautions for Correct Use

- The settings are deleted when EasyKM-Manager is uninstalled.
- Do not uninstall EasyKM-Manager when upgrading the version. Instead, follow the upgrade installation procedure. (Refer to "5-1-3 Upgrade Installation" (P. 5-5).
- Make sure that periodic measurements are stopped and EasyKM-Manager is exited before uninstallation. Uninstallation may not be successful due to the incorrect installation information, if the procedure is performed during periodic measurements or while the software is running.
- Uninstallation deletes the Unit and other information except summary data. To completely delete summary data, manually delete the folders below:

　　　【Windows Vista, Windows 7】

　　　　C:¥Users¥user_account_name¥AppData¥Roaming¥EasyKM Manager¥01

　　　【Windows XP】

　　　　C:¥Documents and Settings¥user_account_name¥Application Data

　　　　¥EasyKM Manager¥01

5.2.1.　Uninstalling from the Control Panel

Use the following procedure to delete EasyKM-Manager from your PC.

■Operation

(1) **Start uninstallation.**

　　Select [Control Panel] - [Programs] - [Programs and Features] from the Windows Start Menu. Then, select "EasyKM Manager" and click "Uninstall".

(Note: Uninstall program)
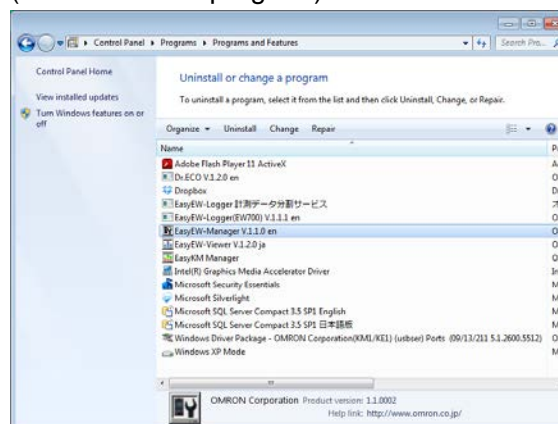
(2) **Confirm uninstallation.**

　　Click the [Yes] button.
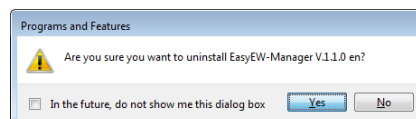
(3) **Uninstallation finishes.**

　　This concludes the uninstallation procedure.

5.2.2. Files Remaining after Uninstallation

The files enclosed in a dotted box [   ] in the figure below remain after uninstalling

EasyKM-Manager.

To delete the files, delete them manually.
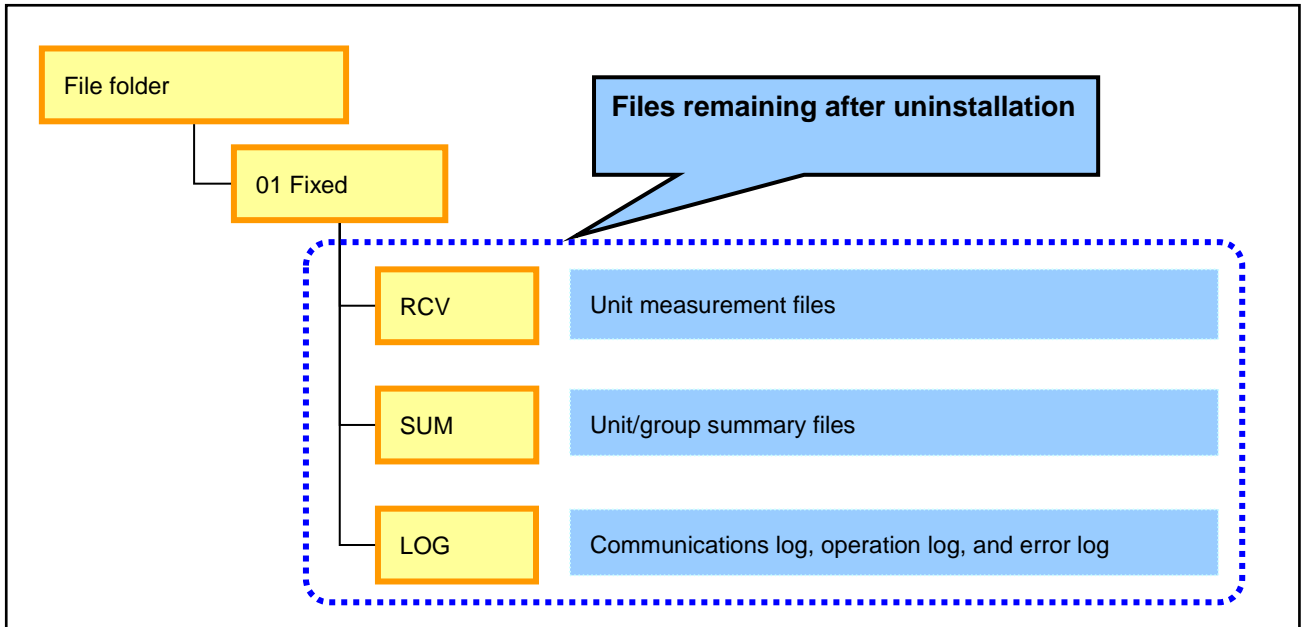
Figure 7: Files Remaining after Uninstallation

5.3.   Version Information

Display the version of EasyKM-Manager.

5-11

■Operation

1.   Select [Help] - [Version information] in the Application Menu.
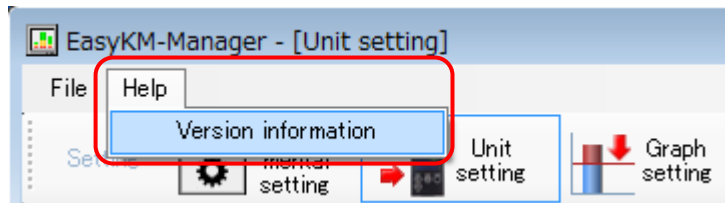
2.   The version information is displayed.

Note: The information display differs depending on the version.

6. Operation
6.1. Window Names and Functions
6.1.1. Menu Configuration

The following window appears when the EasyKM-Manager starts up.

The Application Menu to operate EasyKM-Manager, and the Function Menu to use the EasyKM-Manager functions are available with the window.
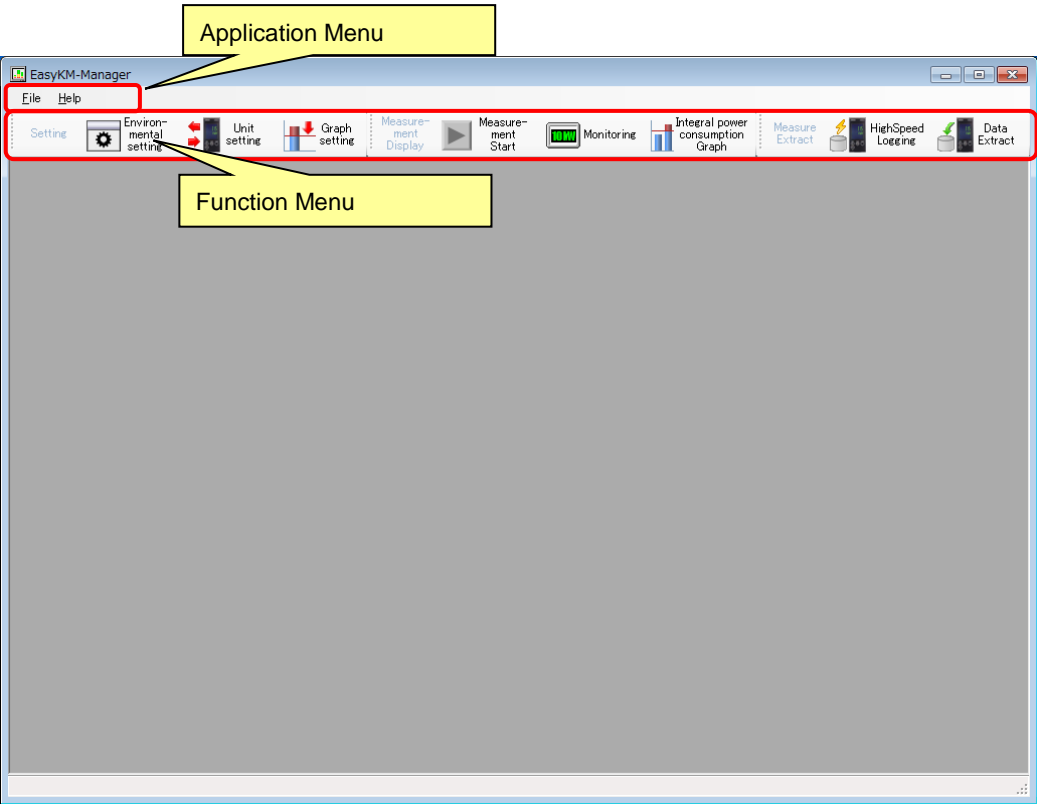
Figure 8: Menu Configuration

Table 12: Application Menu

Menu command/Icon/Tab page	Description
File	
Hide screen	Places EasyKM-Manager in the task tray.
Lock setting screen	Locks or unlocks the setting screen. Also used to set a password.
Close	Ends EasyKM-Manager.
Help	
Version information	Displays information about EasyKM-Manager.

Table 13: Function Menu

Menu command/Icon/Tab page	Description
Setting	Displays different tab pages for Unit settings as well as active power and graph display settings.
Environmental setting	
[Application setting] (*1)	
[Communication setting] (*1)	Note 1: The setting tab page is
[Unit] (*1)	individually displayed for the
[KM1/KE1 measurements point setting] (*1)	function names in the brackets ([ ]). You can switch the tab
[Group] (*1)	pages within the window.
[File output] (*3)	
[Communication test] (*1)	Note 2: Unit settings are not
Unit setting	supported with the KM1/KE1.
[Time setting]	
[KM100 setting]	
[KM20-B40 setting]	
[KM50-C setting]	
[KM50-E setting]	
[3-STATE threshold setting]	
[Measurement value reset]	
Graph setting	
[Active power value]	
[Integral power consumption (By Unit)]	
[Integral power consumption (By Group)]	
[Conversion value name setting]	
Measurement Display	Starts or stops measurements, and displays the measurement results.
Measurement Start/Measurement Stop (*2)	
Monitoring (*3)	Note: Periodic measurements can
[List of active power]	be started or stopped only by
[Historical trend]	clicking the button. You can start
[Earth leakage graph]	and stop measurements from any
Integral power consumption graphs (*3)	tab page. Some functions cannot
[Graph list (Daily)]	be used unless you stop the
[Graph list (Monthly) (*3)]	measurements.
[Individual graph (*3)]	

Measure Extract	Displays the tab page to log instantaneous measurement data or the tab page to extract or view the historical data stored in Units.
High-speed logging (*1)	
Data extract	
[Extracting KM50/100 data manually] (*1) [Unit memory graph display] (*4)	Note: High-speed logging and data extract are not supported with the KM1/KE1.

*1. These tab pages cannot be used during periodic measurements.

*2. Make sure that periodic measurements have been stopped before turning OFF the power supply or changing Unit settings.

*3. These tab pages cannot be used unless periodic measurements are in progress. File output and graph display require the data obtained with periodic measurements.

*4. The display is based on the files output with [Extracting KM50/100 data manually], or files output in a memory card from the KM100.

6.1.2. Function Menu Items and Supported Models

The following table shows the availability of function menu items on individual models.

Table 14: Function Menu Items and Supported Models

Function menu	KM50-E	KM50-C	KM100-T/TM	KM20-B40	KM1-PMU1A	KM1-PMU2A	KM1-EMU8A	KE1-CTD8E	KE1-PGR1C	KE1-ZCT8E
Environmental setting										
Application setting	○	○	○	○	○	○	○	○	○	○
Communication setting	○	○	○	○	○	○	○	○	○	○
Unit	○	○	○	○	○	○	○	○	○	○
KM1/KE1 measurement points setting	—	—	—	—	○	○	○	○	○	○
Group	○	○	○	○	○	○	—	○	○	—
File output	○	○	○	○	○	○	○	○	○	○
Communication test	○	○	○	○	○	○	○	○	○	○
Unit setting (*1)										
Time setting	○	○	○	—	—	—	—	—	—	—
KM100 setting	—	—	○	—	—	—	—	—	—	—
KM20-B40 setting	—	—	—	○	—	—	—	—	—	—
KM50-C setting	—	○	—	—	—	—	—	—	—	—
KM50-E setting	○	—	—	—	—	—	—	—	—	—
3-STATE threshold setting	○	—	—	—	—	—	—	—	—	—
Measurement value reset	○	○	○	○	—	—	—	—	—	—
Graph setting										
Active power value setting	○	○	○	○	○	○	—	○	○	—
Integrated power consumption (By Unit/Circuit)	○	○	○	○	○	○	—	○	○	—
Integrated power consumption (Group)	○	○	○	○	○	○	○	○	○	—
Conversion value name setting	○ (*2)	○ (*2)	—	—	○	○	○	○	○	—
Monitoring										
List of active power	○	○	○	○	○	○	—	○	○	—
Historical trend	○	○	○	○	○	○	—	○	○	—
Earth leakage graph	—	—	—	—	—	—	—	—	○	○
Integral power consumption graphs										
Graph list (Daily)	○	○	○	○	○	○	—	○	○	—
Graph list (Monthly)	○	○	○	○	○	○	—	○	○	—
Individual graph	○	○	○	○	○	○	○	○	○	—
High-speed logging										
High-speed logging	○	○	○	○	—	—	—	—	—	—
Data extract										
Extracting KM50/100 data manually	○	○	○	—	—	—	—	—	—	—
Unit memory graph display	○	○	○	—	—	—	—	—	—	—

○: Supported   —: Not supported

*1.   Use the KM1/KE1 setting tool ("KM1/KE1-Setting") for the time setting, Unit setting and measurement value reset of the KM1/KE1.

*2. The functions only available with the version 2 of the KM50-E and KM50-C.

6.2. Basic Software Operation

6.2.1. Starting the Application

> **Precautions for Correct Use**
>
> The window description varies depending on the language used on the software.
>
> The language is automatically set after the software is installed based on the language set in the Windows operating system you use.
>
> You can change the language used in the display. Refer to "6.3.1.1. Environmental Setting - [Application Setting] Tab Page" (page 6-17) for the procedure.

● Checking the Language Setting

Windows XP

Go to [Control Panel] - [Regional and Language Options] - [Regional Options] tab and check the standards and formats.

Windows Vista

Go to [Control Panel] - [Clock, Language, and Region]. Select [Change the country or region Option] under [Regional and Language Options] and check the [Formats] tab.

Windows 7

Go to [Control Panel] - [Clock, Language, and Region]. Select [Change location Option] under [Region and Language] and check the [Formats] tab.

EasyKM-Manager supports the following languages: English, Japanese, Korean, Chinese (Simplified), and Taiwanese (Traditional Chinese). If your OS uses other language than the listed above, the software display will be in English.

■Operation

1. Start EasyKM-Manager from the Windows Start Menu by selecting [Start] - [All Programs] - [OMRON] - [EasyKM-Manager].
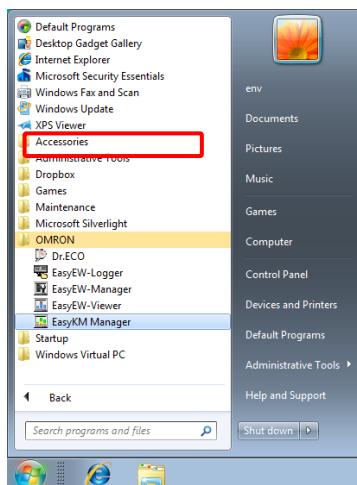
Alternatively, click the EasyKM-Manager icon on the desktop.

The Startup Window will be displayed for a few seconds.

2. The Main Window will be displayed.
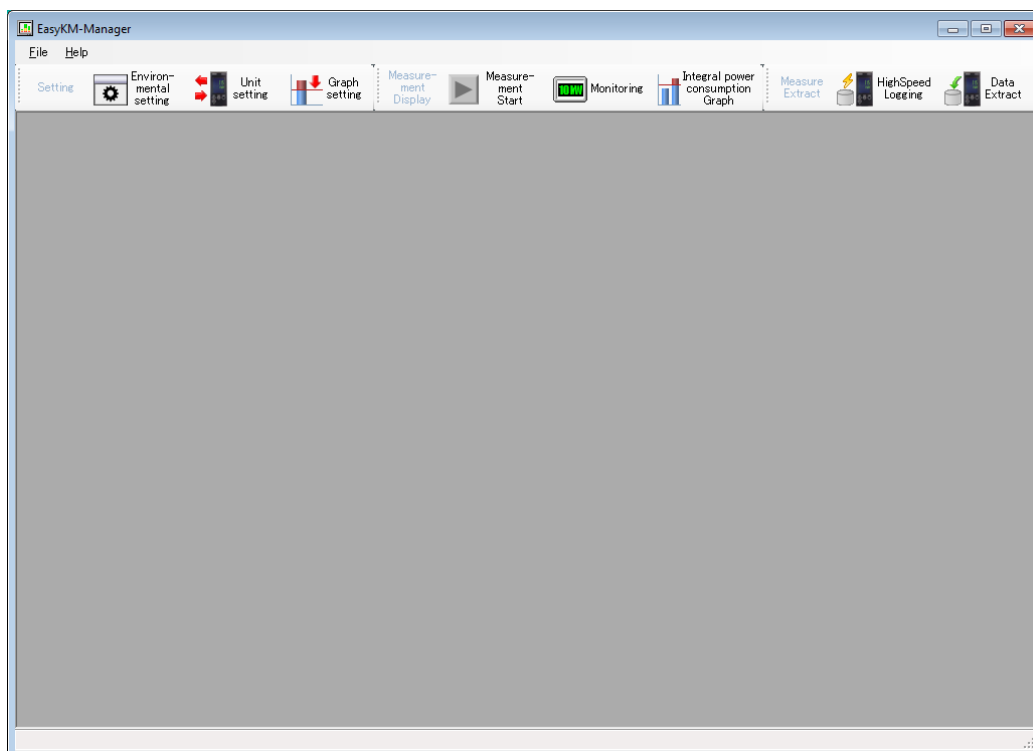
The EasyKM-Manager icon will be displayed in the task tray.

The software has now been started.

6.2.2.　　Starting Automatic Measurements

You can start periodic measurements at the same time the application starts by using the [EasyKM-Manager_Auto] shortcut icon (for auto measurement start) created in the folder specified in the software installation.

  Note: If any folder is not specified in installation, the folder is created in the following location:

    "C:¥Program Files¥OMRON¥EasyKM Manager¥"

EasyKM
Manager_Auto
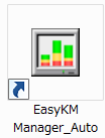
If you start automatic measurements, the Startup Window does not appear, and instead stays minimized in the task tray. To stop measurements, right-click the task tray and click [Close].

If required, place an [EasyKM-Manager_Auto] shortcut in the startup folder for the installed user. EasyKM-Manager will start and automatically begin periodic measurements the next time you log in.

  Precautions for Correct Use

- Precautions on Installing/Uninstalling the [EasyKM-Manager_Auto] Shortcut
  - If you install an update of EasyKM-Manager, the shortcut must be registered again. The same applies if you uninstall the software and install it again.
  - Delete the shortcut manually when you uninstall the software.
- Precautions on Executing the [EasyKM-Manager_Auto Shortcut]
  - If a communications error related to the network occurs the first time measurements are started using the automatic measurement shortcut, the "port open error" message will be displayed and periodic measurements will stop. If this happens, remove whatever is likely to be the cause of the communications error. Periodic measurements will resume when you click the [OK] button on the "Port Open Error" dialog box, but check the communications status indicated by the color of the EasyKM-Manager icon in the task tray. Refer to "6.3.4. Starting and Stopping Periodic Measurements (2) Measurement Status Display" (page 6-82) for the information on the icon.

6.2.3. Minimizing and Restoring the Window

■Operation

1. If you minimize the software window, it is placed in the task tray. Minimize the window if you do not need it or want to hide it by using any of the following three ways:

   ● Click [_] button (minimization button) on the top right of the window. The window is only placed in the task tray and not shown in the task bar.
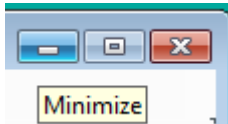
   ● Select [File] - [Hide screen] to place the window in the task tray.
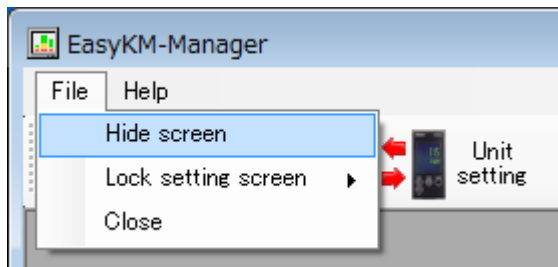
   ● Right-click the task tray and select [Hide screen] to store the window in the task tray.
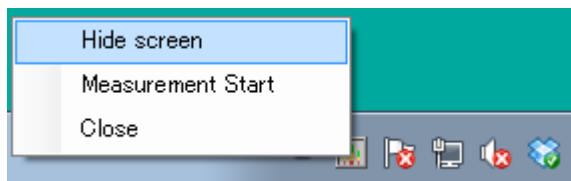
2. To display the window placed in the task tray again, right-click the task tray and select [Screen]. The software window is displayed.
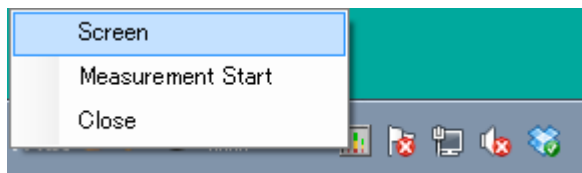
6.2.4.　　Ending the Application

■Operation

1.　Select [File] - [Close] from the Application Menu.
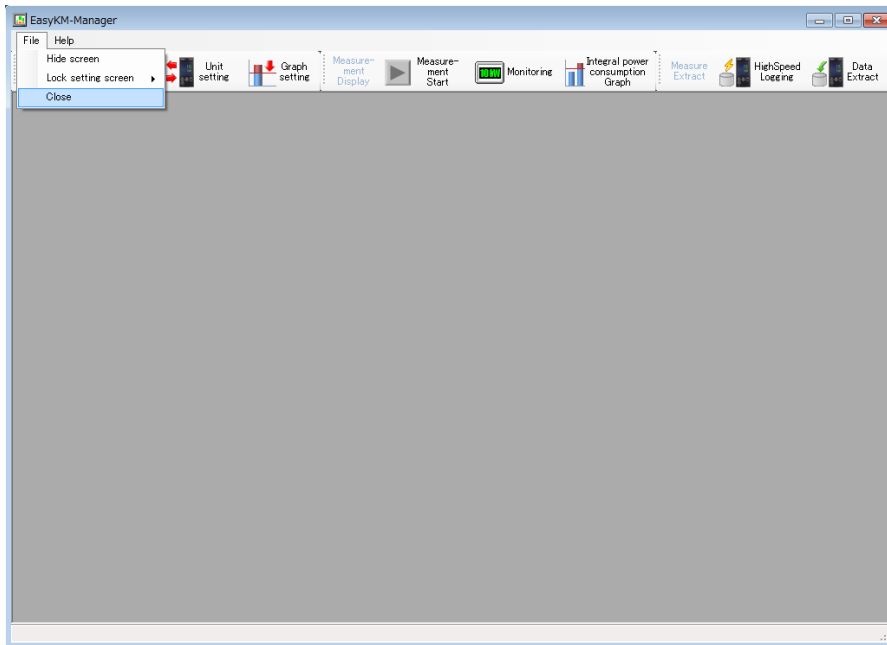
Alternatively, click [×] button on the top right corner of the window.
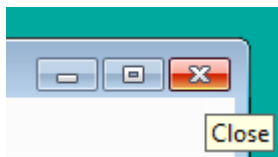
You can also right-click the task tray and select [Close] to end the application.
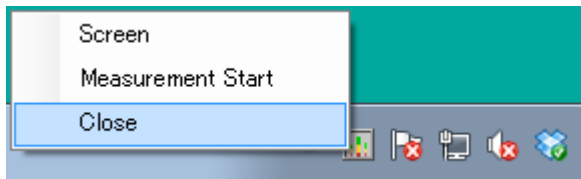
2.　A quit confirmation message appears. Click the [Yes] button to end the application.
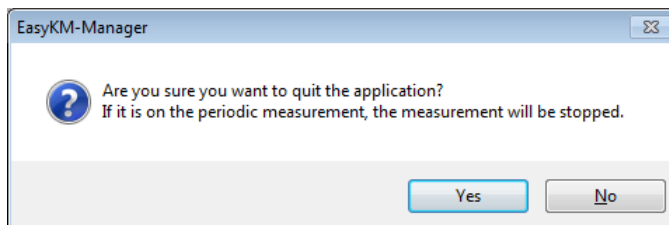
The software has now been closed.

6.2.5.　Lock Setting Screen

The setting screen lock is provided to protect the [Environmental setting], [Unit setting] and [Graph setting] settings from inadvertent changes. The [Periodic measurements start], [Monitoring], [Integral power consumption graphs], [High-speed logging] and [Data extract] functions are still enabled during the screen lock.

Precautions for Correct Use

• Make sure not to forget the screen lock/unlock password. Otherwise the software must be uninstalled and installed again. All the settings must be made again, since they are initialized when the software is uninstalled.

• The password must be registered in the software before using this function.

Note

• After the password is registered, the software always starts with the screen locked regardless whether it is locked or not when the software is closed.
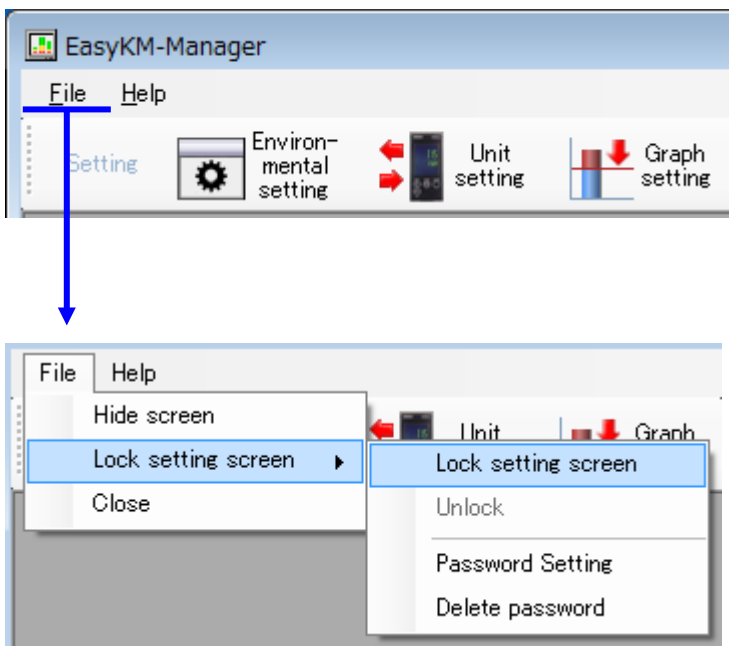
Table 15: Setting Window Lock Menu

Menu item	Description
Lock setting screen	Disables the buttons for [Environmental setting], [Unit setting] and [Graph setting].
Unlock	Enables the buttons for [Environmental setting], [Unit setting] and [Graph setting] after the password is entered.
Password setting	Sets the password (4 to 10 half-width alphanumeric characters).
Delete password	Deletes the password to cancel the use of the function.

■Operation

●Registering the Password

1. Select [File] - [Lock setting screen] - [Password setting] from the Application Menu.
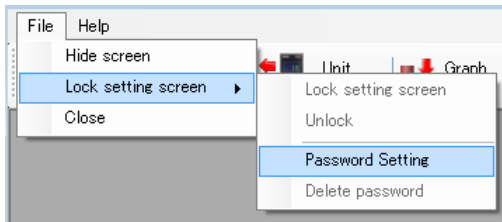
2. Enter the password (4 to 10 half-width alphanumeric characters) to register.

   Click the [Next] button.

3. Click the [Yes] button in the confirmation window.
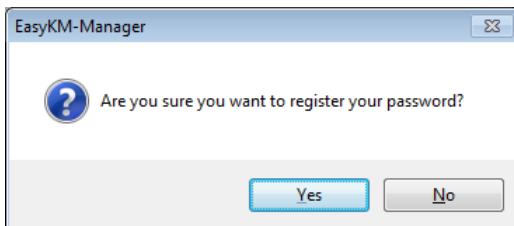
   This concludes the procedure to register the password.

●Locking the Screen

1. Select [File] - [Lock setting screen] - [Lock setting screen] from the Application Menu.
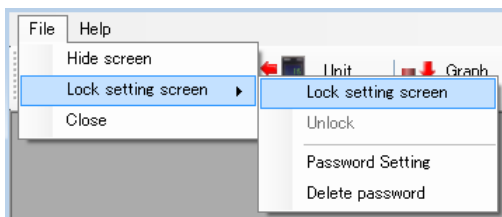
2. Click the [Yes] button in the confirmation window to apply the lock screen.
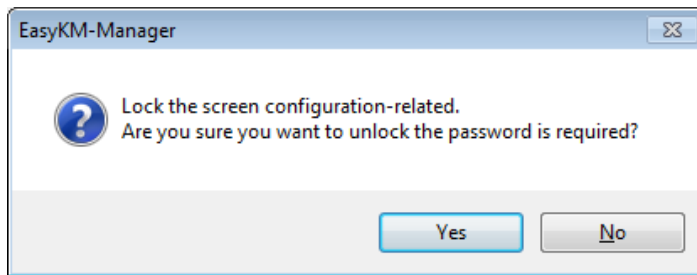
When the screen lock is applied, the [Environmental setting], [Unit setting] and [Graph setting] buttons are locked and disabled.

This concludes the procedure to lock the screen.

●Unlocking the Screen

1. Select [File] - [Lock setting screen] - [Unlock] from the Application Menu.
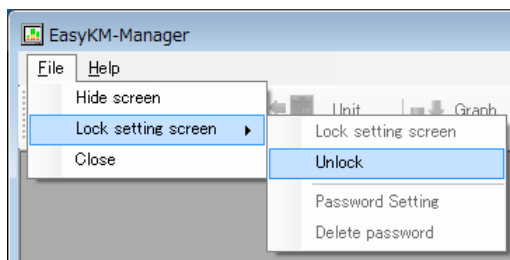
2. Enter the registered password and click the [Next] button.

Note: If the "Password is not correct" message appears, the entered password is wrong. Enter the correct password.
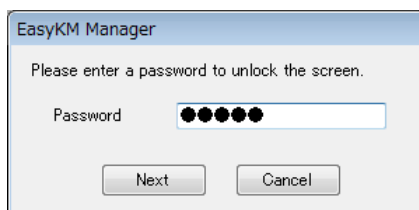
This concludes the procedure to unlock the screen.

●Changing the Password

1. Select [File] - [Lock setting screen] - [Password setting] from the Application Menu.
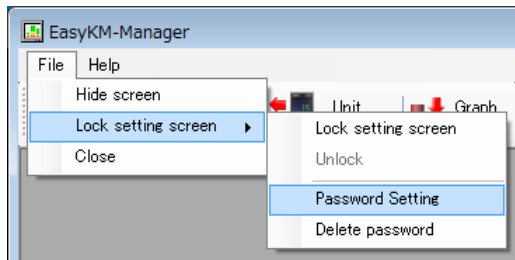
2. Enter the registered password in [Old password], and the changed password in [New password] and [Confirm password]. Click the [Next] button.
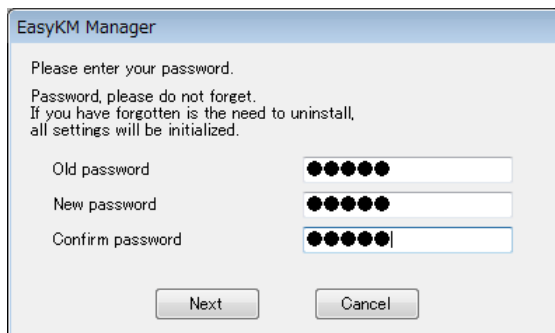
3. Click the [Yes] button in the confirmation window to apply the password change.
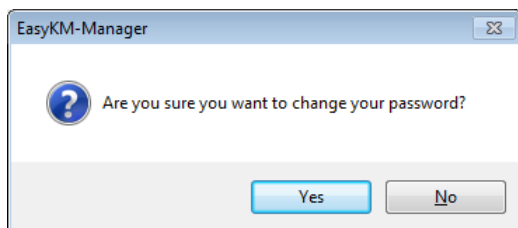
This concludes the procedure to change the password.

●Deleting the Password

1. Select [File] - [Lock setting screen] - [Delete password] from the Application Menu.
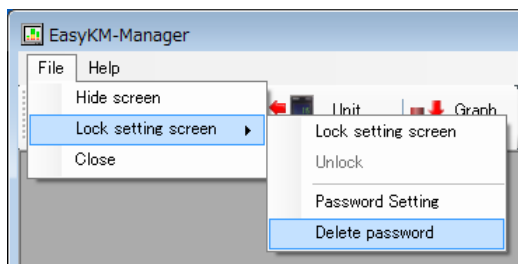
2. Enter the registered password and click the [Next] button.
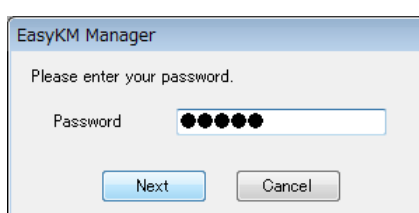
3. Click the [Yes] button in the confirmation window to apply the password deletion.
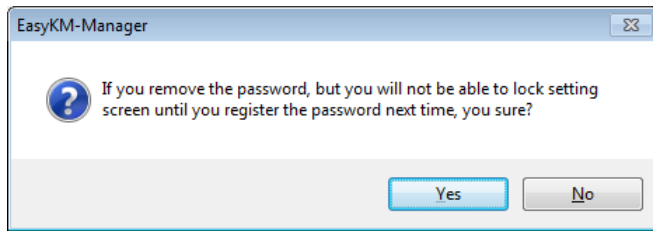
The software returns to the state in which no password is registered.

This concludes the procedure to delete the password.

6.3. Tab Page Operation

Clicking an icon on the Function Menu bar shows the related window with specific tabs. Click the tab to display the tab page.
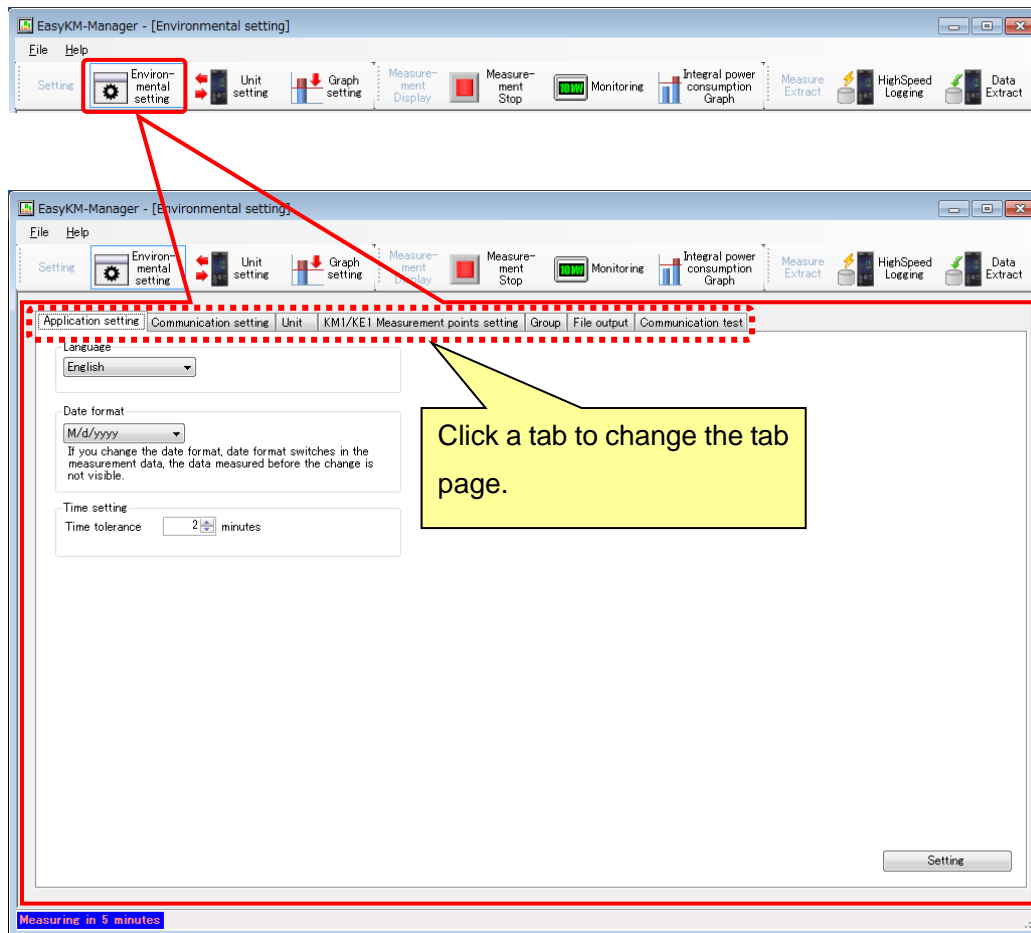
The following subsections explain the operation of individual tab pages.

6.3.1. Environment Setting Tab Pages

Click the [Environmental setting] button on the Function Menu to open the Environmental Setting tab pages.
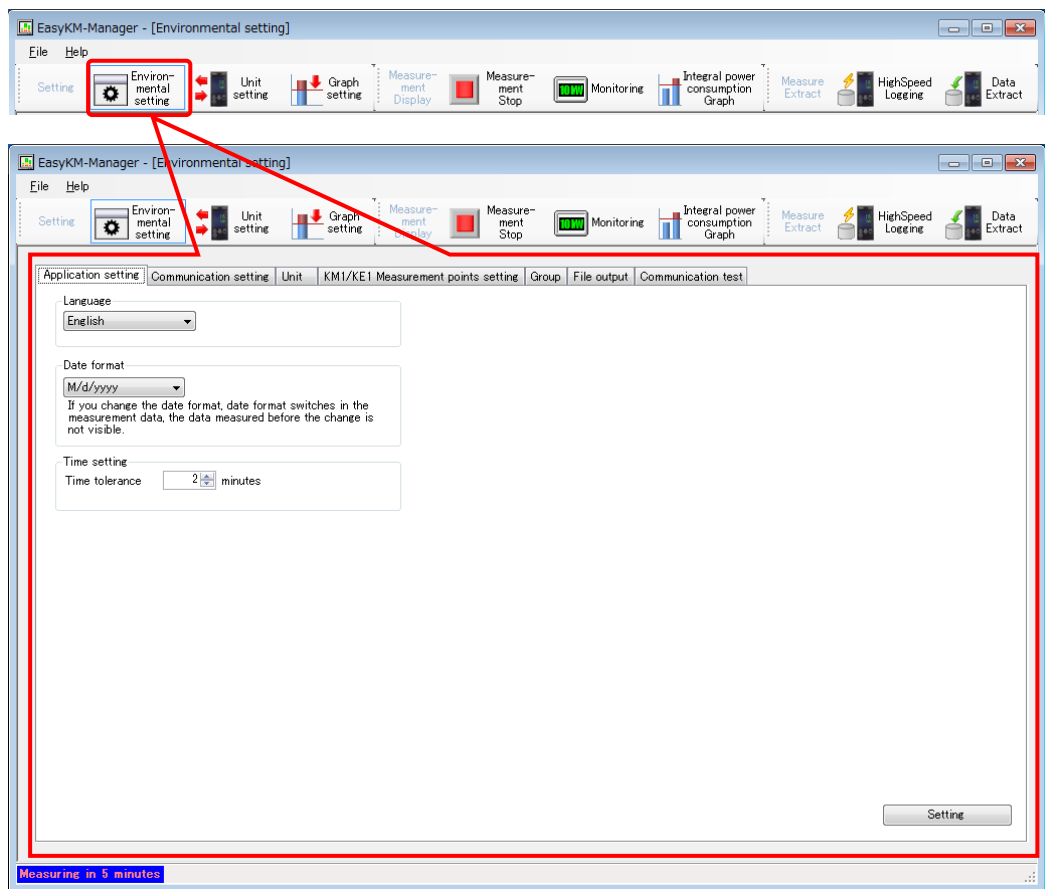
■Tab Pages

● [Application setting] tab

Used to specify the language, date format used in EasyKM-Manager as well as the time tolerance for the [Unit setting] - [Time setting] tab.

● [Communication setting] tab

Used for the communication settings between EasyKM-Manager and Units (e.g. network type, protocol, port, and measurement mode).

● [Unit] tab

Used to register the information on the Units to connect to EasyKM-Manager.

● [[KM1/KE1 measurement points setting] tab

Used to register the KM1/KE1 measurement point information.

● [Group] tab

Used to create a group and register Units and circuits to the group.

● [File output] tab

Used to copy periodic measurements data at a specified interval and output it in a file.

● [Communication test] tab

Used to verify the [Communication setting], [Unit] and [KM1/KE1 Measurement points setting] tab settings for the communications between EasyKM-Manager and the Units.

6.3.1.1. Environmental Setting - [Application Setting] Tab Page

Specify the information used by the EasyKM-Manager application in this tab. The tab shows the current setting information when it is initially displayed.

The following description details the individual items and functions.
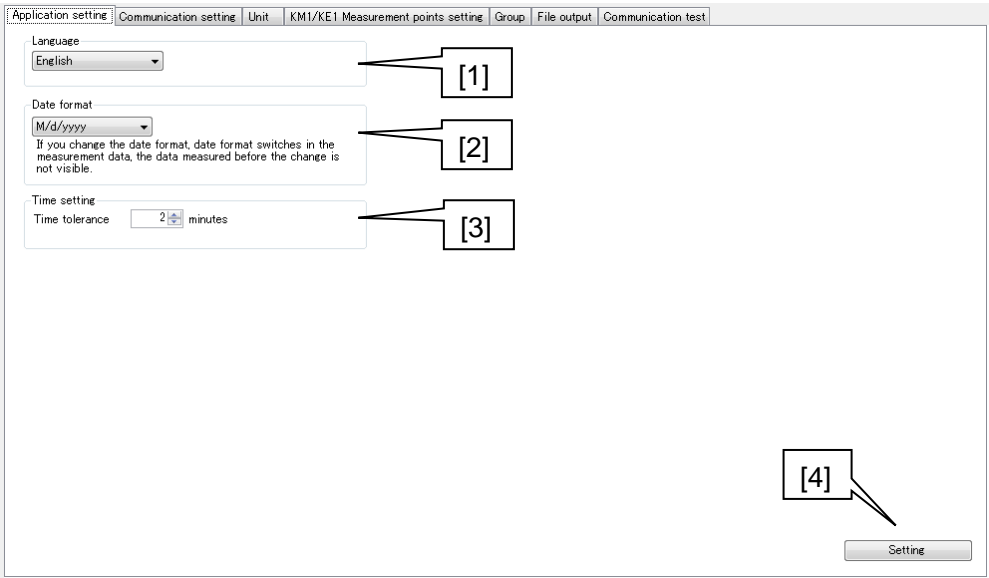
■Operation
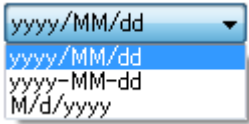
●Application setting

1. Specify [Language] ([1]), [Date format] ([2]) and [Time tolerance] ([3]).

2. Click the [Setting] button (4). A dialog appears to confirm if you want apply the settings.

3. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.

4. Click the [OK] button.

 This concludes the application setting procedure.

■Main Parameters and Functions

[1] Language		Select the language to use in the screen display and output files. Select one of [Automatic setting], [English], [Japanese], [Korean], [Chinese] and [Taiwanese]. [Automatic setting] The language used by the operating system is automatically selected from [English], [Japanese], [Korean], [Chinese] and [Taiwanese]. Note: [English] is selected if EasyKM-Manager cannot identify the language in the OS.

		[English]
		Select this to use English.
		[Japanese]
		Select this to use Japanese.
		[Korean]
		Select this to use Korean.
		[Chinese]
		Select this to use simplified Chinese.
		[Taiwanese]
		Select this to use Taiwanese (traditional Chinese).
[2] Date format	yyyy/MM/dd ▼ yyyy/MM/dd yyyy-MM-dd M/d/yyyy	Select the date format to use in the screen display and output files. Select one of [yyyy/MM/dd], [yyyy-MM-dd] and [M/d/yyyy]. Note: The date description differs depending on the format. Example: March 10, 2011 yyyy/MM/dd: 2011/03/10 yyyy-MM-dd: 2011-03-10 M/d/yyyy: 3/10/2011 **Precaution for Correct Use** If you change the date format, the measurement data obtained before the change cannot be displayed in graph.
[3] Time tolerance	Time tolerance 2 ⬦ minutes	Specify the time difference tolerance between your PC and Units in minutes (Default: 2 min.). If the difference exceeds the set value, the relevant Unit is shown in yellow. Note: The specified time tolerance is used in the [Time setting] tab (See P. 6-48).

[4] Setting	Setting	Saves the values specified for the individual items. When you click the [Setting] button, the confirmation message: "Are you sure to apply the settings? The date format in the measurement data changes and the data before the change cannot be viewed" appears. The settings are saved when you click [Yes]. To abort the settings, click [No]. The display before clicking the [Setting] button returns.
	Precaution for Correct Use If you change the language and date format and click the [Setting] button during periodic measurements, the measurement stops. To resume periodic measurements after the settings, click [Periodic measurements start]. Note: Periodic measurements do not stop if you change only the time tolerance setting.	

6.3.1.2. Environmental Setting - [Communication Setting] Tab Page

Specify the information used by EasyKM-Manager in communications with each Unit. The tab shows the current setting information when it is initially displayed.

The following description details the individual items and functions.

> **Precautions for Correct Use**
>
> • Stop periodic measurements when changing the settings. To resume the measurement after the change, click the [Periodic measurements start] button.
> • To make the RS-232C connection setting, connect the RS-232C or USB cable to the PC before starting EasyKM-Manager.
> • To make the Ethernet connection setting, connect the LAN cable to the PC before starting EasyKM-Manager.
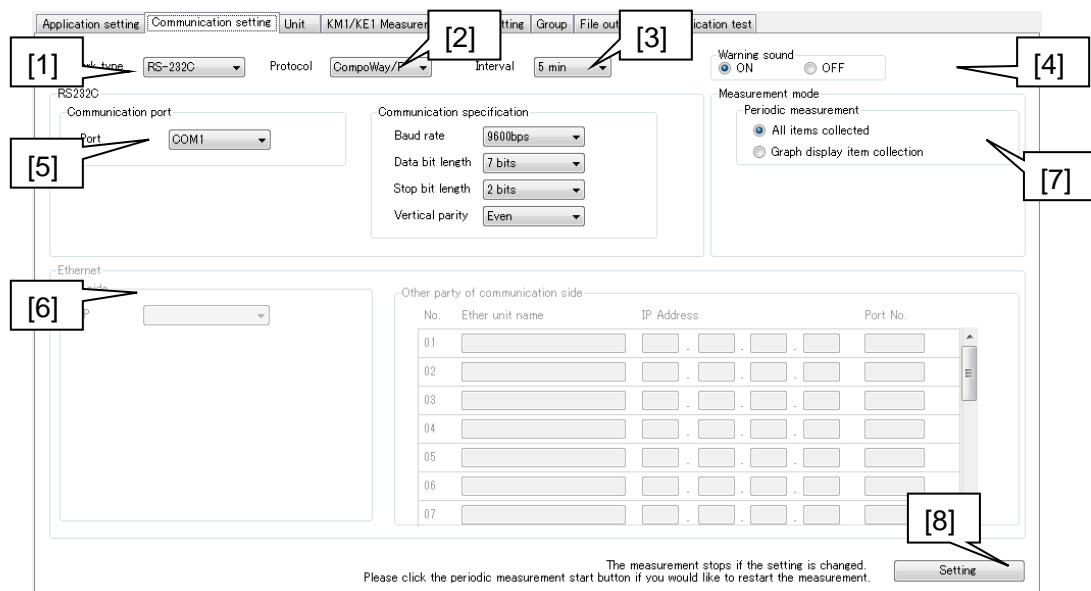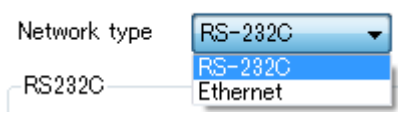
■Operation

●Communication setting

1. Specify [Network type] ([1]), [Protocol] ([2]) and [Interval] ([3]).

2. Specify [RS232C] ([5]) for RS-232C connection. For Ethernet connection, specify [Ethernet] ([6]).

3. Specify [Warning sound] ([4]) and [Measurement mode] ([7]) if required.

4. Click the [Setting] button ([8]). A dialog appears to confirm if you want to apply the settings.

5. Click [Yes]. A dialog appears indicating that the settings are completed.

6. Click the [OK] button.
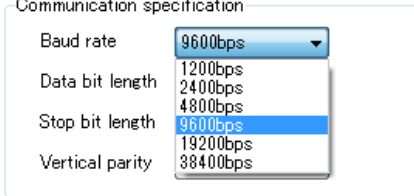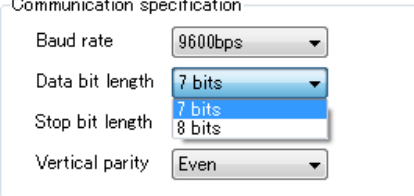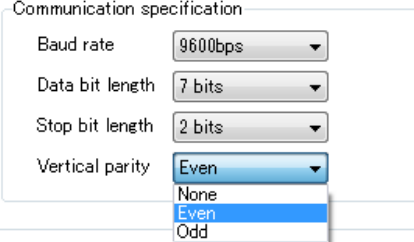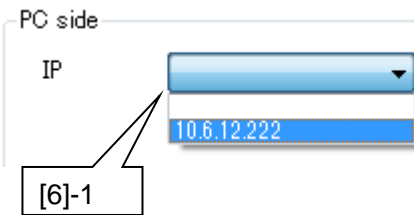
   This concludes the communication setting procedure.
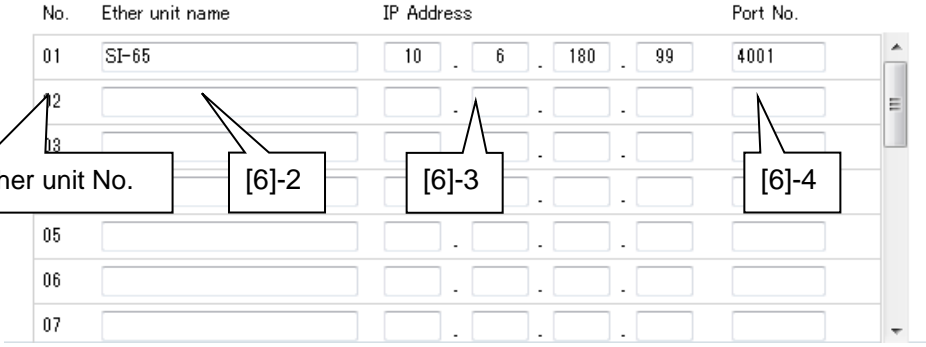
■Main Parameters and Functions

[1] Network type	Network type [RS-232C ▼] RS-232C Ethernet RS232C	Select the communication method. Select from [RS-232C] and [Ethernet]. [RS-232C] Select this for serial communication via a COM port with Units connected through an RS-232C/RS-485 adapter. Note: Refer to "Figure 2: System Configuration with RS-232C" in "1.2 System Configuration" (P. 1-4) for serial communication configuration. [Ethernet] Select this for socket communication via TCP/IP with Units connected through an Ethernet/RS-485 adapter. Note 1: Refer to "System Configuration with Ethernet" in "1.2. System Configuration" (P. 1-3) for socket communication configuration. Note 2: When using MOXA NPort5130 or LINEEYE SI-65, refer to "9.5. Ethernet/RS-485 Adapter Setting Item List" (P.9-58) for the setting details.
[2] Protocol	Protocol [CompoWay/F ▼] CompoWay/F Modbus	Select the protocol used for communication. Select from [CompoWay/F] and [Modbus].
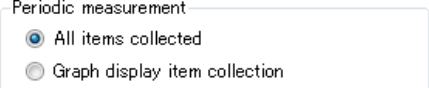
[3] Interval	Interval 5 min 1 min 5 min specification 10 min	Select the measurement interval for periodic measurements. Select one from [1 min.], [5 min.] and [10 min.]. Note: EasyKM-Manager periodically communicates with Units at the interval specified here.
	Precaution for Correct Use ・ Do not change the communications interval after starting periodic measurements. ・ If the interval is changed after starting periodic measurements, graphs (See 6.3.6.3. [Integral Power Consumption Graphs] - [Individual Graphs] (P. 6-104)) are not be displayed correctly, since the data is displayed at the new interval. The values measured before the change are also shown at the new interval. ・ Measurement may not be performed at the specified interval, if there is any Unit with a communication error in the system.	
[4] Warning sound	Warning sound ◉ ON ◯ OFF	Specify whether to sound an alarm when the measured value exceeds the active power or integral power target value or a communications error occurs. Select from [ON] and [OFF]. [ON] The alarm sounds if the target value is exceeded or a communication error occurs while the List of active power or Graph list (Daily) is displayed. [OFF] The alarm does not sound even if the target value is exceeded or a communications error occurs.
[5] [RS-232C]	The item is enabled if [RS-232C] is selected for Network type ([1]). RS232C Communication port Communication specification Port COM1 Baud rate 9600bps [5]-2 [5]-1 Data bit length 7 bits [5]-3 COM1 Stop bit length 2 bits [5]-4 COM3 Vertical parity Even [5]-5	

[5]-1 Port		Select the RS-232C port. The list box shows the serial communication ports your PC can use. Note: Connect the RS-232C or USB cable to the PC for this setting before starting EasyKM-Manager.
[5]-2 Baud rate		Select the baud rate. Select one from [1200bps], [2400bps], [4800bps], [9600bps], [19200bps] and [38400bps].
[5]-3 Data bit length		Select the data length of one byte when sending or receiving data. Select from [7 bits] and [8 bits].
[5]-4 Stop bit length		Select the number of stop bits attached to each byte when sending or receiving data. Select from [1 bit] and [2 bits].
[5]-5 Vertical parity		Select the check bit attached for error detection when sending or receiving data. Select from [None], [Even], and [Odd].
[6] [Ethernet]	The item is enabled if [Ethernet] is selected for Network type ([1]).	
[Ethernet] PC side	Specify the information required for socket communication with Units. 	

[6]-1 IP address	PC side IP 10.6.12.222 ▼ 10.6.12.222	The list box shows the IP address options your PC can use. Select the IP address of the LAN card connected to the Ethernet/RS-485 adapter. Note: Connect the LAN cable to the PC for this setting before starting EasyKM-Manager.
[Ethernet] Communication target side	Specify the detailed information on the Ethernet/RS-485 adapter (Ether unit). Up to 20 adapter units (01 to 20) can be registered for use. However, the IP address and port No. must be unique to each adapter unit. No. Ether unit name IP Address Port No. 01 SI-65 10 . 6 . 180 . 99 4001 02 03 Ether unit No. [6]-2 [6]-3 [6]-4 05 06 07	
[6]-2 Ether unit name	Ether unit name SI-65	Enter the Ethernet/RS-485 adapter name (within 10 full-length or 20 half-length characters).
[6]-3 IP address	IP Address 10 . 6 . 180 . 99	Enter the IP address of the Ethernet/RS-485 adapter in decimal numbers (in 3 digits, within the range: 0 to 255).
[6]-4 Port No.	Port No. 4001	Enter the port No. for the Ethernet/RS-485 adapter in decimal numbers (in 5 digits, within the range: 0 to 65535). Note: The default port No. for an Ethernet/RS-485 is as follows: MOXA NPort5130: 4001 LINEEYE SI-65: 10001

| [7]

[Measurement mode]

Periodic measurements | Periodic measurement
◉ All items collected
○ Graph display item collection | Select the periodic measurements mode for the KM50-C/E or KM1/KE1.

Select from [All item collection] and [Graph display item collection].

[All item collection]

This mode measures all the items available with each Unit.

[Graph display item collection]

This mode measures only the items required by the application. Select this mode when a large number of Units are connected.

Note: Refer to "9.3.1. Data Output in Files (Periodic Measurements)" (P. 9-11) for the measurement target items for each mode. |
| [8]

Setting | Setting

Precaution for Correct Use

If you apply the change by clicking the [Setting] button during periodic measurements, the measurement stops. To resume periodic measurements, click [Periodic measurements start]. | Saves the values specified for the individual items.

Click the [Setting] button. A dialog appears to confirm if you want to apply the settings.

The settings are saved when you click [Yes].

To abort the settings, click [No]. The display before clicking the [Setting] button returns.

The restart of EasyKM-Manager is not required after the settings are changed. However, the communication settings and adapter settings must be matched. |

6.3.1.3. Environmental Setting - [Unit] Tab Page

Register the Unit information used by EasyKM-Manager in this tab.

The following description details the individual items and functions.

The Units with the same location name, measurement options, model, or Ether unit can be registered in batch. The batch-registered location names are suffixed with the Unit No.

Precautions for Correct Use

- Stop periodic measurements when changing the settings. To resume the measurement after the change, click the [Periodic measurements start] button.
- Communication test must be performed if Units are added or replaced to ensure that EasyKM-Manager can "successfully communicate" with all the Units.
- The KM50-C and KM50-E must be tested for communications so that EasyKM-Manager can identify the version (V1/V2). The Units are identified as the version 1 if they are operated before the communication test is completed normally.
- Units not specified for periodic measurements also must be tested for communications. Check the [Measure] check boxes and perform the test for the Units. Clear the check boxes after the communications with the Units are successful.

■Operation

●Setting the Units individually

1. Set [Location name] ([1]-2), [Measure] check box ([1]-3) and [Device model] ([1]-4). Also specify [Ether unit] ([1]-5) for Ethernet connection.
2. Click the [Setting] button ([4]). The confirmation dialog: "Make sure to perform communication test after the change is applied. Are you sure to apply the settings?" appears.
3. Click [Yes] to apply the settings. A dialog appears indicating that the settings have been completed.
4. Click the [OK] button.

   This concludes the individual Unit setting procedure.

●Setting the Units in batch

1. Specify [Location name] ([2]-1), [Measure] ([2]-2) and [Device model] ([2]-3) for batch setting. Also select [Ether unit] ([2]-4) for Ethernet connection.
2. Specify the Unit No.s for batch setting in [Specifying unit range] ([2]-5).
3. Click the [Batch] button ([2]-6). A dialog appears to confirm if batch setting can be made.
4. Click the [Yes] button to make the setting. The batch setting details are shown in the corresponding Unit No. columns.
5. Click the [Setting] button ([4]). The confirmation dialog appears.
6. Click [Yes]. A dialog appears indicating that the settings have been completed.
7. Click the [OK] button.
   This concludes the batch Unit setting procedure.
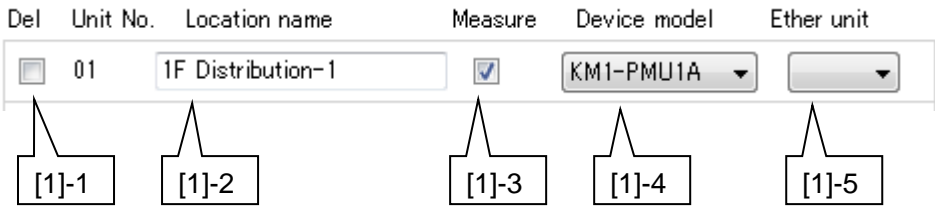
●Deleting the Units
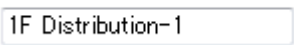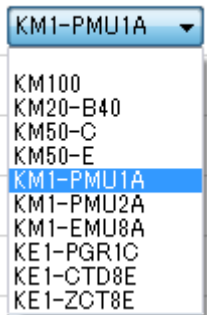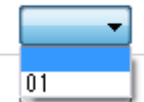
1. Check the [Del] check box ([1]-1) of the Unit to delete.
2. Click the [Setting] button ([4]). The confirmation dialog appears.
3. Click [Yes] to delete the Unit. A dialog appears indicating that the setting is completed.
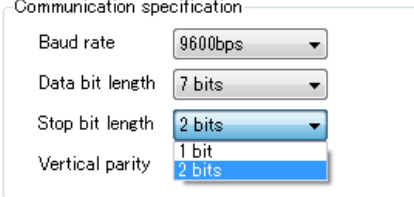4. Click the [OK] button.
   This concludes the procedure to delete a Unit.
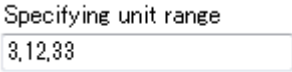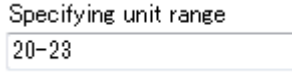
■Main Parameters and Functions

[1] Individual settings	Set the information related to each Unit. Up to 99 Units (01 to 99) can be registered.
[1]-1 Del	Specify the Units to be deleted. Please note that the measurement data obtained by the deleted Units cannot be displayed in graphs. Select the check box (ON) to delete the Unit from registration. Deselect the check box (OFF) to keep the Unit in registration. Note: If Units belonging to a group are deleted, the integral power consumption graph values are reduced, since the number of the group summary targets is reduced.

[1]-2 Location name	Location name 1F Distribution-1	Enter the Unit name (within 10 full-width or 20 half-width characters). The registered Unit location name is used to represent the Unit name in various EasyKM-Manager windows.
[1]-3 Measure	Measure ☑	Specify the Units for communication test or periodic measurements. Select the check boxes for the target Units. Deselect the check boxes for non-target Units. To use the KM1/KE1 as the target, the measurement points registration is required in the [KM1/KE1 measurement points setting] tab. Note 1: If deselected Units (in the [Measure] check boxes) belong to a group, the Units are removed from the [Grouping] setting in the [Group] tab. Note 2: The Units removed from the measurement target selection are displayed as "disconnected" in "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42). Note 3: Please note that the Unit No. selection and graph display are disabled in the [Graph setting], [Monitoring] and [Integral power consumption graphs] tab windows, if the check boxes are cleared.
[1]-4 Device model	Device model KM1-PMU1A ▼ KM100 KM20-B40 KM50-C KM50-E KM1-PMU1A KM1-PMU2A KM1-EMU8A KE1-PGR1C KE1-CTD8E KE1-ZCT8E	Select the model of each periodic measurements target.
[1]-5 Ether unit	Ether unit ▼ 01	Select the Ether unit No. (Target side No.) of the Ethernet/RS-485 adapter connected to the Unit, if the network type in the [Communication setting] tab is specified to [Ethernet]. Note: The Ether unit setting is not required if the network type is [RS-232C]. Leave the item blank.

[2] Batch setting	Set the Units information in batch. Note: Refer to (1) to set Units individually. 	
[2]-1 Location name		Enter the Unit name. Each Unit is set with the Unit No. suffixed to the specified name in batch setting.
[2]-2 Measure		Specify the target Units for periodic measurements. Select the check boxes for the target Units. Deselect the check boxes for non-target Units. Note: If deselected Units (in the [Measure] check boxes) are specified to a group member, the Units are removed from the [Grouping] setting.
[2]-3 Device model		Select the model of the periodic measurements targets.

[2]-4 Ether unit	Ether unit 01	Select the target side Unit. Note: The Ether unit setting is not required if the communication method is [RS-232C]. Leave the item blank.
[2]-5 Specifying unit range	Specifying unit range	Specify the Unit No. range for batch setting. Range setting example 1. Specifying a single Unit Specifying unit range 11 2. Specifying Units individually Specifying unit range 3,12,33 3. Specifying Units in a range Specifying unit range 20-23 Note: Units can be specified by combining the methods above.
[2]-6 Batch setting	Batch	The values set in batch setting are entered in the individual Unit No. boxes. Note 1: The setting made in batch setting here is not yet applied to EasyKM-Manager. It is applied after clicking the [Setting] button. Note 2: If batch setting is made without specifying setting items, the current settings are overwritten with blank information.

[3] Number of remaining units	Number of remaining 89 unit	The number of remaining Units for registration is displayed. The initial value after installation is 99 Units. The number of the remaining Units changes after the setting is completed.
[4] Setting	Setting	The values specified in individual items in [Individual settings] are applied to EasyKM-Manager. When you click the [Setting] button, the message "After the setting is changed, make sure to run the communications test before using each measurement function. Is it OK?" is displayed. If the settings are correct, click the [Yes] button. To abort the settings, click [No]. The display before clicking the [Setting] button returns. Note: To verify the settings, refer to "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42) and check the displayed Unit information and communication test result. For the Unit name, also see "6.3.1.5. Environmental Setting - [Group] Tab Page" (P. 6-36). **Precaution for Correct Use** If you apply the change by clicking the [Setting] button during periodic measurements, the measurement stops. To resume periodic measurements, click [Measurements Start].

6.3.1.4. Environmental Setting - [Measurement Points Setting] Tab Page

Specify the measurement points (Circuit, Event input, Thermistor input and ZCT input) for KM1/KE1 Units registered in the [Unit] tab page and their voltage phase systems as well as periodic measurements options in this tab page.

EasyKM-Manager performs periodic measurements for the target measurement points selected in the [Use Yes/No] check boxes.

Precaution for Correct Use

- Stop periodic measurements when changing the settings. To resume the measurement after the change, click the [Periodic measurements start] button.
- The target Units for periodic measurements must be selected in the [Measure] check boxes beforehand in the [Unit] tab page.
- The KM1/KE1 is a multi-point measurement unit and each measurement point is assigned with a specific number. To check the correspondence of numbers and individual points, refer to "9.1. KM1/KE1 Measurement Points" (P. 9-1).

The following description details the individual items and functions.

■Operation

●Setting the KM1/KE1 measurement points

1. Specify [Electrical system] ([1]-4), [Use Yes/No] ([1]-6) and [Name] for each measurement point of the Units to register.
2. Click the [Setting] button ([2]). A dialog appears to confirm if you want to apply the settings.
3. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.
4. Click the [OK] button.

   This concludes the procedure to set KM1/KE1 measurement points.

■Main Parameters and Functions

[1]
 	
Setting list
	Unit No. Location name Model Phase Measurement points Use Yes / No Name
	
	01 1F Distribution-1 KM1-PMU1A Electrical system 1 1-phase 2-wire ▼ Circuit 1 ☑ Lighting 1-1
	                                                                                        Circuit 2 ☑ Lighting 1-2
	                                                                                        Circuit 3 ☑ Lighting 1-3
	
	[1]-1 [1]--2 [1]--3 [1]--4 [1]-5 [1]--6 [1]--7

[1]-1 Unit No.	Displays the measurement target Unit No. Note: Specify the measurement target in the [Environmental setting] - [Unit] tab page.
[1]-2 Location name	Displays the measurement target Location name. Note: Specify the measurement target in the [Environmental setting] - [Unit] tab page.
[1]-3 Model	Displays the measurement target model name.

[1]-4	Phase	Specify the voltage phase electrical system for each Unit.

Phase electrical system

Electrical system 1 [1-phase 2-wire ▾]

- 1-phase 2-wire
- 1-phase 3-wire
- 3-phase 3-wire
- 3-phase 4-wire

KM1-PMU1A and KE1-PGR1C: Only specify the System 1 phase electrical system.

KM1-PMU2A: Specify the phase electrical system for System 1, System 2 or both.

KE1-CTD8E: Specify the phase electrical system for measurement blocks 1 and 2.

KM1-EMU8A: The phase electrical system cannot be selected.

Note: Refer to "KM1 Smart Power Monitor User's Manual" or "KE1 Smart Measurement Monitor User's Manual" for the relationship between the measurement blocks and voltage systems.

The following table shows the electrical phase systems each model can use.

	Unit	Phase electrical system			
System 1	KM1-PMU1A	1-phase 2-wire	1-phase 3-wire	3-phase 3-wire	3-phase 4-wire
	KM1-PMU2A	1-phase 2-wire	1-phase 3-wire	3-phase 3-wire	-
	KE1-CTD8E	1-phase 2-wire	1-phase 3-wire	3-phase 3-wire	3-phase 4-wire
	KE1-PGR1C	1-phase 2-wire	1-phase 3-wire	3-phase 3-wire	3-phase 4-wire
System 2	KM1-PMU1A	Not selectable			
	KM1-PMU2A	1-phase 2-wire	1-phase 3-wire	3-phase 3-wire	-
	KE1-CTD8E	1-phase 2-wire	1-phase 3-wire	3-phase 3-wire	3-phase 4-wire
	KE1-PGR1C	Not selectable			

If "3-phase 4-wire" is selected for the KE1-CTD8E, specify "3-phase 4-wire" both for measurement blocks 1 and 2.

[1]-5 Measurement points	Lists all the Circuit No.s, Event No.s or ZCT No.s the target Unit can use, registered in the [Unit] tab page. Note: Some circuits cannot be used depending on the selection of the phase electrical system, which are shown in gray.	
[1]-6 Use Yes/No	Use Yes / No ☑	Use this to select a circuit or event for periodic measurements. Note: If you clear the check box, the corresponding circuit No. cannot be selected or displayed in graph in the [Graph setting], [Monitoring] or [Integral power consumption graphs] tab page.
	Precaution for Correct Use Make sure that the [Measure] check box of the Unit is selected in the [Environmental setting] - [Unit] tab page before selecting the circuit No.s. Otherwise, periodic measurements are not performed for the corresponding circuit No., even if it is selected here.	
[1]-7 Name	Name Lighting 1-1	Enter the name for the measurement target point (within 10 full-length or 20 half-length characters). Note: The name specified here is used in graph display and graph setting. The name should be easily identifiable.
[2] Setting	Setting	Registers the values specified for the individual items to EasyKM-Manager. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings. If the settings are correct, click the [Yes] button.

6.3.1.5. Environmental Setting - [Group] Tab Page

Specify group information in this tab page. You can create a group in which multiple Units and circuits can be registered. Once a group is registered, you can display the group's average and the total values in a historical trend graph and integral power consumption graph respectively. To register multiple Units in a single group, use the batch registration function.

Precaution for Correct Use

• Stop periodic measurements when changing the settings. To resume the measurement after the change, click the [Periodic measurements start] button.

• EasyKM-Manager starts the summarization of the group's measured values once periodic measurements start and displays them in a graph. Only the data after the group registration is displayed (not the data before the registration).

The following description details the individual items and functions.
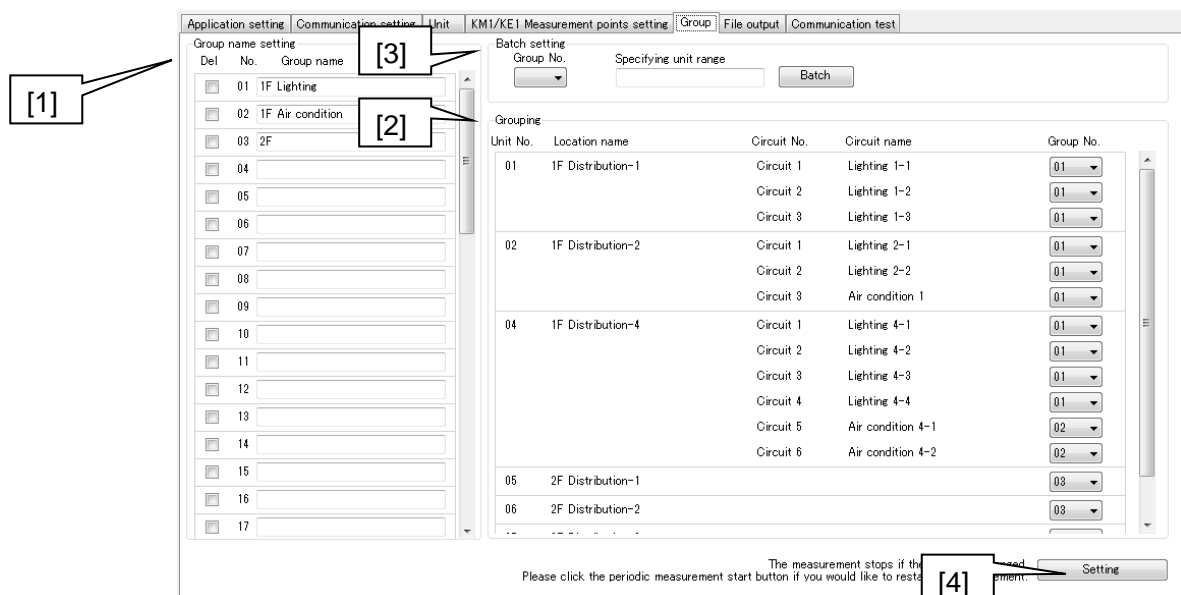
■Operation

●Creating a group

1. Specify [Group name] ([1]-2).

2. Click the [Setting] button ([4]). A dialog appears to confirm if you want to apply the settings.

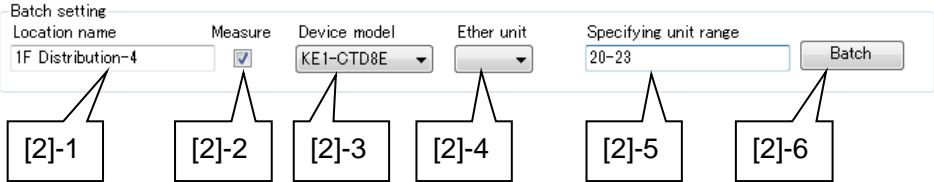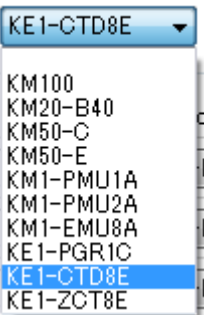3. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.

4. Click the [OK] button.
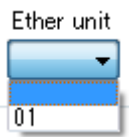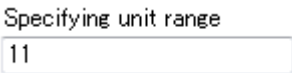
    This concludes the procedure to create a group.

●Registering Units individually to the group

1. Select [Group No.] ([2]-1) for each Unit and circuit.
2. Click the [Setting] button ([4]). A dialog appears to confirm if you want to apply the settings.
3. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.
4. Click the [OK] button.
   This concludes the procedure to register Units individually to a group.

●Registering Units to a group in batch

1. Select the Group No.s in [Group No.] ([3]-1) to register in batch.
2. Enter the Unit No.s for batch registration in [Specifying unit range] ([3]-2).
3. Click the [Batch] button ([3]-3). A dialog appears to confirm if batch setting can be made.
4. Click the [Yes] button to make the settings in batch. The batch setting details are shown in the corresponding Unit No. columns.
5. Click the [Setting] button ([4]). A dialog appears to confirm if you want to apply the settings.
6. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.
7. Click the [OK] button.
   This concludes the batch Unit setting procedure.
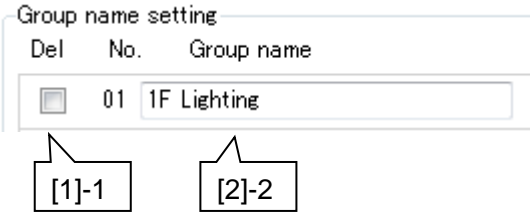
●Deleting a group

1. Select the [Del] check box ([1]-1) of the Group No. to delete.
2. Click the [Setting] button ([4]). A dialog appears to confirm if you want to apply the settings.
3. Click [Yes] to apply the settings. A dialog appears indicating that the settings are completed.
4. Click the [OK] button.
   This concludes the procedure to delete a group.

■Main Parameters and Functions

[1] Group name setting	Register a group and specify the group name. Up to 50 groups can be registered. Group name setting Del　No.　Group name ☐　01　1F Lighting [1]-1　　[2]-2	
[1]-1 Del	Del ☐	Select the groups to delete from registration. Select the check boxes for the groups to delete. The [Group No.] areas for the Units registered in the deleted groups are displayed in blank.

[1]-2 Group name	. Group name 1F Lighting	Enter the group name (within 10 full-length or 20 half-length characters).

[2]
 	
Grouping
	Register [Group No.] for each Unit or circuit.
	
	The KM20-B40, KM100, KM50-C and KM50-E cannot be registered in the same group: the group registration must be performed individually for each Unit. The KM1/KE1 groups are formed by the unit of circuits selected in the [Use Yes/No] check boxes in the [KM1/KE1 measurement points setting] tab page.
	
	Grouping
	Unit No. Location name Circuit No. Circuit name Group No.
	01 1F Distribution-1 Circuit 1 Lighting 1-1 01
	                                Circuit 2 Lighting 1-2 [2]-1 01
	                                Circuit 3 Lighting 1-3 01	

[2]-1 Group No.	Group No. 01 01 02 03	Lists the Group No.s of the group registered in [1]. Select the registered Group No. for each Unit or circuit.
[3] Batch setting	Use this to specify the same Group No. for multiple Units. With the KM1/KE1, the specified [Group No.] is registered for all the circuits of the selected Units. Manually clear the [Group No.] areas for the circuits not required for measurement. Batch setting Group No. Specifying unit range 03 20-23 Batch [3]-1 [3]-2 [3]-3	
[3]-1 Group No.	Group No. 03 01 02 03	Lists the Group No.s of the group registered in [1]. Select the Group No.s to register in batch.

[3]-2 Specifying unit range	Specifying unit range [ ]	Specify the Unit No. range for batch setting. Range setting example 1. Specifying a single Unit Specifying unit range [11] 2. Specifying Units individually Specifying unit range [3,12,33] 3. Specifying Units in a range Specifying unit range [20-23] Note: Units can be specified by combining the methods above.
[3]-3 Batch setting	[Batch]	Sets the batch setting values specified at the previous steps in the [Grouping] items. Note: The setting made in batch setting here is not yet applied to EasyKM-Manager. It is applied after clicking the [Setting] ([4]) button.
[4] Setting	[Setting]	The specified values are applied to EasyKM-Manager. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings. If the settings are correct, click the [Yes] button. **Precaution for Correct Use** If you apply the change by clicking the [Setting] button during periodic measurements, the measurement stops. To resume periodic measurements, click [Measurements Start].

6.3.1.6. Environmental Settings - [File Output] Tab Page

Set EasyKM-Manager to periodically copy and output the measurement data obtained in periodic measurements in files. Make settings depending on your requirements.

Measurement data is stored according to the interval set in [Environmental setting] - [Communication setting] tab page and output to the [File output folder] at the [File output timing] specified in the [File output] tab page. Refer to "9.3. Data Output in CSV Files" (P. 9-9) for the output file formats.

Precaution for Correct Use

After setting, EasyKM-Manager outputs data starting from the measurement data obtained in the current day's periodic measurements.
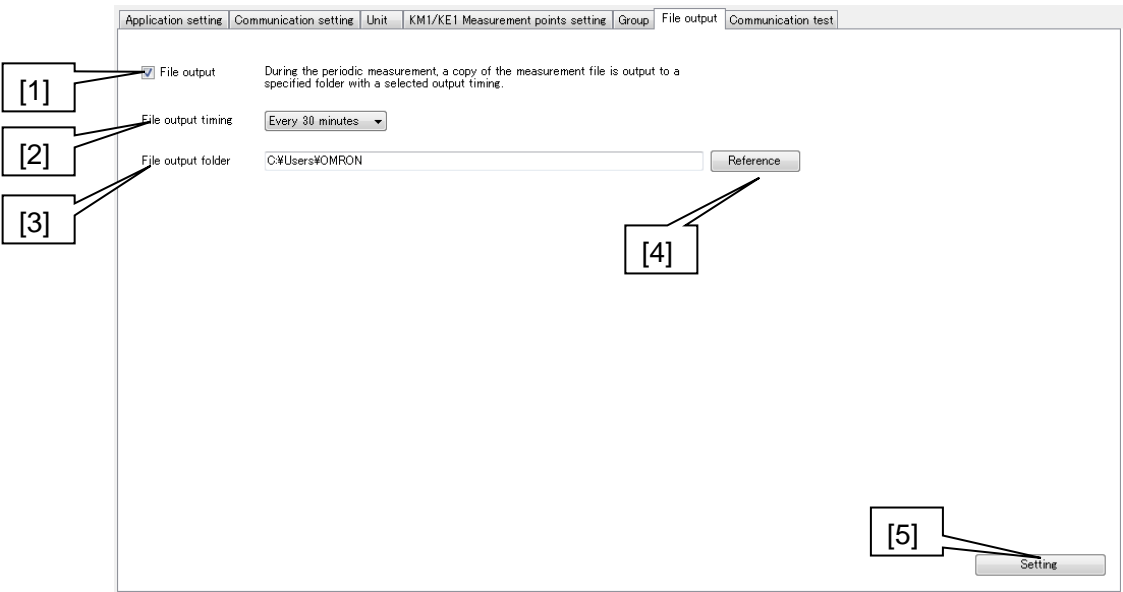
■Operation

●Setting file output
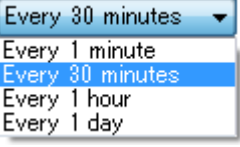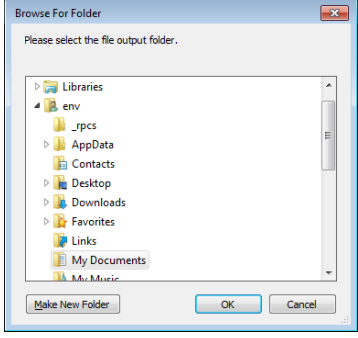
1. Select the [File output] check box ([1]).
2. Specify [File output timing] ([2]) and [File output folder] ([3]).
3. Click the [Setting] button ([5]). The confirmation dialog appears.
4. Click [Yes]. A dialog appears indicating that the settings have been completed.
5. Click the [OK] button.

    This concludes the file output setting procedure.

■Main Parameters and Functions

[1] File output	File output	Select the check box to output a file during periodic measurements. Selecting this check box enables the file output timing [2] and file output folder [3] items for specifying them.

[2] File output timing	Every 30 minutes ▼ Every 1 minute Every 30 minutes Every 1 hour Every 1 day	Specify the timing to output files. Select one from [Every 1 minute], [Every 30 minutes], [Every 1 hour] and [Every 1 day].
[3] File output folder	File output folder C:¥Users¥OMRON	Specify the file output destination. Select the desired folder.
[4] Reference	Reference 	You can click the [Reference] button and specify [File output folder] in the [Browse for Folder] list.
[5] Setting	Setting	Saves the values specified for the individual items. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings. The settings are saved when you click [Yes]. To abort the settings, click [No]. The display before clicking the [Setting] button returns. Note: To verify the settings, check the folder specified in [3] during periodic measurements. Refer to "6.3.4 Starting and Stopping Periodic Measurements" (P. 6-81) for the procedure to start or stop periodic measurements.

6.3.1.7. Environmental Setting - [Communication Test] Tab Page

Use this tab page to communicate with the connected Units and display the communication state. Refer to "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20) and "6.3.1.3. Environmental Setting - [Unit] Tab Page" (P. 6-26) for the communication settings.

Precautions for Correct Use

- Communication test must be performed if Units are added or replaced to ensure that EasyKM-Manager can "successfully communicate" with all the Units.
- Units not specified for periodic measurements also must be tested for communications. Check the [Measure] check boxes in the [Unit] tab page and perform the test for the Units. Clear the check boxes after the communications with the Units are successful.
- If you start periodic measurements before verifying successful communications, the conversions to monetary or pulse conversion value units may not be displayed correctly in "6.3.6.3. Integral Power Consumption Graphs - [Individual Graph] Tab Page" (P. 6-104).
- The KM50-C and KM50-E must be tested for communications so that EasyKM-Manager can identify the version (V1/V2). In new installation, KM50-C and KM50-E Units are identified as the version 1, and as the version verified successful in the last communication test in replacement, if they are operated before successful communication test.
- Stop periodic measurements for communication test. To resume the measurement after the test, click the [Periodic measurements start] button.
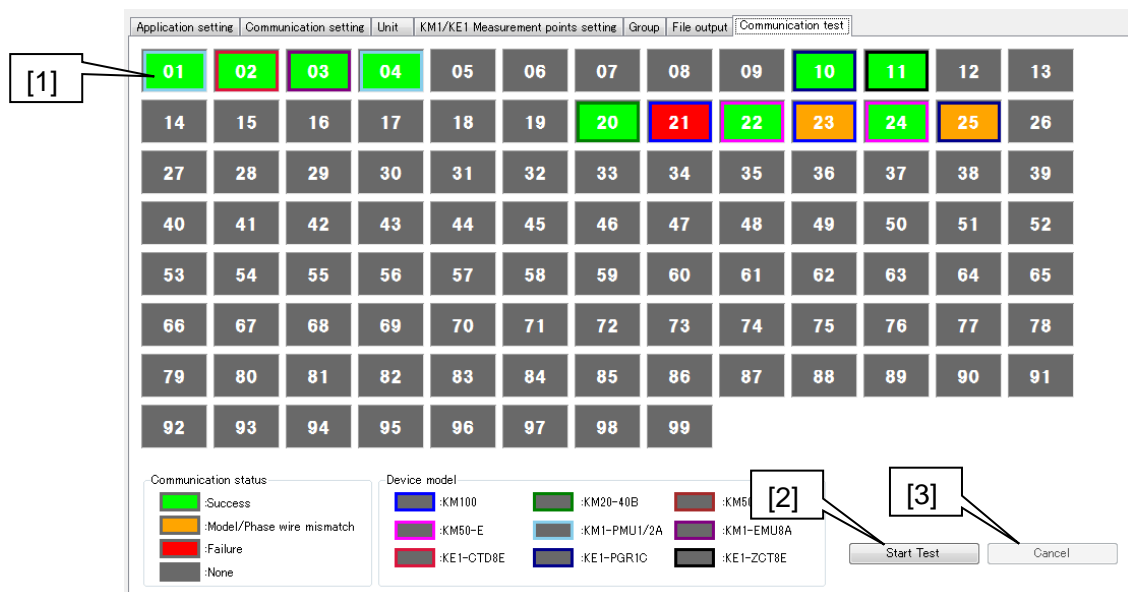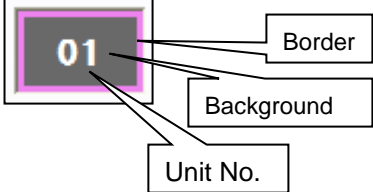
■Operation

●Checking communications with Units

1. Click the [Start test] button ([2]). A message appears to confirm if communication test can be started.
2. Click the [Yes] button. When the test is complete, a message appears indicating that communication test is completed.
3. Click the [OK] button.

4. Check the communication result ([1]) with each Unit.

   This concludes the procedure to test communications with Units.

■Main Parameters and Functions

[1] Unit information	Border / Background / Unit No.	The Unit No.s, communications status, and device models of the registered Units are displayed.
	The border color is determined by the device model.	
	KM100 (Blue) — 05	**Precaution for Correct Use**
	KM20-B40 (Green) — 06	If the KM50-C and KM50-E is set to the Unit device model, EasyKM-Manager cannot identify their version (V1/V2) before communication test. The software considers them as the version 1 until the test is performed successfully.
	KM50-C (Brown) — 07	
	KM50-E (Crimson) — 08	
	KM1-PMU1/2A (Sky blue) — 02	
	KM1-EMU8A (Purple) — 03	
	KE1-CTD8E (Deep red) — 04	
	KE1-PGR1C (Deep blue) — 09	
	KE1-ZCT8E (Black) — 10	

The background color (to indicate the communications status) is displayed after the test is performed by clicking the [Start Test] button.

Success

The background color indicates the communications status.

Failure

Note 1: Initially, all Units are displayed as disconnected.

Note 2: Communications errors and timeout errors are all displayed as communications failures.

None

Note 3: For a communications failure, a tooltip will be displayed if you point the mouse at the Unit information.

Setting mismatch

Note 4: Units deselected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page are displayed as "None" (disconnected).

・Communications timeout
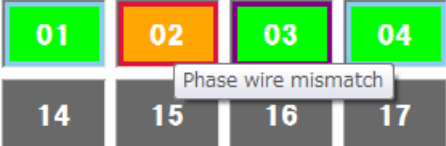
・Wrong device model

The tooltip shows the model detected in communications if the device models specified in the [Unit] tab page and detected in communications do not match.
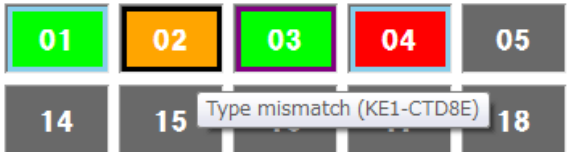
The model detected in communications is displayed.

		・Wrong phase electrical system KM1/KE1: The tooltip shows the phase electrical system detected in communications if the phase electrical systems specified in the [KM1/KE1 measurement points setting] tab page and detected in communications do not match. **Note** If you double-click the Unit information, you can move to the [Unit] tab page.
[2] Start Test	Start Test (Executing Communication Test) Start Test Ca **Executing Communication Test**	Click the [Start Test] button to display the Unit information. During the communications test process, "Executing Communication Test" will flash below the [Start Test] button. Note: If the test result is "Failure", check the communication setting, Unit setting (Unit No.), network device setting and the cable.
[3] Cancel	Cancel	To cancel communications test during the test, click the [Cancel] button. A confirmation message for canceling the communications test is displayed. Click the [Yes] button to cancel the communications test. Click the [No] button to continue the communications test.

6.3.2. Unit Setting Tab Pages

Click the [Unit setting] button on the Function Menu to open the Unit Setting tab pages.

Precautions for Correct Use

- Periodic measurements must be stopped before you change Unit settings.
- This function cannot be used for KM1/KE1 Units. Use the KM1/KE1 tool ("KM1/KE1-Setting") to make the Unit and time settings or to initialize the Unit.

> Note: The KM1/KE1 setting tool ("KM1/KE1 Setting") is the software for easy Unit settings of the KM1 and KE1 series. The software and manual can be downloaded from OMRON's website.
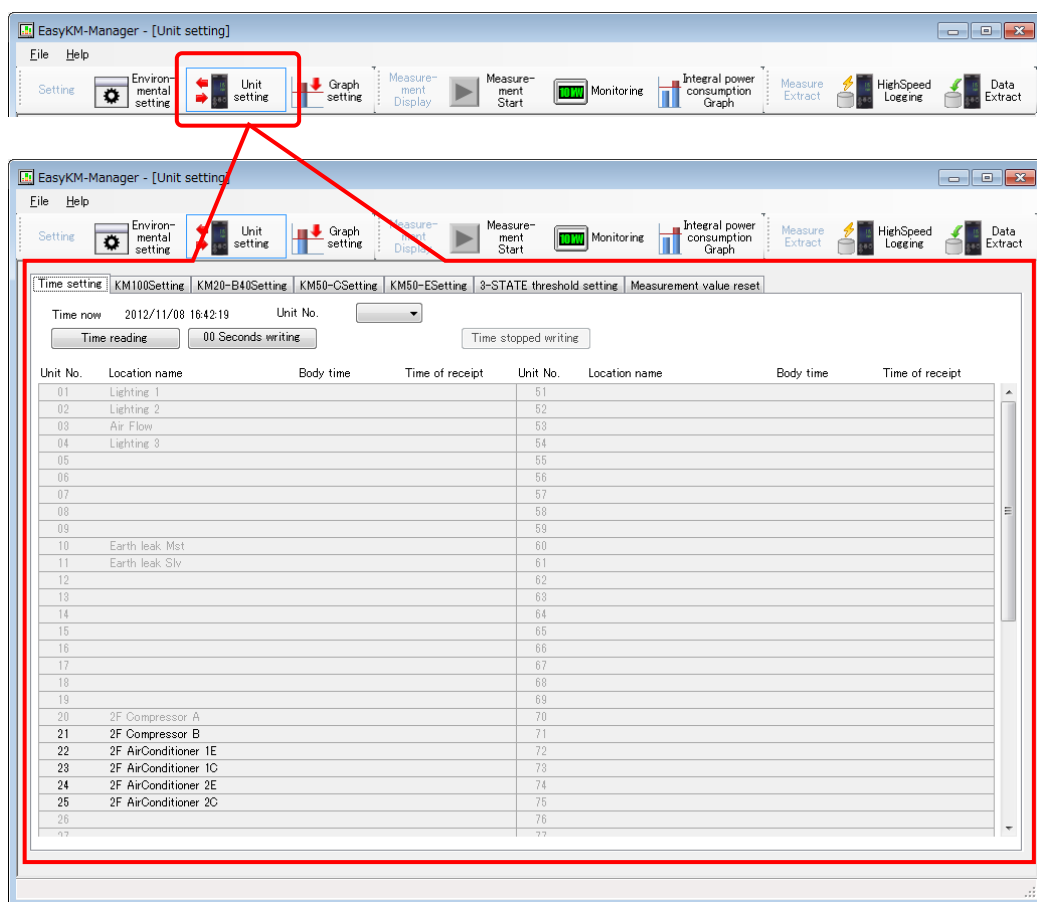
■Tab Pages

● [Time setting] tab

  Used to make the time setting for KM100 and KM50-C/E Units.

● [KM100 setting] tab

  Used to read or write the KM100 Unit information.

● [KM20-B40 setting] tab

  Used to read or write the KM20-B40 Unit information.

● [KM50-C setting] tab

  Used to read or write the KM50-C Unit information.

● [KM50-E setting] tab

  Used to read or write the KM50-E Unit information.

● [3-STATE threshold setting] tab

  Used to adjust or specify the KM50-E's 3-STATE thresholds.

6.3.2.1. Unit Setting - [Time Setting] Tab Page

This tab page is used to set the time of the internal clock of the KM100 and KM50-C/E based on the time of the PC you are using. Make sure that the time in the PC is correct before doing this.

Precautions for Correct Use

・   Stop periodic measurements for time setting.
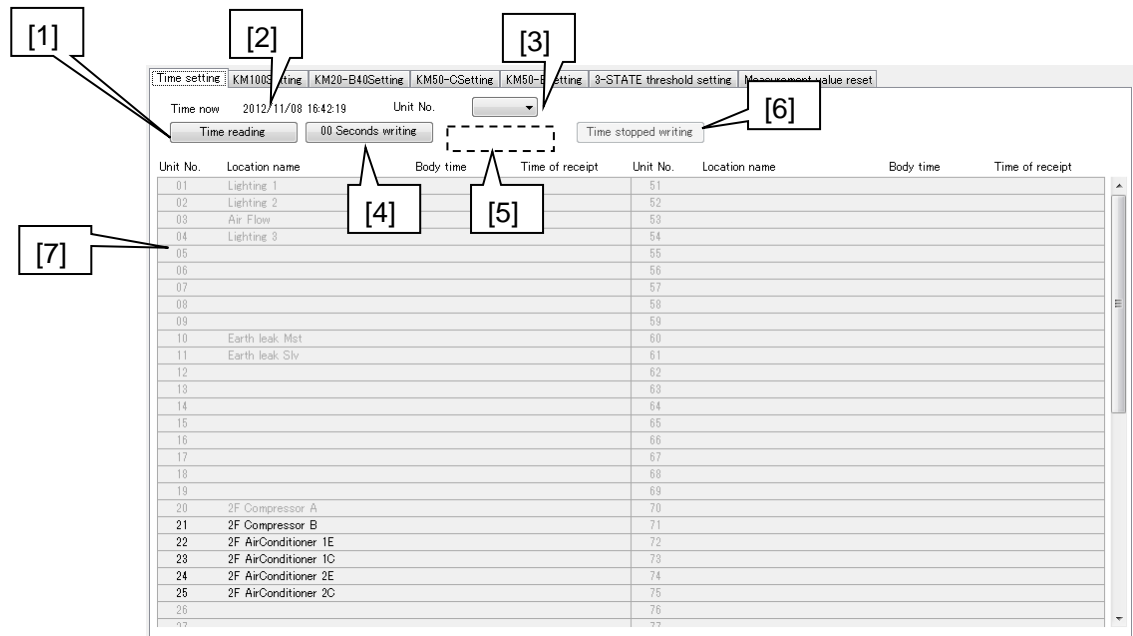
■Operation

●Reading time from Units

1.   Select the Unit No. in [Unit No.] ([3]) of the reading target. Unit No. selection is not required to read the times of all Units.

2.   Click the [Time reading] button ([1]). After the Unit internal time is obtained, a message appears indicating that time reading is completed.

3.   Click the [OK] button.

4.   Check [Body time] ([7]-1) and [Time of receipt] ([7]-2) in the time reading result list.
    This concludes the procedure to read the time from Units.

●Writing time to Units

1.   Select the Unit No. in [Unit No.] ([3]) of the writing target Unit. Unit No. selection is not required to write time to all Units.

2.   Click the [00 Seconds writing] button ([4]). A dialog appears to confirm if you want to apply the settings.

3.   Click the [Yes] button to make the setting. Time is counted down until the digit of "second" reaches "00" in [Time now] ([2]) and the time is written to the selected Unit.

4.   When the message that time writing is completed appears, click the [OK] button.

5.   Check that the time is written correctly by reading the Unit time again.
    This concludes the procedure to write time to Units.

■Main Parameters and Functions

[1] Time reading	Click this to read the target Unit time information.
[2] Time now	Shows the current time of the PC.
[3] Unit No.	Specify the Unit No. of the time read/write target Unit. If it is blank, all Units become the target.
[4] 00 Seconds writing	Clicking this writes the time when the "second" value of the PC reaches "00".
[5] Countdown time	Displays the time (seconds) remaining until writing after clicking the [00 Seconds writing] button.
[6] Time stopped writing	Stops time writing. Note: Only effective during the writing standby (countdown to "00" seconds).
[7] Time reading result list	Displays the results of time reading. [Reading Results] Success (Normal) If time is read correctly, the time read from the Unit is displayed in [Body time] and the Windows time at the reading is displayed in [Time of receipt]. Success (with Difference) If the difference between the values in [Body time] and [Time of receipt] exceeds the time tolerance, the background changes to yellow and the value in [Body time] is displayed in red. Note: Specify the time tolerance in the [Application] tab page (P. 6-17). Failure If time reading fails, the background color changes to red.
[7]-1 Body time	Displays the time read from the Unit.
[7]-2 Time of receipt	The PC time when [Body time] is obtained from the Unit.

6.3.2.2. Unit Setting - [KM100 Setting] Tab Page

Use this tab page to read or write the KM100 Unit information.

> **Precautions for Correct Use**
> ・ Stop periodic measurements for setting.

■Operation

●Writing after changing Unit setting

1. Select the Unit No. in [Unit No.] ([1]-1) of the target Unit to read the setting.

2. Click the [Reading] button ([1]-3). The Unit setting values are displayed.

3. Edit the set information.

4. Select the [Unit No.] ([3]-1) of the target Unit to write the setting.

5. Click the [Writing] button ([3]-4). The confirmation dialog appears.

6. Click the [Yes] button. The message that parameter writing is completed appears.

7. Click the [OK] button.

    This concludes the procedure to write Unit setting values after editing them.

■Main Parameters and Functions

[1]	Use this to read the KM100 parameters.
Reading of setting	

[1]-1 Unit No.	Select the Unit to read from.
[1]-2 Unit name	Displays the Unit name of the selected Unit No.
[1]-3 Reading	Click the [Reading] button to read the Unit information. When the information is successfully read, individual [Writing of setting] items are enabled for setting.
[2] Parameters	The obtained Unit information is displayed. All parameter values before reading are blank or unselected. Edit the parameter values. If a range is defined on the right of the textbox, enter a value within the range. Example: Enter a value within the range from 1 to 9999.
[3] Writing of setting	The settings made in [2] are written to the Unit. Use the following procedure to write the settings: 1. Select the Unit setting method in [3]-1. 2. Select the target Units in [3]-2 or [3]-3. 3. Click the [Writing] button ([3]-4) to write the settings.
[3]-1 Unit setting	Select the writing target Units. [Specified unit]: Individually select the target Units in [3]-2. Up to five Units can be selected. Note: The same Unit No. cannot be selected more than once. [The same model of the same group]: All the KM100 Units in the selected group are the targets. Select the group No. in [3]-3. [All Units of the same model]: All KM100 Units are targeted for writing.

[3]-4	The settings are written to the specified Units.
Writing	Clicking the [Writing] button checks the inputs in [2] items.
	If the input check fails, a warning message appears.
	The message that parameter writing is completed appears if writing is successful.

6.3.2.3. Unit Setting - [KM20-B40 Setting] Tab Page

Use this tab page to read or write the KM20-B40 Unit information.

Precautions for Correct Use

・ Stop periodic measurements for setting.

■Operation

Follow the same procedure in "6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).

■Main Parameters and Functions

[1] Reading of setting	The operating procedure is the same as in "6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).
[2] Parameters	The operating procedure is the same as in "6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).
[3] Writing of setting	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50). Note: When [Priority Type] is set to [Hard-enabled], the following message appears. The settings cannot be written to the Unit.

6.3.2.4. Unit Setting - [KM50-C Setting] Tab Page

Use this tab page to read or write the KM50-C (V1/V2) Unit information.

> **Precautions for Correct Use**

- The tab page include the parameter items both for V1 and V2. However, the parameters only available with V2 are disabled (displayed in gray) if the version of the selected Unit is V1.
- If writing is performed from a V1 Unit to a V2 Unit, only common parameters are written, and V2-specific settings are not written. When the settings in a V2 Unit is written to a V1 Unit, only V1 parameters are written.
- Stop periodic measurements for setting.

■Operation

Follow the procedure in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).

■Main Parameters and Functions

[1] Reading of setting	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).
[2] Parameters	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).
[3] Writing of setting	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).

6.3.2.5. Unit Setting - [KM50-E Setting] Tab Page

Use this tab page to read or write the KM50-E (V1/V2) Unit information.

> **Precautions for Correct Use**
>
> • The tab page include the parameter items both for V1 and V2. However, the parameters only available with V2 are disabled (displayed in gray) if the version of the selected Unit is V1.
>
> • If writing is performed from a V1 Unit to a V2 Unit, only common parameters are written, and V2-specific settings are not written. When the settings in a V2 Unit is written to a V1 Unit, only V1 parameters are written.
>
> • Stop periodic measurements for setting.

■Operation

Follow the procedure in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).

■Main Parameters and Functions

[1] Reading of setting	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).
[2] Parameters	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).
[3] Writing of setting	The operating procedure is the same as in 6.3.2.2. Unit Setting - [KM100 Setting] Tab Page" (P. 6-50).

6.3.2.6. Unit Setting - [3-STATE Threshold Setting] Tab Page (Data List Window)

Use this tab page to obtain KM50-E measurement data, display the measurement results real time in a list and output the data in a CSV file.

The tab page can be switched to the 3-STATE Threshold Setting tab page, where you can display the measured data saved in CSV files in graph, and adjust the thresholds in a visualized manner. The adjusted thresholds can then be written to the KM50-E.

> **Precautions for Correct Use**
>
> ・ Use the [Interval] setting as the rule of thumb (i.e. the accuracy cannot be guaranteed), since the measurement interval may be influenced by the PC workload or communication environment.
>
> ・ Stop periodic measurements for setting.
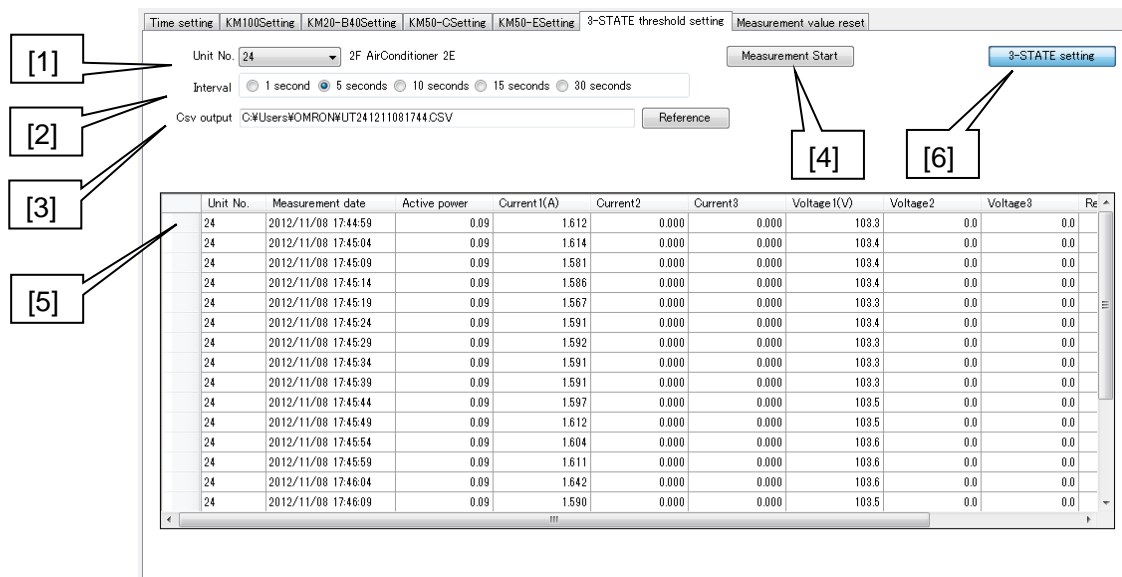
■Operation
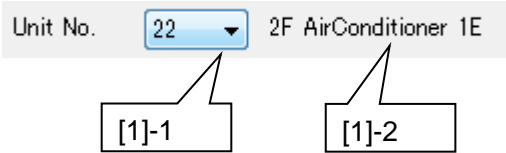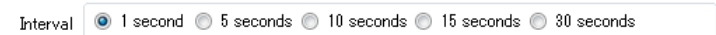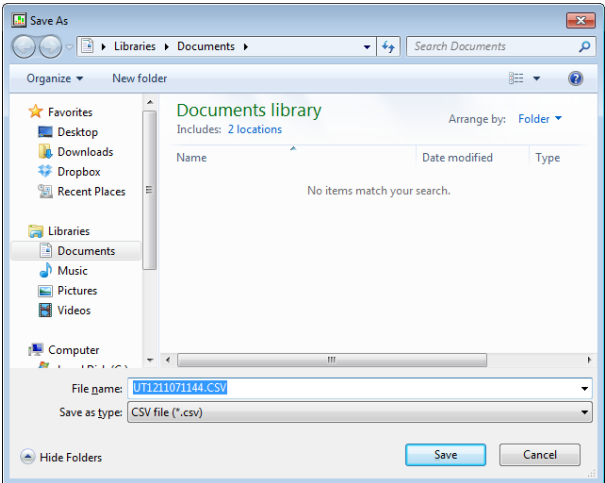
●Obtaining data for 3-STATE threshold setting

1. Select the Unit No. in [Unit No.] ([1]) for 3-STATE threshold setting.

2. Specify [Interval] ([2]).

3. Click the [Reference] button in [CSV output] ([3]) and specify the CSV file output destination.

4. Click the [Measurement Start] button ([4]). A message appears to confirm if you want to start measurement.

5. Click the [Yes] button. The measurement results are displayed in the list at every measurement interval.

6. Click the [Measurement Stop] button ([4]) when required data for 3-STATE setting is obtained. A message appears to confirm if you want to stop measurement.

7. Click the [Yes] button to stop measurement. A dialog appears indicating that measurement is stopped.

8. Click the [OK] button.

9. Click the [3-STATE setting] button ([6]) to switch the display to the 3-STATE Threshold Setting tab

page.

This concludes the data measurement procedure for 3-STATE setting. Refer to "6.3.2.7. Unit Setting - [3-STATE Threshold Setting] Tab Page (3-STATE Settings Window)" (P. 6-60) for the 3-STATE threshold setting procedure.

■Main Parameters and Functions

[1] Unit No.	Select the KM50-E Unit for setting. Unit No. ⬚22 ▼ 2F AirConditioner 1E [1]-1 [1]-2
[1]-1 Unit No.	Select the Unit for setting. Only a KM50-E Unit can be selected.
[1]-2 Unit name	Displays the Unit name for the selected Unit No. in [1]-1.
[2] Interval	Select the measurement interval. Interval ● 1 second ○ 5 seconds ○ 10 seconds ○ 15 seconds ○ 30 seconds The options include [1 second], [5 seconds], [10 seconds], [15 seconds], and [30 seconds].
[3] CSV output	Specify the name of the CSV file in which measuring data is output. Csv output C:¥Users¥OMRON¥UT1211091127.CSV [Reference] Enter the file name. You can also specify the file in the [Save As] dialog box by clicking the [Reference] button.
[4] Measurement Start	・When you click the [Measurement Start] button, a message appears to confirm if you want to start measurement. Click the [Yes] button to start measurement. Measurement is performed at the interval (seconds) specified in [2].

Click [Yes] to cancel measurement.

・When measurement starts, the [Measurement Start] button is replaced with the [Measurement Stop] button.

Measurement Stop

・To stop measurement, click the [Measurement Stop] button.

A message appears to confirm if you want to start measurement.

Click [Yes] to stop measurement.

Click [No] to continue measurement.

Note: If you start measurement again without changing the CSV output destination in [3], the confirmation message "The specified file already exists. Do you want to overwrite the file?" appears. The previous measurement data is discarded if you click [Yes]. If you want to save the old data, click [No] and start measurement again after changing the CSV output destination.

Confirm Save As

⚠ UT1211071144.CSV already exists.
Do you want to replace it?

Yes   No
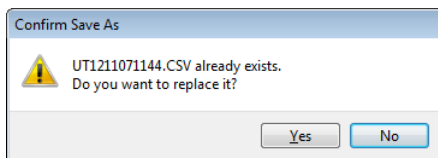
[5] Measurement result list	The list displays measurement results. | Unit No.	Measurement date	Active power	Current1(A)	Current2	Current3	Voltage1(V)	Voltage2	Voltage3	Re
24	2012/11/08 17:44:59	0.09	1.612	0.000	0.000	103.3	0.0	0.0	
24	2012/11/08 17:45:04	0.09	1.614	0.000	0.000	103.4	0.0	0.0	
24	2012/11/08 17:45:09	0.09	1.581	0.000	0.000	103.4	0.0	0.0	
24	2012/11/08 17:45:14	0.09	1.586	0.000	0.000	103.4	0.0	0.0	
24	2012/11/08 17:45:19	0.09	1.567	0.000	0.000	103.3	0.0	0.0	
24	2012/11/08 17:45:24	0.09	1.591	0.000	0.000	103.4	0.0	0.0	
24	2012/11/08 17:45:29	0.09	1.592	0.000	0.000	103.3	0.0	0.0	
24	2012/11/08 17:45:34	0.09	1.591	0.000	0.000	103.3	0.0	0.0	
24	2012/11/08 17:45:39	0.09	1.591	0.000	0.000	103.3	0.0	0.0	
24	2012/11/08 17:45:44	0.09	1.597	0.000	0.000	103.5	0.0	0.0	
24	2012/11/08 17:45:49	0.09	1.612	0.000	0.000	103.5	0.0	0.0	
24	2012/11/08 17:45:54	0.09	1.604	0.000	0.000	103.6	0.0	0.0	
24	2012/11/08 17:45:59	0.09	1.611	0.000	0.000	103.6	0.0	0.0	
24	2012/11/08 17:46:04	0.09	1.642	0.000	0.000	103.6	0.0	0.0	
24	2012/11/08 17:46:09	0.09	1.590	0.000	0.000	103.5	0.0	0.0	| [List Contents] 1. The results for a single measurement operation is displayed in a single row. 2. Up to 3,600 rows can be displayed. When the number of displayed rows reaches 3,600, the first 100 are deleted to continue the process. 3. EasyKM-Manager stops measurement when an error occurs five times in a row during measurement, and displays the message that measurement has stopped due to communication errors. 4. EasyKM-Manager also stops measurement when measurement

	continues for 12 hours. A message appears to notify that measurement is stopped because 12 hours have passed since the measurement start.
[6] 3-STATE setting	Clicking this switches the display to the 3-STATE Settings Window. Refer to "6.3.2.7. Unit Setting - [3-STATE Threshold Setting] Tab Page (3-STATE Settings Window)" (P. 6-60) for the window details.

6.3.2.7. Unit Setting - [3-STATE Threshold Setting] Tab Page (3-STATE Settings Window)

Click the [3-STATE setting] button in the Data List Display to display this tab page.

The tab page displays KM50-E measurement data in graph.

Also use this tab page for 3-STATE threshold setting.

■Operation

●Display graph for 3-STATE threshold setting

1. Select the CSV file containing the [Data List] data in [Reading CSV] ([1]).

2. Click the [Display] button ([2]) to display the graph.

3. Specify [3-STATE judgment] (Power/Current/Voltage) ([4]).

4. If you select "Current" or "Voltage" in [3-STATE judgment], select the option in [Display switch]. The displayed graph changes according to the selection.

    This concludes the procedure to display the graph for 3-STATE threshold setting.

●Writing 3-STATE threshold setting to KM50-E

1. Enter the HIGH threshold in [HIGH threshold input] ([5]-1) by referring to the graph.

2. Enter the LOW threshold in [LOW threshold input] ([5]-2) by referring to the graph.

3. Click the [Threshold setting] button ([6]) to write the HIGH and LOW thresholds to the KM50-E. A message appears to confirm if you want to write threshold setting.

4. Click the [Yes] button. A message appears to indicate that threshold setting is completed.

5. Click the [OK] button.
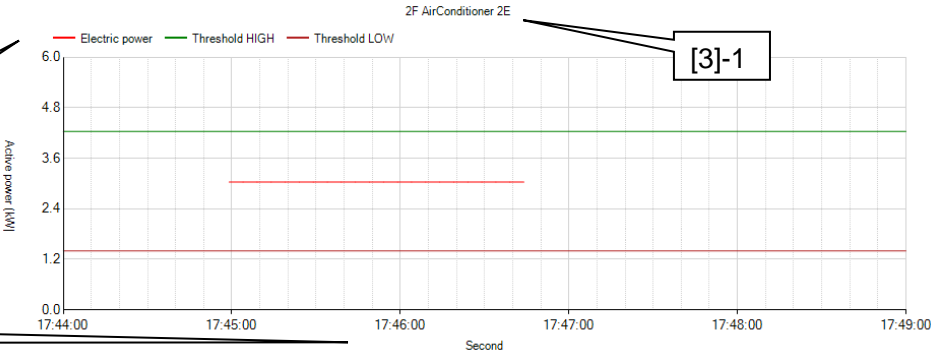
    This concludes the procedure to write 3-STATE thresholds.
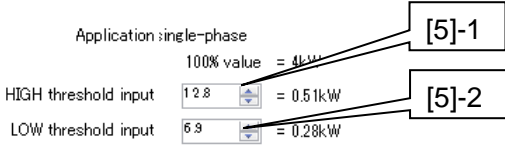
●Changing graph display range

1. The vertical axis in the graph shows [Y-axis display range] ([7]). Specify the upper and lower display limits.

2. The horizontal axis in the graph shows [X-axis display range] ([8]). Specify the display range.

This concludes the procedure to change the graph display range.

■Main Parameters and Functions

[1] Reading CSV	Reading CSV C:¥Users¥OMRON¥UT241211081744.CSV Reference
	Specify the CSV file containing output measurement data.
	Enter the file name.
	You can also specify the file in the [Save As] dialog box by clicking the [Reference] button.
[2] Display	Click the [Display] button to display the graph ([3]).
	Also obtains the applied circuits and thresholds from the target measurement Unit.
	The obtained values are displayed in [Application], [100% value], [HIGH threshold input] and [LOW threshold input].
	HIGH threshold input 11.7 = 0.47kW LOW threshold input 10.1 = 0.4kW
[3] Graph	[Graph Contents]
[3]-2	
[3]-4	
	The graph configuration is as follows:
	[3]-1 Displays the Unit name.
	[3]-2 Displays the legend according to the display switch ([4]).
	[3]-3 Displays the Y-axis title according to [3-STATE judgment] ([4]).
	[3]-4 Displays the X-axis title: "Second". The start time and end time are displayed depending on the measurement time.
[4] 3-STATE judgment	Specify the target to display in the graphs.
	Display switch 3-STATE judgment Electric power ▼ □ Current2 □ Current3 □ voltage2 □ voltage3 □ Hysteresis
	Select [3-STATE judgment] from [Object none], [Power], [Current] and [Voltage].
	Select a check box for [Display switch].
	The displayed graph ([3]) changes depending on the selection/setting.
	Note: If [Object none] is selected, the graph is not displayed.

[5] Threshold inputs	Specify the thresholds. Application single-phase [5]-1 100% value = 4kW HIGH threshold input 12.8 = 0.51kW [5]-2 LOW threshold input 6.9 = 0.28kW Specify the HIGH threshold ([5]-1) and LOW threshold ([5]-2). You can directly enter the values or specify them using the Up and Down arrow buttons. The graph ([3]) is updated according to the specified values. Note: The HIGH threshold cannot be lower than the LOW threshold. If this happens, an error message is displayed. The same applies when the LOW threshold is set higher than the HIGH threshold.
[6] Threshold setting	Write the thresholds to the Unit. Click the [Threshold setting] button. A message appears to confirm if you want to write threshold setting. Click [Yes] to write the thresholds. Click [No] to cancel the threshold writing.
[7] Y-axis display range	The vertical axis display range of the graph can be changed. Specify the upper and lower limits of the display range.
[8] X-axis display range (Maximum 3 hours)	The horizontal axis display range of the graph can be changed. Select from [For three hours after measurement], [For three hours after three hours], [For three hours after six hours], and [For three hours after nine hours]. [For Three Hours after Measurement] Displays the data for 3 hours after measurement starts. [For Three Hours after Three Hours] Displays the data for 3 hours after 3 hours passed since the measurement start. [For Three Hours after Six Hours] Displays the data for 3 hours after 6 hours passed since the measurement start. [For Three Hours after Nine Hours] Displays the data for 3 hours after 9 hours passed since the measurement start. Note: If the measurement file contains no data corresponding to any parameter, the option cannot be selected.
[9] Data list display	Click this to go to the Data List Display. Refer to "6.3.2.6. Unit Setting - [3-STATE Threshold Setting] Tab Page (Data List Window)" (P. 6-56) for the display details.

6.3.2.8. Unit Setting - [Measurement Value Reset] Tab Page

Use this tab page to reset individual Unit measurement values.

Precautions for Correct Use

• Use the KM1/KE1 tool ("KM1/KE1-Setting") to reset KM1/KE1 Units.

• Stop periodic measurements for starting the procedure.

■Operation

●Resetting Unit measurement values
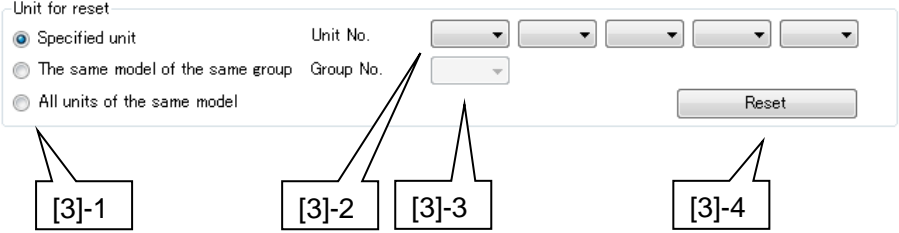
1. Select the [Equipment type] ([1]) of the Unit to reset.

2. Select the measurement items ([2]) to reset.

3. Specify the reset target Unit or group in [Unit for reset] ([3]).

4. Click the [Reset] button ([3]-4). The reset confirmation dialog appears.

5. Click the [Yes] button to reset. A message appears indicating that measurement value reset is completed.

6. Click the [OK] button.

   This concludes the procedure to reset Unit measurement values.

■Main Parameters and Functions

[1]	Select the equipment type of the Unit to reset.
Equipment type	KM100 KM20-B40 KM50-C/E

[2]	Select the measurement items to reset.
Item for reset	☐ Integral power consumption
	☐ Arbitrary integral power consumption(KM100)
	☐ All measurement histories(KM50)
	☐ Log data(KM100)
	☐ Each measurement maximum
	☐ Each measurement minimum
	Select the equipment type to enable the selection of the items to reset.
	Note: If "Log data" is selected, the log data stored in the Unit is deleted.
	When "KM100" is selected: — "Integral power consumption", "Arbitrary integral power consumption", and/or "Log data" can be selected for resetting.
	When "KM20-B40" is selected: — "Integral power consumption", "Each measurement maximum", and/or "Each measurement minimum" can be selected for resetting.
	When "KM50-C/E" is selected: — "Integral power consumption", "All measurement histories", "Each measurement maximum", and/or "Each measurement minimum" can be selected for resetting.

[3] Unit for reset	The items selected in [2] are reset. Use the following procedure to reset the values: 1. Select the Unit setting method in [3]-1. 2. Select the target Units in [3]-2 or [3]-3. 3. Click the [Reset] button ([3]-4) to reset the items.
[3]-1 Unit setting	Specify the Unit to reset. [Specified unit]: Individually select the target Units in [3]-2. Up to five Units can be selected. Note: The same Unit No. cannot be selected more than once. [The same model of the same group]: Select the group No. in [3]-3. [All Units of the same model]: All the Units of the selected equipment type are targeted for resetting.
[3]-4 Reset	The specified Units are reset. Clicking the [Reset] button checks the inputs in [2] items. If the input check fails, a warning message appears. When reset is successful, a message appears indicating that measurement value reset is completed.

Precautions for Correct Use

The following tables show the reset items for individual Unit equipment types.

■KM100

Table 16: Reset Item List (KM100-T-FLK/KM100-TM-FLK)

Reset item	No.	Variable area parameter	Remarks
Integral power consumption	1	Integral power consumption	
Arbitrary integral power consumption	1	Arbitrary integral power consumption	
Log data	1	Measurement data stored in a Unit	

■KM20-B40

Table 17: Reset Item List (KM20-B40-FLK)

Reset item	No.	Variable area parameter	Remarks
Integral power consumption	1	Integral power consumption	
Each measurement maximum	1	Voltage between P1-P2 (Max.) (V)	Not used in this software
	2	Voltage between P2-P3 (Max.) (V)	Not used in this software
	3	I1 current (Max.) (A)	Not used in this software
	4	I2 current (Max.) (A)	Not used in this software
	5	Active power (Max.) (kW)	Not used in this software
Each measurement minimum	1	Voltage between P1-P2 (Min.) (V)	Not used in this software
	2	Voltage between P2-P3 (Min.) (V)	Not used in this software
	3	I1 current (Min.) (A)	Not used in this software
	4	I2 current (Min.) (A)	Not used in this software
	5	Active power (Min.) (kW)	Not used in this software

■KM50-C/E

Table 18: Reset Item List (KM50-C1-FLK/KM50-E1-FLK)

| Reset item | No. | Variable area parameter | KM50-C | | KM50-E | | Remarks |
			V1	V2	V1	V2	
Integral power consumption	1	Total integrated power consumption (kWh)	○	○	○	○	
	2	Total integrated power consumption (Wh)	—	○	○	○	
	3	Calculated CO_2 (total integrated power consumption) ($kgCO_2$)	—	○	—	○	
	4	Integral active power (GWh)	—	○	—	○	
	5	Integral active power (Wh)	—	○	—	○	
	6	Integral regenerated power (GWh)	—	○	—	○	
	7	Integral regenerated power (Wh)	—	○	—	○	
	8	Integral leading reactive power consumption (Gvarh)	—	○	—	○	
	9	Integral leading reactive power consumption (varh)	—	○	—	○	
	10	Integral lagging reactive power consumption (Gvarh)	—	○	—	○	
	11	Integral lagging reactive power consumption (varh)	—	○	—	○	
	12	Integral total reactive power	—	○	—	○	

			consumption (Gvarh)				
	13	Integral total reactive power consumption (varh)	—	O	—	O	
	14	Charge conversion value (upper digits)	—	O	—	O	
	15	Charge conversion value (lower digits)	—	O	—	O	
All measurement histories	1	Integral power consumption every 5 min.. (0.1KWh)	O	O	O	O	
	2	Integral power consumption every 5 min. (0.001KWh)	—	O	O	O	
	3	Total integrated power consumption every 5 min. (0.1KWh)	O	O	O	O	
	4	Total integrated power consumption every 5 min. (0.001KWh)	—	O	O	O	
	5	□ □ integral power consumption every 5 min. (0.1KWh)	—	O	—	O	
	6	□ □ integral power consumption every 5 min. (0.001KWh)	—	O	—	O	
	7	□ □ integral power consumption every 5 min. (0.1KWh)	—	O	—	O	
	8	□ □ integral power consumption every 5 min. (0.001KWh)	—	O	—	O	
	9	Integral power consumption every hour (0.1KWh)	O	O	O	O	
	10	Integral power consumption every hour (0.001KWh)	—	O	O	O	
	11	Integral power consumption every day (0.1KWh)	O	O	O	O	Today's current value is not resettable
	12	Integral power consumption every day (0.001KWh)	—	O	O	O	Today's current value is not resettable
	13	Pulse input ON time every day	O	O	O	O	Today's current value is not resettable
	14	Electric power consumption rate every day	—	O	O	O	Today's current value is not resettable
	15	Pulse count every day	—	O	O	O	Today's current value is not resettable
	16	Integral power consumption every month (0.1KWh)	—	O	O	O	This month values are not resettable
	17	Integral power consumption every month (0.001KWh)	—	O	O	O	This month values are not resettable
	18	HIGH integral power consumption (0.001KWh) (Every 5 min.)	—	—	O	O	
	19	HIGH integral power consumption (0.001KWh) (Every day)	—	—	O	O	Today's current value is not resettable
	20	HIGH integral power consumption ratio (Every day)	—	—	O	O	Today's current value is not resettable
	21	HIGH integral time (Every day)	—	—	O	O	Today's current value is not resettable
	22	HIGH integral time ratio (Every day)	—	—	O	O	Today's current value is not resettable
	23	MIDDLE integral power consumption (0.001KWh) (Every 5 min.)	—	—	O	O	
	24	MIDDLE integral power consumption (0.001KWh) (Every day)	—	—	O	O	Today's current value is not resettable
	25	MIDDLE integral power consumption ratio (Every day)	—	—	O	O	Today's current value is not resettable

	26	MIDDLE integral time (Every day)	—	—	○	○	Today's current value is not resettable
	27	MIDDLE integral time ratio (Every day)	—	—	○	○	Today's current value is not resettable
	28	LOW integral power consumption (0.001KWh) (Every 5 min.)	—	—	○	○	
	29	LOW integral power consumption (0.001KWh) (Every day)	—	—	○	○	Today's current value is not resettable
	30	LOW integral power consumption ratio (Every day)	—	—	○	○	Today's current value is not resettable
	31	LOW integral time (Every day)	—	—	○	○	Today's current value is not resettable
	32	LOW integral time ratio (Every day)	—	—	○	○	Today's current value is not resettable
	33	Each measurement maximum	○	○	○	○	Not used in this software
	34	Each measurement minimum	○	○	○	○	Not used in this software
Each measurement maximum	1	Voltage 1 (Max.) (V)	○	○	○	○	Not used in this software
	2	Voltage 2 (Max.) (V)	○	○	○	○	Not used in this software
	3	Voltage 3 (Max.) (V)	○	○	○	○	Not used in this software
	4	Current 1 (Max.) (A)	○	○	○	○	Not used in this software
	5	Current 2 (Max.) (A)	○	○	○	○	Not used in this software
	6	Current 3 (Max.) (A)	○	○	○	○	Not used in this software
	7	Power factor (Max.)	○	○	○	○	Not used in this software
	8	Active power (Max.) (W)	○	○	○	○	Not used in this software
	9	Active power (Max.) (kW)	○	○	○	○	Not used in this software
	10	Reactive power (Max.) (var)	○	○	○	○	Not used in this software
	11	Reactive power (Max.) (kvar)	○	○	○	○	Not used in this software
Each measurement minimum	1	Voltage 1 (Min.) (V)	○	○	○	○	Not used in this software
	2	Voltage 2 (Min.) (V)	○	○	○	○	Not used in this software
	3	Voltage 3 (Min.) (V)	○	○	○	○	Not used in this software
	4	Current 1 (Min.) (A)	○	○	○	○	Not used in this software
	5	Current 2 (Min.) (A)	○	○	○	○	Not used in this software
	6	Current 3 (Min.) (A)	○	○	○	○	Not used in this software
	7	Power factor (Min.)	○	○	○	○	Not used in this software
	8	Active power (Min.) (W)	○	○	○	○	Not used in this software
	9	Active power (Min.) (kW)	○	○	○	○	Not used in this software
	10	Reactive power (Min.) (var)	○	○	○	○	Not used in this software
	11	Reactive power (Min.) (kvar)	○	○	○	○	Not used in this software

6.3.3. Graph Setting Tab Pages

Click the [Graph setting] button in the Function Menu to open the Graph Setting tab pages.

Precautions for Correct Use

- Click the [Setting] button before moving to another tab page, if you need to register the edited settings.
- The settings being edited are aborted if you select another menu item outside the Graph Setting tab page collection before applying the change by clicking the [Setting] button.
- The settings being edited are retained if you select another tab page within the Graph Setting tab page collection. However, the retained settings on one tab page are aborted if you click the [Setting] button in another tab page.
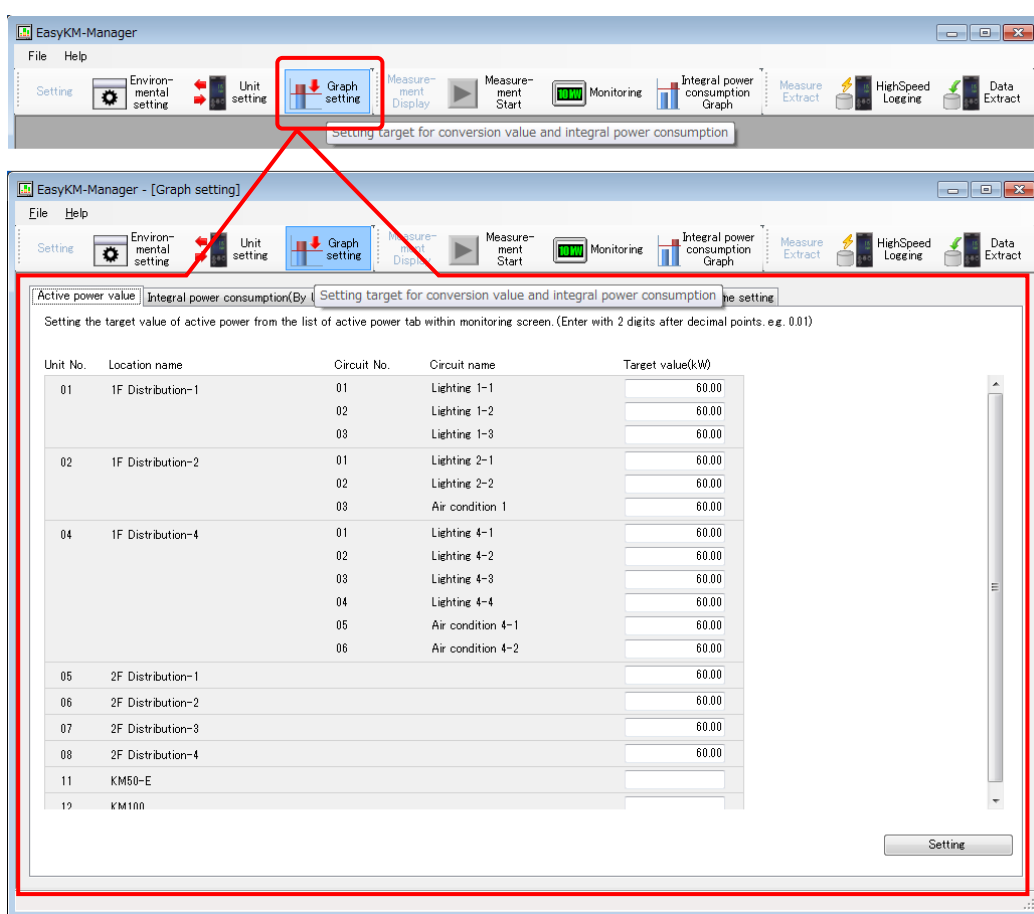
■Tab Pages

● [Active power value] tab

Used to specify the active power target values for [List of active power]. This setting enables EasyKM-Manager to warn by changing the background color in [List of active power] in the Monitoring tab pages or sounding an alarm when the target value is exceeded.

● [Integral power consumption (By Unit/Circuit)] tab

Used to specify the integral power consumption target values for each Unit or circuit. When the target value for each time interval is exceeded, the exceeded portion of the integral power consumption bar graph turns to red, or the alarm can be set to sound in the [Integral power consumption graph (Daily)] window.

● [Integral power consumption (By Group)] tab

Used to specify the integral power consumption target values for each group. When the target value for each time interval is exceeded, the exceeded portion of the integral power consumption bar graph turns to red, or the alarm can be set to sound in the [Integral power consumption graph (Daily)] window.

● [Conversion value name setting] tab

Used to specify the conversion value names for Units with the value conversion capability. Specified names are used in integral power consumption graphs.

6.3.3.1. Graph Setting - [Active Power Value] Tab Page

Use this tab page to set the active power target against the values obtained from each Unit.

To set the target values for KM1/KE1 Units, the Units must be selected beforehand in the [Measure] check boxes and the [Use Yes/No] check boxes in the [KM1/KE1 measurement points setting] tab page.

The target value setting for other Units than the KM1/KE1 requires the selection of the [Measure] check boxes for the Units in the [Environmental setting] - [Unit] tab page.

The following description details the individual items and functions.

■Operation

●Setting active power target value

1. Enter the target value (kW) ([1]-5) for each Unit or circuit.
2. Click the [Setting] button ([3]). A dialog appears to confirm if you want to apply the settings.
3. Click the [Yes] button to apply the setting. The completion notice window appears.
4. Click the [OK] button.

    This concludes the procedure to set the active power target value.

■Main Parameters and Functions

[1]	Specify the target value for a Unit or circuit.
Target value setting	
[1]-1	Displays the Unit No. of the target Unit.
Unit No.	Note: Specify the measurement targets in the [Environmental setting] - [Unit] tab page.

[1]-2 Location name	Displays the location name of the Unit.
[1]-3 Circuit No.	Displays the circuit No. of the Unit (Only for the KM1/KE1). Note: Specify the measurement target circuits in the [KM1/KE1 measurement points setting] tab page by selecting the [Use Yes/No] check boxes.
[1]-4 Circuit name	Displays the measurement target circuit name (Only for the KM1/KE1).
[1]-5 Target value (kW)	Enter the active power target value (within 6 integer and 2 decimal digits).
[2] Page	 Input error page detected after clicking the [Setting] button	Used by EasyKM-Manager if 101 or more Units or circuits are registered. The 101st or a later Unit/circuit can be selected to display its target value setting page. A single page can display the target values of up to 100 target Units or circuits. However, the circuits in the same Unit are displayed in the next page, if all the circuits cannot be displayed in the remaining rows of the same page. A page containing an input error is displayed in red with an exclamation mark (!) in the page list box after clicking the [Setting] button. Correct the error and apply the change again.
[3] Setting		Saves the values specified for the individual items. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings. The settings are saved when you click [Yes]. Clicking [No] does not save the settings.

6.3.3.2. Graph Setting - [Integral Power Consumption (By Unit/Circuit)] Tab Page

Use this tab page to set the integral power consumption target against the values obtained from each Unit.

To set the target values for KM1/KE1 Units, the Units must be selected beforehand in the [Measure] check boxes and the [Use Yes/No] check boxes in the [KM1/KE1 measurement points setting] tab page.

The target value setting for other Units than the KM1/KE1 requires the selection of the [Measure] check boxes for the Units in the [Environmental setting] - [Unit] tab page.

The following description details the individual items and functions.

■Operation

●Setting integral power consumption target values for a Unit or circuit

1. Enter the target value (kWh) for each communications interval ([1]-5): 30 minutes ([1]-6)/1 hour ([1]-7)/1 day ([1]-8) of each Unit or circuit.

2. Click the [Setting] button ([3]). A dialog appears to confirm if you want to apply the settings.

3. Click the [Yes] button to apply the setting. The completion notice window appears.

4. Click the [OK] button.

   This concludes the procedure to set the integral power consumption target values.

■Main Parameters and Functions

[1]	Specify the target values for a Unit or circuit.
Target value setting	

[1]-1 Unit No.	Displays the measurement target Unit No. Note: Specify the measurement targets in the [Environmental setting] - [Unit] tab page.
[1]-2 Location name	Displays the location name of the Unit.
[1]-3 Circuit No.	Displays the circuit No. of the Unit (Only for the KM1/KE1). Note: Specify the measurement target circuits in the [KM1/KE1 measurement points setting] tab page by selecting the [Use Yes/No] check boxes.
[1]-4 Circuit name	Displays the measurement target circuit name (Only for the KM1/KE1).
[1]-5 Target value Intervals (1 minute/ 5 minutes/ 10 minutes) (Day)	Specify the target value (kWh) for each communications interval (within 6 integer and 1 decimal digits). The specified [Interval] options are displayed in the page.
[1]-6 Target value 30 minutes (Day)	Specify the target value (kWh) for every 30 minutes (within 6 integer and 1 decimal digits).
[1]-7 Target value 1 hour (Day)	Specify the target value (kWh) for every one hour (within 6 integer and 1 decimal digits).
[1]-8 Target value 1 day (Month)	Specify the target value (kWh) for every day (within 6 integer and 1 decimal digits).
[2] Page	Used by EasyKM-Manager if 101 or more Units or circuits are registered. By selecting a desired page, you can display the corresponding target value setting page. A single page can display the target values of up to 100 target Units or circuits. However, the circuits in the same Unit are displayed in the next page, if all the circuits cannot be displayed in the remaining rows of the same page. A page containing an input error is displayed in red with an exclamation mark (!) in the page list box after clicking the [Setting] button. Correct the error and apply the change again. Input error page detected after clicking the [Setting] button

[3]	Setting	Saves the values specified for the individual items.
Setting		Click the [Setting] button. A dialog appears to confirm if you want to apply the settings.
		The settings are saved when you click [Yes].
		Clicking [No] does not save the settings.

6.3.3.3. Graph Setting - [Integral Power Consumption (By Group)] Tab Page

Use this tab page to set the integral power consumption target for each group against the values obtained from the Units.

The following description details the individual items and functions.

■Operation

●Setting integral power consumption target values for each group

1. Enter the target value (kWh) for each communications interval ([1]-3): 30 minutes ([1]-4)/1 hour ([1]-5)/1 day ([1]-6) of each group.

2. Click the [Setting] button ([2]). A dialog appears to confirm if you want to apply the settings.

3. Click the [Yes] button to apply the setting. The completion notice window appears.

4. Click the [OK] button.

   This concludes the procedure to set the integral power consumption target values for each group.

■Main Parameters and Functions

[1] Target value setting	Set the target values for each group (for up to 50 groups).
[1]-1 Group No.	Displays the measurement target group No. The group name is displayed in gray if the group contains no measurement target Unit. Note: Make group setting in the [Environmental setting] - [Group] tab page.

[1]-2 Group name	Displays the measurement target group name.	
[1]-3 Target value Intervals (1 minute/ 5 minutes/ 10 minutes) (Day)	Specify the target value (kWh) for each communications interval (within 7 integer and 1 decimal digits). The specified [Interval] options are displayed in the page.	
[1]-4 Target value 30 minutes (Day)	Specify the target value (kWh) for every 30 minutes (within 7 integer and 1 decimal digits).	
[1]-5 Target value 1 hour (Day)	Specify the target value (kWh) for every one hour (within 7 integer and 1 decimal digits).	
[1]-6 Target value 1 day (Month)	Specify the target value (kWh) for every day (within 7 integer and 1 decimal digits).	
[2] Setting	Setting	Saves the values specified for the individual items. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings. The settings are saved when you click [Yes]. Clicking [No] does not save the settings.

6.3.3.4. Graph Setting - [Conversion Value Name Setting] Tab Page

Use this tab page to specify the conversion value names to display in the integral power consumption graph page.

To set conversion value names for KM1/KE1 Units, the Units must be selected beforehand in the [Measure] check boxes and the [Use Yes/No] check boxes in the [KM1/KE1 measurement points setting] tab page.

The conversion value name setting for other Units than the KM1/KE1 requires the selection of the [Measure] check boxes for the Units in the [Environmental setting] - [Unit] tab page.

Precautions for Correct Use

- To set conversion value names for KM50-C/E Units, their version must be "V2", which must be verified in communications test.
- Stop periodic measurements for starting the procedure.

The following description details the individual items and functions.

■Operation

●Setting conversion value names
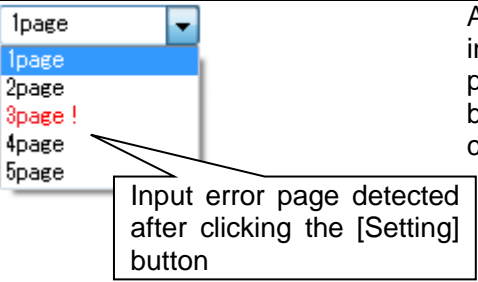
1. Enter [Conversion value name] ([1]-6) for each measurement point.

2. Click the [Setting] button ([3]). A dialog appears to confirm if you want to apply the settings.

3. Click the [Yes] button to apply the setting. The completion notice window appears.

4. Click the [OK] button.

   This concludes the procedure to set conversion value names.

■Main Parameters and Functions

[1] Conversion value name setting	Specify individual conversion value names. KM50-C or KM50-E Units (Must be verified "V2"): Specify the conversion value names for the Pulse conversion value 1, Pulse conversion value 2, and the total of pulse conversion values (the sum of the Pulse conversion values 1 and 2). KM1-PMU1A, KM1-PMU2A and KE1-PGR1C Units: Specify the conversion value names for the integral power consumption conversion values. KM1-EMU8A Units: Specify the conversion value names for the pulse conversion values.
[1]-1 Unit No.	Displays the measurement target Unit No. Note: Specify the measurement targets in the [Environmental setting] - [Unit] tab page.
[1]-2 Location name	Displays the location name of the Unit.
[1]-3 Measurement points	Displays the Unit's measurement points.
[1]-4 Measurement point name	Displays the measurement point name.
[1]-5 Conversion value	Displays the conversion value name.
[1]-6 Conversion value name	Enter the display name for the conversion value (within 10 full-length or 20 half-length characters). **Note:** Specify a simple and comprehensible name with the unit of value included.
[2] Page	Used by EasyKM-Manager if 101 or more Units or circuits are registered. The 101st or a later Unit/circuit can be selected to display its conversion value name setting page. A single page can display the conversion value names of up to 100 target Units or circuits. However, the circuits in the same Unit are displayed in the next page, if all the circuits cannot be displayed in the remaining rows of the same page.

	1page ▼ 1page 2page 3page ! 4page 5page Input error page detected after clicking the [Setting] button	A page containing an input error is displayed in red with an exclamation mark (!) in the page list box after clicking the [Setting] button. Correct the error and apply the change again.
[3] Setting	Setting	Saves the values specified for the individual items. Click the [Setting] button. A dialog appears to confirm if you want to apply the settings. The settings are saved when you click [Yes]. Clicking [No] does not save the settings.

6.3.4.　Starting and Stopping Periodic Measurements

EasyKM-Manager can periodically obtain measurement data from each Unit.

Periodic measurements are performed at the (communications) interval specified in "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20).

The Units selected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page are the targets of periodic measurements. KM1/KE1 Units must also be selected in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page.

Refer to "9.2. Periodic Measurements" (P. 9-6) for the periodic measurements timing, measurement sequence, time stamps as well as the procedure to stop measurement.

Precautions for Correct Use

- Make sure to perform communications test (See "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42)) and check that the communications with the measurement target Units are "successful" prior to periodic measurements.
- Please note that periodic measurements must be stopped when turning OFF the Unit power or changing settings on Units.

(1)　Starting Periodic Measurements

Click the [Measurement Start] button on the Function Menu to start periodic measurements.

The [Measurement Start] button changes to the [Measurement Stop] button.

EasyKM-Manager communicates with individual Units to periodically obtain measurement data.
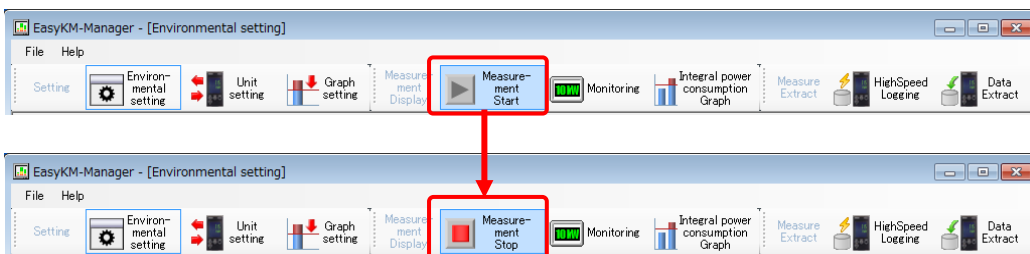
You can also start periodic measurements from the EasyKM-Manager icon in the task tray.

Right-click the task tray and select [Measurement Start].
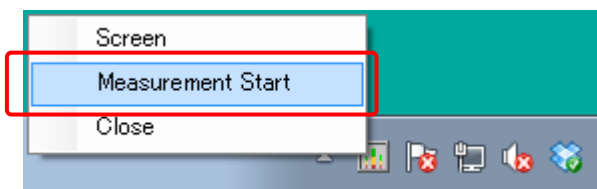
Precautions for Correct Use

The following message appears if the targets include Units not verified to be "successful" in communications tests (Refer to "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42)) when periodic measurements start. Make sure that the communications with all the Units are "successful" before starting periodic measurements.

Note: Clicking the [Yes] button can start periodic measurements when this dialog appears. However, the graph may not be displayed correctly due to the lack of correct device model information caused by the failure to establish the communications.
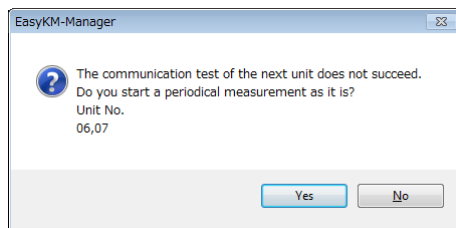
(2) Measurement Status Display
The EasyKM-Manager icon in the task tray displayed at the periodic measurements start changes according to the measurement status.

● During periodic measurements
The icon is highlighted with a tooltip showing the status displayed.
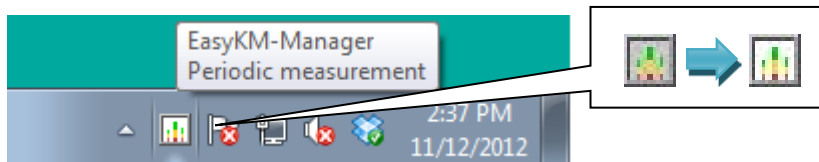
The communications interval and the "measuring" (Measurement is in progress) indication flash in the status bar on the bottom left of the window.
Note: The interval set in the [Environmental setting] - [Communication setting] tab page is displayed.
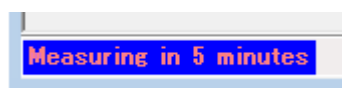
● When a target value is exceeded
The icon color changes to yellow when the target value (active power) is exceeded with a tooltip showing the status.
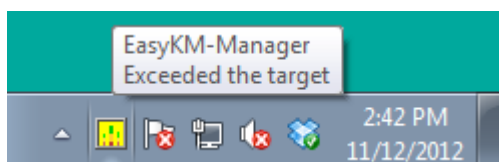
- When a communication error occurs

  The icon color changes to red when a communications error occurs with a tooltip indicating the status.

(3) Ending Periodic Measurements

When you click the [Measurement Stop] button, a message appears to confirm if you want to stop periodic measurements. Click the [Yes] button.
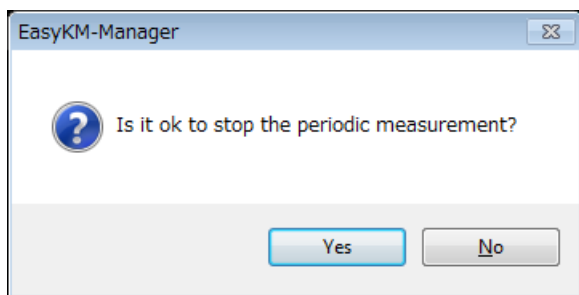
Alternatively, right-click the task tray and select [Measurement Stop]. A message appears to confirm if you want to stop periodic measurements. Click the [Yes] button.
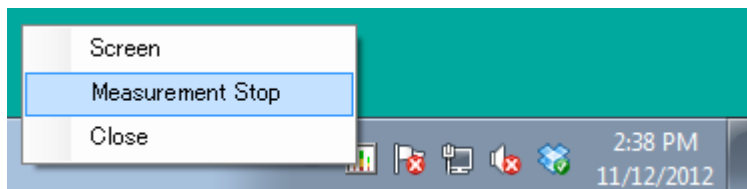
Periodic measurements now stop.

6.3.5.　　Monitoring Tab Pages

Click the [Monitoring] button in the Function Menu to open the Monitoring tab pages.

The Monitoring tab pages display the instantaneous data obtained with periodic measurements.
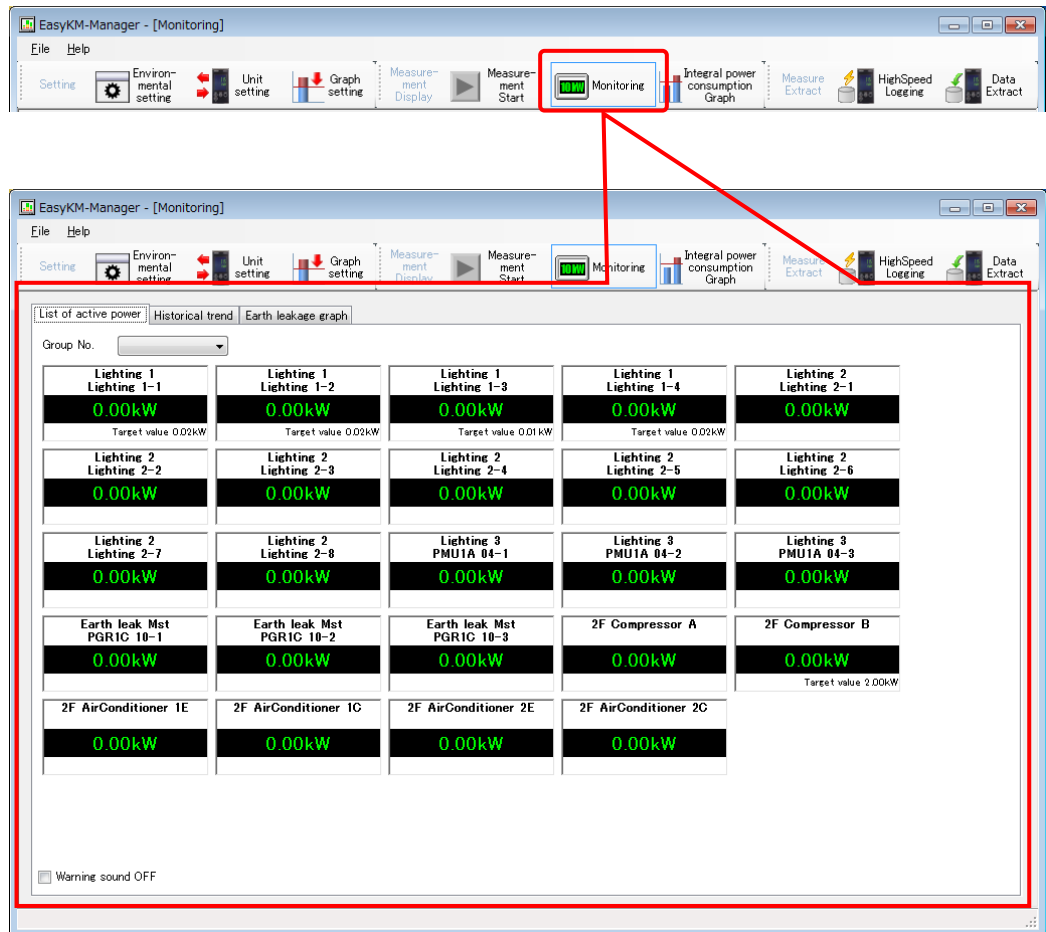
■Tab Pages

● 　[List of active power] tab

　　Displays a list of the current power values of individual Units and circuits.

● 　[Historical trend] tab

　　Displays active power, voltage, current, reactive power and power factor line graphs.

● 　[Earth leakage graph] tab

　　Displays an earth leakage graph for KE1 Units.

6.3.5.1. Monitoring - [List of Active Power] Tab Page

This tab page displays the active power of each Unit or circuit obtained with periodic measurements. The active power values are automatically updated at each communications interval.
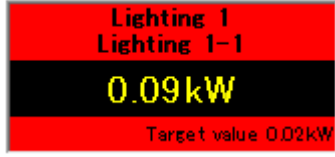
The values of the Unit or circuit currently measured are aligned to the left in the value display area.

■Main Parameters and Functions

[1] Group No.	Select the group whose active power values are displayed. The list box contains the options: a blank (empty string), registered groups and [unregistered]. If you select the blank option (default), all Units and circuits are displayed. If a specific group is selected, only the Units and circuits belonging to the group are displayed. If you select [unregistered], measurement target Units and circuits not registered in any group in the [Environmental setting] tab page are displayed.
[2] Unit information	Displays the active powers of the Units and circuits belonging to the group selected in [Group No.] ([1]). The active powers of KM1/KE1 Units are displayed for individual circuits, which must be selected beforehand in the [Measure] check boxes and the [Use Yes/No] check boxes in the [KM1/KE1 measurement points setting] tab page. The active powers of other Units than KM1/KE1 are displayed for individual Units, which must be selected beforehand in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page. The Unit information is aligned to the top in the display area.

[2]-1 Unit name	Displays the Unit name corresponding to each Unit No. The KM1/KE1 Units are designated by the combination of the "Unit name and circuit name".
[2]-2 Active power	Displays the active power value obtained from each Unit with periodic measurements.
	The background is displayed in white and the active power, in green if the value is within the target value shown in [2]-3.
	If the target value in [2]-3 is exceeded, the background changes to red and the active power, to yellow.
	If a communications error occurs, the background is displayed in red and the "Communication Error" indication, in yellow.
[2]-3 Target value	Displays the active power value specified in the Graph Setting tab pages. If no target value is set, nothing is displayed.
[3] Warning sound	An alarm sounds if the target value is exceeded or a communications error occurs. With KM1/KE1 Units, the exceeding of the target value is judged for each circuit. (The alarm sound must be enabled in the [Environmental setting] - [Communication setting] tab page.) The alarm sound is different between when the target value is exceeded and when a communications error occurs. When the target value is exceeded: slow beep sound When a communications error occurs: fast beep sound Note: If the target value is exceeded and a communications error occurs at the same time, the alarm of the event that occurred first will sound.
[4] Warning sound OFF	Select this check box to stop the alarm sound. To disable the alarm sound (effective from the next time EasyKM-Manager starts), set [Warning sound] to [OFF] in the [Environmental setting] - [Communication setting] tab page.
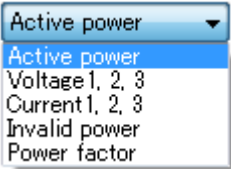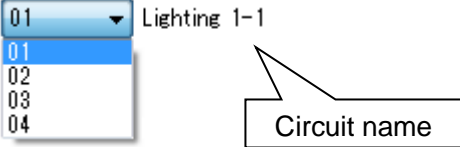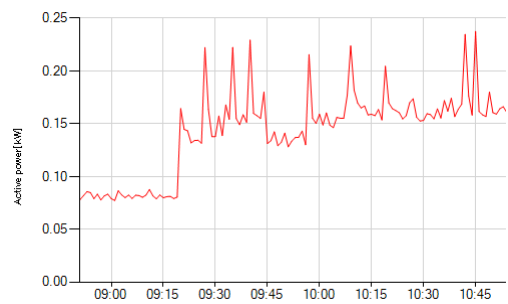
6.3.5.2. Monitoring - [Historical Trend] Tab Page

This tab page displays the instantaneous values obtained with periodic measurements from each Unit or circuit in a line graph. The values are updated automatically at each communications interval if you select the [Automatic Update] check box.

■Main Parameters and Functions

[1] Monitor type		Select [Unit] or [Group]. Use this to switch between the Unit graph and group graph.
[2] Date		Select the date of the graph to display. Select the date from the calendar or use the arrow buttons. The graph is displayed when the date is changed. Note: If you select the [Automatic Update] check box, the date selection is disabled. To view previous data, clear the selection of the [Automatic Update] check box and select the desired date.
[3] Unit No. or Group No.	 Unit name/Group name	Select the Unit No. or group No. to display the graph. The Unit name or group name description changes according to the option you select. The displayed graph ([9]) also changes according to the selection. Only the Unit No.s selected in the [Measure] check boxes in the [Environmental setting] - [Unit]

		tab page are the options. In the same way, only the group No.s registered in the [Environmental setting] - [Group] tab page can be selected.
[4] Item select	Active power ▼ **Active power** Voltage1, 2, 3 Current1, 2, 3 Invalid power Power factor	Select the measurement item to display in graph. See [6] for the details of individual graphs. Note: "Voltage" cannot be selected if a CTD8E Unit is selected in [Unit No.].
[5] Circuit No.	01 ▼ Lighting 1-1 **01** 02 03 04 Circuit name	Select the KM1/KE1 circuit No. if you select a KM1/KE1 Unit in [Unit No.]. Only the circuit No.s selected in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page are the options.
[6] Graph	Displays the graph of the item specified in [Item select]. The Unit name is displayed as the graph title. The "Unit name + circuit name" is displayed for the KM1/KE1. The X axis shows the time (0:00 to 24:00; both displayed as 0:00). EasyKM-Manager treats any gap in measurement as missing data and displays a discontinued line graph. The group average values are displayed in a line graph if you specify the group No. in [3]. Note: The voltage, reactive power and power factor values are not correctly displayed, if you select a KM1 Unit set to the "Simple Measurement" mode.	
	Active power 	EasyKM-Manager displays [Active power value] in a red line graph. The Y axis shows the active power value in kW. The Y axis is scaled automatically.
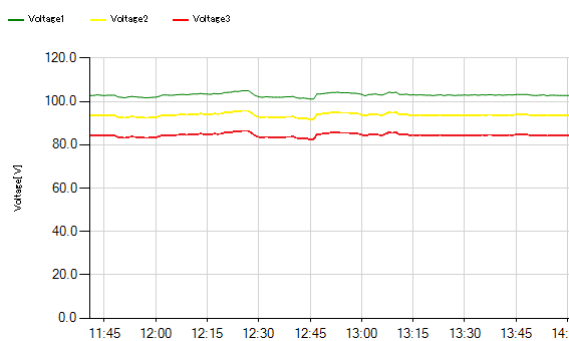
Voltage 1, 2, 3 Voltage1 Voltage2 Voltage3 120.0 100.0 80.0 Voltage[V] 60.0 40.0 20.0 0.0 11:45 12:00 12:15 12:30 12:45 13:00 13:15 13:30 13:45 14:	[Voltage 1, 2, 3] is shown in green (for voltage 1), yellow (for voltage 2), and red (for voltage 3) line graphs. The Y axis shows the voltage in volts. The Y axis is scaled automatically. Note: The same graphs are displayed if any of the KM1/KE1 circuits measuring the same system is selected.
Current 1, 2, 3 Current1 Current2 Current3 6.00 4.00 Current[A] 2.00 0.00 11:45 12:00 12:15 12:30 12:45 13:00 13:15 13:30 13:45 14:	[Current 1, 2, 3] is shown in green (for current 1), yellow (for current 2), and red (for current 3) line graphs. The Y axis shows the current in amperes. The Y axis is scaled automatically.
Invalid power 0.00 -0.01 Invalid power[kvar] -0.01 -0.02 -0.02 11:45 12:00 12:15 12:30 12:45 13:00 13:15 13:30 13:45 14:	EasyKM-Manager displays [Reactive power value] in a red line graph. The Y axis shows the reactive power in kvar. The Y axis is scaled automatically.
Power factor 1.00 0.80 0.60 0.40 0.20 0.00 11:45 12:00 12:15 12:30 12:45 13:00 13:15 13:30 13:45 14:	EasyKM-Manager displays [Power factor] in a red line graph. The Y axis does not display the legend.
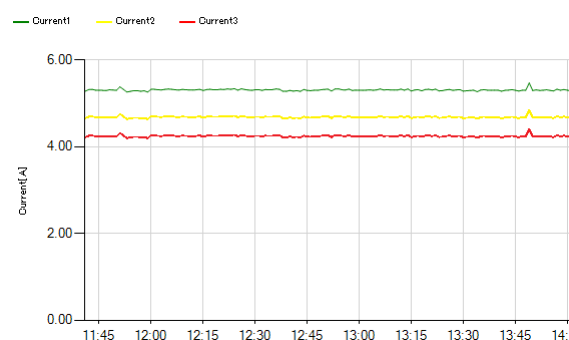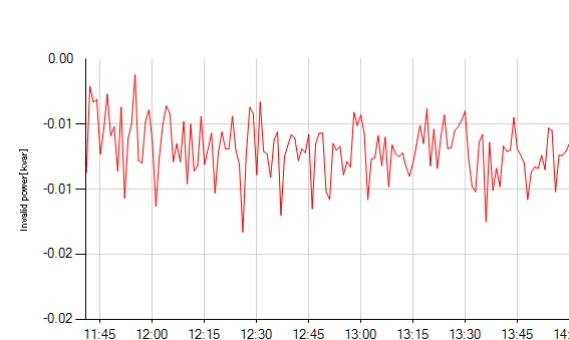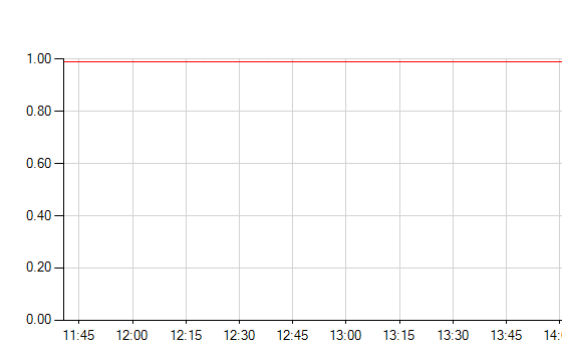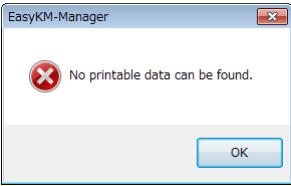
[7] Automatic Update	☐ Automatic Update	Select this check box to automatically update the graph display ([6]). The check box is enabled when a graph is already displayed. The graphs are updated at the communications interval. Note 1: Specify the communications interval in the [Environmental setting] - [Communication setting] tab page. Note 2: Selecting the [Automatic Update] check box sets [Date] ([1]) to the current day (Fixed).
[8] Screen copy	Screen copy	EasyKM-Manager copies the screen image to clipboard.
[9] Print	Print	Click the [Print] button to print the graph ([6]). A message appears to warn that no printable data can be found, if this is the case. EasyKM-Manager No printable data can be found. OK
[10] The latest	The latest	EasyKM-Manager updates the graphs using the latest periodic measurements obtained after the last update.

6.3.5.3. Monitoring - [Earth Leakage Graph] Tab Page
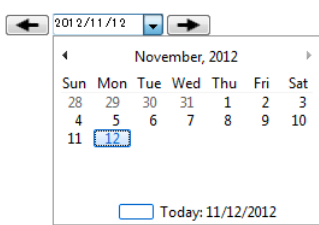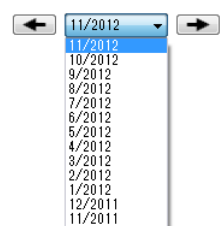
This tab page displays the earth leakage values (Io) for one day, one month or one year in graph.

Click the [The latest] button to display the latest graph.
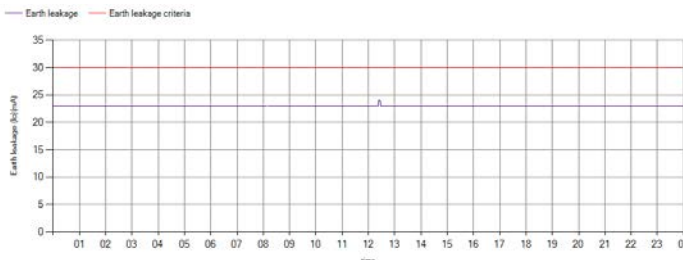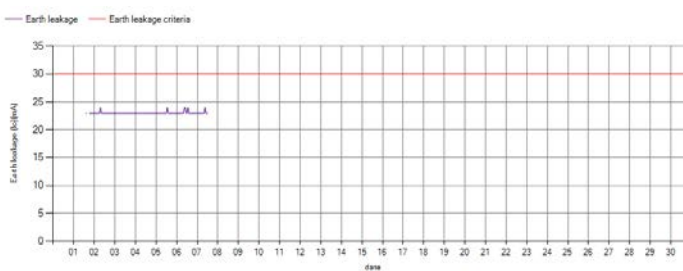
This function can be used for the KE1-PGR1C and KE1-ZCT8E.
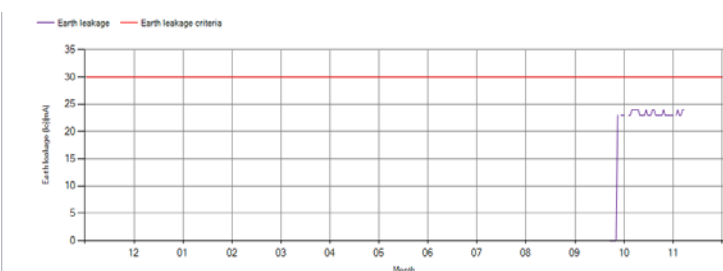
Earth leakage criteria line

Earth leakage (Io) value line

■Main Parameters and Functions

[1] Graph type	 Select the graph period from [One day], [One month] and [One year].
[2] Date Month	Select the date to display in graph if you select the [One day] graph type. The current system date is displayed as default. You can specify the date by typing, using the calendar or arrow buttons. If you select the [One month] or [One year] graph type, specify the month. The current system year and month are displayed as default. The year and month can be selected by using the list box or arrow buttons.

[3] Unit No.	Select the Unit No. to display in graph. The corresponding Unit name to the selected Unit No. is displayed. Only the Unit No.s selected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page are the options.	
[4] ZCT No.	Specify the ZCT No. to display in graph for a KE1-ZCT8E Unit. The corresponding ZCT name to the selected ZCT No. is displayed. Only the ZCT No.s selected in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page are the options.	
[5] Earth leakage criteria	Specify the earth leakage criteria line displayed in the graph. If you change the earth leakage criteria, click the [Setting] button to update the line.	
[6] Setting	Updates the earth leakage criteria line in the graph with the changed earth leakage criteria value.	
[7] Earth leakage graph	Graph type: [One day] 	Displays the graph of the leakage (Io) periodically measured from 0:00 to 23:59 on the selected date ([2]). The graph is plotted at the measurement interval.
	Graph type: [One month] 	Displays the values from the 1st to last day of the selected month ([2]) in graph. The graph is plotted using the hourly maximum values. However, the current hourly values are not used.

	Graph type: [One year] 	Displays the values of one year back from the selected month ([2]) in graph. The graph is plotted using the daily maximum values. However, the current daily values are not used.
	Note <Y axis maximum value> The maximum value on the Y axis is automatically set based on the maximum measured value and earth leakage criteria.	
[8] Screen copy	EasyKM-Manager copies the graph ([7]) to clipboard.	
[9] Print	Prints the graph ([7]). The print dialog appears when you click the [Print] button.	
[10] The latest	EasyKM-Manager updates the graph using the latest periodic measurements obtained after the last update.	

6.3.6. Integral Power Consumption Graph Tab Pages

Click the [Integral power consumption graph] button in the Function Menu to open the Integral Power Consumption Graph tab pages.

The tab pages display the integral power consumption summarized at every communications interval.

Refer to "9.4. Summarizing Data" (P. 9-55) for data summarization.

Precautions for Correct Use

Graphs using the [Time interval] of 1 hour/30 minutes (daily) or 1 day (monthly) are displayed after the completion of periodic measurements, at the end of time interval. If periodic measurements are already stopped at the end of time interval, the data for the corresponding time interval is not displayed in graph.
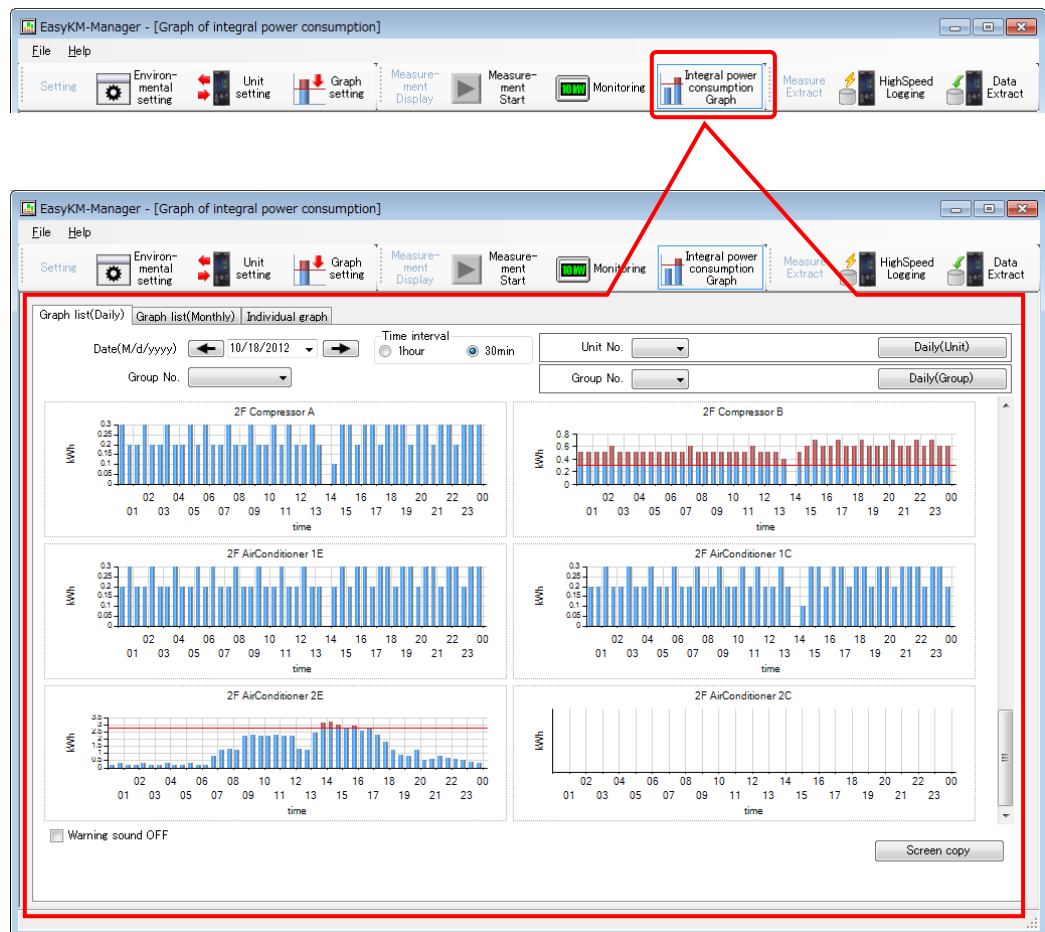
■Tab Pages

● [Graph list (Daily)] tab

Displays the daily integral power consumption for each Unit or circuit in graph. The time interval can be switched between 30 minutes and one hour.

● [Graph list (Monthly)] tab

Displays the monthly integral power consumption for each Unit or circuit in graph (Only daily values are used).

● [Individual graph] tab

Displays the graphs for the integral power consumption for individual Units, circuits or groups. Various graphs can be displayed, such as daily (for every hour/30 minutes/communications interval), monthly, accumulating

integral power consumption, 3-STATE display, and pulse input count value graphs.

6.3.6.1. Integral Power Consumption Graphs - [Graph List (Daily)] Tab Page

This tab page displays the information on the daily integral power consumption obtained from each Unit in graph.

To display graphs of KM1/KE1 Units, the Units must be selected beforehand in the [Measure] check boxes, and individual circuits, in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page. The target value setting for other Units than the KM1/KE1 also requires the selection of the [Measure] check boxes for each Unit in the [Environmental setting] - [Unit] tab page.
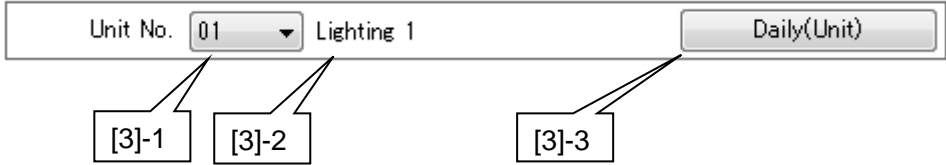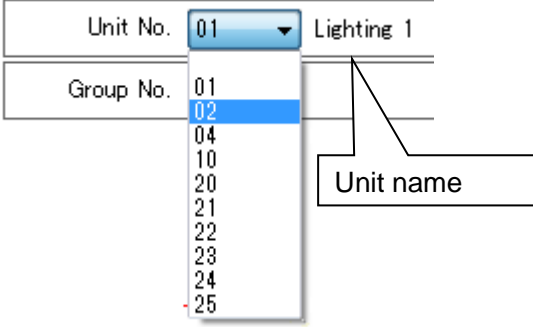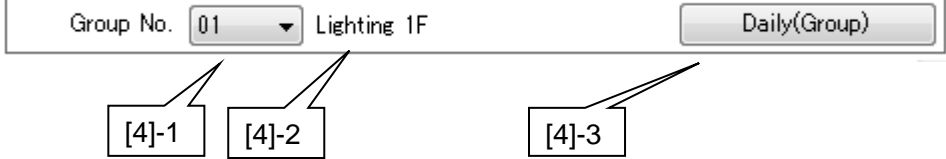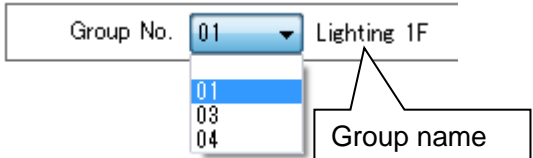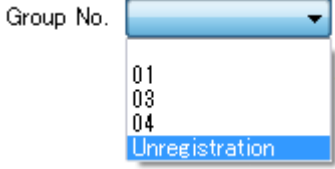
If a graph on the current day is displayed, it is automatically updated at every time interval.
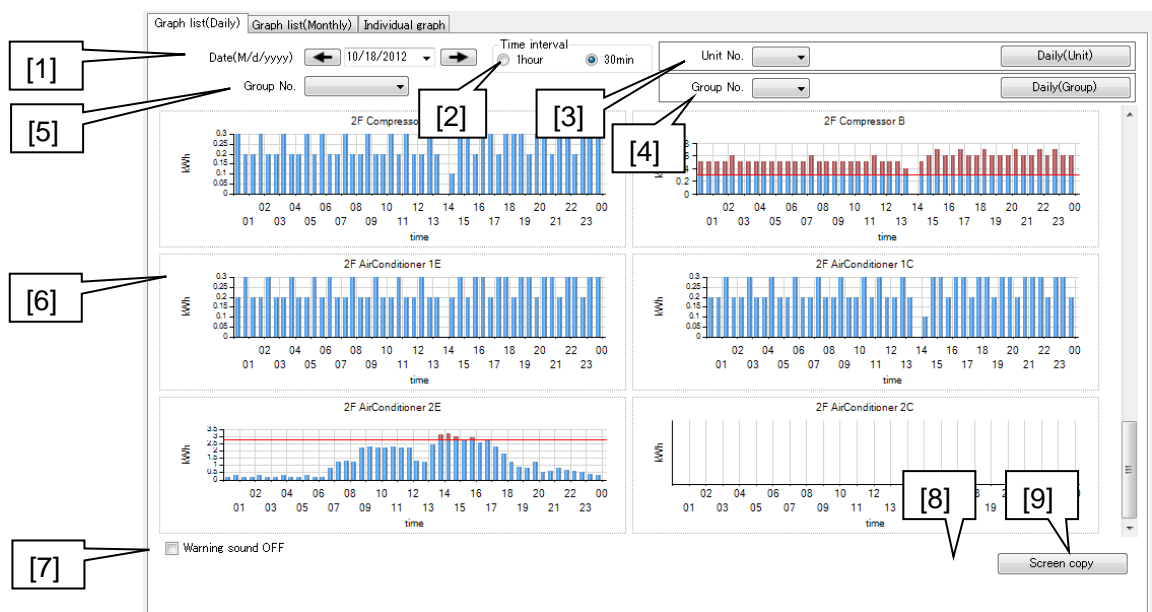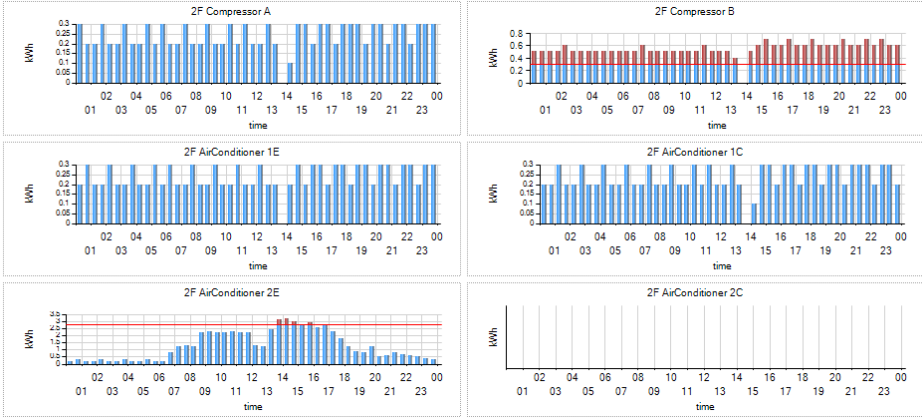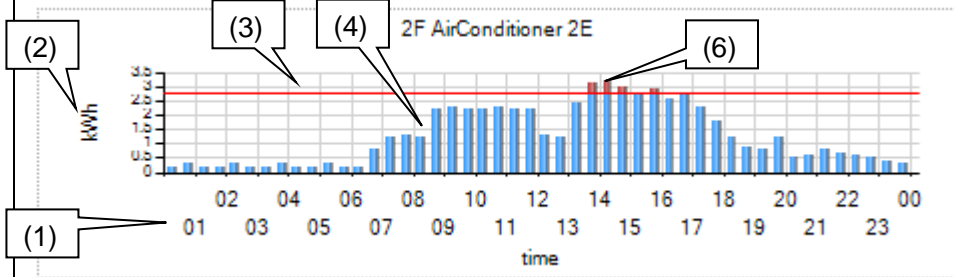
■Main Parameters and Functions

[1] Date		Specify the date to display in the graphs. Select the date from the calendar or use the arrow buttons. The current system date is displayed as default.
[2] Time interval		Specify the time interval to display in the graphs. Select from [1 hour] and [30 min]. The graph changes when you switch the time interval.

[3] Unit information	Select a specific Unit. The [Individual graph] tab page is displayed. If you select a KM1/KE1 Unit, the circuit of the smallest circuit No. is displayed in graph in the [Individual graph] tab page. Unit No. `01` Lighting 1 Daily(Unit) [3]-1 [3]-2 [3]-3
[3]-1 Unit No. [3]-2 Unit name	Unit No. `01` Lighting 1 Group No. 01 `02` 04 10 Unit name 20 21 22 23 24 25	Select the Unit No. for the graph display in the [Individual graph] tab page. The corresponding Unit name is displayed when you specify the Unit No. Only the Unit No.s selected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page are the options.
[3]-3 Daily (Unit)	Daily(Unit)	To display an individual graph for the Unit No. specified in [3]-1, click the [Daily (Unit)] button.
[4] Group information	Select a specific group. The [Individual graph] tab page is displayed. Group No. `01` Lighting 1F Daily(Group) [4]-1 [4]-2 [4]-3
[4]-1 Group No. [4]-2 Group name	Group No. `01` Lighting 1F `01` 03 Group name 04	Select the group No. for the graph display in the [Individual graph] tab page. The corresponding group name is displayed when you specify the group No.
[4]-3 Daily (Group)	Daily(Group)	To display an individual graph for the group No. specified in [4]-1, click the [Daily (Group)] button.
[5] Group No.	Group No. 01 03 04 `Unregistration`	Select the target group for displaying graphs. Nothing is selected by default. The list contains registered groups and "unregistration." If nothing is selected in the list, graphs for all Units are displayed. If you select "Unregistration", graphs for Units not registered in any group are displayed.

	Note: The group No. in [4]-1 also changes when this item is changed.
[6] Graph	EasyKM-Manager displays the graphs (See the example below). The graphs are shown individually for each Unit or circuit. As default, the data on the current day is displayed. Up to 100 graphs are displayed in a single tab page.
	[Graph Data] EasyKM-Manager calculates the increment per the time interval specified in [2] (30 minutes or 1 hour) using the integral power consumption data obtained with periodic measurements. Data is calculated at the following times: · Time interval of 30 minutes: 00 and 30 minutes of each hour -- Example: ···,13:00, 13:30, 14:00, ··· · Time interval of 1 hour: 00 minutes of each hour -- Example: ···,13:00, 14:00, 15:00, ···
	[Graph Contents] The following shows the graph axes and title configuration: (1) The X axis represents hour: "01 to 23" and "00". A single scale division is 1 hour. (2) The Y axis is in "kWh" and automatically scaled. (3) Displays the target value in a red horizontal line. (4) Displays the integral power consumptions in blue bars. (5) Displays the location name. The location name and circuit name are shown for a KM1/KE1 Unit.

(6) If the displayed graph exceeds the target value, EasyKM-Manager warns in the following ways:

    1.   Displays the values exceeding the target value in red.

    2.   Sounds an over-target alarm if the latest data exceeds the target value during periodic measurements, provided that the alarm is enabled in [Environmental setting] - [Communication setting] tab page.

(7) If a communications error occurs during periodic measurements, EasyKM-Manager warns in the following ways:

    3.   Displays the title in red, the graph background in yellow.

    4.   Sounds a communication error alarm if it is enabled.

   Note: The communications error alarm sounds even for Units not displayed in the page.

   Note: The following figure shows a communications error sample.
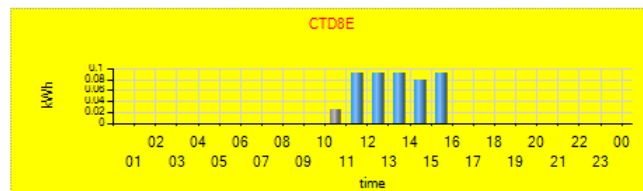
(8) EasyKM-Manager warns in the following ways, if it detects any gap in periodic measurement or data summarization.

    1.   Displays the bars in the graph in gray.

    2.   Shows the explanation for the gray bars at the footer.

☐ Warning sound OFF
The gray display on the bar graph indicates that it could not display the actual values because insufficient data was gathered during the selected period.

    Refer to "8.2. Integral Power Consumption Graphs and Missing Measurements" (P. 8-9) for details.

Note

<Y axis maximum value>

The maximum value on the Y axis is automatically set based on the displayed measurement values.

A target value larger than the Y axis maximum value is not displayed.
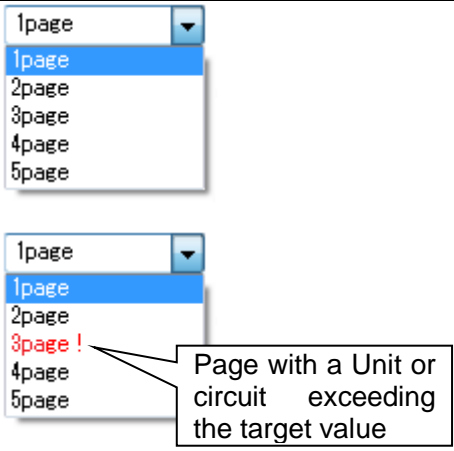
[7] Warning sound OFF	☐ Warning sound OFF	Select this check box to stop the alarm sound. To disable the alarm sound (effective from the next time EasyKM-Manager starts), set [Warning sound] to [OFF] in the [Environmental setting] - [Communication setting] tab page.

[8] Page	1page ▼ 1page 2page 3page 4page 5page 1page ▼ 1page 2page 3page ! ← Page with a Unit or circuit exceeding the target value 4page 5page	Used by EasyKM-Manager if 100 or more Units or circuits are registered. By selecting a desired page, you can display the corresponding graph page. Up to 100 graphs can be displayed in a single page. A page containing a Unit exceeding the target value is displayed in red with an exclamation mark (!) in the page list box.
[9] Screen copy	Screen copy	EasyKM-Manager copies the screen image to clipboard.

6.3.6.2. Integral Power Consumption Graphs - [Graph List (Monthly)] Tab Page

This tab page displays the information on the monthly integral power consumption obtained from each Unit in graph.

To display graphs of KM1/KE1 Units, the Units must be selected beforehand in the [Measure] check boxes, and individual circuits, in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page. The target value setting for other Units than the KM1/KE1 also requires the selection of the [Measure] check boxes for each Unit in the [Environmental setting] - [Unit] tab page.

> **Note:**
>
> EasyKM-Manager does not automatically update the graphs. Click the [The latest] button to update the graphs.
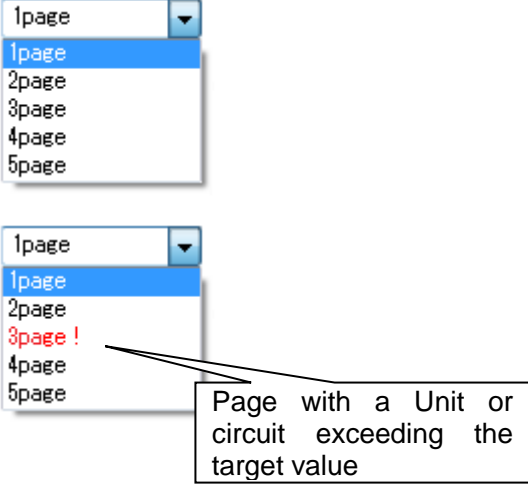
■Main Parameters and Functions

[1] Date		Specify the year and month to display in the graphs. The last 24 months obtained from the system date are displayed in the list. Select the desired year and month.
[2] Unit information	Select a specific Unit. The [Individual graph] tab page is displayed. If you select a KM1/KE1 Unit, the circuit of the smallest circuit No. is displayed in graph in the [Individual graph] tab page. 	

[2]-1 Unit No. [2]-2 Unit name	Unit No. [01 ▼] Lighting 1 Group No. 01 02 04 10 20 21 22 23 24 25 **Unit name**	Select the Unit No. for the graph display in the [Individual graph] tab page. The Unit name is displayed in [2]-2 when the Unit is selected. Only the Unit No.s selected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page are the options.
[2]-3 Monthly (Unit)	Monthly(Unit)	To display an individual graph for the Unit No. specified in [2]-1, click the [Monthly (Unit)] button.
[3] Group information	Select a specific group. The [Individual graph] tab page is displayed. Group No. [01 ▼] Lighting 1F Monthly(Group) [3]-1 [3]-2 [3]-3	
[3]-1 Group No. [3]-2 Group name	Group No. [01 ▼] Lighting 1F 01 02 03 04 **Group name**	Select the group No. for the graph display in the [Individual graph] tab page. The corresponding group name is displayed in [3]-2 when you specify the group No.
[3]-3 Monthly (Group)	Monthly(Group)	To display an individual graph for the group No. specified in [3]-1, click the [Monthly (Group)] button.
[4] Group No.	Group No. [01 ▼] Lighting 1F 01 03 04 Unregistration	Select the target group for displaying graphs. Nothing is selected by default. The list contains registered groups and "unregistration." If nothing is selected in the list, graphs for all Units are displayed. If you select "Unregistration", graphs for Units not registered in any group are displayed. Note: The group No. in [3]-1 also changes when this item is changed.
[5] Graph	Refer to the [Integral power consumption graph] - [Graph list (Daily)] tab page.	

[6] Page		Used by EasyKM-Manager if 100 or more Units or circuits are registered. By selecting a desired page, you can display the corresponding graph page. Up to 100 graphs can be displayed in a single page. A page containing a Unit exceeding the target value is displayed in red with an exclamation mark (!) in the page list box.
	1page ▼ 1page 2page 3page 4page 5page 1page ▼ 1page 2page 3page ! 4page 5page Page with a Unit or circuit exceeding the target value	
[7] Screen copy	Screen copy	EasyKM-Manager copies the screen image to clipboard.
[8] The latest	The latest	EasyKM-Manager updates the graphs using the data obtained after the last update until the day when the latest summarization is completed.

6.3.6.3. Integral Power Consumption Graphs - [Individual Graph] Tab Page

This tab page displays the detailed information on the integral power consumption obtained from each Unit in graph.

Note:

EasyKM-Manager does not automatically update the graphs. Click the [The latest] button to update the graphs.
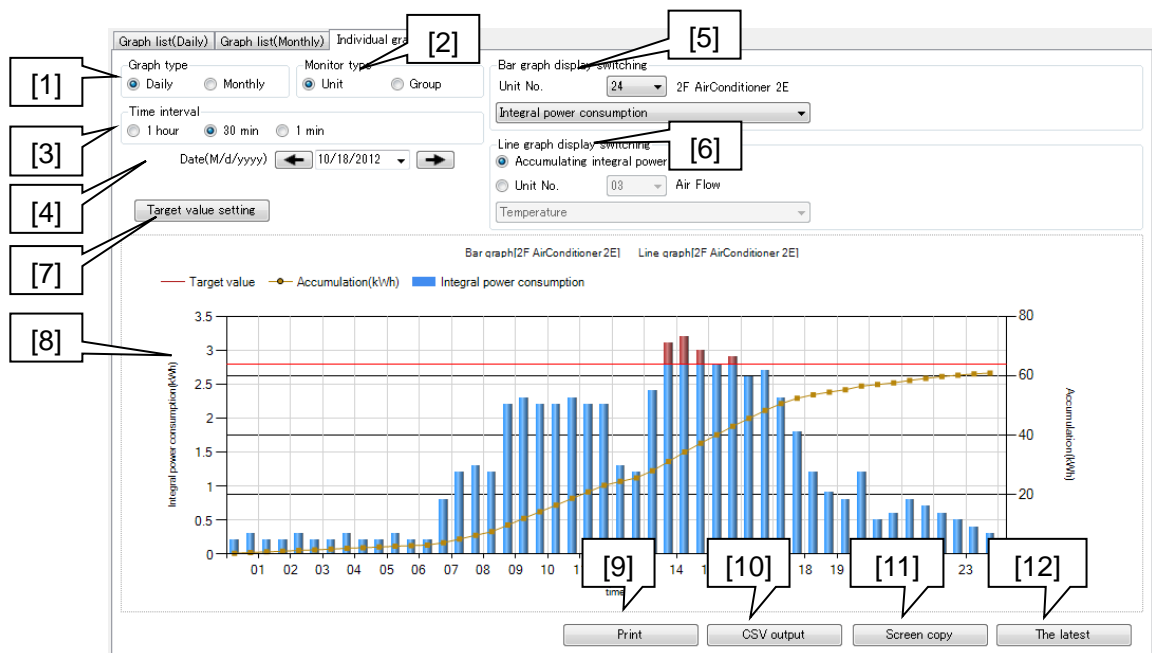
Example: 3-STATE integral power consumption graph
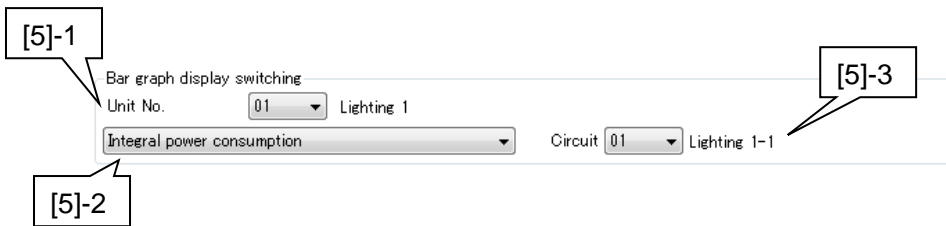
Monitor type: Unit

Bar graph display switching: 3-STATE integral power consumption

Line graph display switching: Sum of pulse input count

■Main Parameters and Functions

[1] Graph type	Specify the graph type. Select from [Daily] and [Monthly]. The graph is updated each time the setting is changed. Note 1: "Daily" is set if you have moved to this tab page after clicking the [Daily (Unit)] button in the [Graph List (Daily)] tab page. Note 2: "Monthly" is set if you have moved to this tab page after clicking the [Monthly (Unit)] button in the [Graph List (Monthly)] tab page.
[2] Monitor type	Select from [Unit] and [Group]. The integral power consumption graph switches between the Unit and Group monitor types each time the setting is changed. The graph of the previously selected Unit or group No. is displayed. (Default: The smallest Unit or group No.)
[3] Time interval	Select from [1 hour], [30 minutes], and [1/5/10 min (Measurement Interval)]. The graph is updated each time the setting is changed. The time interval is not displayed if the graph type is set to [Monthly].
[4] Date	Select the day or month for displaying the graph using the calendar (daily), list (monthly), or arrow buttons. The graph is updated each time the setting is changed.
[5] Bar graph display switching	Select the Unit No. and measurement item to display the bar graph. If you select a KM1/KE1 Unit, also select the circuit No. [5]-1 [5]-3 Bar graph display switching Unit No. 01 ▼ Lighting 1 Integral power consumption ▼ Circuit 01 ▼ Lighting 1-1 [5]-2
[5]-1 Unit No. or Group No.	Select the Unit or group No. for displaying the graph. The Unit name or group name changes according to the selected Unit or group No. The graph is updated each time a new Unit is selected. Only the Unit No.s selected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page are the options. In the same way, only the group No.s registered in the [Environmental setting] - [Group] tab page can be selected. Unit No. 01 ▼ 1F Distribution-1 Or Group No. 01 ▼ 1F Lighting Unit name/Group name

[5]-2 Measurement item (Bar graph)	Select the measurement item to display in a bar graph. The graph ([9]) is updated each time the selection changes. The measurement items for individual models are listed in "Table 19: Bar Graph Switching List Box Options for Each Model". ...

Select the measurement item to display in a bar graph. The graph ([9]) is updated each time the selection changes.

The measurement items for individual models are listed in "Table 19: Bar Graph Switching List Box Options for Each Model".

```
Integral power consumption                    ▼
Integral power consumption
Integral regenerated power consumption
Integral , regenerated power consumption
3-STATE Integral power consumption
Simple charge conversion
3-STATE Charge conversion [All]
3-STATE Charge conversion [HIGH]
3-STATE Charge conversion [MIDDLE]
3-STATE Charge conversion [LOW]
```
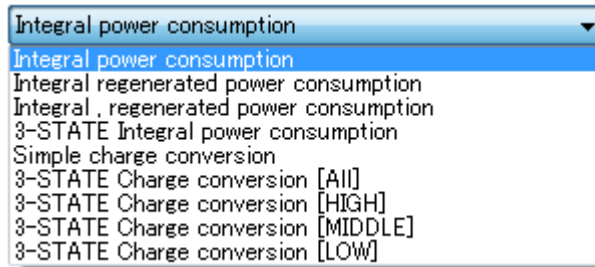
(KM50-E measurement item options)

■Integral power consumption/Integral regenerated power/Integral, regenerated power consumption

You can select from [Integral power consumption], [Integral regenerated power consumption], and [Integral, regenerated power consumption]. Only [Integral power consumption] can be selected for the KM100 and KM20-B40.

The line graph displayed (when [Accumulating integral power consumption] is selected for the line graph) changes according to the selected item. The items displayed for each selection item are shown below.

Selection item	Bar graph selection item	Value displayed when [Accumulated integral power consumption] line graph is selected
Integral power consumption	Integral power consumption	Accumulating integral power consumption
Integral regenerated power consumption	Integral regenerated power consumption	Accumulating regenerated power consumption
Integral, regenerated power consumption	Integral and regenerated power consumption	Accumulating integral power consumption and Accumulating regenerated power consumption

■3-STATE Integral Power Consumption

Can be selected for the KM50-E (V1/V2), KM1-PMU1A and KM1-PMU2A only.

■Simple Charge Conversion
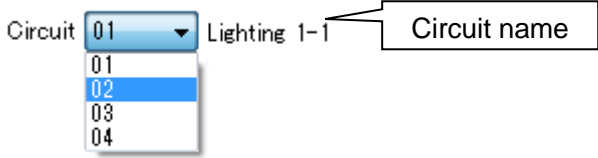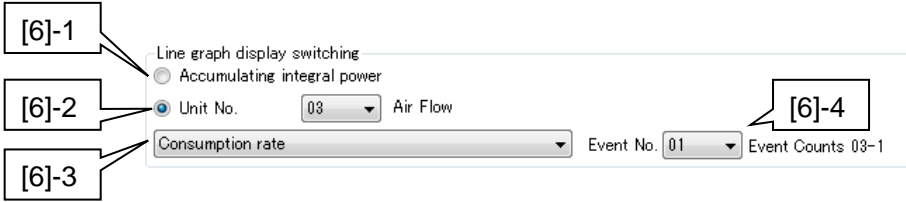
Can be selected for the KM50-C (V2) and KM50-E (V2) only.
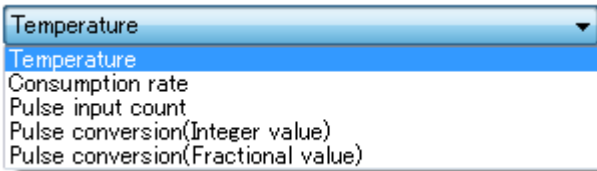
Note: The simple charge conversion graph only shows simplified values and does not reflect daytime and nighttime charges.

■3-STATE Simple Charge Conversion (All)/(HIGH)/(MIDDLE)/(LOW)

Can be selected for the KM50-E (V2) only. The simple charge conversion for each power status can be selected from [All], [HIGH], [MIDDLE], and [LOW].

The items displayed for each selection item are shown below.

	Selection item	Display item (measurement item)
	All	HIGH total integrated charge conversion value, MIDDLE total integrated charge conversion value, and LOW total integrated charge conversion value
	HIGH	HIGH total integrated charge conversion value
	MIDDLE	MIDDLE total integrated charge conversion value
	LOW	LOW total integrated charge conversion value

Note: The simple charge conversion graph only shows simplified values and does not reflect daytime and nighttime charges.

■Integral power consumption conversion value (integer value)/(fractional value)

Can be selected for the KM1/KE1 only.

The graph displays the registered conversion value names if they are registered in "6.3.3.4. Graph Setting - [Conversion Value Name Setting] Tab Page" (P. 6-78). The graph legend does not show the value unit. Include the value unit description in the conversion value name as required when registering.

---

[5]-3 Circuit No.	Select the KM1/KE1 circuit No. if you select a KM1/KE1 Unit in [Unit No.]. The circuit name of the selected circuit No. is displayed. Only the circuit No.s selected in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page are the options.
[6] Line graph display switching	Select items required to display a line graph. Any Unit or circuit measurement data can be selected regardless of the group or Unit selection in "Bar graph display switching". You can select the accumulating integral power consumption of the group or Unit selected in "Bar graph display switching" or any measurement item by specifying a desired Unit.
[6]-1 Accumulating integral power consumption	Select this to display an accumulating integral power consumption line graph. EasyKM-Manager displays the accumulating integral power consumption of the Unit selected in "Bar graph display switching" if the monitor type is set to "Unit". If the monitor type is "Group", the group's accumulating integral power consumption

	is displayed. The name description in the graph changes according to the Unit or group selected in "Bar graph display switching". ◯ Accumulating integral power —————— ┌─────────────────┐ │ Unit No./Group No. │ └─────────────────┘
[6]-2 Unit No.	Use this to specify the measurement item for each Unit for line graph display. The Unit name changes according to the selected Unit. The graph ([9]) is updated each time a new Unit is selected. ◉ Unit No. [03 ▼] Air Flow ┌──────────┐ │ Unit name │ └──────────┘
[6]-3 Measurement item (Line graph)	Select the measurement item to display in a line graph. The graph ([9]) is updated each time the selection changes. The measurement items for individual models are listed in "Table 20: Line Graph Switching List Box Options for Each Model". ┌──────────────────────────────────┐ │ Temperature ▼ │ │ Temperature │ │ Consumption rate │ │ Pulse input count │ │ Pulse conversion(Integer value) │ │ Pulse conversion(Fractional value) │ └──────────────────────────────────┘ (KM50-E measurement item options) Note 1: To display the accumulating integral power consumption of the Unit or group selected for bar graph display, select "Accumulating integral power consumption" in [6]-1. Note 2: The line graph measurement items can be selected for KM50-C, KM50-E and KM1-EMU8A Units only. Note 3: [Consumption rate] cannot be selected if the time interval is set to [1/5/10 min (Measurement Interval)]. Note 4: The temperature values from the KM50-C and KM50-E are obtained with simplified measurement. Only use them to monitor the trend. ■Thermistor input name This is selectable if the Unit is the KM1-EMU8A, and a thermistor input is set in [KM1/KE1 Measurement points setting]. The registered name is displayed. Refer to "6.3.1.4. Environmental Setting - [Measurement Points Setting] Tab Page" (P. 6-32) for details. ■Total conversion value/Conversion value 1/Conversion value 2 Can be selected for the KM50-C and KM50-E only. The graph displays the registered conversion value names if they are registered in the [Conversion value name setting] tab page.

	■Electric power consumption rate
	Only selectable if the time interval is set to "30 minutes", "1 hour" or "1 day (Month)".
	For KM50-C and KM50-E Units, EasyKM-Manager displays the value obtained by using the integral power consumption of the Unit selected in "Bar graph display switching" and the total pulse input counts of the Unit selected in "Line graph display switching".
	For KM1-EMU8A Units, EasyKM-Manager displays the value obtained by using the integral power consumption of the Unit selected in "Bar graph display switching" and the pulse input counts of the event input No. selected in "Line graph display switching".
	"×" is displayed if the pulse input count is "0" in the consumption rate calculation within the specified time interval.
	■Pulse conversion value (integer value)/(fractional value)
	Can be selected for the KM1-EMU8A only.
	The graph displays the registered conversion value names if they are registered in "6.3.3.4. Graph Setting - [Conversion Value Name Setting] Tab Page" (P. 6-78). The graph legend does not show the value unit. Include the value unit description in the conversion value name as required when registering.
[6]-4 Event No.	Select the event No. to display a line graph of the measurement item using an event, if a KM1-EMU8A Unit is selected. The event name changes according to the selected No. Only the event No.s selected in the [Use Yes/No] check boxes in the [Environmental setting] - [KM1/KE1 measurement points setting] tab page are the options. Consumption rate ▼ Event No. 01 ▼ EMU8A 03-1 Event name
[7] Target value setting	Click the [Target value setting] button to move to the [Graph setting] tab pages.
[8] Graph	EasyKM-Manager displays the graph using the conditions specified in [1] to [7]. If the graph contains missing data, refer to "8.2. Integral Power Consumption Graphs and Missing Measurements" (P. 8-9). **Additional Information** <Y axis maximum value> The maximum value on the Y axis is automatically set based on the displayed measurement values. A target value larger than the Y axis maximum value is not displayed.
[9] Print	Prints the graph. The print dialog appears when you click the [Print] button.

[10] CSV output	Outputs the graph to a CSV file. Click the [CSV Output] button to display the "Save As" dialog box. The output data details are shown in Table 43: KM50/KM100/KM20-B40 CSV Output Data (Per Unit/Group, Measurement Interval: 30 Min./1 Hour/1 Day)" (P. 9-45) and "Table 44: KM1/KE1 CSV Output Data (Per Unit/Group, Measurement Interval: 30 Min./1 Hour/1 Day)" (P. 9-46).
[11] Screen copy	EasyKM-Manager copies the graph to clipboard.
[12] The latest	EasyKM-Manager updates the graphs using the data obtained after the last update until the day and time when the latest summarization is completed.

Table 19: Bar Graph Switching List Box Options for Each Model

Bar graph switching list box option	KM100	KM20-B40	KM50-C	KM50-E	KM1-PMU1A	KM1-PMU2A	KE1－PGR1C	KE1-CTD8E
Integral power consumption	○	○	○	○	○	○	○	○
Integral regenerated power	×	×	○	○	○	○	○	○
Integral, regenerated power consumption	×	×	○	○	○	○	○	○
3-STATE integral power consumption	×	×	×	○	○	○	×	×
Simple charge conversion	×	×	○	○	×	×	×	×
3-STATE simple charge conversion (All/HIGH/MIDDLE/LOW)	×	×	×	○	×	×	×	×
Integral power consumption conversion value (integer value)	×	×	×	×	△	△	△	△
Integral power consumption conversion value (fractional value)	×	×	×	×	△	△	△	△

○: Selectable   ×: Not selectable   △: Selectable only when the monitor type is "Unit"

Note: If a group comprising multiple models is displayed, only common items are shown in the list box.

Table 20: Line Graph Switching List Box Options for Each Model

Model	Line graph switching list box option
KM50-C	Temperature
	Electric power consumption rate
	Total pulse input counts
	Pulse input count 1
KM50-E	Pulse input count 2
	Total of pulse conversion values
	Pulse conversion value 1
	Pulse conversion value 2
KM1-EMU8A	(Thermistor input name)
	Electric power consumption rate
	Pulse input counts
	Pulse conversion value (integer value)
	Pulse conversion value (fractional value)

6.3.7.　High-speed Logging

High-speed logging obtains measurement data from Units at the measurement interval of seconds and outputs the data to CSV files.
Click the [High-speed Logging] button in the Function Menu to open the High-speed Logging tab page.

Precautions for Correct Use

・　High-speed logging cannot be used for the KM1/KE1.

・　Stop periodic measurements to perform high-speed logging.
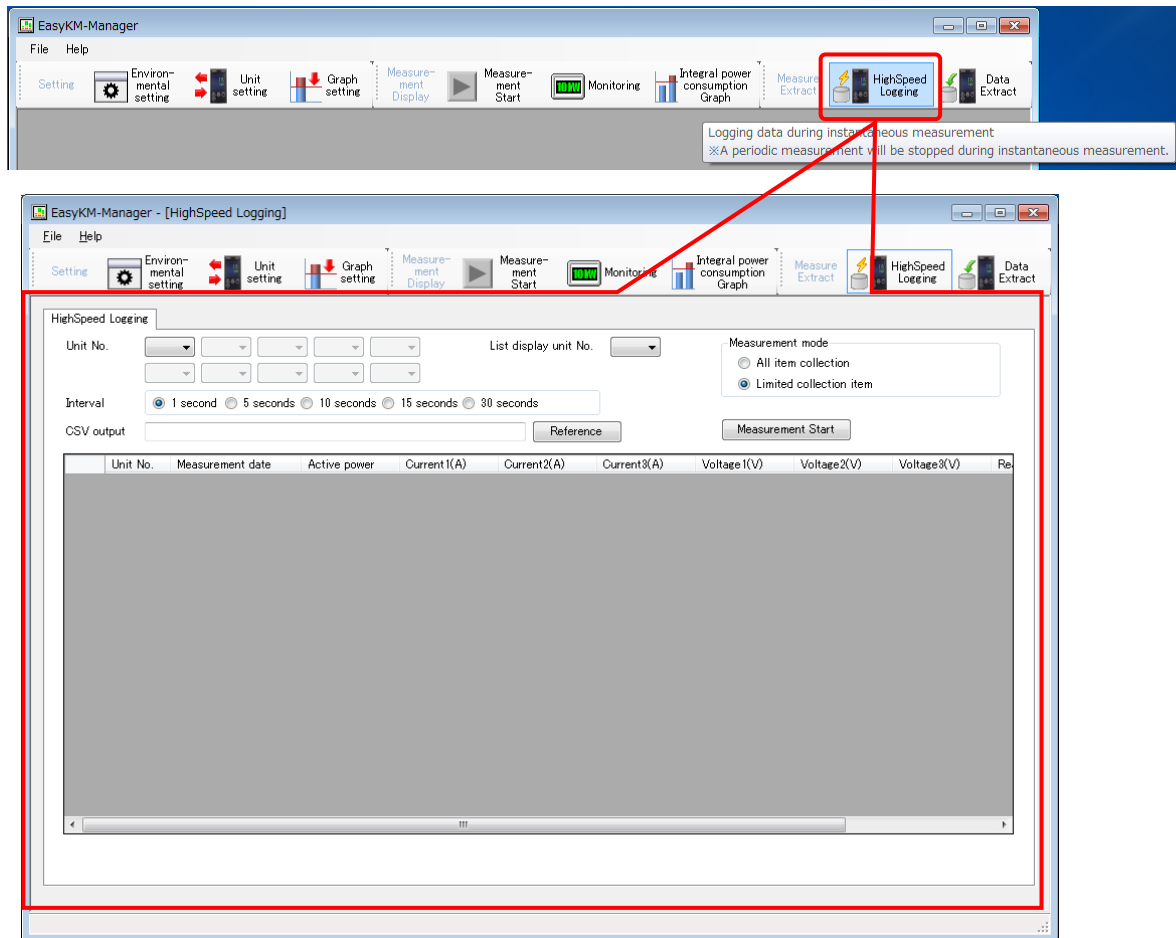
6.3.7.1. High-speed Logging Tab Page

Use this tab page to measure the data of a specific Unit for a specific period and display the results in a list.

Precautions for Correct Use

Use the [Interval] setting as the rule of thumb (i.e. the accuracy cannot be guaranteed), since the measurement interval may be influenced by the PC workload or communication environment.

■Operation

●High-speed logging
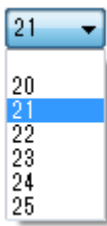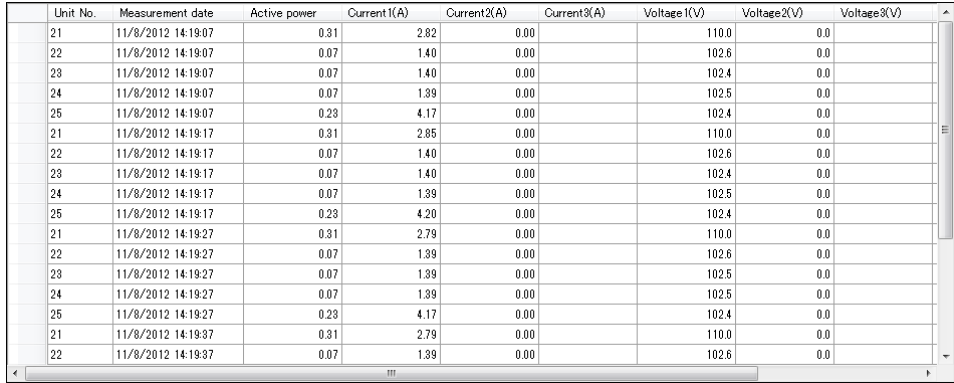
1. Specify [Interval] ([1]).

2. Select the [Unit No.] ([2]) of the measurement target.

3. Click the [Reference] button and specify the CSV file output destination folder.

4. Click the [Measurement Start] button ([5]). A message appears to confirm if you want to start measurement.

5. Click the [Yes] button. The measurement results are shown in the list ([7]).

6. Select a specific Unit in [List display Unit No.] ([6]) if you want to display the Unit alone, when multiple Units are displayed.

7. Click the [Measurement Stop] button ([5]) to stop high-speed logging. A message appears to confirm if you want to stop measurement.

8. Click the [Yes] button. A dialog appears indicating that measurement is stopped.

9. Click the [OK] button.

   This concludes the high-speed logging procedure.

■Main Parameters and Functions

[1] Interval	Specify the measurement interval. You can select the interval from [1 second], [5 seconds], [10 seconds], [15 seconds], and [30 seconds].
[2] Unit No.	Select the measurement targets. The number of Units you can select changes according to the measurement interval. 1-second measurement interval: Only 1 Unit is selectable 5-second measurement interval: 3 Unit are selectable 10-second measurement interval: 5 Unit are selectable 15-second measurement interval: 7 Unit are selectable 30-second measurement interval: 10 Unit are selectable Example: Three Units can be selected if the measurement interval is set to "5 seconds".
[3] CSV output	Specify the CSV file destination folder in which measurement data is output. Select the desired folder. You can click the [Reference] button and specify the folder in the [Browse for Folder] list.

[4] Measurement mode	Select the measurement mode for high-speed logging. Select [All item collection] or [Limited collection item]. [All item collection] The mode to obtain the data for main power measurement items from Units. [Limited collection item] The mode to obtain the data for limited measurement items. The processing speed can be improved by reducing the items. Refer to "9.3.3. Data Output in High-Speed Logging Files (Periodic Measurement)" (P. 9-47) for the measurement target items in each mode.
[5] Measurement Start	When you click the [Measurement Start] button, EasyKM-Manager starts measurement at the interval specified in [1]. When measurement starts, the [Measurement Start] button is replaced with the [Measurement Stop] button. Measurement Stop To stop measurement, click the [Measurement Stop] button. A message appears to confirm if you want to stop measurement. ・Click [Yes] to stop measurement. ・Click [No] to continue measurement. **Precautions for Correct Use** ● The following message appears if the targets include Units not verified to be "successful" in communications tests (Refer to "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42) when periodic measurements start. Make sure that the communications with all the Units are "successful" before starting periodic measurements. Clicking the [Yes] button can start periodic measurements when this dialog appears. However, the data may not be output correctly due to the lack of correct device model information caused by the failure to establish the communications. EasyKM-Manager It will stop the measurement. Is it OK? Yes No ● If the protocol is "CompoWay/F", instantaneous values: Voltage 3, Current 3, Power factor and Frequency cannot be obtained.

[6] List display unit No.	Narrow down the information to display by specifying a Unit No. Select the Unit No. during or after measurement. The information on the selected Unit is displayed in the list ([7]).
[7] Measurement result list	The measurement results are displayed in a list. [List Contents] 1. The results for a single measurement session is displayed in a single row for each Unit. 2. Up to 3,600 rows can be displayed. When the number of displayed rows reaches 3,600, the first 100 are deleted to continue the process. 3. EasyKM-Manager stops measurement when an error occurs five times in a row during measurement, and displays the message that measurement has stopped due to communication errors. 4. EasyKM-Manager also stops measurement when measurement continues for 12 hours. A message appears to notify that measurement is stopped because 12 hours have passed since the measurement start. Note: Data in the past cannot be referred to when measurement is in progress.

6.3.8. Data Extract Tab Pages

Click the [Data Extract] button in the Function Menu to open the Data Extract tab pages.

Precautions for Correct Use

・ The Data Extract function cannot be used for the KM1/KE1.

・ Stop periodic measurements to perform Data Extract.
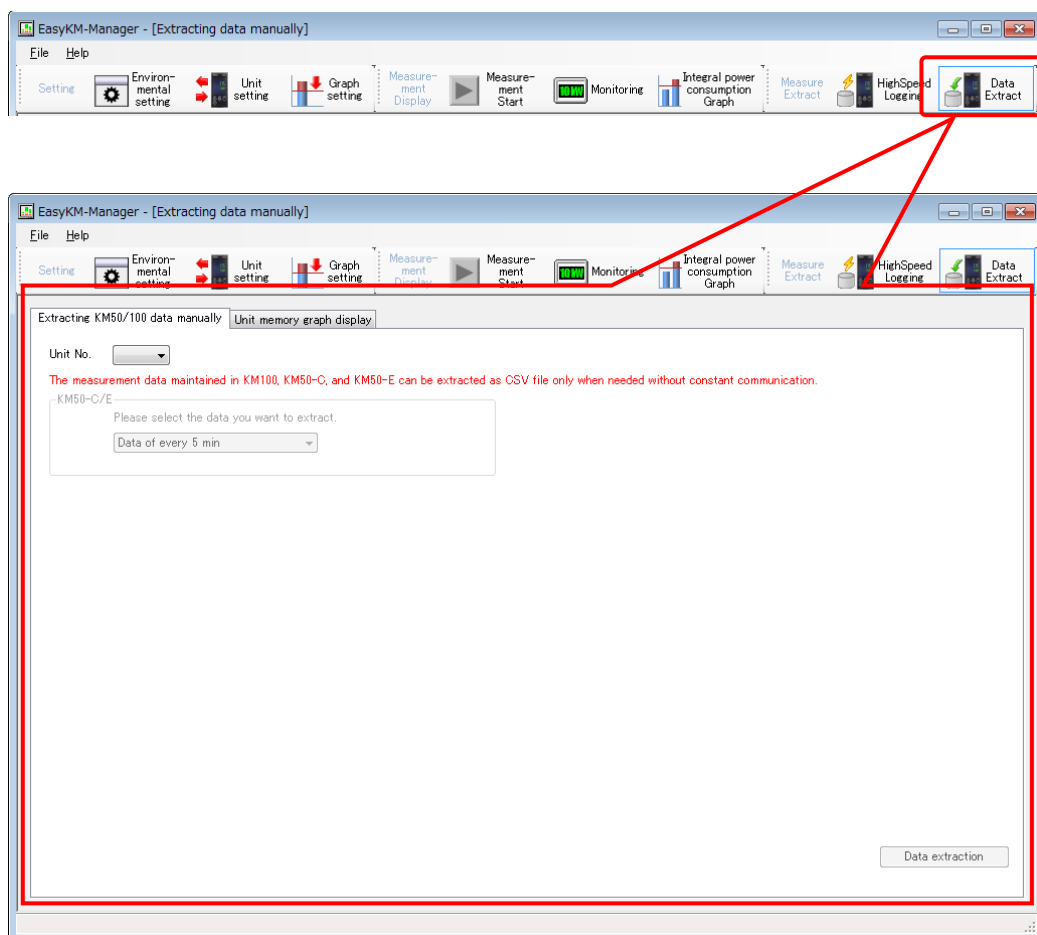
■Tab Pages

● [Extracting KM50/100 data manually] tab

Used to manually extract measurement data from KM50-C/E or KM100 Units.

● [Unit memory graph display] tab

Used to display graphs using the data manually extracted from the KM50-C/E or KM100.

6.3.8.1. Data Extract - [Extracting KM50/100 Data Manually] Tab Page

Use this tab page to manually extract data from KM100, KM50-C, or KM50-E Units. Refer to "9.3.4. Data Output with Manual Extraction" (P. 9-52) for the data extraction items.

Precautions for Correct Use

- Stop periodic measurements for starting the procedure.

■Operation

●Extracting KM50-C/E data

1. Select the Unit in [Unit No.] ([1]) to extract data from.
2. Select the data to extract in [KM50-C/E] ([3]).
3. Click the [Data extraction] button ([2]). A message appears to notify that EasyKM-Manager reads out the time.
4. Click the [Yes] button. The data extraction confirmation dialog appears.
5. Click the [Yes] button. The [Browse for Folder] window is displayed.
6. Specify the data destination folder in the folder browse window. Data extraction starts. When the process is completed, a message appears to notify that data extraction is completed.
7. Click the [OK] button.
   This concludes the procedure to extract data from a KM50-C/E Unit.
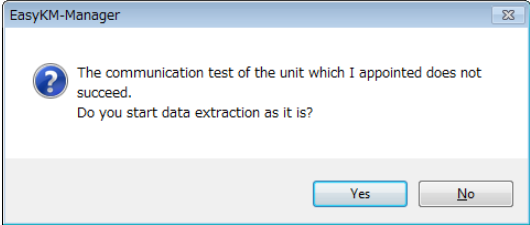
●Extracting KM100 data
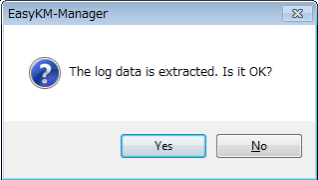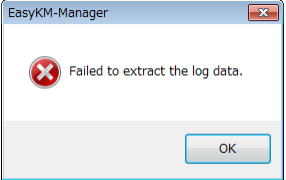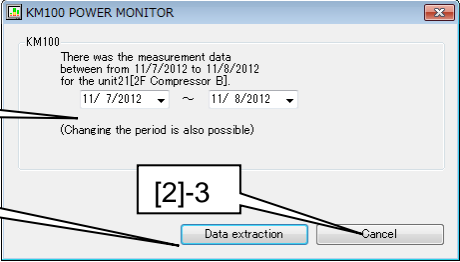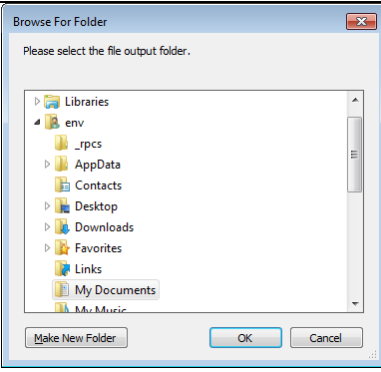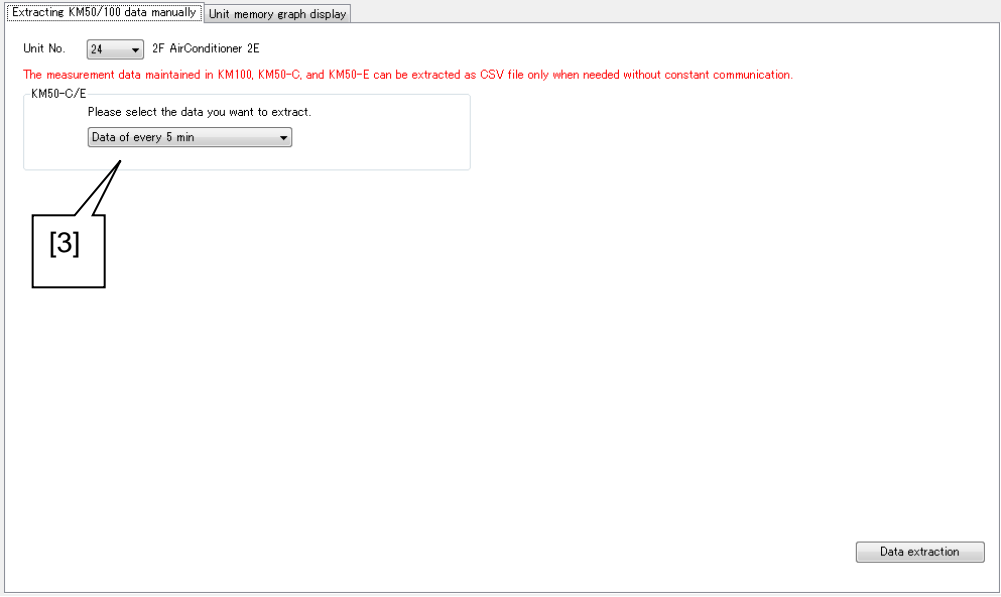
1. Select the Unit in [Unit No.] ([1]) to extract data from.
2. Click the [Data extraction] button ([2]). A message appears to confirm if you want to extract log data.
3. Click the [Yes] button and wait until the "KM100 Power Monitor" window appears.
4. Follow the instructions in the window to select the period of the data to extract ([2]-1) and click the [Data extraction] button ([2]-2). The [Browse for Folder] window is displayed.
5. Click the [OK] button and closes the "KM100 Power Monitor" window using [✕] button.
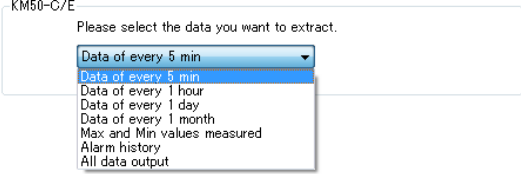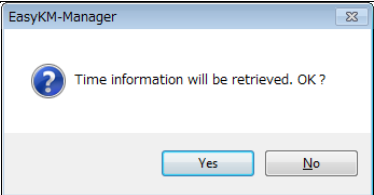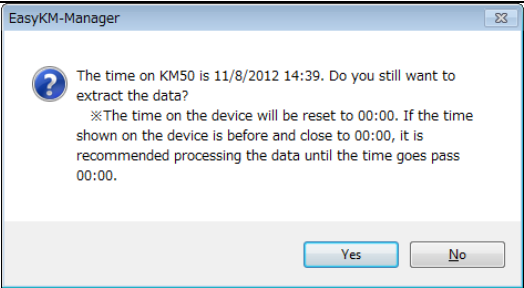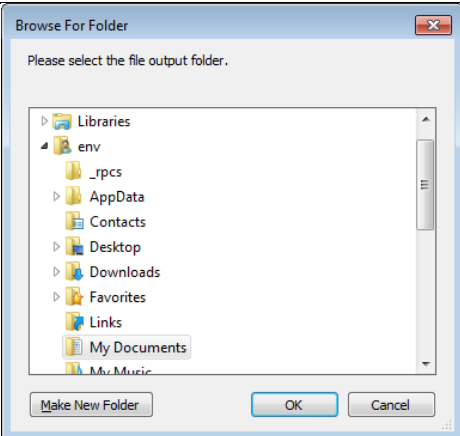
This concludes the procedure to extract data from a KM100 Unit.

■Main Parameters and Functions

[1] Unit No.		Displays the registered Unit No.s in the list box. Select the Unit to extract data from.
[2] Data extraction (KM50/KM100)	The data extraction procedure differs depending on whether the KM100 or KM50-C/E is selected. **Precautions for Correct Use** The following message appears if you attempt to extract data from Units not verified to be "successful" in communications tests (Refer to "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42). Make sure that the communications with all the Units are "successful" before starting data extraction. Clicking the [Yes] button can start data extraction when this dialog appears. However, the data may not be output correctly due to the lack of correct device model information caused by the failure to establish the communications. 	

[2] Data extraction (KM100)	EasyKM-Manager ? The log data is extracted. Is it OK? Yes No	If you select a KM100 Unit, a message appears to confirm if you want to extract log data. Click [Yes].
	EasyKM-Manager ✖ Failed to extract the log data. OK	If data extraction fails, a message appears notifying the failure of log data extraction.
	KM100 POWER MONITOR KM100 There was the measurement data between from 11/7/2012 to 11/8/2012 for the unit21[2F Compressor B]. 11/ 7/2012 ～ 11/ 8/2012 (Changing the period is also possible) [2]-1 [2]-2 [2]-3 Data extraction Cancel	The KM100 Power Monitor window appears if data is successfully extracted. [2]-1: You can change the measurement data period to extract. [2]-2: Click the [Data Extraction] button to extract data. [2]-3: Click the [Cancel] button to stop the process.

	Browse For Folder
	
	Please select the file output folder.
	
	▷ Libraries
	▲ env
	   _rpcs
	   ▷ AppData
	   Contacts
	   ▷ Desktop
	   ▷ Downloads
	   ▷ Favorites
	   Links
	   My Documents
	   My Music
	
	Make New Folder OK Cancel
		The [Browse for Folder] appears after you click the [2]-2 button.
		
		Select where to extract the data to and click the [OK] button.

[2]
 	
Data extraction
 	
(KM50-C/E)
	Extracting KM50/100 data manually │ Unit memory graph display
	
	Unit No. 24 ▼ 2F AirConditioner 2E
	The measurement data maintained in KM100, KM50-C, and KM50-E can be extracted as CSV file only when needed without constant communication.
	KM50-C/E
	   Please select the data you want to extract.
	   Data of every 5 min ▼
	
	[3]
	
	Data extraction	

[3] KM50-C/E	KM50-C/E Please select the data you want to extract. Data of every 5 min ▼ Data of every 5 min Data of every 1 hour Data of every 1 day Data of every 1 month Max and Min values measured Alarm history All data output	If you select a KM50-C/E Unit in [1], the selection of item [3] is enabled. Select the data to extract from the Unit. The selection list includes the following options: [Data of every 5 min] [Data of every 1 hour] [Data of every 1 day] [Data of every 1 month] [Max and Min values measured] [Alarm history] [All data output] Note: The alarm history is included in the list only if the KM50-C-V2 or KM50-E-V2 is selected.
	EasyKM-Manager ⊠ ❓ Time information will be retrieved. OK ? Yes No	A message appears to confirm if you want to extract the time data. Clicking the [No] button cancels the process.
	EasyKM-Manager ⊠ ❓ The time on KM50 is 11/8/2012 14:39. Do you still want to extract the data? 　※The time on the device will be reset to 00:00. If the time shown on the device is before and close to 00:00, it is recommended processing the data until the time goes pass 00:00. Yes No	A message appears to confirm if you want to extract data. Clicking the [No] button cancels the process.
	Browse For Folder ⊠ Please select the file output folder. ▷ 📚 Libraries ▲ 🧑 env 　📁 _rpcs 　▷ 📁 AppData 　📇 Contacts 　▷ 🖥 Desktop 　▷ 📥 Downloads 　▷ ⭐ Favorites 　📁 Links 　📄 My Documents 　📁 My Music Make New Folder OK Cancel	The "Browse For Folder" dialog box is displayed. Select where to extract the data to and click the [OK] button.

6.3.8.2. Data Extract - [Unit Memory Graph Display] Tab Page

Use this tab page to obtain the data from the files output in [Extracting KM50/100 data manually] or CSV files stored in the memory card in the KM100, and display the data in graph.
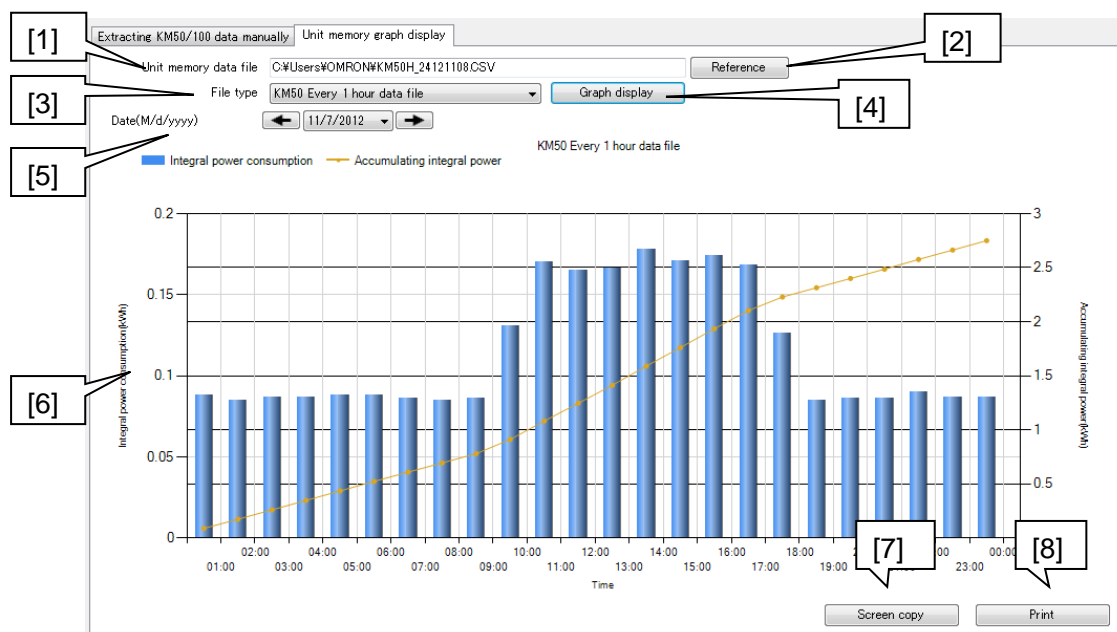
■Operation
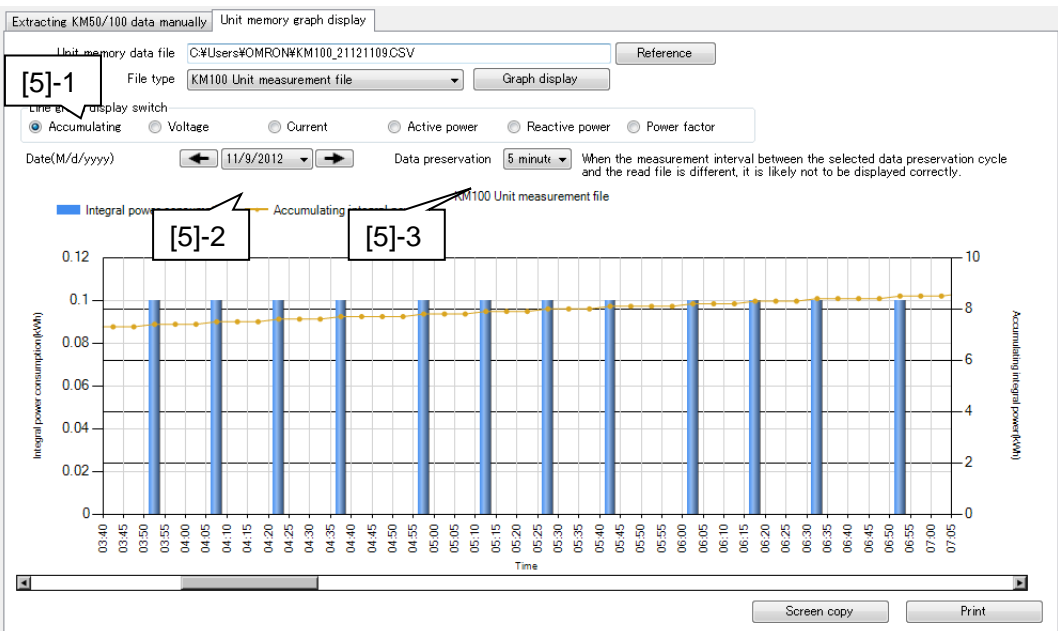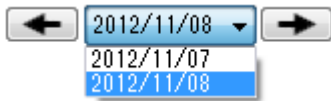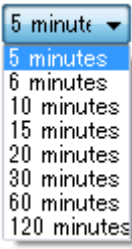
●Displaying Unit memory graph
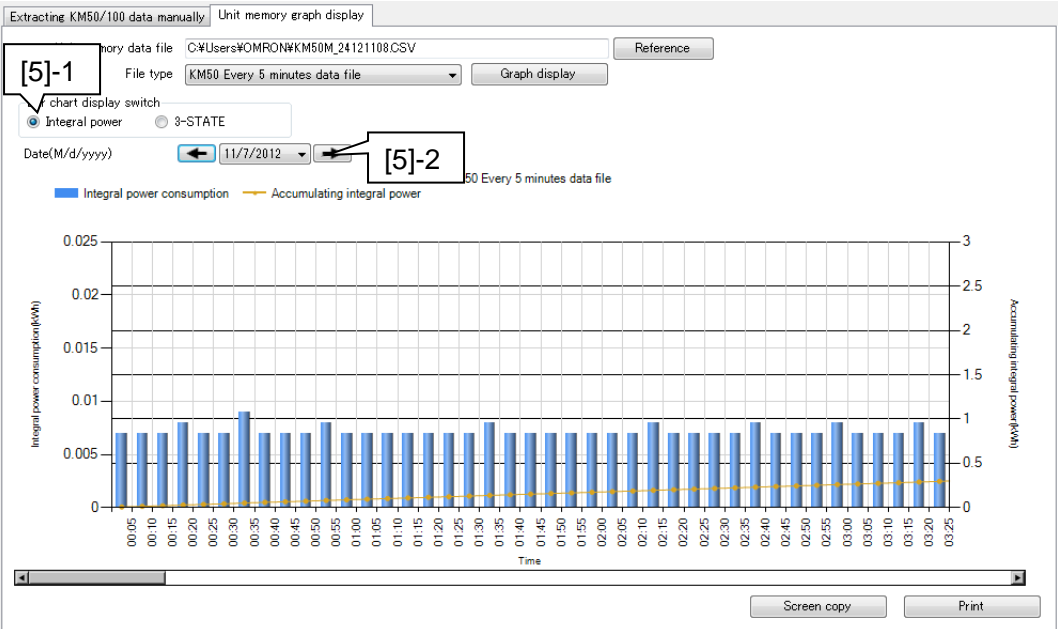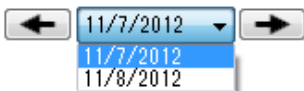
1. Click the [Reference] ([2]) button and specify the file to display in graph.

2. Specify the [File type] ([3]) of the file selected in [Unit memory data file] ([1]).

3. Click the [Graph display] button ([4]).
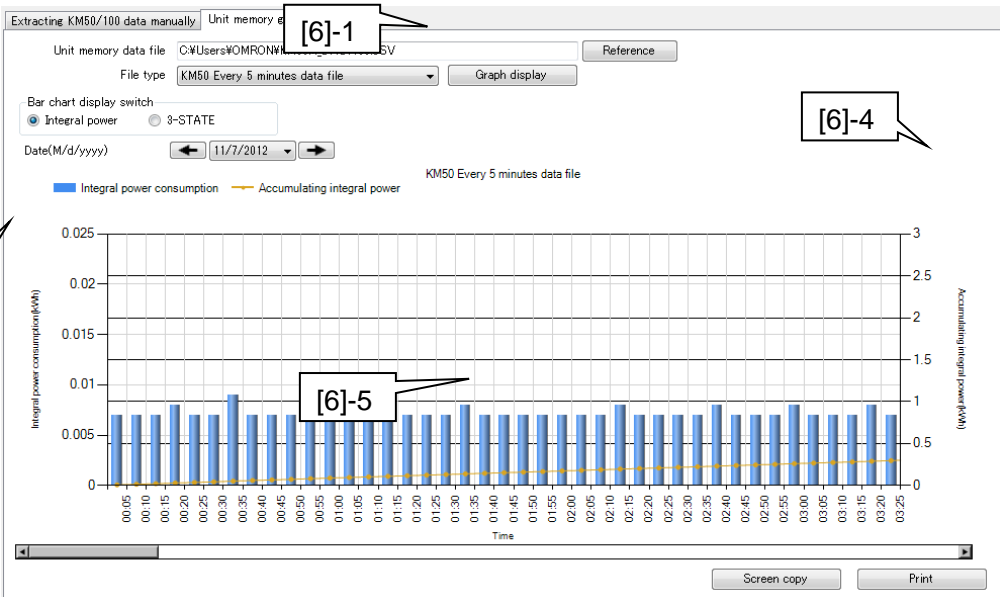
   This concludes the procedure to display the Unit memory graph.

■Main Parameters and Functions

[1] Unit memory data file	Specify the save location of an output file containing manually extracted KM50/100 data or a CSV file saved in the memory card of a KM100 Unit. You can also select the file in the "Open Folder" dialog box displayed after clicking the [Reference] button.
[2] Reference	Displays the "Open Folder" dialog box. Select the file to display in graph and click [Open].
[3] File type	Select the file type of the file selected in [2]. KM50 Every 1 hour data file KM100 Unit measurement file KM50 Every 5 minutes data file KM50 Every 1 hour data file KM50 Every 1day data file KM50 Every 1 month data file
[4] Graph display	Displays the file data in graph.

[5] Graph display conditions (KM100 data)	If you select [KM100 Unit measurement file] for the file type to display the graph, the line graph parameter, target date, and data save period can be changed. The graph display changes each time the change is made. Note: Only the integral power consumption is displayed in the bar graph.
[5]-1 Line graph parameter	Specify the item to display in the line graph. Note: For the [KM100 Unit measurement file] file type, the accumulating integral power consumption, voltage, current, active power, reactive power, and power factor are available as the options. Select a desired item to display the graph.
[5]-2 Date	Specify the date to display in the graph. Select the date from the list or use the arrow buttons.
[5]-3 Data preservation	Specify the data interval to display in the graph. Match the data preservation setting with the "data save period" of the KM100. If a different interval is specified, the graph may not be displayed correctly.

[5] Graph display conditions (KM50 data)	If you select [KM50 Every 5 minutes data file], [KM50 Every 1 hour data file], [KM50 Every 1day data file], or [KM50 Every 1 month data file] for the file type to display the graph, the bar graph parameter and date can be changed. The graph display changes each time the change is made. Note: Only the accumulating integral power consumption is displayed in the line graph.
[5]-1 Bar graph parameter	Specify the item to display in the graph. Note 1: When you select the KM50-E for the Unit and set the file type to [KM50 Every 5 minutes data file] or [KM50 Every day data file], the integral power consumption and total 3-STATE power consumption are the options. Select one of them and display the graph. Note 2: When you select the KM50-C for the Unit or set the file type to [KM50 Every hour data file] or [KM50 Every month data file], the integral power consumption is the only option (Fixed).
[5]-2 Date	Specify the date to display in the graph. Select the date from the list or use the arrow buttons.

[6] Graph	[Graph Contents] The graph configuration is as follows: 　[6]-1　Displays the Unit name. 　[6]-2　Displays the legend. 　[6]-3　The Y-axis legend (left) shows the item name and unit for the bar graph. 　[6]-4　The Y-axis legend (right) shows the item name and unit for the line graph. 　[6]-5　The X axis legend changes according to file type ([3]). 　　　　For [KM100 Unit measurement file], the data is displayed at the interval 　　　　selected in [Data preservation].
[7] Screen copy	EasyKM-Manager copies the graph to clipboard.
[8] Print	Prints the graph. The print dialog appears when you click the [Print] button.

7. Data Backup and Restoration

Periodically backup the EasyKM-Manager settings and periodic measurements data saved in the software. Periodic data backup enables the restoration from the failure of the PC installed with EasyKM-Manager or inadvertent data deletion.

Backup data also can be provisionally restored, when you want to refer to the data before the specified data retention period expires.

> **Precautions for Correct Use**
>
> • Do not delete, move, open or edit the setting information and periodic measurements data in folders mentioned in the procedure description in this chapter for the purpose other than to "back up", "restore" or " refer to periodic measurements data with its retention period expired ".
>
> • The setting information and periodic measurements data folders are usually hidden. When you cannot locate them, refer to "8.4 Locating Hidden File Folders" (P. 8-12).
>
> • Restore data in the same EasyKM-Manager version used to back up the data. If the version is different, graph display or other functions may not work correctly when the data is restored.
> To facilitate this, make sure to keep track of the version (e.g. write it down in a note) when data is backed up.
> Also make sure that the installer used to install EasyKM-Manager at the time of download is kept in good custody. You cannot download an older version, since OMRON website only provides latest version. (See "5.3 Version Information" (P. 5-11))

Back up various setting files and data save folders. The files requiring back up are enclosed in [   ] .
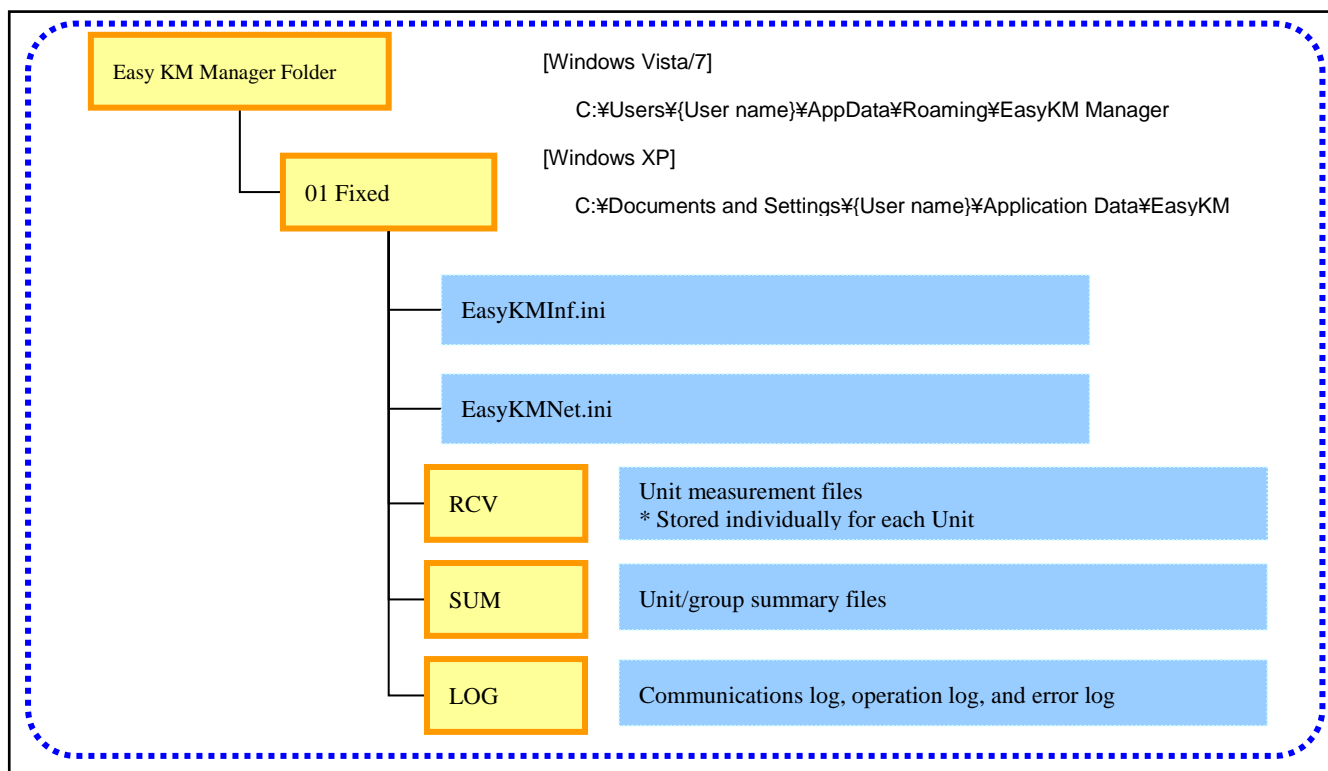
Figure 9: Configuration of PC Installed with EasyKM-Manager

7.1. Data Backup

Back up the folders including setting information and periodic measurements data by copying them in storage outside the PC.

If this is your first backup or you have changed the environmental settings after the previous backup, follow the procedure in "Backup When Environmental Settings Have Changed", if not, refer to "Backup When Environmental Settings Have Not Changed".

7.1.1. Backup When Environmental Settings Have Changed

Create a backup folder in storage outside the PC and copy the folders containing the setting information and periodic measurements data in the created folder, if you perform backup for the first time or the environmental settings have changed since the previous background.

> **Precautions for Correct Use**
>
> Periodic measurements must be stopped to start the procedures in this chapter. Measurement data cannot be obtained or saved while periodic measurements stop.

■Operation

1. Stop periodic measurements if they are in progress.
    (Refer to "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81).)

2. Exit EasyKM-Manager. (Refer to "6.2.4. Ending the Application" (P. 6-9).)

3. Create a new backup folder in storage outside the PC (e.g. a removable hard disk or file server).

4. Copy the following folder to the folder created in Step 3, using Windows Explorer.
    [Windows Vista/7]
      C:¥Users¥{User name}¥AppData¥Roaming¥EasyKM Manager
    [Windows XP]
      C:¥Documents and Settings¥{User name}¥Application Data¥EasyKM Manager

5. After Step 4, start EasyKM-Manager for periodic measurements if required.
    (Refer to "6.2.1. Starting the Application" (P. 6-5) and "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81).)

    This concludes the backup procedure when the environmental settings have changed since the previous backup.

7.1.2.　Backup When Environmental Settings Have Not Changed

If the environmental settings have not changed since the last backup, periodic measurements data is added to the same backup file by overwriting it with the folder in the PC.

> **Precautions for Correct Use**
>
> Periodic measurements must be stopped to start the procedures in this chapter. Measurement data cannot be obtained or saved while periodic measurements stop.

■Operation

1. Stop periodic measurements if they are in progress.
   (Refer to "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81).)

2. Exit EasyKM-Manager. (Refer to "6.2.4. Ending the Application" (P. 6-9).)

3. Using Windows Explorer, overwrite the data previously backed up in the storage outside the PC (e.g. a removable hard disk or file server) with the following folder in the PC. When the overwrite confirmation window appears, select "Overwrite copy".

   [Windows Vista/7]
   　C:¥Users¥{User name}¥AppData¥Roaming¥EasyKM Manager
   　Note: Select [Do this for the next 'X' conflicts] and [Copy and Replace] in the [File copy] window.
   　　　　('X' stands for the number of files, which varies depending on the backup period.)

   [Windows XP]
   　C:¥Documents and Settings¥{User name}¥Application Data¥EasyKM Manager
   　Note: Select [Yes to All] in the [Confirm Folder Replace] window.

4. After Step 3, start EasyKM-Manager for periodic measurements if required.
   (Refer to "6.2.1. Starting the Application" (P. 6-5) and "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81).)

   This concludes the backup procedure when the environmental settings have not changed since the previous backup.

7.2. Restoration

Restore the data (during the backup period) by copying the backup data to the EasyKM-Manager setting information and periodic measurements folder in the event of the PC failure or accidental data deletion.

> **Precautions for Correct Use**
>
> Periodic measurements must be stopped to start the procedures in this chapter. Measurement data cannot be obtained or saved while periodic measurements stop.

■Operation

1. Install EasyKM-Manager in the PC if it is not installed. (Refer to "5.1. Installation" (P. 5-1).)

2. Install the K3SC-10 driver when you use the K3SC-10 (RS-232C/RS-485 adapter) for RS-232C connection for the first time. Refer to the K3SC-10 manual for details.

3. Stop periodic measurements if they are in progress.
    (Refer to "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81).)

4. Exit EasyKM-Manager. (Refer to "6.2.4. Ending the Application" (P. 6-9).)

5. Delete the following folder using Windows Explorer.
    [Windows Vista/7]
    C:¥Users¥{User name}¥AppData¥Roaming¥EasyKM Manager
    [Windows XP]
    C:¥Documents and Settings¥{User name}¥Application Data¥EasyKM Manager

6. Copy the entire "EasyKM Manager" folder including the latest backup data in the following folder. The data up to the last backup is restored.
    [Windows Vista/7]
    C:¥Users¥{User name}¥AppData¥Roaming¥
    [Windows XP]
    C:¥Documents and Settings¥{User name}¥Application Data¥

7. Start EasyKM-Manager, and change necessary settings according to the PC environment (communication port, PC IP address, file output destination). Make the settings with the LAN cable connected to the PC for Ethernet connection, or the USB cable, for RS-232C connection.
(Refer to "6.2.1. Starting the Application" (P. 6-5) and "6.3.1.2. Environmental Setting - [Communication Setting] Tab Page" (P. 6-20).)

8. Test communications with the connected Units to ensure that communications with all the Units are successful.
(Refer to "6.2.1. Starting the Application" (P. 6-5) and "6.3.1.7. Environmental Setting - [Communication Test] Tab Page" (P. 6-42).)

9. Start EasyKM-Manager for periodic measurements if required.
(Refer to "6.3.4. Starting and Stopping Periodic Measurements" (P. 6-81).)

This concludes the restoration procedure.

7.3. Referring to Periodic Measurements Data with Retention Period Expired

You can refer to the periodic measurements data with its retention period expired by copying the backup data including the expired data to the EasyKM-Manager setting information and periodic measurements data folder.

Stopping periodic measurements in progress is not required, if you copy the backup data in another PC installed with EasyKM-Manager.

The following procedure uses another PC not engaged in periodic measurements prepared for data viewing.

Precautions for Correct Use

Periodic measurements must be stopped to start the procedures in this chapter. Measurement data cannot be obtained or saved while periodic measurements stop.

■Operation

1. Install EasyKM-Manager in the PC if it is not installed. (Refer to "5.1. Installation" (P. 5-1).)

2. Exit EasyKM-Manager if it is running. (Refer to "6.2.4. Ending the Application" (P. 6-9).)

3. Delete the following folder using Windows Explorer.
   [Windows Vista/7]
      C:¥Users¥{User name}¥AppData¥Roaming¥EasyKM Manager
   [Windows XP]
      C:¥Documents and Settings¥{User name}¥Application Data¥EasyKM Manager

4. Copy the backup data including the data to refer to in the following folder.
   [Windows Vista/7]
      C:¥Users¥{User name}¥AppData¥Roaming¥
   [Windows XP]
      C:¥Documents and Settings¥{User name}¥Application Data¥

5. Start EasyKM-Manager. (Refer to "6.2.1. Starting the Application" (P. 6-5).)

6. Refer to the data with the retention period expired.
   Do not start periodic measurements when the restored data is being viewed on the PC. If the date changes (to 00:00) during periodic measurements, EasyKM-Manager deletes the pre-expiration data disabling the graph display. (Refer to "1.4. Software Specifications" (P. 1-7).)

   This concludes the procedure to refer to periodic measurements data with the retention period expired.

8. Troubleshooting
8.1. Error Message List

This section describes the error messages displayed by EasyKM-Manager and countermeasures for them.

Table 21: Error Message List

Message	Countermeasure
General	
System error occurred.	An unexpected error occurred. ・Close an open file in the File Folder (Refer to "5.1.4. Folder and File Configuration" (P. 5-8)). ・Restart EasyKM-Manager. ・Restart the PC. Reinstall EasyKM-Manager if it does not function correctly even after the countermeasures above.
Port open error occurred.	You tried to open a network that cannot be used. ・If the network type is RS-232C, check that the communications port is enabled. ・If the network type is Ethernet, check that the IP address of the PC, the remote communications device IP address and the port number are valid.
Environmental Setting - [Communication Setting] Tab Page	
Please select the network type.	A valid network type is not specified. Select either "RS-232C" or "Ethernet".
Please select the protocol.	A valid protocol is not specified. Select either "CompoWay/F" or "Modbus".
Please select the communication interval.	A valid communications interval is not specified. Specify any of "1 minute", "5 minutes", and "10 minutes".
[RS232C] Please select the port.	A valid port is not specified. Specify a communications port that can be used for communications with Units.
[RS232C] Please select the baud rate.	A valid baud rate is not specified. Specify a value within the range of "1,200 bps" to "38,400 bps".
[RS232C] Please select the data bit length.	A valid data bit length is not specified. Select either "7 bits" or "8 bits".
[RS232C] Please select the stop bit length.	A valid stop bit length is not specified. Select either "1 bit" or "2 bits".
[RS232C] Please select the vertical parity.	A valid vertical parity is not specified. Select any of "None", "Even", and "Odd".
[Ethernet: PC side] Please select IP address.	A valid IP address is not specified for the PC. Specify an IP address that can be used for your PC.
[Ethernet: Communication partner side] There is an error in the input of No. XX: XXXX.	An invalid number is used for any of remote communications device IP addresses (01 to 20) or the port number. Enter the correct IP address or port number.

[RS232C] Please select the vertical parity.	A valid vertical parity is not specified. Select any of "None", "Even", and "Odd".
[Ethernet: PC side] Please select IP address.	A valid IP address is not specified for the PC. Specify an IP address that can be used for your PC.
[Ethernet: Communication partner side] There is an error in the input of No. XX: XXXX.	An invalid number is used for any of remote communications device IP addresses (01 to 20) or the port number. Enter the correct IP address or port number.
[Ethernet: Communication partner side] Input more than one case is necessary.	There is no communications partner (01 to 20) even though the network type is set to "Ethernet". Specify one or more remote communications devices.
[Ethernet: Communication partner side] There is a section with no parameter in Unit No. XX.	Any of the remote communications device Ether Unit name, IP address, or port number is not input. To specify a remote communications device, specify the Ether Unit name, IP address, and port number.
[Ethernet: Communication partner side] No. XX: The number of input characters of location names of unit Name is 20 characters or less.	The maximum number of characters that can be entered as the name of the remote Ether Unit was exceeded. The maximum number of input characters for the Ether Unit name is 20 characters.
[Ethernet: Communication partner side] No. XX: Duplicate IP address port number information of No. XX.	The same remote communications device cannot be specified in multiple locations. Check the input information and correct or delete any duplicate Ether Unit names, IP addresses, or port numbers.
Because the unsupported device has been selected, protocol (XXXX) cannot be set.	A Unit not compatible with the specified protocol is registered in the Unit information. Check the compatibility of the protocol.
Environmental Setting - [Unit] Tab Page	
Please specify the range.	Enter the Unit range for data in the batch setting field.
Incorrect entries in the range of the unit. Please input after referring the hyphen specification "1-5" and/or the comma specification "1,5,10."	Enter the Unit range in the batch setting field with ", " or "-", and numbers.
Location name of unit No. XX is not entered.	Enter the location name of the Unit.
Device type of unit No. XX is not selected.	Select the Unit device model.
Please enter the location name and the device type of unit No. XX.	Enter the location name and the device model of the Unit.
The number of input characters of location names of unit No. XX is 20 characters or less.	The maximum number of characters that can be entered as the location name for the Unit was exceeded. The maximum number of input characters for the Unit location name is 20 characters.
The device specified for unit No. XX doesn't correspond to present protocol (XXXX).	A Unit not compatible with the specified protocol is entered in the Unit information. Check the compatibility of the protocol.
Environmental Setting - [Measurement Points Setting] Tab Page	
Unit No. XX: Name is not entered for measurement point XX.	Enter the name for the measurement point.
Unit No. XX: Measurement point XX: The measurement point name must be entered within 20 characters.	The length of the measurement point name exceeds the limit. Name it within the specified number of characters.

Environmental Setting - [Group] Tab Page	
Please specify the range.	Enter the Unit range for data in the batch setting field.
Incorrect entries in the range of the unit. Please input after referring the hyphen specification "1-5" and/or the comma specification "1,5,10."	Enter the Unit range in the batch setting field with ", " or "-", and numbers.
[Grouping] Please enter the group name of group No. XX set to unit No. XX.	Enter the name of the group.
[Group Name Setting] No. XX: The number of input characters of location names of group Name is 20 characters or less.	The maximum number of characters that can be entered as the group name was exceeded. The maximum number of input characters for the group name is 20 characters.
Environmental Settings - [File Output] Tab Page	
The file output folder is not specified.	Enter the file output destination folder.
The file output folder does not exist.	The file output destination folder does not exist. Change the file output destination.
The specified file output folder cannot be set.	A folder that cannot be set as the file output destination was entered. Change the file output destination.
Environmental Setting - [Communication Test] Tab Page	
It is not possible to move to the unit tab during the communication test.	Wait until the communications test is completed.
It is not possible to move during the communications test.	Wait until the communications test is completed.
It is not possible to execute during the communication test.	Wait until the communications test is completed.
Unit Setting, All Tab Pages	
Please select unit No.	Select the unit number.
Please select XXXX.	Specify the corresponding item.
XXXX is illegal.	Change the specified item within the possible input range.
All unit No.1-5 have not been entered.	Select the unit numbers.
The same unit No. has been selected.	The same unit number was selected. Change the unit number selections.
Please select group No.	Select the group number.
Please enter XXXX.	Enter the specified item.
Because it was on hardware active mode, failed to write.	Change the target device to Software-enabled Mode.
Set model XXXX and connected model are different. Connected model: XXXX	The connection type differs from the set type. Correct the model settings.
The form of the unit has not been corresponding. Unit No. XX	The connection type differs from the set type. Correct the model settings.
Failed in the acquisition of model	Perform a communications test to make sure that

information.	communications function correctly.
Hard effective mode is set. Unit No. XX	Change the target Unit to Software-enabled Mode.
The same unit No. has been selected.	The same unit number was selected. Change the unit number selections.
Please select group No.	Select the group number.
Please enter XXXX.	Enter the specified item.
Because it was on hardware active mode, failed to write.	Change the target device to Software-enabled Mode.
Set model XXXX and connected model are different. Connected model: XXXX	The connection type differs from the set type. Correct the model settings.
The form of the unit has not been corresponding. Unit No. XX	The connection type differs from the set type. Correct the model settings.
Failed in the acquisition of model information.	Perform a communications test to make sure that communications function correctly.
Hard effective mode is set. Unit No. XX	Change the target Unit to Software-enabled Mode.
The form of the unit has not been corresponding. Unit No. XX	The connection type differs from the set type. Correct the model settings.
Failed in the acquisition of model information.	Perform a communications test to make sure that communications function correctly.
Hard effective mode is set. Unit No. XX	Change the target Unit to Software-enabled Mode.
Failed in the check on the priority type.	Check to see if the model supports the priority type.
It failed in writing Unit information. Unit No. XX	There is a device that failed in writing the parameters.
Due to "other error" it has been not possible to write. Unit No. XX	Perform a communications test to make sure that communications function correctly.
The specified measurement file is unit No. which does not support 3-STATE function or the unit No. is not for the measurement. (Unit No. XX)	Perform a communications test to make sure that communications function correctly.
Because the reading unit and the version were different, the following unit wrote only a part of parameter. Unit No. XX	Parameters were written to a version-2 Unit with a KM50-C or KM50-E version-1 parameter configuration. Make sure that there is no need to use the version-2 parameter configuration.
Please select XXXX.	Specify the corresponding item.
The value of XXXX have to be equal to XXXX.	Change the specified item so that it has the same value as the specified parameter.
The value of XXXX have to be different from XXXX.	Change the specified item so that it has a different value from the specified parameter.
The value of XXXX have to be equal to or less than XXXX.	Change the specified item so that it has a value that is the same as or less than the specified parameter.
The value of XXXX have to be less than XXXX.	Change the specified item so that it has a value that is less than the specified parameter.

The value of XXXX have to be equal to or greater than XXXX.	Change the specified item so that it has a value that is the same as or greater than the specified parameter.
The value of XXXX have to be greater than XXXX.	Change the specified item so that it has a value that is greater than the specified parameter.
The value of XXXX have to be equal to or less than XXXX.	Change the specified item so that it has a value that is the same as or less than the specified parameter.
The value of XXXX have to be less than XXXX.	Change the specified item so that it has a value that is less than the specified parameter.
The value of XXXX have to be equal to or greater than XXXX.	Change the specified item so that it has a value that is the same as or greater than the specified parameter.
The value of XXXX have to be greater than XXXX.	Change the specified item so that it has a value that is greater than the specified parameter.
Unit Setting - [3-STATE Threshold Setting] Tab Page	
Please specify the CSV output destination.	Specify the CSV output destination.
No folder has been found for the CSV file.	The folder for CSV output does not exist. Change the output destination.
The folder cannot be created at the specification destination for the CSV file.	A folder which cannot be output was specified. Change the output destination.
The file name has not been specified for the CSV file.	Specify the file name of the CSV output destination.
Please use CSV as the extension.	Change the file extension of the CSV output destination to CSV.
The measurement target Unit is not type XXXX.	The connected model cannot be measured. Correct the model settings.
Failed in the acquisition of the application circuit.	Perform a communications test to make sure that communications function correctly.
Please specify reading CSV file.	Please specify the CSV file.
Reading CSV file does not exist.	The CSV file does not exist. Change the file name.
The file name of reading CSV is not specified.	Specify the file name of the CSV file.
Please use CSV as the extension.	Specify a file with an extension of CSV.
Because the specified file is not a measurement file, it is not possible to read.	A file that is not a measurement file was specified. Specify a CSV file that was output during measurements.
The communication time-out.	Perform a communications test to make sure that communications function correctly.
Failed in the parameter reading.	Perform a communications test to make sure that communications function correctly.
Please enter XXXX.	Enter the specified item.
The HIGH threshold cannot be lower than the LOW threshold.	Change the HIGH threshold so that it is higher than the LOW threshold.
The LOW threshold cannot be higher than the HIGH threshold.	Change the LOW threshold so that it is lower than the HIGH threshold.
During the measurement, it is not possible to move.	Wait until the measurement is completed.
During the measurement, it is not possible to execute.	Wait until the measurement is completed.

Failed in reading the attribute from the device.	Perform a communications test to make sure that communications function correctly.
Failed in the parameter writing.	Perform a communications test to make sure that communications function correctly.
Because it cannot be written on the specified file, it is not possible to execute.	Check to see if the save destination file is being used by another application.
During the measurement, it is not possible to move.	Wait until the measurement is completed.
During the measurement, it is not possible to execute.	Wait until the measurement is completed.
Failed in reading the attribute from the device.	Perform a communications test to make sure that communications function correctly.
Failed in the parameter writing.	Perform a communications test to make sure that communications function correctly.
Because it cannot be written on the specified file, it is not possible to execute.	Check to see if the save destination file is being used by another application.
Unit Setting - [Time Setting] Tab Page	
Failed to migrate configuration mode.	Perform a communications test to make sure that communications function correctly.
Failed to write time.	Perform a communications test to make sure that communications function correctly.
Failed to migrate measurement mode.	Perform a communications test to make sure that communications function correctly.
I cannot perform other operation for setting processing average at the time.	The display cannot be moved to another tab page while time setting is being processed. To move to another tab page, stop the time setting.
Graph Setting - [Active Power Value] Tab Page	
Please input the numerical value between 0.00 and 9999999.99 to "target value" of unit No. XX.	Enter a target value within the range 0.00 to 999,999.99.
Please input the numerical value between 0.00 and 9999999.99 for the "target value" of circuit No. XX, Unit No. XX.	Enter a target value within the range 0.00 to 999,999.99.
Graph Setting - [Integral Power Consumption (By Unit)] Tab Page	
Please input the numerical value between 0.0 and 9999999.9 to "target value" of unit No. XX.	Enter a target value within the range 0.0 to 999,999.9.
Please input the numerical value between 0.0 and 9999999.9 to the "target value" of circuit No. XX, Unit No. XX.	Enter a target value within the range 0.0 to 999,999.9.
Graph Setting - [Integral Power Consumption (By Group)] Tab Page	
Please input the numerical value between 0.0 and 999999.9 to "target value" of group No. XX.	Enter a target value within the range 0.0 to 999,999.9.

Graph Setting - [Conversion Value Name Setting] Tab Page	
Unit No. XX: The conversion value name must be input within 20 characters.	The length of the conversion value name exceeds the limit. Name it within the specified number of characters.
Unit No. XX: Circuit/Event No. XX: The conversion value name must be input within 20 characters.	The length of the conversion value name exceeds the limit. Name it within the specified number of characters.
Monitoring - [Historical Trend] Tab Page	
The corresponding data does not exist.	There is no data to display a graph. Change the graph display conditions.
No printable data can be found.	There is no data to display a graph. Change the graph display conditions.
Monitoring - [Earth Leakage Graph] Tab Page	
Please enter the earth leakage criteria in integer within the range of 0 to 2000 mA.	A wrong numeric value is specified to the earth leakage criteria. Specify it in integer, within the range.
Integral Power Consumption Graphs - [Graph List (Daily)] Tab Page	
Please select unit No.	Select the unit number.
Please select group No.	Select the group number.
The corresponding data does not exist.	There is no data to display a graph. Change the graph display conditions.
Integral Power Consumption Graphs - [Graph List (Monthly)] Tab Page	
Please select unit No.	Select the unit number.
Please select group No.	Select the group number.
The corresponding data does not exist.	There is no data to display a graph. Change the graph display conditions.
Integral Power Consumption Graphs - [Individual Graph] Tab Page	
The corresponding data does not exist.	There is no data to display a graph. Change the graph display conditions.
High-speed Logging Tab Page	
Please select unit No.	Select the unit number.
Please specify the output destination for the CSV file.	Specify the CSV output destination.
No folder has been found for the CSV file.	The folder for CSV output does not exist. Change the output destination.
It cannot be output to the specified directory.	A folder which cannot be output was specified. Change the output destination.
The same unit No. has been selected.	The same unit number was selected. Change the unit number selections.
Failed in the acquisition of the application circuit.	Perform a communications test to make sure that communications function correctly.
The measurement has been stopped due to the communications error.	Perform a communications test to make sure that communications function correctly.
During the measurement, it is not possible to execute.	Wait until the measurement is completed.

Data Extract - [Extracting KM50/100 Data Manually] Tab Page	
Failed to retrieve the time information. Processing is interrupted.	Perform a communications test to make sure that communications function correctly.
Failed to write file.	Check to see if the save destination file is being used by another application.
Failed to extract the data.	Perform a communications test to make sure that communications function correctly.
KM100 Power Monitor Dialog Box	
The setting for the data extraction period is illegal.	Set the start period to be earlier than or equal to the end period.
The data storing period is from YYYY/MM/DD to YYYY/MM/DD. Please select within the period.	Set the start and end periods within the data save period.
Failed to extract the data.	Perform a communications test to make sure that communications function correctly.
Failed to extract the log data.	Perform a communications test to make sure that communications function correctly.
Data Extract - [Unit Memory Graph Display] Tab Page	
Please specify the file.	Specify the Unit memory extraction data file.
The extension of the main body memory extraction data file please appoint .CSV.	Specify the Unit memory extraction data file with an extension of CSV.
The file of main body memory extraction data does not exist.	The specified Unit memory extraction data file does not exist.
The specified file format is different and cannot be read.	The specified Unit memory extraction data file and file type do not match or the file is not a Unit memory extraction data file.
Failed to read file.	Close the file if it is open from Excel or other software.
Setting Screen Lock	
Enter the password within the range of 4 to 10 characters. The following symbols cannot be used: @!"#$%&'()*+,-./:;<=>?[¥]^_{{|}}~	Specify the password within the range of 4 to 10 characters. The password includes prohibited characters shown below: @!"#$%&'()*+,-./:;<=>?[¥]^_{{|}}~
The password and password confirmation entries do not match.	A wrong password is entered. Enter the correct password twice.
The registered password and old password entries do not match.	The entered old password does not match with the registered password. Enter the correct password.
The same password cannot be specified for new and old passwords.	The same password as the already registered password cannot be entered. Enter a different password.
A wrong password is entered.	The entered password does not match with the registered password. Enter the correct password.

8.2. Integral Power Consumption Graphs and Missing Measurements

EasyKM-Manager displays hourly integral power consumptions (kWh) on integral power consumption graphs, using data obtained with periodic measurements. Values within the target value are displayed in blue, and sections exceeding the target value, in red bars. However, bars may be displayed in gray depending on the periodic measurements condition.

Cases in which bars are displayed in gray are shown below:
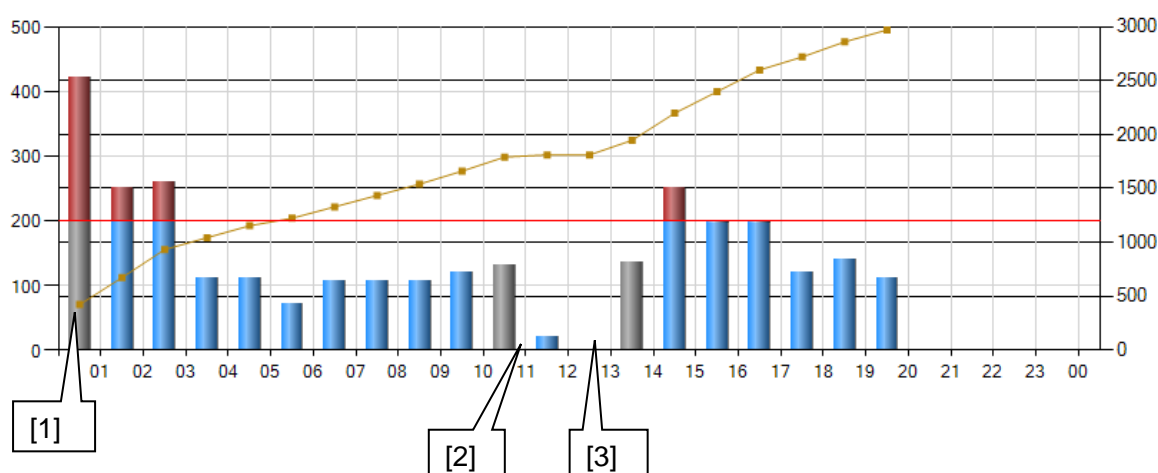
Figure 10: Integral Power Consumption Graph Display Example (Time Interval: 1 Hour)

Table 22: Gray Display Example

Case Example	
0:39:30	The Measurement Start button is pressed →Measurement starts at 0:40, and the remaining time until 00 minutes of the next hour is less than 1 hour. ([1])
10:50:00	Data loss during periodic measurements (Continuous loss afterward) →Only measurement data from 10:00 to 10:49 is available, which does not make a complete hourly measurement. ([2])
13:05:00	Periodic measurements are resumed →No measurement data in Hour 12 for graph display. ([3])

1. Effect of Periodic Measurement Start Timing

EasyKM-Manager calculates the values for a 30-minute graph by integrating the integral power consumptions at each periodic measurements interval. For a hourly and daily graphs, it obtains the values by integrating the integral power consumptions at every 30 minutes and every hour respectively.

If periodic measurements start in the middle of each time interval, the data is displayed in gray.

For example, if periodic measurements start at 0:40, only the data for 20 minutes can be obtained. Therefore, the bar for Hour 0 is displayed in gray. (See [1])

In the same way, the untimely start of periodic measurements at the 30 minute and 1 day interval result in gray bars.

2. Data Loss During Periodic Measurements

Data loss may happen during periodic measurements due to e.g. communications errors. If this happens, sufficient data cannot be obtained for the integral power consumptions at the30 minutes, 1 hour or 1 day interval. The corresponding bars are displayed in gray.

For example, if data loss occurs at 10:50, the bar for the 1 hour interval (Hour 10) is displayed in gray. (See [2])

In the same way, data loss during the 30 minute and 1 day interval result in gray bars.

If data loss continues for more than the time interval, the bars are not displayed. (See [3])

Data loss may be caused by the factors shown below: If data loss happens frequently, consider or upgrade (if necessary) the measurement interval, PC specifications, or network settings.

1) The periodic measurements of all Units do not finish within the measurement interval due to the system environment (e.g. the number of Units, PC specifications, network settings).

2) Communication failure due to the power failure or malfunction of Units.

8.3. Character Code Conversion

Files output by EasyKM-Manager use UTF-8 encoding. Use a UTF-8 supporting application to view the files. Full-width characters are not displayed correctly (transformed in meaningless symbols) with a wrong application.

If you want to use an application not compatible with UTF-8 encoding, convert the files into ANSI format using the following procedure.

■Operation

1. Open the target file in Notepad.

   Note: If you use an application other than Notepad, make sure that the file is opened in read-only mode. If the file is opened in write mode, EasyKM-Manager no longer can write data to the file, which may cause a system error.

2. Select [File] → [Save As] and specify the file name and folder. Then, specify "ANSI" for the character code and save the file.

   Precautions for Correct Use

   Do not overwrite the file. Make sure that you use a different name or save it in a separate folder.
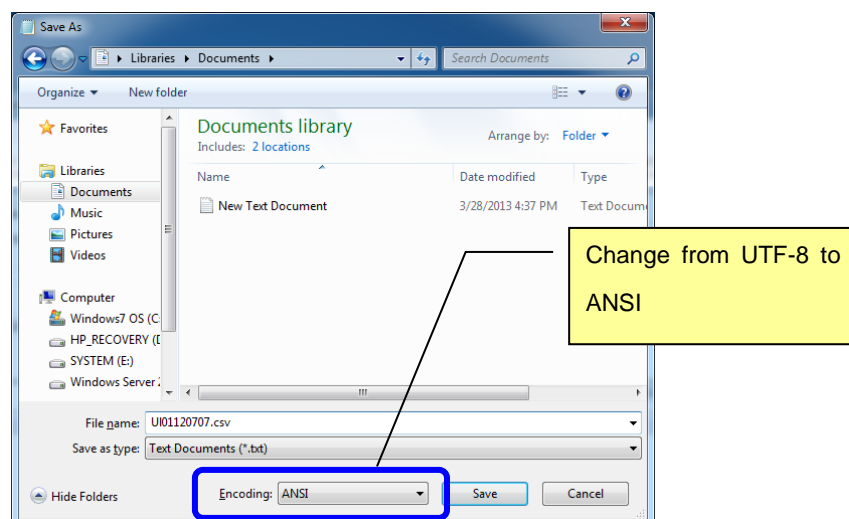
Figure 11: Character Code Conversion (UTF-8 to ANSI)

8.4. Locating Hidden File Folders

EasyKM-Manager internal files are usually hidden. Follow the procedure below to display them for e.g. uninstallation, backup or restoration.

■Operation

[If OS is Windows Vista/7]

1. Select [Organize]→[Folder and Search options] in Windows Explorer.
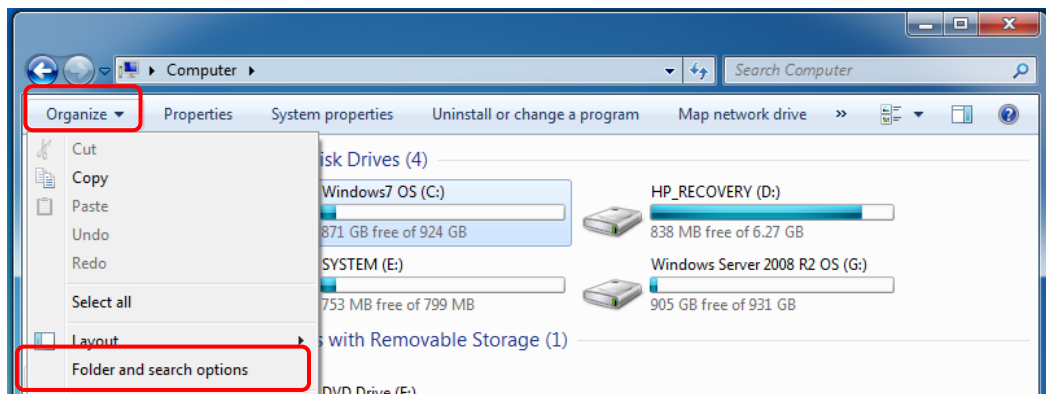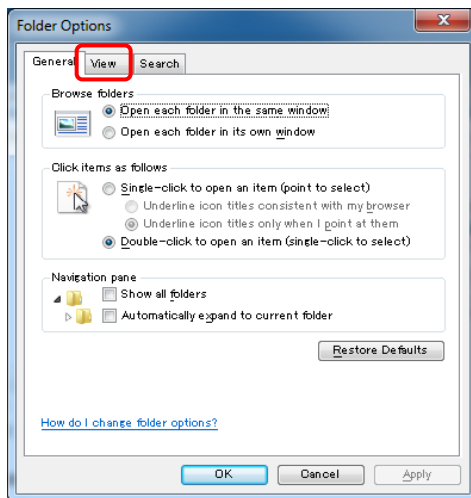
2. Select the [View] tab in "Folder Option".

3. Select "Show hidden files, folders, and drives" in [Hidden files and folders] in the "Advanced settings" item list.
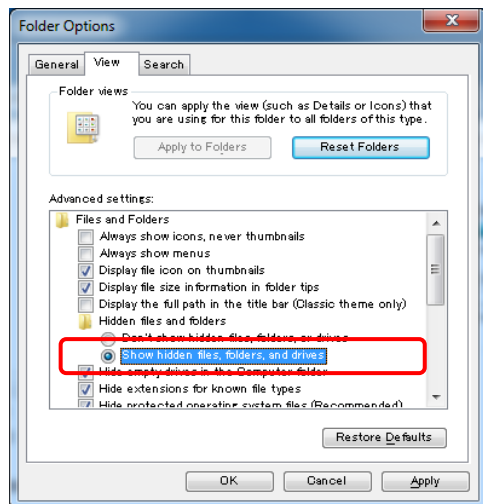
4. Click the [OK] button.

[If OS is Windows XP]

1. Select [Tools]→[Folder Options] in Windows Explorer.
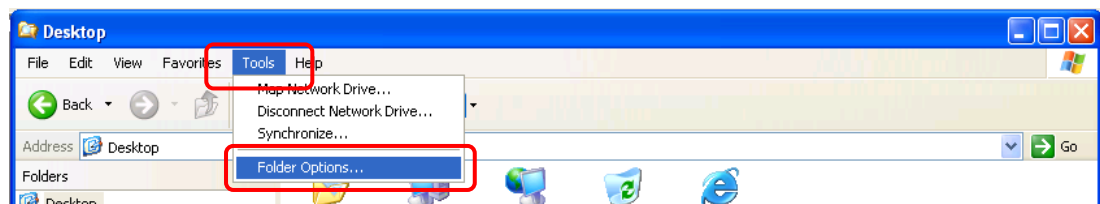
2. Select the [View] tab in "Folder Option".
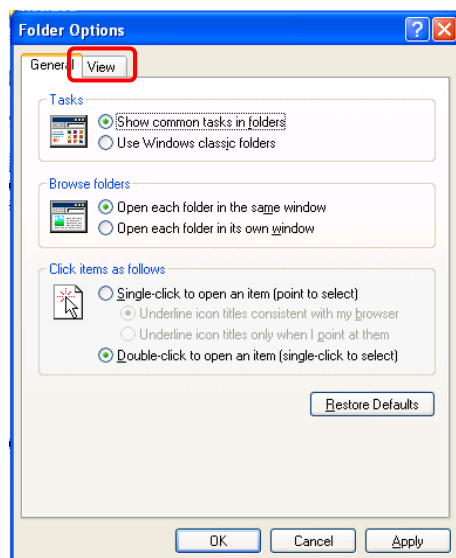
3. Select "Show hidden files and folders" in [Hidden files and folders] in the "Advanced" item list.
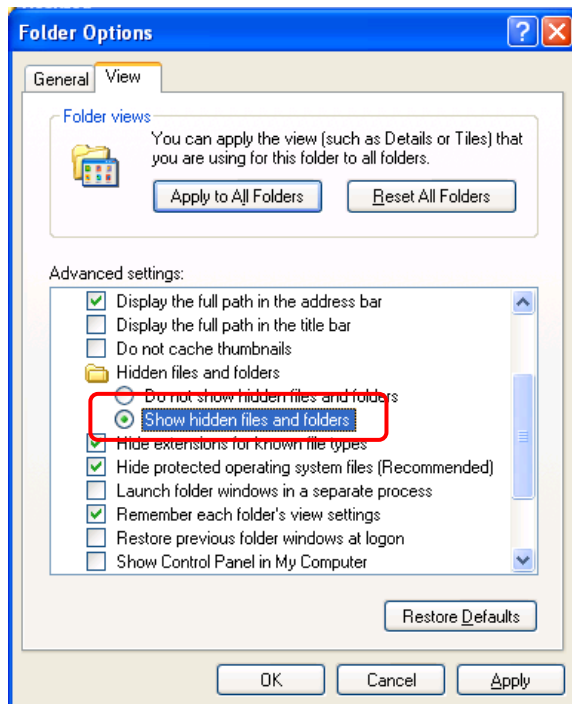
4. Click the [OK] button.

9. Appendix
9.1. KM1/KE1 Measurement Points

The KM1/KE1 differs from the KM100, KM20-B40 and KM50-C/E in the capability of multi-point measurement. EasyKM-Manager requires the specification of KM1/KE measurement points (Circuit No., Event No. and ZCT No.) for necessary settings and graph display. Make sure which measurement point each KM1/KE1 terminal corresponds to, by referring to the Circuit No.s, Event No.s and ZCT No.s specifications shown in the following sections, before starting EasyKM-Manager settings.

9.1.1. Circuit No.

The KM1-PMU1A and KE1-PGR1C provide up to three CT measurement points (circuits), while the KM1-PMU2A, up to four and the KE1-CTD8E, up to eight. The number of circuits and circuit numbers vary depending on the phase electrical system used for the measurement point.

(1) KM1-PMU1A (Power Measurement Unit)
    KE1-PGR1C (Power/Leak Monitoring Unit)

Table 23: Phase Electrical System and Measurement Points (KM1-PMU1A/KE1-PGR1C)

Measure-ment point	Used phase electrical system		
	1-phase 2-wire	1-phase 3-wire 3-phase 3-wire	3-phase 4-wire
Circuit 1	CT input 1	CT input 1,3	CT input 1,2,3
Circuit 2	CT input 2		
Circuit 3	CT input 3		

(2) KM1-PMU2A (Power 2-System Measurement Unit)
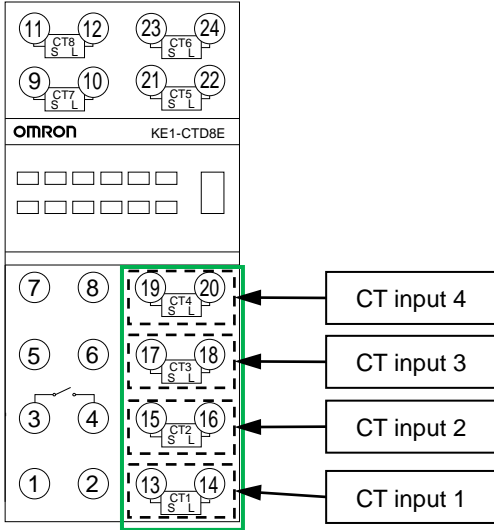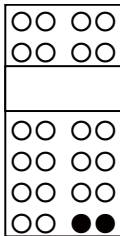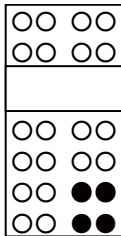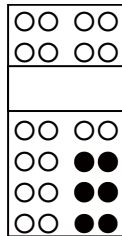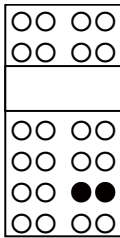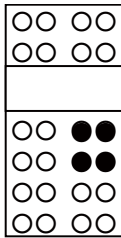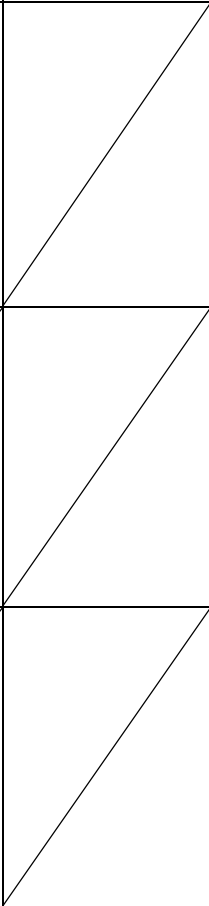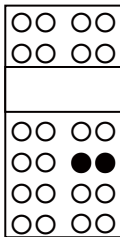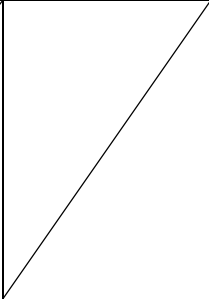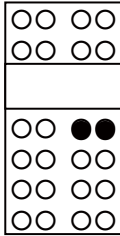
Table 24: Phase Electrical System and Measurement Points (KM1-PMU2A)

System	Measurement point	Used phase electrical system	
		1-phase 2-wire	1-phase 3-wire 3-phase 3-wire
System 1	Circuit 1	CT input 1	CT input 1, 2
	Circuit 2	CT input 2	
System 2	Circuit 3	CT input 3	CT input 3, 4
	Circuit 4	CT input 4	

(3) KE1-CTD8E (CT Expansion Unit)

■Measurement Block 1

Table 25: Phase Electrical System and Measurement Points (KE1-CTD8E Measurement Block 1)

Measurement block 1

Measure-ment point	Measurement block 1 Used phase electrical system		
	1-phase 2-wire	1-phase 3-wire 3-phase 3-wire	3-phase 4-wire
Circuit 1	CT input 1	CT input 1, 2	CT input 1, 3, 2
Circuit 2	CT input 2	CT input 3, 4	
Circuit 3	CT input 3		
Circuit 4	CT input 4		

■Measurement Block 2

Table 26: Phase Electrical System and Measurement Points (KE1-CTD8E Measurement Block 2)
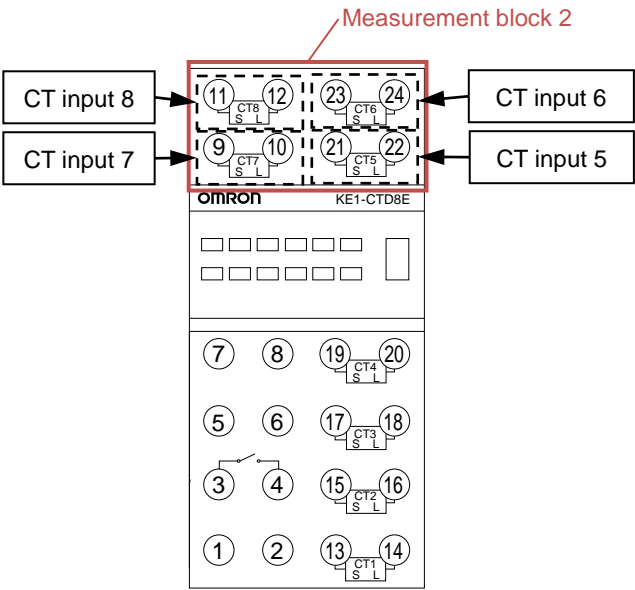
Measure-ment point	Measurement block 2 Used phase electrical system		
	1-phase 2-wire	1-phase 3-wire 3-phase 3-wire	3-phase 4-wire
Circuit 5	CT input 5	CT input 5,6	CT input 5,6,7
Circuit 6	CT input 6	CT input 7,8	
Circuit 7	CT input 7		
Circuit 8	CT input 8		

9.1.2. Event No.

The KM1-EMU8A (Pulse/Temperature Input Unit) provides seven event inputs. Each event is assigned with a fixed event No.

■KM1-EMU8A (Pulse/Temperature Input Unit)
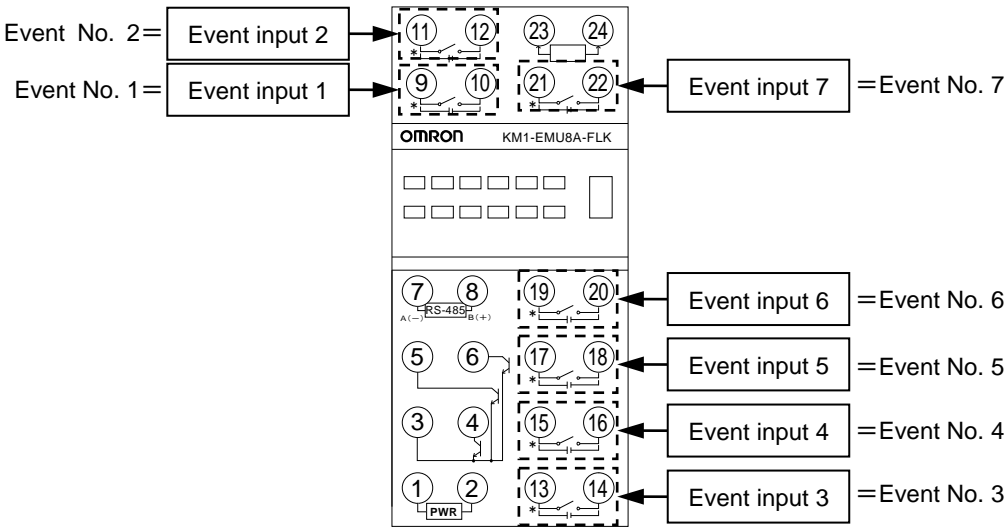
9.1.3. ZCT No.

The KE1-PGR1C provides one ZCT measurement point, while the KE1-ZCT8E, eight points. Each ZCT input is assigned with a fixed ZCT No.

■KE1-PGR1C (Power/Leak Monitoring Unit)   ■KE1-ZCT8E (ZCT Expansion Unit)
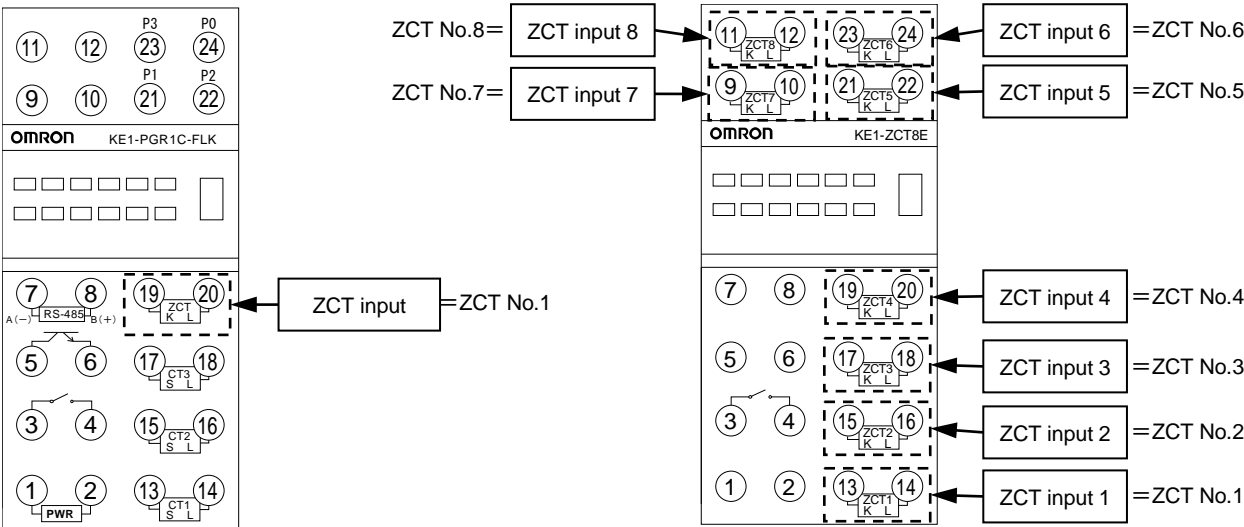
9.2.   Periodic Measurements

EasyKM-Manager provides periodic measurements only when it is started and ready, and the measurement start button is clicked. It does not start periodic measurements before you click the button. This section describes the measurement timing, order of execution, and time stamps, as well as how to stop the measurement process.

9.2.1.   Periodic Measurement Timing

When you start periodic measurements, EasyKM-Manager collects measurement data (effective values) at the time interval (1 minute, 5 minutes, or 10 minutes) specified in the [Environmental setting] - [Communication setting] tab page. The timing for collecting data is shown in the following figure.

Adjust the communications interval according to the number of the Units and the communications environment.

Measurement interval	Measurement timing
Every 10 min.	0/10/20/30/40/50 min. of every hour
Every 5 min.	0/5/10/15/···/50/55 min. of every hour
Every 1 min.	Every minute
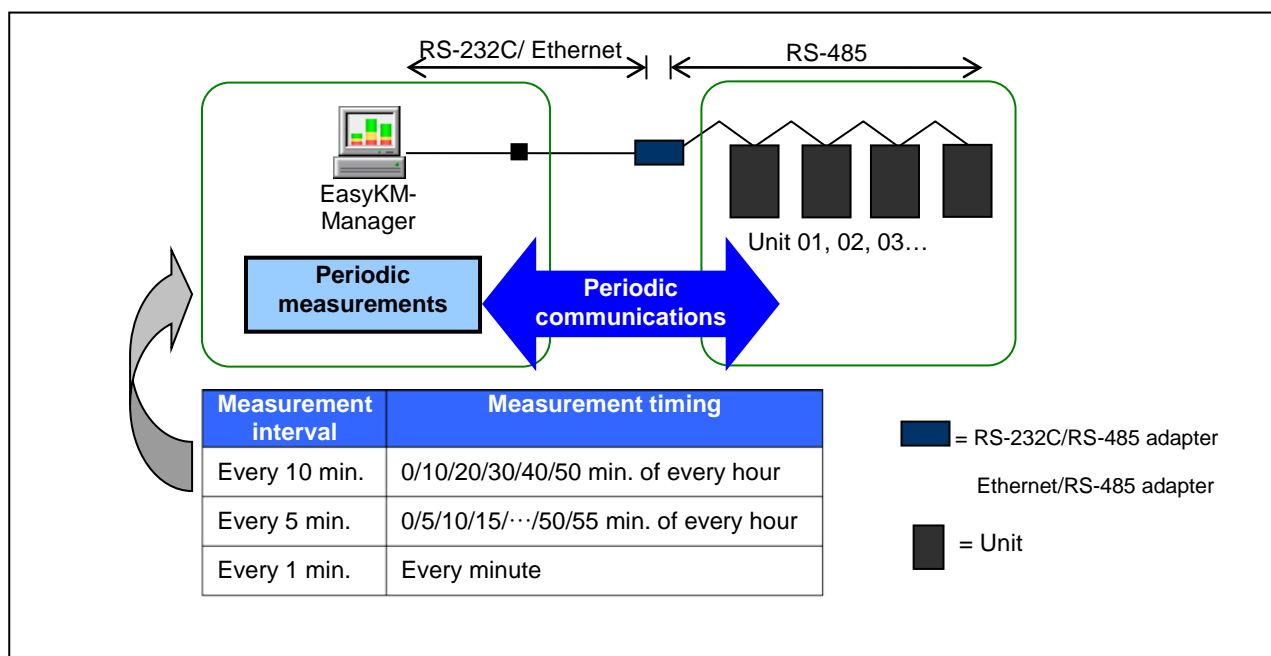
Figure 12: Periodic Measurement Timing

9.2.2.   Measurement Sequence and Measurement Date

EasyKM-Manager performs measurements for one Unit at a time in order of Unit No.s, starting from 01. However, the Units measured periodically are only those selected in the [Measure] check boxes in the [Environmental setting] - [Unit] tab page. Measurements are not performed for those not selected in the check boxes. With KM1/KE1 Units, the measurement points selected in the [Use Yes/No] check boxes in the [Environmental setting] - [Measurement points setting] tab are the targets for periodic measurements.

The communications systems are connected in parallel in a configuration using multiple Ethernet converters. In this case, EasyKM-Manager collects measurement data from the Units in the ascending order of Unit No.s. Simultaneous communications with multiple Units are not provided.
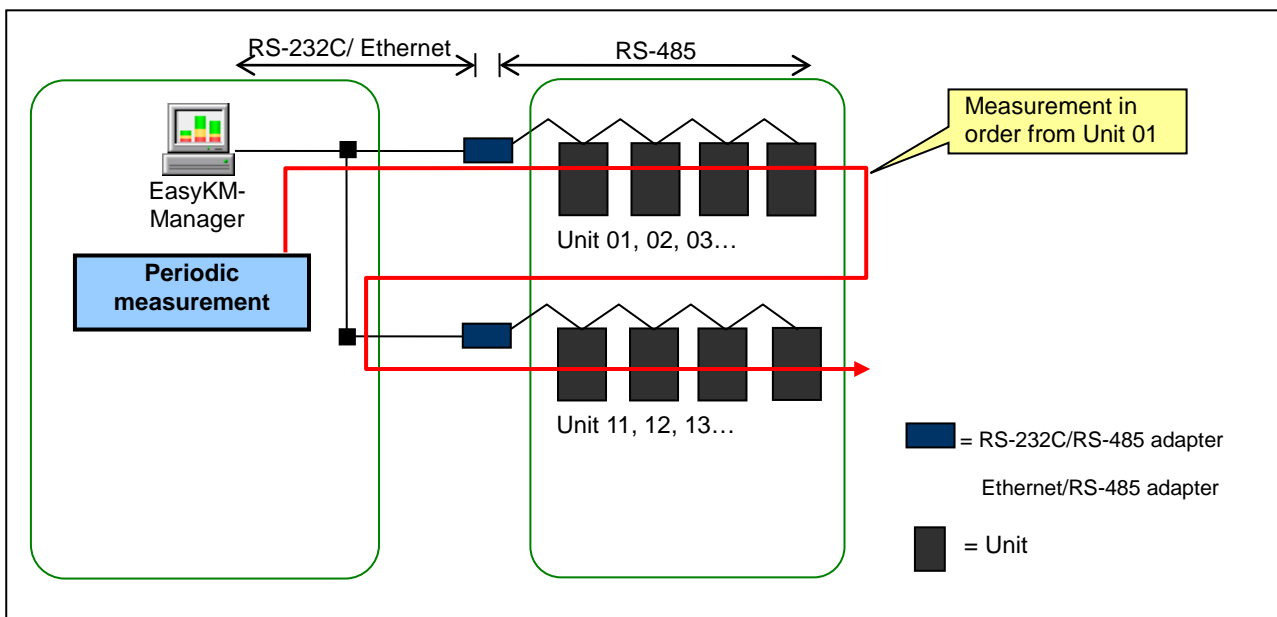
Figure 13: Measurement Sequence

The "second" digits are always shown in "00" in the measurement time records.

Table 27: Example for Periodic Measurement Data for 2010/07/01 0:01

Unit No.	Date	Time of measurement (Example)	Measurement time record
1	2010/07/01	0:01:05	2010/07/01 0:01:00
2	2010/07/01	0:01:06	2010/07/01 0:01:00
3	2010/07/01	0:01:07	2010/07/01 0:01:00
4	2010/07/01	0:01:08	2010/07/01 0:01:00
5	2010/07/01	0:01:09	2010/07/01 0:01:00

9.2.3. Stopping Measurements

EasyKM-Manager stops periodic measurements if you click the measurement stop button. If EasyKM-Manager is still in the progress of communications with some Units, it stops measurement after the measurement of all the target Units is completed.
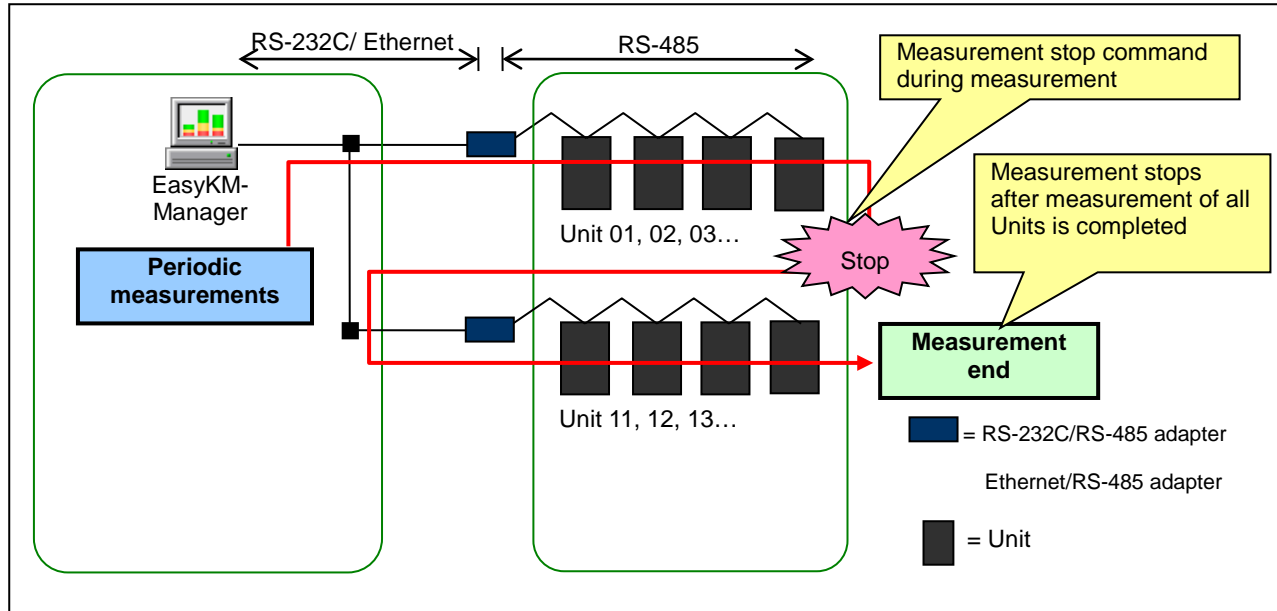
Figure 14: Stopping Measurement

9.3.   Data Output in CSV Files

Precautions for Correct Use

EasyKM-Manager uses the UTF-8 character encoding for the output files. Use an application supporting UTF-8 to view the files. To view the files in Microsoft Excel, use Microsoft Excel 2003 SP3 or higher.

The measurement data items generated by file output (periodic measurements), high-speed logging, and manual acquisition are shown below:

Table 28: CSV File Name List

Function		File name		
File output (Measurement data)	KM100 KM20-B40 KM50-C-V1 KM50-C-V1 KM50-E-V1 KM50-C-V2 KM50-E-V2	UI99YYMMDD.csv 99: Unit No. YYMMDD: Measurement date		
	KM1-PMU1A KM1-PMU2A KM1-EMU8A KE1-CTD8E KE1-PGR1C KE1-ZCT8E	UI99X-YYMMDD.csv 99: Unit No. X: Circuit No. YYMMDD: Measurement date		
	Data is output to the folders created for every Unit in the folder specified for file output. The data is output at the communications interval.			
Individual graphs CSV File output	Unit-specific	Display time interval [1 hour]		DMU99YYMMDD.csv
		Display time interval [30 minutes]		DMU99YYMMDD.csv
		Display time interval [Communications interval: 1 min./5 min./10 min.]		DRU99YYMMDD.csv
		Graph type [Monthly]		MU99YYMM.csv
	Group-specific	Display time interval [1 hour]		DHG99YYMMDD.csv
		Display time interval [30 minutes]		DMG99YYMMDD.csv
		Display time interval [Communications interval: 1 min./5 min./10 min.]		DRG99YYMMDD.csv
		Graph type [Monthly]		MG99YYMM.csv
	99: Unit No. or Group No. YYMMDD: Specified date for graph display YYMM: Specified month for graph display			
High-speed logging	KM100 KM20-B40 KM50-C-V1 KM50-C-V1 KM50-E-V1 KM50-C-V2 KM50-E-V2	UL99YYMMDDHHMMSS.csv 99: Unit No. YYMMDD: Measurement date HHMMSS: Measurement time		

Manual data extraction (Unit logging data)	KM100	KM100_99YYMMDD.csv
		
		    99: Unit No.
		    YYMMDD: System date	

	KM50-C-V1 KM50-E-V1 KM50-C-V2 KM50-E-V2	Data extracted every 5 minutes	KM50M_99YYMMDD.csv
		Data extracted every hour	KM50H_99YYMMDD.csv
		Data extracted every day	KM50D_99YYMMDD.csv
		Data extracted every month	KM50T_99YYMMDD.csv
		Maximum and minimum data	KM50Z_99YYMMDD.csv
		Alarm history data (*1)	KM50W_99YYMMDD.csv
		99: Unit No. YYMMDD: System date	

*1: The alarm history data can be output for the KM50-C-V2 and KM50-E-V2 only.

9.3.1. Data Output in Files (Periodic Measurements)

The following table shows the page reference list for periodic measurement data items collected from each model.

Table 29: Model-Specific Data Detail Reference List

No.	Model	Phase electrical system	Measurement point	Reference page
1	KM50-C1-FLK KM50-E1-FLK	—	—	9-12
2	KM100-T-FLK KM100-TM-FLK	—	—	9-14
3	KM20-B40-FLK	—	—	9-15
4	KM1-PUM1A-FLK KE1-PGR1C-FLK	1-phase 2-wire	Circuit 1	9-16
			Circuit 2	
			Circuit 3	
		1-phase 3-wire, 3-phase 3-wire, 3-phase 4-wire	Circuit 1	9-19
5	KE1-PGR1C-FLK	—	ZCT input	9-20
6	KM1-PUM2A-FLK	1-phase 2-wire	Circuit 1	9-21
			Circuit 2	
			Circuit 3	
			Circuit 4	
		1-phase 3-wire, 3-phase 3-wire	Circuit 1	9-25
			Circuit 3	
7	KE1-CTD8E	1-phase 2-wire	Circuit 1	9-27
			Circuit 2	
			Circuit 3	
			Circuit 4	
			Circuit 5	
			Circuit 6	
			Circuit 7	
			Circuit 8	
		1-phase 3-wire, 3-phase 3-wire	Circuit 1	9-35
			Circuit 2	
			Circuit 5	
			Circuit 6	
		3-phase 4-wire	Circuit 1	9-39
			Circuit 5	
8	KE1-EMU8A	—	Event input	9-41
9	KE1-ZCT8E	—	ZCT input	9-43

Table 30: Measurement Data for KM50-C1-FLK/KM50-E1-FLK

No.	CSV parameter	KM50				CompoWay/F		Modbus	Variable area parameter
		C-V1	E-V1	C-V2	E-V2	Type	Address	Address	
1	Date	O	O	O	O	---	---	---	Measurement date
2	Time	O	O	O	O	---	---	---	Measurement time
3	Voltage 1 (V)	O	O	O	O	C8	0000	0000	Instantaneous voltage 1 (V)
4	Voltage 2 (V)	O	O	O	O	C8	0001	0001	Instantaneous voltage 2 (V)
5	Voltage 3 (V)	O	O	O	O	C8	0002	0002	Instantaneous voltage 3 (V)
6	Current 1 (A)	O	O	O	O	C8	0003	0003	Instantaneous current 1 (A)
7	Current 2 (A)	O	O	O	O	C8	0004	0004	Instantaneous current 2 (A)
8	Current 3 (A)	O	O	O	O	C8	0005	0005	Instantaneous current 3 (A)
9	Power factor	O	O	O	O	C8	0006	0006	Instantaneous power factor
10	Frequency (Hz)	O	O	O*1	O*1	C8	0007	0007	Instantaneous frequency (Hz)
11	Active power (W)	O	O	O*1	O*1	C8	0008	0008	Instantaneous active power (W)
12	Active power (kW)	O	O	O	O	C8	0009	0009	Instantaneous active power (kW)
13	Reactive power (var)	O	O	O	O	C8	000A	000A	Instantaneous reactive power (var)
14	Reactive power (kvar)	O	O	O	O	C8	000B	000B	Instantaneous reactive power (kvar)
15	Total integral power consumption (Wh)	O	O	O*1	O*1	C8	001F	001F	Total integral power consumption (Wh)
16	Total integral power consumption (kWh)	O	O	O	O	C8	000C	000C	Total integral power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	---	---	---	---	---	---	---	None
18	CO$_2$ conversion value (kgCO$_2$)	O	O	O*1	O*1	C8	000D	000D	Calculated CO$_2$ (total integrated power consumption) (kgCO$_2$/kWh)
19	Sum of pulse input count for today (times)	O	O	O*1	O*1	C8	000E	000E	Sum of pulse input count for today (times)
20	Electric power consumption rate (kWh/times)	O	O	O*1	O*1	C8	000F	000F	Electric power consumption rate (kWh/times)
21	Pulse input ON time	O	O	O*1	O*1	C8	0010	0010	Pulse input ON time (h)
22	HIGH integral power consumption	---	O	---	O*1	C8	0013	0013	HIGH integral power consumption (kWh)
23	HIGH integral power consumption ratio	---	O	---	O*1	C8	0014	0014	HIGH integral power consumption ratio
24	HIGH integral time	---	O	---	O*1	C8	0015	0015	HIGH integral time
25	HIGH integral time ratio	---	O	---	O*1	C8	0016	0016	HIGH integral time ratio
26	MIDDLE integral power consumption	---	O	---	O*1	C8	0017	0017	MIDDLE integral power consumption (kWh)
27	MIDDLEintegral power consumption ratio	---	O	---	O*1	C8	0018	0018	MIDDLE integral power consumption ratio
28	MIDDLE integral time	---	O	---	O*1	C8	0019	0019	MIDDLE integral time
29	MIDDLE integral time ratio	---	O	---	O*1	C8	001A	001A	MIDDLE integral time ratio
30	LOW integral power consumption	---	O	---	O*1	C8	001B	001B	LOW integral power consumption (kWh)
31	LOW integral power consumption ratio	---	O	---	O*1	C8	001C	001C	LOW integral power consumption ratio
32	LOW integral time	---	O	---	O*1	C8	001D	001D	LOW integral time
33	LOW integral time ratio	---	O	---	O*1	C8	001E	001E	LOW integral time ratio
34	Status	O	O	O	O	C8	0011	0011	Status
35	Integral active power (GWh)	---	---	O*1	O*1	C8	0020	0020	Integral active power (GWh)
35	Integral active power (Wh)	---	---	O*1	O*1	C8	0021	0021	Integral active power (Wh)
36	Integral regenerated power (GWh)	---	---	O*1	O*1	C8	0022	0022	Integral regenerated power (GWh)
37	Integral regenerated power (Wh)	---	---	O*1	O*1	C8	0023	0023	Integral regenerated power (Wh)
38	Integral leading reactive power consumption (Gvarh)	---	---	O*1	O*1	C8	0024	0024	Integral leading reactive power consumption (Gvarh)
39	Integral leading reactive power consumption (varh)	---	---	O*1	O*1	C8	0025	0025	Integral leading reactive power consumption (varh)
40	Integral lagging reactive power consumption (Gvarh)	---	---	O*1	O*1	C8	0026	0026	Integral lagging reactive power consumption (Gvarh)
41	Integral lagging reactive power consumption (varh)	---	---	O*1	O*1	C8	0027	0027	Integral lagging reactive power consumption (varh)
42	Integral total reactive power consumption (Gvarh)	---	---	O*1	O*1	C8	0028	0028	Integral total reactive power consumption (Gvarh)
43	Integral total reactive power consumption (varh)	---	---	O*1	O*1	C8	0029	0029	Integral total reactive power consumption (varh)
44	3-STATE HIGH integral power	---	---	---	O	C8	002A	002A	3-STATE HIGH integral power

	consumption (GWh)								consumption (GWh)
45	3-STATE HIGH integral power consumption (Wh)	---	---	---	O	C8	002B	002B	3-STATE HIGH integral power consumption (Wh)
46	3-STATE HIGH integral time (min.)	---	---	---	O	C8	002C	002C	3-STATE HIGH integral time (min.)
47	3-STATE MIDDLE integral power consumption (GWh)	---	---	---	O	C8	002D	002D	3-STATE MIDDLE integral power consumption (GWh)
48	3-STATE MIDDLE integral power consumption (Wh)	---	---	---	O	C8	002E	002E	3-STATE MIDDLE integral power consumption (Wh)
49	3-STATE MIDDLE integral time (min.)	---	---	---	O	C8	002F	002F	3-STATE MIDDLE integral time (min.)
50	3-STATE LOW integral power consumption (GWh)	---	---	---	O	C8	0030	0030	3-STATE LOW integral power consumption (GWh)
51	3-STATE LOW integral power consumption (Wh)	---	---	---	O	C8	0031	0031	3-STATE LOW integral power consumption (Wh)
52	3-STATE LOW integral time (min.)	---	---	---	O	C8	0032	0032	3-STATE LOW integral time (min.)
53	Total pulse input count 1 (times)	---	---	O	O	C8	0033	0033	Total pulse input count 1 (times)
54	Total pulse input count 2 (times)	---	---	O	O	C8	0034	0034	Total pulse input count 2 (times)
55	Sum of total pulse input counts (times)	---	---	O	O	C8	0035	0035	Sum of total pulse input counts (times)
56	Pulse input count 1 for today (times)	---	---	O	O	C8	0036	0036	Pulse input count 1 for today (times)
57	Pulse input count 2 for today (times)	---	---	O	O	C8	0037	0037	Pulse input count 2 for today (times)
58	Temperature	---	---	O	O	C8	0038	0038	Temperature
59	Charge conversion value	---	---	O	O	C8	0039 003A	0039 003A	Charge conversion value (upper digits) Charge conversion value (lower digits)
61	HIGH total integrated power consumption charge conversion value	---	---	---	O	C8	003B 003C	003B 003C	HIGH total integrated power consumption charge conversion value (upper digits) HIGH total integrated power consumption charge conversion value (lower digits)
61	MIDDLE total integrated power consumption charge conversion value	---	---	---	O	C8	003D 003E	003D 003E	MIDDLE total integrated power consumption charge conversion value (upper digits) MIDDLE total integrated power consumption charge conversion value (lower digits)
62	LOW total integrated power consumption charge conversion value	---	---	---	O	C8	003F 0040	003F 0040	LOW total integrated power consumption charge conversion value (upper digits) LOW total integrated power consumption charge conversion value (lower digits)
63	Pulse conversion target 1	---	---	O	O	C8	0041 0042	0041 0042	Pulse conversion value 1 (upper digits) Pulse conversion value 1 (lower digits)
64	Pulse conversion target 2	---	---	O	O	C8	0043 0044	0043 0044	Pulse conversion value 2 (upper digits) Pulse conversion value 2 (lower digits)

*1 When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Table 31: Measurement Data for KM100-T-FLK/KM100-TM-FLK

No.	CSV parameter	KM100	CompoWay/F		Modbus	Variable area parameter
			Type	Address	Address	
1	Date	O	---	---	---	Measurement date
2	Time	O	---	---	---	Measurement time
3	Voltage 1 (V)	O	C0	0000	---	Phase-R instantaneous voltage (V)
4	Voltage 2 (V)	O	C0	0001	---	Phase-T instantaneous voltage (V)
5	Voltage 3 (V)	---	---	---	---	None
6	Current 1 (A)	O	C0	0002	---	Phase-R instantaneous current (A)
7	Current 2 (A)	O	C0	0003	---	Phase-T instantaneous current (A)
8	Current 3 (A)	---	---	---	---	None
9	Power factor	O	C0	0006	---	Instantaneous power factor
10	Frequency (Hz)	O	C0	0007	---	Frequency (Hz)
11	Active power (W)	---	---	---	---	None
12	Active power (kW)	O	C0	0004	---	Instantaneous active power (kW)
13	Reactive power (var)	---	---	---	---	None
14	Reactive power (kvar)	O	C0	0005	---	Instantaneous reactive power (kvar)
15	Total integrated power consumption (Wh)	---	---	---	---	None
16	Total integrated power consumption (kWh)	O	C0	0008	---	Integral power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	O	C0	0009	---	Arbitrary integral power consumption (kWh)
18	CO_2 conversion value (kgCO$_2$/kWh)	---	---	---	---	None
19	Pulse input count (times)	---	---	---	---	None
20	Electric power consumption rate (kWh/times)	---	---	---	---	None
21	Pulse input ON time	---	---	---	---	None
22	HIGH integral power consumption	---	---	---	---	None
23	HIGH integral power consumption ratio	---	---	---	---	None
24	HIGH integral time	---	---	---	---	None
25	HIGH integral time ratio	---	---	---	---	None
26	MIDDLE integral power consumption	---	---	---	---	None
27	MIDDLE integral power consumption ratio	---	---	---	---	None
28	MIDDLE integral time	---	---	---	---	None
29	MIDDLE integral time ratio	---	---	---	---	None
30	LOW integral power consumption	---	---	---	---	None
31	LOW integral power consumption ratio	---	---	---	---	None
32	LOW integral time	---	---	---	---	None
33	LOW integral time ratio	---	---	---	---	None
34	Status	O	C0	000A	---	Status

Table 32: Measurement Data for KM20-B40-FLK

No.	CSV parameter	KM20 -B40	CompoWay/F		Modbus	Variable area parameter
			Type	Address	Address	
1	Date	O	---	---	---	Measurement date
2	Time	O	---	---	---	Measurement time
3	Voltage 1 (V)	O	C0	0000	---	Instantaneous voltage between P1-P2 (V)
4	Voltage 2 (V)	O	C0	0001	---	Instantaneous voltage between P2-P3 (V)
5	Voltage 3 (V)	---	---	---	---	None
6	Current 1 (A)	O	C0	0002	---	I1 instantaneous current (A)
7	Current 2 (A)	O	C0	0003	---	I2 instantaneous current (A)
8	Current 3 (A)	---	---	---	---	None
9	Power factor	O	C0	0006	---	Instantaneous power factor
10	Frequency (Hz)	O	C0	0007	---	Frequency (Hz)
11	Active power (W)	---	---	---	---	None
12	Active power (kW)	O	C0	0004	---	Instantaneous active power (kW)
13	Reactive power (var)	---	---	---	---	None
14	Reactive power (kvar)	---	---	---	---	None
15	Total integrated power consumption (Wh)	---	---	---	---	None
16	Total integrated power consumption (kWh)	O	C0	0008	---	Integral power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	---	---	---	---	None
18	CO_2 conversion value (kgCO$_2$/kWh)	---	---	---	---	None
19	Pulse input count (times)	---	---	---	---	None
20	Electric power consumption rate (kWh/times)	---	---	---	---	None
21	Pulse input ON time	---	---	---	---	None
22	HIGH integral power consumption	---	---	---	---	None
23	HIGH integral power consumption ratio	---	---	---	---	None
24	HIGH integral time	---	---	---	---	None
25	HIGH integral time ratio	---	---	---	---	None
26	MIDDLE integral power consumption	---	---	---	---	None
27	MIDDLE integral power consumption ratio	---	---	---	---	None
28	MIDDLE integral time	---	---	---	---	None
29	MIDDLE integral time ratio	---	---	---	---	None
30	LOW integral power consumption	---	---	---	---	None
31	LOW integral power consumption ratio	---	---	---	---	None
32	LOW integral time	---	---	---	---	None
33	LOW integral time ratio	---	---	---	---	None
34	Status	O	C0	000A	---	Status

Table 33: Measurement Data for KM1-PMU1A-FLK/KE1-PGR1C-FLK (1-Phase 2-Wire)

Model	PMU1A, PGR1C	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F		Modbus	Variable area parameter
			Type	Address	Address	
1	Date	—	—	—		Measurement date
2	Time	—	—	—		Measurement time
3	Phase voltage 1 (V)	C0	0000	0000		Voltage 1 (V)
4	Phase voltage 2 (V)	—	—	—		None
5	Phase voltage 3 (V)	—	—	—		None
6	Line voltage 1 (V)	—	—	—		None
7	Line voltage 2 (V)	—	—	—		None
8	Line voltage 3 (V)	—	—	—		None
9	Current 1 (A)	C0	0006	000C		Current 1 (A)
10	Current 2 (A)	—	—	—		None
11	Current 3 (A)	—	—	—		None
12	Power factor	C0	0012	0024		Power factor 1
13	Frequency (Hz) (*1)	C0	001A	0034		Frequency 1 (Hz)
14	Active power (W)	C0	001C	0038		Active power 1 (W)
15	Reactive power (var)	C0	001C	0038		Reactive power 1 (var)
16	Temperature [Unit]	—	—	—		None
17	Earth leakage (Io) (mA)	—	—	—		None
18	Integral active power (Wh)	C0	0018	0030		Integral active power 1 (Wh)
19	Integral regenerated power (Wh) (*2)	C0	0088	0110		Integral regenerated power 1 (Wh)
20	Integral leading reactive power consumption (varh) (*1)	C0	0090	0120		Integral leading reactive power consumption 1 (varh)
21	Integral lagging reactive power consumption (varh) (*1)	C0	0098	0130		Integral lagging reactive power consumption 1 (varh)
22	Integral total reactive power consumption (varh) (*1)	C0	00A0	0140		Integral total reactive power consumption 1 (varh)
23	3-STATE HIGH integral power consumption (Wh)	C0	0100	0200		3-STATE HIGH integral power consumption 1 (Wh)
24	3-STATE HIGH integral time (s) (*1)	C0	0101	0202		3-STATE HIGH integral time 1 (s)
25	3-STATE MIDDLE integral power consumption (Wh)	C0	0108	0210		3-STATE MIDDLE integral power consumption 1 (Wh)
26	3-STATE MIDDLE integral time (s) (*1)	C0	0109	0212		3-STATE MIDDLE integral time 1 (s)
27	3-STATE LOW integral power consumption (Wh)	C0	0110	0220		3-STATE LOW integral power consumption 1 (Wh)
28	3-STATE LOW integral time (s) (*1)	C0	0111	0222		3-STATE LOW integral time 1 (s)
29	Pulse input ON time (s)	—	—	—		None
30	Pulse input count (times)	—	—	—		None
31	Electric power consumption rate (kWh/times) (*1)	C0	0126	024C		Electric power consumption rate 1 (kWh/times)
32	Integral power consumption conversion value (integer value)	C0	012A	0254		Integral power consumption conversion value 1_1
33	Integral power consumption conversion value (fractional value)	C0	012B	0256		Integral power consumption conversion value 1_2
34	Pulse conversion value (integer value)	—	—	—		None
35	Pulse conversion value (fractional value)	—	—	—		None

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Model	PMU1A, PGR1C	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 2
No.	CSV parameter		CompoWay/F		Modbus	Variable area parameter
			Type	Address	Address	
1	Date	—	—	—		Measurement date
2	Time	—	—	—		Measurement time
3	Phase voltage 1 (V)	C0	0000		0000	Voltage 2 (V)
4	Phase voltage 2 (V)	—	—		—	None
5	Phase voltage 3 (V)	—	—		—	None
6	Line voltage 1 (V)	—	—		—	None
7	Line voltage 2 (V)	—	—		—	None
8	Line voltage 3 (V)	—	—		—	None
9	Current 1 (A)	C0	0007		000E	Instantaneous value
10	Current 2 (A)	—	—		—	None
11	Current 3 (A)	—	—		—	None
12	Power factor	C0	0013		0026	Power factor 2
13	Frequency (Hz) (*1)	C0	001A		0034	Frequency 2 (Hz)
14	Active power (W)	C0	001D		003A	Active power 2 (W)
15	Reactive power (var)	C0	001D		003A	Reactive power 2 (var)
16	Temperature [Unit]	—	—		—	None
17	Earth leakage (Io) (mA)	—	—		—	None
18	Integral active power (Wh)	C0	0019		0032	Integral active power 2 (Wh)
19	Integral regenerated power (Wh) (*2)	C0	0089		0112	Integral regenerated power 2 (Wh)
20	Integral leading reactive power consumption (varh) (*1)	C0	0091		0122	Integral leading reactive power consumption 2 (varh)
21	Integral lagging reactive power consumption (varh) (*1)	C0	0099		0132	Integral lagging reactive power consumption 2 (varh)
22	Integral total reactive power consumption (varh) (*1)	C0	00A1		0142	Integral total reactive power consumption 2 (varh)
23	3-STATE HIGH integral power consumption (Wh)	C0	0102		0204	3-STATE HIGH integral power consumption 2 (Wh)
24	3-STATE HIGH integral time (s) (*1)	C0	0103		0206	3-STATE HIGH integrated power consumption 2 (s)
25	3-STATE MIDDLE integral power consumption (Wh)	C0	010A		0214	3-STATE MIDDLE integral power consumption 2 (Wh)
26	3-STATE MIDDLE integral time (s) (*1)	C0	010B		0216	3-STATE MIDDLE integral time 2 (s)
27	3-STATE LOW integral power consumption (Wh)	C0	0112		0224	3-STATE LOW integral power consumption 2 (Wh)
28	3-STATE LOW integral time (s) (*1)	C0	0113		0226	3-STATE LOW integral time 2 (s)
29	Pulse input ON time (s)	—	—		—	None
30	Pulse input count (times)	—	—		—	None
31	Electric power consumption rate (kWh/times) (*1)	C0	0127		024E	Electric power consumption rate 2 (kWh/times)
32	Integral power consumption conversion value (integer value)	C0	012C		0258	Integral power consumption conversion value 2_1
33	Integral power consumption conversion value (fractional value)	C0	012D		025A	Integral power consumption conversion value 2_2
34	Pulse conversion value (integer value)	—	—		—	None
35	Pulse conversion value (fractional value)	—	—		—	None

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Model	PMU1A, PGR1C	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 3
No.	**CSV parameter**		**CompoWay/F**	**Modbus**	**Variable area parameter**	
			Type	**Address**	**Address**	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	C0	0000	0000	Voltage 3 (V)	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0008	0010	Current 3 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0014	0028	Power factor 3	
13	Frequency (Hz) (*1)	C0	001A	0034	Frequency 1 (Hz)	
14	Active power (W)	C0	001E	003C	Active power 3 (W)	
15	Reactive power (var)	C0	001E	003C	Reactive power 3 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	001A	0034	Integral active power 3 (Wh)	
19	Integral regenerated power (Wh) (*2)	C0	008A	0114	Integral regenerated power 3 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0092	0124	Integral leading reactive power consumption 3 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	009A	0134	Integral lagging reactive power consumption 3 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A2	0144	Integral total reactive power consumption 3 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	C0	0104	0208	3-STATE HIGH integral power consumption 3 (Wh)	
24	3-STATE HIGH integral time (s) (*1)	C0	0105	020A	3-STATE HIGH integrated power consumption 3 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)	C0	010C	0218	3-STATE MIDDLE integral power consumption 3 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)	C0	010D	021A	3-STATE MIDDLE integral time 3 (s)	
27	3-STATE LOW integral power consumption (Wh)	C0	0114	0228	3-STATE LOW integral power consumption 3 (Wh)	
28	3-STATE LOW integral time (s) (*1)	C0	0115	022A	3-STATE LOW integral time 3 (s)	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)	C0	0128	0250	Electric power consumption rate 3 (kWh/times)	
32	Integral power consumption conversion value (integer value)	C0	012E	025C	Integral power consumption conversion value 3_1	
33	Integral power consumption conversion value (fractional value)	C0	012F	025E	Integral power consumption conversion value 3_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Table 34: Measurement Data for KM1-PMU1A-FLK/KE1-PGR1C-FLK
(1-Phase 3-Wire, 3-Phase 3-Wire, 3-Phase 4-Wire)

Model	PMU1A, PGR1C	Phase electrical system	1-Phase 3-Wire, 3-Phase 3-Wire, 3-Phase 4-Wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	C0	0000	0000	Voltage 1 (V)	
4	Phase voltage 2 (V)	C0	0001	0002	Voltage 2 (V)	
5	Phase voltage 3 (V)	C0	0002	0004	Voltage 3 (V)	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0006	000C	Current 1 (A)	
10	Current 2 (A)	C0	0007	000E	Current 2 (A)	
11	Current 3 (A)	C0	0008	0010	Current 3 (A)	
12	Power factor	C0	0012	0024	Power factor 1	
13	Frequency (Hz) (*1)	C0	001A	0034	Frequency 1 (Hz)	
14	Active power (W)	C0	001C	0038	Active power 1 (W)	
15	Reactive power (var)	C0	0024	0048	Reactive power 1 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0080	0100	Integral active power 1 (Wh)	
19	Integral regenerated power (Wh)	C0	0088	0110	Integral regenerated power 1 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0090	0120	Integral leading reactive power consumption 1 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	0098	0130	Integral lagging reactive power consumption 1 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A0	0140	Integral total reactive power consumption 1 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	C0	0100	0200	3-STATE HIGH integral power consumption 1 (Wh)	
24	3-STATE HIGH integral time (s) (*1)	C0	0101	0202	33-STATE HIGH integral time 1 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)	C0	0108	0210	3-STATE MIDDLE integral power consumption 1 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)	C0	0109	0212	3-STATE MIDDLE integral time 1 (s)	
27	3-STATE LOW integral power consumption (Wh)	C0	0110	0220	3-STATE LOW integral power consumption 1 (Wh)	
28	3-STATE LOW integral time (s) (*1)	C0	0111	0222	3-STATE LOW integral time 1 (s)	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)	C0	0126	024C	Electric power consumption rate 1 (kWh/times)	
32	Integral power consumption conversion value (integer value)	C0	012A	0254	Integral power consumption conversion value 1_1	
33	Integral power consumption conversion value (fractional value)	C0	012B	0256	Integral power consumption conversion value 1_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Table 35: Measurement Data for KE1-PGR1C-FLK (ZCT Input)

Model	PGR1C	Measurement point	ZCT input		
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter
			Type	Address	Address	
1	Date		–	–	–	Measurement date
2	Time		–	–	–	Measurement time
3	Phase voltage 1 (V)		–	–	–	None
4	Phase voltage 2 (V)		–	–	–	None
5	Phase voltage 3 (V)		–	–	–	None
6	Line voltage 1 (V)		–	–	–	None
7	Line voltage 2 (V)		–	–	–	None
8	Line voltage 3 (V)		–	–	–	None
9	Current 1 (A)		–	–	–	None
10	Current 2 (A)		–	–	–	None
11	Current 3 (A)		–	–	–	None
12	Power factor		–	–	–	None
13	Frequency (Hz)		–	–	–	None
14	Active power (W)		–	–	–	None
15	Reactive power (var)		–	–	–	None
16	Temperature [Unit]		–	–	–	None
17	Earth leakage (Io) (mA)		C0	0034	0068	Leakage (Io) 1 (mA)
18	Integral active power (Wh)		–	–	–	None
19	Integral regenerated power (Wh)		–	–	–	None
20	Integral leading reactive power consumption (varh)		–	–	–	None
21	Integral lagging reactive power consumption (varh)		–	–	–	None
22	Integral total reactive power consumption (varh)		–	–	–	None
23	3-STATE HIGH integral power consumption (Wh)		–	–	–	None
24	3-STATE HIGH integral time (s)		–	–	–	None
25	3-STATE MIDDLE integral power consumption (Wh)		–	–	–	None
26	3-STATE MIDDLE integral time (s)		–	–	–	None
27	3-STATE LOW integral power consumption (Wh)		–	–	–	None
28	3-STATE LOW integral time (s)		–	–	–	None
29	Pulse input ON time (s)		–	–	–	None
30	Pulse input count (times)		–	–	–	None
31	Electric power consumption rate (kWh/times)		–	–	–	None
32	Integral power consumption conversion value (integer value)		–	–	–	None
33	Integral power consumption conversion value (fractional value)		–	–	–	None
34	Pulse conversion value (integer value)		–	–	–	None
35	Pulse conversion value (fractional value)		–	–	–	None

Table 36: Measurement Data for KM1-PMU2A-FLK (1-Phase 2-Wire)

Model	PMU2A	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type / Address	Address		
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	C0	0000	0000	Voltage 1 (V)	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0006	000C	Current 1 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0012	0024	Power factor 1	
13	Frequency (Hz) (*1)	C0	001A	0034	Frequency 1 (Hz)	
14	Active power (W)	C0	001C	0038	Active power 1 (W)	
15	Reactive power (var)	C0	0024	0048	Reactive power 1 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0080	0100	Integral active power 1 (Wh)	
19	Integral regenerated power (Wh) (*2)	C0	0088	0110	Integral regenerated power 1 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0090	0120	Integral leading reactive power consumption 1 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	0098	0130	Integral lagging reactive power consumption 1 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A0	0140	Integral total reactive power consumption 1 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	C0	0100	0200	3-STATE HIGH integral power consumption 1 (Wh)	
24	3-STATE HIGH integral time (s) (*1)	C0	0101	0202	3-STATE HIGH integral time 1 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)	C0	0108	0210	3-STATE MIDDLE integral power consumption 1 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)	C0	0109	0212	3-STATE MIDDLE integral time 1 (s)	
27	3-STATE LOW integral power consumption (Wh)	C0	0110	0220	3-STATE LOW integral power consumption 1 (Wh)	
28	3-STATE LOW integral time (s) (*1)	C0	0111	0222	3-STATE LOW integral time 1 (s)	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)	C0	0126	024C	Electric power consumption rate 1 (kWh/times)	
32	Integral power consumption conversion value (integer value)	C0	012A	0254	Integral power consumption conversion value 1_1 (integer value)	
33	Integral power consumption conversion value (fractional value)	C0	012B	0256	Integral power consumption conversion value 1_2 (fractional value)	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Model	PMU2A	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 2
No.	**CSV parameter**		**CompoWay/F**	**Modbus**	**Variable area parameter**	
			Type	**Address**	**Address**	

No.	CSV parameter	Type	Address	Modbus Address	Variable area parameter
1	Date	—	—	—	Measurement date
2	Time	—	—	—	Measurement time
3	Phase voltage 1 (V)	C0	0000	0000	Voltage 2 (V)
4	Phase voltage 2 (V)	—	—	—	None
5	Phase voltage 3 (V)	—	—	—	None
6	Line voltage 1 (V)	—	—	—	None
7	Line voltage 2 (V)	—	—	—	None
8	Line voltage 3 (V)	—	—	—	None
9	Current 1 (A)	C0	0007	000E	Current 2 (A)
10	Current 2 (A)	—	—	—	None
11	Current 3 (A)	—	—	—	None
12	Power factor	C0	0013	0026	Power factor 2
13	Frequency (Hz) (*1)	C0	001A	0034	Frequency 1 (Hz)
14	Active power (W)	C0	001D	003A	Active power 2 (W)
15	Reactive power (var)	C0	0025	004A	Reactive power 2 (var)
16	Temperature [Unit]	—	—	—	None
17	Earth leakage (Io) (mA)	—	—	—	None
18	Integral active power (Wh)	C0	0081	0102	Integral active power 2 (Wh)
19	Integral regenerated power (Wh) (*2)	C0	0089	0112	Integral regenerated power 2 (Wh)
20	Integral leading reactive power consumption (varh) (*1)	C0	0091	0122	Integral leading reactive power consumption 2 (varh)
21	Integral lagging reactive power consumption (varh) (*1)	C0	0099	0132	Integral lagging reactive power consumption 2 (varh)
22	Integral total reactive power consumption (varh) (*1)	C0	00A1	0142	Integral total reactive power consumption 2 (varh)
23	3-STATE HIGH integral power consumption (Wh)	C0	0102	0204	3-STATE HIGH integral power consumption 2 (Wh)
24	3-STATE HIGH integral time (s) (*1)	C0	0103	0206	3-STATE HIGH integral power consumption 2 (s)
25	3-STATE MIDDLE integral power consumption (Wh)	C0	010A	0214	3-STATE MIDDLE integral power consumption 2 (Wh)
26	3-STATE MIDDLE integral time (s) (*1)	C0	010B	0216	3-STATE MIDDLE integral time 2 (s)
27	3-STATE LOW integral power consumption (Wh)	C0	0112	0224	3-STATE LOW integral power consumption 2 (Wh)
28	3-STATE LOW integral time (s) (*1)	C0	0113	0226	3-STATE LOW integral time 2 (s)
29	Pulse input ON time (s)	—	—	—	None
30	Pulse input count (times)	—	—	—	None
31	Electric power consumption rate (kWh/times) (*1)	C0	0127	024E	Electric power consumption rate 2 (kWh/times)
32	Integral power consumption conversion value (integer value)	C0	012C	0258	Integral power consumption conversion value 2_1
33	Integral power consumption conversion value (fractional value)	C0	012D	025A	Integral power consumption conversion value 2_2
34	Pulse conversion value (integer value)	—	—	—	None
35	Pulse conversion value (fractional value)	—	—	—	None

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Model	PMU2A	Phase electrical system	1-phase 2-wire			Measurement point	Circuit 3
No.	CSV parameter		CompoWay/F		Modbus	Variable area parameter	
			Type	Address	Address		
1	Date		—	—	—	Measurement date	
2	Time		—	—	—	Measurement time	
3	Phase voltage 1 (V)		C0	0003	0006	Phase voltage 3 (V)	
4	Phase voltage 2 (V)		—	—	—	None	
5	Phase voltage 3 (V)		—	—	—	None	
6	Line voltage 1 (V)		—	—	—	None	
7	Line voltage 2 (V)		—	—	—	None	
8	Line voltage 3 (V)		—	—	—	None	
9	Current 1 (A)		C0	000C	0018	Current 7 (A)	
10	Current 2 (A)		—	—	—	None	
11	Current 3 (A)		—	—	—	None	
12	Power factor		C0	0016	002C	Power factor 3	
13	Frequency (Hz) (*1)		C0	001B	0036	Frequency 2 (Hz)	
14	Active power (W)		C0	0020	0040	Active power 3 (W)	
15	Reactive power (var)		C0	0028	0050	Reactive power 3 (var)	
16	Temperature [Unit]		—	—	—	None	
17	Earth leakage (Io) (mA)		—	—	—	None	
18	Integral active power (Wh)		C0	0084	0108	Integral active power 3 (Wh)	
19	Integral regenerated power (Wh) (*2)		C0	008C	0118	Integral regenerated power 3 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)		C0	0092	0124	Integral leading reactive power consumption 3 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)		C0	009A	0134	Integral lagging reactive power consumption 3 (varh)	
22	Integral total reactive power consumption (varh) (*1)		C0	00A2	0144	Integral total reactive power consumption 3 (varh)	
23	3-STATE HIGH integral power consumption (Wh)		C0	0104	0208	3-STATE HIGH integral power consumption 3 (Wh)	
24	3-STATE HIGH integral time (s) (*1)		C0	0105	020A	3-STATE HIGH integral power consumption 3 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)		C0	010C	0218	3-STATE MIDDLE integral power consumption 3 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)		C0	010D	021A	3-STATE MIDDLE integral time 3 (s)	
27	3-STATE LOW integral power consumption (Wh)		C0	0114	0228	3-STATE LOW integral power consumption 3 (Wh)	
28	3-STATE LOW integral time (s) (*1)		C0	0115	022A	3-STATE LOW integral time 3 (s)	
29	Pulse input ON time (s)		—	—	—	None	
30	Pulse input count (times)		—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)		C0	0128	0250	Electric power consumption rate 3 (kWh/times)	
32	Integral power consumption conversion value (integer value)		C0	0132	0264	Integral power consumption conversion value 3_1	
33	Integral power consumption conversion value (fractional value)		C0	0133	0266	Integral power consumption conversion value 3_2	
34	Pulse conversion value (integer value)		—	—	—	None	
35	Pulse conversion value (fractional value)		—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Model	PMU2A	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 4
No.	**CSV parameter**		**CompoWay/F**	**Modbus Address**	**Variable area parameter**	
			Type	**Address**		
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	C0	0003	0006	Voltage 4 (V)	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000D	001A	Voltage 8 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0017	002E	Power factor 4	
13	Frequency (Hz) (*1)	C0	0013	0036	Frequency 2 (Hz)	
14	Active power (W)	C0	0021	0042	Active power 4 (W)	
15	Reactive power (var)	C0	0029	0052	Reactive power 4 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0085	010A	Integral active power 4 (Wh)	
19	Integral regenerated power (Wh) (*2)	C0	008D	011A	Integral regenerated power 4 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0093	0126	Integral leading reactive power consumption 4 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	009B	0136	Integral lagging reactive power consumption 4 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A3	0146	Integral total reactive power consumption 4 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	C0	0106	020C	3-STATE HIGH integral power consumption 4 (Wh)	
24	3-STATE HIGH integral time (s) (*1)	C0	0107	020E	3-STATE HIGH integral power consumption 4 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)	C0	010E	021C	3-STATE MIDDLE integral power consumption 4 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)	C0	010F	021E	3-STATE MIDDLE integral time 4 (s)	
27	3-STATE LOW integral power consumption (Wh)	C0	0116	022C	3-STATE LOW integral power consumption 4 (Wh)	
28	3-STATE LOW integral time (s) (*1)	C0	0117	022E	3-STATE LOW integral time 4 (s)	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)	C0	0129	0252	Electric power consumption rate 4 (kWh/times)	
32	Integral power consumption conversion value (integer value)	C0	0134	0268	Integral power consumption conversion value 4_1	
33	Integral power consumption conversion value (fractional value)	C0	0135	026A	Integral power consumption conversion value 4_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".

Table 37: Measurement Data for KM1-PMU2A-FLK (1-Phase 3-Wire, 3-Phase 3-Wire)

Model	PMU2A	Phase electrical system	1-phase 3-wire, 3-phase 3-wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	C0	0000	0000	Voltage 1 (V)	
4	Phase voltage 2 (V)	C0	0001	0002	Voltage 2 (V)	
5	Phase voltage 3 (V)	C0	0002	0004	Voltage 3 (V)	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0006	000C	Current 1 (A)	
10	Current 2 (A)	C0	0007	000E	Current 2 (A)	
11	Current 3 (A)	C0	0008	0010	Current 3 (A)	
12	Power factor	C0	0012	0024	Power factor 1	
13	Frequency (Hz) (*1)	C0	001A	0034	Frequency 1 (Hz)	
14	Active power (W)	C0	001C	0038	Active power 1 (W)	
15	Reactive power (var)	C0	0024	0048	Reactive power 1 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0080	0100	Integral active power 1 (Wh)	
19	Integral regenerated power (Wh)	C0	0088	0110	Integral regenerated power 1 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0090	0120	Integral leading reactive power consumption 1 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	0098	0130	Integral lagging reactive power consumption 1 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A0	0140	Integral total reactive power consumption 1 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	C0	0100	0200	3-STATE HIGH integral power consumption 1 (Wh)	
24	3-STATE HIGH integral time (s) (*1)	C0	0101	0202	3-STATE HIGH integral time 1 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)	C0	0108	0210	3-STATE MIDDLE integral power consumption 1 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)	C0	0109	0217	3-STATE MIDDLE integral time 1 (s)	
27	3-STATE LOW integral power consumption (Wh)	C0	0110	0220	3-STATE LOW integral power consumption 1 (Wh)	
28	3-STATE LOW integral time (s) (*1)	C0	0111	0222	3-STATE LOW integral time 1 (s)	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)	C0	0126	024C	Electric power consumption rate 1 (kWh/times)	
32	Integral power consumption conversion value (integer value)	C0	012A	0254	Integral power consumption conversion value 1 (integer value)	
33	Integral power consumption conversion value (fractional value)	C0	012B	0256	Integral power consumption conversion value 1 (fractional value)	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	PMU2A	Phase electrical system	1-phase 3-wire, 3-phase 3-wire		Measurement point	Circuit 3
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	C0	0003	0006	Voltage 1 (V)	
4	Phase voltage 2 (V)	C0	0004	0008	Voltage 2 (V)	
5	Phase voltage 3 (V)	C0	0005	000A	Voltage 3 (V)	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000C	0018	Current 7 (A)	
10	Current 2 (A)	C0	000D	001A	Voltage 8 (A)	
11	Current 3 (A)	C0	000E	001C	Voltage 9 (A)	
12	Power factor	C0	0016	002C	Power factor 3	
13	Frequency (Hz) (*1)	C0	001B	0036	Frequency 2 (Hz)	
14	Active power (W)	C0	0020	0040	Active power 3 (W)	
15	Reactive power (var)	C0	0028	0050	Reactive power 3 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0084	0108	Integral active power 3 (Wh)	
19	Integral regenerated power (Wh)	C0	008C	0118	Integral regenerated power 3 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0092	0124	Integral leading reactive power consumption 3 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	009A	0134	Integral lagging reactive power consumption 3 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A2	0144	Integral total reactive power consumption 3 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	C0	0104	0208	3-STATE HIGH integral power consumption 3 (Wh)	
24	3-STATE HIGH integral time (s) (*1)	C0	0105	020A	3-STATE HIGH integral power consumption 3 (s)	
25	3-STATE MIDDLE integral power consumption (Wh)	C0	010C	0218	3-STATE MIDDLE integral power consumption 3 (Wh)	
26	3-STATE MIDDLE integral time (s) (*1)	C0	010D	021A	3-STATE MIDDLE integral time 3 (s)	
27	3-STATE LOW integral power consumption (Wh)	C0	0114	0228	3-STATE LOW integral power consumption 3 (Wh)	
28	3-STATE LOW integral time (s) (*1)	C0	0115	022A	3-STATE LOW integral time 3 (s)	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times) (*1)	C0	0128	0250	Electric power consumption rate 3 (kWh/times)	
32	Integral power consumption conversion value (integer value)	C0	0132	0264	Integral power consumption conversion value 3_1	
33	Integral power consumption conversion value (fractional value)	C0	0133	0266	Integral power consumption conversion value 3_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Table 38: Measurement Data for KE1-CTD8E (1-Phase 2-Wire)

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type / Address	Address		
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0006	000C	Current 1 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0012	0024	Power factor 1	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	001C	0038	Active power 1 (W)	
15	Reactive power (var)	C0	0024	0048	Reactive power 1 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0080	0100	Integral active power 1 (Wh)	
19	Integral regenerated power (Wh) (*1)	C0	0088	0110	Integral regenerated power 1 (Wh)	
20	Integral leading reactive power consumption (varh) (*2)	C0	0090	0120	Integral leading reactive power consumption 1 (varh)	
21	Integral lagging reactive power consumption (varh) (*2)	C0	0098	0130	Integral lagging reactive power consumption 1 (varh)	
22	Integral total reactive power consumption (varh) (*2)	C0	00A0	0140	Integral total reactive power consumption 1 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	012A	0254	Integral power consumption conversion value 1_1	
33	Integral power consumption conversion value (fractional value)	C0	012B	0256	Integral power consumption conversion value 1_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 2
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0007	000E	Current 2 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0013	0026	Power factor 2	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	001D	003A	Active power 2 (W)	
15	Reactive power (var)	C0	0025	004A	Reactive power 2 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0081	0102	Integral active power 2 (Wh)	
19	Integral regenerated power (Wh) (*1)	C0	0089	0112	Integral regenerated power 2 (Wh)	
20	Integral leading reactive power consumption (varh) (*2)	C0	0091	0122	Integral leading reactive power consumption 2 (varh)	
21	Integral lagging reactive power consumption (varh) (*2)	C0	0099	0132	Integral lagging reactive power consumption 2 (varh)	
22	Integral total reactive power consumption (varh) (*2)	C0	00A1	0142	Integral total reactive power consumption 2 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	012C	0258	Integral power consumption conversion value 2_1	
33	Integral power consumption conversion value (fractional value)	C0	012D	025A	Integral power consumption conversion value 2_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 3
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None ⌞	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0008	0010	Current 3 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0014	0028	Power factor 3	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	001E	003C	Active power 3 (W)	
15	Reactive power (var)	C0	0026	004C	Reactive power 3 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0082	0104	Integral active power 3 (Wh)	
19	Integral regenerated power (Wh) (*1)	C0	008A	0114	Integral regenerated power 3 (Wh)	
20	Integral leading reactive power consumption (varh) (*2)	C0	0092	0124	Integral leading reactive power consumption 3 (varh)	
21	Integral lagging reactive power consumption (varh) (*2)	C0	009A	0134	Integral lagging reactive power consumption 3 (varh)	
22	Integral total reactive power consumption (varh) (*2)	C0	00A2	0144	Integral total reactive power consumption 3 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	012E	025C	Integral power consumption conversion value 3_1	
33	Integral power consumption conversion value (fractional value)	C0	012F	025E	Integral power consumption conversion value 3_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 4
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	

No.	CSV parameter	Type	Address	Address	Variable area parameter
1	Date	—	—	—	Measurement date
2	Time	—	—	—	Measurement time
3	Phase voltage 1 (V)	—	—	—	None
4	Phase voltage 2 (V)	—	—	—	None
5	Phase voltage 3 (V)	—	—	—	None
6	Line voltage 1 (V)	—	—	—	None
7	Line voltage 2 (V)	—	—	—	None
8	Line voltage 3 (V)	—	—	—	None
9	Current 1 (A)	C0	0009	0012	Current 4 (A)
10	Current 2 (A)	—	—	—	None
11	Current 3 (A)	—	—	—	None
12	Power factor	C0	0015	002A	Power factor 4
13	Frequency (Hz)	—	—	—	None
14	Active power (W)	C0	001F	003E	Active power 4 (W)
15	Reactive power (var)	C0	0027	004E	Reactive power 4 (var)
16	Temperature [Unit]	—	—	—	None
17	Earth leakage (Io) (mA)	—	—	—	None
18	Integral active power (Wh)	C0	0083	0106	Integral active power 4 (Wh)
19	Integral regenerated power (Wh) (*1)	C0	008B	0116	Integral regenerated power 4 (Wh)
20	Integral leading reactive power consumption (varh) (*2)	C0	0093	0126	Integral leading reactive power consumption 4 (varh)
21	Integral lagging reactive power consumption (varh) (*2)	C0	009B	0136	Integral lagging reactive power consumption 4 (varh)
22	Integral total reactive power consumption (varh) (*2)	C0	00A3	0146	Integral total reactive power consumption 4 (varh)
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None
24	3-STATE HIGH integral time (s)	—	—	—	None
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None
26	3-STATE MIDDLE integral time (s)	—	—	—	None
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None
28	3-STATE LOW integral time (s)	—	—	—	None
29	Pulse input ON time (s)	—	—	—	None
30	Pulse input count (times)	—	—	—	None
31	Electric power consumption rate (kWh/times)	—	—	—	None
32	Integral power consumption conversion value (integer value)	C0	0130	0260	Integral power consumption conversion value 4_1
33	Integral power consumption conversion value (fractional value)	C0	0131	0262	Integral power consumption conversion value 4_2
34	Pulse conversion value (integer value)	—	—	—	None
35	Pulse conversion value (fractional value)	—	—	—	None

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to" Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 5
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000C	0018	Current 7 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0016	002C	Power factor 5	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	0020	0040	Active power 5 (W)	
15	Reactive power (var)	C0	0028	0050	Reactive power 5 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0084	0108	Integral active power 5 (Wh)	
19	Integral regenerated power (Wh) (*1)	C0	008C	0118	Integral regenerated power 5 (Wh)	
20	Integral leading reactive power consumption (varh) (*2)	C0	0094	0128	Integral leading reactive power consumption 5 (varh)	
21	Integral lagging reactive power consumption (varh) (*2)	C0	009C	0138	Integral lagging reactive power consumption 5 (varh)	
22	Integral total reactive power consumption (varh) (*2)	C0	00A4	0148	Integral total reactive power consumption 5 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	0132	0264	Integral power consumption conversion value 5_1	
33	Integral power consumption conversion value (fractional value)	C0	0133	0266	Integral power consumption conversion value 5_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 6

| No. | CSV parameter | CompoWay/F | | Modbus Address | Variable area parameter |
		Type	Address		
1	Date	—	—	—	Measurement date
2	Time	—	—	—	Measurement time
3	Phase voltage 1 (V)	—	—	—	None
4	Phase voltage 2 (V)	—	—	—	None
5	Phase voltage 3 (V)	—	—	—	None
6	Line voltage 1 (V)	—	—	—	None
7	Line voltage 2 (V)	—	—	—	None
8	Line voltage 3 (V)	—	—	—	None
9	Current 1 (A)	C0	000D	001A	Voltage 8 (A)
10	Current 2 (A)	—	—	—	None
11	Current 3 (A)	—	—	—	None
12	Power factor	C0	0017	002E	Power factor 6
13	Frequency (Hz)	—	—	—	None
14	Active power (W)	C0	0021	0042	Active power 6 (W)
15	Reactive power (var)	C0	0029	0052	Reactive power 6 (var)
16	Temperature [Unit]	—	—	—	None
17	Earth leakage (Io) (mA)	—	—	—	None
18	Integral active power (Wh)	C0	0085	010A	Integral active power 6 (Wh)
19	Integral regenerated power (Wh) (*1)	C0	008D	011A	Integral regenerated power 6 (Wh)
20	Integral leading reactive power consumption (varh) (*2)	C0	0095	012A	Integral leading reactive power consumption 6 (varh)
21	Integral lagging reactive power consumption (varh) (*2)	C0	009D	013A	Integral lagging reactive power consumption 6 (varh)
22	Integral total reactive power consumption (varh) (*2)	C0	00A5	014A	Integral total reactive power consumption 6 (varh)
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None
24	3-STATE HIGH integral time (s)	—	—	—	None
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None
26	3-STATE MIDDLE integral time (s)	—	—	—	None
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None
28	3-STATE LOW integral time (s)	—	—	—	None
29	Pulse input ON time (s)	—	—	—	None
30	Pulse input count (times)	—	—	—	None
31	Electric power consumption rate (kWh/times)	—	—	—	None
32	Integral power consumption conversion value (integer value)	C0	0134	0268	Integral power consumption conversion value 6_1
33	Integral power consumption conversion value (fractional value)	C0	0135	026A	Integral power consumption conversion value 6_2
34	Pulse conversion value (integer value)	—	—	—	None
35	Pulse conversion value (fractional value)	—	—	—	None

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 7
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000E	001C	Voltage 9 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0018	0030	Power factor 7	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	0022	0044	Active power 7 (W)	
15	Reactive power (var)	C0	002A	0054	Reactive power 7 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0086	010C	Integral active power 7 (Wh)	
19	Integral regenerated power (Wh) (*1)	C0	008E	011C	Integral regenerated power 7 (Wh)	
20	Integral leading reactive power consumption (varh) (*2)	C0	0096	012C	Integral leading reactive power consumption 7 (varh)	
21	Integral lagging reactive power consumption (varh) (*2)	C0	009E	013C	Integral lagging reactive power consumption 7 (varh)	
22	Integral total reactive power consumption (varh) (*2)	C0	00A6	014C	Integral total reactive power consumption 7 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	0136	026C	Integral power consumption conversion value 7_1	
33	Integral power consumption conversion value (fractional value)	C0	0137	026E	Integral power consumption conversion value 7_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 2-wire		Measurement point	Circuit 8
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000F	001E	Current 10 (A)	
10	Current 2 (A)	—	—	—	None	
11	Current 3 (A)	—	—	—	None	
12	Power factor	C0	0019	0032	Power factor 8	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	0023	0046	Active power 8 (W)	
15	Reactive power (var)	C0	002B	0056	Reactive power 8 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0087	010E	Integral active power 8 (Wh)	
19	Integral regenerated power (Wh) (*1)	C0	008F	011E	Integral regenerated power 8 (Wh)	
20	Integral leading reactive power consumption (varh) (*2)	C0	0097	002E	Integral leading reactive power consumption 8 (varh)	
21	Integral lagging reactive power consumption (varh) (*2)	C0	009F	013E	Integral lagging reactive power consumption 8 (varh)	
22	Integral total reactive power consumption (varh) (*2)	C0	00A7	014E	Integral total reactive power consumption 8 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	0138	0270	Integral power consumption conversion value 8_1	
33	Integral power consumption conversion value (fractional value)	C0	0139	0272	Integral power consumption conversion value 8_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: The integral regenerated power value is not correctly obtained if the phase electrical system is set to "1-phase 2-wire".
*2: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Table 39: Measurement Data for KE1-PGR1C-FLK (1-Phase 3-Wire, 3-Phase 3-Wire)

Model	CTD8E	Phase electrical system	1-phase 3-wire, 3-phase 3-wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date		—	—	—	Measurement date
2	Time		—	—	—	Measurement time
3	Phase voltage 1 (V)		—	—	—	None
4	Phase voltage 2 (V)		—	—	—	None
5	Phase voltage 3 (V)		—	—	—	None
6	Line voltage 1 (V)		—	—	—	None
7	Line voltage 2 (V)		—	—	—	None
8	Line voltage 3 (V)		—	—	—	None
9	Current 1 (A)		C0	0006	000C	Current 1 (A)
10	Current 2 (A)		C0	0007	000E	Current 2 (A)
11	Current 3 (A)		C0	0008	0010	Current 3 (A)
12	Power factor		C0	0012	0024	Power factor 1
13	Frequency (Hz)		—	—	—	None
14	Active power (W)		C0	001C	0038	Active power 1 (W)
15	Reactive power (var)		C0	0024	0048	Reactive power 1 (var)
16	Temperature [Unit]		—	—	—	None
17	Earth leakage (Io) (mA)		—	—	—	None
18	Integral active power (Wh)		C0	0080	0100	Integral active power 1 (Wh)
19	Integral regenerated power (Wh)		C0	0088	0110	Integral regenerated power 1 (Wh)
20	Integral leading reactive power consumption (varh) (*1)		C0	0090	0120	Integral leading reactive power consumption 1 (varh)
21	Integral lagging reactive power consumption (varh) (*1)		C0	0098	0130	Integral lagging reactive power consumption 1 (varh)
22	Integral total reactive power consumption (varh) (*1)		C0	00A0	0140	Integral total reactive power consumption 1 (varh)
23	3-STATE HIGH integral power consumption (Wh)		—	—	—	None
24	3-STATE HIGH integral time (s)		—	—	—	None
25	3-STATE MIDDLE integral power consumption (Wh)		—	—	—	None
26	3-STATE MIDDLE integral time (s)		—	—	—	None
27	3-STATE LOW integral power consumption (Wh)		—	—	—	None
28	3-STATE LOW integral time (s)		—	—	—	None
29	Pulse input ON time (s)		—	—	—	None
30	Pulse input count (times)		—	—	—	None
31	Electric power consumption rate (kWh/times)		—	—	—	None
32	Integral power consumption conversion value (integer value)		C0	012A	0254	Integral power consumption conversion value 1_1
33	Integral power consumption conversion value (fractional value)		C0	012B	0256	Integral power consumption conversion value 1_2
34	Pulse conversion value (integer value)		—	—	—	None
35	Pulse conversion value (fractional value)		—	—	—	None

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 3-wire, 3-phase 3-wire		Measurement point	Circuit 2
No.	**CSV parameter**		**CompoWay/F**	**Modbus**	**Variable area parameter**	
			Type	**Address**	**Address**	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None ∟	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None ∟	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0009	0012	Current 4 (A)	
10	Current 2 (A)	C0	000A	0014	Current 5 (A)	
11	Current 3 (A)	C0	000B	0016	Current 6 (A)	
12	Power factor	C0	0013	0026	Power factor 2	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	001D	003A	Active power 2 (W)	
15	Reactive power (var)	C0	0025	004A	Reactive power 2 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0081	0102	Integral active power 2 (Wh)	
19	Integral regenerated power (Wh)	C0	0089	0112	Integral regenerated power 2 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0091	0122	Integral leading reactive power consumption 2 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	0099	0132	Integral lagging reactive power consumption 2 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A1	0142	Integral total reactive power consumption 2 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	012C	0258	Integral power consumption conversion value 2_1	
33	Integral power consumption conversion value (fractional value)	C0	012D	025A	Integral power consumption conversion value 2_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 3-wire, 3-phase 3-wire		Measurement point	Circuit 5
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	

No.	CSV parameter	Type	Address (CompoWay/F)	Address (Modbus)	Variable area parameter
1	Date	—	—	—	Measurement date
2	Time	—	—	—	Measurement time
3	Phase voltage 1 (V)	—	—	—	None
4	Phase voltage 2 (V)	—	—	—	None
5	Phase voltage 3 (V)	—	—	—	None
6	Line voltage 1 (V)	—	—	—	None
7	Line voltage 2 (V)	—	—	—	None
8	Line voltage 3 (V)	—	—	—	None
9	Current 1 (A)	C0	000C	0018	Current 7 (A)
10	Current 2 (A)	C0	000D	001A	Voltage 8 (A)
11	Current 3 (A)	C0	000E	001C	Voltage 9 (A)
12	Power factor	C0	0016	002C	Power factor 5
13	Frequency (Hz)	—	—	—	None
14	Active power (W)	C0	0020	0040	Active power 5 (W)
15	Reactive power (var)	C0	0028	0050	Reactive power 5 (var)
16	Temperature [Unit]	—	—	—	None
17	Earth leakage (Io) (mA)	—	—	—	None
18	Integral active power (Wh)	C0	0084	0108	Integral active power 5 (Wh)
19	Integral regenerated power (Wh)	C0	008C	0118	Integral regenerated power 5 (Wh)
20	Integral leading reactive power consumption (varh) (*1)	C0	0094	0128	Integral leading reactive power consumption 5 (varh)
21	Integral lagging reactive power consumption (varh) (*1)	C0	009C	0138	Integral lagging reactive power consumption 5 (varh)
22	Integral total reactive power consumption (varh) (*1)	C0	00A4	0148	Integral total reactive power consumption 5 (varh)
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None
24	3-STATE HIGH integral time (s)	—	—	—	None
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None
26	3-STATE MIDDLE integral time (s)	—	—	—	None
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None
28	3-STATE LOW integral time (s)	—	—	—	None
29	Pulse input ON time (s)	—	—	—	None
30	Pulse input count (times)	—	—	—	None
31	Electric power consumption rate (kWh/times)	—	—	—	None
32	Integral power consumption conversion value (integer value)	C0	0132	0264	Integral power consumption conversion value 5_1
33	Integral power consumption conversion value (fractional value)	C0	0133	0266	Integral power consumption conversion value 5_2
34	Pulse conversion value (integer value)	—	—	—	None
35	Pulse conversion value (fractional value)	—	—	—	None

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	1-phase 3-wire, 3-phase 3-wire		Measurement point	Circuit 6
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000F	001E	Current 10 (A)	
10	Current 2 (A)	C0	0010	0020	Current 11 (A)	
11	Current 3 (A)	C0	0011	0022	Current 12 (A)	
12	Power factor	C0	0017	002E	Power factor 6	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	0021	0042	Active power 6 (W)	
15	Reactive power (var)	C0	0029	0052	Reactive power 6 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0085	010A	Integral active power 6 (Wh)	
19	Integral regenerated power (Wh)	C0	008D	011A	Integral regenerated power 6 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0095	012A	Integral leading reactive power consumption 6 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	009D	013A	Integral lagging reactive power consumption 6 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A5	014A	Integral total reactive power consumption 6 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	0134	0268	Integral power consumption conversion value 6_1	
33	Integral power consumption conversion value (fractional value)	C0	0135	026A	Integral power consumption conversion value 6_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Table 40: Measurement Data for KE1-CTD8E (3-Phase 4-Wire)

Model	CTD8E	Phase electrical system	3-phase 4-wire		Measurement point	Circuit 1
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter	
			Type	Address	Address	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	0006	000C	Current 1 (A)	
10	Current 2 (A)	C0	0007	000E	Current 2 (A)	
11	Current 3 (A)	C0	0008	0010	Current 3 (A)	
12	Power factor	C0	0012	0024	Power factor 1	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	001C	0038	Active power 1 (W)	
15	Reactive power (var)	C0	0024	0048	Reactive power 1 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0080	0100	Integral active power 1 (Wh)	
19	Integral regenerated power (Wh)	C0	0080	0110	Integral regenerated power 1 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0090	0120	Integral leading reactive power consumption 1 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	0098	0130	Integral lagging reactive power consumption 1 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A0	0140	Integral total reactive power consumption 1 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	012A	0254	Integral power consumption conversion value 1_1	
33	Integral power consumption conversion value (fractional value)	C0	012B	0256	Integral power consumption conversion value 1_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Model	CTD8E	Phase electrical system	3-phase 4-wire		Measurement point	Circuit 5
No.	CSV parameter	CompoWay/F Type	CompoWay/F Address	Modbus Address	Variable area parameter	
1	Date	—	—	—	Measurement date	
2	Time	—	—	—	Measurement time	
3	Phase voltage 1 (V)	—	—	—	None	
4	Phase voltage 2 (V)	—	—	—	None	
5	Phase voltage 3 (V)	—	—	—	None	
6	Line voltage 1 (V)	—	—	—	None	
7	Line voltage 2 (V)	—	—	—	None	
8	Line voltage 3 (V)	—	—	—	None	
9	Current 1 (A)	C0	000C	0018	Current 7 (A)	
10	Current 2 (A)	C0	000D	001A	Voltage 8 (A)	
11	Current 3 (A)	C0	000E	001C	Voltage 9 (A)	
12	Power factor	C0	0016	002C	Power factor 5	
13	Frequency (Hz)	—	—	—	None	
14	Active power (W)	C0	0020	0040	Active power 5 (W)	
15	Reactive power (var)	C0	0028	0050	Reactive power 5 (var)	
16	Temperature [Unit]	—	—	—	None	
17	Earth leakage (Io) (mA)	—	—	—	None	
18	Integral active power (Wh)	C0	0084	0108	Integral active power 5 (Wh)	
19	Integral regenerated power (Wh)	C0	008C	0118	Integral regenerated power 5 (Wh)	
20	Integral leading reactive power consumption (varh) (*1)	C0	0094	0128	Integral leading reactive power consumption 5 (varh)	
21	Integral lagging reactive power consumption (varh) (*1)	C0	009C	0138	Integral lagging reactive power consumption 5 (varh)	
22	Integral total reactive power consumption (varh) (*1)	C0	00A4	0148	Integral total reactive power consumption 5 (varh)	
23	3-STATE HIGH integral power consumption (Wh)	—	—	—	None	
24	3-STATE HIGH integral time (s)	—	—	—	None	
25	3-STATE MIDDLE integral power consumption (Wh)	—	—	—	None	
26	3-STATE MIDDLE integral time (s)	—	—	—	None	
27	3-STATE LOW integral power consumption (Wh)	—	—	—	None	
28	3-STATE LOW integral time (s)	—	—	—	None	
29	Pulse input ON time (s)	—	—	—	None	
30	Pulse input count (times)	—	—	—	None	
31	Electric power consumption rate (kWh/times)	—	—	—	None	
32	Integral power consumption conversion value (integer value)	C0	0132	0264	Integral power consumption conversion value 5_1	
33	Integral power consumption conversion value (fractional value)	C0	0133	0266	Integral power consumption conversion value 5_2	
34	Pulse conversion value (integer value)	—	—	—	None	
35	Pulse conversion value (fractional value)	—	—	—	None	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.

Table 41: Measurement Data for KM1-EMU8A (Event Input)

Model	EMU8A	Measurement point	Event input		
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter
			Type / Address	Address	
1	Date		— —	—	Measurement date
2	Time		— —	—	Measurement time
3	Phase voltage 1 (V)		— —	—	None
4	Phase voltage 2 (V)		— —	—	None
5	Phase voltage 3 (V)		— —	—	None
6	Line voltage 1 (V)		— —	—	None
7	Line voltage 2 (V)		— —	—	None
8	Line voltage 3 (V)		— —	—	None
9	Current 1 (A)		— —	—	None
10	Current 2 (A)		— —	—	None
11	Current 3 (A)		— —	—	None
12	Power factor		— —	—	None
13	Frequency (Hz)		— —	—	None
14	Active power (W)		— —	—	None
15	Reactive power (var)		— —	—	None
16	Temperature [Unit]		C0 / 002C	0058	Instantaneous value (℃ or F)
17	Earth leakage (Io) (mA)		— —	—	None
18	Integral active power (Wh)		— —	—	None
19	Integral regenerated power (Wh)		— —	—	None
20	Integral leading reactive power consumption (varh)		— —	—	None
21	Integral lagging reactive power consumption (varh)		— —	—	None
22	Integral total reactive power consumption (varh)		— —	—	None
23	3-STATE HIGH integral power consumption (Wh)		— —	—	None
24	3-STATE HIGH integral time (s)		— —	—	None
25	3-STATE MIDDLE integral power consumption (Wh)		— —	—	None
26	3-STATE MIDDLE integral time (s)		— —	—	None
27	3-STATE LOW integral power consumption (Wh)		— —	—	None
28	3-STATE LOW integral time (s)		— —	—	None
29	Pulse input ON time (s) (*1)		*2	*2	
30	Pulse input count (times)		*2	*2	
31	Electric power consumption rate (kWh/times)		— —	—	None
32	Integral power consumption conversion value (integer value)		— —	—	None
33	Integral power consumption conversion value (fractional value)		— —	—	None
34	Pulse conversion value (integer value)		*2	*2	
35	Pulse conversion value (fractional value)		*2	*2	

*1: When the measurement mode is set to "Graph display item collection", periodic measurements data is not acquired.
*2: Each event input for measurement targets individually outputs a file (Up to seven files).
The following page shows the individual addresses.

■Pulse Input ON Time (s)

No.	Variable area parameter	CompoWay/F		Modbus
		Type	Address	Address
1	Pulse input ON time 1 (s)	C0	0118	0230
2	Pulse input ON time 2 (s)	C0	0119	0232
3	Pulse input ON time 3 (s)	C0	011A	0234
4	Pulse input ON time 4 (s)	C0	011B	0236
5	Pulse input ON time 5 (s)	C0	011C	0238
6	Pulse input ON time 6 (s)	C0	011D	023A
7	Pulse input ON time 7 (s)	C0	011E	023C

■Pulse Input Count (times)

No.	Variable area parameter	CompoWay/F		Modbus
		Type	Address	Address
1	Pulse input count 1 (times)	C0	011F	023E
2	Pulse input count 2 (times)	C0	0120	0240
3	Pulse input count 3 (times)	C0	0121	0242
4	Pulse input count 4 (times)	C0	0122	0244
5	Pulse input count 5 (times)	C0	0123	0246
6	Pulse input count 6 (times)	C0	0124	0248
7	Pulse input count 7 (times)	C0	0125	024A

■Pulse Conversion Value (Integer Value)

No.	Variable area parameter	CompoWay/F		Modbus
		Type	Address	Address
1	Pulse conversion value 1_1	C0	013A	0274
2	Pulse conversion value 2_1	C0	013C	0278
3	Pulse conversion value 3_1	C0	013E	027C
4	Pulse conversion value 4_1	C0	0140	0280
5	Pulse conversion value 5_1	C0	0142	0284
6	Pulse conversion value 6_1	C0	0144	0288
7	Pulse conversion value 7_1	C0	0146	028C

■Pulse Conversion Value (Fractional Value)

No.	Variable area parameter	CompoWay/F		Modbus
		Type	Address	Address
1	Pulse conversion value 1_2	C0	013B	0276
2	Pulse conversion value 2_2	C0	013D	027A
3	Pulse conversion value 3_2	C0	013F	027E
4	Pulse conversion value 4_2	C0	0141	0282
5	Pulse conversion value 5_2	C0	0143	0286
6	Pulse conversion value 6_2	C0	0145	028A
7	Pulse conversion value 7_2	C0	0147	028E

Table 42: Measurement Data for KM1-ZCT8E (ZCT Input)

Model	ZCT8E	Measurement point	ZCT input		
No.	CSV parameter		CompoWay/F	Modbus	Variable area parameter
			Type	Address	Address	
1	Date		—	—	—	Measurement date
2	Time		—	—	—	Measurement time
3	Phase voltage 1 (V)		—	—	—	None
4	Phase voltage 2 (V)		—	—	—	None
5	Phase voltage 3 (V)		—	—	—	None
6	Line voltage 1 (V)		—	—	—	None
7	Line voltage 2 (V)		—	—	—	None
8	Line voltage 3 (V)		—	—	—	None
9	Current 1 (A)		—	—	—	None
10	Current 2 (A)		—	—	—	None
11	Current 3 (A)		—	—	—	None
12	Power factor		—	—	—	None
13	Frequency (Hz)		—	—	—	None
14	Active power (W)		—	—	—	None
15	Reactive power (var)		—	—	—	None
16	Temperature [Unit]		—	—	—	None
17	Earth leakage (Io) (mA)			*1	*1	
18	Integral active power (Wh)		—	—	—	None
19	Integral regenerated power (Wh)		—	—	—	None
20	Integral leading reactive power consumption (varh)		—	—	—	None
21	Integral lagging reactive power consumption (varh)		—	—	—	None
22	Integral total reactive power consumption (varh)		—	—	—	None
23	3-STATE HIGH integral power consumption (Wh)		—	—	—	None
24	3-STATE HIGH integral time (s)		—	—	—	None
25	3-STATE MIDDLE integral power consumption (Wh)		—	—	—	None
26	3-STATE MIDDLE integral time (s)		—	—	—	None
27	3-STATE LOW integral power consumption (Wh)		—	—	—	None
28	3-STATE LOW integral time (s)		—	—	—	None
29	Pulse input ON time (s)		—	—	—	None
30	Pulse input count (times)		—	—	—	None
31	Electric power consumption rate (kWh/times)		—	—	—	None
32	Integral power consumption conversion value (integer value)		—	—	—	None
33	Integral power consumption conversion value (fractional value)		—	—	—	None
34	Pulse conversion value (integer value)		—	—	—	None
35	Pulse conversion value (fractional value)		—	—	—	None

*1 Each ZCT input for measurement targets individually outputs a file (Up to eight files).
The following page shows the individual addresses.

■Earth leakage (Io) (mA)

No.	Variable area parameter	CompoWay/F		Modbus
		Type	Address	Address
1	Earth leakage (Io) 1 (mA)	C0	0034	0068
2	Earth leakage (Io) 2 (mA)	C0	0035	006A
3	Earth leakage (Io) 3 (mA)	C0	0036	006C
4	Earth leakage (Io) 4 (mA)	C0	0037	006E
5	Earth leakage (Io) 5 (mA)	C0	0038	0070
6	Earth leakage (Io) 6 (mA)	C0	0039	0072
7	Earth leakage (Io) 7 (mA)	C0	003A	0074
8	Earth leakage (Io) 8 (mA)	C0	003B	0076

9.3.2. Data Output in Unit-/Group-Specific Graphs

The following table shows the data output in unit- or group-specific graphs.

Table 43: KM50/KM100/KM20-B40 CSV Output Data

(Per Unit/Group, Measurement Interval: 30 Min./1 Hour/1 Day)

No.	CSV parameter	KM100	KM20-B40	KM50-C-V1	KM50-E-V1	KM50-C-V2	KM50-E-V2	Remarks
1	Date	O	O	O	O	O	O	
2	Time	O	O	O	O	O	O	
3	Abnormal flag	O	O	O	O	O	O	
4	Integral power consumption (kWh)	O	O	O	O	O	O	
5	Accumulated power consumption (kWh) (*1)	O	O	O	O	O	O	
6	HIGH integral power consumption	—	—	—	O	—	O	
7	MIDDLE integral power consumption	—	—	—	O	—	O	
8	LOW integral power consumption	—	—	—	O	—	O	
9	Regenerated power consumption (kWh)	—	—	—	—	O	O	
10	Accumulated regenerated power consumption (kWh) (*1)	—	—	—	—	O	O	
11	Simple charge conversion value	—	—	—	—	O	O	
12	HIGH total integrated power consumption Simple charge conversion value [(*3)]	—	—	—	—	—	O	
13	MIDDLE total integrated power consumption Simple charge conversion value [(*3)]	—	—	—	—	—	O	
14	LOW total integrated power consumption Simple charge conversion value [(*3)]	—	—	—	—	—	O	
15	Integral power consumption conversion value (integer value)	—	—	—	—	—	—	For KM1/KE1
16	Integral power consumption conversion value (fractional value)	—	—	—	—	—	—	For KM1/KE1
17	Sum of pulse input count (times) (*2)	—	—	—	—	O	O	
18	Pulse input count 1 (times) (*2)	—	—	—	—	O	O	
19	Pulse input count 2 (times) (*2)	—	—	—	—	O	O	
20	Conversion value 1 [(*3)] (*2)	—	—	—	—	O	O	
21	Conversion value 2 [(*3)] (*2)	—	—	—	—	O	O	
22	Total conversion value [(*3)] +[(*3)] (*2)	—	—	—	—	O	O	
23	Temperature [(*3)] (*2)	—	—	—	—	O	O	
24	Consumption rate	—	—	—	—	O	O	

*1: The accumulated value of integral power consumption (kWh) or regenerated power consumption (kWh).

*2: The corresponding Unit No. is assigned in front of the CSV parameter name, when a group line graph shows individual Unit values.

*3: The value unit is given in brackets. The value unit is read from each Unit during a communications test.

Table 44: KM1/KE1 CSV Output Data (Per Unit/Group, Measurement Interval: 30 Min./1 Hour/1 Day)

No.	CSV parameter	PMU1A	PMU2A	EMU8A	CTD8E	PGR1C	ZCT8E	Remarks
1	Date	O	O	O	O	O	—	
2	Time	O	O	O	O	O	—	
3	Abnormal flag	O	O	O	O	O	—	
4	Integral power consumption (kWh)	O	O	—	O	O	—	
5	Accumulated power consumption (kWh) (*1)	O	O	—	O	O	—	
6	HIGH integral power consumption	O	O	—	—	—	—	
7	MIDDLE integral power consumption	O	O	—	—	—	—	
8	LOW integral power consumption	O	O	—	—	—	—	
9	Regenerated power consumption (kWh)	O	O	—	O	O	—	
10	Accumulated regenerated power consumption (kWh) (*1)	O	O	—	O	O	—	
11	Simple charge conversion value	—	—	—	—	—	—	For KM50/KM100/KM20
12	HIGH total integrated power consumption Simple charge conversion value	—	—	—	—	—	—	For KM100/KM20/KM50
13	MIDDLE total integrated power consumption Simple charge conversion value	—	—	—	—	—	—	For KM100/KM20/KM50
14	LOW total integrated power consumption Simple charge conversion value	—	—	—	—	—	—	For KM100/KM20/KM50
15	Integral power consumption conversion value (integer value)	O	O	—	O	O	—	
16	Integral power consumption conversion value (fractional value)	O	O	—	O	O	—	
17	Pulse input count (times) (*2)	—	—	O	—	—	—	
18	Pulse conversion value (integer value) (*2)	—	—	O	—	—	—	
19	Pulse conversion value (fractional value) (*2)	—	—	O	—	—	—	
20	Thermistor input (*2)	—	—	O	—	—	—	
21	Consumption rate	O	O	—	—	—	—	

*1: The accumulated value of integral power consumption (kWh) or regenerated power consumption (kWh).

*2: The corresponding Unit No. and Event No. are assigned in front of the CSV parameter name, when a group line graph shows individual Unit values.

9.3.3. Data Output in High-Speed Logging Files (Periodic Measurement)

This section shows the data collected with high-speed logging.

See "Table 45: High-Speed Logging CSV Data for KM50-C1-FLK/KM50-E1-FLK" (P. 9-47) for the KM50-C/E data.

See "Table 46: High-Speed Logging Item List for KM100-T-FLK/KM100-TM-FLK" (P. 9-50) for the KM100 data.

See "Table 47: High-Speed Logging Item List for KM20-B40-FLK" (P. 9-51) for the KM20-B40 data.

Table 45: High-Speed Logging CSV Data for KM50-C1-FLK/KM50-E1-FLK

■ All Item Collection

No.	CSV parameter	KM50				CompoWay/F		Modbus	Variable area parameter
		C-V1	E-V1	C-V2	E-V2	Type	Address	Address	
1	Unit No.	O	O	O	O	---	---	---	Measurement target Unit number
2	Measurement date	O	O	O	O	---	---	---	Measurement date
3	Voltage 1 (V)	O	O	O	O	C8	0000	0000	Instantaneous voltage 1 (V)
4	Voltage 2	O	O	O	O	C8	0001	0001	Instantaneous voltage 2 (V)
5	Voltage 3	O	O	O	O	C8	0002	0002	Instantaneous voltage 3 (V)
6	Current 1 (A)	O	O	O	O	C8	0003	0003	Instantaneous current 1 (A)
7	Current 2	O	O	O	O	C8	0004	0004	Instantaneous current 2 (A)
8	Current 3	O	O	O	O	C8	0005	0005	Instantaneous current 3 (A)
9	Power factor	O	O	O	O	C8	0006	0006	Instantaneous power factor
10	Frequency (Hz)	O	O	O	O	C8	0007	0007	Instantaneous frequency (Hz)
11	Active power (W)	O	O	O	O	C8	0008	0008	Instantaneous active power (W)
12	Active power (kW)	O	O	O	O	C8	0009	0009	Instantaneous active power (kW)
13	Reactive power (var)	O	O	O	O	C8	000A	000A	Instantaneous reactive power (var)
14	Reactive power (kvar)	O	O	O	O	C8	000B	000B	Instantaneous reactive power (kvar)
15	Total integrated power consumption (Wh)	---	O	---	O	C8	001F	001F	Total integrated power consumption (Wh)
16	Total integrated power consumption (kWh)	O	O	O	O	C8	000C	000C	Total integrated power consumption n (kWh)
17	Arbitrary integral power consumption (kWh)	---	---	---	---	---	---	---	None
18	CO_2 conversion value (kgCO_2)	O	O	O	O	C8	000D	000D	Calculated CO_2 (total power consumption) (kgCO_2)
19	Sum of pulse input count for today (times)	O	O	O	O	C8	000E	000E	Sum of pulse input count today
20	Electric power consumption rate (kWh/times)	O	O	O	O	C8	000F	000F	Electric power consumption rate (kWh/times)
21	Pulse input ON time	O	O	O	O	C8	0010	0010	Pulse input ON time
22	HIGH integral power consumption	---	O	---	O	C8	0013	0013	HIGH integral power consumption (kWh)
23	HIGH integral power consumption ratio	---	O	---	O	C8	0014	0014	HIGH integral power consumption ratio
24	HIGH integral time	---	O	---	O	C8	0015	0015	HIGH integral time
25	HIGH integral time ratio	---	O	---	O	C8	0016	0016	HIGH integral time ratio
26	MIDDLE integral power consumption	---	O	---	O	C8	0017	0017	MIDDLE integral power consumption (kWh)
27	MIDDLE integral power consumption ratio	---	O	---	O	C8	0018	0018	MIDDLE integral power consumption ratio
28	MIDDLE integral time	---	O	---	O	C8	0019	0019	MIDDLE integral time
29	MIDDLE integral time ratio	---	O	---	O	C8	001A	001A	MIDDLE integral time ratio
30	LOW integral power consumption	---	O	---	O	C8	001B	001B	LOW integral power consumption (kWh)
31	LOW integral power consumption ratio	---	O	---	O	C8	001C	001C	LOW integral power consumption ratio
32	LOW integral time	---	O	---	O	C8	001D	001D	LOW integral time
33	LOW integral time ratio	---	O	---	O	C8	001E	001E	LOW integral time ratio
34	Status	O	O	O	O	C8	0011	0011	Status

■Limited Collection Items: CompoWay/F

No.	CSV parameter	KM50				CompoWay/F		Variable area parameter
		C-V1	E-V1	C-V2	E-V2	Type	Address	
1	Unit No.	O	O	O	O	—	—	Measurement target unit number
2	Measurement date	O	O	O	O	—	—	Measurement date
3	Voltage 1 (V)	O	O	O	O	C0	0000	Instantaneous voltage 1 (V)
4	Voltage 2	O	O	O	O	C0	0001	Instantaneous voltage 2 (V)
5	Voltage 3	—	—	—	—			None
6	Current 1 (A)	O	O	O	O	C0	0003	Instantaneous current 1 (A)
7	Current 2	O	O	O	O	C0	0004	Instantaneous current 2 (A)
8	Current 3	—	—	—	—	—	—	None
9	Power factor	O	O	O	O	C0	0006	Instantaneous power factor
10	Frequency (Hz)	O	O	O	O	C0	0007	Instantaneous frequency (Hz)
11	Active power (W)	—	—	—	—	—	—	None
12	Active power (kW)	O	O	O	O	C0	0009	Instantaneous active power (kW)
13	Reactive power (var)	—	—	—	—	—	—	None
14	Reactive power (kvar)	O	O	O	O	C0	000B	Instantaneous reactive power (kvar)
15	Total integrated power consumption (Wh)	—	—	—	—	—	—	None
16	Total integrated power consumption (kWh)	O	O	O	O	C0	000C	Total integrated power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	—	—	—	—	—	—	None
18	CO_2 conversion value ($kgCO_2$)	—	—	—	—	—	—	None
19	Sum of pulse input count for today (times)	—	—	—	—	—	—	None
20	Electric power consumption rate (kWh/times)	—	—	—	—	—	—	None
21	Pulse input ON time	—	—	—	—	—	—	None
22	HIGH integral power consumption	—	—	—	—	—	—	None
23	HIGH integral power consumption ratio	—	—	—	—	—	—	None
24	HIGH integral time	—	—	—	—	—	—	None
25	HIGH integral time ratio	—	—	—	—	—	—	None
26	MIDDLE integral power consumption	—	—	—	—	—	—	None
27	MIDDLE integral power consumption ratio	—	—	—	—	—	—	None
28	MIDDLE integral time	—	—	—	—	—	—	None
29	MIDDLE integral time ratio	—	—	—	—	—	—	None
30	LOW integral power consumption	—	—	—	—	—	—	None
31	LOW integral power consumption ratio	—	—	—	—	—	—	None
32	LOW integral time	—	—	—	—	—	—	None
33	LOW integral time ratio	—	—	—	—	—	—	None
34	Status	—	—	—	—	—	—	None

■Limited Collection Items: Modbus

No.	CSV parameter	KM50				Modbus Address	Variable area parameter
		C-V1	E-V1	C-V2	E-V2		
1	Unit No.	O	O	O	O	—	Measurement target Unit number
2	Measurement date	O	O	O	O	—	Measurement date
3	Voltage 1 (V)	O	O	O	O	0000	Instantaneous voltage 1 (V)
4	Voltage 2	O	O	O	O	0001	Instantaneous voltage 2 (V)
5	Voltage 3	O	O	O	O	0002	Instantaneous voltage 3 (V)
6	Current 1 (A)	O	O	O	O	0003	Instantaneous current 1 (A)
7	Current 2	O	O	O	O	0004	Instantaneous current 2 (A)
8	Current 3	O	O	O	O	0005	Instantaneous current 3 (A)
9	Power factor	O	O	O	O	0006	Instantaneous power factor
10	Frequency (Hz)	O	O	O	O	0007	Instantaneous frequency (Hz)
11	Active power (W)	O	O	O	O	0008	Instantaneous active power (W)
12	Active power (kW)	O	O	O	O	0009	Instantaneous active power (kW)
13	Reactive power (var)	O	O	O	O	000A	Instantaneous reactive power (var)
14	Reactive power (kvar)	O	O	O	O	000B	Instantaneous reactive power (kvar)
15	Total integrated power consumption (Wh)	—	—	—	—	—	None
16	Total integrated power consumption (kWh)	O	O	O	O	000C	Total integral power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	—	—	—	—	—	None
18	CO_2 conversion value (kgCO$_2$)	—	—	—	—	—	None
19	Sum of pulse input count for today (times)	—	—	—	—	—	None
20	Electric power consumption rate (kWh/times)	—	—	—	—	—	None
21	Pulse input ON time	—	—	—	—	—	None
22	HIGH integral power consumption	—	—	—	—	—	None
23	HIGH integral power consumption ratio	—	—	—	—	—	None
24	HIGH integral time	—	—	—	—	—	None
25	HIGH integral time ratio	—	—	—	—	—	None
26	MIDDLE integral power consumption	—	—	—	—	—	None
27	MIDDLE integral power consumption ratio	—	—	—	—	—	None
28	MIDDLE integral time	—	—	—	—	—	None
29	MIDDLE integral time ratio	—	—	—	—	—	None
30	LOW integral power consumption	—	—	—	—	—	None
31	LOW integral power consumption ratio	—	—	—	—	—	None
32	LOW integral time	—	—	—	—	—	None
33	LOW integral time ratio	—	—	—	—	—	None
34	Status	—	—	—	—	—	None

Table 46: High-Speed Logging Item List for KM100-T-FLK/KM100-TM-FLK

No.	CSV parameter	KM100		CompoWay/F		Modbus	Variable area parameter
		All item collection	Limited collection items	Type	Address	Address	
1	Unit No.	O	O	—	—	—	Measurement target Unit number
2	Measurement date	O	O	—	—	—	Measurement date
3	Voltage 1	O	O	C0	0000	—	Phase-R instantaneous voltage (V)
4	Voltage 2	O	O	C0	0001	—	Phase-T instantaneous voltage (V)
5	Voltage 3	—	—	—	—	—	None
6	Current 1	O	O	C0	0002	—	Phase-R instantaneous current (A)
7	Current 2	O	O	C0	0003	—	Phase-T instantaneous current (A)
8	Current 3	—	—	—	—	—	None
9	Power factor	O	O	C0	0006	—	Instantaneous power factor
10	Frequency (Hz)	O	O	C0	0007	—	Frequency (Hz)
11	Active power (W)	—	—	—	—	—	None
12	Active power (kW)	O	O	C0	0004	—	Instantaneous active power (kW)
13	Reactive power (var)	—	—	—	—	—	None
14	Reactive power (kvar)	O	O	C0	0005	—	Instantaneous reactive power (kvar)
15	Total integrated power consumption (Wh)	—	—	—	—	—	None
16	Total integrated power consumption (kWh)	O	O	C0	0008	—	Integral power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	O	O	C0	0009	—	Arbitrary integral power consumption (kWh)
18	CO_2 conversion value ($kgCO_2$)	—	—	—	—	—	None
19	Sum of pulse input count for today (times)	—	—	—	—	—	None
20	Electric power consumption rate (kWh/times)	—	—	—	—	—	None
21	Pulse input ON time	—	—	—	—	—	None
22	HIGH integral power consumption	—	—	—	—	—	None
23	HIGH integral power consumption ratio	—	—	—	—	—	None
24	HIGH integral time	—	—	—	—	—	None
25	HIGH integral time ratio	—	—	—	—	—	None
26	MIDDLE integral power consumption	—	—	—	—	—	None
27	MIDDLE integral power consumption ratio	—	—	—	—	—	None
28	MIDDLE integral time	—	—	—	—	—	None
29	MIDDLE integral time ratio	—	—	—	—	—	None
30	LOW integral power consumption	—	—	—	—	—	None
31	LOW integral power consumption ratio	—	—	—	—	—	None
32	LOW integral time	—	—	—	—	—	None
33	LOW integral time ratio	—	—	—	—	—	None
34	Status	O	—	C0	000A	—	Status

Table 47: High-Speed Logging Item List for KM20-B40-FLK

No.	CCSV parameter	KM20-B40		CompoWay/F		Modbus	Variable area parameter
		All item collection	Limited collection items	Type	Address	Address	
1	Unit No.	O	O	—	—	—	Measurement target Unit number
2	Measurement date	O	O	—	—	—	Measurement date
3	Voltage 1	O	O	C0	0000	—	Instantaneous voltage between P1-P2 (V)
4	Voltage 2	O	O	C0	0001	—	Instantaneous voltage between P2-P3 (V)
5	Voltage 3	—	—	—	—	—	None
6	Current 1	O	O	C0	0002	—	I1 instantaneous current (A)
7	Current 2	O	O	C0	0003	—	I2 instantaneous current (A)
8	Current 3	—	—	—	—	—	None
9	Power factor	O	O	C0	0006	—	Instantaneous power factor
10	Frequency (Hz)	O	O	C0	0007	—	Frequency (Hz)
11	Active power (W)	—	—	—	—	—	None
12	Active power (kW)	O	O	C0	0004	—	Instantaneous active power (kW)
13	Reactive power (var)	—	—	—	—	—	None
14	Reactive power (kvar)	—	—	—	—	—	None
15	Total integrated power consumption (Wh)	—	—	—	—	—	None
16	Total integrated power consumption (kWh)	O	O	C0	0008	—	Integral power consumption (kWh)
17	Arbitrary integral power consumption (kWh)	—	—	—	—	—	None
18	CO_2 conversion value ($kgCO_2$)	—	—	—	—	—	None
19	Sum of pulse input count for today (times)	—	—	—	—	—	None
20	Electric power consumption rate (kWh/times)	—	—	—	—	—	None
21	Pulse input ON time	—	—	—	—	—	None
22	HIGH integral power consumption	—	—	—	—	—	None
23	HIGH integral power consumption ratio	—	—	—	—	—	None
24	HIGH integral time	—	—	—	—	—	None
25	HIGH integral time ratio	—	—	—	—	—	None
26	MIDDLE integral power consumption	—	—	—	—	—	None
27	MIDDLE integral power consumption ratio	—	—	—	—	—	None
28	MIDDLE integral time	—	—	—	—	—	None
29	MIDDLE integral time ratio	—	—	—	—	—	None
30	LOW integral power consumption	—	—	—	—	—	None
31	LOW integral power consumption ratio	—	—	—	—	—	None
32	LOW integral time	—	—	—	—	—	None
33	LOW integral time ratio	—	—	—	—	—	None
34	Status	O	—	C0	000A	—	Status

9.3.4.　Data Output with Manual Extraction

The following data manually extracted from Units can be output in files.

9.3.4.1. CSV Log Data for KM100-T-FLK/KM100-TM-FLK

The data extracted from the log data stored in each Unit is saved in a CSV file. The period of the extracted log data depends on the data retention period specified for the Unit (The maximum retention log items is 340). However, the log data for the periods where no measurement is performed (i.e. the Unit is not in operation) cannot be extracted.

Table 48: Manually Extracted KM100 Data CSV

■Data retention period

Data retention period	Description
5 min.	Measurement data for (maximum) last 1.18 days
6 min.	Measurement data for (maximum) last 1.42 days
10 min.	Measurement data for (maximum) last 2.36 days
15 min.	Measurement data for (maximum) last 3.54 days
20 min.	Measurement data for (maximum) last 4.72 days
30 min.	Measurement data for (maximum) last 7.08 days
60 min.	Measurement data for (maximum) last 14.17 days
120 min.	Measurement data for (maximum) last 28.33 days

■Measurement Condition Output Item

No.	Output item
1	Measurement condition (Fixed string)
2	Applied circuit
3	Voltage range
4	Current range
5	VT primary voltage
6	CT ratio
7	Data retention period

■Measurement Data Output Item

No.	Output item
1	Date
2	Time
3	P1-2 average voltage (V)
4	P1-2 maximum voltage (V)
5	P2-3 average voltage (V)
6	P2-3 maximum voltage (V)
7	I1 average current (A)
8	I1 maximum current (A)
9	I3 average current (A)
10	I3 maximum current (A)
11	Average power consumption (kW)
12	Average power consumption (kW)
13	Average reactive power (kvar)
14	Maximum reactive power (kvar)
15	Integral power consumption (kW/h)
16	Arbitrary integral power consumption (kW/h)
17	Power factor
18	Frequency (Hz)

9.3.4.2. Manually Extracted CSV Data for KM50-C1-FLK/KM50-E1-FLK

The following data manually extracted from Units can be output in files.

Table 49: Manually Extracted KM50-C/KM50-E Data CSV

■Data Retention Period

Extracted data	Description
Data extracted every 5 min.	Data measured for 2 days including today and the previous day
Data extracted every hour	Data measured for 2 days including today and the previous day
Data extracted every day	Data measured for 9 days including today and the previous 8 days
Data extracted every month	Data measured for 14 months including this month and the previous 13 months
Maximum/Minimum measurement values	Data measured for 2 days including today and the previous day
Alarm history data	The last 10 data items

■Output Data Items Extracted Every 5 Minutes

The output items vary among the KM50-C and -E models as well as versions.

No.	Output item	KM50			
		E-V1	C-V1	E-V2	C-V2
1	Date	○	○	○	○
2	Time	○	○	○	○
3	Integral power consumption (unit: 0.1kWh) every 5 min.	○	○	○	○
4	Total integrated power consumption (unit: 0.1kWh) every 5 min.	○	○	○	○
5	HIGH integral power consumption every 5 min.	○	✕	○	✕
6	MIDDLE integral power consumption every 5 min.	○	✕	○	✕
7	LOW integral power consumption every 5 min.	○	✕	○	✕
8	Integral power consumption (unit: 0.001kWh) every 5 min.	○	✕	○	○
9	Total integrated power consumption (unit: 0.001kWh) every 5 min.	○	✕	○	○
10	□□ integral power consumption (unit: 0.1kWh) every 5 min.	✕	✕	○	○
11	□□ total integrated power consumption (unit: 0.1kWh) every 5 min.	✕	✕	○	○
12	□ □ integral power consumption (unit: 0.001kWh) every 5 min.	✕	✕	○	○
13	□□ total integrated power consumption (unit: 0.001kWh) every 5 min.	✕	✕	○	○

(○: Output, ✕: Not output)

■Output Data Items Extracted Every Hour

The output items vary among the KM50-C and -E models as well as versions.

No.	Output item	KM50			
		E-V1	C-V1	E-V2	C-V2
1	Date	○	○	○	○
2	Time	○	○	○	○
3	Integral power consumption (unit: 0.1kWh) every hour	○	○	○	○
4	Integral power consumption (unit: 0.001kWh) every hour.	○	✕	○	○

(○: Output, ✕: Not output)

■Output Data Items Extracted Every Day

The output items vary among the KM50-C and -E models as well as the versions.

No.	Output item	KM50			
		E-V1	C-V1	E-V2	C-V2
1	Date	○	○	○	○
2	Integral power consumption (unit: 0.1kWh) every day	○	○	○	○
3	Integral power consumption (unit: 0.001kWh) every day	○	×	○	○
4	Operating time every day (*1)	○	○	○	○
5	Electric power consumption rate every day	○	○	○	○
6	Pulse count every day	○	○	○	○
7	HIGH integral power consumption every day	○	×	○	×
8	HIGH integral power consumption ratio every day	○	×	○	×
9	HIGH integral time every day	○	×	○	×
10	HIGH integral time ratio every day	○	×	○	×
11	MIDDLE integral power consumption every day	○	×	○	×
12	MIDDLE integral power consumption ratio every day	○	×	○	×
13	MIDDLE integral time every day	○	×	○	×
14	MIDDLE integral time ratio every day	○	×	○	×
15	LOW integral power consumption every day	○	×	○	×
16	LOW integral power consumption ratio every day	○	×	○	×
17	LOW integral time every day	○	×	○	×
18	LOW integral time ratio every day	○	×	○	×

(○: Output, ×: Not output)

*1: Refers to the "Pulse input ON time every day" with KM50-C/E (V2).

■Output Data Items Extracted Every Month

The output items vary among the KM50-C and -E models as well as the versions.

No.	Output item	KM50			
		E-V1	C-V1	E-V2	C-V2
1	Date	○	○	○	○
2	Integral power consumption (unit: 0.1kWh) every month	○	○	○	○
3	Integral power consumption (unit: 0.001kWh) every month	○	×	○	○

(○: Output, ×: Not output)

■Maximum/Minimum Data Output Items

The output items vary among the KM50-C and -E models as well as the versions.

No.	Output item	KM50			
		E-V1	C-V1	E-V2	C-V2
1	Date	○	○	○	○
2	Maximum voltage 1 measurement time	○	○	○	○
3	Maximum voltage 1 measurement value (V)	○	○	○	○
4	Maximum voltage 2 measurement time	○	○	○	○
5	Maximum voltage 2 measurement value (V)	○	○	○	○
6	Maximum voltage 3 measurement time	○	○	○	○
7	Maximum voltage 3 measurement value (V)	○	○	○	○
8	Maximum current 1 measurement time	○	○	○	○
9	Maximum current 1 measurement value (A)	○	○	○	○
10	Maximum current 2 measurement time	○	○	○	○
11	Maximum current 2 measurement value (A)	○	○	○	○
12	Maximum current 3 measurement time	○	○	○	○
13	Maximum current 3 measurement value (A)	○	○	○	○

		E-V1	C-V1	E-V2	C-V2
14	Maximum power factor measurement time	O	O	O	O
15	Maximum power factor measurement value	O	O	O	O
16	Maximum active power measurement time (W)	O	O	O	O
17	Maximum active power measurement value (W)	O	O	O	O
18	Maximum active power measurement time (kW)	O	O	O	O
19	Maximum active power measurement value (kW)	O	O	O	O
20	Maximum reactive power measurement time (var)	O	O	O	O
21	Maximum reactive power measurement value (var)	O	O	O	O
22	Maximum reactive power measurement time (kvar)	O	O	O	O
23	Maximum reactive power measurement value (kvar)	O	O	O	O
24	Minimum voltage 1 measurement time	O	O	O	O
25	Minimum voltage 1 measurement value (V)	O	O	O	O
26	Minimum voltage 2 measurement time	O	O	O	O
27	Minimum voltage 2 measurement value (V)	O	O	O	O
28	Minimum voltage 3 measurement time	O	O	O	O
29	Minimum voltage 3 measurement value (V)	O	O	O	O
30	Minimum current 1 measurement time	O	O	O	O
31	Minimum current 1 measurement value (A)	O	O	O	O
32	Minimum current 2 measurement time	O	O	O	O
33	Minimum current 2 measurement value (A)	O	O	O	O
34	Minimum current 3 measurement time	O	O	O	O
35	Minimum current 3 measurement value (A)	O	O	O	O
36	Minimum power factor measurement time	O	O	O	O
37	Minimum power factor measurement value	O	O	O	O
38	Minimum active power measurement time (W)	O	O	O	O
39	Minimum active power measurement value (W)	O	O	O	O
40	Minimum active power measurement time (kW)	O	O	O	O
41	Minimum active power measurement value (kW)	O	O	O	O
42	Minimum reactive power measurement time (var)	O	O	O	O
43	Minimum reactive power measurement value (var)	O	O	O	O
44	Minimum reactive power measurement time (kvar)	O	O	O	O
45	Minimum reactive power measurement value (kvar)	O	O	O	O

(O: Output, ✕: Not output)

■Alarm History Data Output Items

The output items vary among the KM50-C and -E models as well as the versions.

No.	Output item	KM50			
		E-V1	C-V1	E-V2	C-V2
1	Alarm generation	✕	✕	O	O
2	Alarm generation date	✕	✕	O	O
3	Alarm cancel date	✕	✕	O	O

(O: Output, ✕: Not output)

9.4. Summarizing Data

Data collected from periodic measurements is summarized at every measurement interval of 30 minutes, 1 hour, or 1 day, for periodic output in lists and graphs. Data is summarized only while periodic measurements are in progress.

This section describes the data summarizing method and produced files.

1. Summarizing Method and Created Files

Data collected at a 1-, 5-, or 10-minute measurement interval is summarized using the procedure below for graph display: a daily graph with 30-minute/hourly values or monthly graph with daily values.
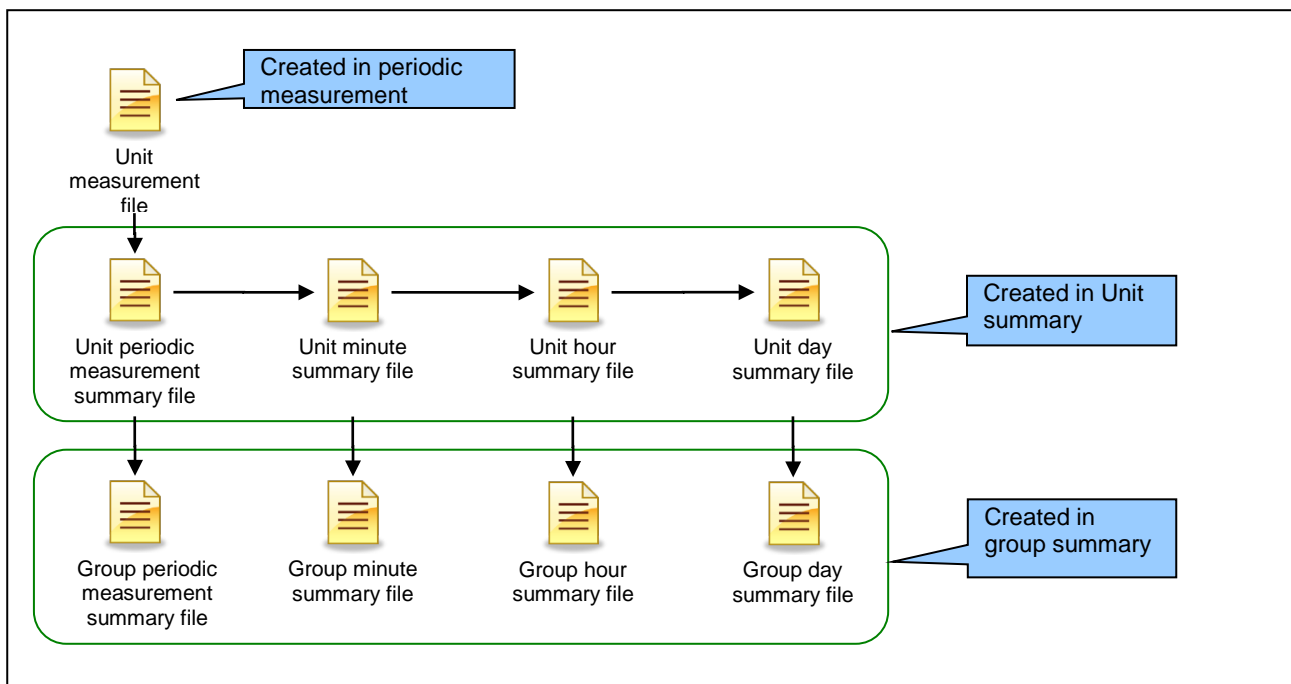
Figure 15: Summary Method and Created Files

Power consumptions are calculated based on the summary process as follows:

(1) A Unit measurement file stores the Unit's measured values and the integral power consumption obtained by accumulating the measured values.

(2) A Unit or group periodic measurement summary file stores the Unit's or group's power consumption based on the previous and current integral power consumption values at each measurement interval obtained by subtracting the first from the latter.

(3) A Unit or group minute summary file stores the Unit's or group's total power consumption for every 30 minutes obtained from the periodic measurement file.

(4) A Unit or group hour summary file stores the Unit's or group's total power consumption for every hour obtained from the minute summary file.

(5) A Unit or group day summary file stores the Unit's or group's total power consumption for every day obtained from the hour summary file.

Precautions for Correct Use

The values in each graph refer to the corresponding summary file, created at the timing the periodic measurements for the last interval (specified for the summary file) is completed. The values for intervals where periodic measurements are stopped are not displayed in the graph.

■File Creation Frequency

The following table shows the frequency each measurement/summary file is created.

Table 50: File Creation Frequency

File	Data Granularity	File creation frequency	File retention period
Unit measurement file	1 data for every 1, 5, or 10 minutes	1 file per day	1 month
Unit periodic measurement summary file	1 data for every 1, 5, or 10 minutes	1 file per day	2 years
Unit minute summary file	1 data for every 30 minutes	1 file per month	2 years
Unit hour summary file	1 data every hour	1 file per month	2 years
Unit day summary file	1 data every day	1 file per month	2 years
Group periodic measurement summary file	1 data for every 1, 5, or 10 minutes	1 file per day	2 years
Group minute summary file	1 data for every 30 minutes	1 file per month	2 years
Group hour summary file	1 data every hour	1 file per month	2 years
Group day summary file	1 data every day	1 file per month	2 years

■Included Time Bands

The following table shows the time bands included in individual Unit/group summary files.

Table 51: Time Band Data

File	Time band	Summary source file
Unit/group minute summary file	Minutes 1 to 30 every hour Minute 31 every hour to minute 0 the next hour	Unit periodic measurement summary file
Unit/group hour summary file	Minute 30 every hour and minute 0 the next hour	Unit/group minute summary file
Unit/group day summary file	Hour 1 every day to hour 0 the next day	Unit/group hour summary file

2.   Minimum Units for Integral Power Consumptions

The KM100/KM20-B40/KM50 can provide the integral power consumption in the unit of 0.1 kWh or larger. If the integral power consumption variations are small and less than 0.1 kWh, the measured value is recorded as "0 kWh". The measurement result equal to "0 kWh" is not displayed in the integral power consumption graph.

The KM1/KE1 integral power consumption can be measured in the unit of 0.001 kWh or larger.

9.5. Ethernet/RS-485 Adapter Setting Item List

This section describes the Ethernet/RS-485 adapter settings used in the EasyKM-Manager operating environment, centered around the settings required for connection with Units. Refer to Ethernet/RS-485 Adapter manual for the detailed connection and setting procedures.

> **Precautions for Correct Use**

- The description here focuses on the settings required when the Unit protocol is set to Modbus or CompoWay/F.
- Specify the items with "O" mark in the "Must set" column according to the settings of the Unit to use. The parameters without the mark also may require setting.

9.5.1. MOXA NPort 5130

The values in the table can be used if the Unit uses the default setting values.

Please note that some values may be fixed and cannot be changed depending on the protocol you use.

Table 52: MOXA NPort 5130 Setting Items

Parameter	Setting		Must set
	Modbus	CompoWay/F	
Basic Settings			
Server name	(ModelName+SerialNumber)		
Web console	Enable		
Telnet console	Enable		
Reset button protect	No		
Network Settings			
IP address	(Any IP address)		O
Netmask	(Any subnet mask)		O
Gateway	(Any default gateway)		O
IP configuration	Static		O
DNS server1			
DNS server2			
SNMP	Enable		
Community name	public		
Contact			
Location			
Auto report to IP			
Auto report to UDP port	4002		
Auto report period	10seconds		
Serial Settings			
Port 1 1			
Port alias			
Baud rate	9600		O
Data bits	8 (*1)	O	O
Stop bits	1 (*1)	O	O
Parity	Even		O
Flow control	None		O
FIFO	Enable		O
Interface	RS-485, 2wire		O

Operating Settings			
Port 1 1			
Operating mode	TCP Server Mode		○
TCP alive check time	7min		
Inactivity time	0ms		
Max connection	1		
Ignore jammed IP	Not selected		
Allow driver control	Not selected		
Packing length	0		
Delimiter 1	0(Hex), Not selected	3(Hex), selected	○
Delimiter 2	0(Hex), Not selected		
Delimiter process	Do Nothing	Delimiter+1	○
Force transmit	350ms	0	○
Local TCP port	4001		○
Command port	966		
Accessible IP Settings			
	Not set		
Auto Warning Settings			
(Auto warning: Email and SNMP trap)			
Mail server			
My server requires authentication			
From E-mail address			
E-mail address 1			
E-mail address 2			
E-mail address 3			
E-mail address 4			
SNMP trap server IP or domain name			
(Event)			
Cold start			
Warm start			
Authentication failure			
IP address changed			
Password changed			
Change Password			
Old password	Not set		
New password			
Retype password			

*1: If Modbus is selected, the data length will be always 8 bits and the number of stop bits will be set

automatically according to the vertical parity.

Vertical parity enabled: 1 bit

Vertical parity disabled: 2 bits

Note: If the NPort5130 server cannot communicate with Units normally despite the correct settings and communications environment, install the jumper resistors (provided with the NPort5130) to the NPort5130's jumpers (JP3 and JP4). Remove the screws on the NPort5130 side panel and locate the jumper resistors. Refer to the pages on the RS-485 port adjustable resistance in the MOXA "NPort5100 Series User's Manual" for the details.

9.5.2. LINEEYE SI-65

The values in the table can be used if the Unit uses the default setting values.

Please note that some values may be fixed and cannot be changed depending on the protocol you use.

Table 53: LINE SI-65 Setting Items

Parameter		Setting		Must set
		Modbus	CompoWay/F	
Network				
	Network Mode	Wired Only		
	(IP Configuration)			
	Obtain IP address automatically	Not selected		
	Use the following IP configuration	Selected		
	IP Address	(Any IP address)		○
	Subnet Mask	(Any subnet mask)		○
	Default Gateway	(Any default gateway)		○
	DNS Server			
	(Ethernet Configuration)			
	Auto Negotiate	Selected		
	Speed			
	Duplex			
Server				
	(Server Configuration)			
	Telnet Password			
	Retype Password			
	(Advanced)			
	ARP Cache Timeout	32sec		
	TCP Keepalive	45sec		
	Monitor Mode @ Bootup	Enable		
	CPU Performance Mode	Regular		
	HTTP Server Port	80		
	Config Server Port	30718		
	MTU Size	1400		
Serial Tunnel – Hostlist				
	(Retry Settings)			
	Retry Counter	3		
	Retry Timeout	250		
	(Host Information)			
		Not set		
Channel1 - Serial Settings				
	(Port Settings)			
	Protool	RS485 (Please note this setting overrides the logical setting of "RS485 - 2wire", according to the description in the SI-65 Interface Converter Operation Manual that the setting always should be "RS-232".)		○
	Baud Rate	9600		○
	Data Bits	8 (*1)	7	○
	Flow Control	None		○
	Parity	Even		○

	Stop Bits	1 (*1)	2	○
	(Pack Control)			
	Enable Packing	Selected		○
	Idle Gap Time	12msec		
	Match 2Byte Sequence	No		
	Match Bytes	0x00, 0x00		
	Send Frame Immediate	No		
	Send Trailing Bytes	None		
	(Flush Mode - Flush Input Buffer)			
	With Active Connect	No		
	With Passive Connect	No		
	At Time of Disconnect	No		
	(Flush Mode - Flush Output Buffer)			
	With Active Connect	No		
	With Passive Connect	No		
	At Time of Disconnect	No		
Channel1 – Connection				
	(Connect Protocol)			
	Protocol	TCP		○
	(Connect Mode - Passive Connection)			
	Accept Incoming	Yes		
	Password Required	No		
	Password			
	Modem Escape Sequence Pass Through	Yes		
	(Connect Mode - Active Connection)			
	Active Connect	None		
	Start Character	0x0D		
	Modem Mode	None		
	Show IP Address After RING	Yes		
	(Endpoint Configuration)			
	Local Port	10001		○
	Remote Port	0		
	Auto increment for active connect	Not selected		
	Remote Host	Not set		
	(Common Options)			
	Telnet Com Port Cntrl	Disable		
	Terminal Name			
	Connect Response	None		
	Use Hostlist	No		
	LED	Blink		
	(Disconnect Mode)			
	On Mdm_Ctrl_In Drop	No		
	Check EOT(Ctrl-D)	No		
	Hard Disconnect	Yes		
	Inactivity Timeout			

*1: If Modbus is selected, the data length will be always 8 bits and the number of stop bits will be set automatically according to the vertical parity.

Vertical parity enabled: 1 bit

Vertical parity disabled: 2 bits

- After you change settings and click [Apply Settings] using the SI-65 Setting Tool (Web Manager), the page may not be reloaded with the new settings, depending on your web browser setting. If this happens, change the web browser cache setting to "check every time the page is displayed".

- The SI-65 also requires the setting of DIP switches provided on the unit in addition to settings with the setting tool (Web Manager). Turn ON the SW-A (DIP switch A) pin 4 and SW-B (DIP switch B) pins 1 and 2. Refer to the SI-65 "Interface Converter Operation Manual" for the details.

SW-A   1   2   3   4

OFF

ON

Table 54: SW-A Setting Items

Item		SW-A				Remarks
		No.1	No.2	No.3	No.4	
Baud rate	Minimum 1.2 Kbps	ON	OFF	OFF		Specify according to the application environment (baud rate).
	Minimum 2.4 Kbps	OFF	ON	OFF		
	Minimum 4.8 Kbps	ON	ON	OFF		
	Minimum 9.6 Kbps	OFF	OFF	ON		
	Minimum 19.2 Kbps	ON	OFF	ON		
	Minimum 38.4 Kbps	OFF	ON	ON		
RS-422/485 transmission driver control	Active				OFF	Make sure that this parameter is set to ON (Auto).
	Auto				ON	

SW-B   1   2   3   4

OFF

ON

Table 55: SW-B Setting Items

Item		SW-B				Remarks
		No.1	No.2	No.3	No.4	
Circuit mode (communications method) selection	RS-422 (full duplex)	OFF				Make sure that this parameter is set to ON (RS-485 (half-duplex)).
	RS-485 (half duplex)	ON				
Transmission data echo reception	Echo back		OFF			Make sure that this parameter is set to ON (no echo back).
	No echo back		ON			
Terminating resistance between SD+ and SD-	No terminating resistance			OFF		Specify according to the application environment.
	Terminating resistance (100 Ω)			ON		
Terminating resistance between SD/RD+ and SD/RD-	No terminating resistance				OFF	Specify according to the application environment.
	Terminating resistance (100 Ω)				ON	

(MEMO)

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