

ME96SS Ver.A Series

Multi-Measuring Instruments

New models!



① ME96SSEA-MB (economy model)

Major features

- [1] Active energy measuring accuracy of class 0.5S
- [2] Applicable to harmonics (THD)
- [3] Applicable to current demand

② ME96SSRA-MB (standard model)

Major features

- [1] Active energy measuring accuracy of class 0.5S
- [2] Applicable to harmonics of $\pm 1.0\%$ (19th)
- [3] Applicable to demands A and W,var,VA
- [4] Optional units can be added.

③ ME96SSHA-MB (high-performance model)

Major features

- [1] Active energy measuring accuracy of class 0.5S
- [2] Applicable to harmonics of $\pm 1.0\%$ (31st)
- [3] Applicable to demands A and W,var,VA
- [4] Optional units can be added.

What we improved ?

1 Measuring function improvement

		Economy model		Standard model		High-spec model	
		Before improvement	After improvement	Before improvement	After improvement	Before improvement	After improvement
Model		ME96SSE-MB	ME96SSEA-MB	ME96SSR-MB	ME96SSRA-MB	ME96SSH-MB	ME96SSHA-MB
Measurement items and accuracy	Active energy	Class1	Class0.5S	Class1	Class0.5S	Class0.5S	Class0.5S
	Reactive energy	–	–	Class2	Class1S	Class2	Class1S
	Power factor	±2.0%	±0.5%	±2.0%	±0.5%	±1.0%	±0.2%
	Harmonic	–	±2.0% THD	±2.0% (Up to 13th)	±1.0% (Up to 19th)	±2.0% (Up to 31st)	±1.0% (Up to 31st)
	Demand	–	A (thermal)	A (thermal)	A (thermal), W, var, VA (rolling)	A (thermal), W (rolling)	A (thermal), W, var, VA (rolling)

Main point of improvement

1) ME96SSEA-MB(Economy model)

- Improve measurement accuracy of Active energy “Class1” ⇒ “Class0.5S”
- Add measurement item of “Total Harmonic(THD)”

2) ME96SSRA-MB(Standard model)

- Improve measurement accuracy of Active energy “Class1” ⇒ “Class0.5S”
- Expand measurement range of Harmonic (Up to 13th ⇒ “Up to 19th”)

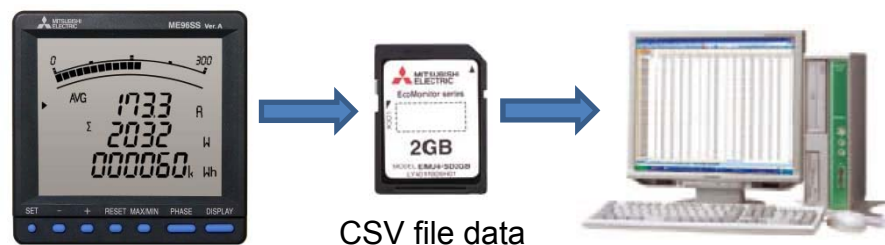
3) ME96SSHA-MB(high-performance model)

- Add measurement items of “var/VA(rolling Demand)”

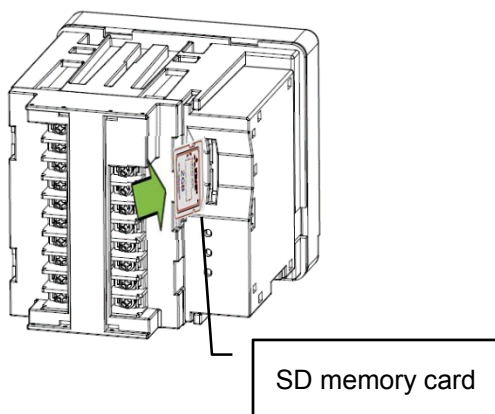
2 New optional plug-in module

1) Data logging support

for ME96SSRA-MB/ME96SSHA-MB



Optional plug-in module that can hold the data during a communication impossible period



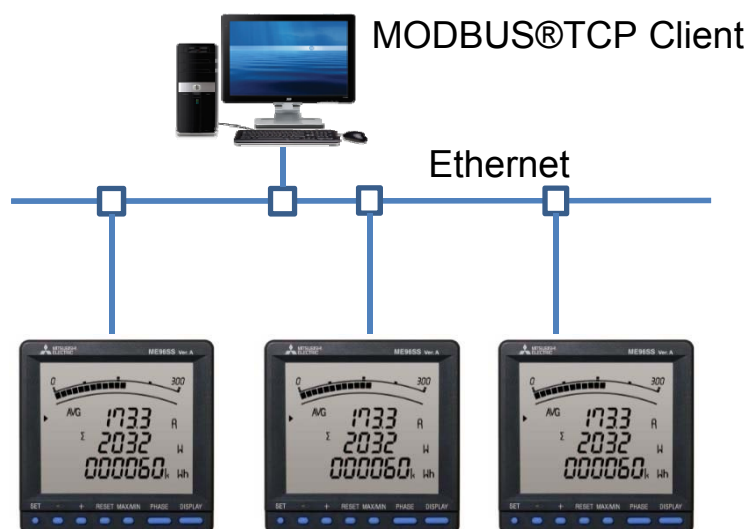
【Logging Specification】

Item		Specifications
Logging mode		Automatic refresh (Automatic overwrite/refresh)
Logging data type	Detailed data	1, 5, 10, 15 and 30-minute cycles
	1-hour data	1-hour cycles
Amount of logging element	Detailed data	Max. of 6 elements
	1-hour data	Max. of 6 elements
Internal memory Logging period	Detailed data	Cycle: 1min - 2days Cycle: 15min - 30days Cycle: 30min - 60days
	1-hour data	400days
SD memory card (2GB) Logging period		10 years or more
System log data		1,200 records
Output format		CSV format (ASCII code)

2 New optional plug-in module

2) MODBUS®TCP communication support for ME96SSRA-MB/ME96SSHA-MB

MODBUS®TCP communication unit that can be used in Ethernet system



【Specification】

Item	Specification
Interface	Conforms with IEEE802.3(10BASE-T/100BASE-TX)
Data transmission rate	10Mbps/100Mbps
Connector applicable for external wiring	RJ45 x1port
Protocol	MODBUS TCP (Port number is 502)
Maximum segment length (Between a hub and a node)	100m (328.08ft.)
Maximum number of Clients	4 connections (ex. In previous example, the number of clients is 2.)

Useful function

3 Operating time counter

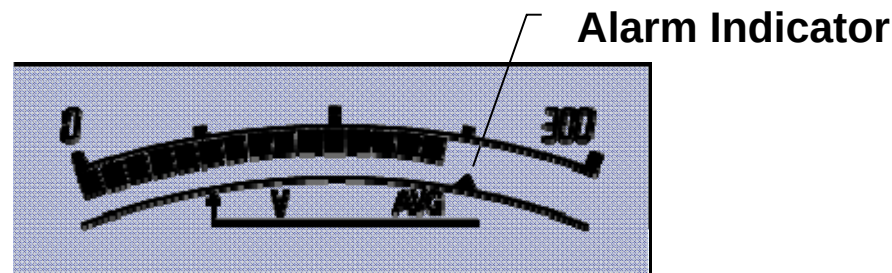
With a new operating timer users can benefit from a clear view of the measurement period helping them to **understand and make clear decisions on the data.**

4 Motor starting current mask

The ME96SS Ver.A series has intelligent masking options such as motor starting current ideal for **clearly identifying the nature of measured loads.**

5 Alarm function

The alarm function allows users to preset a trigger level where they can then decide to **take immediate actions** before, for example, a peak voltage is reached.



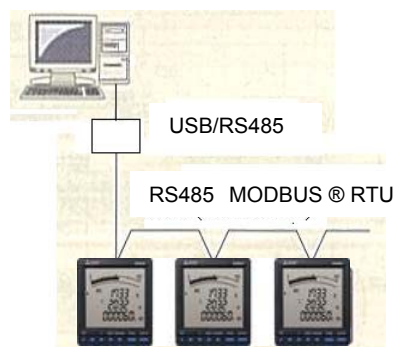
Connectivity

6 Easy communication

All ME96SS Ver.A series units can be used standalone but also come with MODBUS® RTU as standard for **simple remote monitoring systems**. The standard and high performance range units also offer optional CC-Link for **advanced integrated applications** and analog/pulse options for connection to **third party PLCs** with limited communication functions.

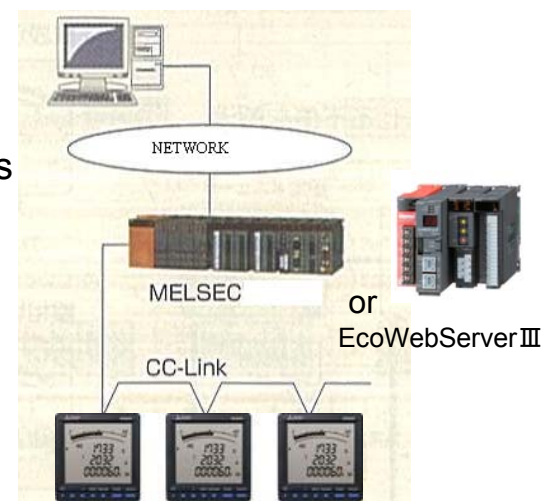
Quick and simple connection with MODBUS® RTU

Applicable ME96 units
SSHA SSRA SSEA
☒ ☒ ☒



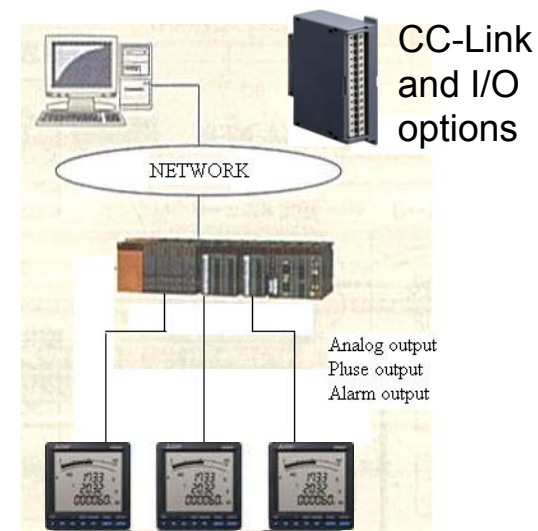
Advanced networked systems using CC-Link

Applicable ME96 units
SSHA SSRA SSEA
☒ ☒ ☐



Third party PLCs or with limited communication functions

Applicable ME96 units
SSHA SSRA SSEA
☒ ☒ ☐



Connectivity

7 Expandable Mitsubishi MODBUS®RTU/TCP system

EcoWebServer III

Modbus support



LAN CH2

Ethernet
MODBUS®TCP

ME96SS Ver.A Series



HUB

Ethernet
MODBUS®TCP

MODBUS TCP⇔RTU Converter:
MOXA MGATE MB3170 and etc.



EcoMonitorLight



ME96SS



RS-485
MODBUS®RTU

Powerful

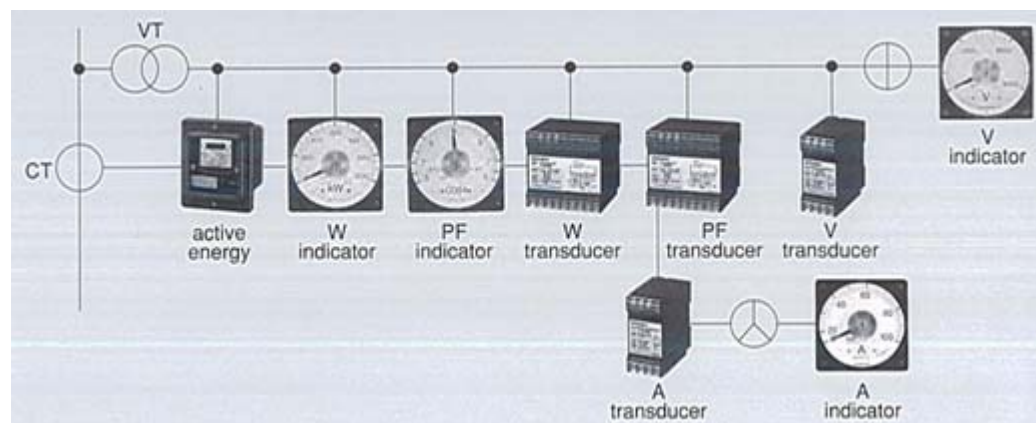
8 One device replaces nine

With the ME96SS Ver.A series you can replace 9 separate devices with 1 powerful unit, **simplifying your system, improving performance, reducing cost.**



9 Advanced management

The ME96SS Ver.A series can also manage Demand power calculation (Rolling block, Fixed Block) and Multi-energy counting (for TOU system) – **making management easy!**

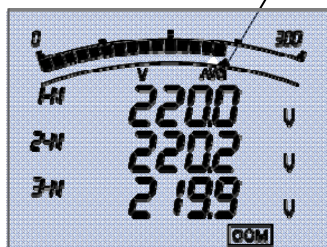


Powerful

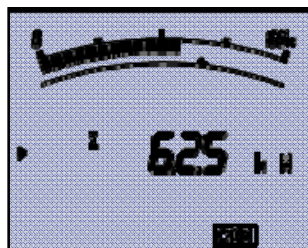
10 Clear display

The **big display** clearly shows voltage, current and power, offers meter and bar graphs.

Average Voltage

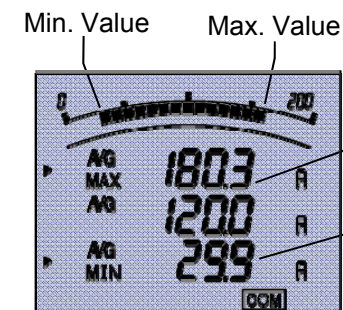


All phases
displayed
simultaneously

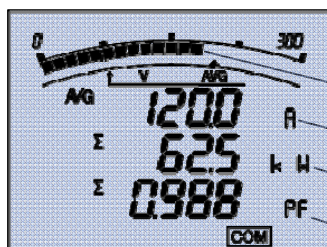


Fixed or cyclic displays

Simple and clear maximum
and minimum values

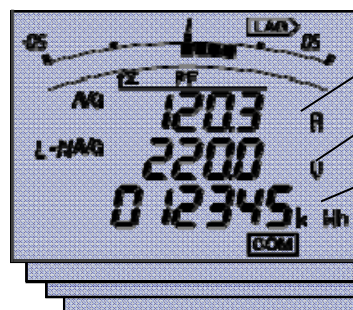


Max.
Value
Min.
Value



Four characteristics
displayed simultaneously

Voltage
Current
Power
Power Factor

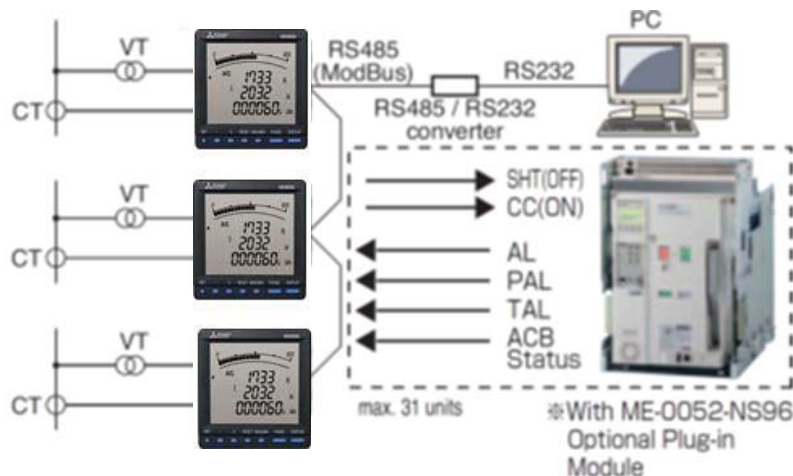


Upper : Select from A,V,W,var,VA,PF,HZ,Wh,varh,VAh
Middle : Select from A,V,W,var,VA,PF,HZ,Wh,varh,VAh
Lower : Select from A,V,W,var,VA,PF,HZ,Wh,varh,VAh
Maximum of 4 displays are settable

Thoughtful design

11 Remote I/O

Use the ME96SS Ver.A Series (SSRA/SSHA) to remotely interface with local devices such as ACBs. This allows users advanced control **without having to deploy secondary control devices.**



12 High speed commissioning

The flexible test function allows

- a) the installation to be pre-checked before the load voltage/current are enabled
- b) I/O devices and communication to be checked

This means **quicker and safer commissioning and installation.**

PRODUCT DETAILS

Specifications

Measuring Items	ME96SSHA-MB	ME96SSRA-MB	ME96SSEA-MB
Current (A)	±0.1%	±0.2%	±0.5%
Demand Current (DA)	○	○	○
Voltage (V)	±0.1%	±0.2%	±0.5%
Active Power (W)	±0.2%	±0.5%	±0.5%
Reactive Power (var)	±0.2%	±0.5%	-
Apparent Power (VA)	±0.2%	±0.5%	-
Power Factor (PF)	±0.2%	±0.5%	±0.5%
Frequency (Hz)	±0.1%	±0.1%	±0.2%
Active Energy (Wh) (IEC62053-21,22)	Class0.5S (Import/Export)	Class0.5S (Import/Export)	Class0.5S (Import)
Reactive Energy (varh)	Class1S	Class1S	-
Apparent Energy (VAh)	±2.0%	±2.0%	-
Harmonics Current (HI)	Max.31st,±1.0%	Max.19th,±1.0%	Total, ±2.0%
Harmonics Voltage (HV)	Max.31st,±1.0%	Max.19th,±1.0%	Total, ±2.0%

Specifications

●Direct Input

	3P4W (Phase/Line-Line)	3P3W (delta circuit)	3P3W (star circuit)	1P3W (Phase/Line-Line)	1P2W
Rated	277/480V	277V	480V	240/480V	277V
Maximum	400/640V	400V	Max.600V	300/600V	400V

●VT Primary Voltage, CT Primary Current

- VT : 60V ~ 750kV
- CT : 1A ~ 30kA

●Power Failure Compensation

Setting Value, Max./Min. Value, Active /Reactive Energy, Operating time is memorized **in the non-volatile memory**.

●Standard

- EMC : EN61326-1/2013 , FCC/ICpart15B ClassA , KC
- Safety : EN61010-1/2010 , UL61010-1

Specifications

•Optional Plug-in Module (For ME96SSHA-MB and ME96SSRA-MB)

Model Name	Analog Output	Pulse /Alarm Output	Contact Input	Contact Output	Commu nication	Logging
ME-4210-SS96	4	2	1	-	-	-
ME-0040C-SS96	-	-	4	-	CC-Link	-
ME-0052-SS96	-	-	5	2 note1	-	-
ME-0000BU-SS96	-	-	-	-	-	6 items
ME-0000MT-SS96	-	-	-	-	MODBUS ®TCP	-

Note1:These contact outputs are controlled via MODBUS[®] RTU communication.

Comparison of Previous version

ME96SSEA-MB (Main point of changes)

		Before the change	After the change	Remarks
Model name		ME96SSE-MB	ME96SSEA-MB	“A” means “Ver.A”
Terminal Block		Push-in type	Screw type	Support 2.5mm ² Cable
Measuring	Wh	Class1.0	Class 0.5S	Improvement
	Harmonics	—	THD	Addition
	Demand function	—	A(Thermal)	Addition
Plug-in module		—	—	—

Comparison of Previous version

ME96SSRA-MB (Main point of changes)

		Before the change	After the change	Remarks
Model name		ME96SSR-MB	ME96SSRA-MB	"A" means Ver.A"
Terminal Block		Push-in type	Screw type	Support 2.5mm ² Cable
Measuring	PowerFactor	±2.0%	± 1.0%	Improvement
	Wh	Class1.0	Class0.5S	Improvement
	Harmonics	±2.0% (Up to 13 th)	± 1.0% (Up to 19 th)	Improvement
	Demand function	A(Thermal)	A(Thermal), W,var,VA(Rolling)	Addition
Plug-in module		1)CC-Link 2)Analog +Pulse 3)DI/DO	1)CC-Link 2)Analog +Pulse 3)DI/DO 4)Logging 5)MODBUS TCP	Addition

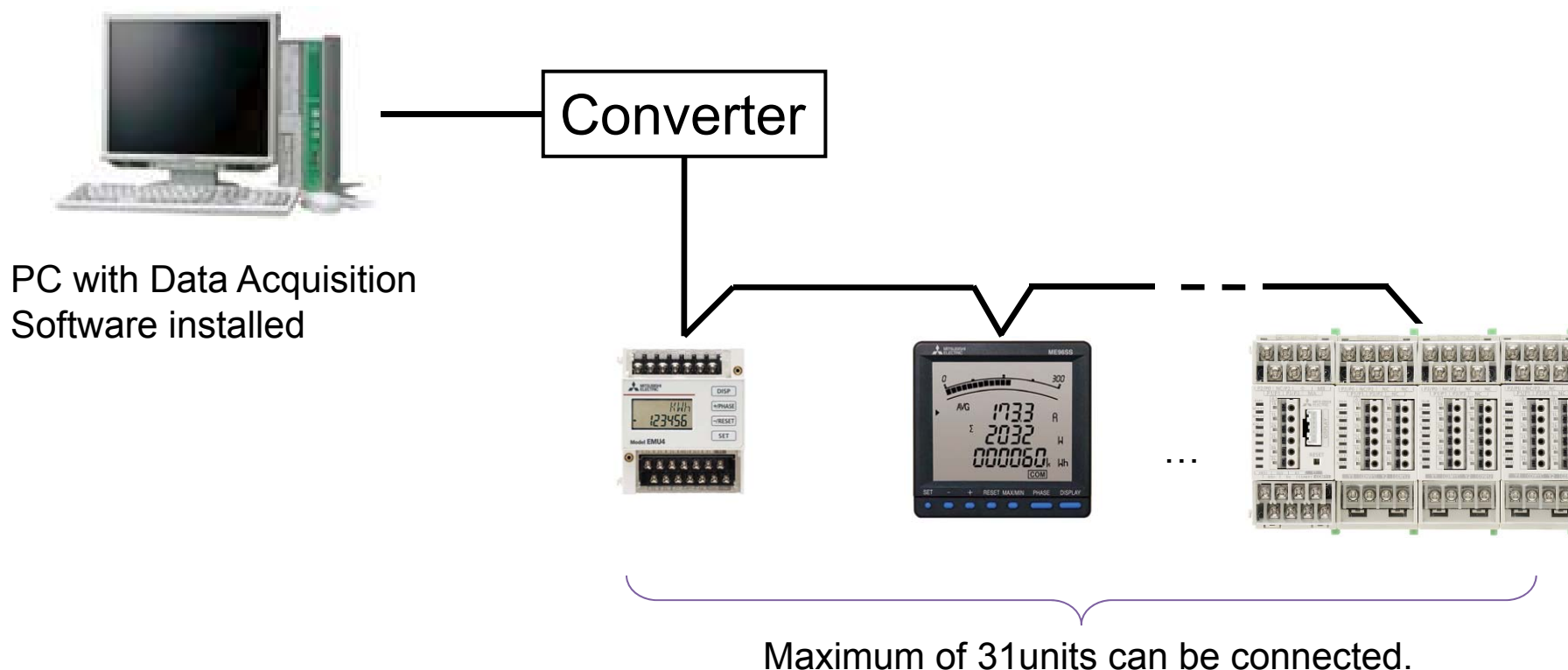
Comparison of Previous version

ME96SSHA-MB (Main point of changes)

		Before the change	After the change	Remarks
Model name		ME96SSH-MB	ME96SSHA-MB	“A” means Ver.A”
Terminal Block		Push-in type	Screw type	Support 2.5mm ² Cable
Measuring	Harmonics	±2.5% (Up to 31 st)	± 1.0% (Up to 31 st)	Improvement
	Demand function	A(Thermal), W(Rolling)	A(Thermal), W, var,VA(Rolling)	Addition
Plug-in module		1)CC-Link 2)Analog +Pulse 3)DI/DO	1)CC-Link 2)Analog +Pulse 3)DI/DO 4)Logging 5)MODBUS TCP	Addition

Data Acquisition Software (EMU4-SW1)

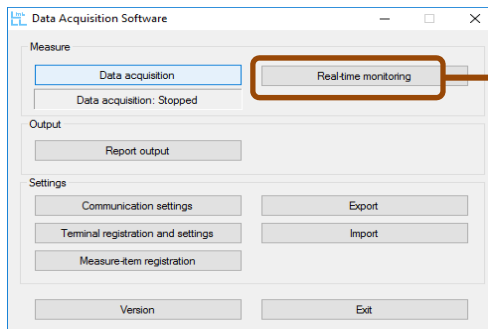
EMU4-SW1 performs data acquisition from energy measuring units equipped with a MODBUS® RTU communication interface.



Data Acquisition Software (EMU4-SW1)

(1) Displaying current values

Main Screen



Real-time monitoring

Measure-point name	Terminal name	Measure-item	Target	Time	Present value	Unit
point1	4_EMU4-HD1-MB	Current I1	☒	2/21/2013 7:01:33 PM	5700	A
point2	4_EMU4-HD1-MB	Electric energy(consuming)	☒	2/21/2013 7:01:33 PM	666665	kWh
point3	4_EMU4-HD1-MB	Voltage V1-N	☒	2/21/2013 7:01:33 PM	167	V
point4	4_EMU4-HD1-MB	Harmonic V1-N(Fundamental)	☒	2/21/2013 7:01:33 PM	60	V
point5	4_EMU4-HD1-MB	Pulse-count value	☒	2/21/2013 7:01:33 PM	221222	
point6	4_EMU4-HD1-MB	Frequency	☒	2/21/2013 7:01:33 PM	500	Hz

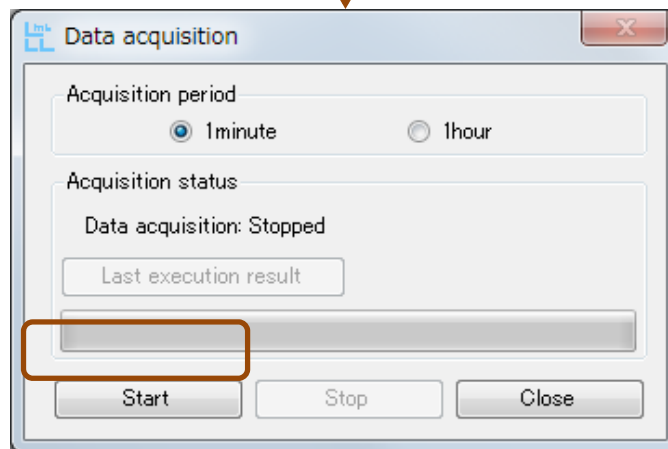
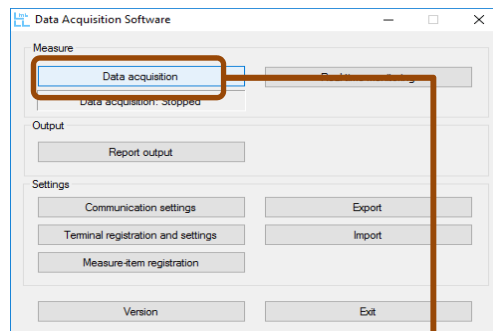
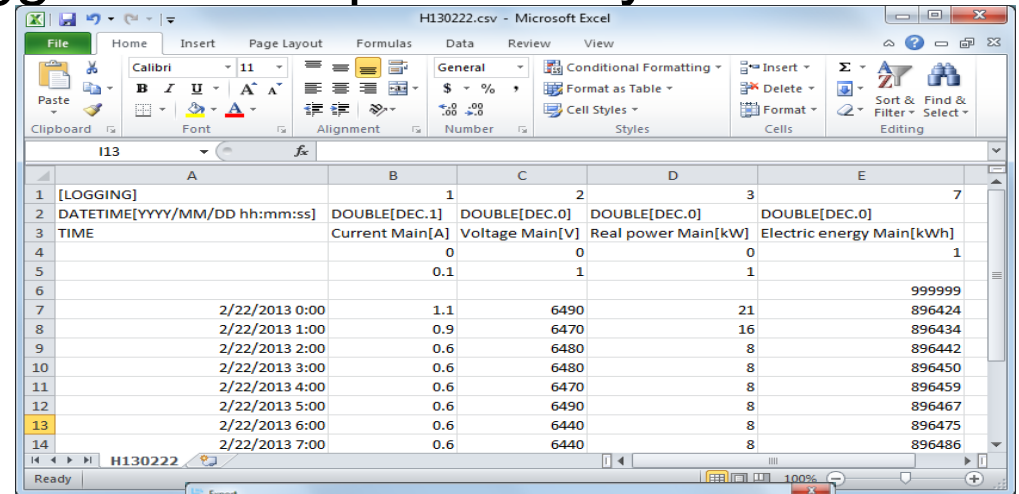
Maximum
124 items

Selected measurement items are displayed in real time (every one second).

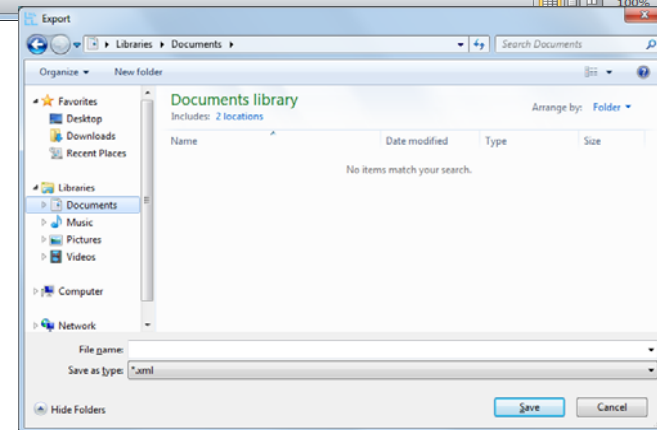
Data Acquisition Software (EMU4-SW1)

(2) Measurement data is logged in the specified cycle.

Main Screen

1	[LOGGING]	1	2	3	7
2	DATETIME[YYYY/MM/DD hh:mm:ss]	DOUBLE[DEC.1]	DOUBLE[DEC.0]	DOUBLE[DEC.0]	DOUBLE[DEC.0]
3	TIME	Current Main[A]	Voltage Main[V]	Real power Main[kW]	Electric energy Main[kWh]
4		0	0	0	1
5		0.1	1		
6					999999
7	2/22/2013 0:00	1.1	6490	21	896424
8	2/22/2013 1:00	0.9	6470	16	896434
9	2/22/2013 2:00	0.6	6480	8	896442
10	2/22/2013 3:00	0.6	6480	8	896450
11	2/22/2013 4:00	0.6	6470	8	896459
12	2/22/2013 5:00	0.6	6490	8	896467
13	2/22/2013 6:00	0.6	6440	8	896475
14	2/22/2013 7:00	0.6	6440	8	896486

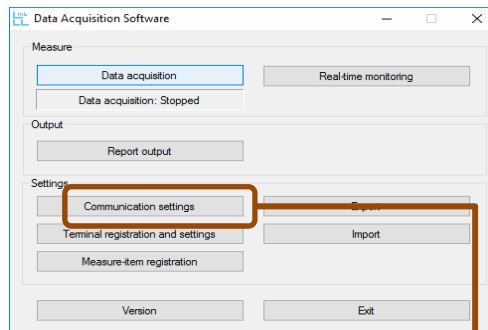


Data is logged in CSV format every one minute or one hour.

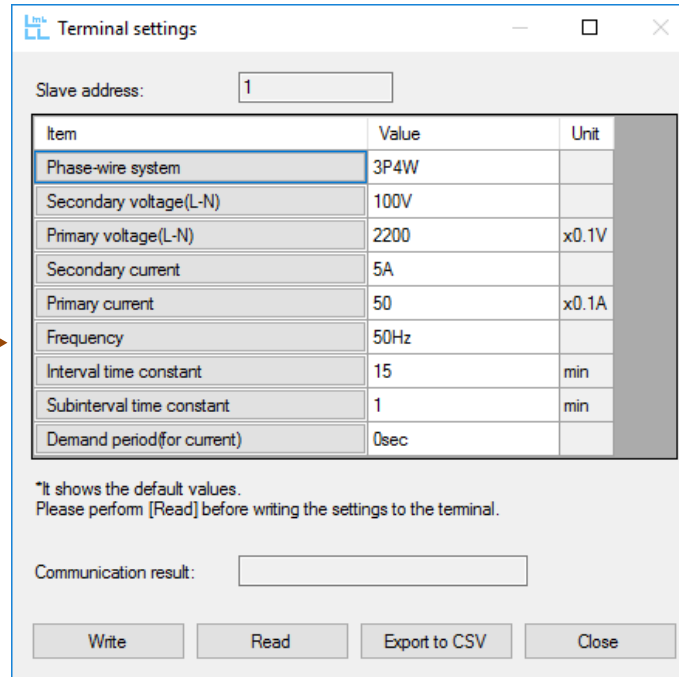
Data Acquisition Software (EMU4-SW1)

(4) You can specify basic settings.

Main Screen



Terminal Settings



The 'Terminal settings' dialog box contains the following information:

Slave address:

Item	Value	Unit
Phase-wire system	3P4W	
Secondary voltage(L-N)	100V	
Primary voltage(L-N)	2200	x0.1V
Secondary current	5A	
Primary current	50	x0.1A
Frequency	50Hz	
Interval time constant	15	min
Subinterval time constant	1	min
Demand period(for current)	0sec	

*It shows the default values.
Please perform [Read] before writing the settings to the terminal.

Communication result:

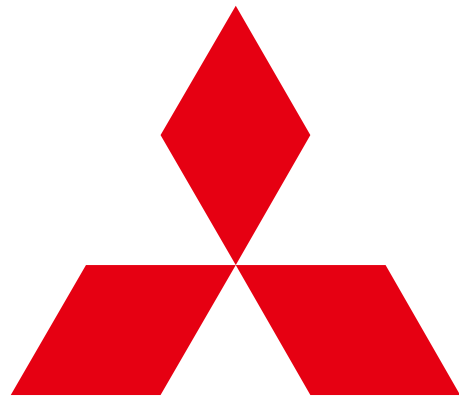
Buttons: Write, Read, Export to CSV, Close

Data Acquisition Software (EMU4-SW1)

Item		
Recommended system environment	Operating System	▪ Microsoft® Windows® 10 (32 / 64bit) ▪ Microsoft® Windows® 8.1 Pro (32 / 64bit) ▪ Microsoft® Windows® 7 Professional (32/ 64bit) SP1 ▪ Microsoft® Windows Vista® Ultimate 32bit SP2
	Microsoft. NET Framework	▪ Microsoft® .NET Framework 2.0 ▪ Microsoft® .NET Framework 3.5 ▪ Microsoft® .NET Framework 3.5.1
	Microsoft Excel	▪ Microsoft® Excel® 2007 SP3 (32 / 64bit) ▪ Microsoft® Excel® 2010 SP1 (32 / 64bit) ▪ Microsoft® Excel® 2013 SP1 (32 / 64bit) ▪ Microsoft® Excel® 2016 SP1 (32 / 64bit)
Basic specifications	Max. connectable devices	31 devices
Data collection functions	Periodic acquisition	Data acquisition in a cycle of one minute or one hour
	Present value display	Perform constant communication, displays the present value
	Max. acquisition points	124 points

Data Acquisition Software (EMU4-SW1) carries out free download, and gets from the Mitsubishi Electric site. (<http://www.mitsubishielectric.com/fa/>)

"Home>Products>Power Monitoring Products>Energy Saving Supporting Devices>Software Features>Data Acquisition Software"



**MITSUBISHI
ELECTRIC**

Changes for the Better