PC Recorder Series

MSRpro SOFTWARE PACKAGE Ver.6

Functions & Features

- Industrial recorder on Windows based PC
- Stores, computes and plots in high speed multichannel input data of variety
- Client-server system
- Total of 2048 analolg-discrete mixed input channels
- 100 msec. high speed storing mode
- Recorded data is exportable to other Windows applications in CSV format
- Daily, monthly, annual report can be created by using report software
- Power demand monitoring is available with power monitor software
- Available as gas demand monitoring
- Batch recording is available with client software

MODEL: MSR2K-V6

ORDERING INFORMATION

- Code number: MSR2K-V6

RELATED PRODUCTS

- Remote I/O R3 series

Network module for Modbus/TCP (Ethernet) (model: R3-NE1)
Network module for Modbus (model: R3-NM1)

- Remote I/O R5 series

Network module for Modbus/TCP (Ethernet) (model: R5-NE1)
Network module for Modbus (model: R5-NM1)

- Modbus I/O module (model: R7M, R7E)
- Ethernet communication adaptor (model: 72EM-M4 (firmware version V1.01.03 or higher), 72EM2-M4, GR8-EM)
- RS-232-C/RS-485 converter (model: R2K-1)
- Remote I/O R1M series, R2M series, R1MS, RZMS, RZUS series
- Multi power monitor (models: 52U, 53U, L53U, 54U)
- Multi power transmitter (model: M5XWTU)
- Paperless recorder (models: 73VR21x (Ver.1 is not applicable), 73VR3100)

· Ethernet tower light (model: IT60RE, IT40SRE, IT50SRE, IT60SRE)

PACKAGE INCLUDING...

- CD-ROM ..... (1)

Builder Software, English/Japanese version
Server Software, English/Japanese version
Client/Analyzer Software, English/Japanese version
Report software MSRpro-Report
Power monitor software MSReco
Power monitor client software MSReco-client
MSRpro Data Conversion Tool
Users manuals for each software program

DATA INPUT INTERFACE

Modbus RTU interface: Connects to RS-232-C (COM1 through COM8) via an RS-485/ RS-232-C converter; 38.4 kbps

Modbus/TCP interface: 100-Mbps LAN interface compatible with Windows

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SERVER SOFTWARE (MSR2K-S)

■ HARDWARE REQUIREMENTS

HARDWARE	REQUIREMENTS
PC	IBM PC/AT or compatible
Operating system	Windows 7 Professional (32-bit, 64-bit) or Windows 10 Professional (32-bit, 64-bit) (The MSR2K may not operate adequately in certain conditions.)
CPU	Pentium IV 2.0 GHz or higher
Screen area	XGA (1024 by 768 pixels) or better resolution
Display color	65000 colors (16 bits)
Main memory	512 MB minimum; 1 GB minimum recommended
Hard disk area	80 GB; Use an internal hard disk. *1
I/O hardware	R3-NE1, R3-NM1*2, R5-NE1, R5-NM1*2, R7E, R7M*2, R1M-GH2, R1M-J3, R1M-A1*2, R1M-D1, R1M-P4*2, R1MS-GH3, R2M-2G3, R2M-2H3, RZMS-U9*2, RZUS-U9*2, 52U*4, 53U*2, L53U*2 , 54U*2, R7MWTU*2, R7EWTU*2, R9MWTU*2, R9EWTU*2, 73VR21x*3,4 , 73VR3100*3,4, IT60RE , IT40SRE , IT50SRE , IT60SRE, M5XWTU*1
CD drive	Windows supported CD drive is used to install the software program.
Communication port	LAN card by Windows

*1. External (e.g. SCSI) devices may impair appropriate performance. Please secure enough hard disk space for the MSR2K data. Recorded data may be periodically transferred to external storage media to allow new data stored.
*2. 100 msec. storing mode is not selectable.
*3. Real-time connection only.
*4. Single node per station. High speed mode is not selectable.
CAUTION: The software's performance largely depends upon the PC's performance including other environmental conditions. Data sampling may be missed when it is not adequate. The missing parts will be filled with the previously sampled data.
NOTE: When the Server and the Client are used on the same PC, the PC must satisfy the Server's system requirements.

■**Builder Software & MSRpro V1. Conversion Tool**: Installed and used in the Server PC.

■SOFTWARE FUNCTIONS

The Server samples data at I/O devices, calculate and store data in files. Stored data is distributed upon request from Clients.
Storing Mode: High speed, Middle speed or Low speed selectable
Data format: Binary, CSV
•**Sampling Rate** (depends upon number of slave devices)
High speed mode: 100 msec.
Middle speed mode: 1 sec.
Low speed mode: 5 sec.
•**Maximum number of I/O signals**
High speed mode: 8 groups (256 points)
Middle/low speed mode: 2048 (Limited to 512 when the Server and the Client are in the same PC.)
•**Data Storing Method**
Normal: Recording is manually initiated and stopped. Data is continuously stored while the recording is on.
Auto: Recording is automatically initiated and stopped at a predefined time (one time only or every day).
Event recording: The Server detects an external event by trigger signal, and stores preset number of samples (max. 120 as pretrigger, max. 1200 as posttrigger) before and after the moment of event.
Remote trigger: Data is automatically recorded while the external trigger condition (input) is true.
Store conditionally (analog): Data is automatically recorded when a specific analog input signal is within a pre-determined range.
•**Storing Rate (reading and plotting)** (selectable per group)
High speed mode: 100, 500 msec.
Middle speed mode: 1, 2, 5, 10, 20, 30 sec., 1 min., 10 min.
Low speed mode: 5, 10, 20, 30 sec., 1 min., 10 min.
•**Computation Functions**: Square root extraction, arithmetic functions, logic functions, segment linearization and temperature/pressure compensation, moving average (between 2 - 5 samples), pulse accumulation (between 0.5 - 24 h)
Alarm: Four stages alarm output. Point of contact outputs to the output modules.
•**Maximum number of I/O stations**
High speed mode: 1 (1 station/1 node only)

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Middle speed mode: 8*

Low speed mode: 20* (Only the 53U, 73VR21x Ver.2 and/or M5XWTU can be assigned for the station 9 or later.)

* Max. 15 nodes can be connected per every 72EM(2)-M4 and GR8-EM station. Only 1 node for other Ethernet devices.

COM port connection is available only with Station 1 through 4.

Maximum number of clients: 4

CAUTION: V 1.00x data can be imported into the V 6.00x by using the Conversion Tool.

■ SELECTABLE REMOTE I/O MODULES

• R3 Series Remote I/O

SIGNAL TYPE	MODELS
DC voltage input	R3-SV4, R3-SV4A, R3-SV4B, R3-SV4C, R3(Y)-SV8, R3-SV8A, R3-SV8B, R3-SV8C, R3(S/Y)-SV8N, R3-SV16N, R3Y-SV16
DC current input	R3-SS4, R3(Y)-SS8, R3(S/Y)-SS8N, R3(Y)-SS16N
Thermocouple input	R3-TS4, R3-TS8
RTD input	R3-RS4, R3(S)-RS4A, R3(Y)-RS8, R3-RS8A, R3-RS8B
Universal input	R3-US4
Discrete input	R3(S/Y)-DA16, R3(Y)-DA16A, R3-DA16B, R3-DA32A, R3-DA64A
Discrete output	R3(Y)-DC16, R3-DC16A, R3-DC16B, R3-DC16C, R3-DC32A, R3-DC32C, R3-DC64A, R3-DC64C
Discrete I/O	R3(S)-DAC16*, R3(S)-DAC16A*
4 – 20mA input with excitation supply	R3(Y)-DS4, R3-DS8N, R3(Y)-DS8N
Potentiometer input	R3-MS4, R3(Y)-MS8
CT input	R3-CT4
AC current input with clamp-on current sensor	R3-CT4A**, R3-CT4B**, R3-CT4C, R3-CT8A**, R3-CT8B**, R3-CT8C
PT input	R3-PT4
Zero-phase current input	R3-CZ4
AC power input	R3-WT4, R3-WT4A, R3-WT4B, R3-WTU
High speed pulse input	R3-PA4
Speed/position input	R3-PA2
Totalized pulse input	R3-PA4A, R3-PA4B, R3(Y)-PA16, R3(S)-PA8
Strain gauge input	R3-LC2
Alarm	R3-AD4, R3-AR4, R3-AS4, R3-AS8, R3-AT4, R3-AV4, R3-AV8
Gateway	R3-GC1, R3-GD1, R3-GE1, R3-GFL1, R3-GM1

* Only continuous output mode is available.

** Data range must be setup with the PC Configurator Software R3CON and the dedicated cable.

• R3 Series Interface Modules

NETWORK	MODELS
Modbus Network Module	R3-NM1
Ethernet Network Module	R3-NE1

• R1M, R2M, RZxS Series I/O Modules

MODBUS MODULE	MODELS	
SIGNAL TYPE	R1M, RZMS, RZUS	R2M
DC Voltage input	R1M-GH2	R2M-2G3
Thermocouple input	R1MS-GH3	R2M-2H3
DC Current input	RZM(U)S-U9	
RTD input	R1M-J3	
Potentiometer input	RZM(U)S-U9	
Discrete input	R1M-A1	
Discrete output	R1M-D1	
Pulse input	R1M-P4	
Totalized pulse input	R1M-A1, R1M-P4	

• R5 Series Remote I/O

SIGNAL TYPE	MODELS
DC voltage input	R5-SV, R5T-SV
DC current input	R5-SS, R5T-SS
Thermocouple input	R5-TS, R5T-TS
RTD input	R5-RS, R5T-RS
Discrete input	R5-DA4, R5T-DA4, R5-DA16
Discrete output	R5-DC4, R5T-DC4, R5-DC16
4 – 20mA input with excitation supply	R5-DS, R5T-DS
Totalized pulse input	R5-PA2, R5T-PA2
Potentiometer input	R5-MS
CT input	R5T-CT
AC current input with clamp-on current sensor*	R5T-CTA, R5T-CTB
PT input	R5T-PT

* Data range must be setup for use with the PC Recorder using the PC Configurator Software R5CON and the special cable.

• R5 Series Interface Modules

NETWORK	MODELS
Modbus Network Module	R5-NM1
Ethernet Network Module	R5-NE1

• R7M Series Remote I/O*

SIGNAL TYPE	MODELS
DC voltage/current input	R7M-SV4
Thermocouple input	R7M-TS4
RTD input	R7M-RS4
Potentiometer input	R7M-MS4
CT input	R7M-CT4E
Totalized pulse input	R7M-PA8
Discrete input	R7M-DA16
Discrete output	R7M-DC16A, R7M-DC16B, R7M-DC8C
Discrete input (Extension)	R7M-EA8, R7M-EA16
Discrete output (Extension)	R7M-EC8A, R7M-EC8B, R7M-EC16A, R7M-EC16B

* Must be setup with R7X Configurator Software and the dedicated cable.

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• R7E Series Remote I/O

SIGNAL TYPE	MODELS
DC voltage/current input	R7E-SV4
Thermocouple input	R7E-TS4
RTD input	R7E-RS4
Potentiometer input	R7E-MS4
CT input	R7E-CT4E*
Discrete input	R7E-DA16
Discrete output	R7E-DC16A, R7E-DC16B
Discrete input (Extension)	R7E-EA8, R7E-EA16
Discrete output (Extension)	R7E-EC8A, R7E-EC8B, R7E-EC16A, R7E-EC16B

* Must be setup with R7X Configurator Software and the dedicated cable.

• Multi Power Monitor

SIGNAL TYPE	MODELS
Multi power monitor	52U
	53U, L53U
	54U

• Multi Power Transmitter

SIGNAL TYPE	MODELS
Multi power transmitter	M5XWTU

• Multi Power Monitoring Module

SIGNAL TYPE		MODELS
Multi power unit (Modbus)		R7MWTU
		R9MWTU
Multi power unit (Ethernet)		R7EWTU
		R9EWTU
Extension module	Discreate input	R7MWTU-EA8
	Discreate I/O	R9WTU-ED16
	Multi power monitor	R9WTU-EP8

Must be setup with R7xWTU, R9xWTU Configurator Software and the dedicated cable.

• Paperless Recorder

NETWORK	MODELS
Built-in input module paperless recorder	73VR21x (Ver. 2, Ver. 3)
Selectable input modules paperless recorder	73VR3100

• ETHERNET Tower Light

SIGNAL TYPE	MODELS
Discrete output	IT60RE, IT40SRE, IT50SRE, IT60SRE

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CLIENT/ANALYZER SOFTWARE (MSR2K-C)

■ HARDWARE REQUIREMENTS

HARDWARE	REQUIREMENTS
PC	IBM PC/AT or compatible
Operating system	Windows 7 Professional (32-bit, 64-bit) or Windows 10 Professional (32-bit, 64-bit)
CPU	Pentium IV 2.0 GHz or higher
Screen area	XGA (1024 by 768 pixels) or better resolution; SXGA (1280 by 1024 pixels) recommended to show 50 or more groups
Display color	65000 colors (16 bits)
Main memory	512 MB minimum; 1 GB minimum recommended
CD drive	Windows supported CD drive is used to install the software program.
Communication port	LAN card by Windows

NOTE: When the Server and the Client are used on the same PC, the PC must satisfy the Server's system requirements.

■SOFTWARE FUNCTIONS

The Client/Analyzer displays data on the screen and performs data setting. The Client can be installed in a separate PC from the one installed with the Server.

•**Data Display**

Number of display channels: 32 pens are grouped to be displayed on one view; 64 groups in total for 2048 channels.

•**Real Time Trend Display**

Perpendicular chart: The latest data at the top or the bottom selectable

Horizontal chart: The latest data at the right or the left selectable

Pen position indicator: Marker, digital value, bargraph or color graph

Overview: Displays data for the all channels within a group (32 pens) or 4 groups (128 pens)

Graphic panel: Displays data on a graphic background

Real time analyzer: Overlapping, masking

•**Batch Operation**

Batch operation storing: Starts/stops batch operation data storing in specific conditions per group (32 pens), and stores data in CSV file at a specified location

Storing rate: 1, 2, 5, 10, 20, 30 sec., 1, 10 minutes

Real time trend display: Displays batch data currently in operation with a specified background color

Trend retrieval: Displays batch data spred in the past

Compare: Overlapping a presently stored data on a past data, or multiple sets of retrieved data

Maximum data volume: 65000 rows; 36 hours or 65000 rows, whichever comes first, with the end condition set to 'time'

•**Trend retrieval**

Alarm history: Historical data indicating the time indexes when an alarm is triggered and reset.

•**Analyzer**

Enlarge: Enlarges the area by mouse clicking

Compare: Overlapping multiple sets of retrieved data

Search: Maximum value, minimum value, conditioning, rising/sinking edges

Maximum number of clients: 4

CAUTION: The MSR128 data cannot be imported into the MSR2K.

■ I/O DEVICE

Depends on I/O device of server software (model: MSR2K-S).

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REPORT SOFTWARE (MSR2K-CR)

■ HARDWARE REQUIREMENTS

HARDWARE	REQUIREMENTS
PC	IBM PC/AT or compatible
Operating system	Windows 7 Professional (32-bit, 64-bit) or Windows 10 Professional (32-bit, 64-bit)
CPU	Pentium IV 2.0 GHz or higher
Screen area	XGA (1024 by 768 pixels) or better resolution
Display color	65000 colors (16 bits)
Main memory	512 MB minimum; 1 GB minimum recommended
CD drive	Windows supported CD drive is used to install the software program.
Communication port	LAN card by Windows

NOTE: When the Server Software (model: MSR2K-S) and the Report Software (model: MSR2K-CR) are used on the same PC, the PC must satisfy the Server's system requirements.

■ SOFTWARE FUNCTIONS

Creating reports by using data collected with the MSRpro-Server software program.

- **Data acquisition**
  Data type: Average, maximum, minimum, accumulation difference, momentary, and accumulation values
- **Report**
  Report type: Daily, monthly, and annual reports
  Layout: max. 16 pens per page
  Max. page number: 128 pages for each report
  Display digit: 12 digits including signs
- **Data correction**
  Applicable to: Daily, monthly, and annual reports
  Correction process: Calculating summary items automatically
- **Data storage**
  Storage method: Saved as a report file in any location
  Storage period: Depends on the period the server saves
- **Print**
  Applicable to: Daily, monthly, and annual reports
  Color printing: Available
  Auto printing: Available to specify print time and report
  Manual printing: Available to specify report
- **Format**
  Page title: Per report page, max. 24 characters
  Date: Available to display
  Signature column: 0 to 4 columns
  Summary items: Total, average, maximum and minimum

Note) The software creates a report with server software Ver.3 or later.

■ I/O DEVICE

Depends on I/O device of server software (model: MSR2K-S).

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POWER MONITOR SOFTWARE (MSR2K-CE)

■ HARDWARE REQUIREMENTS

HARDWARE	REQUIREMENTS
PC	IBM PC/AT or compatible
Operating system	Windows 7 Professional (32-bit, 64-bit) or Windows 10 Professional (32-bit, 64-bit)
CPU	Pentium IV 2.0 GHz or higher
Screen area	XGA (1024 by 768 pixels) or better resolution
Display color	65000 colors (16 bits)
Main memory	512 MB minimum; 1 GB minimum recommended
CD drive	Windows supported CD drive is used to install the software program.
Communication port	LAN card by Windows

NOTE: When the Server Software (model: MSR2K-S) and the Power Monitor Software (model: MSR2K-CE) are used on the same PC, the PC must satisfy the Server's system requirements.

■ SOFTWARE FUNCTIONS

Max. 32 of demand monitoring views are displayed by using data collected with the server software program.

• Display function

Data display: Present demand value, predicted demand value, target demand value, energy consumption, surplus power, alarm status

Demand display: Present demand line, predicted demand line, target demand line, alarm line are displayed.

Energy consumption graph: Energy consumption at every 15, 30 or 60 min. is displayed with bargraph.

Information (Demand) view: Max. daily demand value, max. monthly demand value or max. annual demand value is displayed.

Information (Bargraph) view: Max. energy consumption per day, month or year is displayed.

Max. view numbers: Max. 32 views for demand and bargraph view (16 views max. for damand and 2 views max. for bargraph are available simultaneously. Gas demand monitoring is available by sellecting the unit.

• Demand monitoring function

Time unit: 15 min., 30 min. or 60 min.

Sampling cycle: 10 seconds

Calendar setting: Register pattern schedules in an annual calendar on a daily basis

Pattern setting: 128 pattern

Alarm: Up to 4 alarm setpoints can be set for the predicted demand. Alarm outputs to discrete output devices.

Setpoints can be set for each demand view. Buzzer of your PC can be set when an alarm is generated.

When connecting with the model ITx0(S)RE, ITx0(S)RE buzzer individually can be on beside normal alarm output.

The buzzer can be stopped in the alarm monitor view. (the buzzer stops in all demand view pages. Operation per page is not available.)

Alarm Monitor: Alarm status of each Demand view page is listed. An alarm Monitor window is popped up when an alarm is generated.

Alarm history: History of alarm genaration or clear is displayed.

• Report function

Printer output: daily, monthly or annual demand report is automatically or manually printed.

File output: Reports can be saved as a CSV file automatically or manually.

Screen shot: A screen shot is saved in BMP format.

Max. MSR2K-CEC connection numbers: 4

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■ I/O DEVICE

Supported device is accumulated pulse input device when pulse signal from power meter is used.

• R3 Series Remote I/O

SIGNAL TYPE	MODELS
Totalized pulse input	R3 (Y)-PA16, R3 (S)-PA8, R3-PA4A, R3-PA4B
AC power input	R3-WT4, R3-WT4A, R3-WT4B, R3-WTU

• R5 Series Remote I/O

SIGNAL TYPE	MODELS
Totalized pulse input	R5-PA2, R5T-PA2

• R1M Series I/O Modules

SIGNAL TYPE	MODELS
Totalized pulse input	R1M-P4, R1M-A1

• R7 Series I/O Modules

SIGNAL TYPE	MODELS
Totalized pulse input	R7M-PA8

• Multi Power Monitor

SIGNAL TYPE	MODELS
Multi power monitor	52U
	53U, L53U
	54U

NOTE: Reading energy consumption data to display demand and bargraph.

• Multi Power Transmitter

SIGNAL TYPE	MODELS
Multi power transmitter	M5XWTU

• Multi Power Monitoring Module

SIGNAL TYPE		MODELS
Multi power monitoring module (Modbus)		R7MWTU
		R9MWTU
Multi power monitoring module (Ethernet)		R7EWTU
		R9EWTU
Extension module	Discrete input	R7MWTU-EA8
	Discrete I/O	R9WTU-ED16
	Multi power monitoring	R9WTU-EP8

• Alarm Output Moduls

SIGNAL TYPE	MODELS
Discrete output	R1M-D1
	R3-DCx
	R5-DCx
	R7M-DCx/ECx
	R7E-DCx/ECx
LED, Buzzer	IT60RE, IT40SRE, IT50SRE, IT60SRE

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POWER MONITOR CLIENT SOFTWARE (MSR2K-CEC)

■ HARDWARE REQUIREMENTS

HARDWARE	REQUIREMENTS
PC	IBM PC/AT or compatible
Operating system	Windows 7 Professional (32-bit, 64-bit) or Windows 10 Professional (32-bit, 64-bit)
CPU	Pentium IV 2.0 GHz or higher
Screen area	XGA (1024 by 768 pixels) or better resolution
Display color	65000 colors (16 bits)
Main memory	512 MB minimum; 1 GB minimum recommended
CD drive	Windows supported CD drive is used to install the software program.
Communication port	LAN card by Windows

NOTE: Power Monitor Client Software (model: MSR2K-CEC) does not run in the PC where Power Monitor Software (model: MSR2K-CE) is running.

■ SOFTWARE FUNCTIONS

Reading settings and data of MSReco and displaying demand.

• Display function

Data display: Present demand value, predicted demand value, target demand value, energy consumption, surplus power, alarm status

Demand display: Present demand line, predicted demand line, target demand line, alarm line are displayed.

Bargraph view: Energy consumption at every hour, day, week, month or year is displayed with bar graph.

Information (Demand) view: Max. daily demand value, max. monthly demand value or max. annual demand value is displayed.

Information (Bargraph) view: Max. energy consumption per day, month or year is displayed.

Max. view numbers: Max. 32 views for demand and bargraph view (16 views max. for damand and 2 views max. for bargraph are available simultaneously.

Alarm Monitor: Alarm status of each Demand view page is listed.

Alarm history: History of alarm genaration or clear is displayed.

• Report function

Printer output: daily, monthly or annual demand report is automatically or manually printed.

File output: Reports can be saved as a CSV file automatically or manually.

Screen shot: A screen shot is saved in BMP format.

■ I/O DEVICE

Depends on I/O device of power monitor software (model: MSR2K-CE).

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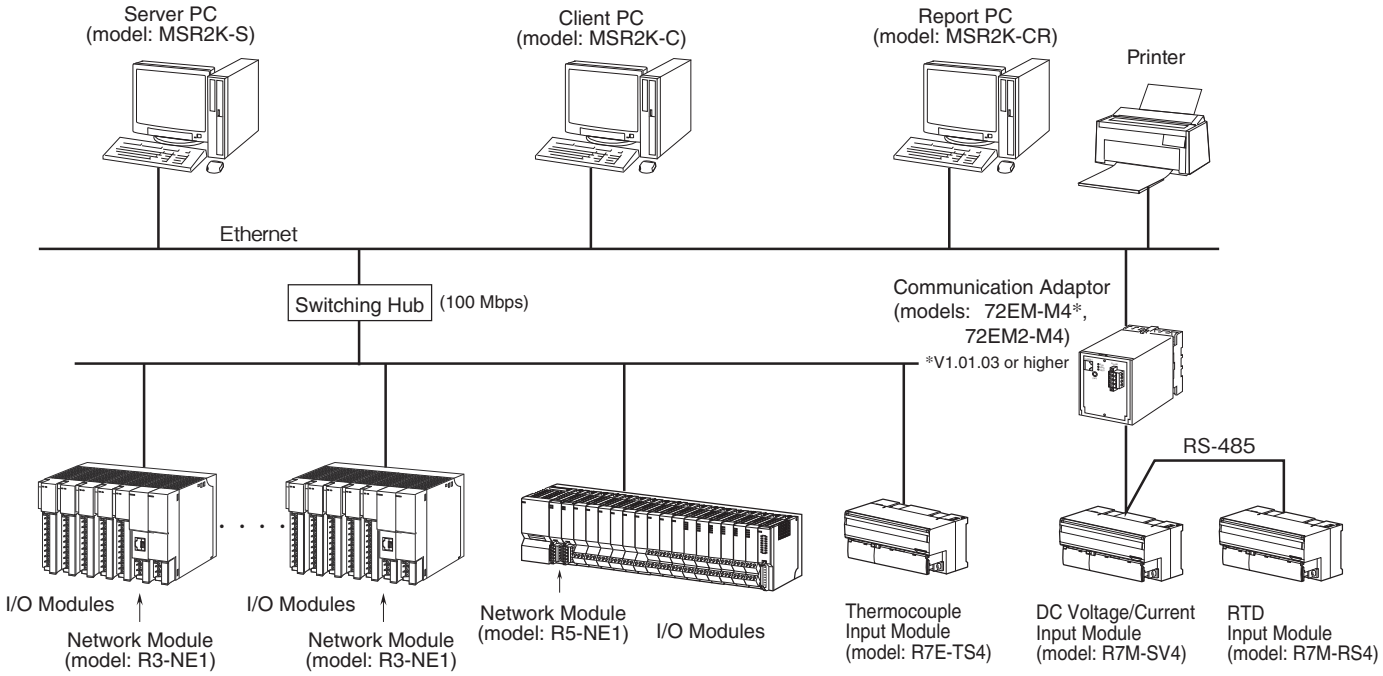
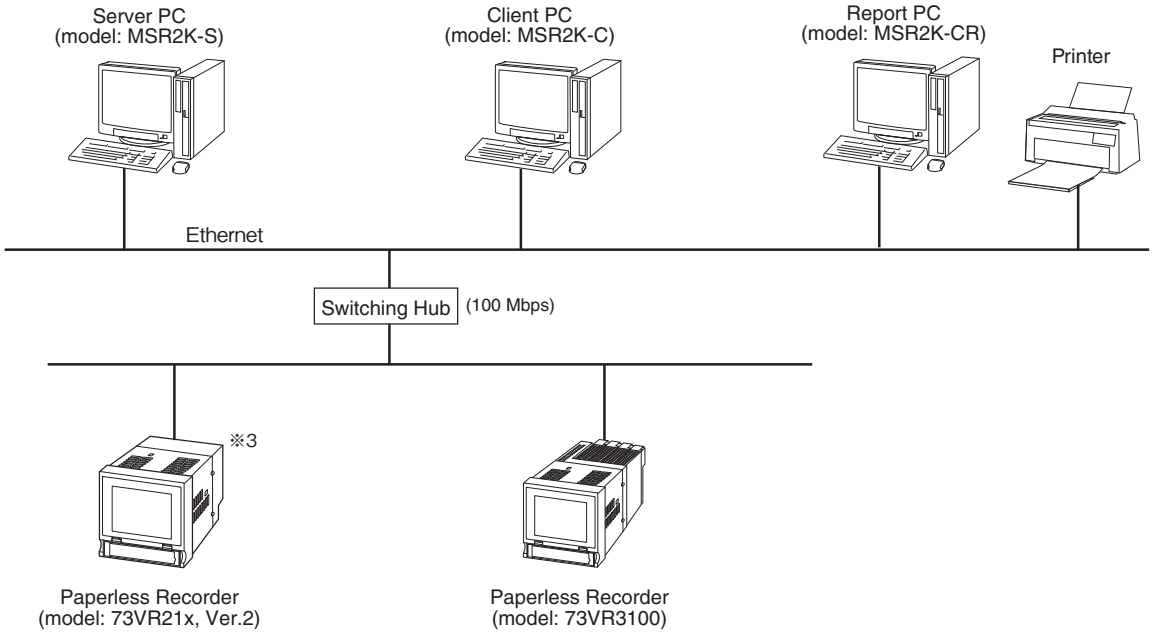
SYSTEM CONFIGURATION EXAMPLES

■ **R3, R5, R7 SERIES**



■ **73VR SERIES**



Note 1. Use a dedicated Ethernet network for the PC and the R3 modules.
Note 2. Max. four (4) Client PC.
Note 3. Max. eight (8) R3 stations.
Note 4. Actual sampling rate depends upon the number of connected slave devices.

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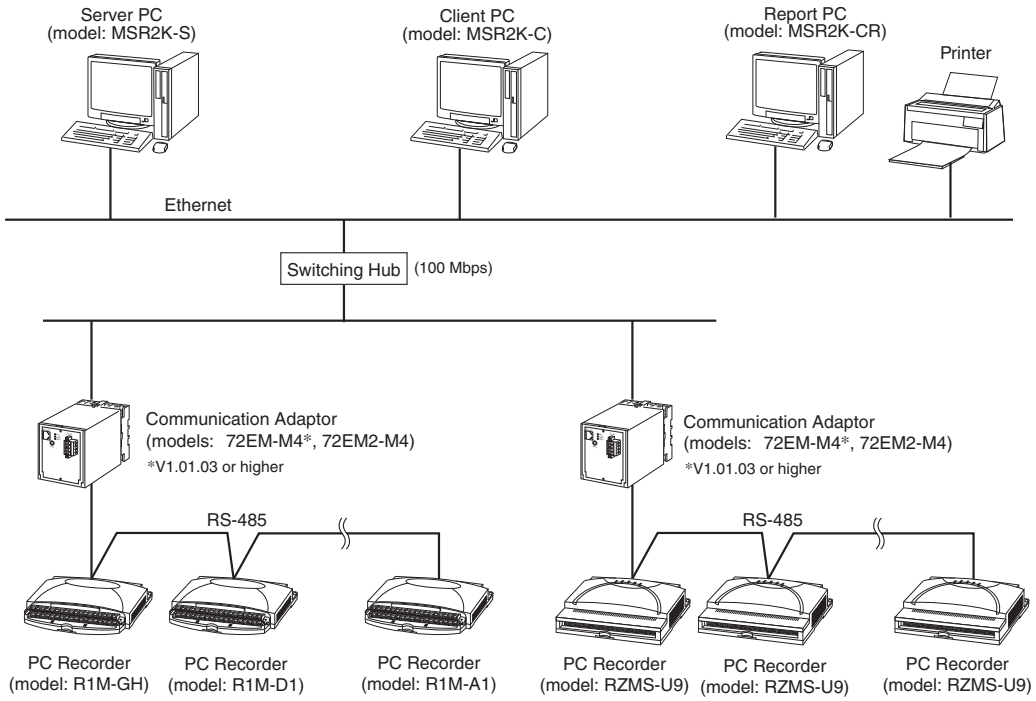
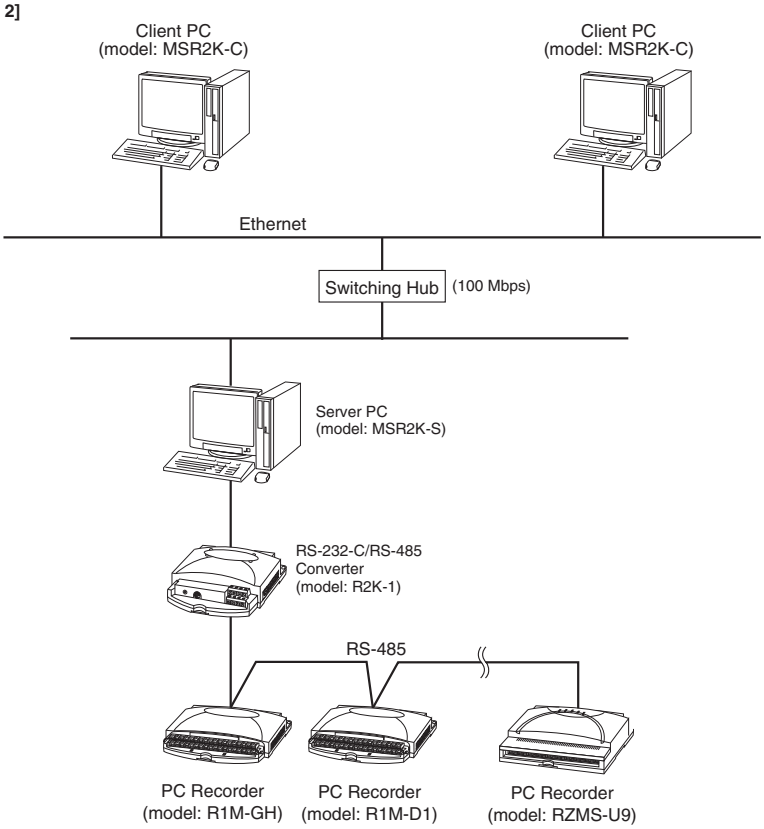
■ **R1M, R2M, RZxS SERIES**

[Example 1]



[Example 2]



Note 1. Use a dedicated Ethernet network for the PC and the R3 modules.
Note 2. Max. four (4) Client PC.
Note 3. Max. eight (8) R3 stations.
Note 4. Actual sampling rate depends upon the number of connected slave devices.

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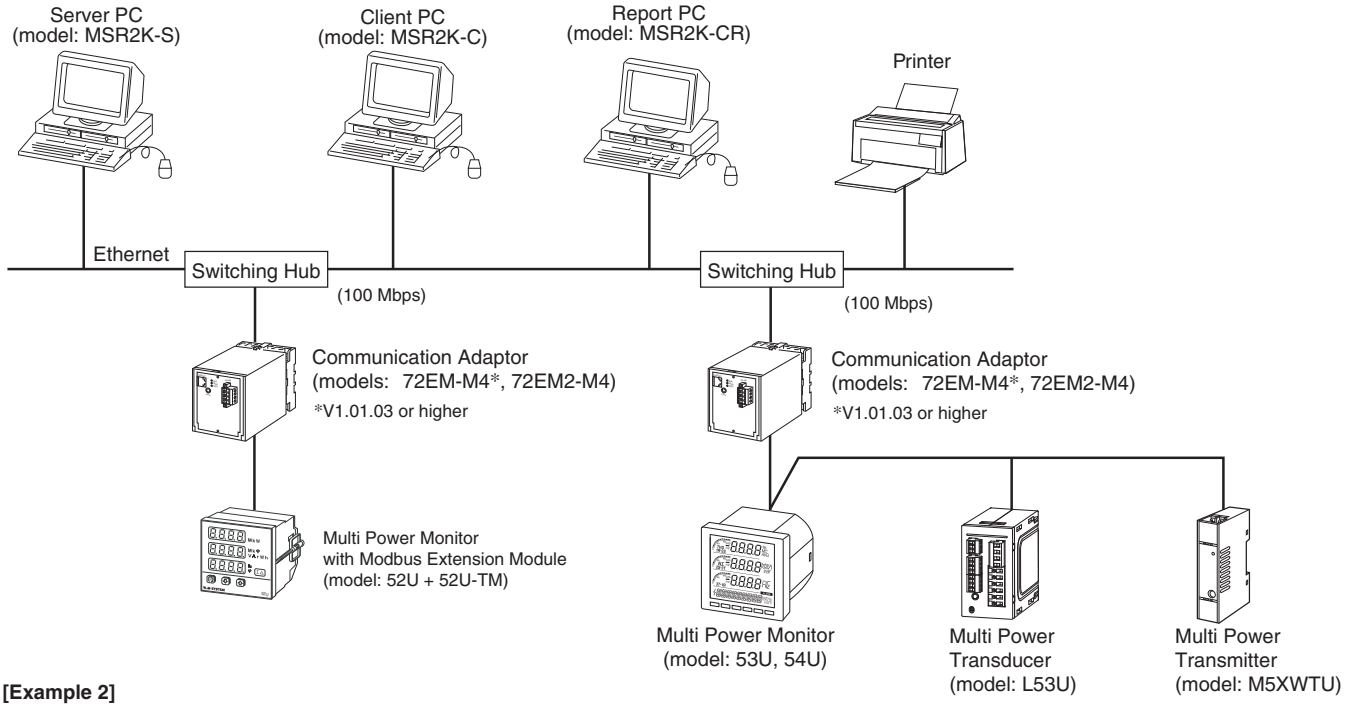
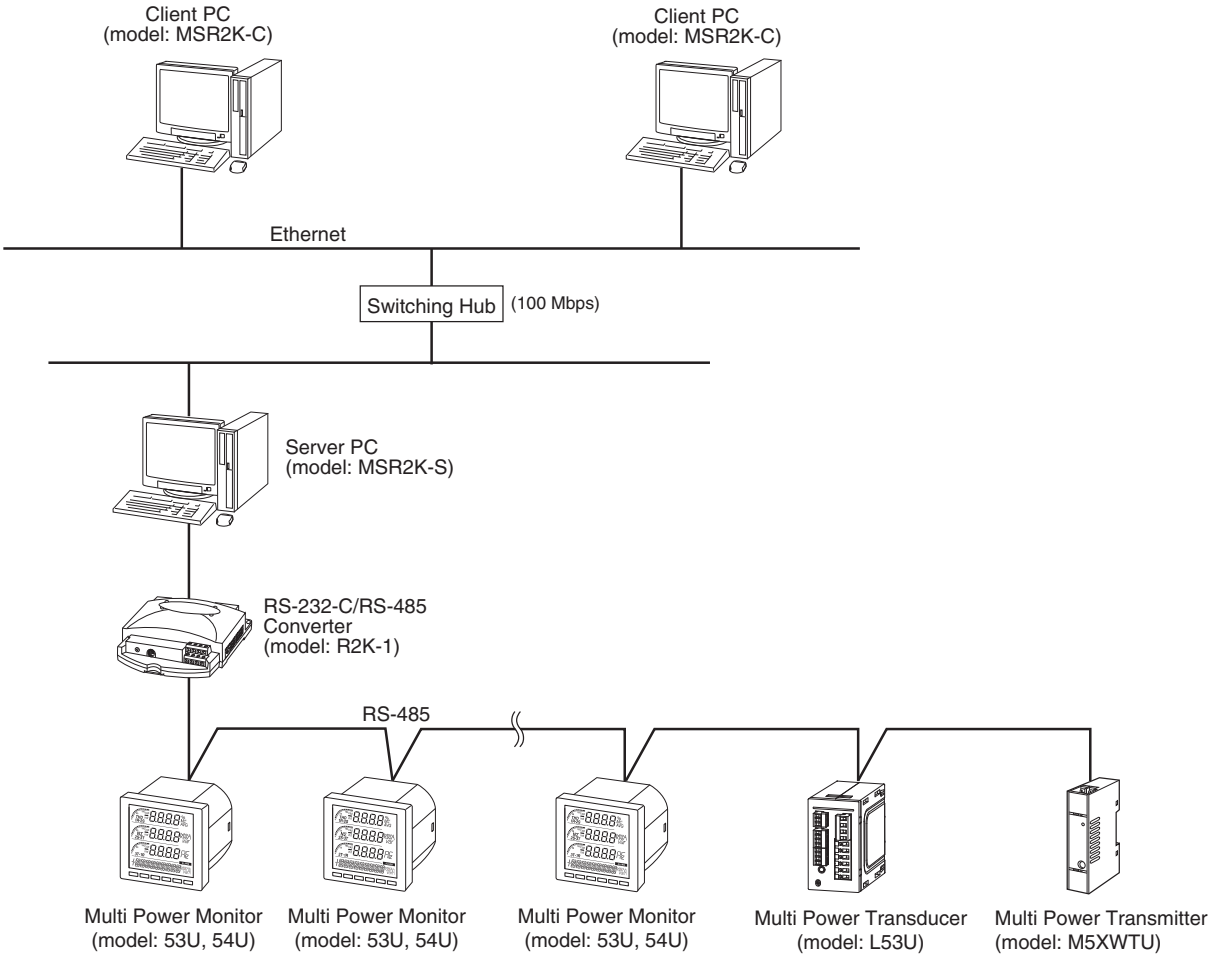
■ **52U, 53U, M5XWTU**

[Example 1]



[Example 2]



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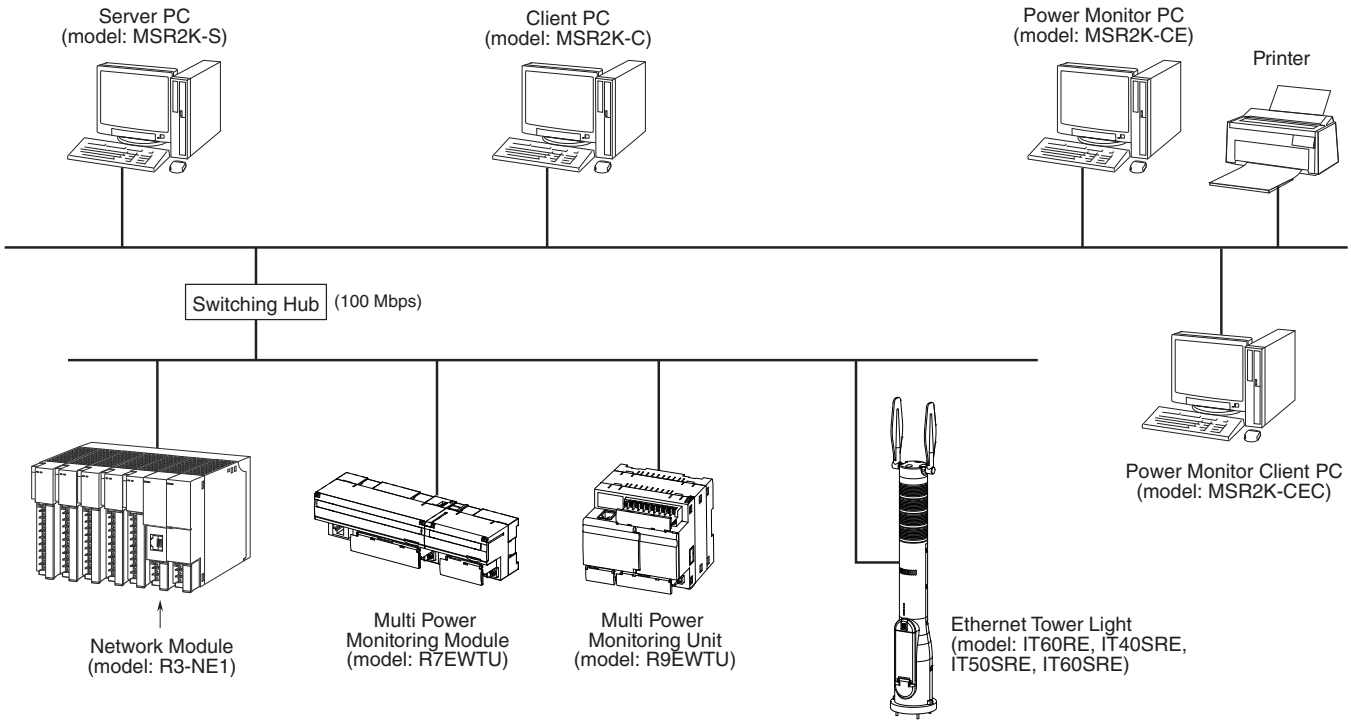
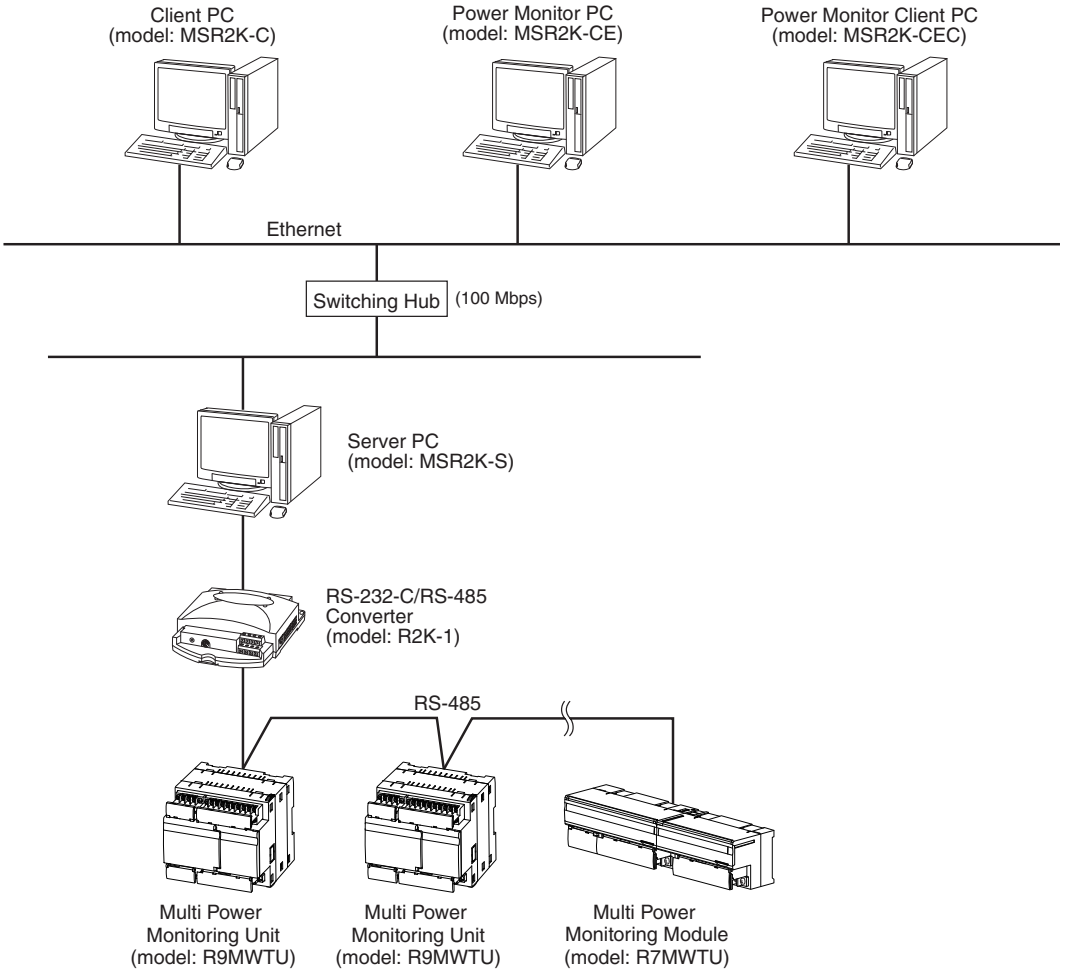
■ **MSReco**

[Example 1]



[Example 2]



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⚠ Specifications are subject to change without notice.

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