## Paperless Recording System

## PAPERLESS RECORDER

(remote I/O modules)

### Functions & Features

• 100 msec. storing rate for the max. of 64 points (1 station) with the R3-NE1 module
• Graphic image view helps to recognize measuring points and signal status at a glance
• Data stored in CF Cards and SD Cards
• Memory card slot accessible at the front
• Real time monitoring at the host PC via Ethernet
• Dedicated application software to view and analyze the data
• Touch panel operation
• IP 65 front panel



144 (5.67)

144 (5.67)

133 (5.24)

mm (inch)

CE
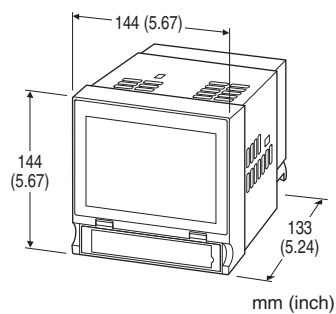
## MODEL: 73VR1100-[1]-[2][3]

## ORDERING INFORMATION

• Code number: 73VR1100-[1]-[2][3]
Specify a code from below for each of [1] through [3].
  (e.g. 73VR1100-E-M2/Q)
• Specify the specification for option code /Q
  (e.g. /C01/S01/HA)

## [1] LANGUAGE

N: Japanese
E: English

## [2] POWER INPUT

### AC Power

M2: 100 – 240 V AC (Operational voltage range 85 – 264 V, 47 – 66 Hz)
  (CE not available for desktop type)

### DC Power

R: 24 V DC
(Operational voltage range 24 V ±10 %, ripple 10 %p-p max.)

## [3] OPTIONS

blank: none
/Q: With options (specify the specification)

### SPECIFICATIONS OF OPTION: Q (multiple selections)

**COATING (For the detail, refer to M-System's web site.)**
/C01: Silicone coating
/C02: Polyurethane coating
/C03: Rubber coating
**TERMINAL SCREW MATERIAL**
/S01: Stainless steel
**INSTALLATION**
/HA: Desktop type (with handle and feet)
(Desktop type cannot be mounted on a panel surface. The handle and rubber feet cannot be detached.)

## RELATED PRODUCTS

Please refer to data sheets for the respective models.
• PC recorder R1M, R2M, R1MS, RZMS series
• Remote I/O R3 series
Ethernet (Modbus/TCP) interface module (model: R3-NE1)
Modbus interface module (model: R3-NM1)
• Remote I/O R5 series
Ethernet (Modbus/TCP) interface module (model: R5-NE1)
Modbus interface module (model: R5-NM1)
• Modbus I/O module (model: R7M)
• Ethernet I/O module, Modbus/TCP (model: R7E)
R7 configurator software (model: R7CON) To connect with R7M series, change Modbus Communication Parameters of the R7M by using R7CON and the special cable.
• Multi power monitor (model: 53U)
· Ethernet tower light (Model: IT60RE, IT40SRE, IT50SRE, IT60SRE)
Lamps and buzzer are turned on/off in combination with alarm output of 73VR1100.
• Ethernet communication adaptor (model: 72EM2-M4)

■ Memory card
A memory card is required to store data in the 73VR1100. Available for purchase from M-System. Consult M-System (except SD/CF conversion adapter).
M-System will not guarantee the product's described performance if a memory card other than purchased from M-System, or specified below, is used.
• CF Card
1. Manufacturer: Hagiwara Solutions
Model No.: MCF10P-xxxxS
Capacity: 128 MB through 1 GB
(CFI-xxxxDG ... discontinued)
2. Manufacturer: Apacer Technology
Model name: CFC III
Model No.: AP-CFxxxxE3NR-ETNDNRQ

Capacity: 256 MB through 1 GB
 Part No.: 81.27L20.TB47C (256 MB)
  81.29910.TB37C (512 MB)
  81.29920.TB37C (1 GB)
(AP-CFxxxxE3ER-ETNDNR, AP-CFxxxxE3ER-ETNDNRK ...
discontinued)
• SD Card (Compatible with 73VR1100 Ver.5.03.xx or later)
Manufacturer: Hagiwara Solutions
Model No.: NSD6-004GH (B21SEI
(NSDA-004GT, NSDA-004GL ... discontinued)
SD/CF Conversion Adapter is required to use SD card. There
are some restrictions on using SD card. For details, refer to
the instruction manual.
• SD/CF Conversion Adapter (operation confirmed):
 DeLOCK adaptor CF II to SDHC,SDXC
 Model: 61796 (operation has been confirmed with the
adapter purchased in the year of 2016.)
      62637 (operation has been confirmed with the
adapter purchased in the year of 2018.)
Note: Refer to the data sheets of the respective models.

## PACKAGE INCLUDES...

• 73VR Application Software CD (model: 73VRPAC2)
• Mounting brackets (two)
 (/HA: Not included for desktop type)

## GENERAL SPECIFICATIONS

**Construction**: Panel mount type or desktop type
**Degree of protection**: IP65; applicable to the front panel of
the recorder with single mounting according to the specified
panel cutout (/HA: Desktop type cannot be mounted on a
panel surface)
### ■ CONNECTION
**Power input, alarm output, RUN contact output**: M3
separable screw terminal  (torque 0.5 N·m)
**Screw terminal**: Nickel-plated steel (standard) or stainless
steel
**Ethernet**: RJ-45 Modular Jack
**RS-485**: Euro type connector terminal
 **Transmission media**: Shielded twisted-pair cable (CPEV-S
0.9 dia.)
 **Applicable wire size**: 0.2 to 2.5 mm$^2$ or AWG 24 to AWG 12
for both stranded and single core wires. stripped length 7
mm. Use pin terminals with stranded wires.
### ■ MATERIALS
**Enclosure**: Steel
**Bezel**: Flame-resistant resin (black)
**Front filter**: Transparent resin
**Isolation**: Alarm output to RUN output to power to Ethernet
to FG or RS-485
### ■ INDICATORS

**RUN output indicator LED**: Green light turns on in normal
conditions; off in an abnormality.
**Power indicator LED**: Green light turns on when the power is
supplied.
### ■ INTERFACE
**Ethernet**: 10BASE-T / 100BASE-TX automatically switched;
Conforms to IEEE 802 (10BASE-T) or IEEE 802.3 (100BASE-
TX)
**IP address**: 192.168.0.1 (factory default setting)
**Subnet mask**: 255.255.255.0 (factory default setting)
**Default gateway**: None (factory default setting)
**CF Card slot**: Type I; for use with the cards' operating
voltage 3.3 V
**USB**: Conforms to Version 1.1
### ■ DISPLAY
**Display device**: 5.5-inch TFT LCD
**Display colors**: 256
**Resolution**: 320 × 240 pixels
**Pixel pitch**: 0.12 × 0.35 mm
Note: The backlight can be replaced in M-System factory.
The LCD must be replaced at the same time.
### ■ ALARM / RUN OUTPUT
**Rated load**: 250 V AC @ 0.5 A (cos ø = 1)
(For desktop type EU conformity: < 50 V AC)
30 V DC @ 0.5 A (resistive load)
**Maximum switching voltage**: 250 V AC or 30 V DC
**Maximum switching power**: 250 VA or 150 W
**Minimum load**: 1 V DC @ 1 mA
**Mechanical life**: 2 × 10$^7$ cycles (rate 300/min.)
External protection is recommended when driving an
inductive load.
**RUN output contact**: ON in normal conditions; OFF in errors
(CPU error, application errors)
**Alarm output contact**: Specified in the application software

## EXTERNAL INTERFACE

### ■ Modbus RTU
**Configuration**: Half-duplex, asynchronous, no procedure
**Standard**: Conforms to TIA/EIA RS-485-A
**Max. transmission distance**: 500 meters
**Transfer rate**: 38400 bps
**Data bit**: 8
**Parity bit**: Odd
**Stop bit**: 1
**Max. node number**: 15 (except the master)
**Transmission media**:
Shielded twisted-pair cable (CPEV-S φ0.9)
**Terminating resistor**: incorporated

## INSTALLATION

**Power input**

•**AC**:
 Approx. 15 VA at 100 V
 Approx. 20 VA at 240 V

•**DC**: 8 W or 340 mA

**Operating temperature**: 0 to 50°C (32 to 122°F)

Display quality (e.g. decreased contrast) may deteriorate when the recorder is used for a long time in an environment exceeding 50°C. However, it is only a temporary phenomenon. When the recorder is back in normal temperature, full legibility is recovered. No damage in performance.

**Operating humidity**: 30 to 85 %RH (non-condensing)

**Allowable dust particles:** 0.1 mg/m$^2$ (no conductive particles)

**Corrosive gas:** Not allowed

**Mounting**: Panel flush mounting (except desktop type)

**Panel cutout dimensions:** 137 × 137 mm (5.39"× 5.39")

**Weight**: 1.7 kg (3.7 lb)

Caution: Use of UPS (switching time: without delay, output: sine waveforms) is recommended to prevent data loss or CF card damage by a loss of power during recording.

## PERFORMANCE

**Calendar clock accuracy**: Monthly deviation 3 minutes at 25°C

**Insulation resistance**: ≥ 100 MΩ with 500 V DC

**Dielectric strength**: 500 V AC @ 1 minute
(alarm output to RUN output to power or FG or RS-485)

 **AC powered**:
2000 V AC @ 1 minute (power to FG or Ethernet or RS-485)
500 V AC @ 1 minute (FG or RS-485 to Ethernet)

 **DC powered**:
1250 V AC @ 1 minute (power to FG or Ethernet or RS-485)
500 V AC @ 1 minute (FG or RS-485 to Ethernet)

## STANDARDS & APPROVALS

**EU conformity**:
(M2 AC power of desktop type does not conform to EU directive)
EMC Directive
  EMI EN 61000-6-4
  EMS EN 61000-6-2
Low Voltage Directive
  EN 61010-1
  Installation Category II
  Pollution Degree 2
Alarm output to RUN output to power to FG or Ethernet or RS-485: Reinforced insulation (300 V)
RoHS Directive

## APPLICATION SOFTWARE CD

■ **73VRPAC2 (included in the product package)**

• 73VR1100 Builder Software: Model 73VR11BLD

Used to configure parameters on the PC.

- Parameter configurations can be downloaded to the recorder via Ethernet.

- Present setting on the 73VR1100 can be uploaded and displayed on the PC.

- Configuration files can be converted into CSV.

• 73VR Data Viewer: Model 73VRWV

Used to show and analyze recorded data on the PC.

- Data stored in the CF Card can be called up on the PC screen via the CF Card Reader.

- Data stored in the CF Card can be sent by FTP and called up on the PC screen.

- Various analyzing functions

- Data, alarm history and comment files can be converted into CSV.

• PC Recorder Software: Model MSR128-V6

The 73VR1100 data can be sampled and stored in real time via Ethernet by the MSR128-V6.

• Instruction Manuals

- 73VR1100 users manual

- 73VR11BLD users manual

- 73VRWV users manual

- MSR128-V6 users manual

## PC REQUIREMENTS (provided by the user)

■ **73VR1100 Builder Software: Model 73VR11BLD**

| | |
|---|---|
| Operating system | Windows 7 Professional (32-bit) or Windows 10 (32-bit, 64-bit) Note: Proper software functions may not be ensured under certain conditions. |
| Screen area | 1024 by 768 pixels or better resolution |
| CD drive | Windows supported CD drive is used to install the software program. |
| Card reader | Used to read/write the CF Card |
| Mouse | Windows supported |
| LAN card | LAN card required to connect to Ethernet; 10BASE-T or 100BASE-T cable |

■ **73VR Data Viewer: Model 73VRWV**

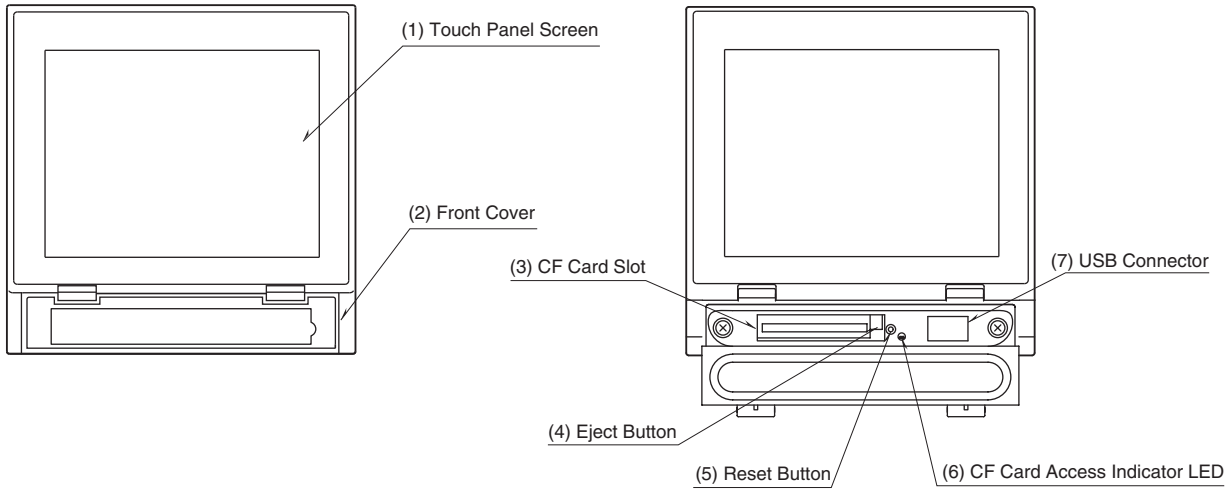| | |
|---|---|
| Operating system | Windows 7 Professional (32-bit) or Windows 10 (32-bit, 64-bit) Note: Proper software functions may not be ensured under certain conditions. |
| Screen area | 1024 by 768 pixels or higher |
| Display color | 65000 colors (16-bit) |
| Main memory (RAM) | 2 GB recommended |
| CD drive | Windows supported CD drive is used to install the software program. |
| Card reader | Used to read/write the CF Card |
| Mouse | Windows supported (Certain functions of the 73VR may be compromised if the mouse's software driver is not Windows standard.) |
| LAN card | LAN card required to connect to Ethernet; 10BASE-T or 100BASE-T cable |

**■ PC Recorder Software: Model MSR128-V6**

| | NORMAL MODE (storing rates ≥ 500 ms) | HIGH SPEED MODE (storing rates 100 / 200 ms)[1] |
|---|---|---|
| PC | IBM PC/AT or compatible | |
| Operating system | Windows XP SP1, SP2, SP3, Windows Vista Business (32-bit), Windows 7 Professional (32-bit) or Windows 10 (32-bit, 64-bit) Note: Proper software functions may not be ensured under certain conditions. | |
| CPU | Pentium III 800 MHz or higher 1 GHz higher for Windows Vista, Windows 7, Windows 10 | Pentium IV 2.0 GHz or higher |
| Screen area | 1024 by 768 pixels or better resolution | |
| Display color | 65000 colors (16-bit) | |
| Video memory | 2 MB minimum; 4 MB recommended | 4 MB minimum |
| Main memory | 256 MB recommended for Windows XP 1 GB recommended for Windows Vista, Windows 7, Windows 10 | 512 MB recommended for Windows XP 1 GB recommended for Windows Vista, Windows 7, Windows 10 |
| Hard disk area | Use an internal hard disk.[2] Max. approx. 100 MB required per day. | Use an internal hard disk.[2] Max. approx. 500 MB required per day. |
| Printer | Use a printer for Windows. The programs use Standard System Fonts used in Windows. Use a printer driver for Standard System Fonts. | |
| CD drive | Windows supported CD drive is used to install the software program. | |
| Card reader drive | Used with devices which save data in a CF Card | |
| Communication port | RS-232-C port (COM1 through COM5) supported LAN card | LAN card by Windows |

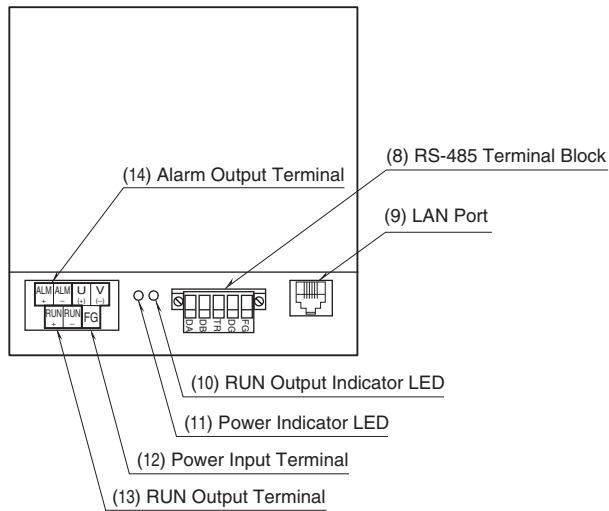*1. The 73VR1100 or the 73VR21x cannot be used in High Speed Mode.
*2. External (e.g. SCSI) devices may impair appropriate performance.
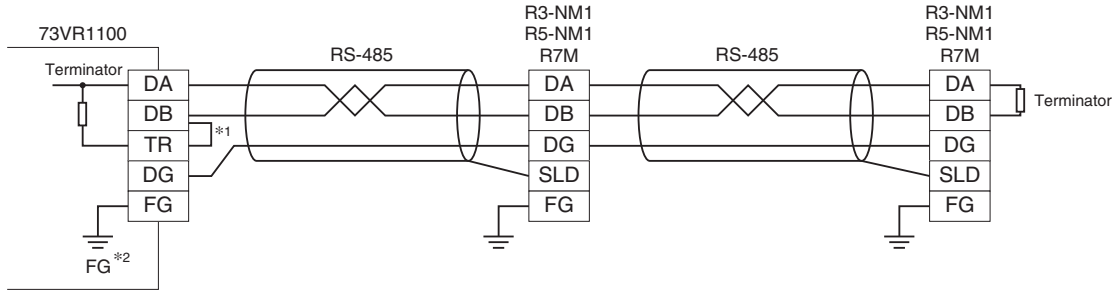
## EXTERNAL VIEW

### ■ FRONT VIEW

(1) Touch Panel Screen

(2) Front Cover

(3) CF Card Slot

(7) USB Connector

(4) Eject Button

(5) Reset Button

(6) CF Card Access Indicator LED

### ■ REAR VIEW

(14) Alarm Output Terminal

(8) RS-485 Terminal Block

(9) LAN Port

ALM ALM U V
RUN RUN FG

(10) RUN Output Indicator LED

(11) Power Indicator LED
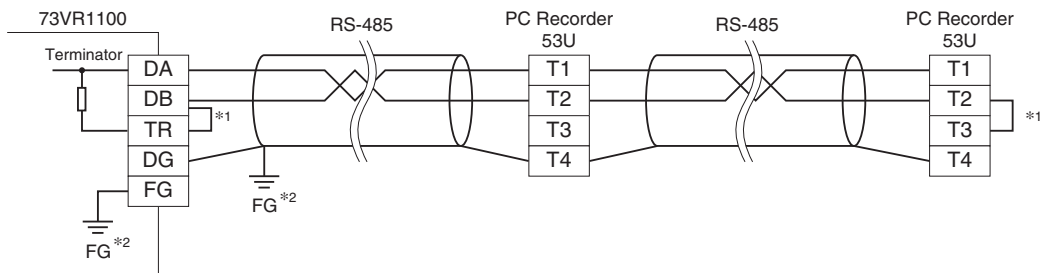
(12) Power Input Terminal

(13) RUN Output Terminal

## COMMUNICATION CABLE CONNECTIONS
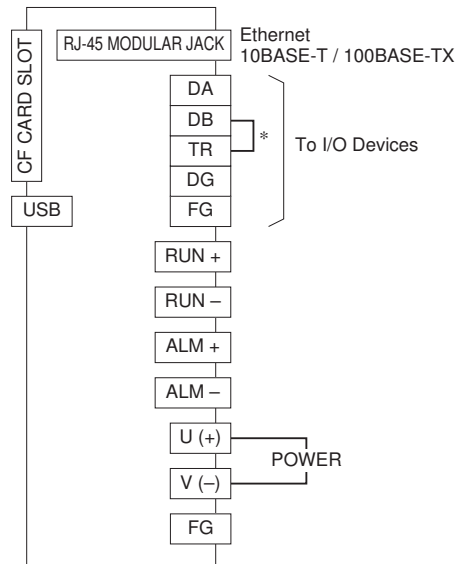
### ■ R3-NM1, R5-NM1, R7M



### ■ PC RECORDER, 53U



*1. Internal terminating resistor is used when the device is at the extreme end of a transmission line.
*2. Install shield cables to all sections and ground them at a single point.

## CONNECTION DIAGRAM

Note: In order to improve EMC performance, bond the FG terminal to ground.
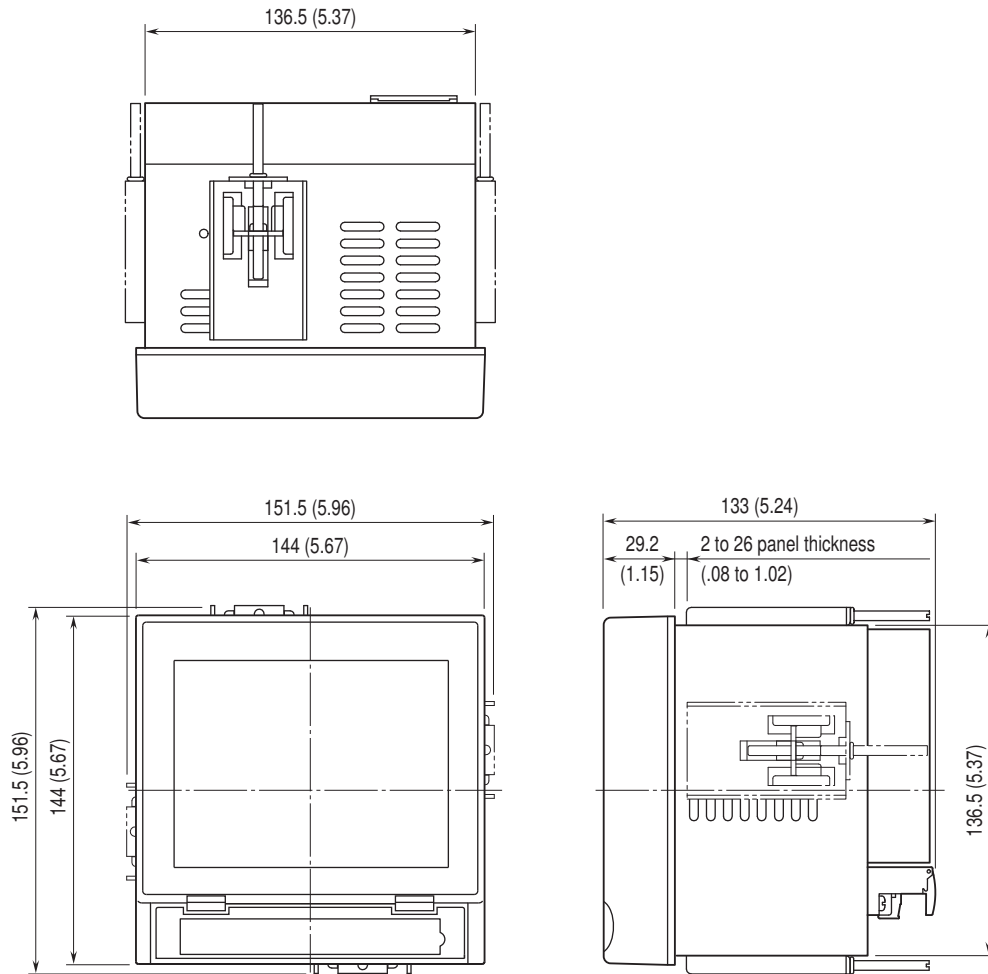
Caution: FG terminal is NOT a protective conductor terminal.



*Short across these terminals when the device is at the extreme end of a transmission line.

## EXTERNAL DIMENSIONS   unit: mm [inch]

· **Panel mount type**

136.5 (5.37)

151.5 (5.96)
144 (5.67)

151.5 (5.96)
144 (5.67)

133 (5.24)
29.2 (1.15)
2 to 26 panel thickness (.08 to 1.02)
136.5 (5.37)

Attach the mounting bracket either on the top/bottom or on the sides.

· **Desktop type**

136.5 (5.37)

144 (5.67)

25 (.98)

173 (6.81)

144 (5.67)

4 (.16)

133 (5.24)

29.2 (1.15)

136.5 (5.37)
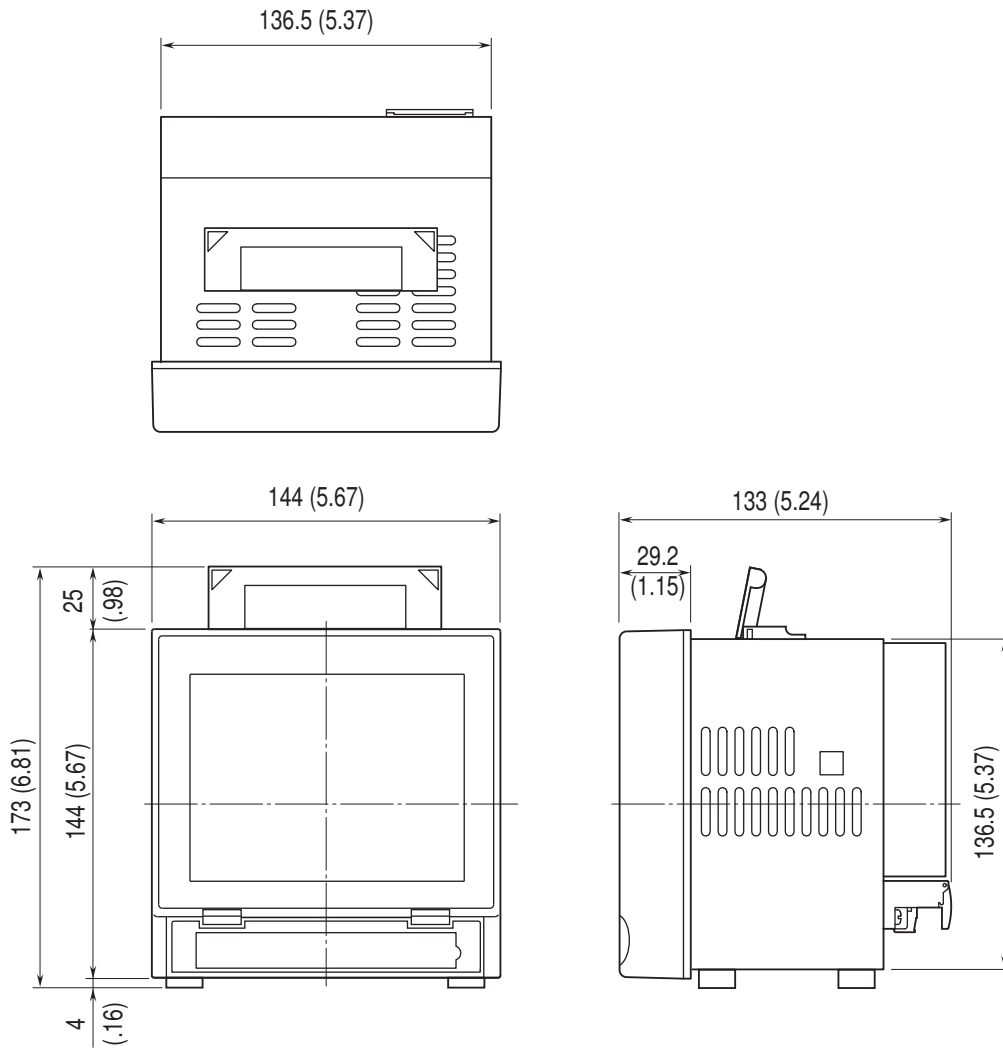
## PANEL CUTOUT (unit: mm)

Usable panel thickness: 2 – 26 mm (0.08" – 1.02")

■ SINGLE MOUNTING

$137^{+2}_{0}$

$137^{+2}_{0}$
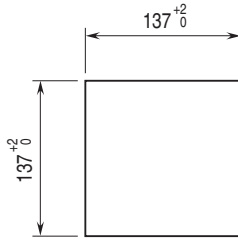
| Number | $L^{+2}_{0}$ (mm) |
|--------|-------------------|
| 2 | 282 |
| 3 | 426 |
| 4 | 570 |
| 5 | 714 |
| 6 | 858 |
| 7 | 1002 |
| 8 | 1146 |
| 9 | 1290 |
| 10 | 1434 |
| n | $(114 \times n) - 6$ |

■ VERTICAL CLUSTERED MOUNTING (max. 3 units)

$137^{+2}_{0}$

$L^{+2}_{0}$

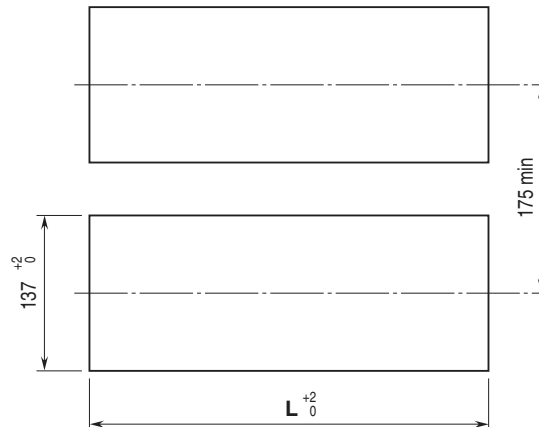175 min
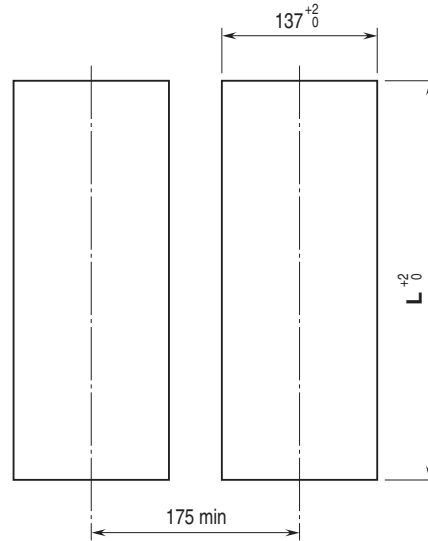
■ HORIZONTAL CLUSTERED MOUNTING

175 min

$137^{+2}_{0}$

$L^{+2}_{0}$

Notes
1. Dimensional tolerance ±3% unless otherwise specified.
(±0.3 mm for < 10 mm)
2. Desktop type cannot be mounted on a panel surface.

## SOFTWARE FUNCTIONS

■ NUMBER OF INPUT PEN POINTS
High speed mode: 64 points
Normal mode: 128 points
Function pen points are included in the above figures.

■ TYPE OF I/O DEVICES
High speed mode: R3-NE1
Normal mode: R1M-GH2, R1M-J3, R1M-A1, R1M-D1, R1M-P4, R1MS-GH3, R2M-2G3, R2M-2H3, RZMS-U9, R3-NE1, R3-NM1, R5-NE1, R5-NM1, R7E, R7M, 53U, IT60RE, IT40SRE, IT50SRE, IT60SRE

■ NUMBER OF I/O DEVICES
Ethernet
High speed mode: 1 station
Normal mode: 2 stations; Max. 15 nodes are connectable to one 72EM2-M4 station.
RS-485: 15 nodes

■ 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.
Event recording: The recorder detects an external event by trigger signal, and stores preset number of samples (max. 1200 respectively) before and after the moment of event.
Remote trigger: Data is automatically recorded while the external trigger condition (input) is true.

■ STORING RATE
High speed mode: 100 msec.
Normal mode: 500 msec., 1, 2, 5, 10 seconds, 1 minute, 10

minutes (Actual storing rate depends upon the number of I/O devices. Contact M-System for more information.)
[Example] Max. number of I/O devices that ensures 500 msec. storing intervals under the following conditions:
Data cycle priority on alarm, RS-485 connection, no trigger or alarm setting
R1M-GH2: 10
RZMS-U9: 2
R3-NE1: 1 (128 channels, analog input only)

## ■ DATA STORAGE

**Data file:** Stores momentary values in the storing rate and their calculation result.

**Alarm history file**: Records time index information when alarms are triggered and reset.
Oldest data is overwritten with new data when the number of records reaches its limit.

**Comment history file:** Records comments written in trend views with time index. Oldest data is overwritten with new data when the number of records reaches 1000 files.

**Configuration file:** Stores the 73VR1100 setting.

**File format:** Binary
Oldest measured data is overwritten with new data or data recording is stopped when the card memory is full.

## ■ ALARM

### • Analog Alarm

**Alarm setpoints**: Max. 4 points per channel

**Alarm type**: High / Low

**Deadband**: Set in engineering unit values

**Output**: Remote output devices

### • Discrete Alarm

**Alarm type**: ON / OFF

**Delay time**: Selectable

**Output**: Remote output devices

### • **Data Storage**: Trigger time, reset time, pen number and tag name, alarm message

**Number of stored alarm events**: Depends upon the CF Card capacity.
128 MB: 250 events
256 MB: 500 events
512 MB or 1 GB: 1000 events

## ■ CALCULATION FUNCTIONS

**Function pen points**

**High speed mode**: 32 points

**Normal mode**: 32 or 64 points selectable

**Operations**

**Arithmetic**: Addition/subtraction, Multiplication, Division

**Logical**: AND, OR, NOT, XOR

**Mathematical**: Square root extractor, Power

**Accumulation**: Analog accumulation, Pulse accumulation (per time unit)

**Filter**: Moving average, First order lag

**Hold**: Peak (maximum) hold (tracking increasing signal), Peak (minimum) hold (tracking decreasing signal)

**F value**: F value

**Anemoscope (16 directions)**

**Alarm**: Alarm trip can be programmed for calculated results.

## ■ DATA DISPLAY FUNCTIONS

### • Trend View

**Chart direction**: Perpendicular or horizontal

**Number of pens displayed**: 2, 4, 6, 8 per view

**Number of display views**: 4

**Chart speed:**(Chart speed is described as number of pixels to plot single data sample.)(pixel(s)/samples)
•4, 1, 1/5, 1/32
•1/160, 1/480 or 1/960 (Not selectable with 100 msec. storing rate)

**Display rate:**(Common setting to all views)
1, 2 or 5 sec.

**Pen thickness**: Normal and wide

**Digital indicator**: Shows momentary value.

**Alarm indicator**: Shows alarm status of the channels displayed on the screen.

**Comment**: Shows comments entered manually.

**Scale**: Linear and square root; Switchable to the engineering unit scale.

### • Bargraph View

**Bargraph direction**: Perpendicular or horizontal

**Number of pens displayed**: 2, 4, 6, 8 per view

**Number of display views**: 4

**Display rate:**(Common setting to all views)
1, 2 or 5 sec.

**Digital indicator**: Shows momentary value.

**Alarm indicator**: Shows alarm status of the channels displayed on the screen.

**Scale**: Linear and square root;
Switchable to the engineering unit scale.

### • Overview

**Number of pens displayed**: 2, 4, 6, 8, 16 per view

**Number of display views**: 64

**Display rate:**(Common setting to all views)
1, 2, or 5 sec.

**Alarm indicator**: Shows alarm status and date/time of the last alarm trip and reset for the channels displayed on the screen.

### • Graphic View

**Number of display views**: 2

**Display rate:**(Common setting to all views)
1, 2 or 5 sec.

**Background image file format**: .bmp

**Background image size**: 320 by 240 pixels

**Background image color**: 256

**Number of components displayed**: Max. 64 per view

### • **Retrieve View**: Shows data stored in the CF Card.

**Number of pens displayed**: 2, 4, 6, 8 per view

**Number of display views**: 4
**Data search**: Scrolling the chart, specifying a specific time index, or searching by max./min. values.
• **Alarm History View**: Shows data stored in the alarm history file.
**Number of displayed alarm events**: 16
**Number of display views**: 1
**Display update**: Automatically updated by a new event
**Data search**: Scrolling the view or specifying a specific time index.
**Jump**: Scroll the view to an alarm event to show the relevant data on Retrieve View.
• **Comment History View**: Shows data stored in the comment history file.
**Number of displayed alarm events**: 16
**Number of display views**: 1
**Data search**: Scrolling the view or specifying a specific time index.
**Jump**: Scroll the view to a comment to show the relevant data on Retrieve View.

■ **ETHERNET COMMUNICATION**
Monitoring data and setup of the 73VR1100 is possible on the PC connected via Ethernet.
• **Dedicated Protocol**
**Real time communication**: Transmits specific data to a host PC installed with the PC Recorder Software (model: MSR128). Max. 2 hosts.
**FTP communication**: Transmits data stored in the CF Card using the FTP protocol to a host PC by the 73VR Data Viewer (model: 73VRWV) installed in it. Data can be transmitted even during recording.
**Download, Upload**: Software configurations created on the 73VR1100 Configuration Builder (model: 73VR11BLD) can be downloaded to the 73VR1100. The configuration set up on the 73VR1100 can be uploaded and displayed on the 73VR11BLD.
• **Modbus Protocol**
**Protocol**: Modbus/TCP
**Port No.**: 502 (fixed)
**IP address**: Set on the recorder
**Subnet mask**: Set on the recorder
**Default gateway**: Set on the recorder
**Max. number of 73VR1100 connected simultaneously**: 2

**Supported Function Codes**

| CODE | NAME | FUNCTION |
|---|---|---|
| 01 | Read Coil Status | Reads DO |
| 02 | Read Input Status | Reads DI |
| 04 | Read Input Register | Reads Input Register |
| 11 | Fetch Communication Event Counter | Reads Status Word and Event Counter from Comm. Event Counter |

**Exception Response**

| CODE | NAME | FUNCTION |
|---|---|---|
| 01 | Illegal Function | Function Not supported |
| 02 | Illegal Data Address | Specified address does not exist |

**Supported Function Codes**
Data storing rate 100 msec.

| | ADDR. | TYPE | NAME |
|---|---|---|---|
| Coil (0X) | 1 | | Discrete output (pen 1, relay 1) |
| | 2 | | Discrete output (pen 1, relay 2) |
| | 3 | | Discrete output (pen 1, relay 3) (Unused with discrete alarm) |
| | 4 | | Discrete output (pen 1, relay 4) (Unused with discrete alarm) |
| | : | | : |
| | 255 | | Discrete output (pen 64, relay 3) (Unused with discrete alarm) |
| | 256 | | Discrete output (pen 64, relay 4) (Unused with discrete alarm) |
| | 257 | | Discrete output (alarm output terminal) |
| Input Status (1X) | 1 thr. 64 | | Input or function data (discrete) |
| Input Register (3X) | 1 thr. 128 | I or F | Input or function data (analog) |

Data storing rate 500 msec.

| | ADDR. | TYPE | NAME |
|---|---|---|---|
| Coil (0X) | 1 | | Discrete output (pen 1, relay 1) |
| | 2 | | Discrete output (pen 1, relay 2) |
| | 3 | | Discrete output (pen 1, relay 3) (Unused with discrete alarm) |
| | 4 | | Discrete output (pen 1, relay 4) (Unused with discrete alarm) |
| | : | | : |
| | 511 | | Discrete output (pen 128, relay 3) (Unused with discrete alarm) |
| | 512 | | Discrete output (pen 128, relay 4) (Unused with discrete alarm) |
| | 513 | | Discrete output (alarm output terminal) |
| Input Status (1X) | 1 thr. 128 | | Input or function data (discrete) |
| Input Register (3X) | 1 thr. 256 | I or F | Input or function data (analog) |

## ■ OTHER FUNCTIONS

### • Operation Lockout

With a password setting, unauthorized operations on the Trend View, Bargraph View and Overview can be locked out.

### • Data File Used Volume Information

A bargraph with % indication is provided on the screen to show how much percent of the data file memory has been used up.

0 – 49 % used: Green bargraph

50 – 79 % used: Amber bargraph

80 – 100 % used: Red bargraph

### • Hot Swapping of the CF Card

The CF Card is hot swappable: removable during data recording. However, there may be a slight disturbance in storing rate when the card is inserted.

### • Screen Saver

The backlight is automatically turned off if the screen is untouched for a certain time period.

### • Writing/Reading Setting

The recorder's present setting can be stored in a USB flash-memory. Setting stored in the memory can be read in to the 73VR1100.

## ■ SELECTABLE REMOTE I/O MODULES

### • PC Recorder (R1, R2, RZ) Series

| SIGNAL TYPE | MODELS |
|---|---|
| DC voltage input | R1M-GH2, R1MS-GH3, R2M-2G3, RZMS-U9 |
| Thermocouple input | R1M-GH2  R1MS-GH3,  R2M-2H3, RZMS-U9 |
| DC current input | R1M-GH2  R1MS-GH3, RZMS-U9 |
| RTD input | R1M-J3, RZMS-U9 |
| Potentiometer input | R1M-J3, RZMS-U9 |
| Contact input | R1M-A1 |
| Contact output | R1M-D1 |
| Pulse input | R1M-P4 |
| Totalized pulse input | R1M-P4, R1M-A1 |

### • 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.

## • 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 – 20 mA input with excitation supply | R5-DS, R5T-DS |
| 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 with the PC Configurator Software R5CON and the dedicated cable.

## • 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 |
| 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.

## • 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.

## • Power Multimeter

| TYPE | MODELS |
|---|---|
| Power multimeter | 53U* |

* Choose 'Modbus' option.  Only 1 DO can be used for alarm output.

## • ETHERNET Tower Light

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

## ■ STORABLE TIME DURATION IN 1GB CF CARD

| STORING RATE | APPROXIMATE TIME DURATION | | | | |
|---|---|---|---|---|---|
| | 8 ch input | 16 ch input | 32 ch input | 64 ch input | 128 ch input |
| 0.1 seconds | 27 days, 16 hours | 15 days, 8 hour | 8 days, 8 hours | 4 days, 8 hours | --- |
| 0.5 seconds | 138 days | 77 days | 40 days | 20 days, 16 hours | 14 days |
| 1 second | 277 days | 154 days | 81 days, 16 hours | 42 days | 28 days, 8 hours |
| 10 seconds | 7 years, 222 days | 4 years, 83 days | 2 years, 86 days | 1 years, 55 days | 213 days |
| 1 minute | 10 years minimum | 10 years minimum | 10 years minimum | 6 years, 335 days | 3 years, 172 days |

--- : Not Applicable
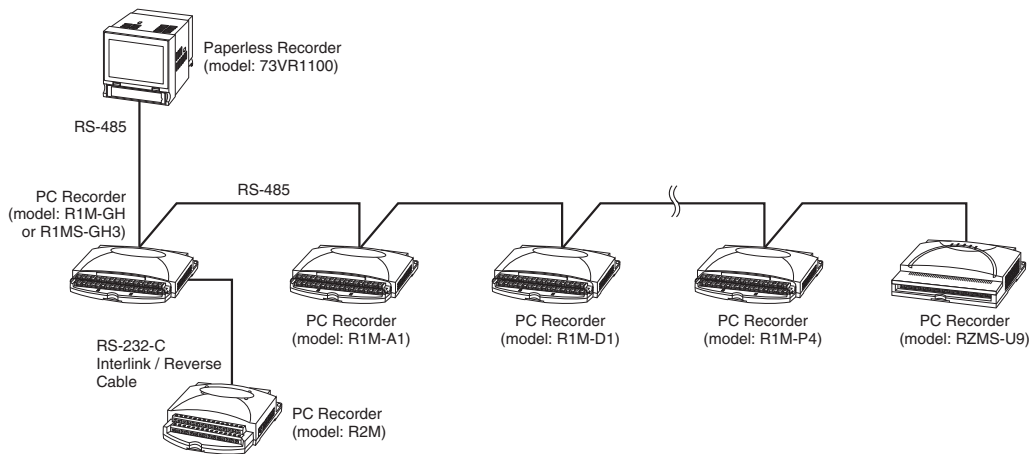
Note 1: Data are calculated ones, and thus not guaranteed.
Note 2: Assuming 4 bytes per data per channel.
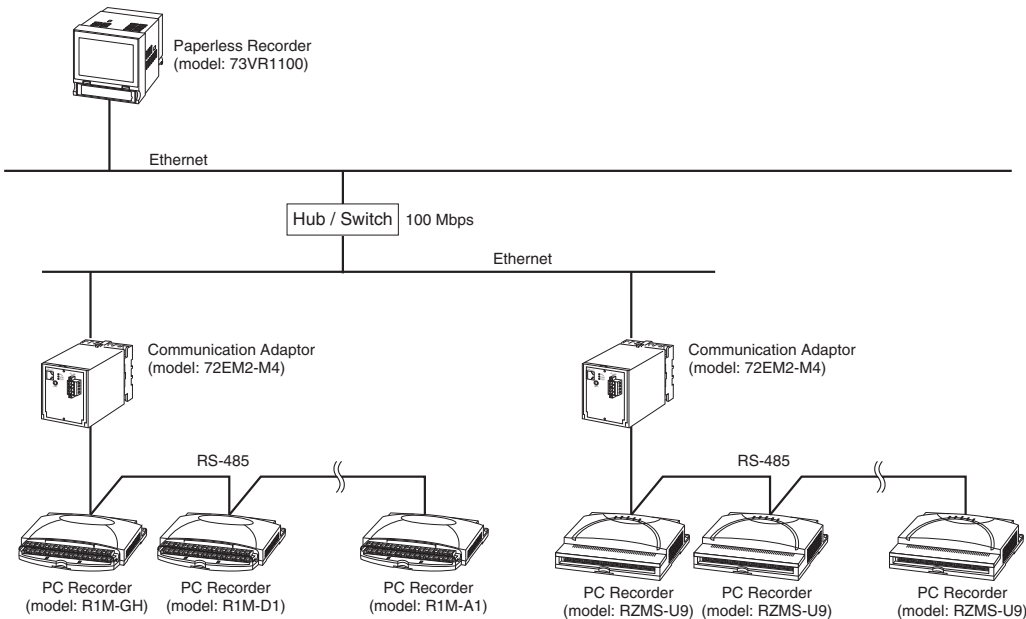Note 3: A year is calculated as 365 days.

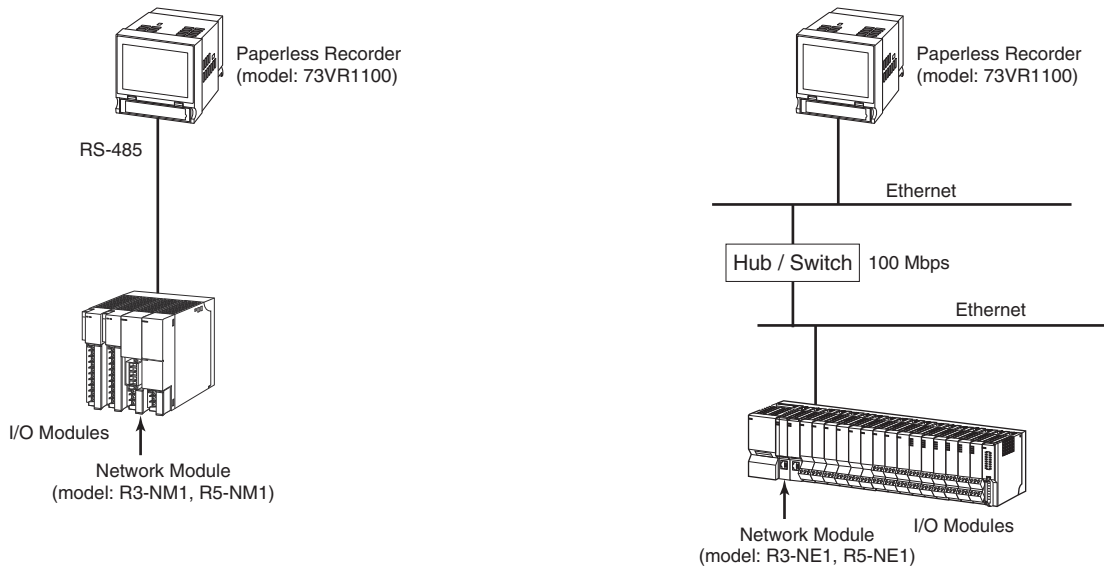## SYSTEM CONFIGURATION EXAMPLES

■ R1M, R2M, RZMS

[Example 1]



[Example 2]



Note 1: Use a dedicated network for the 73VR1100 and its input devices.
Note 2: The sampling rate depends upon the number of devices to be connected.

## ■ R3, R5 SERIES

Paperless Recorder
(model: 73VR1100)

RS-485

I/O Modules

Network Module
(model: R3-NM1, R5-NM1)

Paperless Recorder
(model: 73VR1100)

Ethernet

Hub / Switch | 100 Mbps

Ethernet
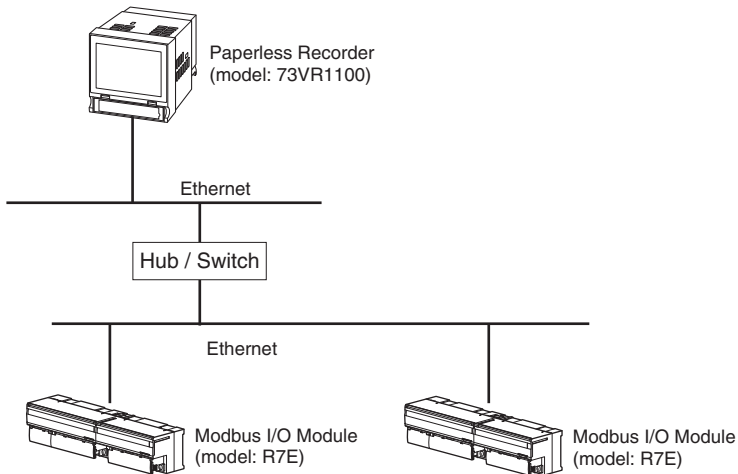
Network Module
(model: R3-NE1, R5-NE1)

I/O Modules

Note 1: Use a dedicated network for the 73VR1100 and its input devices.
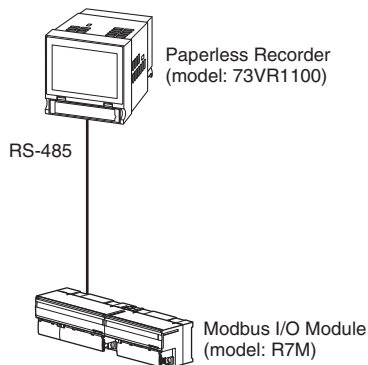Note 2: The sampling rate depends upon the number of devices to be connected for the R3 series.
Note 3: Use of a switch/hub via straight type cables is recommended to connect the R3-NE1 or the R5-NE1 to the 73VR1100.
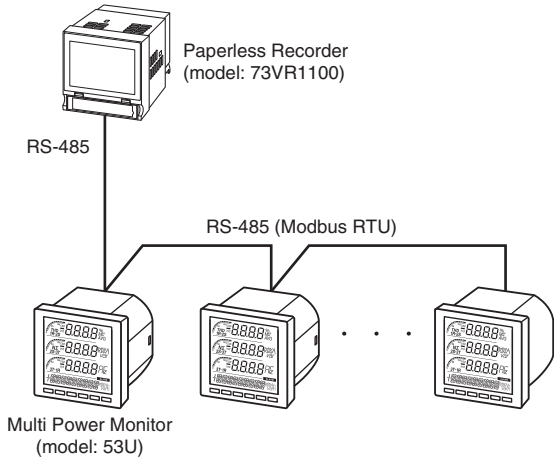
## ■ R7E

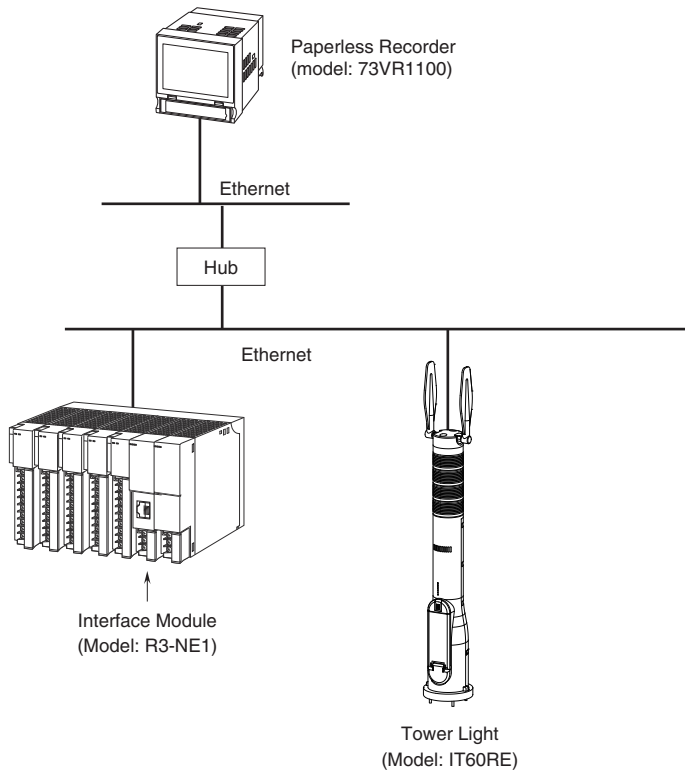Paperless Recorder
(model: 73VR1100)

Ethernet

Hub / Switch

Ethernet

Modbus I/O Module
(model: R7E)

Modbus I/O Module
(model: R7E)

## ■ R7M

Paperless Recorder
(model: 73VR1100)

RS-485

Modbus I/O Module
(model: R7M)

## ■ 53U



Paperless Recorder
(model: 73VR1100)

RS-485

RS-485 (Modbus RTU)

Multi Power Monitor
(model: 53U)

## ■ IT60RE (R3 applied on input units)



Paperless Recorder
(model: 73VR1100)

Ethernet

Hub

Ethernet

Interface Module
(Model: R3-NE1)

Tower Light
(Model: IT60RE)

# MODEL: 73VR1100

■ **MSR128**

**• I/O devices connected to RS-485**

PC Recorder Software
(model: MSR128)

Ethernet

Hub / Switch | 100 Mbps

Ethernet

Paperless Recorder
(model: 73VR1100)

RS-485

PC Recorder
(model: R1M-GH)

PC Recorder
(model: R1M-D1)

PC Recorder
(model: R1M-A1)
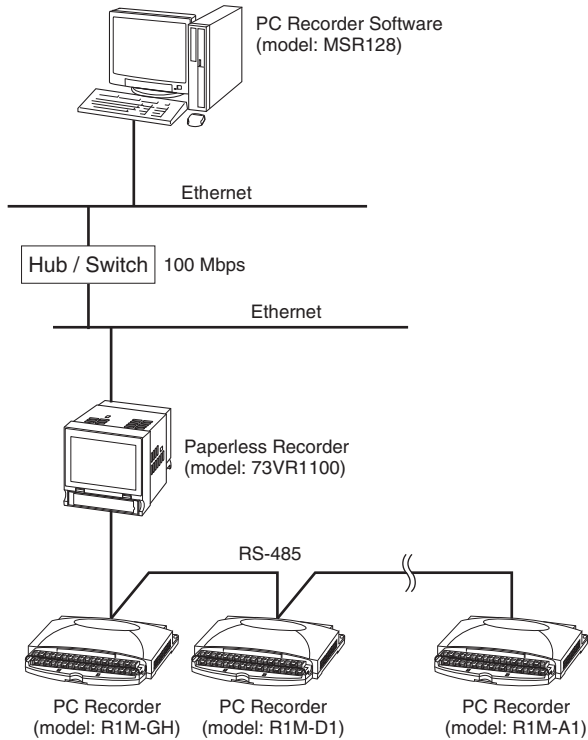
**• Transferring data from the CF Card**

PC Recorder Software
(model: MSR128)

Card Reader

CF Card

Paperless Recorder
(model: 73VR1100)

RS-485

PC Recorder
(model: R1M-GH)

PC Recorder
(model: R1M-D1)

PC Recorder
(model: R1M-A1)
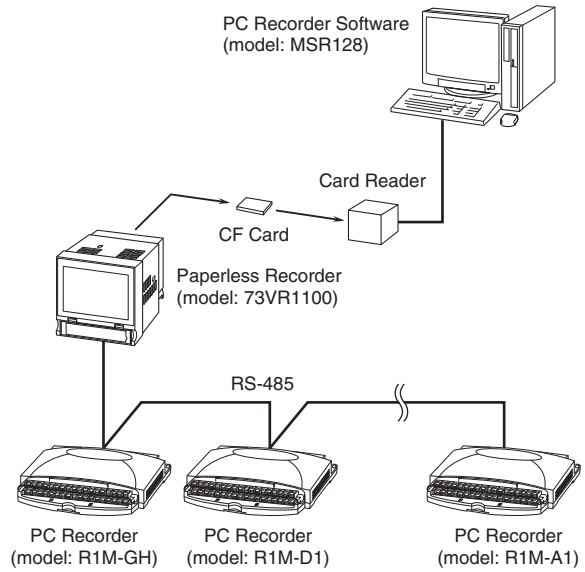
**• I/O devices connected to Ethernet**

PC Recorder Software
(model: MSR128)

Ethernet

Hub / Switch | 100 Mbps

Ethernet

Paperless Recorder
(model: 73VR1100)

Network Module
(model: R3-NE1, R5-NE1)

I/O Modules
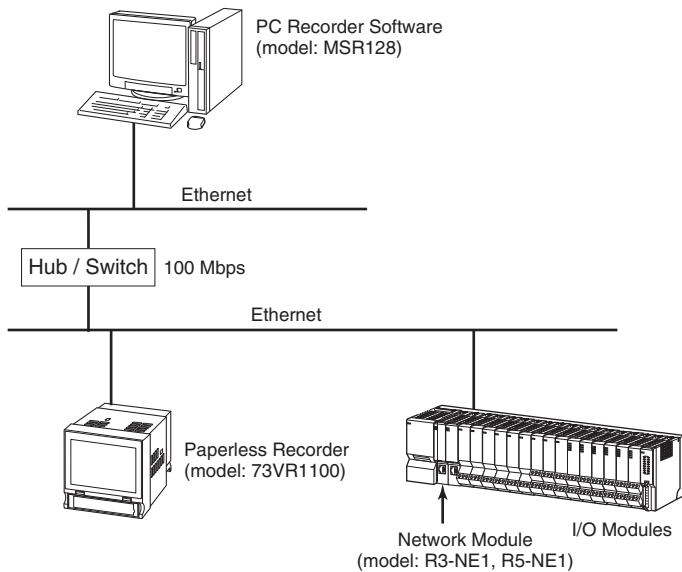
Note 1: Use a dedicated network for the 73VR1100 and its input devices.
Note 2: Use of a hub/switch via straight cables is recommended to connect the 73VR1100 to the PC.
Note 3: The storing intervals of 100 msec. and 200 msec. are not applicable to the above configuration.

⚠ Specifications are subject to change without notice.