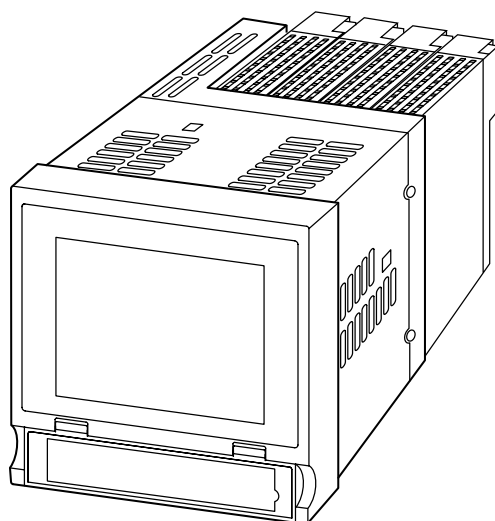

73VR3100 PAPERLESS RECORDER

STARTUP GUIDE

– Read Before Installation –



Contents

1. POINTS OF CAUTION	2
2. PACKAGE INCLUDES.....	5
3. ITEMS TO PREPARE.....	6
4. COMPONENT IDENTIFICATION	7
5. EXTERNAL DIMENSIONS	9
6. INSTALLING THE UNIT.....	11
7. WIRING TO THE UNIT.....	13
8. SETTING UP THE RECORDER.....	14
9. LET'S START RECORDING	21
10. MORE ABOUT THE 73VR3100	24

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1. POINTS OF CAUTION

Thank you for choosing M-System. Before use, please read this manual carefully. If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

This product is for use in general industrial environments, therefore may not be suitable for applications which require higher level of safety (e.g. safety or accident prevention systems) or of reliability (e.g. vehicle control or combustion control systems).

For safety, installation and maintenance of this product must be conducted by qualified personnel.

■ POWER INPUT

- Power input rating & operational range: Check the power rating for the unit on the specifications.
 - 100 – 240 V AC rating: 85 – 264 V, 47 – 66 Hz,
approx. 27 VA at 100 V, approx. 46 VA at 240 V
 - 24 V DC rating: 24 V \pm 10%, approx. 24 W
- Supplying any level of power other than specified above can damage the 73VR3100 or the power source.
- The power cables and the signal I/O cables for the 73VR3100 must be located separately.
- The main circuit cables (high voltage and high current), the signal I/O cables, and the power cables should not be bundled together or placed near each other.
- To increase noise resistance of the power input wires, twist the strands before connecting.

■ SAFETY PRECAUTION

- Before you remove the unit, turn off the power supply and input signal for safety.
- Do not use the 73VR3100 in an environment where flammable gases are present. This may result in an explosion.
- Do not disassemble or modify the 73VR3100 in any way. Doing so may result in a fire or an electrical shock.
- Do not strike the panel of the 73VR3100 with a hard, heavy or pointed object, or press the panel with excessive force. Doing so may result in panel damage or injury.
- Do not block the 73VR3100's ventilation openings or use it in areas where heat accumulates. Additionally, do not store or use it under high-temperature conditions.
- Do not store or use the 73VR3100 in locations subject to direct sunlight, or where excessive dust or dirt is present.
- The 73VR3100 is a precision instrument. Do not store or use it where large shocks or excessive vibration can occur.

-
- Do not store or use the 73VR3100 in environments subject to chemical evaporation (such as that of organic solvents), or where there are chemicals and/or acids present in the air.
 - Do not use paint thinner or organic solvents to clean the 73VR3100.
 - Observe the environmental conditions when using the 73VR3100.
 - Wait at least for 5 seconds before turning on the power supply after it has been turned off. The 73VR3100 may not start up if the time interval is less than 5 seconds.

■ ENVIRONMENT

- Indoor use.
- The 73VR3100 is designed to be mounted on a vertical panel. It is not suitable for a slanted or a horizontal panel surface.
- Environmental temperature must be within 0 to 50°C (32 to 122°F) with relative humidity within 30 to 85% RH in order to ensure adequate life span and operation.
- Desktop type cannot be mounted on a panel surface.
- The handle and rubber feet cannot be detached from desktop type unit.

■ GROUNDING

- Be sure to determine in advance the most stable grounding point in the environment and earth the 73VR3100's FG terminal and that of connected devices (PC) to it in order to prevent electric shock to the operator and to protect the devices from dielectric breakdown.
- Grounding is also effective to eliminate noise that could cause errors in the 73VR3100's operation.

■ CF CARD

- Do not turn off the power supply to the 73VR3100 or reset it during recording. The CF Card may be destroyed.
- Observe the described procedure when you need to replace the CF Card during recording.
- Confirm the sides and the connector position of the CF Card when inserting one to the card slot.

■ LCD PANEL

- The LCD panel's liquid contains an irritant. If the panel is damaged and the liquid contacts your skin, rinse immediately the contact area with running water for at least 15 minutes. If the liquid gets in your eyes, rinse immediately your eyes with running water for at least 15 minutes and consult a doctor.
- The following phenomena are LCD characteristics, and NOT a product defect:
 - LCD screen may show uneven brightness depending upon displayed images or contrast settings.
 - The LCD screen pixels may contain minute black-and-white-colored spots.
 - The color displayed on the LCD screen may appear different when seen from outside the specified viewing angle.
 - When the same image is displayed on the screen for a long time period, an afterimage may appear when the image is changed. If this happens, turn off the 73VR3100 and wait 10 seconds before restarting it.
- To prevent an afterimage:
 - Set the screensaver when you plan to display the same image for a long time period.
 - Plan to change the screen image periodically so that the same image does not remain for the long time period.

■ BACKLIGHT

- Even when the backlight is failed, the screen display can be controlled by touching it.
- Backlight failure is confirmed by the following phenomena:
 - The screen gets dark even when no screensaver setting is enabled.
 - If the screensaver is activated, the screen display does not recover when the screen is touched.
- The backlight can be replaced in M-System factory. The LCD must be replaced at the same time. Please consult M-System.

■ I/O MODULES

- Please refer to respective modules' instruction manuals for detailed information about them.

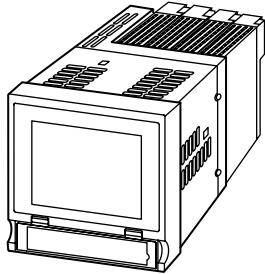
■ AND

- We recommend use of an UPS to supply power backups.

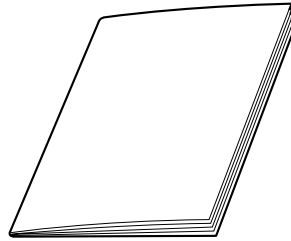
2. PACKAGE INCLUDES...

Please confirm that all items mentioned below are included in the package.

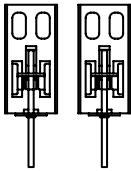
Paperless Recorder



I/O module (R3-x) instruction manual

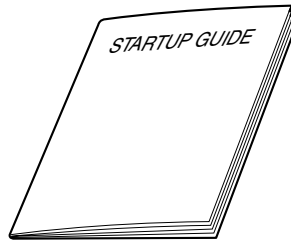


Mounting bracket (two pieces)

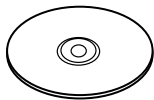


Not included for desktop type.

Startup guide (this booklet)



Software CD (73VRPAC2)



3. ITEMS TO PREPARE

- CF card

Prepare one of the following model numbers:

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-CFxxxxRBNS-ETNDNRG Parts No.: 256 MB ... 81.28L10.UC08B
512 MB ... 81.29L10.UC08B
1 GB ... 81.2AL10.UC08B

Capacity: 256 MB through 1 GB

(AP-CFxxxxE3ER-ETNDNR, AP-CFxxxxE3ER-ETNDNRK,
AP-CFxxxxE3NR-ETNDNRQ ... discontinued)

- CF card reader

The CF card reader is required to read the card contents into a PC.

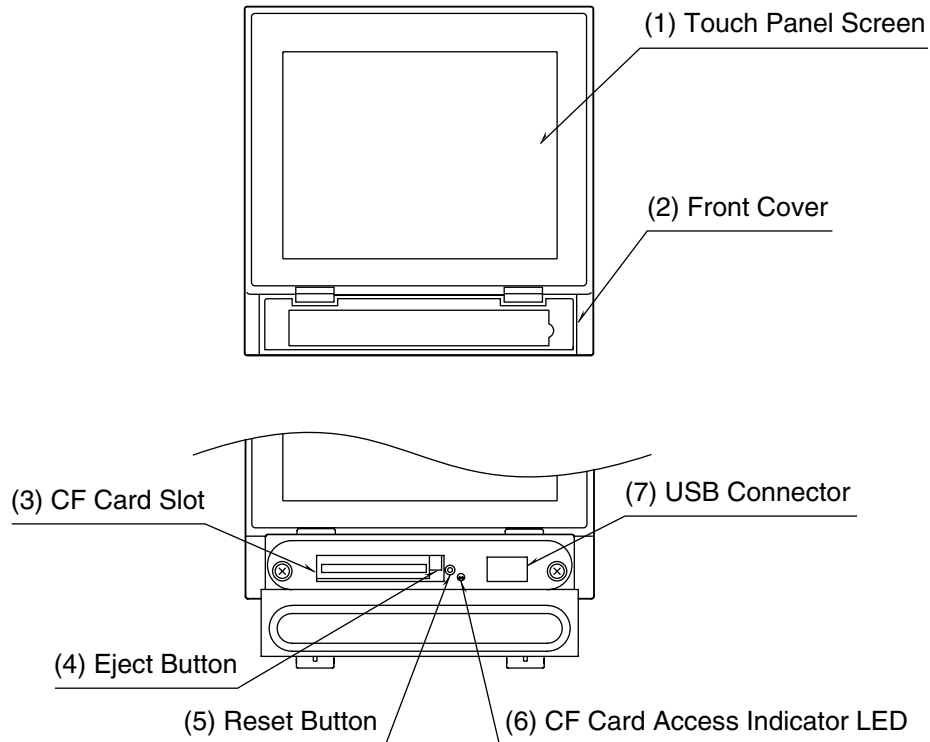
- Refer to Users Manuals stored in the 73VRPAC2 CD for detailed operations of the 73VR3100.

(1) Paperless Recorder (model: 73VR3100) Users ManualNo. EM-7397-B

(2) PC Configurator Software (model: 73VR31BLD) Users Manual No. EM-7397-C

4. COMPONENT IDENTIFICATION

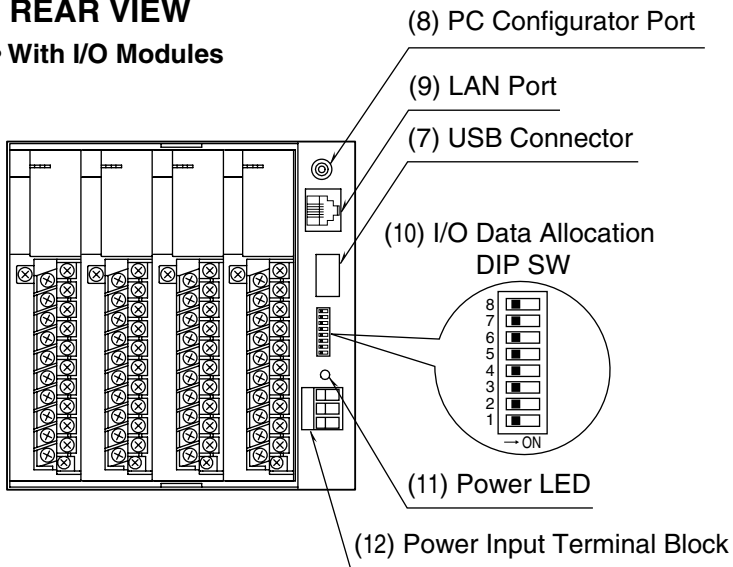
■ FRONT VIEW



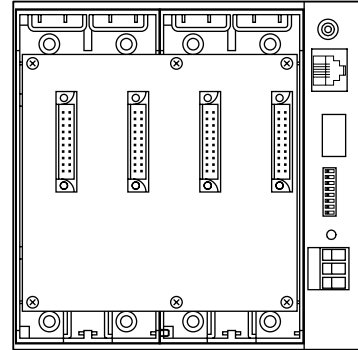
- (1) Touch Panel Screen
Trend chart and other data views and setup views are displayed.
- (2) Front Cover
Access to the CF Card Slot.
- (3) CF Card Slot
- (4) Eject Button
Used to retrieve the CF Card.
- (5) Reset Button
Used to restart the 73VR3100.
- (6) CF Card Access Indicator LED
Red LED turns on during the CF Card is accessed.
- (7) USB Connector
Connect an USB flash-memory.

■ REAR VIEW

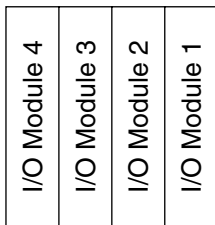
• With I/O Modules



• Without I/O Modules



• I/O Module Assignment

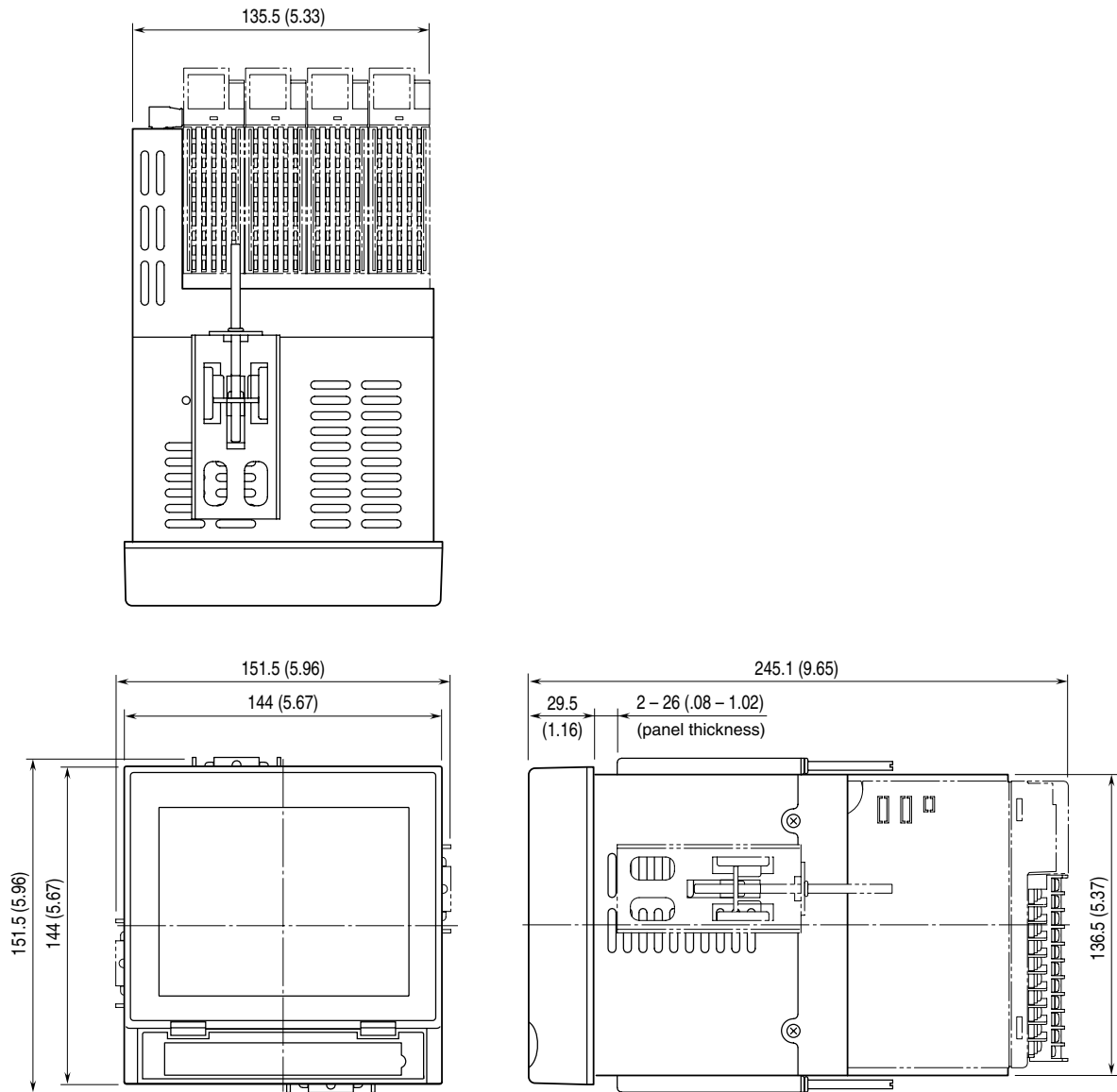


- (8) PC Configurator Port
Used to program with the R3 Configurator Software.
- (9) LAN Port
Connects the LAN cable (10BASE-T or 100BASE-TX)
- (10) I/O Data Allocation DIP Switch
Assigns the required data area for each I/O module.
Four (4) modes (1, 4, 8 and 16) are selectable depending upon the number of I/Os.
- (11) Power LED
LED turns on while the power is supplied.
- (12) Power input terminal block

5. EXTERNAL DIMENSIONS

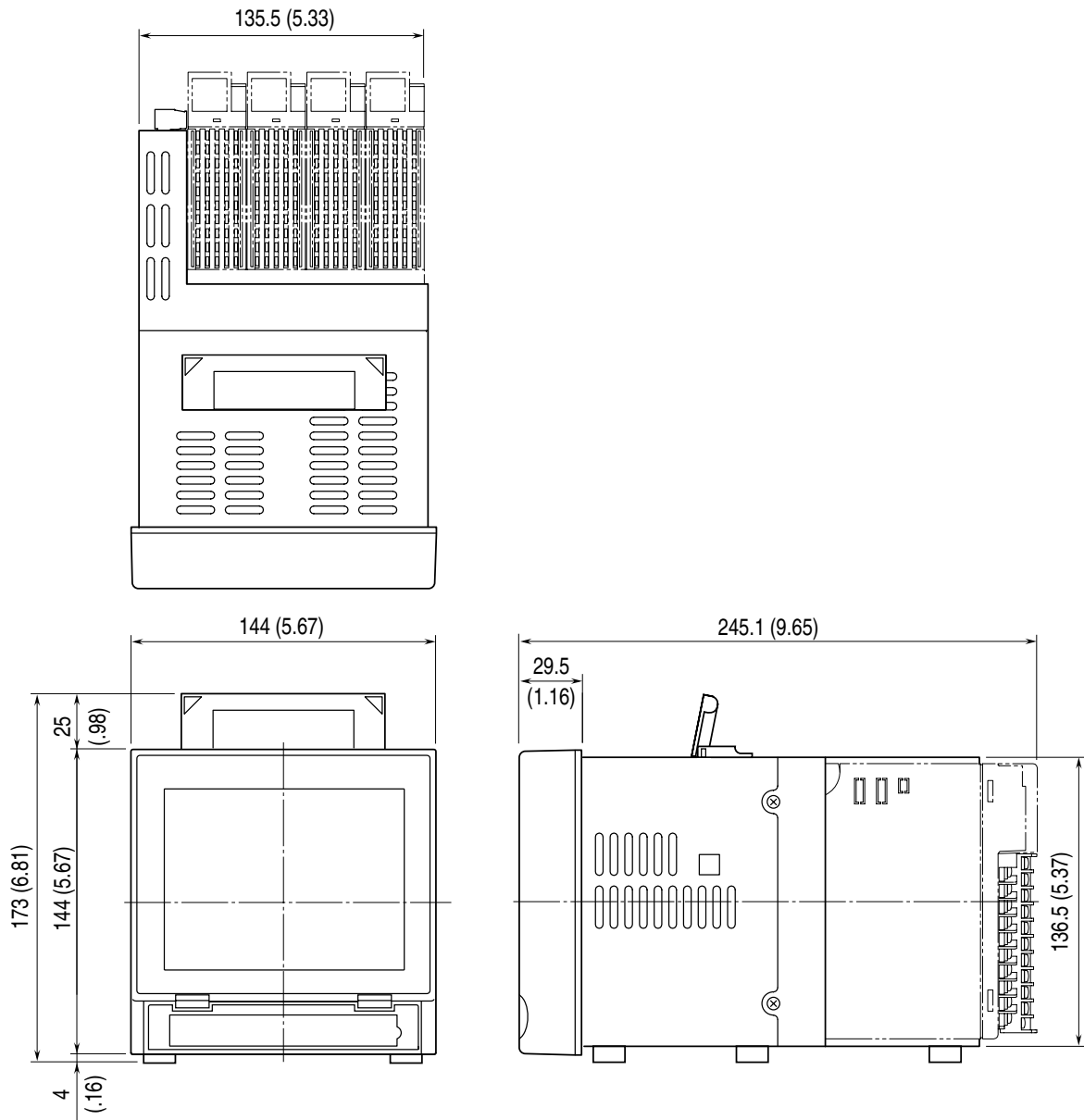
Unit: mm (inch)

· Panel mount type



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

• Desktop type



The handle and rubber feet cannot be detached from desktop type unit.

6. INSTALLING THE UNIT

Mount the 73VR3100 on the surface of a panel.

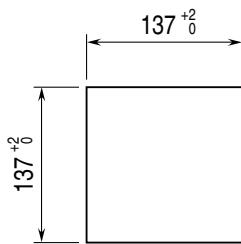
■ ADAPTABLE PANEL

Panel thickness: 2 to 26 mm

Material: Steel

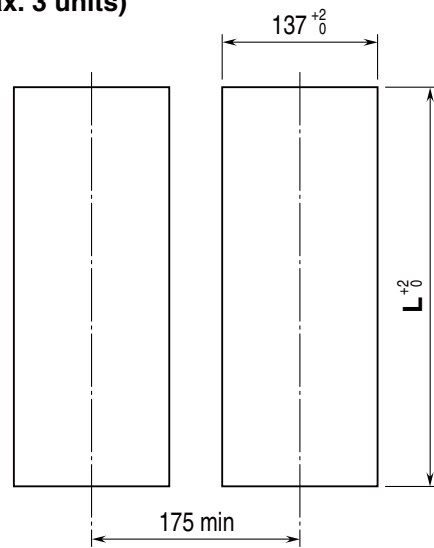
■ PANEL CUTOUT Unit: mm

■ SINGLE MOUNTING

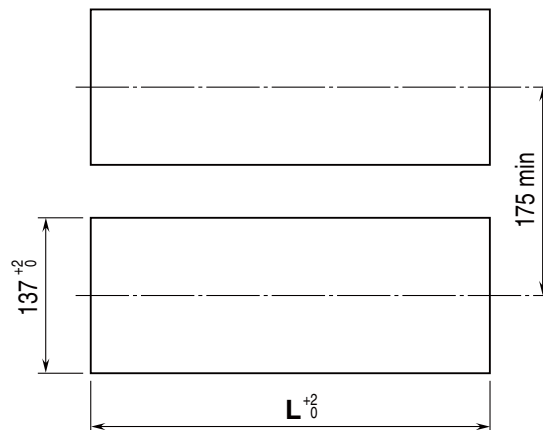


Number	$L \begin{smallmatrix} +2 \\ 0 \end{smallmatrix}$ (mm)
2	282
3	426
4	570
5	714
6	858
7	1002
8	1146
9	1290
10	1434
n	$(114 \times n) - 6$

■ VERTICAL CLUSTERED MOUNTING (max. 3 units)



■ HORIZONTAL CLUSTERED MOUNTING

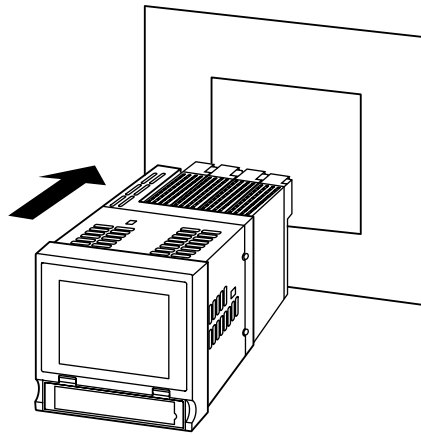


Notes

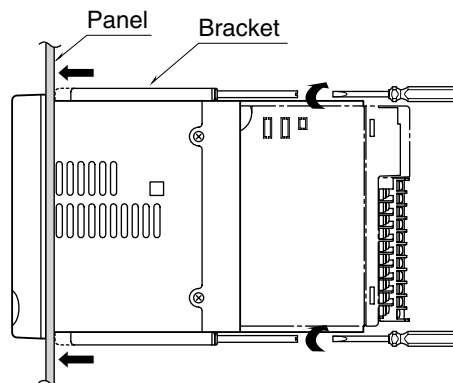
1. The R3 I/O modules mounted on the second and the third 73VR3100 from the top cannot be removed in the vertical clustered mounting.
2. Dimensional tolerance $\pm 3\%$ unless otherwise specified.
(± 0.3 mm for < 10 mm)
3. Desktop type cannot be mounted on a panel surface.

■ PANEL MOUNTING

(1) Insert the 73VR3100 from the front side of the panel.



(2) Remove the sheets covering the mounting bracket holes. Fix two mounting brackets either on the sides or on the top and bottom of the unit. Tighten screws.



CAUTION !

Adequate tightening torque for the screws used to mount the unit onto the panel is between 0.8 and 1.2 N·m. If an excessive force is applied, the unit's enclosure may be destroyed, or the panel may be distorted, which would cause a compromise in the unit's protection against water or liquid ingress.

7. WIRING TO THE UNIT

Before setting up the Paperless Recorder, connect power supply cables to the unit.

■ WIRE TYPE

Please choose appropriate wires referring to the following conditions:

- Terminal type: Euro type connector terminal
- Applicable wire size: 0.2 to 2.5 mm² or AWG24 to 12
- Core wire type: Stranded or Single core
(For stranded wires, use pin terminals.)
- Stripped length: 7 mm

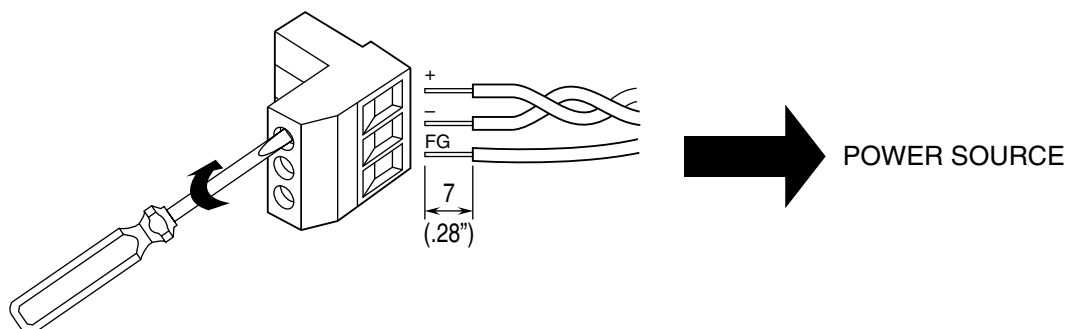
■ CONNECTING TO POWER SOURCE

- Confirm the power input rating on the specifications.

	Rated Voltage	Operational Voltage Range	Power Consumption
AC Power	100 – 240 V AC	85 – 264 V AC	Approx. 27 VA at 100 V Approx. 46 VA at 240 V
DC Power	24 V DC	24 V DC \pm 10%	Approx. 24 W

- How to Connect the power supply cable:

- (1) Confirm that the power supply is turned off.
- (2) Loosen three (3) screws at the terminal block.
- (3) Insert wires into the connection.
- (4) Fix them with the screw. Adequate torque is between 0.5 and 0.6 N·m.



8. SETTING UP THE RECORDER

Basic setup procedure is explained in this section, using an example of the following input modules to store data in a CF card in 1 second storing interval.

Module Slot No. 1 Model R3-SS4S DC current input module
Module Slot No. 2 Model R3-DA16S Discrete input module

8.1 I/O DATA ALLOCATION DIP SWITCH

The DIP switch (See Section 4) setting is used to assign required data area for each I/O module.

Four (4) modes (1, 4, 8 and 16) are selectable depending upon the number of I/Os as in the table below.

- (1) Turn off the power supply to the unit.
- (2) Set DIP switch positions as indicated below:
 - Module Slot No. 1 = Data Area 4 (SW1 = ON, SW2 = OFF)
 - Module Slot No. 4 = Data Area 1 (SW4 = OFF)
 - Module No. 3 and 4 are not used.
 - Set these slots to Data Area 1 (SW5 to 8 = OFF).

■ DIP SWITCH SETTING

The DIP switch is set at the factory according to I/O module types specified in Ordering Information Sheet. For example, Modul 1 is set to '4' when the R3-SV4 is selected to be installed at this position. Set to '1' with the R3-DA16 and R3-DC16.

MODULE NUMBER								DATA ALLOC. MODE
1		2		3		4		
SW1	SW2	SW3	SW4	SW5	SW6	SW7	SW8	
OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF	1
ON	OFF	ON	OFF	ON	OFF	ON	OFF	4
OFF	ON	OFF	ON	OFF	ON	OFF	ON	8
ON	ON	ON	ON	ON	ON	ON	ON	16

NOTE – Data Allocation Mode –

Data Allocation Mode depends upon I/O types. Please refer to the data sheet for a specific I/O module to confirm its Data Allocation Mode.

8.2 INSTALLING PC CONFIGURATOR SOFTWARE

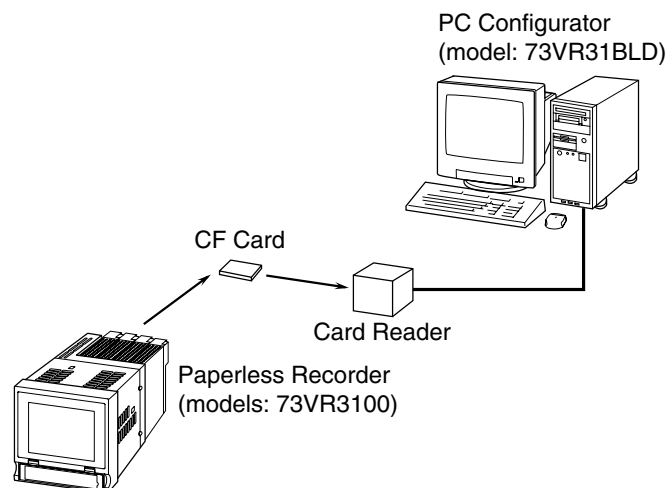
The 73VR3100 software package 73VRPAC2 includes a PC Configurator Software (model: 73VR31BLD) to help you easily set up the 73VR3100.

- (1) Start up the Windows PC and insert the 73VRPAC2 CD.
- (2) After you have specified to install the 73VR31BLD, Install Shield window automatically appears on the screen.
- (3) Follow the step-by-step the instructions that will appear on the window.
- (4) When the installation is successfully completed, '73VR31BLD' will be added to the menu under 'Programs.'

☛ See 73VR31BLD Users Manual Section 1 for detail.

8.3 GETTING THE CF CARD READY

- (1) Get the CF card in which the 73VR3100 configuration data file is to be stored.
- (2) Insert the card into the CF card reader connected to the PC.



8.4 CREATING A CONFIGURATION FILE ON THE 73VR31BLD

Let us show you an example to creating a setting data for the following input modules and specifications.

- I/O modules
 - Module Slot No. 1: Model R3-SS4S
(input range: 4 – 20 mA, scale: 0 – 100°C)
 - Module Slot No. 2: Model R3-DA16S
- Storing interval: 1 second
- Storing mode: Normal
 - Recording is manually initiated and stopped.
 - Data is continuously stored while the recording is on.
- Input 1: Module Slot No. 1, Channel 1
- Input 2: Module Slot No. 2, Channel 1

■ STARTING UP THE 73VR31BLD

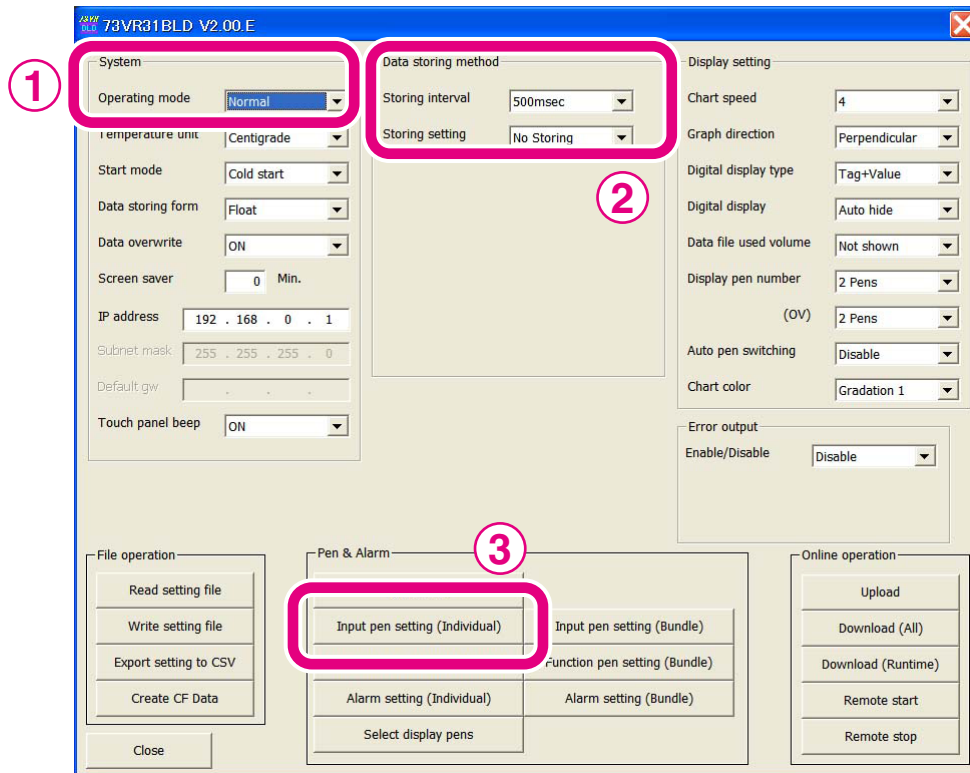
Go to Programs > 73VR > 73VR31BLD > 73VR31BLD_Vxxx to start the program.

NOTE

'xxx' in '73VR31BLD_Vxxx' means the software version number. For example, '73VR-31BLD_V100' means that the version is V1.00.A.

■ BASIC SETTING

The figure below shows an initial view of the 73VR31BLD.



Specify the following setting items:

(1) System

Operating mode: Normal

(2) Data storing method

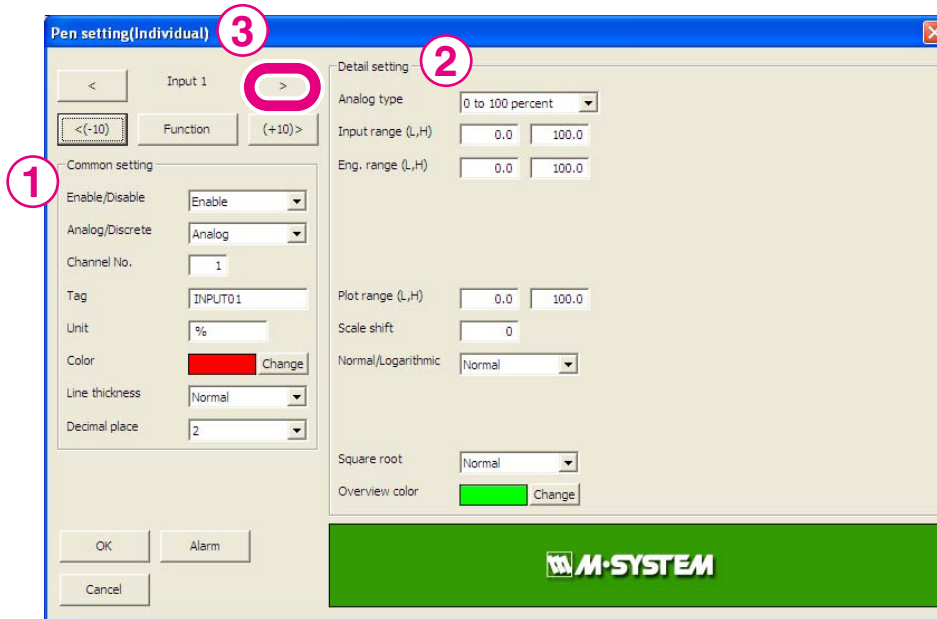
Storing interval: 1 sec

Storing setting: Normal

(3) Input pen setting (Individual)

■ INPUT 1 PEN SETTING

Specify the following setting items:



(1) Common setting

Enable / Disable: Enable
Analog / Discrete: Analog
Channel No.: 1
Tag: INPUT 01
Unit: deg C

(2) Detail setting

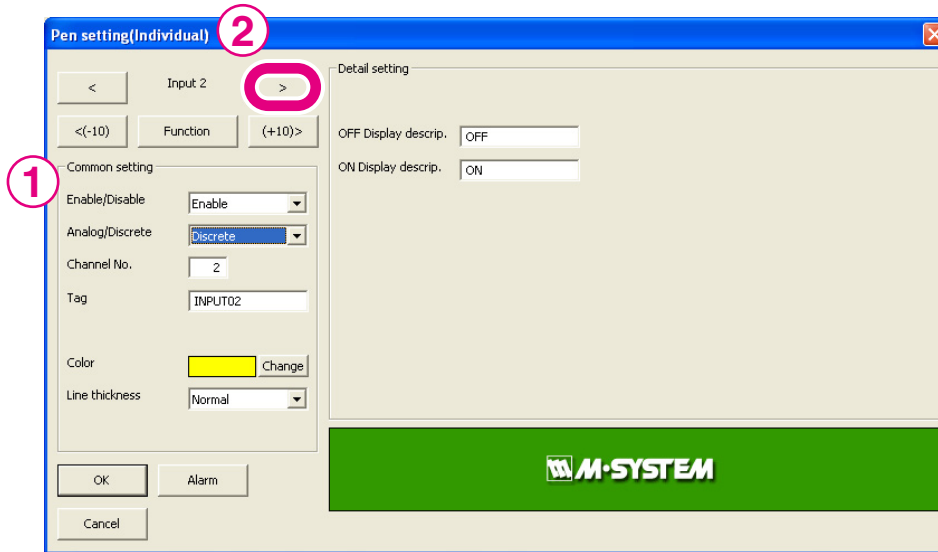
Analog type: 0 to 100 percent
Input range (L, H): 0.0 to 100.0
Eng. range (L, H): 0.0 to 100.0
Plot range (L, H): 0.0 to 100.0
Scale shift: 0
Normal / Logarithmic: Normal

(3) Press [>] button to the right of [Input 1] button to go to Input 2.

☞ See 73VR31BLD Users Manual Section 2 for detail.

■ INPUT 2 PEN SETTING

Specify the following setting items:



(1) Common setting

Enable / Disable: Enable
Analog / Discrete: Discrete
Channel No.: 65
Tag: INPUT 02

(2) Press [>] button to the right of [Input 2] button to go to Input 2.

NOTE – How to Count Channel No.? –

Channel 1 of the Slot No. 2 module is assigned to that of Input 2.

Slot No. 2 module, model R3-DA16S, is a discrete input module.

Slot No. 1 module, model R3-SS4S, is an analog input module with Data Allocation Mode 4.

When you count how many channels are assigned to Slot No. 1 in order to assign the channels for Slot No. 2, it is calculated as:

$$\text{Data Allocation Mode for Slot No. 1} \times 16 = 4 \times 16 = 64.$$

Then the Slot No. 2 starts at Channel 65.

➡ See 73VR31BLD Users Manual Section 2 for detail.

■ INPUT 3 THROUGH INPUT 8 PEN SETTING

Disable Input 3 through Input 8:

(1) Common setting

Enable / Disable: Disable

(2) Press [OK] button to go back to the initial view.

Basic setting using the PC Configurator Software is now complete.

■ SAVING CONFIGURATION FILE

Save the configuration as a file in the CF card.

(1) Press [Write setting file] under 'File operation' to call up 'Save as' window.

(2) Locate the CF card and specify '73VR.VRP31' as a file name, and click [OK].

(3) Click [Close] on the initial window or click [X] button on the title bar to quit the program.

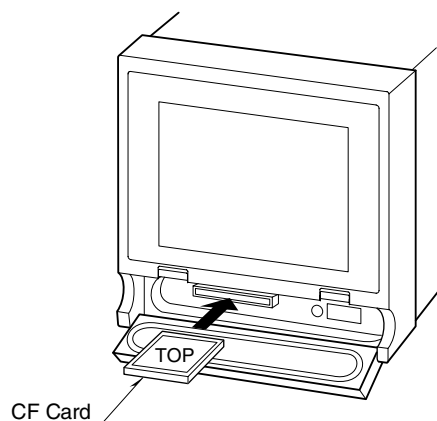
9. LET'S START RECORDING

9.1 READING IN SETTING FILE

The setting file created on the 73VR31BLD is read into the 73VR3100 via the CF card.

■ INSERTING THE CF CARD

- (1) Turn off the power supply to the 73VR3100.
- (2) Open the front cover.
- (3) Insert the CF card so that its side without label is on the top.



- (4) Push it in until EJECT button is popped up.
- (5) Close the front cover.

NOTES – Hot to Take the CF Card Out –

- (1) When the 73VR3100 is recording data, touch [MENU] key on the right bottom on the screen and touch [Stop] to stop the recording.
- (2) Push EJECT button to the right side of the card slot and take the card out.

9.2 STARTING THE 73VR3100

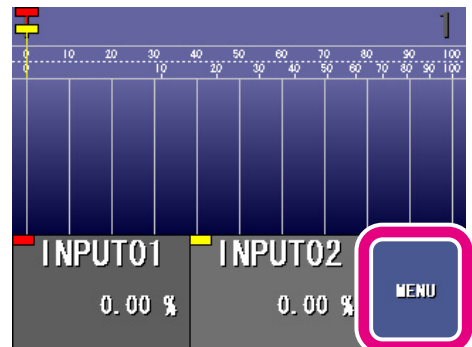
(1) Turn on the power supply to the 73VR3100.

NOTE

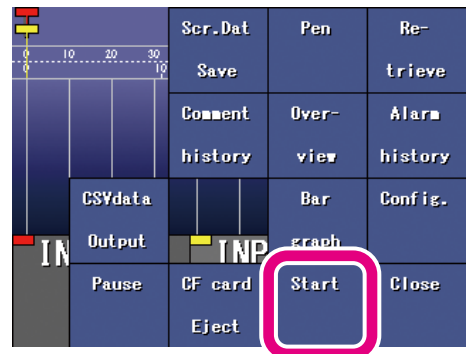
The 73VR3100 creates files necessary for its operation in the CF card after its power supply has been turned on. This operation may take some time.

☛ See 73VR3100 Users Manual Section 8 for detail.

(2) Touch [MENU] on the Record view to show the menu keys.

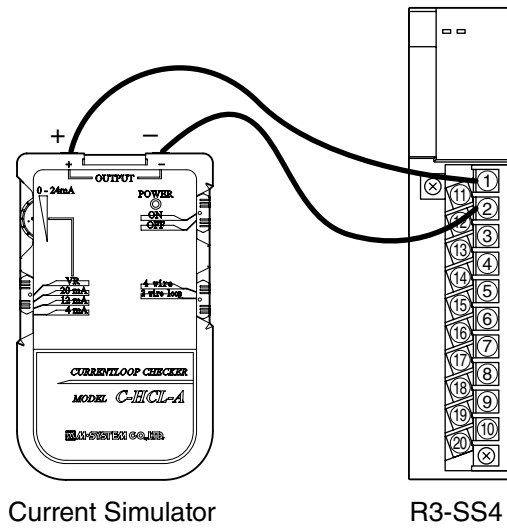


(3) Touch [Start] to start recording.

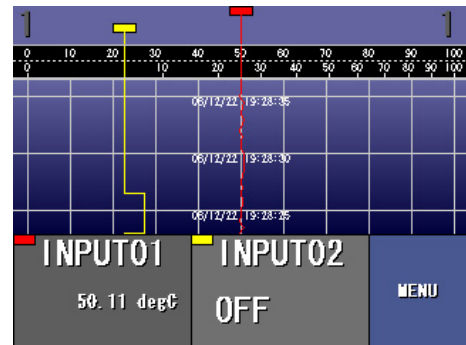


9.3 CONFIRMING DATA WITH SIMULATED INPUT

- (1) Connect a current signal simulator (e.g. M-System model C-HCL-A) to the input terminals (1 – 2) of the Slot No. 1 module (R3-SS4S).



- (2) Apply 12 mA and confirm that the recorder shows 50°C on the screen.



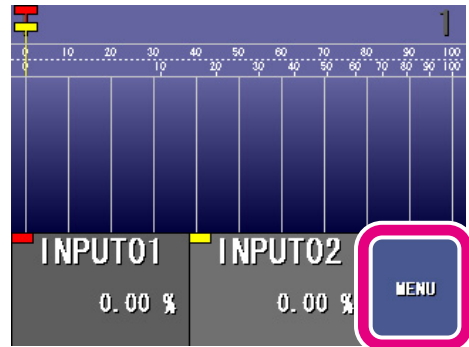
- (3) Apply a contact input signal to the Ch. 1 terminals of the Slot No. 2 module (R3-DA16S) and confirm that the recorder shows ON and OFF status according to the simulated input.

10. MORE ABOUT THE 73VR3100

10.1 SETUP ON THE 73VR3100 VIEW

The 73VR3100 can be configured via the front menu keys, without using the PC Configurator software.

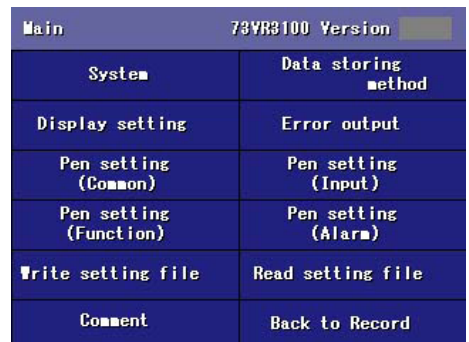
- (1) Insert the CF card into the 73VR3100.
- (2) Turn on the power supply to the 73VR3100.
- (3) Touch [MENU] key on the screen to call up control buttons.



- (4) Touch [Config.] key.



- (5) Select a menu item to start setting.



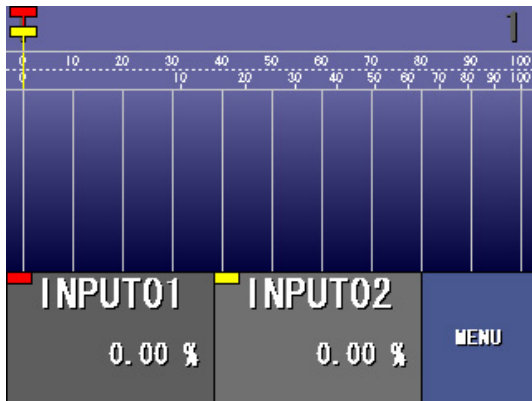
☛ See 73VR3100 Users Manual Section 4 for detail.

10.2 DISPLAY VIEWS

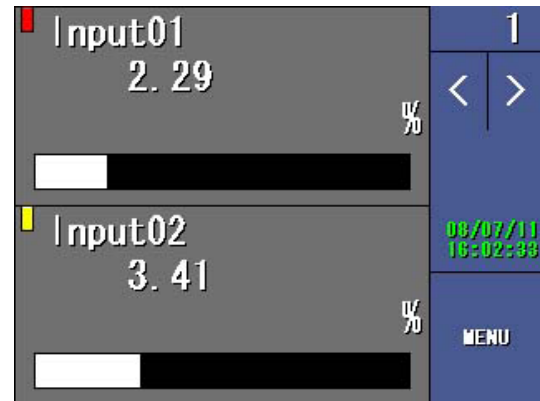
The 73VR3100 is available with:

- 'Trend View,' 'Overview' and 'Bargraph View' plotting recorded data in real time.
- 'Retrieve View' and 'Alarm History' showing data stored in the CF card.

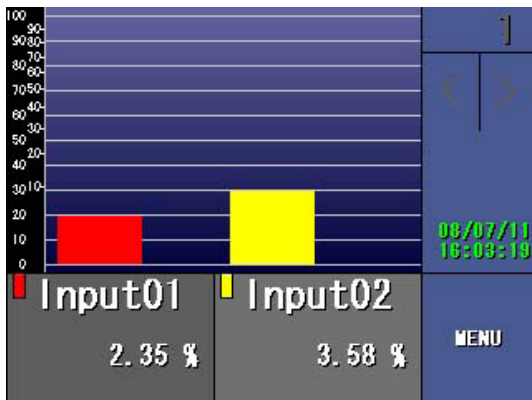
☛ See 73VR3100 Users Manual Section 7 for detail.



Trend View



Overview



Bargraph