Paperless Recording System

Versatile data recording and intuitive operation

Replace paper chart recorders and save cost of supplies and maintenance. Flexible I/O and networking capabilities.
Paperless Recorder
73VR Series

Replace paper chart recorders and save cost of supplies and maintenance. Environmentally friendly data recording solution – no chart paper, pens and cartridges. 73VR Series offers 3 types to select in many applications.

Versatile data recording.

- Touch panel operation
- Selectable number of pens to display
- 5.5-inch TFT color display with backlight
- Selectable chart colors available
  - White or from blue to black (plain light, plain dark or gradation)
- IP65 front cover

Remote I/O type
73VR1100

Built-in universal input type
73VR2100

Selective input module type
73VR3100

New Feature of Paperless Recorder 73VR3100

Direct operation and configuration from PLC

- The host PLC can control the 73VR3100 via built-in gateway module to start/stop recording, enter comments and set displays. *1
- Data sent from PLC can be displayed and recorded. *2

*1. In “Remote” mode, local control at the 73VR3100 is locked
*2. Storing rate 20msec. is not selectable

Gateway Interface Modules*3

<table>
<thead>
<tr>
<th>Network</th>
<th>Model</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cc:Link</td>
<td>R3-GC1</td>
<td>Ver. 2.00</td>
</tr>
<tr>
<td>DeviceNet</td>
<td>R3-GD1</td>
<td>Analog 64 ch.</td>
</tr>
<tr>
<td>Modbus/TCP</td>
<td>R3-GE1</td>
<td>Ethernet</td>
</tr>
<tr>
<td>Modbus</td>
<td>R3-GM1</td>
<td>RS-485</td>
</tr>
<tr>
<td>FL/net</td>
<td>R3-GFL1</td>
<td>OPCN-2</td>
</tr>
</tbody>
</table>

*3. The number of gateway module vary by its settings
Paperless Recorder with selectable built-in I/O  73VR3100

Selectable input modules.
Flexible I/O capability using the R3 series modules.
Compatible with various open networks.

◆ Up to four R3 Series I/O modules can be selected (Max. 64 inputs).
◆ By replacing one of the I/O modules with Network Module for the R3 Series, the 73VR3100 can directly communicate to major PLC via Modbus, Ethernet (Modbus/TCP), DeviceNet, PROFIBUS-DP, CC-Link, LONWORKS, T-Link and FL-net.
◆ 20 msec. storing rate with the combination of 8 analog and 8 discrete inputs.
◆ Real time trending and recording on the PC Recorder software MSR via Ethernet.

<table>
<thead>
<tr>
<th>SPECIFICATIONS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of input channels</td>
</tr>
<tr>
<td>Storing rate:</td>
</tr>
<tr>
<td>High speed mode</td>
</tr>
<tr>
<td>Normal mode</td>
</tr>
<tr>
<td>Input types</td>
</tr>
<tr>
<td>Trigger input</td>
</tr>
<tr>
<td>Alarm/Run output</td>
</tr>
<tr>
<td>Weight</td>
</tr>
<tr>
<td>Display</td>
</tr>
<tr>
<td>Display device</td>
</tr>
<tr>
<td>Display colors</td>
</tr>
<tr>
<td>Resolution</td>
</tr>
<tr>
<td>Ethernet</td>
</tr>
<tr>
<td>10BASE-T / 100BASE-TX automatically switched; Conforms to IEEE802 (10BASE-T) or IEEE802.3 (100BASE-TX)</td>
</tr>
<tr>
<td>Degree of protection</td>
</tr>
<tr>
<td>CE marking</td>
</tr>
</tbody>
</table>

Open network module installed, using 73VR3100 as remote I/O with local display and recording function.

Display & recording data input to a control system.
Paperless Recorder with built-in I/O  73VR2100

Built-in universal input modules.
Universal input – DC, Thermocouple, RTD

- Independent input type and range selectable for each channel
- 100 msec. storing rate up to 6 point
- 2, 4, 6, 8, 10 or 12 points
- Real time trending and recording on the PC Recorder software MSR via Ethernet

### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Model</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>73VR2102</td>
<td>Paperless Recorder (built-in input modules, 2-point inputs)</td>
</tr>
<tr>
<td>73VR2104</td>
<td>Paperless Recorder (built-in input modules, 4-point inputs)</td>
</tr>
<tr>
<td>73VR2106</td>
<td>Paperless Recorder (built-in input modules, 6-point inputs)</td>
</tr>
<tr>
<td>73VR2108</td>
<td>Paperless Recorder (built-in input modules, 8-point inputs)</td>
</tr>
<tr>
<td>73VR2110</td>
<td>Paperless Recorder (built-in input modules, 10-point inputs)</td>
</tr>
<tr>
<td>73VR2112</td>
<td>Paperless Recorder (built-in input modules, 12-point inputs)</td>
</tr>
</tbody>
</table>

#### INPUT TYPE

**DC Voltage**

- Input resistance 900kΩ minimum (excluding the case in which, with range setting other than ±12V, ±6V or ±3V, a voltage exceeding ±1.3V is applied.)
- Input range ±60mV, ±125mV, ±250mV, ±500mV, ±1000mV, ±2V, ±4V, ±12V

**DC Current**

- 4-20mA, use optional REM3-250 resistor module

**Thermocouple**

- Input range (PR), K (CA), E (CRC), F (IC), T (CC), B (RH), R, S, C (WRe 5-26), N, U, L, P (Platinel II)

**Burnout sensing**

- Upscale: ≤130nA
- Downscale: ≤220nA
- No burnout: ≤10nA

**RTD (3-wire)**

- Input range Pt 100 (JIS ‘89), Pt 100 (JIS ‘97, IEC), Pt 200, Pt 300, Pt 400, Pt 500, Pt 1000, Pt 500 (JIS ‘81), JPt 100 (JIS ‘89), Ni 100, Ni 120, Ni 508.40, Ni-Fe 604, Cu 10 @25°C

**Burnout sensing**

- Upscale or Downsacle: ≤130nA

**Allowable lead-wire resistance**

- 200 per wire

### QUICK SETUP

Intuitive “Help View” screen for easy user setup and use.
Paperless Recorder with Remote I/O  73VR1100

Connects to remote I/O.

Designed to utilize a wide variety of M-System’s remote I/O devices.

- Best suited to record data transmitted from I/O located remotely in the field, or inside an instrumentation or control cabinet.
- Instead of using expensive sensor cables, reduce wiring runs by using open field networks through remote I/O.
- I/O separated 73VR1100 provides the installation flexibility which fits in the tight space of a control panel or machinery chassis.

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### SPECIFICATIONS

<table>
<thead>
<tr>
<th>Specification</th>
<th>Details</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of input channels</td>
<td>64, 128 (Function pen points included)</td>
</tr>
<tr>
<td>Function pen points</td>
<td>32, 64</td>
</tr>
<tr>
<td>Storing rate (high speed mode)</td>
<td>100 msec.</td>
</tr>
<tr>
<td>Storing rate (normal mode)</td>
<td>600 msec., 1, 2, 5, 10 seconds, 1 minute, 10 minutes</td>
</tr>
<tr>
<td>Input types</td>
<td>R3 series I/O modules (DC voltage, DC current, Thermocouple, RTD, AC voltage, AC current, Encoder, Totalized pulse)</td>
</tr>
<tr>
<td>Trigger input</td>
<td>Max. 128 via remote I/O</td>
</tr>
<tr>
<td>Alarm/Run output</td>
<td>Alarm × 1, Run × 1; Alarm also available via remote output modules</td>
</tr>
<tr>
<td>Weight</td>
<td>1.7 kg (3.7 lbs)</td>
</tr>
<tr>
<td>Display</td>
<td>5.5-inch TFT LCD</td>
</tr>
<tr>
<td>Display colors</td>
<td>256</td>
</tr>
<tr>
<td>Resolution</td>
<td>320 × 240 pixels</td>
</tr>
<tr>
<td>Ethernet</td>
<td>10BASE-T / 100BASE-TX automatically switched; Conforms to IEEE802 (10BASE-T) or IEEE802.3 (100BASE-TX)</td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP65 (applicable to the front panel of with the cover closed when a single unit is mounted according to the specified panel cutout)</td>
</tr>
<tr>
<td>CE marking</td>
<td>Yes</td>
</tr>
</tbody>
</table>

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**Multichannel remote data acquisition**

73VR1100

- Up to 128 points
- Modbus RS-485
- Max. 500 meters
- Ethernet - Up to 2 stations

**Reduce wiring cost**

73VR1100

- Remote I/O
- Sensor

Specifications are subject to change without notice.
M-System's Model 71VR1 is a 1/4 DIN size (96 x 96 mm panel cutout), compact paperless recorder that can store and display the maximum of 8-point analog inputs and 8-point discrete inputs. The 3.5 inch TFT color LCD display can show two pen channels at once on a trend graph or digital/bargraph indicators.

Field signals are connected to local terminals and polled remotely from Modbus RTU I/O devices. Three models are available depending on the number of local inputs.

Data sampling rate is selectable between 100 msec. and 10 seconds depending upon the type and number of local and remote inputs. In addition to manual and continuous recording mode, conditional recording triggered by AND/OR functions in combinations of analog/discrete signal values/states is available. This allows the user to record only necessary part of the data in order to save memory area.

Each analog input signal is independently set with four (4) alarm thresholds. In addition to the built-in DO terminals, at the maximum of 8-point discrete outputs can be mapped on remote output devices to alert externally. Alarm events are recorded in an alarm history file, up to 200 events.

Data is stored in a memory card at the rear side of the recorder, and can be transferred to a PC and converted into CSV format files with this card or via the front IrDA port.

Thanks to its small panel size and shallow depth of only 10 centimeters (4 inches) needed behind the panel surface, the 71VR1 can be mounted on control panels built into industrial and commercial machineries. Imagine the 71VR1 mounted on a wave soldering machine. Single unit can monitor and record solder temperature, conveyor speed, starting/stopping of the machine, current consumption and their alarm history.

IP 65 front panel is also suitable for applications and installations where splashing water is present such as sanitary plants.