Product Manual

8 Channel Scanner
with USB Data Logger
and RS-485 Communication

**MS 1248U-M1**

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**Product Inception**

**Technical Specifications**

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Model</td>
<td>MS 1248U-M1</td>
</tr>
<tr>
<td>Display</td>
<td>UPPER: 4 Digit 7 seg 0.70&quot;, RED LED Display &lt;br&gt;LOWER: 4 Digit 7 seg 0.50&quot;, GREEN LED Display</td>
</tr>
<tr>
<td>Size (mm)</td>
<td>96 (H) X 96 (W) X 50 (D) mm</td>
</tr>
<tr>
<td>Panel Cutout</td>
<td>92 X 92 mm</td>
</tr>
<tr>
<td>Input</td>
<td>J TYPE, K TYPE, PT-100 3Wire Selectable</td>
</tr>
<tr>
<td>Temperature Range</td>
<td>J: 0 To 600°C / K: 0 TO 1200°C &lt;br&gt;PT-100: -99 To 400°C</td>
</tr>
<tr>
<td>Output</td>
<td>4 Relay (NO-C-NC) 1C/O 5A@230V AC, USB Data Logging Facility &lt;br&gt;with RS-485 RTU MODBUS (5A for resistive load)</td>
</tr>
<tr>
<td>Power Supply</td>
<td>100 to 250V AC,50/60 Hz, Approx 4VA</td>
</tr>
<tr>
<td>Operating Temperature</td>
<td>0°C To 55°C</td>
</tr>
<tr>
<td>Relative Humidity</td>
<td>Up to 95% RH Non Condensing</td>
</tr>
</tbody>
</table>
**Procedure**

1) Do all connection as per the wiring diagram.
2) To Configure:  
   1. Grouping facility (Maximum group-4).
   2. Relay mode, 
      - If 1st Relay per group 
      - If 2nd Relay per group 
      LOW 
      HIGH 
      HIGH / LOW 
   3. Scan type (Range 0-99 sec).
   5. Skip or unskip channel.
3) If needed to add offset, press + together. 
   Set offset for each channel if required.
   Off set range will be ±25°C for J, K, PT-100 temperature input.
   Off set range will be ±25.0°C for when DP is selected YES.
4) Press & Hold key for auto scrolling or manual scrolling.
5) In hold mode use & key to select next channel.

**Terminal Diagram**
Main Menu: To change set value & hysteresis based on relay mode & grouping

For Example:

In Group No 1, if 1st channel, have a set point as a high alarm, 1 relay.
In Group No 2 if 2nd channel, have a set point as a low alarm, 1 relay.
For, 3rd, 4th, 5th, 6th, 7th, 8th channel have a set point as high & low alarm, 2 relay.

MENU-1

Input Selection

Press \(\bigtriangledown\) + \(\bigtriangledown\) key.

Scan time.

Press \(\bigtriangledown\) key.

Use \(\bigtriangleup\) or \(\bigtriangledown\) key to Skip or Unskip Channel.

(Repeat the same procedure for all 8 channels).

Press \(\bigtriangledown\) key.

To change the Input Type, Press \(\bigtriangleup\) or \(\bigtriangledown\) Key.

( J, K, PT-100,PT.1).

(Repeat the same procedure for all 8 channels).

Press \(\bigtriangleup\) key.

Press \(\bigtriangledown\) key to save & exit.

Note: Set value can be changed by \(\bigtriangleup\) or \(\bigtriangledown\) key.
### Key Operation

1) Press key to enter in set value menu.
2) Press & Key to change the parameter setting.
3) Press + Key to enter in parameter menu (Input selection, skip-unskip selection)
4) Press + Key to enter in group menu for relay mode selection.
5) Press + Key to set OFFSET.
6) Press & hold key to enter in scroll & hold mode.

### Menu: 2

To configurable no.of channel per group. (User can define maximum 4 group & maximum 8 channel/group), relay mode

**Relay menu**

Press (+) key

Set yes or no for channel by press or key.

Press key to go to next parameter

Press key to output relay select.

Select no of output relay by press & key.

Press key to go to next parameter

Set output of relay

- Low
- High
- High and Low

by press or key

Press key to next group (if relay exist)

Press key to exit
**MENU-3**

### Set point Selection

Press **SET** key.

1. **LOW/ HIGH SET POINT-1**
   - Press **SET** key.
   - **300 H5-1**
     - High / Trip set point for Group 1,
     - (Repeat the same procedure for all 4 group).
   - Press **SET** key.
     - **100 L5-4**
       - Low / High set point for Group 4,
       - (Repeat the same procedure for all 8 Channels).

2. **HYS-1**
   - Press **SET** key.
     - **5 HYS**
       - (Repeat the same procedure for all 4 Hysteresis)

Press **SET** key to save & exit.

**MENU-4**

### OFFSET Setting

Press **[ or ]** key to change offset

1. **OFFSET-1**
   - Press **SET** key to change offset
   - Press set key to go to next channel
   - **OFFSET-2**
   - **OFFSET-8**
     - Change offset point -25 to +25 by using **[ or ]** key.

(Repeat the same procedure for all 4 Hysteresis)
**MENU-5**

**Communication Parameter**

Press **△** & **▼** key to access Communication Parameter.

- **Device Address.** (1 - 128)
- **Baud-rate.** (4800 / 9600 / 19200)
- **Parity.** (None / Even / Odd)
- **Data Type.** (Float / Integer)
- **Read Function.** (0x03 / 0x04)
- **Write Function.** (0x06 / 0x10)
- **USB Save Time.** (1 - 999)

If password is not 25.

Press **SET** key to access Communication Parameter.

Note: Values can be changed by pressing **△** or **▼** keys.

Press **SET** key to save & exit.

- **Second.** (0 - 59)
- **Minute.** (0 - 59)
- **Hour.** (0 - 23)
- **Date.** (1 - 31)
- **Month.** (1 - 12)
- **Year.** (0 - 99)
### MODBUS Setting

1) **Device Address**: 1 to 128  
2) **Baud-rate**: 4800, 9600, 19200 (bps)  
3) **Parity**: None, Even, Odd  
4) **Data Type**: Sign Integer, Float  
5) **Read Function Registers**: 0x03 and 0x04  
6) **Write Function Registers**: 0x06 and 0x10

<table>
<thead>
<tr>
<th>Read/Write</th>
<th>Parameter</th>
<th>Data Type = Float</th>
<th>Data Type = Sign Integer</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Read Function</td>
<td>Read Function</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Register</td>
<td>Register</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0x04</td>
<td>0x03</td>
</tr>
<tr>
<td></td>
<td></td>
<td>0x04</td>
<td>0x03</td>
</tr>
<tr>
<td>R</td>
<td>Ch-1 Process Value</td>
<td>30000</td>
<td>30000</td>
</tr>
<tr>
<td>R</td>
<td>Ch-2 Process Value</td>
<td>30002</td>
<td>30001</td>
</tr>
<tr>
<td>R</td>
<td>Ch-3 Process Value</td>
<td>30004</td>
<td>30002</td>
</tr>
<tr>
<td>R</td>
<td>Ch-4 Process Value</td>
<td>30006</td>
<td>30003</td>
</tr>
<tr>
<td>R</td>
<td>Ch-5 Process Value</td>
<td>30008</td>
<td>30004</td>
</tr>
<tr>
<td>R</td>
<td>Ch-6 Process Value</td>
<td>30010</td>
<td>30005</td>
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<tr>
<td>R</td>
<td>Ch-7 Process Value</td>
<td>30012</td>
<td>30006</td>
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<td>R</td>
<td>Ch-8 Process Value</td>
<td>30014</td>
<td>30007</td>
</tr>
<tr>
<td>R/W</td>
<td>Ch-1 Input</td>
<td>30016</td>
<td>30008</td>
</tr>
<tr>
<td>R/W</td>
<td>Ch-2 Input</td>
<td>30018</td>
<td>30009</td>
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<tr>
<td>R/W</td>
<td>Ch-3 Input</td>
<td>30020</td>
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<td>R/W</td>
<td>Ch-4 Input</td>
<td>30022</td>
<td>30011</td>
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<tr>
<td>R/W</td>
<td>Ch-5 Input</td>
<td>30024</td>
<td>30012</td>
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<tr>
<td>R/W</td>
<td>Ch-6 Input</td>
<td>30026</td>
<td>30013</td>
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<td>R/W</td>
<td>Ch-7 Input</td>
<td>30028</td>
<td>30014</td>
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<tr>
<td>R/W</td>
<td>Ch-8 Input</td>
<td>30030</td>
<td>30015</td>
</tr>
<tr>
<td>R/W</td>
<td>Offset 1</td>
<td>30032</td>
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<tr>
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<tr>
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<td>R/W</td>
<td>Offset 4</td>
<td>30038</td>
<td>30019</td>
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<td>Offset 5</td>
<td>30040</td>
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<tr>
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<td>Offset 6</td>
<td>30042</td>
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<tr>
<td>R/W</td>
<td>Offset 7</td>
<td>30044</td>
<td>30022</td>
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<tr>
<td>R/W</td>
<td>Offset 8</td>
<td>30046</td>
<td>30023</td>
</tr>
<tr>
<td>R/W</td>
<td>Hysteresis 1</td>
<td>30064</td>
<td>30032</td>
</tr>
<tr>
<td>R/W</td>
<td>Hysteresis 2</td>
<td>30066</td>
<td>30033</td>
</tr>
<tr>
<td>R/W</td>
<td>Hysteresis 3</td>
<td>30068</td>
<td>30034</td>
</tr>
<tr>
<td>R/W</td>
<td>Hysteresis 4</td>
<td>30070</td>
<td>30035</td>
</tr>
<tr>
<td>R/W</td>
<td>Decimal Point</td>
<td>30240</td>
<td>30120</td>
</tr>
<tr>
<td>R/W</td>
<td>Scan Time</td>
<td>30242</td>
<td>40121</td>
</tr>
</tbody>
</table>

**If Data type is sign Integer than**

If Selected value in DP parameter is “YES” and RTD sensor is selected  
Actual Value = Modbus resister value / 10  
Parameter are: All channel temperature  
Parameter are: All channel offset
### USB Excel Sheet Format

<table>
<thead>
<tr>
<th>Date</th>
<th>Time</th>
<th>Channel 1</th>
<th>Channel 2</th>
<th>Channel 3</th>
<th>Channel 4</th>
<th>Channel 7</th>
<th>Channel 8</th>
</tr>
</thead>
<tbody>
<tr>
<td>1/06/2018</td>
<td>14:22:31</td>
<td>45</td>
<td>42</td>
<td>39</td>
<td>35</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:32</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:33</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:34</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:35</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:36</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:37</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:38</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:39</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1/06/2018</td>
<td>14:22:40</td>
<td>46</td>
<td>42</td>
<td>39</td>
<td>36</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

**Note:** Up to 8000 values can be stored in internal memory, and after internal memory reaches to 3000 values, memory full indication LED start blinking which means memory is about to full.
Mechanical Installation

<table>
<thead>
<tr>
<th>MODEL DIMENSIONS</th>
<th>A</th>
<th>B</th>
<th>C</th>
<th>D</th>
<th>E</th>
<th>F</th>
<th>G</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>100mm</td>
<td>100mm</td>
<td>90mm</td>
<td>90mm</td>
<td>3mm</td>
<td>53mm</td>
<td>56mm</td>
</tr>
</tbody>
</table>
**Safety Precautions**

All safety related codifications, symbols and instructions that appear in this operating manual or on the equipment must be strictly followed to ensure the safety of the operating personnel as well as the instrument.

If all the equipment is not handled in a manner specified by the manufacturer, it might impair the protection provided by the equipment.

=> Read complete instructions prior to installation and operation of the unit.

![WARNING](image)

**Warning Guidelines**

1. To prevent the risk of electric shock power supply to the equipment must be kept OFF while doing the wiring arrangement. Do not touch the terminals while power is being supplied.
2. To reduce electromagnetic interference, use wire with adequate rating and twists of the same of equal size shall be made with shortest connection.
3. Cable used for connection to power source, must have a cross section of $(1\text{mm})^2$ or greater. These wires should have insulations capacity made of at least 1.5kV.
4. When extending the thermocouple lead wires, always use thermocouple compensation wires for wiring for the RTD type, use a wiring material with a small lead resistance (5Ω max per line) and no resistance differentials among three wires should be present.
5. A better anti-noise effect can be expected by using standard power supply cable for the instrument.

**Installation Guidelines**

1. This equipment, being built-in-type, normally becomes a part of main control panel and in such case the terminals do not remain accessible to the end user after installation and internal wiring.
2. Do not allow pieces of metal, wire clippings, or fine metallic fillings from installation to enter the product or else it may lead to a safety hazard that may in turn endanger life or cause electrical shock to the operator.
3. Circuit breaker or mains switch must be installed between power source and supply terminal to facilitate power ‘ON’ or ‘OFF’ function. However this mains switch or circuit breaker must be installed at convenient place normally accessible to the operator.
4. Use and store the instrument within the specified ambient temperature and humidity ranges as mentioned in this manual.

**Mechanical Installation**

1. Prepare the panel cutout with proper dimensions as show above.
2. Fit the unit into the panel with the help of clamp given.
3. The equipment in its installed state must not come in close proximity to any heating source, caustic vapors, oils steam, or other unwanted process by products.
4. Use the specified size of crimp terminal (M3.5 screws) to wire the terminal block. Tightening the screws on the terminal block using the tightening torque of the range of 1.2 N.m.
5. Do not connect anything to unused terminals.

**Maintenance**

1. The equipment should be cleaned regularly to avoid blockage of ventilating parts.
2. Clean the equipment with a clean soft cloth. Do not use isopropyl alcohol or any other cleaning agent.
3. Fusible resistor must not be replaced by operator.