1. PRODUCT CHECK

Check whether the delivered product is as specified by referring to the following modular code list.

<table>
<thead>
<tr>
<th>Model code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>C 1 0 0</td>
<td>100% check</td>
</tr>
<tr>
<td>A 0 9 8</td>
<td>98% check</td>
</tr>
<tr>
<td>D 1 2 3</td>
<td>123% check</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control action</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>PID action (Recent action)</td>
<td>A: 0.0% alarm</td>
</tr>
<tr>
<td>D: PID action (Direct action)</td>
<td>B: 0.0% alarm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Input type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>See input range tabs &quot;Code&quot;</td>
<td>C: 0.0% alarm</td>
</tr>
<tr>
<td>See input range tabs &quot;Code&quot;</td>
<td>D: 0.0% alarm</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Control output (OUT)</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M: Relay contact</td>
<td>X: Voltage order</td>
</tr>
<tr>
<td>B: Current to 10mA DC</td>
<td>G: Other for special driving</td>
</tr>
</tbody>
</table>

- First alarm [ALM1]: 1. Return alarm
- Second alarm [ALM2]: 2. Return alarm

- Daily alarm: 3. Return alarm
- H: Process alarm 3
- I: Process alarm 3
- J: Process alarm 3

- K: Process alarm 3
- L: Process alarm 3
- M: Process alarm 3

- N: Process alarm 3
- P: Process alarm 3
- Q: Process alarm 3

- R: Process alarm 3
- S: Process alarm 3
- T: Process alarm 3

- U: Process alarm 3
- V: Process alarm 3
- W: Process alarm 3

- X: Process alarm 3
- Y: Process alarm 3
- Z: Process alarm 3

- AA: Process alarm 3
- BB: Process alarm 3
- CC: Process alarm 3

- DD: Process alarm 3
- EE: Process alarm 3
- FF: Process alarm 3

- GG: Process alarm 3
- HH: Process alarm 3
- II: Process alarm 3

- JJ: Process alarm 3
- KK: Process alarm 3
- LL: Process alarm 3

<table>
<thead>
<tr>
<th>Accessories</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mounting brackets... 2 pcs.</td>
<td>Instruction manual (MCCN1-43). 1 copy</td>
</tr>
</tbody>
</table>

2. MOUNTING

**WARNING**

In order to prevent electric shock or instrument failure, do not turn on the power supply until all of the wiring is completed.

**Cautions for mounting**

- Avoid the following when selecting the mounting location:
  - Ambient temperature of less than 0 °C (32 °F) or more than 50 °C (122 °F).
  - High humidity of less than 45% or more than 90%
  - Rapid changes in ambient temperature which may cause condensation.
  - Corrosive or inflammable gasses.
  - Direct vibration or shock to the mainframe.
  - Water, oil, chemicals, vapor or steam spills.
  - Dust, sand, dirt, or iron particles.
  - Excessive ionization, noise, static electricity, magnetic fields, or noise.
  - Direct airflow from an air conditioner.
  - Should be used indoors where the system is not exposed to direct sunlight.
  - Heat to be accumulated radiation heat.

**Dimensions (Unit: mm)***

- Panel size: W 190 x H 135
- Mounting size: W 190 x H 135

**Mounting procedures**

- When the controller is mounted on panel with 1 to 5mm in thickness, the mounting brackets are already installed on the controller. Insert the controller into the panel front without removal of the brackets.

- When the controllers are mounted on panel with 5 to 8mm in thickness, remove the mounting brackets from the controller with a slotless screwdriver. Engage each mounting bracket with screws marked with "S" to "P" on the housing and then insert the controller into the panel from the panel front.

**3. MOUNTING**

**WARNING**

In order to prevent electric shock or instrument failure, do not turn on the power supply until all of the wiring is completed.

**Cautions for wiring**

- (1) For thermocouple input, use the specified compensation wire.
- (2) For RTD input, use leads with low resistance and having no resistance differences among the 3 leads.
- (3) Conduct input signal wiring away from instrument power, electric power supply and load lines to avoid noise induction.

**Cautions for wiring**

- (5) For power supply wires, use twisted wires with low voltage drop.
- (6) At 5 to 6 sec are required as the preparation time for contact output after power on. Use a delay relay when the output wire is used for an external interlock circuit.
- (7) This instrument has no power supply switch or fuses. Therefore, install the fuse close to the instrument and the switch, if required.
- (8) To the instrument with power supply 24 V, please be sure to supply the power from SELV circuit.

**Cautions for wiring**

- (9) This instrument is intended to be used under the following environmental conditions. (IEC1010)

**OVERVOLTAGE CATEGORY II *POLLUTION DEGREE 2**

**Terminal configuration**

- **Output rated**
  - Relay contact output: 250V AC, 1A (Resistive load)
  - Voltage output: 0 to 10V DC (Load resistance > 50kΩ)
  - Trigger output (For alarm): Zero crossing method, medium capacity max driving (100mA supply)
  - Load: 32V DC system, 250V AC system

- **Power supply & Power consumption**
  - Power supply: 24V DC
  - Power consumption: 2W

- **Heater break alarm function**
  - Power supply: 24V DC
  - Current measurement: 0 to 2A (CT), 10A (CT-24)
  - Maximum current rating: 2A
  - Maximum current rating: 10A
  - Input protection: 2.5 kΩ

- **1. Terminals which are not used according to the terminal type are all removed.**
- **2. When control output is trigger output for triac driving, the number of alarm output points becomes 1.**
- **3. Crimp-type terminal lug. Therefore, use the lug suitable for a screw of M3.**

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*Dimensions in inches are shown for reference. Dimensions in feet are shown for reference." Width: 190 mm, Height: 135 mm. The thickness of panel board is W 190 x H 135." Width: 190 mm, Height: 135 mm. The thickness of panel board is W 190 x H 135.*
5. OPERATION

5.1 Calling-up procedure of each mode

(a) Press the SET key.
(b) Press the ESC key for more than 5 sec.

Input type code/input range display
This controller, with the power turned ON, displays automatically the input type code on the measured value (PV) display unit and the input range, on the set-value (SV) display unit, respectively.

Example: For a controller with the thermocouple input type and input range from 0 to 1272 °C.

Parameter setting mode

- Alarm setting
- AT setting
- PID constant setting
- Other setting

AT = Auto-tuning

5.2 Parameter type

The following parameter symbols are displayed one by one every time the SET key is pressed. However, some parameter symbols may not be displayed depending on the specification.

<table>
<thead>
<tr>
<th>Symbol</th>
<th>Name</th>
<th>Setting range</th>
<th>Description</th>
<th>Initial value prior to shipment</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current transformer input</td>
<td>Setting is not possible.</td>
<td>Display input value from the current transformer.</td>
<td>Display input value from the current transformer.</td>
<td></td>
</tr>
<tr>
<td>RL1</td>
<td>First alarm</td>
<td>0.0 to 9999 °C</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>RL2</td>
<td>Second alarm</td>
<td>0.0 to 9999 °C</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>HBA</td>
<td>Heater break alarm</td>
<td>0.0 to 100 °A</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>LBA</td>
<td>Control loop break alarm</td>
<td>0.0 to 100 °A</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>LBA</td>
<td>Calibration</td>
<td>0.0 to 100 °A</td>
<td>0.0</td>
<td>0.0</td>
</tr>
<tr>
<td>A</td>
<td>Auto-tuning</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

The second alarm is not available on a current input.

5.3 Parameter setting procedure

Setting set-value (SV)

This is an example of setting the set-value (SV) to 200 °C.

(a) Press the SET key.
(b) Press the ESC key for more than 5 sec.

6. DISPLAY AT ERROR OCCURRENCE

Error display:

- RAM failure (Instruct user to set data write, etc.)

Override, Underline:

- (Flashing) (Flashing)

Error (MEASURED value exceeds the highest input display range limit.)

Underline (Measured value below the lowest input display range limit.)

Each status at input abnormality is shown in the following:

<table>
<thead>
<tr>
<th>Input type</th>
<th>Character</th>
<th>Range</th>
<th>Code</th>
</tr>
</thead>
<tbody>
<tr>
<td>01 02 03 04</td>
<td>K</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>05 06 07 08</td>
<td>E</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>09 10 11 12</td>
<td>N</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>13 14 15 16</td>
<td>J</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>17 18 19 20</td>
<td>K</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>21 22 23 24</td>
<td>E</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>25 26 27 28</td>
<td>N</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
<tr>
<td>29 30 31 32</td>
<td>J</td>
<td>0x 0000[0000] °C</td>
<td>01</td>
</tr>
</tbody>
</table>

- Accuracy in the range of 0 to 600 ℃: ±3 ℃ (0 to 100 ℃: Not guaranteed.)

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