1. PARTS DESCRIPTION

2. OPERATION MENU

2.1 Transfer to Each Mode

The controller has five different setting modes, and all selectable parameters belongs to one of them. The following chart show how to access different setting mode.

<table>
<thead>
<tr>
<th>Input type and range display</th>
<th>Operation mode</th>
</tr>
</thead>
<tbody>
<tr>
<td>This instrument immediately displays input type symbol and input range following power ON. Example: When sensor type is K thermocouple (-200 to +1372°C)</td>
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<td>Digital Controller</td>
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</tr>
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</tr>
</tbody>
</table>

2.2 Parameter Selection within Mode

- **SV setting & Monitor mode**: It is possible to set SV which is a control target and also to monitor PV, MV, etc. Pressing the MONI key enables the selection of monitor screens. Pressing the SET key enables the selection of setting screens. Use this mode during normal operation. The following is the when the type of direct key corresponds to Type 1.

<table>
<thead>
<tr>
<th>Parameters which are related to existing functions that are not displayed.</th>
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</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
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</tbody>
</table>

- **Operation mode**: The Operation mode is used to select the operation modes (PIDAT, Auto/Manual mode, Remote/Local mode, RUN/STOP mode) of the instrument. In addition, the Startup tuning (ST) and Automatic temperature rise learning function can be set. For details on the Operation mode, see the FB400/FB900 Parameter List (IMR1006-E).

3. OPERATION

3.1 Procedure for Operation

Example: An example of performing operation with SV set to 200°C and Event 1 set value (invasion high) set to 20°C is shown in the following.

- **Operation procedure**
  - See 3.1.1 Set the set value (SV)

3.1.1 Set the set value (SV)

Example: Change the target value of the control to 200°C

1. Select the set value (SV) screen

Press the SET key at PV/SV monitor screen until Set value (SV) screen is displayed.

2. Change the set value (SV)

The high-digit digit indicates which digit can be set.

Press the shift key to high-light the hundreds digit.

Press the UP key to change the number to 2.

3. Press the SET key to store the new set value (SV). The screen goes to the next parameter.

4. Set value (SV)

Manipulated output value at SV transfer

5. Cautions

- Operation information and setting information are to be changed. The power is turned on. If the input signal setting is disconnected or short-circuated (RTO input only), the instrument determines that input error (burn-out, etc.) has occurred.

- Displays:
  - Updsc: Thermocouple input, RTO input (when input breaks), Voltage input (when input breaks)";
  - Ovrdsc: Thermocouple input, RTO input (when short-circuit), Voltage input (when short-circuit)"

- For the voltage (high) or current input, the display becomes indefinite (display of about zero value).

- For thermocouple input and voltage (input) input, it is possible to select uppercase or lowercase when mode is set (Factory set value: Uppercase).

- Outputs:
  - Control output: Output depending on the action at each event function." (Factory set value: Manipulated output value at input error)
  - Event output: Output depending on the condition of the event action (Factory set value: Event output turned off at input error occurrence)

- A power failure of 20 ms or less will not affect the control action. When a power failure of more than 20 ms occurs, the instrument assumes that the power has been turned off. When power returns, the controller will restore the conditions (Factory set value: No change). Note 1.

- The event is activated when the power is turned on or when transferred from ST mode to RUN mode.

- The event is hold-on activation is activated when not only the SV is changed, but also the power is turned on or when transferred from STOP mode to RUN mode.

- Set in an engineering mode.
3.1.2 Set the event set value (alarm set value)

Example: Change the event 1 set value (EV1) to 20

1. Press the SET key for 2 seconds at PV/SV monitor screen until Parameter setting mode is displayed. Event 1 set value (EV1) is displayed first.
2. Press the Shift or DOWN keys to change the event 1 set value (EV1). Event 1 set value (EV1) screen goes to the next parameter.
3. Press the SET key to store the new event 1 set value (EV1). The screen goes to the next parameter.

3.5 Selecting Memory Area Used for Control

Even if this instrument is in any mode, pressing the AREA key changes to the Memory area transfer screen.

Press the AREA key to change the screen to the Memory area transfer.
Select any memory area number which needs to be changed by pressing the UP or DOWN key.
Press the SET key to store the new memory area number.

3.3 Monitor Transfer

This diagram shows the operating procedure when the type of direct key corresponds to Type 1.

f. Even when this instrument is in any mode, pressing the A/M transfer key enables the transfer RUN/STOP through key operation if the contact (DI5) is not closed. (When DI5 opens: STOP mode is maintained.)

For the types of monitor screen, see Section 5 SV setting & Monitor mode.

3.4 Setting Manipulated Output Value (MV) in Manual Mode

When the digital input Auto/Manual transfer function is used, it is impossible to transfer RUN/STOP through key operation if the contact (DI5) is not closed. (When DI5 opens: STOP mode is maintained.)

- Display when input error occurs

Prior to replacing the sensor, always turn the power OFF or change to STOP with RUN/STOP transfer.

- Self-diagnostic error

In an error is detected by the self-diagnostic function, the PV display shows "Err" and the SV display shows the error code. If two or more errors occur simultaneously, the total summation of these error codes is displayed.

Solution: Turn off the power at once. If an error occurs after the power is turned on again, please contact RKC sales office or the agent.

- Display changes automatically

Pressing the UP key changes to STOP mode from RUN mode.

When in STOP mode, no manual (MAN) mode lamp turns on.

The manipulated output value when the Manual mode input from the Auto mode differs depending on the MV transfer function (MVTS) setting. The MV transfer function (MVTS) enables the selection of whether a balanceless and bumpless transfer is made or a previous manipulated output value is used.

2. When in manual (MAN) mode, it is possible to set any manipulated output value (MV) on the PV/SV monitor screen. Set the manipulated output value (MV) by UP or DOWN keys.

Press the UP key when the run mode needs to be set.

3. When the autotuning (AT) is finished, the control will automatically return to PID control. At this time, the AT lamp turns off.

4. ERROR DISPLAYS

Display when input error occurs

Prior to replacing the sensor, always turn the power OFF or change to STOP with RUN/STOP transfer.

- Self-diagnostic error

In an error is detected by the self-diagnostic function, the PV display shows "Err" and the SV display shows the error code. If two or more errors occur simultaneously, the total summation of these error codes is displayed.

Solution: Turn off the power at once. If an error occurs after the power is turned on again, please contact RKC sales office or the agent.

- Display changes automatically

Pressing the UP key changes to STOP mode from RUN mode.

When in STOP mode, no manual (MAN) mode lamp turns on.

The manipulated output value when the Manual mode input from the Auto mode differs depending on the MV transfer function (MVTS) setting. The MV transfer function (MVTS) enables the selection of whether a balanceless and bumpless transfer is made or a previous manipulated output value is used.

2. When in manual (MAN) mode, it is possible to set any manipulated output value (MV) on the PV/SV monitor screen. Set the manipulated output value (MV) by UP or DOWN keys.

Press the UP key when the run mode needs to be set.