DIGITAL INDICATING CONTROLLER
LT110 SERIES

LT110 series, 1/32 DIN size, miniature digital indicating controllers, feature all functions that are convenient in various control applications. The controllers are applicable to various equipment including semiconductor manufacturing equipment, electronic parts manufacturing equipment, food-processing machinery, packaging machinery, injection machine.

FEATURES
- Small size, lightweight, short space
- Universal input consisted of 5 kinds of T/C input and 4 kinds of RTD input, and multi-input of 5 kinds of T/C input
- Optimum PID values are automatically calculated for accurate and stable control by PID auto-tuning.
- Various functions including sensor correction, setpoint lock, setpoint limit, control output OFF, and alarm action delay timer are built-in.
- The controllers conform to CE and the front panel is dust-proof and water-proof conforming to IP-65.

MODEL

<table>
<thead>
<tr>
<th>LT11□□0000 - □□0A</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size</td>
</tr>
<tr>
<td>1: 48 x 24mm</td>
</tr>
<tr>
<td>Input signal</td>
</tr>
<tr>
<td>0: Universal input (with 1 event output)</td>
</tr>
<tr>
<td>1: Thermocouple multi-input</td>
</tr>
<tr>
<td>Control output</td>
</tr>
<tr>
<td>1: On-off pulse type</td>
</tr>
<tr>
<td>3: Current output type</td>
</tr>
<tr>
<td>5: SSR drive pulse type</td>
</tr>
<tr>
<td>Options (Available in universal input only)</td>
</tr>
<tr>
<td>0: None</td>
</tr>
<tr>
<td>1: Setpoint change (DI) ... With 2 SVs and 1 DI</td>
</tr>
<tr>
<td>2: Heater disconnection (CT) ... With current transformer</td>
</tr>
<tr>
<td>Available in on-off pulse type and SSR drive pulse type only</td>
</tr>
<tr>
<td>Power supply</td>
</tr>
<tr>
<td>A: 100 to 240VAC (universal)</td>
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</tbody>
</table>

SPECIFICATIONS

INPUT SPECIFICATIONS
Input signal: T/C ... K, N, J, E, Platinel II
RTD ... P100, J100
Measuring range: Refer to the measuring range.
Indication accuracy ratings:
  T/C ... ±0.3% of input span ± 1 digit or ±2°C, whichever is larger
  RTD ... ±0.2% of input span ± 1 digit
Measuring unit: °C or °F
Sampling time: Approx. 0.25 second
Burnout: Upscale
Allowable signal source resistance: T/C ... 1000 or less
RTD ... 10a or less (per wire)
Measuring input shift (sensor correction): -100.0 to 100.0°C

CONTROL SPECIFICATIONS
Control cycle time: Approx. 0.25 second
Control system: PID (2-position control enabled)
Control setting accuracy ratings:
  Same as indication accuracy rating
Auto-tuning: Standard (Manual setting of PID constants enabled)
PID constants:
  P ... 0 to Maximum value of each range
  I ... 0 to 36000 seconds
  D ... 1 to 3600 seconds
Pulse cycle: 1 to 120 seconds (Available in on-off pulse type and SSR pulse type only)

Hysteresis: 0.1 to 100.0°C (2-position control only)
Anti-reset windup: Automatic
Control operation: Direct/reverse operation switching
Output:
  • On-off pulse type
    - Output signal: On-off pulse conductive signal
    - Contact rating: Resistor load 250VAC 3A
    - Inductive load 250VAC 1A
    - On-off pulse time: Approx. 1 to 120 seconds variable
  • Current output type
    - Output signal: 4 to 20mA
    - Load resistance: 500 or less
  • SSR drive pulse type
    - Output signal: On-off pulse voltage signal
      At ON: 12VDC ± (0 to +2V), Max 40mA
    - On-off pulse cycle: Approx. 1 to 120 seconds variable
Output limiter: 0 to 100% (~5 to 105% for current output type)

ALARM SPECIFICATIONS
Alarm point: 1 point
Temperature alarm type:
  - Deviation high alarm, deviation low alarm
  - Absolute value deviation high alarm, absolute value deviation low alarm
  - Deviation high alarm with standby function
  - Deviation low alarm with standby function
  - Absolute value deviation high alarm with standby function
  - Absolute value deviation low alarm with standby function
  - Absolute value high alarm, absolute value low alarm
  - Absolute value high alarm with standby function
  - Absolute value low alarm with standby function
Loop break alarm:
  - Alarm activation when the control output is maximum or minimum and the process value does not vary more than a set band in a set time.
  - Heater disconnection, sensor disconnection, control equipment failure
Alarm time setting range: 0 to 200 minutes
Alarm band: 0 to 150°C or 0.0 to 150.0°C
Alarm deadband: 0.1 to 100°C
Alarm output: Open collector 24VDC 0.1A (maximum)

DISPLAY FUNCTION
Display: 4-digit LED
Display contents: PV or SV switching, Parameter item

GENERAL SPECIFICATIONS
Power voltage: 100 to 240VAC, 50/60Hz (universal)
Working temperature: 0 to 50°C
Working humidity: 35 to 85%RH (no dew condensation)
Power consumption: Approx. 5VA
Case: Non-flammable resin
Color: Gray
Installation: Flush panel installation
Weight: Approx. 100g
### MEASURING RANGES

<table>
<thead>
<tr>
<th>Input kind</th>
<th>Input range</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>0 to 1370 °C 0 to 2500 °F</td>
</tr>
<tr>
<td>J</td>
<td>0 to 1000 °C 0 to 1800 °F</td>
</tr>
<tr>
<td>E</td>
<td>0 to 800 °C 0 to 1500 °F</td>
</tr>
<tr>
<td>Platinel II</td>
<td>0 to 1390 °C 0 to 2500 °F</td>
</tr>
<tr>
<td>N</td>
<td>0 to 1300 °C 0 to 2300 °F</td>
</tr>
<tr>
<td>Pt100</td>
<td>-199.9 to 850.0 °C -199.9 to 999.9 °F</td>
</tr>
<tr>
<td>JPt100</td>
<td>-200 to 850 °C -200 to 1500 °F</td>
</tr>
</tbody>
</table>

### OPTIONS

<table>
<thead>
<tr>
<th>Option</th>
<th>Contents</th>
</tr>
</thead>
<tbody>
<tr>
<td>Setpoint switching</td>
<td>For switching Setpoint 1 and Setpoint 2 (This option can be added to the universal input type.)</td>
</tr>
<tr>
<td>Heater disconnection alarm output</td>
<td>For detecting heater disconnection by monitoring a heater power source with a CT (current transformer). Use the CTL-12-S36-10L1 current transformer attached. Rating: 50A Setting range: 0.0 to 50.0A (0.0: no operation) Setting accuracy: ±5% Operation: ON/OFF Output: Open collector control rating 0.1A (max) at 24VDC (This option can be added to the on-off pulse type and the SSR drive pulse type only in the universal input type.)</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>For preventing from electrical shock (Purchasing with controller is requested.)</td>
</tr>
</tbody>
</table>

### TERMINAL BOARD

- Event output
- On-off pulse output type
- Current output type SSR drive pulse type

* Event output is available in universal input type only.

### ALARM FUNCTION

- Deviation high alarm
- Deviation low alarm
- Absolute value deviation high alarm with standby function
- Absolute value deviation low alarm with standby function
- Absolute value deviation high alarm with standby function
- Absolute value deviation low alarm with standby function

At indicates ON or OFF operation. At indicates the standby function operated.

- Heater disconnection alarm output

### DIMENSIONS

- General installation
- Panel thickness: 1 to 10mm

Specifications subject to change without notice. Printed in Japan (I) 2002. 7