**Digital Indicating Controller**

**LT23A SERIES**

**Easy to use small size controller at reasonable price**

**CE RoHS compliance**

LT 23A series is a 48X48mm digital indicating controller with indicating accuracy of ±0.5% and the control cycle of approximately 0.5 seconds.

There are two type of mounting methods, terminal block type and socket type.

3 types of auto tuning functions and overshoot suppression functions are provided and highly safe control is achieved.

Combination of internal computing function and enriched input and output option support various usage scenarios.

Special loader software provides ease of setting operations and data acquisition.

### FEATURES

- **Compact design**
  - Short depth of instrument (case 60mm) saves the space of instrument and control board.

- **Enriched input types**
  - Thermocouple group, resistance thermometer group, DC voltage / DC group can be selected. Input types can be changed within each group.

- **Outstanding controllability**
  - Control system can be selected from two-position control, PID control and self-tuning.
  - It has overshoot suppression function and high functionality PID.

- **3 type of auto tuning**
  - Can be selected from normal, rapid-response, safe tuning on the control target.

- **Various input / output signal (optional) are available**
  - Current transformer input 2 points, event output 3 points (Max), remote signal input 2 points, communication interface (RS485).

- **Terminal block type and socket type are available**

- **Conformance to international safety standards**
  - Conformance to CE marking, RoHS

- **Loader software is available**
  - Various parameter settings and data acquisition can be done easily using loader software (sold separately).

### PARTS NAMES OF FUNCTIONS

1. **Upper display**: Displays PV values (preset temperature, etc) or settings items.
2. **Lower display**: Displays SP values (set temperature, etc) and other parameter values.
3. **Status display lamp**: RDY: Lights when READY (Control stop)\n   MAN: Lights when MANUAL (manual mode)\n   EV1 to EV3: Lights when event outputs are ON.\n   O1 to O2: Lights when the control output is ON.\n   The operations which has been set beforehand can be done by pushing the key for 1s or more.\n   The function is disabled at factory default.
4. **[FUNC] key**: Switches the display.
5. **[MODE] key**: Used for incrementing numeric values and performing arithmetic shift operation.
6. **Recoder connector**: Connects to a personal computer by using USB loader cable.

### MODELS

<table>
<thead>
<tr>
<th>Specifications</th>
<th>00</th>
<th>01</th>
<th>02</th>
<th>03</th>
<th>04</th>
<th>05</th>
<th>06</th>
</tr>
</thead>
<tbody>
<tr>
<td>LT23A</td>
<td>48mmX48mm front size</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>Thermocouple input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>2</td>
<td>RTD input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>8</td>
<td>DC voltage/current input</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+2</td>
<td>ON-OFF pulse</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+1</td>
<td>SSR drive pulse output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+1</td>
<td>SSR drive pulse output</td>
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<td></td>
</tr>
<tr>
<td>+1</td>
<td>SSR drive pulse output</td>
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<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+1</td>
<td>Current output</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>+1</td>
<td>Current output</td>
<td></td>
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</tr>
</tbody>
</table>
**LT23A Series**

**48x48mm compact body**

Compact body of 48x48mm and 60mm in depth. There is not only panel mounting type but also socket type, so it can correspond to multiple types of installations such as panel mounting type and DIN rail mounting type.

**IP66 protection structure of dust and water proof**

Front of LT23A employs IP66 protection structure of dust-proof and water-proof.

**Advanced controllability**

- High-performance PID
- PID

**Easy-to-read display**

On the display, measuring value (PV) is indicated in green and setting value (SP) is indicated in orange LEDs.

**Frequently used operation can be assigned to the FUNC key**

By assigning frequently used operation such as RUN/READY to the FUNC key, only one press of a button enables switching the functions.

**Easy-to-read display**

- Measuring input
  - Group selection by the model
  - Thermocouple 12 types
  - RTD 2 types
  - DC Voltage / Current 6 types
- Current transformer input (option) 2 points
- External signal input (option) 2 points
- Loader connector
  - Support loader software 1 port

**Control output (select at model)**

- ON-OFF pulse outputs
- Event output (option)
  - 3 points
  - 2 points (independent contact)

**Communication (option)**

- RS485 1 port

*Various parameter settings are available from PC by using dedicated loader software. However, it requires exclusive loader cable (sold separately).*

**Loader software (sold separately)**

Various parameter settings and data acquisition are available by connecting this controller to the PC which the loader software is installed.

**Internal event can be output as external contact output by logical operation**

On LT23A…

Result of the logical operation which performed on selected five points of various internal events is able to be assigned to the three points of external digital outputs. It can simplify process of event outputs which logical operation was conventionally performed on receiver side.
**SPECIFICATIONS**

- **Input specifications**
  - Input signal: Group selection by the models (Thermocouple, Resistance Thermometer, DC voltage/current)
  - Range type: Refer to a measuring range table
  - Input sampling cycle: 500ms
  - Accuracy rating: ±0.5%FS±2:1digit

- **Control specifications**
  - Output type: ON-OFF pulse output type: 1c 250V AC, 30V DC 3A (resistance load)
  - Current output type: 0 to 20 A DC, 4 to 20 mA DC (It can be changed by the setting)
  - SSR drive pulse output type: 19V DC ±15%, Internal resistance 82Ω, Allowable current Max. 24mA DC

- **General specifications**
  - Operation temperature: 0 to 50°C
  - Power supply voltage range:
    - AC power supply model 100 to 240 V AC, 50/60Hz
    - DC power supply model 24 V AC, 50/60Hz to 48V DC
  - Power consumption:
    - AC power supply model 12 VA or/and lower
    - DC power supply model 7 VA or/and lower (24V AC) 5W or/and lower (24V DC)
  - Safety standards: CE marking compliant product
  - Structure: IP66 (front part)
  - Weight: Terminal block type: 150g
  - Socket type: 200g (including socket)

- **ACCESSORY**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Attachment (for terminal block type)</td>
<td>LTA-P205</td>
</tr>
<tr>
<td>Manual</td>
<td>L2A-11-</td>
</tr>
<tr>
<td>Gasket (for terminal block type)</td>
<td>LTA-P206</td>
</tr>
</tbody>
</table>

- **OPTIONAL SOFTWARE**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Loader software (cable included)</td>
<td>LTA-S001</td>
</tr>
<tr>
<td>Loader software</td>
<td>LTA-S002</td>
</tr>
<tr>
<td>Loader cable</td>
<td>LTA-S003</td>
</tr>
</tbody>
</table>

- **ACCESSORY (Sold separately)**

<table>
<thead>
<tr>
<th>Item</th>
<th>Model</th>
</tr>
</thead>
<tbody>
<tr>
<td>Hard cover</td>
<td>LTA-P202</td>
</tr>
<tr>
<td>Soft cover</td>
<td>LTA-P203</td>
</tr>
<tr>
<td>Terminal cover</td>
<td>LTA-P204</td>
</tr>
<tr>
<td>Current transformer</td>
<td>LTA-P207</td>
</tr>
<tr>
<td>Attachment (for terminal block type)</td>
<td>LTA-P205</td>
</tr>
<tr>
<td>Gasket (for terminal block type)</td>
<td>LTA-P206</td>
</tr>
<tr>
<td>Socket</td>
<td>LTA-P201</td>
</tr>
<tr>
<td>Plug conversion cable for LT23A</td>
<td>LTA-P209</td>
</tr>
<tr>
<td>Shunt resister 250Ω</td>
<td>RZ-EX250</td>
</tr>
</tbody>
</table>

- **MEASURING RANGE**

<table>
<thead>
<tr>
<th>Input type</th>
<th>Measuring range</th>
<th>Measuring accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>Thermocouple</td>
<td></td>
<td>±0.5%FS±1digit</td>
</tr>
<tr>
<td>K</td>
<td>-200 to 1200°C</td>
<td>Minus area is ±1.0%FS±1digit</td>
</tr>
<tr>
<td>J</td>
<td>0 to 1200°C</td>
<td>Range with decimal point is ±0.5%FS±2digit</td>
</tr>
<tr>
<td>E</td>
<td>0 to 600°C</td>
<td>Minus area is ±1.0%FS±2digit</td>
</tr>
<tr>
<td>T</td>
<td>-200.0 to 400.0°C</td>
<td>Under 260°C: ±5%FS, 260-800°C: ±1%FS</td>
</tr>
<tr>
<td>R</td>
<td>0 to 1600°C</td>
<td></td>
</tr>
<tr>
<td>S</td>
<td>0 to 1600°C</td>
<td></td>
</tr>
<tr>
<td>N</td>
<td>0 to 1300°C</td>
<td></td>
</tr>
<tr>
<td>Platinnel I</td>
<td>0 to 1300°C</td>
<td></td>
</tr>
<tr>
<td>WR5-26</td>
<td>0 to 1400°C</td>
<td></td>
</tr>
<tr>
<td>DIN U</td>
<td>0 to 2300°C</td>
<td></td>
</tr>
<tr>
<td>DIN L</td>
<td>-200.0 to 400.0°C</td>
<td></td>
</tr>
<tr>
<td>PT100, J100, J280</td>
<td>-200 to 500°C</td>
<td>±0.5%FS±1digit</td>
</tr>
<tr>
<td>J1100</td>
<td>-200 to 200°C</td>
<td></td>
</tr>
<tr>
<td>J1100</td>
<td>-100 to 300°C</td>
<td></td>
</tr>
<tr>
<td>PT100, J100, J280</td>
<td>-50.0 to 200.0°C</td>
<td></td>
</tr>
<tr>
<td>J1100</td>
<td>-50.0 to 200.0°C</td>
<td></td>
</tr>
<tr>
<td>PT100, J100, J280</td>
<td>-50.0 to 100.0°C</td>
<td></td>
</tr>
<tr>
<td>J1100</td>
<td>-50.0 to 200.0°C</td>
<td></td>
</tr>
<tr>
<td>PT100, J100, J280</td>
<td>0 to 500°C</td>
<td></td>
</tr>
<tr>
<td>J1100</td>
<td>0 to 500°C</td>
<td></td>
</tr>
<tr>
<td>DC voltage/current</td>
<td></td>
<td>±0.5%FS±1digit</td>
</tr>
<tr>
<td>1 to 5V</td>
<td>86</td>
<td>The scaling and decimal point position can be changed variably in a range of -1999 to +9999</td>
</tr>
<tr>
<td>0 to 5V</td>
<td>87</td>
<td></td>
</tr>
<tr>
<td>0 to 10V</td>
<td>88</td>
<td></td>
</tr>
<tr>
<td>0 to 20mA</td>
<td>89</td>
<td></td>
</tr>
<tr>
<td>4 to 20mA</td>
<td>90</td>
<td></td>
</tr>
</tbody>
</table>

- Lower limit of indication value of B thermocouple is 20°C

- Applicable standards
  - Thermocouple
    - JIS C 1602-1995
    - JIS C 1604-1989
    - JIS C 1604-1997
    - JIS C 1605-1995
    - JIS C 1605-1997
  - Resistance thermometer
    - JIS C 1604-1989
    - JIS C 1604-1997
    - JIS C 1604-1997

- JIS C 1602-1995
- JIS C 1604-1989
- JIS C 1604-1997
- JIS C 1605-1995
- JIS C 1605-1997

Platinnel I : Engelhard Industries(IIS90)
DIN U,DIN L : ASTM E988-96(Reapproved 2002)
DIN3710-1985
### TERMINAL BOARD

#### Terminal block type

- **Control output**
  - ON-OFF pulse
  - SSR driver pulse
  - SSR driver pulse

- **CT input**

- **Event output**
  - Relay
  - SSR driver pulse

- **Power supply**
  - 100-240V AC
  - 24V AC
  - 24-48V DC (Non-polar)

- **Measurement input**
  - Current
  - Voltage
  - Thermocouple
  - RTD

- **Communication interface**
  - RS485

#### Socket type

- **Control output**
  - ON-OFF pulse
  - SSR driver pulse

- **Event output**
  - Relay
  - Individual contact

- **Measurement input**
  - Thermocouple
  - RTD
  - Current
  - Voltage

- **Socket terminal number**

- **Power supply**
  - 100-240V AC
  - 24V AC
  - 24-48V DC (Non-polar)

- **RS485 communication connection**

#### DIMENSIONS

#### Terminal block type

- Compliant panel board thickness 9 max

#### Panel cutout

- **Separate installation**
  - Terminal screws M3
  - More than 30
  - 45
  - 0

- **Closed installation**
  - (48xN-3)
  - 45
  - 0

- **Socket type**

- **Wiring terminal block**

- Terminal screws M3.5

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