General Specifications

UT32A-D/MDL
Digital Indicating Controller
(Dual-loop, DIN Rail Mounting Type)

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Overview
The UT32A-D/MDL controller is a dual-loop controller that can be mounted in an enclosure. A ladder sequence function is included as standard. Configuration is performed using LL50A (sold separately) via the maintenance port or communication interface.

The UT32A-D has a Panel mounting type (without option code /MDL). For more details, please see General Specification GS 05P08D31-01EN.

Features
• Simple panel surface
  Mounting the controller in an enclosure simplifies the panel surface. This controller saves space because dual-loop control is possible from its compact body.
• Ladder sequence function is included as standard.
  This function allows for creating a simple sequence control. Dedicated LL50A Parameter Setting Software (sold separately) allows for performing programming using a ladder language.
• Equipped with a multitude of functions
  Universal I/O is included as standard. PID control, ON/OFF control, etc. are available.
• LL50A Parameter Setting Software (sold separately)
  The parameters and ladder programs of UTAdvanced controller can be built from a PC using this software. It makes data management even easier.

Functional Specifications

Control Specifications
(1) Control Mode : Dual-loop control
(2) Control period: 200 ms

Table of Number of Inputs and Outputs

<table>
<thead>
<tr>
<th>Model and suffix code</th>
<th>Number of analog input points</th>
<th>Number of analog output points</th>
<th>Number of contact input points</th>
<th>Number of contact output points</th>
</tr>
</thead>
<tbody>
<tr>
<td>UT32A-Dx0/MDL</td>
<td>2</td>
<td>2</td>
<td>3</td>
<td>3</td>
</tr>
</tbody>
</table>

Control Computation Function
(1) Types of control
- PID control
- ON/OFF control

(2) Control Computation Function
(a) Target setting point and the number of PID parameter groups
  Respectively, four sets of target setpoints, alarm setpoints, and PID parameters can be set.
(b) Selecting the PID parameter group
  The following PID parameter groups can be selected.
  - Target setpoint number (SPNO) (The PID number can be set arbitrarily.)
  - Measured input zone PID
  - Target setpoint zone PID
  - Reached target setpoint zone PID

Alarm Functions
• Types of Alarm (loop-1 and loop-2)

<table>
<thead>
<tr>
<th>Measured value alarm</th>
<th>Deviation alarm</th>
<th>Rate-of-change alarm</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV (measured value)</td>
<td>high/low limit alarm</td>
<td></td>
</tr>
<tr>
<td>Deviation</td>
<td>high/low limit alarm</td>
<td></td>
</tr>
<tr>
<td>Deviation within high and low limits alarm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Analog input PV</td>
<td>high/low limit alarm</td>
<td></td>
</tr>
<tr>
<td>Rate-of-change</td>
<td>high/low limit alarm</td>
<td></td>
</tr>
</tbody>
</table>

Setpoint alarm
- SP (setpoint) high/low limit alarm
- Target SP high/low limit alarm
- Target SP deviation high/low limit alarm
- Target SP deviation high and low limits alarm
- Target SP deviation within high and low limits alarm

Output alarm
- Control output high/low limit alarm
- Cooling control output high/low limit alarm

Other alarms
- Heater disconnection alarm (for /HA option)
- Self-diagnosis alarm
- FAIL
• Alarm Functions

<table>
<thead>
<tr>
<th>Alarm output action</th>
<th>Alarm stand-by action</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Alarm latch (forced reset) function</td>
</tr>
<tr>
<td></td>
<td>Alarm hysteresis</td>
</tr>
<tr>
<td></td>
<td>Alarm ON/OFF delay timer</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Number of alarm settings</th>
<th>4</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of alarm output points</td>
<td>3</td>
</tr>
</tbody>
</table>

Contact I/O Function

This function allows for allocating the input error condition, operation condition, alarm condition or other conditions to the contact input and contact output. AUTO/MAN, REMOTE/LOCAL, and STOP/START can be switched individually or simultaneously both in loop-1 and loop-2.

<table>
<thead>
<tr>
<th>Contact input</th>
<th>AUTO/MANUAL switching</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>REMOTE/LOCAL switching (only model with communication option)</td>
</tr>
<tr>
<td></td>
<td>STOP/START switching</td>
</tr>
<tr>
<td></td>
<td>Switching to AUTO</td>
</tr>
<tr>
<td></td>
<td>Switching to MANUAL</td>
</tr>
<tr>
<td></td>
<td>Switching to REMOTE (only model with communication option)</td>
</tr>
<tr>
<td></td>
<td>Switching to LOCAL (only model with communication option)</td>
</tr>
<tr>
<td></td>
<td>AUTO-TUNING START/STOP switching</td>
</tr>
<tr>
<td></td>
<td>SP number specification</td>
</tr>
<tr>
<td></td>
<td>PID number specification</td>
</tr>
<tr>
<td></td>
<td>Manual preset output number specification</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Contact output</th>
<th>Alarms 1 through 4</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Status output</td>
</tr>
</tbody>
</table>

Ladder Sequence Function

(1) Number of I/O Points

<table>
<thead>
<tr>
<th>Number of I/O Points</th>
<th>Number of I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital input points</td>
<td>3</td>
</tr>
<tr>
<td>Digital output points</td>
<td>3</td>
</tr>
</tbody>
</table>

(2) Types of Command

<table>
<thead>
<tr>
<th>Number of commands</th>
<th>Remark</th>
</tr>
</thead>
<tbody>
<tr>
<td>13</td>
<td>Load, AND, OR, Timer, Counter, etc.</td>
</tr>
<tr>
<td>73</td>
<td>Comparison, reverse, addition/subtraction/multiplication/division, logic operation, high/low limiter, etc.</td>
</tr>
</tbody>
</table>

(3) Sequence Device

<table>
<thead>
<tr>
<th>Types of device</th>
<th>Number of points</th>
</tr>
</thead>
<tbody>
<tr>
<td>Digital I/O</td>
<td></td>
</tr>
<tr>
<td>Input relay</td>
<td>3</td>
</tr>
<tr>
<td>Output relay</td>
<td>3</td>
</tr>
<tr>
<td>Internal device</td>
<td></td>
</tr>
<tr>
<td>M relay (bit data)</td>
<td>256</td>
</tr>
<tr>
<td>DAT register (data)</td>
<td>28</td>
</tr>
<tr>
<td>P register (parameter)</td>
<td>10</td>
</tr>
<tr>
<td>K register (constant)</td>
<td>30</td>
</tr>
<tr>
<td>Special device</td>
<td></td>
</tr>
<tr>
<td>Special relay (bit data)</td>
<td>12</td>
</tr>
</tbody>
</table>

Process data and process relay can be used besides the above-mentioned.

(4) Program capacity

Max Program capacity: 300 steps *

*: Available number of steps differs according to the parameters and using command.

(5) Ladder computation period

Ladder computation period is the same as control period.
## Communication Function

<table>
<thead>
<tr>
<th>Function</th>
<th>Method</th>
<th>Interface</th>
<th>Targets</th>
<th>Max connection</th>
<th>Communication Data</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Modbus (RTU/ASCII)</strong></td>
<td></td>
<td></td>
<td>A standard industry protocol allowing communications between the controller and devices such as PCs, PLCs, and DCSs.</td>
<td>Slave</td>
<td>RS-485</td>
</tr>
<tr>
<td><strong>Peer to peer</strong></td>
<td></td>
<td></td>
<td>A protocol allowing multiple controllers to send and receive data between one another. The Ladder Program is used.</td>
<td>Multi-drop</td>
<td>RS-485 (2 wire only)</td>
</tr>
<tr>
<td><strong>Coordinated Communication</strong></td>
<td></td>
<td></td>
<td>A protocol to coordinate the operation of two or more instruments controlling the same process.</td>
<td>Master/Slave</td>
<td>RS-485</td>
</tr>
<tr>
<td><strong>PC link</strong></td>
<td></td>
<td></td>
<td>The proprietar Yokogawa protocol allowing communications to PCs, PLCs and touch panels.</td>
<td>Slave</td>
<td>RS-485</td>
</tr>
</tbody>
</table>

**Physical Interface**

**RS-485**

<table>
<thead>
<tr>
<th>Standard</th>
<th>Communication method</th>
<th>Baud rate</th>
<th>Maximum communication distance</th>
<th>Terminating resistor</th>
</tr>
</thead>
<tbody>
<tr>
<td>EIA RS-485</td>
<td>Two-wire harf-duplex or four-wire harf-duplex, start-stop synchronizion, and non-procedural</td>
<td>600,1200,2400,4800,9600,19200 or 38400bps, Peer to peer communication is fixed at 19200bps</td>
<td>1200m</td>
<td>220Ω (External)</td>
</tr>
</tbody>
</table>

---

*1: UT digital indication controllers can be connected.
## Hardware Specifications

### Display Specifications

The controller status can be verified with the LED.

<table>
<thead>
<tr>
<th>Status</th>
<th>LED</th>
<th>Lit/Blinks</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Normal</td>
<td>Green</td>
<td>Lit</td>
<td></td>
</tr>
<tr>
<td>Communication error</td>
<td>Green</td>
<td>Blinks</td>
<td></td>
</tr>
<tr>
<td>Instrument failure</td>
<td>Red</td>
<td>Lit</td>
<td>Parameter error/Instrument failure/Ladder program corruption.</td>
</tr>
<tr>
<td>Input error</td>
<td>Red</td>
<td>Blinks</td>
<td>Sensor burnout, input over</td>
</tr>
</tbody>
</table>

![LED lamp](image)

UT32A-D/MDL Front (with terminal cover)

### Universal Input Specifications (PV1, PV2)

- Number of input points: 2
- Types of input, instrument range, and measurement accuracy (see the table below)

<table>
<thead>
<tr>
<th>Types of Input</th>
<th>Instrument range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>°C</td>
<td>°F</td>
</tr>
<tr>
<td>K</td>
<td>270.0 to 1370.0°C</td>
<td>-450.0 to 2500.0°F</td>
</tr>
<tr>
<td>J</td>
<td>270.0 to 1000.0°C</td>
<td>-450.0 to 2000.0°F</td>
</tr>
<tr>
<td>T</td>
<td>0.0 to 400.0°C</td>
<td>-200.0 to 750.0°F</td>
</tr>
<tr>
<td>B</td>
<td>0.0 to 1800.0°C</td>
<td>32 to 3300°F</td>
</tr>
<tr>
<td>S</td>
<td>0.0 to 1700.0°C</td>
<td>32 to 3100°F</td>
</tr>
<tr>
<td>R</td>
<td>0.0 to 1700.0°C</td>
<td>32 to 3100°F</td>
</tr>
<tr>
<td>N</td>
<td>-200.0 to 1300.0°C</td>
<td>-300.0 to 2400.0°F</td>
</tr>
<tr>
<td>E</td>
<td>270.0 to 1000.0°C</td>
<td>-450.0 to 1800.0°F</td>
</tr>
<tr>
<td>L</td>
<td>-200.0 to 400.0°C</td>
<td>-300.0 to 750.0°F</td>
</tr>
<tr>
<td>U</td>
<td>0.0 to 400.0°C</td>
<td>-200.0 to 1000.0°F</td>
</tr>
<tr>
<td>W</td>
<td>0.0 to 2300.0°C</td>
<td>32 to 4200°F</td>
</tr>
<tr>
<td>Platinel 2</td>
<td>0.0 to 1390.0°C</td>
<td>32.0 to 2500.0°F</td>
</tr>
<tr>
<td>Pt100</td>
<td>200.0 to 2800.0°C</td>
<td>4.00 to 20.00 mA</td>
</tr>
<tr>
<td>Pt100</td>
<td>150.0 to 150.0°C</td>
<td>4.00 to 20.00 mA</td>
</tr>
<tr>
<td>Standard signal</td>
<td>0.00 to 2.0000 V</td>
<td>-</td>
</tr>
<tr>
<td>DC voltage</td>
<td>1.00 to 5.000 V</td>
<td>-</td>
</tr>
<tr>
<td>DC current</td>
<td>4.00 to 20.00 mA</td>
<td>-</td>
</tr>
</tbody>
</table>

The accuracy is that in the standard operating conditions: 23 ±2°C, 55 ±10%RH, and power frequency at 50/60 Hz.

*1: ±0.3°C and ±1 digit in the range between 0 and 100°C
±0.5°C ±1 digit in the range between -100 and 200°C

*2: W-5% Re/W-26% Re (Hoskins Mfg.Co.), ASTM E988

- Applicable standards: JIS, IEC and DIN (ITS-90) for thermocouples and resistance-temperature detectors (RTD)
- Input sampling period: Synchronized to control period for thermocouples and resistance-temperature detectors (RTD)
• Burnout detection
  Upscale and downscale of function, and OFF can be specified for the standard signal of thermocouple and resistance-temperature detector (RTD).
  For integrated signal input, 0.1 V or 0.4 mA or less is judged as a burnout.
  • Input bias current: 0.05 μA (for thermocouple and resistance-temperature detector (RTD))
  • Resistance-temperature detector (RTD) measured current: About 0.16 mA
• Input resistance
  1 MΩ or more for thermocouple/mV input
  About 1 MΩ for voltage input
  About 250 Ω for current input (with built-in shunt resistance)
• Allowable signal source resistance
  250 Ω or less for thermocouple/mV input
  Effect of signal source resistance: 0.1 μV/Ω or less
  2 kΩ or less for DC voltage input
  Effect of signal source resistance: about 0.01%/100 Ω
• Allowable wiring resistance
  Up to 150 Ω per line for resistance-temperature detector (RTD) input (conductor resistance between the three lines shall be equal)
  Effect of wiring resistance: ±0.1°C/10 Ω
• Allowable input voltage/current
  ±10 V DC for thermocouple/mV/mA or resistance-temperature detector (RTD) input
  ±20 V DC for V input
  ±40 mA DC for mA input
• Noise reduction ratio
  40 dB or more (at 50/60 Hz) in normal mode
  120 dB or more (at 50/60 Hz) in common mode
• Reference junction compensation error
  ±1.0°C (15 to 35°C)
  ±1.5°C (−10 to 5°C and 35 to 50°C)

Contact Input Specifications (DI)
• Number of points: 3 points (standard)
• Input type: no-voltage contact input or transistor contact input
• Input contact capacity: 12 V DC, 10 mA or more
  Be sure to use a contact with a minimum ON current of 1 mA or less
• ON/OFF detection
  For no-voltage contact input:
  Contact resistance 1 kΩ or less in ON state
  Contact resistance 50 kΩ or more in OFF state
  Transistor contact input:
  2 V or less in ON state
  Leak current 100 μA or less in OFF state
• Status detection minimum hold time: control period + 50 ms
• Application: SP switching, operation mode switching, event input

Control Output Specifications (OUT, OUT2)
• Number of points: 2
• Output functions:
  • Current output or voltage pulse output
  • Current output:
    • 4 to 20 mA DC or 0 to 20 mA DC/load resistance 600 Ω or less
  • Current output accuracy:
    • ±0.1% of span (however, ±5% of span for 1 mA or less)
    • The accuracy is that in the standard operating conditions: 23 ±2°C, 55 ±10%RH, and power frequency at 50/60 Hz
• Voltage pulse output
  Application: time proportional output
  ON voltage: 12 V or more/load resistance of 600 Ω or more
  OFF voltage: 0.1 V DC or less
  Time resolution: 10 ms or 0.1% of output value, whichever is larger

Control Relay Contact Output Specifications (OUT, OUT2)
• Types of contact and number of points: 2 points, 1a-contact point (common is separated)
• Contact rating
  1a-contact: 3 A at 240 V AC or 3 A at 30 V DC (resistance load)
  *: The control output should always be used with a load of 10 mA or more.
• Application: time proportional output, ON/OFF output
• Time resolution for control output: 10 ms or 0.1% of output value, whichever is larger

Alarm Relay Contact Output Specifications (ALM)
• Types of contact and number of points: 3 points, 1a-contact points (common is separated)
• Contact rating
  1a-contact: 1 A at 240 V AC or 1 A at 30 V DC (resistance load)
  *: The alarm output should always be used with a load of 1 mA or more.
• Application: alarm output, FAIL output, etc.

Maintenance Port Specifications
The maintenance port is used to connect a dedicated cable when using the LL50A Parameter Setting Software (sold separately). Through this port, you can set controller parameters, download ladder programs, and so on.
For details, see the LL50A General Specifications (GS05P05A01-01EN).

Use LL50A with the controller turned on. (The dedicated cable must be connected. LL50A Light-loader adapter cannot be used.)
The maintenance port is not isolated from the PV input terminal. Use the port only for maintenance purposes, such as for setting the controller parameters.
Safety and EMC Standards

- **Safety:** Compliant with IEC/EN 61010-1 (CE), IEC/EN 61010-2-201 (CE), IEC/EN 61010-2-030 (CE), approved by CAN/CSA C22.2 No. 61010-1 (CSA), approved by UL 61010-1.
  - Installation category: II
  - Pollution degree: 2
  - Measurement category: I (CAT I) (UL, CSA) or O (Other) (CE)
  - Rated measurement input voltage: Max. 10 V DC
  - Rated transient overvoltage: 1500 V (*)
  - This is a reference safety standard value for measurement category I of CSA/UL 61010-1, and for measurement category O of IEC/EN 61010-2-030. This value is not necessarily a guarantee of instrument performance.

- **EMC standards:**
  - Compliant with CE marking
    - EN 61326-1 Class A, Table 2 (For use in industrial locations).
    - EN 61326-2-3
    - The instrument continues to operate at a measurement accuracy of within ±20% of the range during testing.
    - EN 55011 Class A, Group 1
    - EN 61000-3-2 Class A
    - EN 61000-3-3
    - EMC Regulatory Arrangement in Australia and New Zealand
    - EN 55011 Class A, Group 1
    - KC marking: Electromagnetic wave interference prevention standard, electromagnetic wave protection standard compliance

Power Supply Specifications and Isolation

- **Power supply**
  - Rated voltage: 100 to 240 V AC (+10%/-15%), 50/60 Hz
  - 24 V AC/DC (+10%/-15%) (When the /DC option is specified)
  - Power consumption: 15 VA (For the /DC option. DC: 7 VA, AC: 11 VA)
  - Storage: Nonvolatile memory
  - Allowable power interruption time: 20 ms (at 100 V AC)
  - Withstanding voltage:
    - 2300 V AC for 1 minute between primary and secondary terminals (UL, CSA)
    - 3000 V AC for 1 minute between primary and secondary terminals (CE)
    - 1500 V AC for 1 minute between primary terminals
    - 500 V AC for 1 minute between secondary terminals
    - (Primary terminals = Power (*) and relay output terminals, Secondary terminals = Analog I/O signal terminals, contact input terminals, communication terminals, and functional grounding terminals.)
    - Power terminals for 24 V AC/DC models are the secondary terminals.
  - Insulation resistance
    - Between power supply terminals and a grounding terminal: 20 MΩ or more at 500 V DC

- **Isolation specifications**

<table>
<thead>
<tr>
<th>PV1 (universal) input terminal, Maintenance port</th>
<th>Power supply</th>
</tr>
</thead>
<tbody>
<tr>
<td>PV2 (universal) input terminal</td>
<td>Internal circuits</td>
</tr>
<tr>
<td>Control (analog) output terminal (OUT, OUT2) (not isolated between the analog output terminals)</td>
<td></td>
</tr>
<tr>
<td>Control relay (2 a-contact) output terminal (OUT, OUT2)</td>
<td></td>
</tr>
<tr>
<td>Alarm-1 relay (a-contact) output terminal</td>
<td></td>
</tr>
<tr>
<td>Alarm-2 relay (a-contact) output terminal</td>
<td></td>
</tr>
<tr>
<td>Alarm-3 relay (a-contact) output terminal</td>
<td></td>
</tr>
<tr>
<td>Contact input terminal (3 points)</td>
<td></td>
</tr>
<tr>
<td>RS485 communication terminal</td>
<td></td>
</tr>
<tr>
<td>Current transformer input terminal</td>
<td></td>
</tr>
</tbody>
</table>

The circuits divided by lines are insulated mutually.

Environmental Conditions

**Normal operating conditions**

- Ambient temperature: -10 to 50°C
- Ambient humidity: 20 to 90% RH (no condensation)
- Magnetic field: 400 A/m or less
- Continuous vibration (at 5 to 9 Hz) Half amplitude of 1.5 mm or less
- Impact: 98 m/s² or less, 11 msec.
- Altitude: 2,000 m or less above sea level
- Warm-up time: 30 minutes or more after the power is turned on
- Start-up time within 10 s

**Transportation and Storage Conditions**

- Temperature: -25 to 70°C
- Temperature change rate: 20°C per hour or less
- Humidity: 5 to 95%RH (no condensation)

**Effects of Operating Conditions**

- Effect of ambient temperature
  - For voltage or TC input:
    - ±1 μV/°C or ±0.01% of F.S. (instrument range)/°C, whichever is greater
  - For RTD input:
    - ±0.05°C/°C (ambient temperature) or less
  - For current input:
    - ±0.01% of F.S. (instrument range)/°C
  - For analog output:
    - ±0.02% of F.S./°C or less
  - Effect of power supply fluctuation:
    - For analog input: ±0.05% of F.S. (instrument range) or less
    - For analog output: ±0.05% of F.S. or less
    - (Each within rated voltage range)

**Construction, Mounting, and Wiring**

- Construction: DIN rail mounting type
- Material: Polycarbonate resin (Flame retardancy: UL94 V-0)
  - DIN rail mounting bracket material: Panel steel sheet
  - Case color: Black (Light Charcoal gray)
  - Weight: 1 kg or less
  - External dimensions (mm):
    - UT52A/MDL: 48.2 (width) x 114 (height) x 100 (depth)
  - Compatible DIN rails: TH35-7.5Fe, TH35-7.5AF, JIS C 2812
  - Mounting position: Horizontal.
  - Wiring: M3 screw terminal with square washer (signal wiring and power)
## Block Diagram

Block Diagram

### Loop-1 PV input

- PV input bias
- PV input filter

### Loop-2 PV input

- PV input bias
- PV input filter

### Communication

- Main line communication: LOCAL
- Main line communication: REMOTE

### PV to SP

- SP ramp rate
- SP limit

### Output Limiter

- Manual operation
- Manual preset output
- Input error preset output

### Target Setpoints

- 1 to 4

### PV and SP

- PV input bias
- PV input filter

### UNIT

- IN
- RH, RL

### Outdoor Ladder Calculation Program

- Signal goes to the output as is when without ladder program.

### Function

- Terminal
- Parameter
- Contact signal
- Front panel key

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GS 05P08D81-01EN

Oct.20, 2017-00
### Terminal Arrangement

#### Loop-1 and Loop-2 control output

- **OUT1**
  - Factory default: Control output is relay.
  - Current output range can be changed.

- **OUT2**
  - Control output is relay at factory default.
  - Current output range can be changed.

#### Contact input - DI

- **DI1**
  - Loop-1 AUTO when DI1=ON
  - Loop-1 MAN when DI1=OFF

- **DI2**
  - Loop-1 and Loop-2 STOP when DI2=ON
  - Loop-1 and Loop-2 RUN when DI2=OFF

- **DI3**
  - Loop-2 AUTO when DI3=ON
  - Loop-2 MAN when DI3=OFF

#### Power supply

- **100-240 V AC power supply**
  - Power supply: AC power supply
  - (24 V AC/DC power supply: Option code /DC)

#### External Dimensions

- **15(0.59)**
  - DIN rail TH35-7.5

- **48.2(1.90)**
  - Cable for LL50

- **91.6(3.61)**
  - 120 (4.72) min. (required for inserting/removing the cable for LL50A)

- **114(4.49)**
  - Minimum cable curvature: R40 (1.57) 90 (3.54) min. (required for removing the instrument from the DIN rail)

- **213(8.40)**
  - 90(3.54) mm (required for removing the instrument from the DIN rail)

- **94.6(3.72)**
  - 60(2.36) mm (required for removing the instrument from the DIN rail)

- **322(12.70)**
  - 4.3(0.17) 4(0.16) mm (required for inserting/removing the cable for LL50A)

#### Contact output - ALM

- **AL1**
  - Control output is relay at factory default.

- **AL2**
  - Control output is relay at factory default.

- **AL3**
  - Control output is relay at factory default.

#### Relay contact rating:

- 240 V AC, 1 A
- 30 V DC, 1 A (resistance load)

#### Loop-1 and Loop-2 PV input

- **PV1**
  - Factory default: PV input type is undefined.

- **PV2**
  - Factory default: PV input type is undefined.

#### Voltage (mV, V) input

- **+**
  - 111
  - 201
  - 202
  - 203
  - 204
  - 205
  - 206
  - 207
  - 208
  - 209
  - 210

- **-**
  - 101
  - 102
  - 103
  - 104
  - 105
  - 106
  - 107
  - 108
  - 109
  - 110

#### Factory default:

- PV input type is undefined.

#### Current (mA) input

- **+**
  - 201
  - 202
  - 203

- **-**
  - 204

#### Current/voltage pulse output

- 0-20 mA DC, 4-20 mA DC, Voltage pulse (12 V)

#### Contact output

- **DI1**
  - Contact input
  - Contact rating: 12 V DC, 10 mA or more

- **DI2**
  - Contact input
  - Contact rating: 12 V DC, 10 mA or more

- **DI3**
  - Contact input
  - Contact rating: 12 V DC, 10 mA or more

#### Functions can be changed.

- Loop-1 AUTO when DI1=ON
- Loop-1 MAN when DI1=OFF
- Loop-2 AUTO when DI3=ON
- Loop-2 MAN when DI3=OFF
- Loop-1 and Loop-2 STOP when DI2=ON
- Loop-1 and Loop-2 RUN when DI2=OFF

#### RS-485 communication

- **SDB+**
  - SDB+ (Suffix code: Type 2=1)

- **SDA-**
  - SDA- (Suffix code: Type 2=1)

- **RDB+**
  - RDB+ (Suffix code: Type 2=1)

- **RDA-**
  - RDA- (Suffix code: Type 2=1)

#### Note:

- Trigonometry
- General tolerance = ±(JIS B 0401-1998 tolerance class IT18)/2

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GS 05P08D1-01EN

Oct.20, 2017-00
Model and Suffix Code

<table>
<thead>
<tr>
<th>Model</th>
<th>Suffix code</th>
<th>Option code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>UT32A</td>
<td>/MDL</td>
<td>-O</td>
<td>Digital Indicating Controller (Power supply: 100-240 V AC) (provided with 3 DIs, and 3 DOs) (without the display parts and keys)</td>
</tr>
</tbody>
</table>

Type 1: Basic control
- Type 2: Functions
  - Type 3: Fixed code
    - Fixed code: -00 (Always “-00” for Standard Code Model)

<table>
<thead>
<tr>
<th>Case color</th>
<th>Fixed code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Black (Light charcoal gray)</td>
<td>-00</td>
<td>Temperature unit: deg C &amp; deg F</td>
</tr>
</tbody>
</table>

Option codes
- /MDL (Required) Mount on DIN rail (without the display parts and keys)
- /DC Power supply 24 V AC/DC
- /CT Coating (*)
- /CV Terminal cover

*1: When the /CT option is specified, the UT32A does not conform to the safety standards (UL and CSA) and CE marking (Products with /CT option are not intended for EEA-market).

Items to be specified when ordering
Model and suffix codes, whether User’s Manual and QIC required.

Standard accessories
Operation Guide

Special Order Items

<table>
<thead>
<tr>
<th>Model code</th>
<th>Suffix code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>LL50A</td>
<td>-00</td>
<td>Parameter Setting Software</td>
</tr>
<tr>
<td>X010</td>
<td>See the General Specifications (*)</td>
<td>Resistance Module</td>
</tr>
</tbody>
</table>

*: Necessary to input current signal to voltage input terminal.

User’s Manual
Product user’s manuals can be downloaded or viewed at the following URL. To view the user’s manual, you need to use Adobe Reader 7 or later by Adobe Systems.

URL: http://www.yokogawa.com/ns/ut/im/