Warning and Disclaimer

(1) YOKOGAWA makes no warranties regarding the product except those stated in the WARRANTY that is provided separately.

(2) The product is provided on an "as is" basis. YOKOGAWA assumes no liability to any person or entity for any loss or damage, direct or indirect, arising from the use of the product or from any unpredictable defect of the product.

Safety, Protection, and Modification of the Product

(1) In order to protect the system controlled by this product and the product itself, and to ensure safe operation, observe the safety precautions described in the operation guide. Use of the instrument in a manner not prescribed herein may compromise the protective functions of the instrument and the protection features inherent in the device. We assume no liability for safety, or responsibility for the product's quality, performance, or functionality if users fail to observe these instructions when operating the product.

(2) Installation of protection and/or safety circuits with respect to a lightning protector/protective equipment for the system controlled by the product and the product itself: footprint or back panel design of a process or line using the system controlled by the product or the product itself, and/or the design and installation of protective and safety circuits are the responsibilities of the end user as the customer deems necessary.

(3) Be sure to use the spare parts approved by YOKOGAWA when replacing parts or consumables.

(4) The product is not designed or manufactured to be used in critical applications that directly affect or threaten human lives. Such applications include nuclear power equipment, devices used in transportation, aviation, railway facilities, aviation, medical equipment. If not used, it is the user's responsibility to indicate this fact to those who are responsible for the system in which the product is used.

(5) Modification of the product is strictly prohibited.

(6) This product is intended to be handled by skilled/personnel for electronic devices.

(7) This product is UL Recognized Component. In order to comply with UL standards, end-products are necessary to be designed by those who have knowledge of the requirements.

Power Supply

The instrument's supply voltage matches the voltage of the power supply before turning ON the power.

Do not operate the instrument in locations with combustible or explosive gases. Operation in such environments constitutes an extreme safety hazard. Use of the instrument in explosive environments may lead to explosions of corrosive materials (PB, SO₂, etc.) for extended periods of time may cause a failure.

Do Not Remove the Terminal Cover

The internal unit shall not be removed by anyone other than YOKOGAWA. The instrument shall not be repaired by a person not authorized by YOKOGAWA.

There are dangerous high voltage parts inside. Additionally, do not replace the fuse by yourself.

Take Safety Measures in Protective Construction

Operation of the instrument in a manner not specified in the operation guide may damage its protective construction.

This instrument is an EMC class A product. In a domestic environment, the product may cause radio interference in which case the user needs to take adequate measures.

Customized Product

For customized products, the product is identified by the option code of S# or S#-M# (where ‘#’ is X). Contact your supplier in case your instrument has option S#K and you are not in the possession of FX-1(Model code)#S# or IM [Model code]#S# (where [Model code] means, for example UT35A).

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### 4. Hardware Specifications

**Universal Input (PV, PV2)**

- **Number of inputs:** 2
- **Input type, instrument range, and measurement accuracy:** See the table below.

<table>
<thead>
<tr>
<th>Input Type</th>
<th>Instrument Range</th>
<th>Accuracy</th>
</tr>
</thead>
<tbody>
<tr>
<td>K</td>
<td>0°C to 1300°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>T</td>
<td>-200°C to 1300°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>E</td>
<td>80°C to 200°C</td>
<td>±1.0% of instrument range ±0.1% (or 1°C if less)</td>
</tr>
<tr>
<td>S</td>
<td>0°C to 1800°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>B</td>
<td>0°C to 1800°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>N</td>
<td>-200°C to 1800°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>L</td>
<td>0°C to 1400°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>W</td>
<td>0°C to 60°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>Platin‐13</td>
<td>0°C to 600°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>Platin‐28</td>
<td>0°C to 200°C</td>
<td>±0.5% of instrument range ±0.1°C (or 1°C if less)</td>
</tr>
<tr>
<td>Pt100</td>
<td>0°C to 130°C</td>
<td>±0.1% of instrument range ±0.1°C (or 1°C if less)</td>
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<tr>
<td>Pt1000</td>
<td>0°C to 130°C</td>
<td>±0.1% of instrument range ±0.1°C (or 1°C if less)</td>
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</table>

**Relay Contact Output Specifications (OUT, OUT2)**

- **Contact type and number of outputs:**
  - Control output: contact point 1c or 2 points
  - Contact rating: 240 V AC, 3A or 20 V DC, 3A (resistance load)
  - Use: Time proportional output, ON/OFF output
  - Time resolution of control output: 10 ms or 0.1% of output, whichever is larger

**Analog Output Specifications (OUT, OUT2)**

- **Number of outputs:**
  - Output type: current output or voltage output
  - Current output: 4 to 20 mA DC or 20 to 4 mA DC (load resistance of 600 Ω or less)
  - Current output accuracy: ±0.1% of span (±0.5% of span for 1 mA or less)
  - Voltage output: 0 to 10 V DC or 0 to 5 V DC
  - Voltage output accuracy: ±0.1% of range ±0.1% of span ±0.1% of full scale

**Note:**
- The accuracy is that in the standard operating conditions: 23±2°C, 55±10%RH, and power frequency at 50±5 Hz.
- Accuracy is specified at the nominal voltage or load for each input type.
- The accuracy for the input signal is specified for a 1% change in the input signal.
**Power Supply Specifications and Isolation**

- **Power supply**
  - Rated voltage: 100-240 V AC (+10%-15%), 50/60 Hz
  - 24 V ACCD (+10%-15%) (for DC option)
- **Power consumption**: 15 VA (7% VA, ACC: 11 VA) if DC option is specified
- **Data backup**: Nonvolatile memory
- **Power holdup time**: 20 ms (for 100 V DC drive)

**Environmental Conditions**

- **Normal Operating Conditions**
  - Ambient temperature: -10 to 50 °C
  - Ambient humidity: 20 to 80%, RH (no condensation allowed)
  - Magnetic field: 400 A/m or less
  - Continuous vibration at 5 to 50 Hz: Half amplitude of 1.5 mm or less, 10 cycles for 50 minutes in each of the three axes directions
  - Continuous vibration at 9 to 150 Hz: 4.9 m/s² or less, 10 cycles for 50 minutes each in the three axes directions
  - Short-period vibration: 14.7 m/s², 15 seconds or less
  - Shock: 98 m/s² or less, 11 ms
  - Altitude: 2000 m or less above sea level
  - Warm-up time: 30 minutes or more after the power is turned on
  - Startup time: Within 10 seconds

- **Transportation and Storage Conditions**
  - Temperature: -25 to 70 °C
  - Temperature change rate: 20°C/h or less
  - Humidity: 5 to 95% RH (no condensation allowed)

**Effects of Operating Conditions**

- **Effect of ambient temperature**
  - Voltage or DC input: ±15°C or ±0.0% of F.S./°C, whichever is larger
  - Current input: ±2% of F.S./°C
  - RTD input: ±0.05%/°C (ambient temperature) or less
  - Analog output: ±0.2% of F.S./°C or less

- **Effect of power supply voltage fluctuation**
  - Analog input: ±0.05% of F.S. or less
  - Analog output: ±0.05% of F.S. or less

- **Within rated voltage range**

5. How to Connect Wires

- **Wiring work must be carried out by a person with basic electrical knowledge and practical experience**.
- **Be sure to turn off the power supply to the controller before wiring to avoid an electric shock.** Use a tester or similar device to ensure that no power is being supplied to a cable to be connected.
- **For short-circuit cable**, the temperature rating is 75 °C or more.

**Effects**

- **Temperature**:
  - The effects are for 1000 V AC for 1 minute

- **Power**
  - **Short-period vibration**: 5 k/m/s² or less

- **Isolation**

- **Power cables close to each other**.

- **For TC input**, use shielded compensating lead wires for wiring.

- **If the functional insulation or primary insulation becomes impaired**, use the auxiliary relay to perform ON/OFF control.

- **To ensure that no power is being supplied to a cable to be wiring to avoid an electric shock**. Use a tester or similar device for this purpose.

- **Provide electricity from a single-phase power supply**. If the wiring does not comply with the safety standard, do not use an unassigned terminal as the relay terminal.

- **Wiring work must be carried out by a person with basic electrical knowledge and practical experience**.

**Recommended Crimp-on Terminal Lugs**

- **Recommended tightening torque**: 0.6 N·m

- **Applicable wire size**: Power supply wiring 1.25 mm² or more

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**Cable Specifications and Recommended Cables**

- **AC Relay Wiring**
  - Use a single-phase product, 5 A, 100 V or 220 V AC
  - **Supply**:
    - Voltage: 200-240 V AC
    - Frequency: 50/60 Hz
  - **Current/voltage pulse output**
  - **Voltage pulse** (12 V)

**DC Relay Wiring**

- **UT32A-D**
  - **External DC power supply**
  - **Purpose Name and Manufacturer**
    - **Terminals**
      - **UT32A-D**
      - **(Mount it directly to the relay coil terminal (socket))**

**Loop-2 PV input**

- **PV2**
  - **Function**
    - Factory default: Control output is relay
  - **Contact output**
    - ALM
  - **Contact output**
    - L
  - **Voltage**
    - (24 V AC/DC power supply, Open circuit 4 V)

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**Terminal Wiring Diagrams**

- **Do not use an unassigned terminal as the relay terminal**.
- **Do not use a 100-240 V AC power supply for the 24 V AC/DC model**; otherwise, the instrument will malfunction.
## 7. Setup Procedure

The following foottchart shows the setup procedure for UT32A-DMI.

- **Installation and Setting**
  - Install and wire a controller.
  - No (Set parameters through communication.)

- **Input and Output**
  - Yes
  - NO (Set parameters through communication.)

- **Parameter Settings**
  - LLSSA Parameter setting software (sold separately)
   - See the LLSSA Parameter Setting Software User’s Manual (sold separately).

- **PSD Recycling**
  - Yes
  - NO (Set parameters through communication.)

## 8. Operations

The controller status can be verified with the LED.

**LED Indicators:**
- Green: Bit 0 = 1,
- Yellow: Bit 1 = 1,
- Red: Bit 2 = 1

### 8.3 LED Indicators

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**Error Indicators:**

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**Operation Manual:**

## 9. Troubleshooting

If a problem appears to be complicated, contact our sales representatives.

### 9.1 Troubleshooting Checklist

- Yes
  - No (Set parameters through communication.)

### 9.2 Troubleshooting Checklist

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**General Specification:**


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