1. PARTS DESCRIPTION

![Module Mainframe](image)

**Module Mainframe**

- **Terminals**:
  - **Type**: 21-pin connector (Type A: Male, Type B: Female)
  - **Input/Output**: Digital input/output (DI/DO)
  - **Data**: 7-bit, without parity, Stop 1-bit
  - **Connection**: RS-485 (full-duplex)

**Connectors**

- **Type**: 9-pin D-subminiature connector

**Mode Change Switch**

- **Settings**: On, Off

**Power Supply Terminals**

- **Voltage**: 9 to 30 V DC

**Environment**

- **Temperature**: -10°C to 55°C
- **Humidity**: 5% to 95% RH

**Power Supply Terminal**

- **Voltage**: 9 to 30 V DC

**Mounting**

- **Method**: Screw Mounting

2. COMMUNICATION SETTING

**Communication Setting**

- **Configuration**: Modbus RTU
- **Address**: 1 to 255

**Protocol Selections and Communication Speed Setting**

- **Modbus**: 9600 bps, Odd parity, Stop 1-bit

3. MOUNTING

**Mounting Requirements**

- **Orientation**: Horizontal or vertical

**Mounting Dimensions**

- **Height**: 152 mm
- **Width**: 65 mm
- **Depth**: 145 mm

**Mounting Method**

- **Screws**: M3×5

**Warning**: To prevent electrical shock or instrument failure, always turn off the power before mounting or removing the instrument.

4. WIRING

**Wiring Precautions**

- **Do not cross high-voltage connections such as power supply terminals, etc., to avoid electrical shock.
- **RNC is not responsible if this instrument is repaired, modified or disassembled by other than factory-approved personnel.
- **Malfunction can occur and warranty is void under these conditions.

**Warning**: To prevent electrical shock or instrument failure, do not turn on the power until all the wiring is completed.

4.1 Wiring Cautions

- **Avoid noise induction, keep input/output signal wires away from instrument power line, load lines and power lines of other electrical equipment.
- **If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter.
- **The shortest distance between the twisted pair input/output wires should be selected for the most effective noise reduction.
- **Always use the installer noise filter on a grounded panel. Grasp the wiring between the noise filter and the instrument power supply terminals to achieve the most effective noise reduction.
- **Do not connect fuses or switches to the noise filter output wiring, as this will reduce noise reduction effectiveness.
- **About eight seconds are required as preparation time for contact output every time the temperature changes. The provided output should be used for an external interlock circuit.

**Power Supply terminals must be treated and have a low voltage drop.

- **For an instrument with a 24 V power supply, supply power from a SELV circuit.
- **A suitable power supply should be considered in the end-use equipment. The power supply must be in compliance with a limited-energy circuits (maximum available current of 16 A).”

**Supply the power to only one of the joined modules. When power is supplied to any one of the jointed modules, the initial current surge when the power is turned on.

**Recommended tightening torque: 0.43 to 0.5 N•cm (4.3 to 5.0 kgf•cm)

**Used cable specifications:

- **Type**: CCITT U.128 (RS-485) cable
- **Specifications**: Shielded cable

**Recommended tightening torque: 0.4 N•cm (4.3 kgf•cm)

**Joint connector**

- **Use**: To mechanically and electrically connect each module.

**Communication terminals**

- **Use**: To realize communication between the instrument and the following device.

**COMMUNICATION TERMINALS**

- **Type**: 9-pin D-subminiature connector

**Joint connector**

- **Use**: To realize communication between the instrument and the following device.

**Communication terminals**

- **Use**: To realize communication between the instrument and the following device.

**Warning**: To prevent electrical shock or instrument failure, do not turn on the power until all the wiring is completed.

5. TERMINAL FUNCTION

**Loade manual. Please place this manual in a convenient location for easy reference.

**Manual**: RKC Instruction Manual (IMS01T01-E3).

**URL**: http://www.rkcinst.com/english/manual_load.htm

**WARNING**

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### Digital output (DO1 to DO8)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0005</td>
<td>Digital input (DI)</td>
</tr>
<tr>
<td>0006</td>
<td>Digital output (DO)</td>
</tr>
<tr>
<td>0007</td>
<td>Analog input (AI)</td>
</tr>
<tr>
<td>0008</td>
<td>Analog output (AO)</td>
</tr>
<tr>
<td>0009</td>
<td>Communication (Modbus)</td>
</tr>
<tr>
<td>000A</td>
<td>Pulse counter (PC)</td>
</tr>
<tr>
<td>000B</td>
<td>Event list (EL)</td>
</tr>
<tr>
<td>000C</td>
<td>Alarm list (AL)</td>
</tr>
<tr>
<td>000D</td>
<td>sampler list (SL)</td>
</tr>
<tr>
<td>000E</td>
<td>Global parameter (GP)</td>
</tr>
<tr>
<td>000F</td>
<td>User parameter (UP)</td>
</tr>
</tbody>
</table>

### Communication data (RKC communication)

- **Name**: ID (Encoder/Decoder), ASCII (Character/ASCII)
- **Data range**: 0 to 255
- **Factory set value**: 0

### Communication data (Modbus)

<table>
<thead>
<tr>
<th>Code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>0001</td>
<td>Digital input (DI)</td>
</tr>
<tr>
<td>0002</td>
<td>Digital output (DO)</td>
</tr>
<tr>
<td>0003</td>
<td>Analog input (AI)</td>
</tr>
<tr>
<td>0004</td>
<td>Analog output (AO)</td>
</tr>
<tr>
<td>0005</td>
<td>Communication (Modbus)</td>
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<td>000A</td>
<td>Global parameter (GP)</td>
</tr>
<tr>
<td>000B</td>
<td>User parameter (UP)</td>
</tr>
</tbody>
</table>

### 6. COMMUNICATION DATA MAP

- **Modbus register address (HEx): Hexadecimal DEC: Decimal**
- **Number of inputs**: None or 8 points (DO1 to DO8)
- **Number of outputs**: None or 8 points (DI1 to DI8)
- **Capture judgment time**: 250 ms
- **Number of operations**: None or 8 points (DO1 to DO8)

### 7. MODEL CODE

- **Z-DIO-A**
  - **Communication**: Quick start code 1
  - **Quick start code 1**: No code

### General specifications

- **Power supply voltage**: 24 V DC (Rating)
- **Power consumption (at maximum load)**: 5 mA or less (at 24 VDC)
- **Cooling method**: Natural convection
- **Dimensions**: 90 mm x 90 mm x 76 mm
- **Weight**: 200 g
- **Altitude up to**: 2000 m
- **Temperature range**: -10°C to +50°C
- **Environmental conditions**: Relative humidity: 20% (minimum) to 90% (maximum) at 40°C
- **EMC**: EN61326-1
- **OVERVOLTAGE CATEGORY II, POLLUTION DEGREE 2**
- **Memory area transfer**: 1 to 8
- **Error code**: 0002 RO b1: Data back-up error

### 5. SPECIFICATIONS

- **Digital input (DI)**
  - **Number of inputs**: None or 8 points (DO1 to DO8)
  - **Isolated input**: Each common block
  - **Input method**: 2 points (AI points) or 3 points (DI points)
  - **Input voltage**: 5 V or less
  - **levation range**: 200 V DC or less

- **Digital output (DO)**
  - **Number of outputs**: None or 8 points (DO1 to DO8)
  - **Number of common**: 2 points (DO4 points/common)

- **Relay contact output**: 1 contact
- **Contact type**: 1a contact
- **Load voltage**: 50 V DC or less
- **Leakage current at OFF**: 0.1 mA or less
- **ON voltage**: 2 V or less (at maximum load current)
- **Leakage current at OFF**: 0.5 mA or less

### Circuit configuration of digital input:

- **Circuit configuration of digital output:

### Base

- **Terminal configurations of the base are the same as the base of Z-TIO module. For the details, see the Z-TIO Instruction Manual (IMS110T1-EQ).**

### Instruction Manual (IMS01T04-E)

- **Relay contact output**
  - **Open collector output**

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*Note: The image contains a diagram of a circuit configuration and a table of digital output assignments. The table includes columns for Name, Address, Access, Data range, and Factory set value.*