1. Specifications

- Model
  - □ 100A (TRZ100D-C/5P)
  - □ 150A (TRZ150D-C/5P)
  - □ 200A (TRZ200D-C/5P)

Flow-rate range (Actual flow-rate) (Accuracy guaranteed scope) [m³/h]

<table>
<thead>
<tr>
<th>Model</th>
<th>TRZ100</th>
<th>TRZ150</th>
<th>TRZ200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Flow rate range</td>
<td>±10 to 500</td>
<td>±24 to 1200</td>
<td>±40 to 2000</td>
</tr>
</tbody>
</table>

Accuracy (Actual flow rate)

- Flow-rate measurement accuracy [m³/h]

<table>
<thead>
<tr>
<th>Model</th>
<th>TRZ100</th>
<th>TRZ150</th>
<th>TRZ200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Accuracy</td>
<td>±5%RD</td>
<td>±5%RD</td>
<td>±5%RD</td>
</tr>
<tr>
<td></td>
<td>±10 to 50</td>
<td>±24 to 120</td>
<td>±40 to 200</td>
</tr>
<tr>
<td>±2%RD</td>
<td>±50 to 500</td>
<td>±120 to 1200</td>
<td>±200 to 2000</td>
</tr>
</tbody>
</table>

NORMAL conversion

±2.5%RD (0.5MPa, ordinary temperature and, dry air)

Low flow cutoff (Actual flow rate) Can be Changeable by button operation (0 ≤ Setting value < Qmin) [m³/h or less]

<table>
<thead>
<tr>
<th>Model</th>
<th>TRZ100</th>
<th>TRZ150</th>
<th>TRZ200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial setting value</td>
<td>±2.6</td>
<td>±5.0</td>
<td>±9.0</td>
</tr>
</tbody>
</table>

Response-ability Update interval 2 seconds

Smoothing of instantaneous flow rate value by moving average method (Initial setting value: 4 times)

"□" are selectable item.
### Product Specifications

<table>
<thead>
<tr>
<th>Ultrasonic Flow Meter for Air (External Power Supply Type)</th>
<th>Model</th>
<th>TRZ [Nominal diameter] D -C / 5P</th>
</tr>
</thead>
</table>

#### Display
- **Main display:** The following is switched and selected using the “left button”.
  - [When forward flow display mode *1) is selected]
    - Accumulated flow volume (Forward flow) ($m^3$)
    - Trip accumulated flow volume (Forward flow) ($m^3$)
    - Instantaneous flow-rate (L/min) *2)
  - [When reverse flow display mode *1) is selected]
    - Accumulated flow volume (Forward flow) ($m^3$)
    - Accumulated flow volume (Reverse flow) ($m^3$)
    - Instantaneous flow-rate (L/min) *2)

- **Sub display:** The following is switched and selected using the “right button”.
  - Instantaneous flow-rate ($m^3/h$)
  - Pressure (kPa) [gauge pressure]
  - Temperature (°C)

*1) The display mode is selected by button operation.
*2) If an instantaneous flow-rate (L/min) is displayed, the main display (accumulated flow volume) and sub display (instantaneous flow-rate ($m^3/h$), pressure (kPa) and temperature (°C)) are not displayed.

#### Number of digits displayed
- **Main display**
  - Accumulated flow volume (Forward flow) [$m^3$]: 000000000000 10 digits
  - Trip accumulated flow volume (Forward flow) [$m^3$]: 000000000 9 digits
  - Accumulated flow volume (Reverse flow) [$m^3$]: -000000000 9 digits
  - Instantaneous flow-rate [L/min]: 000000 7 digits

- **Unit:** Selected by button operation

<table>
<thead>
<tr>
<th>When NORMAL flow is selected</th>
<th>When standard flow is selected</th>
<th>When actual flow is selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>$m^3$ (NORMAL)</td>
<td>$m^3$ (Standard)</td>
<td>$m^3$</td>
</tr>
</tbody>
</table>

#### Sub display
- **Instantaneous flow-rate [$m^3/h$]:**
  - 0000.0 (less than 10000) 5 digits
  - 00000 (10000 or more) 5 digits

- **Unit:** Selected by button operation and communication

<table>
<thead>
<tr>
<th>When NORMAL flow is selected</th>
<th>When standard flow is selected</th>
<th>When actual flow is selected</th>
</tr>
</thead>
<tbody>
<tr>
<td>$m^3$ (NORMAL)</td>
<td>$m^3$ (Standard)</td>
<td>$m^3$</td>
</tr>
</tbody>
</table>

- **Pressure [kPa]:** 0000.0 5 digits
- **Temperature [°C]:** 00.0 3 digits
### Product Specifications

<table>
<thead>
<tr>
<th>Ultrasonic Flow Meter for Air (External Power Supply Type)</th>
<th>Model</th>
<th>TRZ [Nominal diameter] D -C / 5P</th>
</tr>
</thead>
</table>

- **Current output**
  - Output method: 4 - 20 mA Discharge method
  - Output accuracy: ± 0.5%FS
  - External load: 400 Ω or less

("Instantaneous flow-rate", "Pressure", and "Temperature" can be switched by button operation.)

When instantaneous flow-rate is selected

- **[Forward flow display mode]**
  - Zero output current: 4.0 mA (Reverse flow to low flow cutoff)
  - Output current lower limit: 4.0 mA (Clip at 4.0 mA)
  - Output current upper limit: 22.0 mA (Clip at 22.0 mA)

- **[Forward/reverse flow display mode]**
  - Zero output current: 12.0 mA (Within low flow cutoff)
  - Output current lower limit: 3.5 mA (Clip at 3.5 mA)
  - Output current upper limit: 22.0 mA (Clip at 22.0 mA)

**Full scale flow rate (Can be changed by button operation and communication)**

<table>
<thead>
<tr>
<th>Model</th>
<th>TRZ100</th>
<th>TRX150</th>
<th>TRX200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Initial setting value</td>
<td>5000</td>
<td>10000</td>
<td>20000</td>
</tr>
</tbody>
</table>

When pressure is selected

- Output method: Output as 4.0 mA: 0 MPa, 20.0 mA: 1 MPa (Fixed)
- Output current lower limit: 4.0 mA (Clip at 4.0 mA)
- Output current upper limit: 22.0 mA (Clip at 22.0 mA)

When temperature is selected

- Output method: Output as 4.0 mA: -10°C, 20.0 mA: +60°C (Fixed)
- Output current lower limit: 3.5 mA (Clip at 3.5 mA)
- Output current upper limit: 22.0 mA (Clip at 22.0 mA)
### Product Specifications

<table>
<thead>
<tr>
<th>Ultrasonic Flow Meter for Air (External Power Supply Type)</th>
<th>Model</th>
<th>TRZ [Nominal diameter] D-C / 5P</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Contact output</strong></td>
<td>Open drain output 2 channels</td>
<td></td>
</tr>
<tr>
<td>Output 1</td>
<td>Unit pulse output (Forward flow)</td>
<td></td>
</tr>
<tr>
<td>Output 2</td>
<td>Unit pulse output (Reverse flow), flow rate upper and lower limit alarm output, body error output, telegram output (Either one is selected by button operation)</td>
<td></td>
</tr>
<tr>
<td>Maximum load</td>
<td>26.4 VDC-50 mA</td>
<td></td>
</tr>
<tr>
<td>Saturated voltage when ON</td>
<td>1.5 V or less</td>
<td></td>
</tr>
<tr>
<td>Current when OFF</td>
<td>50 μA or less</td>
<td></td>
</tr>
</tbody>
</table>

**Pulse output**
- Unit pulses in accordance with increase of the accumulated flow volume are output.
- Pulse unit: 100 L/P (initial setting value) (Can be changed by button operation)
- Maximum output frequency: 10 Hz
- Output type: One shot or duty (can be changed by button operation)
- One shot pulse width: 50, 100, 125, 250, 500 ms (can be changed by button operation)
- Duty: 35 to 65%

**Flow rate upper and lower limit alarm output**
- When the instantaneous flow-rate becomes higher or lower than the set flow rate, an alarm signal is output.
- (The alarm output upper and lower limit flow rate and alarm judgment value hysteresis width can be set by a button operation.)

**Body error output**
- An alarm signal is output when a flow rate measurement error, pressure value error, temperature value error or communication circuit error is detected.

**Telegram statement**
- Measurement data are transmitted using telegrams at regular time intervals (10 minutes).
- Telegram type: Asynchronous 2400 bps
- Transmitted data: Accumulated flow rate (forward flow), accumulated flow rate (reverse flow), instantaneous flow rate, pressure, temperature and error information

**Measurable fluid**
- Air (Mainly factory air)

**Working fluid temperature**
- -10 to +60°C, 90%RH or less

**Working pressure**
- 0 to less than 1MPa (Gauge pressure)

**Working environment**
- -10 to +60°C, 90%RH or less (There must be no condensation)

**Storage environment**
- -20 to +70°C (There must be no condensation)

**Power supply**
- Built-in lithium battery life: 10 years (At environment temperature of 20°C)

**Flow direction**
- Forward and reverse flows can be measured (Direction indicated by the arrow is forward flow.)

**Connection type**
- JIS10K Flange

**Installation position**
- Horizontal (LCD display portion faces upward) or vertical

**Pressure drop**
- Extremely low (Equivalent to a straight pipe)

**Protection structure**
- IP 64 (JIS C0920: dust-proof, splash-proof type) which can be installed outdoors
### Product Specifications

<table>
<thead>
<tr>
<th></th>
<th>Ver. 3</th>
<th>5/6</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Ultrasonic Flow Meter for Air</strong></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Model</td>
<td>TRZ [Nominal diameter] D -C / 5P</td>
</tr>
</tbody>
</table>

#### Mass

<table>
<thead>
<tr>
<th>Model</th>
<th>TRZ100</th>
<th>TRZ150</th>
<th>TRZ200</th>
</tr>
</thead>
<tbody>
<tr>
<td>Mass</td>
<td>9.8 kg</td>
<td>18.1 kg</td>
<td>23.9 kg</td>
</tr>
</tbody>
</table>

#### Material

- ○ Measurement portion : stainless steel alloy
- ○ Outer casing : Aluminum alloy
- ○ Sensor rubber : FVMQ (Fluorosilicone rubber)
- Display portion casing : Aluminum alloy

*○ symbol indicates the gas contacting parts.

#### Standard working period

10 years (At ambient temperature of 20°C and ambient humidity of 65%RH)

* 10 years is not the warranty period.

#### Accessories

- M4 Hexagonal wrench
- Centering collar (Wafer type only)
- Flange packing (Wafer type only)
- Bolt set (Wafer type only)

- Power supply / Output cable (Six-core cable)
  - ○ Cable length: □ 5 m (Standard accessory) □ 20 m (option)
  - **Wire connection:**
    - Open drain output 1 ········ White
    - Open drain output 2 ········ Yellow
    - 24 V power supply ··········· Red
    - 4 to 20 mA output ··········· Green
    - Communication ··················· Brown
    - GND ····························· Black

*Items with "○"
2. Precautions in handling

2-1. Installation environment

(1) Although the high weather-proof electronic display is adopted, in case of installation at a place subjected to direct.

(2) Do not install the flow meter at a place with much electromagnetic noise or in corrosive atmosphere.

(3) This product is designed for outdoor installation, but avoid areas where there is a risk of water submergence and water always splashes.

(4) When opening or closing a valve before and after the flow meter, open or close the valve not all at once but gradually.

2-2. Piping conditions

(1) To realize stable measurement, it is recommended to install a straight pipe portion of 20 D or more (D: nominal diameter) at the upstream and downstream sides of the flow meter.

(2) In case large amount of mist, dust, etc., are contained in the fluid, install the flow meter by vertical piping. In the case of horizontal piping, install the flow meter so that the display part faces upward.

(3) In case installation of the product near a pressure reducing valve or a flow adjusting valve is planned, contact us in advance.