 Reliability Creativity Service	Product Specifications		Ver.4	1/5
	<b>Ultrasonic Flow Meter for Air (RS485 Type)</b>		Model	TRZ [Nominal diameter] R – C/ 5P

## 1. Specifications

- Model   
 100A (TRZ100R-C/5P)  
 150A (TRZ150R-C/5P)  
 200A (TRZ200R-C/5P)

Flow-rate range (actual flow-rate) (accuracy guaranteed scope)  
[m<sup>3</sup>/h]

Model	TRZ100	TRZ150	TRZ200
Flow rate range	±10 to 500	±24 to 1200	±40 to 2000

Accuracy (actual flow rate)

- Flow-rate measurement accuracy

[m<sup>3</sup>/h]

Model	TRZ100	TRZ150	TRZ200
Accuracy	±5%RD	±24 to 120	±40 to 200
	±2%RD0	±120 to 1200	±200 to 2000

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)  
[m<sup>3</sup>/h or less]

Model	TRZ100	TRZ150	TRZ200
Initial setting value	±2.6	±5.0	±9.0

Response-ability Update interval 2 seconds

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

"⊙" are selectable item.

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**Display**

Main display: The following is switched and selected using the “left button”.

[When forward flow display mode \*<sup>1)</sup> is selected]

Accumulated flow volume (forward flow) (m<sup>3</sup>)·Trip accumulated flow volume (forward flow) (m<sup>3</sup>)·Instantaneous flow-rate (L/min) \*<sup>2)</sup>

[When reverse flow display mode \*<sup>1)</sup> is selected]

Accumulated flow volume (forward flow) (m<sup>3</sup>)·Accumulated flow volume (reverse flow) (m<sup>3</sup>)·Instantaneous flow rate (L/min) \*<sup>2)</sup>

Sub display: The following is switched and selected using the “right button”.

Instantaneous flow rate (m<sup>3</sup>/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 rate) and sub display (instantaneous flow rate (m<sup>3</sup>/h), pressure (kPa) and temperature (°C)) are not displayed.

**umber of digits displayed**

**Main display**

Accumulated flow rate (Forward flow) [m<sup>3</sup>] : 00000000000 10 digits  
 Trip accumulated flow rate (Forward flow) [m<sup>3</sup>] : 000000000 9 digits  
 Accumulated flow rate (Reverse flow) [m<sup>3</sup>] : -000000000 9 digits  
 Instantaneous flow rate [L/min] : 0000000 7 digits

Unit: Selected by button operation and communication

When NORMAL flow is selected	When standard flow is selected	When actual flow is selected
m <sup>3</sup> (NORMAL)	m <sup>3</sup> (Standard)	m <sup>3</sup>

**Sub display**


Instantaneous flow-rate [m<sup>3</sup>/h]: 0000.0 (less than 10000) 5 digits  
 00000 (10000 or more) 5 digits

Unit : Selected by button operation and communication

When NORMAL flow is selected	When standard flow is selected	When actual flow is selected
m <sup>3</sup> (NORMAL)	m <sup>3</sup> (Standard)	m <sup>3</sup>

Pressure [kPa]: 0000.0 5 digits

Temperature [°C]: 00.0 3 digits

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Current output Output method : 4 - 20 mA Discharge method  
Output accuracy :  $\pm 0.5\%$ FS  
External load : 400  $\Omega$  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)

Model	TRZ100	TRX150	TRX200
Initial setting value	5000	10000	20000

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:  $-10^{\circ}\text{C}$ , 20.0 mA:  $+60^{\circ}\text{C}$  (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)

Contact output Open drain output 1 channel

Output1 : Unit pulse output (forward flow)  
Maximum load : 26.4 VDC·50 mA  
Saturated voltage when ON : 1.5 V or less  
Current when OFF : 50  $\mu\text{A}$  or less

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 and communication)

One shot pulse width: 50, 100, 125, 250, 500 ms (can be changed by button operation and communication)

Duty: 35 to 65%

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Communication    Communication method : Half duplex communication method(RS485 communication)  
Communication speed : 9600 bps, 19200 bps, 38400 bps, 57600 bps, 115200 bps  
(Allowable range:  $\pm 1.0\%$ )  
Synchronization method : Asynchronous  
Bit length : 8 bits  
Parity : None, even number, odd number  
Stop bit : 1 bit, 2 bits  
Bit transmission order : Order from b1 to b7 (low order prioritized sending)  
Error control : CRC

\* For details of communication specifications, download from our HP please.

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

Mass


Model	TRZ100	TRZ150	TRZ200
Mass	10.0 kg	18.3 kg	24.3 kg

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.

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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) [option]

- ◎ Cable length:  5 m     20 m
- Wire connection: Open drain output 1 ..... White
- Open drain output 2 ..... Yellow
- 4 to 20 mA output (+) ... 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.