 Reliability Creativity Service	Product Specifications		Ver. 3	1/6
	Ultrasonic Flow Meter for Air (External Power Supply Type)		Model	TRZ [Nominal diameter] D -C / 5P

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]

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 ³ /h]		
	Model	TRZ100	TRZ150	TRZ200
Accuracy	±5%RD	±10 to 50	±24 to 120	±40 to 200
	±2%RD	±50 to 500	±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 ³ /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”.

Display

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[When forward flow display mode *¹) is selected]

Accumulated flow volume (Forward flow) (m³)·Trip accumulated flow volume (Forward flow) (m³)·Instantaneous flow-rate (L/min) *²)

[When reverse flow display mode *¹) is selected]

Accumulated flow volume (Forward flow) (m³)·Accumulated flow volume (Reverse flow) (m³)·Instantaneous flow-rate (L/min) *²)

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

Instantaneous flow-rate (m³/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 (m³/h), pressure (kPa) and temperature (°C)) are not displayed.

umber of digits displayed

Main display

Accumulated flow volume (Forward flow) [m³] : 000000000000 10 digits
 Trip accumulated flow volume (Forward flow) [m³]: † 000000000 9 digits
 Accumulated flow volume (Reverse flow) [m³] : -000000000 9 digits
 Instantaneous flow-rate [L/min] : 0000000 7 digits

Unit: Selected by button operation

When NORMAL flow is selected	When standard flow is selected	When actual flow is selected
m ³ (NORMAL)	m ³ (Standard)	m ³

Sub display


Instantaneous flow-rate [m³/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 ³ (NORMAL)	m ³ (Standard)	m ³

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 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)


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°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)

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Contact output Open drain output 2 channels

Output 1 : Unit pulse output (Forward flow)
Output 2 : 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)
Maximum load : 26.4 VDC·50 mA
Saturated voltage when ON : 1.5 V or less
Current when OFF : 50 μ 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)
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

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Mass

Model	TRZ100	TRZ150	TRZ200
Mass	9.8 kg	18.1 kg	23.9 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.


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 "◎"

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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.