	Product Specifications		Ver. 3	1/6
	Ultrasonic Flow Meter for Air (Built-in battery type)		Model	TRZ [Nominal diameter] B - C/ 5P

1. Specifications

- Nominal diameter
 100A (TRZ100B-C/5P)
 150A (TRZ150B-C/5P)
 200A (TRZ200B-C/5P)

Flow-rate range (actual flow-rate) (accuracy guaranteed range)
[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

[m³/h]

	Model	TRZ100	TRZ150	TRZ200
Accuracy	±10~50	±10 to 50	±24 to 120	±40 to 200
	±50~500	±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)


[m³/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.

	Product Specifications		Ver. 3	2/6
	Ultrasonic Flow Meter for Air (Built-in battery type)		Model	TRZ [Nominal diameter] B - C/ 5P

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

Number of digits displayed Main display

Accumulated flow rate (Forward flow) [m³] : 000000000000 10 digits
 Trip accumulated flow rate (Forward flow) [m³] : 000000000 9 digits
 Accumulated flow rate (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

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

	Product Specifications		Ver. 3	3/6
	Ultrasonic Flow Meter for Air (Built-in battery type)	Model	TRZ [Nominal diameter] B - C/ 5P	

Current output Output method : 4-20 mA Two-wire type
 Power supply voltage : 24 VDC±10% Power consumption: 0.6 W or less
 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)


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)

	Product Specifications		Ver. 3	4/6
	Ultrasonic Flow Meter for Air (Built-in battery type)	Model	TRZ [Nominal diameter] B - C/ 5P	

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, flow meter error output, telegraphic statement signal output (Either one is selected by button operation)

Maximum load : 26.4 V DC·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.)

Flow meter error output

An alarm signal is output when a flow measurement error, pressure value error, temperature value error, communication circuit error or low battery voltage decrease is detected.

telegraphic statement signal output

Measured data are transmitted by telegraphic statement signal at constant time interval (10 minutes)

Telegraphic statement signal type: Asynchronous 2400 bps

Data to be transmitted: Accumulated flow volume (Forward flow), accumulated flow volume (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

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

Pressure drop Extremely low (Equivalent to a straight pipe)

	Product Specifications		Ver. 3	5/6
	Ultrasonic Flow Meter for Air (Built-in battery type)		Model	TRZ [Nominal diameter] B - C/ 5P

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

Mass

Model	TRZ100	TRZ150	TRZ200
Mass	10.0kg	18.3kg	24.1kg

Material

- Measurement portion : stainless steel alloy
- Outer casing : Aluminum alloy
- Sensor rubber : FVMQ (Fluoro silicone 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) [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 "◎"

	Product Specifications		Ver. 3	6/6
	Ultrasonic Flow Meter for Air (Built-in battery type)	Model	TRZ [Nominal diameter] B - C/ 5P	

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.