 Reliability Creativity Service	Product Specifications		Ver. 5	1/5
	<b>Ultrasonic Flow Meter for Air (RS485 Type)</b>		Model	TRX [Nominal diameter] R / [Gas type] / 5P / [Degreasing process]

## 1. Specifications

◎ Model TRX [Nominal diameter] R / [Gas type] / 5P / [Degreasing process]

Nominal diameter	Gas type	Degreasing process
<input type="checkbox"/> 25 (25A)	<input type="checkbox"/> C (factory air)	<input type="checkbox"/> No description (no process)
<input type="checkbox"/> 32 (32A)	<input type="checkbox"/> N (nitrogen)	<input type="checkbox"/> K (degreasing process)
<input type="checkbox"/> 40 (40A)		
<input type="checkbox"/> 50 (50A)		
<input type="checkbox"/> 65 (65A)		
<input type="checkbox"/> 80 (80A)		

Flow-rate range (Actual flow-rate) (Accuracy guaranteed range)

	[m <sup>3</sup> /h]					
Model	TRX25	TRX32	TRX40	TRX50	TRX65	TRX80
Flow rate range	±0.6 to 35	±1.1 to 65	±1.3 to 80	±2.5 to 150	±4 to 240	±5 to 300

Accuracy (Actual flow rate)

- Flow-rate measurement accuracy

		[m <sup>3</sup> /h]					
	Model	TRX25	TRX32	TRX40	TRX50	TRX65	TRX80
Accuracy	±5%RD	±0.6 to 3.5	±1.1 to 6.5	±1.3 to 8	±2.5 to 15	±4 to 24	±5 to 30
	±2%RD	±3.5 to 35	±6.5 to 65	±8 to 80	±15 to 150	±24 to 240	±30 to 300


- NORMAL conversion  
± 2.5%RD (0.5MPa, ordinary temperature and, dry air or nitrogen)

Low flow cutoff (Actual flow rate) Can be Changeable by button operation (0 ≤ Setting value < Qmin)

		[m <sup>3</sup> /h or less]					
	Model	TRX25	TRX32	TRX40	TRX50	TRX65	TRX80
Initial setting value		±0.1	±0.2	±0.2	±0.4	±0.6	±0.8

Response-ability Update interval : 0.5 second  
Smoothing of instantaneous flow rate value by moving average method (Initial setting value: 4 times)

"◎" is selectable item.

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

[When reverse flow display mode \*1) 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)\*2)

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

**Number of digits displayed**

**Main display**

Accumulated flow rate (Forward flow) [m3] : 00000000.0 9 digits  
 Trip accumulated flow rate (Forward flow) [m3] : † 0000000.0 8 digits  
 Accumulated flow rate (Reverse flow) [m3] : -0000000.0 8 digits  
 Instantaneous flow rate [L/min] : 00000.00 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>

Note) In case actual flow display (m<sup>3</sup>) is selected for "accumulated flow volume (Forward flow)", "trip accumulated flow volume (Forward flow)", and "accumulated flow volume (Reverse flow)", it is displayed to the second decimal point.

**Sub display**


Instantaneous flow-rate [m<sup>3</sup>/h]: 000.00 (less than 1000) 5 digits  
 0000.0 (1000 or more and 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 <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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Electric 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)

Model	TRX25	TRX32	TRX40	TRX50	TRX65	TRX80
Initial setting value	300	600	700	1200	2000	2500

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)

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 μA 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%

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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: ± 1.0%)  
                           Synchronization system    : 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) or nitrogen  
**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**                         24 VDC±10% Power consumption: 1.5 W or less  
**Flow direction**                        Forward and reverse flows can be measured (Direction indicated by the arrow is forward flow.)

**Connection type**

Model	TRX25	TRX32	TRX40	TRX50	TRX65	TRX80
Connection type	Taper pipe thread (Screw-in)		Wafer (Installed and tightened between JIS10K flanges)			

**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	TRX25	TRX32	TRX40	TRX50	TRX65	TRX80
Mass	1.5 kg	1.4 kg	1.0 kg	1.2 kg	1.4 kg	1.7 kg

**Material**

- Measurement portion : Engineering plastic (Such as PPS), aluminum alloy
  - Outer casing            : Aluminum alloy
  - Sensor rubber         : FVMQ (Fluoro silicone rubber)
  - Display portion casing    : Aluminum alloy
- \*○ symbol indicates the gas contacting parts.  
 In the case of a degreasing process product, a degreasing process has been performed for gas contacting parts.  
 (For details, refer to “3. Degreasing process”.)

**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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	<b>Ultrasonic Flow Meter for Air (RS485 Type)</b>	Model	TRX [Nominal diameter] R / [Gas type] / 5P / [Degreasing process]	

- Accessories
- M4 Hexagonal wrench
  - Centering collar (Wafer type only)
  - Flange gasket (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  |
- "☉" is selectable.

Others                    CE marking, UKCA marking, RoHS Directive compliant

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.

3. Decreasing process

In the case of a degreasing process product, the followings are the degreasing processes for the gas contacting parts.

- (1) Ultrasonic cleaning degreasing process by degreasing cleaning liquid  
For gas contacting parts (Other than the following specified parts), after immersion in degreasing cleaning liquid and performing ultrasonic cleaning, the cleaning liquid attached to the parts surfaces are to be removed with tap water (Running water).
- (2) Degreasing process by alcohol wiping  
After wiping the following specified parts with hand towels containing alcohol, they are wiped again with hand towels containing tap water.

<Specified parts>

Ultrasonic sensor, pressure sensor unit's pressure introduction portion outside wall surface, heat shrinkable tube