

■ Specifications

Common specifications for Ultrasonic Flowmeter for air TRX/TRZ ver. 5

Nominal diameter	25A	32A	40A	50A	65A	80A	100A	150A	200A
Measurable fluids	Air (mainly factory air), or Nitrogen (Note 1) *Please select at the time of placing an order								
Compensation	NORMAL compensation Flow amount that actual flow is compensated at 0°C, 1 atm.								
Fluid temperature and humidity	Standard compensation Flow amount that actual flow is compensated at the designated temperature (set at the flowmeter), 1 atm. -10 ~ 60 °C, 90%RH MAX								
Working pressure	0 ~ Less than 1MPa (Gauge pressure)								
Flow range (actual volume)	±0.6 ~ 35m³/h	±1.1 ~ 65m³/h	±1.3 ~ 80m³/h	±2.5 ~ 150m³/h	±4 ~ 240m³/h	±5 ~ 300m³/h	±10 ~ 500m³/h	±24 ~ 1200m³/h	±40 ~ 2000m³/h
Flow measurement accuracy	±2%RS	±3.5 ~ 35m³/h	±6.5 ~ 65m³/h	±8 ~ 80m³/h	±15 ~ 150m³/h	±24 ~ 240m³/h	±30 ~ 300m³/h	±50 ~ 500m³/h	±120 ~ 1200m³/h
	±5%RS	±0.6 ~ 3.5m³/h	±1.1 ~ 6.5m³/h	±1.3 ~ 8m³/h	±2.5 ~ 15m³/h	±4 ~ 24m³/h	±5 ~ 30m³/h	±10 ~ 50m³/h	±24 ~ 120m³/h
Low-flow cut-off	±0.1m³/h	±0.2m³/h	±0.2m³/h	±0.4m³/h	±0.6m³/h	±0.8m³/h	±2.6m³/h	±5.0m³/h	±9.0m³/h
Conversion-to-NORMAL accuracy	±2.5% (At 500kPa, 25 °C)								
Connection	Rc1	Rc1-1/4	Wafer (put into place between JIS10K flanges)				JIS10K flange		
Installation position	LCD (including display of Unit, Gas type, and Alarm indication) Alarm indication: Flow measurement alarm, pressure value alarm, temperature value alarm, communication circuit alarm, external memory alarm, low battery voltage alarm (for built-in battery type), flowmeter replacement timing (for built-in battery type)								
Materials in contact with fluid	Aluminum Alloy, PPS, Fluorosilicone rubber, etc.					Stainless steel alloy, PPS, Fluorosilicone rubber, etc.			
Installation	Indoors/outdoors (protection class: IP64)								
Storage temperature	-20~70°C, No dew condensation								

Specifications for External Power Supply Type (D) / Built-in Battery Type(B)

Model	TRX25D-C(N)/5P	TRX32D-C(N)/5P	TRX40D-C(N)/5P	TRX50D-C(N)/5P	TRX65D-C(N)/5P	TRX80D-C(N)/5P	TRX100D-C(N)/5P	TRX150D-C(N)/5P	TRX200D-C(N)/5P
External power supply specification	24VDC±10%, Power consumption 1.1W MAX(Electric current consumption 40mA MAX)								
Built-in battery specification	Built-in lithium battery with a battery life of 10 years (At environmental temperature 20°C)								
Nominal diameter	25mm	32mm	40mm	50mm	65mm	80mm	100mm	150mm	200mm
Electric Power Supply	4-20mA(±0.5%FS), Load resistance 400 ohm or less, Upper limit output current 22mA Output of instantaneous flow-rate, pressure, meter alarms or temperature is selectable by the button								
	Note) An electric power supply device (24VDC±10%) shall be prepared separately, in case of use of electric current output with the built-in battery specification type.								
Output	Output range (4-20mA): Instantaneous flow-rate 0 ~ 9999Nm³/h(Forward flow indication mode), 9999 ~ 0Nm³/h(Forward/reverse flow indication mode), 9999 is setting value set by the button								
	Pressure 0 ~ 1000kPa, Temperature -10 ~ 60°C								
Contact output	2 open drain outputs, MAX load: 24VDC 10mA, MAX frequency: 10Hz, Duty ratio: 35 ~ 65%, or One-shot (Select ON-Time from 50,100,125,250,500ms) ※Note 2(Possible to change the setting at site)								
	Output 1: Unit pulse (Forward flow) Output 2: Selection from Unit pulse (Reverse flow), Flow upper and lower limit alarm, or electronic statement signal								
Mass	Pulse output unit 0.1Nm³/P, 1Nm³/P								
	Pulse output unit 1Nm³/P, 10Nm³/P								
Mass	External power supply specifications								
	Built-in battery specifications								
Conformed standard	CE marking conformity (EN61000-6-2:2005, EN61000-6-4:2007)								

RS485 Output Type Specifications

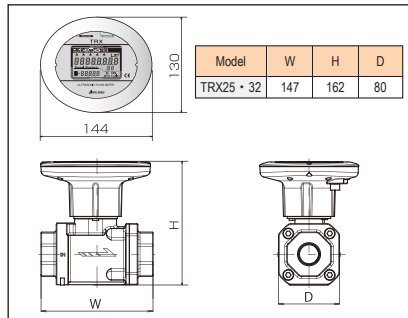
Model	TRX25R-C(N)/5P	TRX32R-C(N)/5P	TRX40R-C(N)/5P	TRX50R-C(N)/5P	TRX65R-C(N)/5P	TRX80R-C(N)/5P	TRX100R-C(N)/5P	TRX150R-C(N)/5P	TRX200R-C(N)/5P
Nominal diameter	25mm	32mm	40mm	50mm	65mm	80mm	100mm	150mm	200mm
Power supply	24VDC±10%、24VDC±10%、 Power consumption not more than 1.5W								
Output	Current output								
	Same as the specifications for External Power Supply Type (D) and Built-in Battery Type(B)								
Contact pulse output	Unit pulse								
	Nch Open-drain output 1 line: Maximum load: 24VDC 50mA Output type: Duty ratio (35 to 65% maximum frequency) or One-shot (Select ON-Time from 50,100,125,250,500ms)								
Communication ※Note 3	Pulse output unit 100L (normal) / P, 1000L (normal) / P ※Note 1								
	Pulse output unit 1m³ (normal) / P, 10m³(normal)/P ※Note 1								
Weight	1 line: Conform to Modbus/RTU								
	Communication bit rate: Selection from 9600,19200,38400,57600,115200bps by button operation								

Note 1) Nominal diameters 25 ~ 80mm correspond measurement of Nitrogen.
 Note 2) At the actual flow measurement setting, number of digits for accumulated flow volumes, number of digits for instantaneous flow-rate, and pulse output unit differ from the above table.
 *Piping conditions : 25mm & 32mm: Furnishing of straight pipe of 20D or more at the upstream side and 5D or more at the downstream side (In case of utilization of forward/reverse flow indication mode, 20D or more for the both upstream and downstream)
 40mm and above : Furnishing of straight pipe of 10D or more at the upstream side and 5D or more at the downstream side (In case of utilization of forward/reverse flow indication mode, 10D or more for the both upstream and downstream)
 Note 3) Communication specifications can be downloaded from our company website.
 Note 4) In case of connection with a logger device, command sending interval shall be set to 200msec or longer.

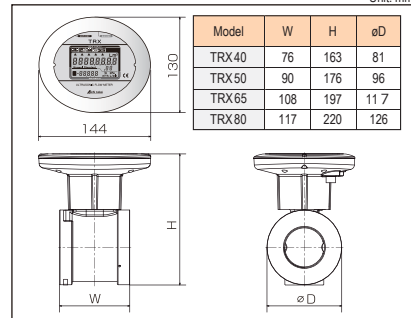
■ Actual Flow Volume – Normal Flow Volume Conversion Table

Conversion condition		25mm		32mm		40mm		50mm		65mm		80mm		100mm		150mm		200mm	
Temperature (°C)	Gauge pressure (MPa)	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum	Minimum	Maximum
20	0.7 (Nm³/h)	4.4	260	8.1	480	9.6	590	18	1100	30	1770	37	2210	74	3680	180	8840	290	14700
	0.5 (Nm³/h)	3.2	190	5.9	350	7	430	13	800	21	1280	27	1600	53	2670	130	6420	210	10700
30	0.7 (Nm³/h)	4.3	250	7.8	460	9.3	570	18	1070	29	1710	36	2140	71	3560	170	8550	290	14250
	0.5 (Nm³/h)	3.1	180	5.7	340	6.8	420	12	760	20	1240	26	1560	51	2550	120	6000	200	10000
Actual flow (m³/h)		0.6	35	1.1	65	1.3	80	2.5	150	4	240	5	300	10	500	24	1200	40	2000

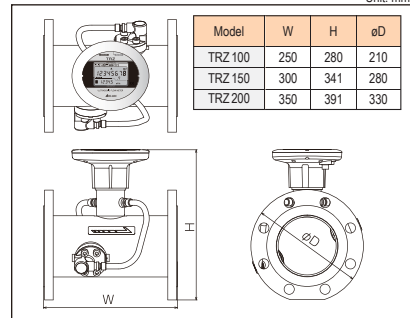
■ External dimensions 25mm • 32mm



40mm • 50mm • 65mm • 80mm



100mm • 150mm • 200mm



Technical specifications in this catalog are up-to-date as of November 2016.



Reliability, Creativity, Service

For Air

High Performance Ultrasonic Flowmeter

TRX/TRZ

For appropriate management of Compressor Air!

Introducing a new flow meter with higher cost performance!!



Standard equipping of Conversion-to-NORMAL (Temperature & Pressure Compensation) function

Energy-saving Tool

Take a Close Look at Our Evolving Ultrasonic Flow Meter Measurement Technology

Lineup includes smaller nominal diameters!

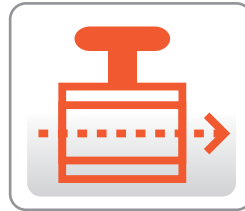
TRX/TRZ flowmeters support achieving of "Visualization" to meet your needs.



The standard for air measurement from now on

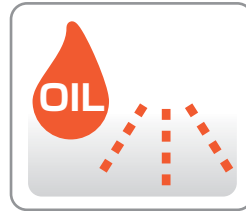
Pressure loss = "0", therefore, energy loss = "0"

Ultrasonic type measuring principle is adopted. No obstructions inside the measuring pipe, so there is absolutely no pressure loss.



Strong resistance to oil and vapor provides high durability

No moving parts means high resistance to fluids containing oil, vapor, and dust. Use with old piping and oil-supplying compressors is also possible.



* If contamination by oil, vapor, and the like is particularly high, vertical piping is recommended.

Measurement and output of forward flow and reverse flow possible

Through the settings, measurement and output of forward flow and reverse flow is possible. This allows for use in loop piping and for determining the consumption volume for air transferred between factories.

Battery power supply makes power line construction unnecessary

The built-in battery type (with a life of 10 years) makes power line construction unnecessary. In addition, the external power supply type (24V DC) is also available in this product lineup.

RS485 output function is equipped

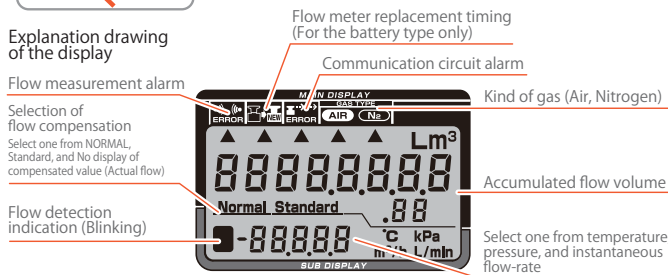
Flow (Instantaneous flow-rate / Accumulated flow volume), pressure, and temperature can be outputted at the same time. Also, meter alarms (flow measurement, pressure, temperature, communication circuit) are able to be outputted.

WIDE Wide range ability with ratio of 1:60

The wide range ability allows for accurate measurement of even smaller flow rates. In addition, from the detection flow rate (measurement start flow rate) to the maximum flow rate, a wide range with a ratio of 1:400 is provided.

Easy-to-read display

Addition to flow, the present circumstances can be seen at a glance. Furthermore, the display portion is able to be rotated 90 degrees.



Measurement principle

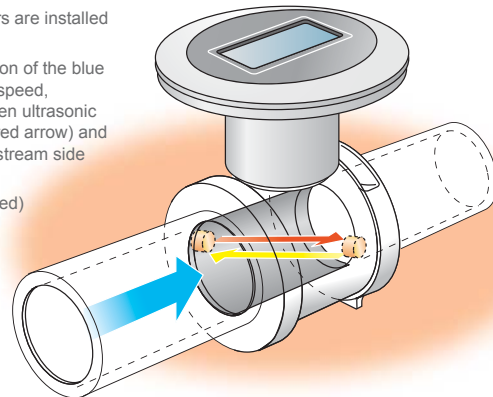
"Propagation time difference" method superior in repeatability

For this flowmeter, 2 ultrasonic sensors are installed at its upstream and downstream sides.

When fluid is flown towards the direction of the blue arrow on the drawing, because of flow speed, difference in time of propagation between ultrasonic wave transmitted from upstream side (red arrow) and ultrasonic wave transmitted from downstream side (yellow arrow) occurs.

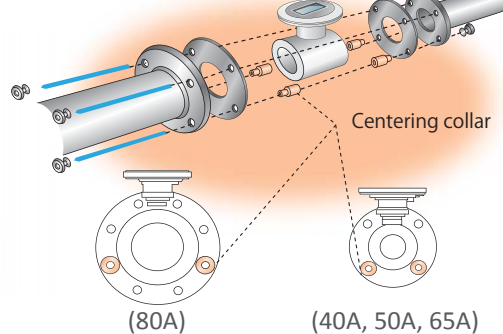
By detecting fluid's flow-rate (flow speed) with this time difference, flow volume is calculated based on the flow-rate and cross-sectional area of the flowmeter's measuring pipe.

Also, with the pressure sensor built in the flowmeter body, conversion to NORMAL (pressure/temperature compensation)



Example of installation

(TRX Wafer connection type)

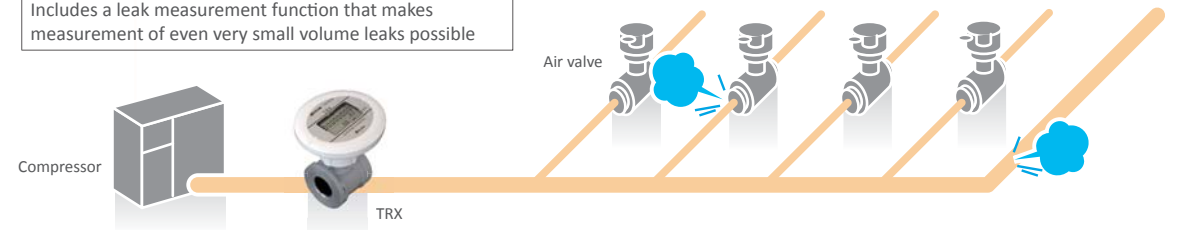


As the centering collars have function to isolate the meter body from piping, utilize them without fail because the meter may be unable to measure by conduction of static electricity, etc., if they are not used.

Examples of applications

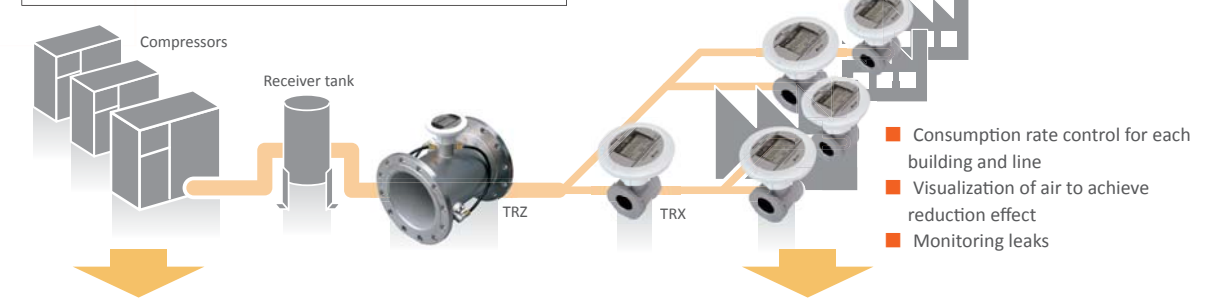
1. For detection and countermeasure of factory air leakage

Includes a leak measurement function that makes measurement of even very small volume leaks possible



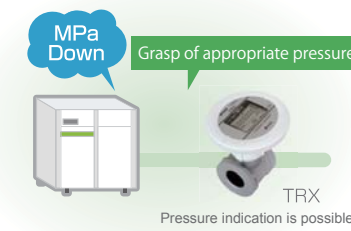
2. For energy specific unit management by measuring air consumption amount of each building (Factory A, Factory B, etc.) on a factory's premises.

The lineup covers nominal diameters from 25mm to 200mm.



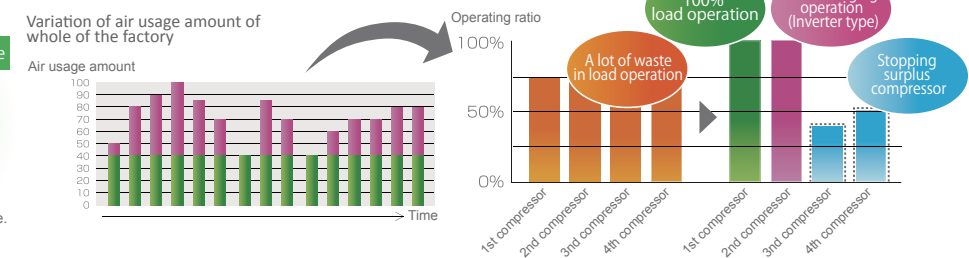
Reviewing of the pressure at the source

By knowing necessary amount of air at each line, changing the compressor's pressure to appropriate pressure leads to cost reduction.



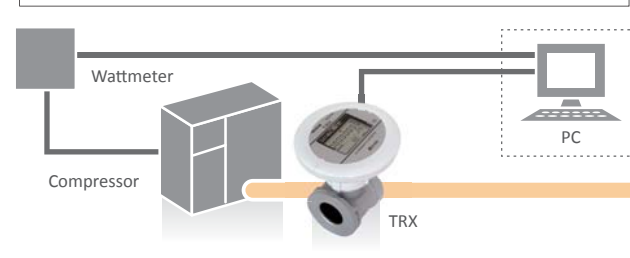
Grasp of the compressor operating load

By grasping load efficiency from air usage amount of each hour, reviewing way of operation of compressors leads to improvement of energy saving.



3. For "Visualization" control of load factor at compressor operation

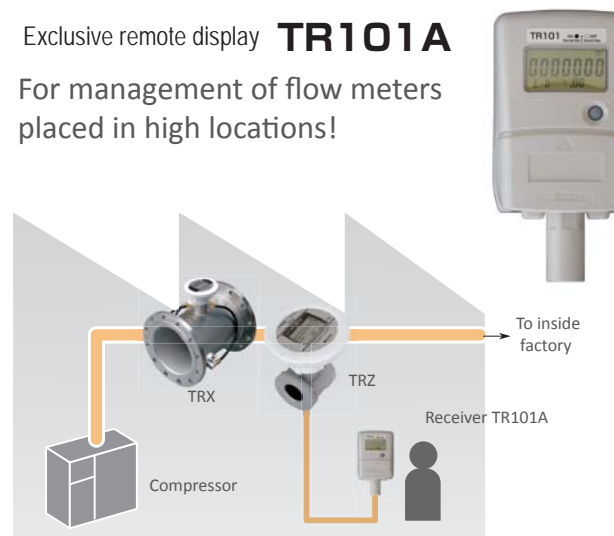
Electric current output and contact pulse output are equipped.



Management of electricity consumption per unit air (specific dynamic cost) by taking such data into a data logger, etc., contributes to effective operation of the compressor and electricity amount reduction.

Exclusive remote display TR101A

For management of flow meters placed in high locations!



Specifications

Accumulated flow volume(Forward flow)*2	0000000000	10 digits	Unit: m3 or Nm3
Accumulated flow volume(Reverse flow)*3	-0000000000	9 digits	Unit: m3 or Nm3
Accumulated flow volume (Total of forward and reverse flows)*3	0000000000	10 digits	Unit: m3 or Nm3
Instantaneous flow-rate [m3/h]	00000	5 digits	Unit: m3/h or m3/h
Instantaneous flow-rate [L/min]	0000000	7 digits	Unit: L/min or NL/min
Pressure [kPa]	0000	4 digits	
Temperature [°C]	00.0	3 digits	
Alarm indication	E-0:	No connection or disconnection of the communication cable	
	E-1:	Ultrasonic measurement error of the meter	
	E-2:	Low battery voltage of the meter (Built-in battery type)	
	E-3:	Low battery voltage and ultrasonic measurement error of the meter (Built-in battery type)	
	E-4:	Short circuit of the communication cable	
		: Low battery voltage of remote display	
Input	Exclusive electronic statement signal from ultrasonic flowmeter		
Output	None		
Power supply	Lithium battery; The battery life is 10 years (at average environmental temperature 20°C)		
Ambient temperature and humidity of installation location	-10 to 60°C, 90%RH or less		
Casing material	ABS resin		
Structure	IP X3 (rainproof-model)		
External dimensions	H188×W100×D43		
Mass	Approximately 250g		

*NOTE: Display data is automatically updated every 10 minutes, or display data can be updated manually.
 *1: In Case of Normal flow setting, * flashes.
 *2: The maximum number of digits for the total integrated value that display on the TRX will not be displayed or reflected in the transmitter due to the position of the decimal point.
 *3: In case the setting is no reverse flow measurement, an under-bar is indicated for accumulated flow volume (Reverse flow) and accumulated flow volume (Total of forward and reverse flows)