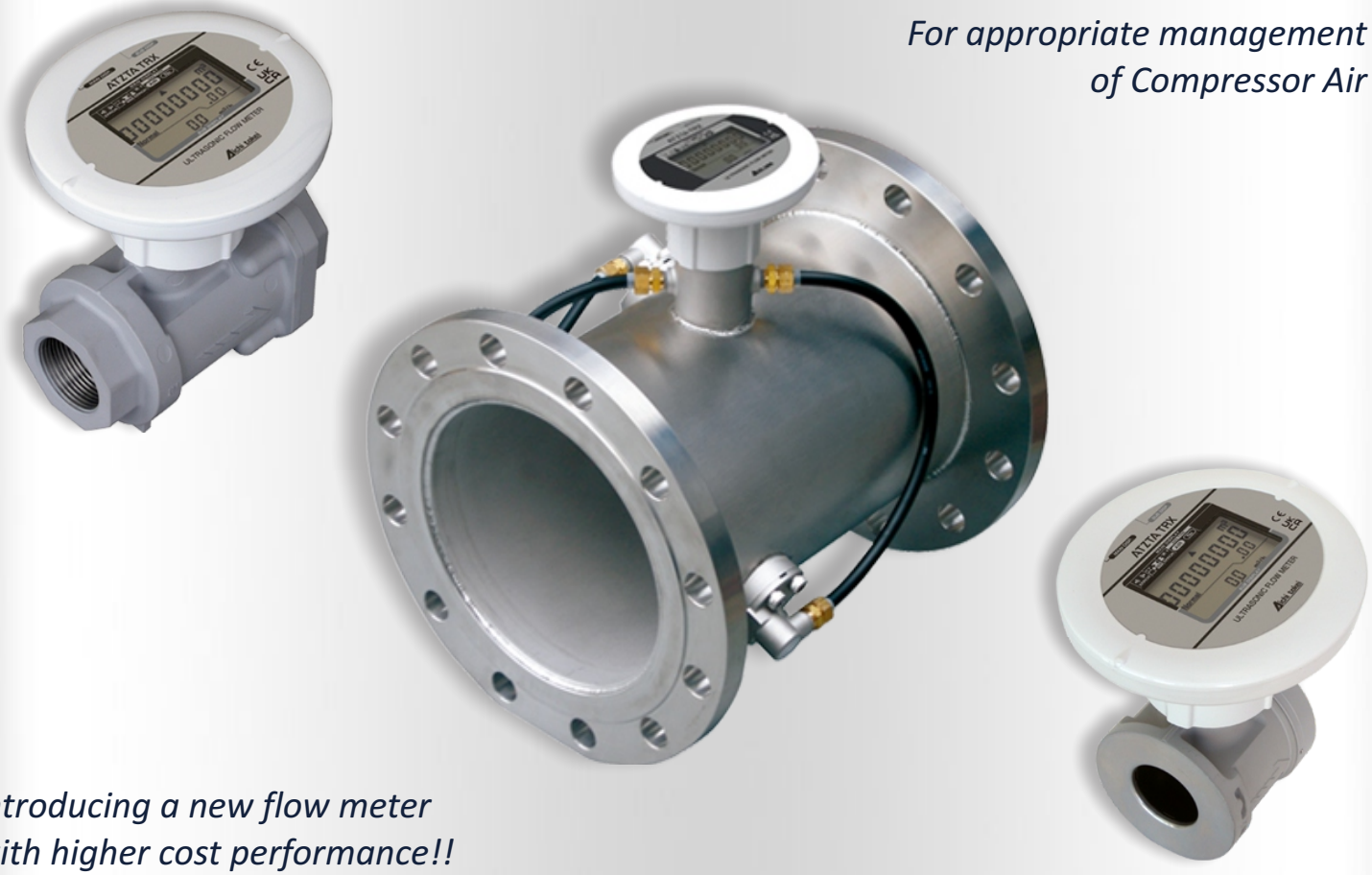
" If You Want To Manage It, Measure It "

IOTAFLOW
SYSTEMS PVT. LTD

For appropriate management of Compressor Air



Introducing a new flow meter with higher cost performance!!

High Performance
Ultrasonic Air Meter

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

www.iotaflow.com

Take a Close Look at Our Evolving Ultrasonic Flowmeter Measurement Technology

Lineup includes smaller nominal diameters!

Flowmeters support achieving of "Visualization" to meet your needs.



The standard for air measurement from now on

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.



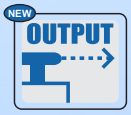
Battery power supply makes power line construction unnecessary

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

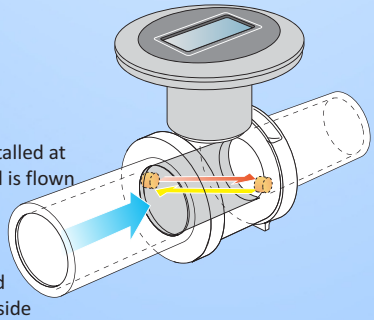
Flow (Instantaneous flow-rate / Accumulated flow volume), pressure, and temperature can be outputted at the same time. Also, meter alarms (flow measurement, pressure, temperature, communication circuit) are able to be outputted.



Measurement principle

"Propagation time difference" method superior in repeatability

For this flow meter, 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)



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.



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.

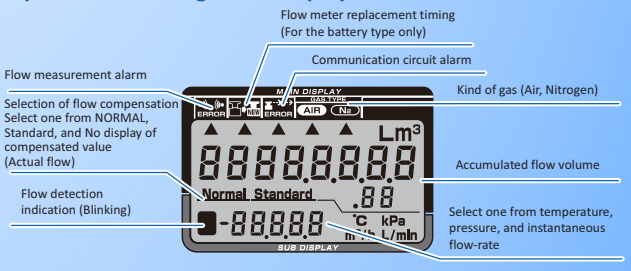


Easy-to-read display

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

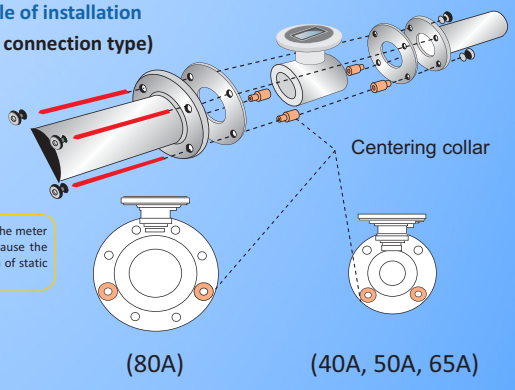


Explanation drawing of the display



Example of installation

(Wafer connection type)



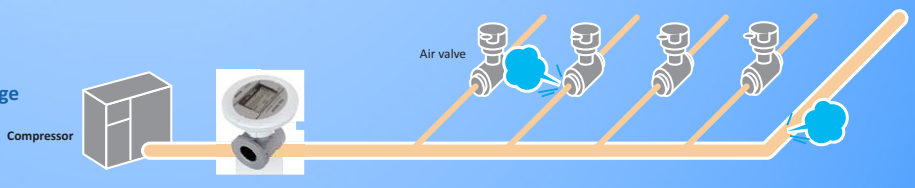
As the centering collars have function to isolate the meter body from piping, utilize them without fail because the meter may be unable to measure by conduction of static electricity, etc., if they are not used.

(80A) (40A, 50A, 65A)

Examples of applications

For detection and countermeasure of factory air leakage

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



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

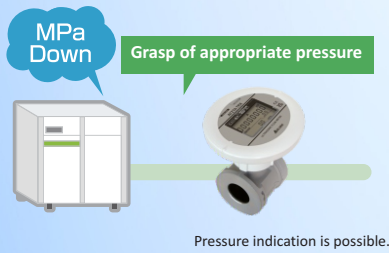
The lineup covers nominal diameters from 25mm to 200mm.



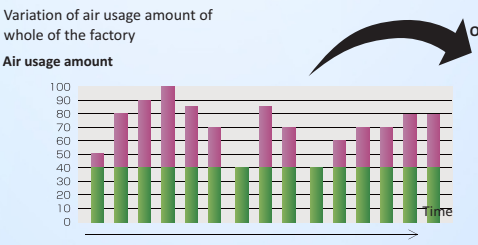
- Consumption rate control for each building and line
- Visualization of air to achieve reduction effect
- Monitoring leaks

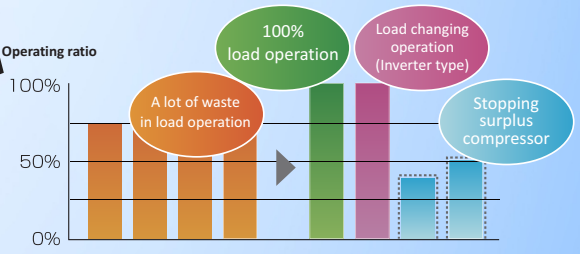
Reviewing of the pressure at the source

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



Pressure indication is possible.

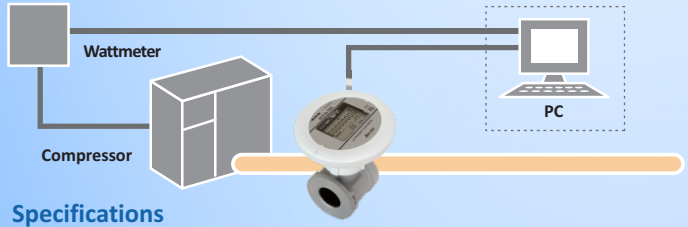




For "Visualization" control of load factor at compressor operation

Electric current output and contact pulse output are equipped.

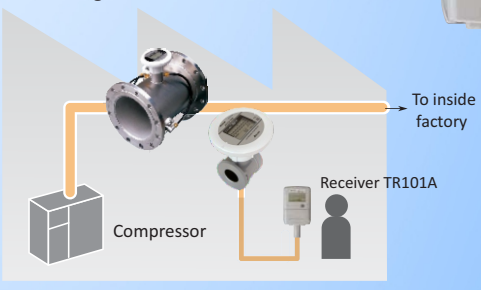
Management of electricity consumption per unit air (specific dynamic cost) by taking such data into a data logger, etc., contributes to effective operation of the compressor and electricity amount reduction.



Exclusive remote display
For management of flow meters placed in high locations!

TR101A





Specifications

Display*1	Accumulated flow volume(Forward flow)*2	0000000000 10 digits Unit: m^3or Nm^3
	Accumulated flow volume(Reverse flow)*3	-000000000 9 digits Unit: m^3 or Nm^3
	Accumulated flow volume (Total of forward and reverse flows)*3	0000000000 10 digits Unit: m^3 or Nm^3
	Instantaneous flow-rate [m^3/h]	00000 5 digits Unit: m^3/h or m^3/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 flow meter
Output		None
Power supply		Lithium battery :The battery life is 10 years (at average environmental temperature 20)
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
		Approximately 250g

NOTE: Display data is automatically updated every 10 minutes, or display data can be updated manually.

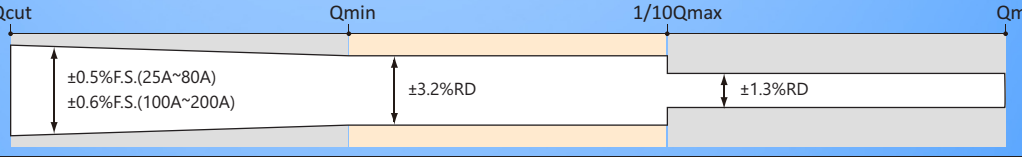
** 1 : In Case of Normal flow setting, ● flashes.*

** 2 : The maximum number of digits for the total integrated value that display on the 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)*

Specifications

Common specifications for ultrasonic flowmeter for air

Nominal diameter		25"	32"	40"	50"	65"	80"	100"	150"	
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.								
	Standard compensation	Flow amount that actual flow is compensated at the designated temperature (set at the flowmeter), 1 atm.								
Fluid temperature		-10 ~ 60 °C								
Working pressure		0 ~ Less than 1MPa (Gauge pressure)								
Normal flow-rate (Nm3/h) *1	Qmax	260.0	480.0	600.0	1100.0	1800.0	2200.0	3700.0	9000.0	14800.0
	1/10Qmax	26.0	48.0	60.0	110.0	180.0	220.0	370.0	900.0	1480.0
	Qmin	4.3	8.0	10.0	18.3	30.0	36.7	74.0	180.0	296.0
	Qcut	0.7	1.5	1.5	2.9	4.4	5.9	19.2	36.9	66.3
Accuracy *2										
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								

*1. This is normal flow -rate indicated under the condition of 20°C as the temperature and 700kPa as the pressure.
*2. At our shipping test facility.

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

Model	External power supply specification	25D-C(N)/5P	32D-C(N)/5P	40D-C(N)/5P	50D-C(N)/5P	65D-C(N)/5P	80D-C(N)/5P	100D-C(N)/5P	150D-C(N)/5P	200D-C(N)/5P
	Built-in battery specification	25B-C(N)/5P	32B-C(N)/5P	40B-C(N)/5P	50B-C(N)/5P	65B-C(N)/5P	80B-C(N)/5P	100B-C(N)/5P	150B-C(N)/5P	200B-C(N)/5P
Nominal diameter		25mm	32mm	40mm	50mm	65mm	80mm	100mm	150mm	200mm
Electric Power Supply	External power supply specification	24VDC±10%, Power consumption 1.1W MAX(Electric current consumption 40mAMAX)								
	Built-in battery specification	Built-in lithium battery with a battery life of 10 years (At environmental temperature 20°C)								
Output	Electric current output	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 range (4-20mA) : Instantaneous flow-rate 0 ~ □□□□Nm³/h(Forward flow indication mode), -□□□□ ~ □□□□Nm³/h(Forward/reverse flow indication mode) □□□□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 telegram statement signal								
		Pulse output unit 0.1Nm³/P, 1Nm³/P						Pulse output unit 1Nm³/P, 10Nm³/P		
Mass	External power supply specifications	1.5kg	1.4kg	1.0kg	1.2kg	1.4kg	1.7kg	9.8kg	18.1kg	23.9kg
	Built-in battery specifications	1.7kg	1.6kg	1.1kg	1.3kg	1.6kg	1.8kg	10.0kg	18.3kg	24.1kg
Conformed standard		CE marking conformity (EN61000-6-2:2005, EN61000-6-4:2007)								

RS485 Output Type Specifications

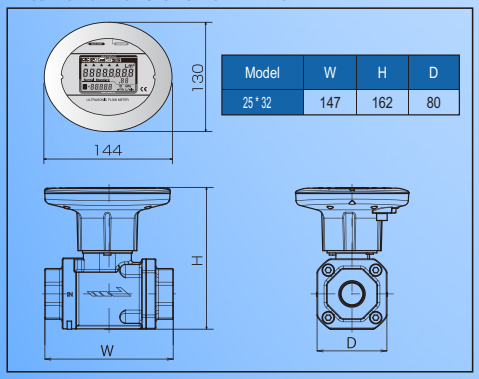
Model		25R-C(N)/5P	32R-C(N)/5P	40R-C(N)/5P	50R-C(N)/5P	65R-C(N)/5P	80R-C(N)/5P	100R-C(N)/5P	150R-C(N)/5P	200R-C(N)/5P
Nominal diameter		25mm	32mm	40mm	50mm	65mm	80mm	100mm	150mm	200mm
Power supply		24VDC±10%, 24VDC±10%, Power consumption not more than 1.5W								
Output	Current output	Same as the Specifications for Power Supply Type (D) and built-in Battery Type (B)								
	Contact pulse output	Unit pulse								
		Nch Open -drain output 1 line: Maximum load: 20VDC 50mA								
		Output type: Duty ratio (35 to 65% maximum frequency) or One-shot (Select ON-Time from 50,100,125,250,500ms)								
		Pulse output unit 100L (normal) /P, 1000L (normal) /P, *Note 1+						Pulse output unit 1m³ (normal)/P,10m³ (normal)/P, *Note 1		
	Communication *Note 3	1line: Conform to Modbus/RTU								
		Communication bit rate: Selection from 9600,19200,38400,57600,115200bps by button operation								
Weight		1.5kg	1.4kg	1.0kg	1.2kg	1.4kg	1.7kg	9.8kg	18.1kg	23.9kg

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
30	0.5 (Nm³/h)	3.2	190	5.9	350	7	430	13	800	21	1280	27	1600	53	2670	130	6420	210	10700
	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
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

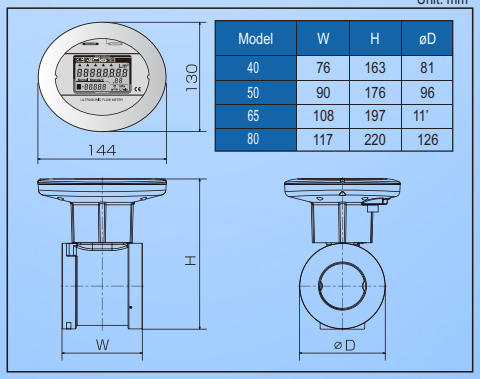
External dimensions 25mm * 32mm



Model	W	H	D
25*32	147	162	80

40mm * 50mm * 65mm * 80mm

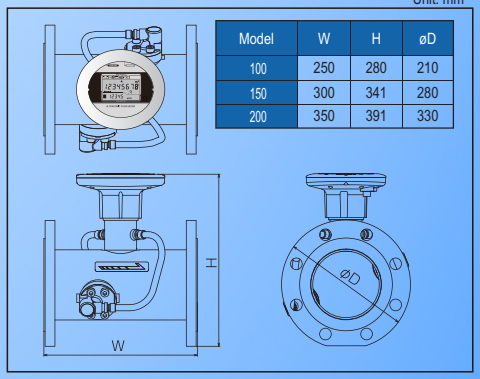
Unit: mm



Model	W	H	øD
40	76	163	81
50	90	176	96
65	108	197	11'
80	117	220	126

100mm * 150mm * 200mm

Unit: mm



Model	W	H	øD
100	250	280	210
150	300	341	280
200	350	391	330

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