



AF-R221 AIR FLOW TESTER

Optimum for testing discharge flow and airtightness.
Flow sensor is selectable from Laminar Flow and Mass Flow.

■ Features



Easy-to-navigate configuration with icons.
Each menu opens by simply touching an icon.



Test pressure and flow can be monitored in charts.



Language selectable (English, Japanese, Chinese, Spanish)



FTP (optional) available for Ethernet.



Easy data collection via USB port.



Flow Check (C-CHK) as standard feature



Flow Optimizer. Even when test pressure fluctuates, the flow at the specified test pressure is displayed.

■ Application Examples



Engine assembly leak test

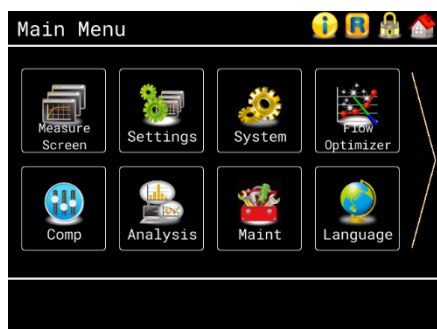


Flow and leak tests for auto parts

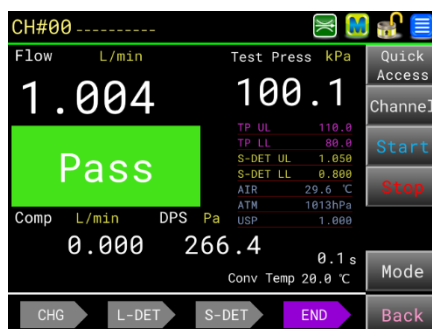


Gas equipment flow test

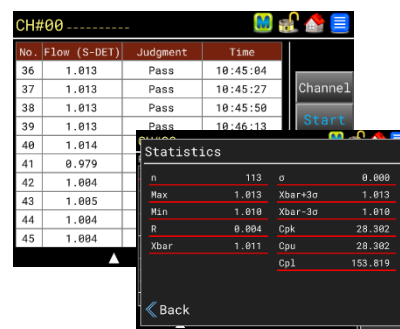
One-touch icons



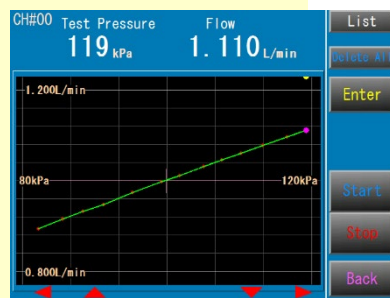
Measure Screen



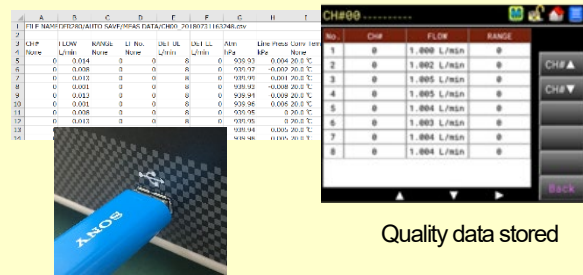
X-Chart/List and Statistics for Analysis



● Flow Optimizer Multi-Point Optimizer Sampling

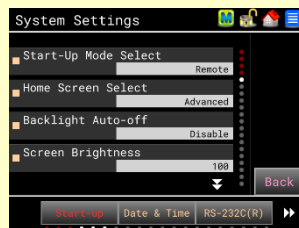


● Test parameters and results can be output to the USB memory.



Quality data stored

● FTP Function



Settings
IP Address
Subnet Mask
User Name
Password
FTP Directory

FTP parameters



Share the quality data via Ethernet

■ Select Laminar Flow Sensor or Mass Flow Sensor Take advantages of excellent features of each Flow Sensor.

Laminar Flow Sensor (Laminar Flow Tube)



- ▶ Wide variety of ranges (F.S.10 mL/min to 100 L/min)
- ▶ Can measure pulsating flow rate such as pump discharge flow
- ▶ Durable & robust with no moving parts

Mass Flow Sensor



- ▶ Can measure with different/variable line pressure
- ▶ No atmospheric compensation required
- ▶ High response speed

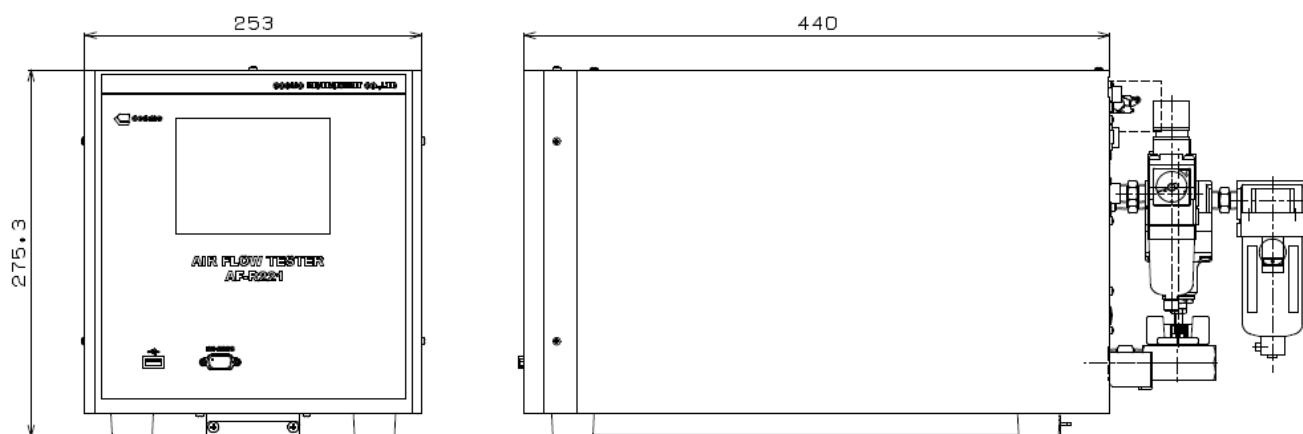
■ Standard Features

Display	Measurement screen is selectable from 6 screens.		Digital Filter	Averages the readings for more stable readings with less variation.
Test Reliability	Blow Check	After flow test, the fill valve is opened to check there is flow. Only for F4	Data Analysis	Counter, Statistics, Waveform display
			User Span	Span value is either manually entered or automatically set.
	C-CHK	The flow is compared with the value of Flow Master.	Flow Limits	Upper limits: UL2/UL, Lower limits: LL2/LL
	F-CHK	Measured flow is compared with the value of Flow Master in every test. (Option: CX)	Exhaust Interference Prevention	Externally controls the Exhaust timing after air flow test.
Flow Optimizer	Formula Optimizer	Samples the flows at Target Press (P1) to display the optimized flow.	Data Acquisition	Up to 5000 data are stored. USB can be used for data storing.
	Two-Point Optimizer	Samples the flows at two pressure points, Target Test Press (P1) and Off-Target Test Press (P2), to optimize the measured flow when the test pressure is off target.	DET Extension	When the flow is in the range between "DET LL and DET LL2" or "DET UL and DET UL2", the DET is repeated.
	Multi-Point Optimizer	Samples the flows at Target Test Press (P1) and other multiple pressure points within the allowable range to optimize the flow when the test pressure is off target.	Optional Feature	External Exhaust Valve (Exhaust valve unit is sold separately) Bypass circuit ready (Bypass circuit unit is sold separately.)

■ Specifications

Pressure Media	Air	Port Size	Pressure source / Pilot pressure source Rc 1/4 (Laminar Flow Model 100L only: Rc 3/8) WORK Port 200 mL/min or less: Rc 1/4 500 mL/min or more: Rc 1/2	
Accuracy	■ Laminar Flow Sensor ±1.5% of F.S. ±1 digit (Specified pressure)	RS-232	Front panel port	T, IL, ML, D and P fixed length outputs, F2
	■ Mass Flow Sensor ±1.5% of F.S. ±1 digit (Specified pressure) ±3.0% of F.S. ±1 digit (Other than the specified test pressure)		Rear panel port	T, IL, ML, D and P fixed length outputs, F2
Specified Test Pressure Range	Micro (L01): 1 to 10 kPa (without Regulator) Micro low (L03): 10 to 30 kPa (Mass Flow only) Micro low (L05): 10 to 50 kPa (Laminar Flow only) Low (L): 15 to 80 kPa Medium (M): 30 to 700 kPa Vacuum (V): -10 to -70 kPa (Laminar Flow 20L or less)		Save Data	Flow, Pressure, Comp value, Air temp, Flow limits, Atm press, and others
			CSV Copy to USB	csv file
Number of Channels	32 channels (#0 to #31)	USB Port	Parameter Backup System Backup Software update Copy Operation Manual (PDF)	
Power Source	100 to 240 VAC±10%, 50/60 Hz, 60 VA max (Use the enclosed power cord at 125 VAC or less)	Flow Unit	L/min, mL/min, L/s, mL/s, L/h, m³/h, mm³/s, USP (User Span)	
Timer Setting	Up to 999.9 s (Resolution: 0.1 s)	Pressure Unit	kPa, MPa, (psi, kg/cm², bar, mbar, mmHg, cmHg, inHg, mmH₂O) The units in () are not available for SI unit models.	
Pressure Source	Clean air The source pressure must be sufficiently higher than the test pressure.	Standard Accessories	Quick mounting brackets, Interface connectors, Power cord (3 m), Inspection record, Operation Manual	
Operating Temperature	5 to 45°C	Weight	Approx. 15 kg	
Humidity	80 % RH or less / no dew condensation			

■ External Appearance



■ Peripheral Equipment

External Exhaust Valve Unit



Prevents contamination when testing parts having water, oil or other foreign matter on them.

External Bypass Circuit Unit



Reduces test time for low pressure/large-volume parts.

Remote Control Box



Externally controls START, STOP and CHG Hold.

Model

AF-R221 (A . B . C . D E F) (G , H , I)

A Flow Sensor

Sensor	Mass Flow Sensor	Laminar Flow Sensor
Code	F3	F4

B Flow Sensor Range

Sensor	Code													
Mass Flow Sensor	500ML	2L	5L	20L	50L	100L								
Laminar Flow Sensor	10ML	20ML	50ML	100ML	200ML	500ML	1L	2L	5L	10L	20L	30L	50L	100L

C Pressure Range

Pressure	Micro	Micro low	Micro low	Low		Medium	Vacuum
Pressure range	1 to 10 kPa	10 to 30 kPa	10 to 50 kPa	30 to 80 kPa	15 to 80 kPa	30 to 700 kPa	-10 to -70 kPa
Code	L01	L03 Mass Flow only	L05 Laminar Flow only	L Mass Flow only	L Laminar Flow only	M	V

D Pneumatic Circuit

	Built-in Bypass Circuit	Built-in Exhaust Valve	Dual pressure ready(Bypass circuit unit is sold separately.)	Secondary Flow Measurement
Function	Effective for large-volume parts. Pressurizes the tested part during CHG.	Exhaust Valve is built in the tester. Prevents testers from oils and dusts.	Reduces pressurization time by applying a pressure higher than the test pressure for a predetermined period of time (or to a target pressure) during CHG.	The flow coming out of the tested part is measured and judged.
Code	B1	G1	F	C

E Units

Units	SI units (Mandatory for Japanese customers)	All units (Only for overseas customers)	UL certification (Only for US customers, In preparation)
Code	UX1	UX2	UX3

F Option

Code	Function	Code	Function
R1	EP Regulator connector for Dual pressure	J1	US specification (Port size in NPT)
CX	Automatic CAL Check	W	Stop Valve Monitoring
FR	Dual Range Calibration (Only for F4)	A	Filter Option
	L Range and U Range calibrations are available for 1L or higher ranges.	K	Atmospheric Pressure Sensor (For F4 only)
P	Speed Controller	D	FTP memory

G Flow Range H Test Pressure Range

Mass Flow

G Flow Range		H Test Pressure Range	
Code	Flow Range	Pressure	Vacuum
500ML	0 to 500 mL/min	10 to 700 kPa	-10 to -70 kPa
2L	0 to 2 L/min	10 to 700 kPa	-10 to -70 kPa
5L	0 to 5 L/min	10 to 700 kPa	-10 to -70 kPa
20L	0 to 20 L/min	10 to 700 kPa	-10 to -70 kPa
50L	0 to 50 L/min	10 to 700 kPa	—
100L	0 to 100 L/min	10 to 700 kPa	—

- Select a flow range from the table.
- Specify the test pressure within the applicable pressure range.
- Consult Cosmo if the test pressure exceeds the range.

I Conversion Temperature

Temperature	20 °C	0 °C
Code	S	N

Laminar Flow

G Flow Range		H Test Pressure Range	
Code	Flow Range	Pressure	Vacuum
10ML	0 to 10 mL/ min	10 to 700 kPa	-10 to -70 kPa
20ML	0 to 20 mL/ min	10 to 700 kPa	-10 to -70 kPa
50ML	0 to 50 mL/ min	10 to 700 kPa	-10 to -70 kPa
100ML	0 to 100 mL/ min	10 to 700 kPa	-10 to -70 kPa
200ML	0 to 200 mL/ min	10 to 700 kPa	-10 to -70 kPa
500ML	0 to 500 mL/ min	10 to 700 kPa	-10 to -70 kPa
1L	0 to 1 L/min	10 to 700 kPa	-10 to -70 kPa
2L	0 to 2 L/min	10 to 700 kPa	-10 to -70 kPa
5L	0 to 5 L/min	10 to 700 kPa	-10 to -70 kPa
10L	0 to 10 L/min	10 to 500 kPa	-10 to -70 kPa
20L	0 to 20 L/min	10 to 500 kPa	-10 to -70 kPa
30L	0 to 30 L/min	10 to 500 kPa	—
50L	0 to 50 L/min	10 to 350 kPa	—
100L	0 to 100 L/min	10 to 200 kPa	—

The contents in this Product Information are as of January 2022. The specifications are subject to change without prior notice.

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