PRODUCT INFORMATION

AIR FLOW TESTER

NEW

CE

AF-R220
AIR FLOW TESTER

Optimum for testing discharge flow and airtightness.
Flow sensor is selectable from Laminar Flow or 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 is selectable among English, Japanese, Chinese and Spanish
- Test results analysis is available.
- Test results can be easily stored in a USB Memory.
- Display of equivalent flow rate at 1 atm, 20 °C
  (When option K is selected, the actual atmospheric pressure is automatically measured for the calculation.)
- Flow Check (C-CHK) as standard feature
- Flow Optimizer. When test pressure fluctuates, the flow at the specified test pressure is displayed.

■ Application Examples

Engine assembly leak tests

Flow and leak tests for Auto parts

Gas equipment flow tests

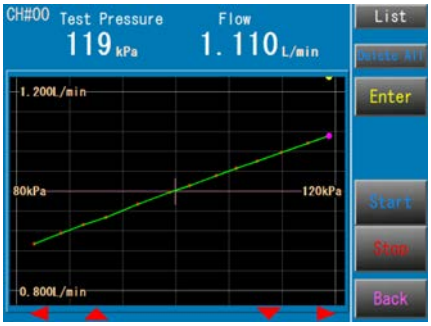
Main Menu

Measurement Screen (Waveform)

X-Chart/List and Statistics for Analysis

■ Flow Optimizer

Multi-Point Optimizer sampling screen



■ Language Menu

■ USB Port

- Test Data
- Waveform Data
- Parameter Backup/Restore
- System Backup/Restore
- Copy CVS to USB
- Tester version upgrade
- Copy Operation Manual

■ Flow sensor is selectable from Laminar Flow or Mass Flow .

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)
- ► Allows measurement of discharge flow rate of pulsative parts such as pumps
- ► Durable & robust with no moving part

Mass Flow Sensor

- ► Allows measurement with different/variable test pressure
- ► No temperature compensation required
- ► No atmospheric compensation required
- ► High response speed

■ Standard Features

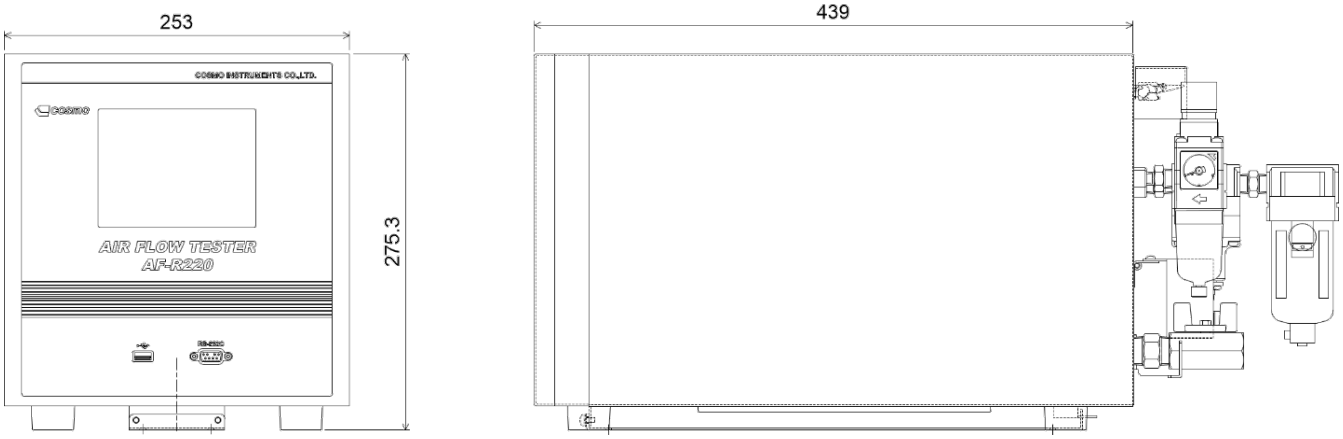
Display	Measurement screen is selectable from **6** different screens.		Data Acquisition	Up to 5000 data are stored. USB can be used for data storing.
Test Reliability	Sensor Protection	The pneumatic circuit is cleaned at the end of every flow test.	Data Analysis	Counter, Statistics, Waveform display
	Blow Check	After the flow test, the fill valve is opened to check there is flow.	User Span	Span value is either manually entered or automatically setup.
	C-CHK	The flow is compared with the value of Flow Master.	EXH Interference Prev	Exhaust timing will be controlled for the cases where multiple cavities are tested at the same time.
	F-CHK	The measured flow is compared with the value of Flow Master in every test. (Option: CX)	Digital Filter	Averages the readings for more stable readings with less variation.
Flow Optimizer	Formula Optimizer	Samples the flows at Target Test Press (P1) to displays the optimized flow.	Equivalent Flow Display	The flow rate when air is flown in an environment of 1 atm at 20 °C is displayed. When the atmospheric sensor (option) is used, this feature can be automatically used.
	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.	Flow Limits	Upper limits; UL2/UL, Lower limits: LL2/LL
	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.	DET Extension	When the flow is in the range between “S-DET LL and S-DET LL2” or “S-DET UL an S-DET UL2”, the DET is repeated.
			Optional Feature	External Exhaust Valve (Exhaust valve unit is sold separately)
				Bypass circuit ready (Bypass circuit unit is sold separately.)

■ Specifications

Pressure Media	Air
Accuracy	■ Laminar Flow Sensor ±1.5% of F.S. ±1 digit (Specified pressure)
	■ Mass Flow Sensor ±1.5% of F.S. ±1 digit (Specified pressure) ±3.0% of F.S. ±1 digit (Pressure not specified)
Specified Pressure Range	Micro (L01): 1 to 10 kPa (Regulator not enclosed) Micro low (L03): 10 to 30 kPa (Mass Flow only) Micro low (L05): 10 to 50 (Laminar Flow only) Low (L): 30 to 80 kPa Medium (M): 30 to 700 kPa Vacuum (V): -10 to -70 kPa (Laminar Flow 20L or less)
Number of Channels	32 channels (#0 to #31)
Power Source	100 to 240 VAC±10%, 50/60 Hz,60 VA max (Use the enclosed power cord at 125 VAC or less)
Timer Setting	Up to 999.9 s (Resolution: 0.1 s)
Pressure Source	Clean air The source pressure must be sufficiently higher than the test pressure.
Operating Temperature	5 to 45 °C
Humidity	80 % RH or less / no dew condensation
Weight	Approx. 15 kg

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	
CPU	ARM9 400 MHz, DRAM 128 MB	
RS-232	Front panel port	Fixed-length output: T, IL, ML, D, P
	Rear panel port	Fixed-length output: T, IL, ML, D, P
	Test data	Flow, Pressure, Comp value, Air temp, Flow limits, Atm press, and others
	CSV Copy to USB	csv file
USB Port	Parameter Backup System Backup Software update Copy Operation Manual (PDF)	
Flow Unit	L/min, mL/min, L/s, mL/s, L/h, m^3/h, USP (User Span)	
Pressure Unit	kPa, MPa, (psi, kg/cm^2, bar, mbar, mmHg, cmHg, inHg, mmH_2O) The units in ( ) are not available for SI unit restriction models.	
Standard Accessories	Quick mounting brackets, Interface connectors, Power cord (3 m), Inspection record, Operation Manual	

■ External Appearance



■ Peripheral Equipments

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 when testing parts with a large internal volume at low test pressure.

Remote Control Box

Externally controls START, STOP and CHG Hold.

■ Model

AF-R220 F4 1L M - BG W CX ••• (☐ L, ☐ KP, S)

A B C D E F G

A Flow Sensor

Mass Flow Sensor	Laminar Flow Sensor
F3	**F4**

B Flow Sensor Range

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 Test Pressure Range

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

* Regulator is not enclosed for L01.

D Option

B1	Built-in Bypass Circuit	Effective for large-volume parts Pressurizes the tested part during CHG stage.	**FR**	Dual Range Calibration (Only for F4)	L Range and U Range calibrations are available for 1L or higher ranges.
G1	Built-in Exhaust Valve	Exhaust Valve is set in the tester. Prevents testers from oils and dusts	**W**	Stop Valve Monitoring	Checks open/close of stop valve
F	Dual Pressure (Bypass circuit unit is sold separately.)	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.	**A**	Filter Option	Filter with Auto-drain
C	Secondary Flow Measurement	The flow coming out of the tested part is measured and judged.	**K**	Atmospheric Pressure Sensor (For F4 only)	The atmospheric pressure is automatically captured with a high performance atmospheric pressure sensor and compensated.
R1	Dual pressure EP Regulator connector	Specify this option when EP Regulator is selected in option F.	**PX2**	Battery Option	Rechargeable Battery. The rechargeable battery does not conform to the CE.
CX	Automatic CAL Check	Automatically checks sensitivity with flow master			

E Flow range F Test pressure

Mass flow

E Flow range		F 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 the range from the lists above.
- Specify the test pressure within each pressure range.
- Consult Cosmo for unspecified ranges

Laminar Flow

E Flow range		F 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 700 kPa**	**-10 to -70 kPa**
20L	0 to 20 L/min	**10 to 700 kPa**	**-10 to -70 kPa**
30L	0 to 30 L/min	**10 to 700 kPa**	---
50L	0 to 50 L/min	**10 to 500 kPa**	---
100L	0 to 100 L/min	**10 to 500 kPa**	---

G Conversion temperature

20 °C	0 °C
S	**N**

The contents in this product information are as of Sep 2016. The specifications are subject to change without prior notice.

Cosmo Instruments Co., Ltd.

http://www.cosmo-k.co.jp

2974-23 Ishikawa, Hachioji, Tokyo 192-0032 Japan

Phone: +81-(0)42-642-1357 Fax: +81-(0)42-646-2439

China:	Cosmo (Shanghai) Trading Co., Ltd.	+86-(0)21-6575-6880
	Shanghai, Tianjin, Guangzhou, Chongqing, Changchun, and Wuhan	
Korea:	Cosmo Korea Co., Ltd.	+82-(0)32-623-6961
Taiwan:	Diafriend Corporation	+886-(0)2-27121050
Malaysia:	Wave Electronics & Electrical System Sdn. Bhd.	+60-(0)3-51626677
Thailand:	Cosmowave Technology Co., Ltd.	+66-(0)2-7361667
Indonesia:	Pt. Cosmowave	+62-(0)21-42900043
Vietnam:	Cosmowave Technology Co.,Ltd. Vietnam Representative Office	+84-(0)47876085

India:	Cosmo Instruments India Pvt. Ltd. Head Office	+91-(0)124-421-0946
	Cosmo Instruments India Pvt. Ltd. South Zone Regional Office	+91-(0)9663384423
	Cosmo Instruments India Pvt. Ltd. Pune - Chakan Office	+91-(0)20-6933-2345
Germany:	Cosmo EU Solutions Technology GmbH	+49-(0)212-383671-71
UK:	Fletcher-Moorland Ltd.	+44-(0)1782-411021
USA:	Cosmo Solutions Technology, Inc.	+1-248-488-2580
Mexico:	Cosmo De Mexico	+52 472 748 62 94
Brazil:	Tex Equipamentos Eletronicos Ind. Com. Ltda.	+55-(0)11-4591-2825
Australia:	Industrial Research Technology Pty. Ltd.	+61-(0)412-176-674