



J&W Model ADM1000 Intelligent Flowmeter

Operating Instructions



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Packing List

Thank you for choosing J&W Scientific's ADM1000 Intelligent Flowmeter. When unpacking the box, please make sure it contains the following:

1 ADM1000 Intelligent Flowmeter

(battery included)

1 Instruction Manual

Principle of Operation

The ADM1000 provides continuous, real time measurements of all **NON-CORROSIVE AND NON-FLAMMABLE GAS FLOWS** . Unlike bubble flowmeters, the ADM1000 operates without liquids, bubbles or glass parts.

When activated, a solenoid actuated valve interrupts the gas flow momentarily. The gas flow moves a diaphragm in proportion to the flow rate. This movement is transformed by the microprocessor into a digital value which is displayed instantly.

Adjusting the Viewing Angle

The flip down wire stand will give you a better viewing angle when the ADM1000 is placed above bench level. Simply pull the stand down until it is in the locked position.

Taking a Flow Measurement

Make sure that the flow to be measured is within the range of the flowmeter. Over ranging the flowmeter can damage the transducer. Briefly press the on/split button. The display will flash the message **WARMUP**. During this time, the microprocessor will run a self-diagnostic to ensure the system is functioning correctly. **Always turn the flowmeter on before connecting to a flow source.**

Connect the flexible tubing to the gas source to be measured, wait for the reading to stabilize (1 - 2 seconds) and record the reading.

Note: Low flows (less than 1 mL/min) may take up to 5 seconds for the reading to stabilize.

Important

When compared with readings from the ADM1000, measurements taken with bubble-type flowmeters may show a difference. This is not a problem with your new ADM1000.

As a consequence of the ideal gas law, measurements made with both soap bubble meters and the ADM1000 are temperature sensitive. However, bubble-type flowmeters add water vapor to the gas being measured which introduces error into the flow rate measurement.

Even when accurately calibrated, soap bubble meters typically read slightly higher than the Intelligent Flowmeter. The higher readings arise from relatively high concentrations of water vapor present in the soap bubble apparatus. At room temperature, water vapor can raise readings by nearly 4%. This unfortunate property is amplified by the effect of temperature. As the measured gas or the flowmeter itself is warmed, the amount of water vapor increases, and the reading can be much higher than the true flow rate. Figure 1 shows the effect of water vapor on volumetric flow measurements. Since the Intelligent Flowmeter is BUBBLE-FREE, this error is not introduced into the flow rate measurement.

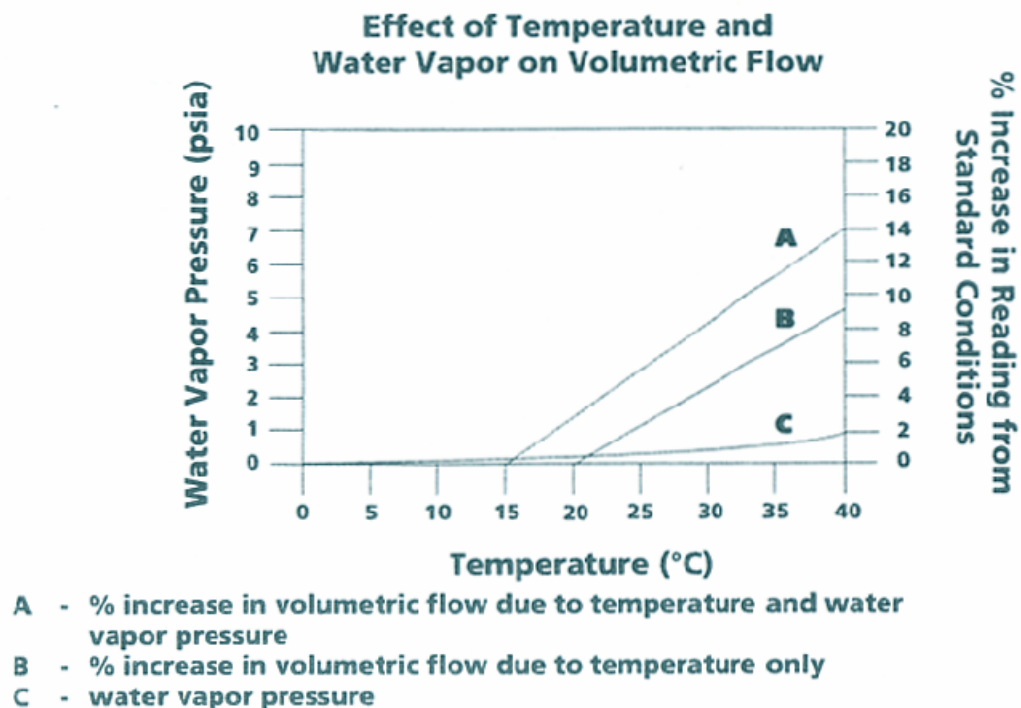


Figure 1. Effect of temperature and water vapor on volumetric flow.

Autoranging Display

The microprocessor automatically adjusts the resolution of the display in response to various gas flow ranges as follows:

<u>Flow (mL/min)</u>	<u>Resolution (mL/min)</u>
0.10 - 9.99	.01
10.0 - 99.9	0.1
100 - 1000	1.0

Auto/Manual Power Off

Every time the unit is activated, a "power-off" cycle begins, lasting 10 minutes. If the flowmeter is not used during this time, the unit will turn off. To conserve battery power, turn off the instrument manually by pressing and holding the on/split button until the sign off message appears.

Low Battery Indicator

When the **LOWBAT** symbol is displayed, replace the battery. (We recommend a standard 9V alkaline battery.) Install it by removing the battery cover on the back of the case. Change the battery and replace the cover.

Reading & Setting a Split Ratio

Turn the unit on by briefly pressing the on/split button. Connect the flexible tubing from the Intelligent Flowmeter to the GC column gas flow*. When the reading stabilizes (1-2 seconds), briefly press the on/split button. (*Note: The display will show an error message if the flow being measured is less than 0.5 mL/min.*)

** Accurate column flow rates can only be determined when detector gases have been turned off.*

The reading is now stored in memory, and the display will read **1:1**. Disconnect the flexible tubing from the GC column flow and connect it to the split vent. The display will now read the ratio directly. The exact ratio can be dialed in by simply adjusting the flow of the split vent until the required ratio is displayed.

2.00 mL

1.00:1

50.0:1

Typical display sequence for setting a 50.0:1 split ratio with a 2 mL/min column flow.

Returning to Single Flow

To return to single flow operation, briefly press the on/split button.

Recalibration Service

To have your ADM1000 recalibrated, order part number **SERVICE**.

Replacing Flexible Tubing

When replacing the flexible tubing please order P/N 701-0016. This is available by the foot, a minimum of two feet is necessary. If tubing other than this is used please cut to 18" (+/- 2") in length. **Important:** If flows to be measured are less than 200 mL/min and a greater length of tubing is desired (greater than 18") please order tubing extension kit P/N 220-1179.

If tubing greater in length than 18" is used *without* this kit errors in the displayed flow value may occur with flows under 200 mL/min.

Product Specifications

- Flow range: 0.1 to 1000 mL/min, autoranging
- Accuracy $\pm 3\%$ of reading
- Tubing temperature range: -62°C to 110°C
- Operating temperature range: 0°C to 45°C
- Power: 9V battery (alkaline)
- Display: 16 character alphanumeric
- Automatic power off
- Split ratio mode with continuous split flow rate reading
- NIST traceability
- Compatible with non-corrosive and non-flammable gases
- Self-checking power on sequence
- Each flowmeter individually computer calibrated.

Technical Support

J&W's Technical Support Chemists can help solve problems, answer questions and assist with new methods. This valuable service is provided to J&W customers without charge. Calls for technical support go directly to our chemists, getting you the help you need fast.

For Technical Support:

Call 1-800-552-0413 Call 916-351-0387

Call 916-985-7888 Fax 916-985-1101

Monday through Friday,

7:00 a.m. - 5:00 p.m., Pacific Standard Time

Warranty

J&W Scientific warrants to the purchaser only that all J&W products will be free from defects in materials and workmanship for ninety (90) days from the date of invoice. Claims must be authorized and a return authorization number issued before a product can be returned.

Under the above warranty, J&W will, at its option, either repair or replace a nonconforming or defective product or return to purchaser the purchase price. J&W shall have no obligation hereunder if the product has been misused, carelessly handled, defaced, modified or altered.

The above warranty is the only warranty authorized by J&W. J&W shall in no event be responsible for any loss of business or profits, downtime or delay, labor, repair, or material costs, injury to person or property or any similar or dissimilar incidental or consequential loss or damage incurred by purchaser, even if J&W has been advised of the possibility of such losses or damages.

Inasmuch as J&W does not undertake to evaluate the suitability of any J&W product for any particular application, the purchaser is expected to understand the operational characteristics of the product, as suggested in documentation supplied by J&W, and to assess the suitability of J&W products for this application.

This warranty is in lieu of all other warranties, expressed or implied, including warranties on merchantability and fitness for any particular purpose. To the extent that any provision of this warranty is prohibited by any applicable law which cannot be preempted, that portion of this warranty shall not be applicable to subject transaction.



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