

FLUKE®

923

Air Velocity Meter

Users Manual

PN 4024518

September 2011

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Table of Contents

Title	Page
Introduction	1
Safety Information	2
Symbols	2
Features	3
Product Use	3
The Display	6
Buttons	8
Auto Power Off	9
Velocity Probe	9
IR and RF Communication	12
Air Velocity and Flow	12
Measure Velocity	12
Measure Flow	13
Samples	14
Measurement Units	14
Velocity Alarm	16
Clear All	16
Recall	17
Calculate Average	17
Maintenance	17
Clean the Product	18
Change the Batteries	18
How to Contact Fluke	21
Specifications	22

Electrical Specifications	22
Mechanical Specifications	23
Environmental Specifications.....	23
Safety Compliance.....	24
Miscellaneous Specifications.....	24

Introduction

The 923 Air Velocity Meter (the Product) is a handheld, indoor-air quality diagnostic instrument. It uses a probe that can be used while attached to the Product or in wireless mode away from the Product base.

The Product measures, calculates, and displays:

- Air temperature measured in Celsius (°C) or Fahrenheit (°F).
- Air velocity (actual) measured in m/s or fpm.
- Flow rate displayed in l/s, cfm or m³/hr.
- Average indications for temperature, velocity, and flow.

Safety Information

⚠️⚠️ Warnings






To prevent possible electrical shock, fire, or personal injury:

- Use the Product only as specified, or the protection supplied by the Product can be compromised.
- Do not use the Product around explosive gas, vapor, or in damp or wet environments.

Symbols

Symbols used in this manual and on the Product are shown in Table 1.

Table 1. Symbols

Symbol	Meaning
	Risk of danger. Important information. Refer to manual.
	Conforms to relevant European Union directives
	Do not dispose of this product as unsorted municipal waste. Go to Fluke's website for recycling information.
	Battery
	Wireless mode is active.

Features

The Product features:

- A wireless telescopic probe
- LED backlight
- Auto power off
- Low-battery indicator
- Velocity alarm
- US and Metric measurement options
- Single-point and continuous data log options
- Probe sensor cover
- Protective case

Product Use

The subsequent sections tell you how to use the Product. Figure 1 and Table 2 show the buttons, indicators, and sensors on the Product.

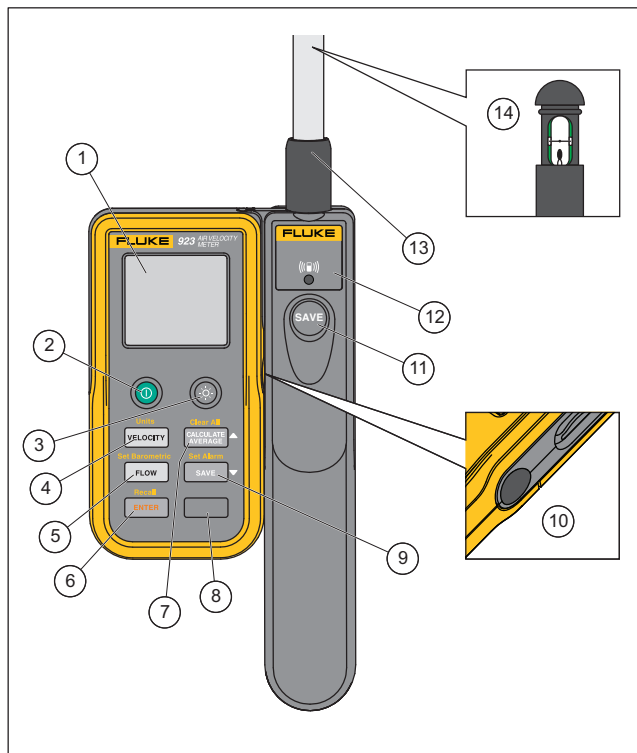


Figure 1. The Product

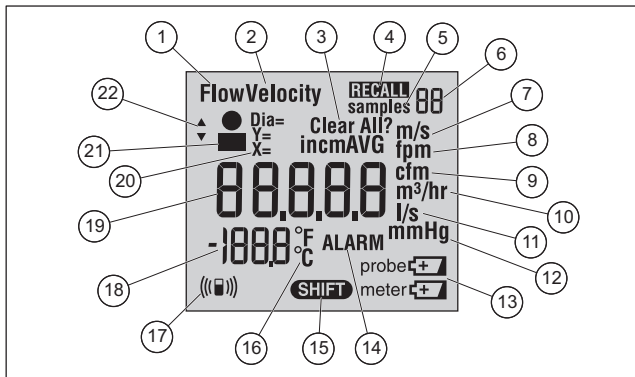
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Table 2. The Product

Item	Description	Item	Description
①	Display (LCD)	⑧	Shift button
②	Power button	⑨	Save button. Push Shift to set air velocity alarm.
③	Backlight button	⑩	IR Sensor
④	Velocity button. Push Shift to set Units.	⑪	Save button
⑤	Flow button. Push Shift to enter barometric pressure.	⑫	Wireless indicator. Flashes in wireless mode.
⑥	Enter button. Push Shift to recall saved records.	⑬	Telescopic probe
⑦	Calculate Average button. Push Shift to clear all saved samples.	⑭	Velocity sensor

The Display

Figure 2 and Table 3 show the display.



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Figure 2. Display

Table 3. Display

Item	Description	Item	Description
①	Flow indicator	⑫	Millimeters of Mercury indicator
②	Velocity indicator	⑬	Low battery indicators for the Probe and the Product body
③	Clear All? indicator	⑭	Velocity alarm indicator
④	Recall indicator	⑮	Shift indicator
⑤	Samples indicator	⑯	Fahrenheit and Celsius indicators
⑥	Number of samples indicator	⑰	Wireless indicator
⑦	Meters per second indicator	⑱	Temperature display
⑧	Feet per minute indicator	⑲	Primary display
⑨	Cubic feet per minute indicator	⑳	Duct diameter, X and Y size indicators
⑩	Cubic meters per hour indicator	㉑	Duct-type indicators
⑪	Liters per second indicator	㉒	Up and down indicators

Buttons

Table 4 explains the Product buttons.

Table 4. Buttons













Button	Function
	Power- Push to turn the Product on or off.
	Backlight- Push to turn the backlight on or off.
Units 	Velocity- Push to see velocity and temperature. When used with <input type="text"/> you can set measurement units.
Clear All 	Calculate Average- Push to see the average value of recorded data. When used with <input type="text"/> you can delete all recorded data. Also used for ▲.
Set Barometric 	Flow- Push to enter duct parameters and flow. When used with <input type="text"/> and ▲ and ▼ you can enter barometric pressure.
Set Alarm 	Save- Push to record measurement data. Push <input type="text"/> to set the velocity alarm. Also used for ▼.



Table 4. Buttons (cont.)

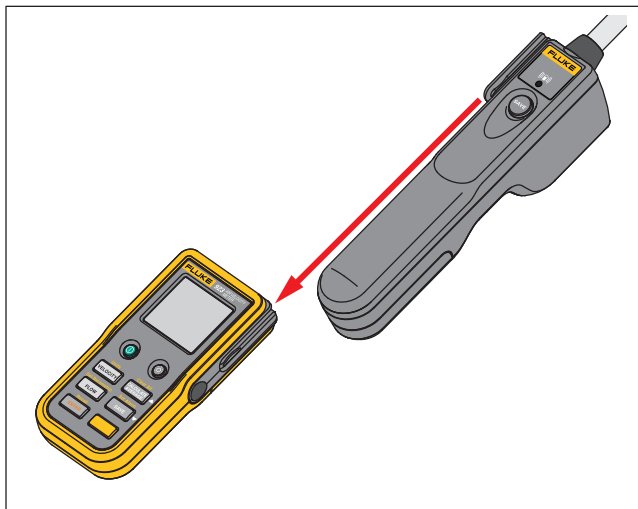
Button	Function
Recall 	Enter- Push when you set the measurement or function parameters to keep the value. When used with  and ▲ and ▼, you can recall recorded data.
	Shift- The Products secondary functions operate with  . Secondary functions are shown above the buttons.
	Save- (Located on the Probe). Push to record a current probe measurement.

Auto Power Off

To conserve battery power, the Product turns off after 15 minutes of non-use. Push  to turn the Product on.

Velocity Probe

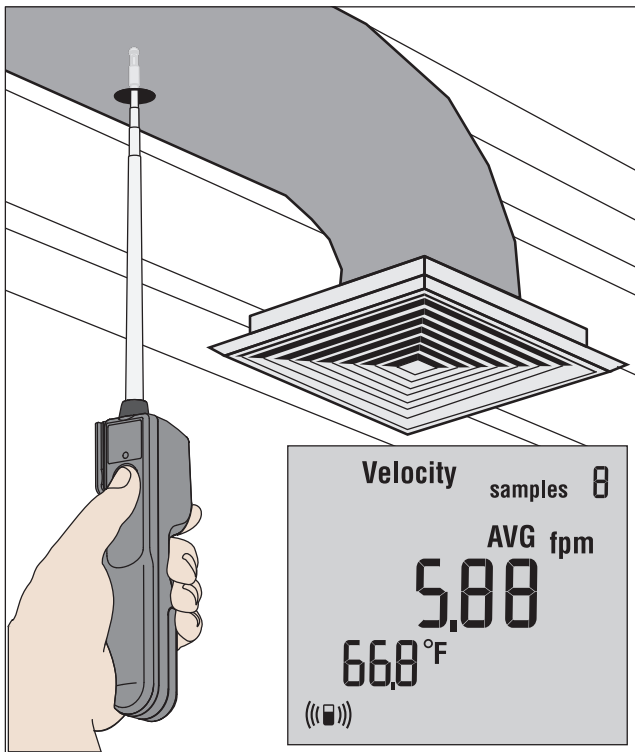
The Velocity Probe measures air velocity and temperature. When the Product is turned on, the wireless indicator light on the Probe lights (). If the indicator does not come on, make sure the Probe battery is charged or replace it if necessary. When the Probe is removed from the Product base, the wireless indicator light will flash and () shows on the display. To remove the Probe from the base, see Figure 3.



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Figure 3. Detach the Probe


Use the Probe while it is attached to the Product base, as shown in Figure 1 or use it in wireless mode away from the base, as shown in Figure 4.



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Figure 4. Velocity Probe Use

IR and RF Communication

When the Probe is connected the Product base, the two communicate with infrared (IR) sensors. When the Probe is used away from the base in wireless mode, the Probe uses radio frequency (RF) to communicate with the base. If unable to communicate in RF mode, turn the Product off, connect the Probe to the base, and push  to turn the Product on.

Air Velocity and Flow






The Product measures actual air velocity and volume flow rate to find the overall velocity indication.

Measure Velocity

Note

To measure velocity, a barometric pressure reading is necessary. The barometric pressure on the Product defaults to sea level but can be adjusted. If you use the default but are not at sea level, you will still get a velocity reading, but there may be a slight error due to the incorrect barometric pressure.

To measure velocity, first enter the barometric pressure:

1. Push  and  to access the **Set Barometric** function.
2. Push  and  to record the barometric pressure.
3. Push .

To measure velocity:

1. Push **VELOCITY**.
2. Put the probe sensor perpendicular (90 °) to the air stream that you will measure. Make sure that the sensor cover is pulled back to show the sensor.
3. Push **SAVE** on the Product base, or **SAVE** on the Probe to capture the velocity reading.

Note

*The **Samples** indicator on the display increases.*

Measure Flow

To measure flow:

1. The type and dimensions of the air duct are necessary for the measurement. To record this data:
 - a. Push **FLOW**.
 - b. Push **▲** and **▼** to select the air duct type: **●** or **■**.
 - c. Push **ENTER**.
 - d. Push **▲** and **▼** to record the duct measurements.
If the duct is circular:
 1. Record the diameter (**Dia**).
 2. Push **ENTER**.
If the duct is rectangular:
 1. Record the width (**X**) and push **ENTER**.
 2. Record the height (**Y**) and push **ENTER**.

2. Put the Probe sensor perpendicular to the air stream that you will measure. Make sure that the sensor cover is pulled back to show the sensor.
3. Push **SAVE** on the Product base, or **SAVE** on the Probe to record the flow indication.

Note

*The **Samples** indicator on the display increases.*

Samples

The Product can record 99 samples of velocity and 99 samples of flow measurement data, 198 samples total.

To see the recorded samples:

1. Push .
2. Push **ENTER** to access the **Recall** function.
3. Push ▲ to move forward and ▼ to move backward through the samples.

All data for the recorded samples is shown.

Measurement Units

The Product shows measurements in different measurement units. To choose which units are shown:

1. Push .
2. Push **VELOCITY** to access the **Units** function.

The first **Flow** units screen shows. To change the measurement units for the duct size to centimetres (**cm**) or inches (**in**):

1. Push ▲ and ▼ to choose between **cm** and **in**.
2. Push **ENTER** to save the choice.

The second **Flow** units screen shows. To change between cubic feet per minute (**cfm**), litres per second (**l/s**), and cubic meters per hour (**m3/hr**):

1. Push ▲ and ▼ to choose the necessary measurement unit.
2. Push **ENTER** to record the selection.

The **Velocity** units screen shows. To change between feet per minute (**fpm**) or meters per second (**m/s**):

1. Push ▲ and ▼ to choose the necessary measurement unit.
2. Push **ENTER** to record the choice.

The temperature units screen shows. To select between degrees Fahrenheit (°F) and degrees Celsius (°C):

1. Push ▲ and ▼ to choose the necessary measurement unit.
2. Push **ENTER** to record the choice.

The Product changes to velocity mode. To exit from the measurement units menu, push **VELOCITY**. All preferences to that point are kept. The preferences are also kept if the Product turns off.

Velocity Alarm

The velocity alarm starts if the measurement is above the alarm user preset. When the alarm goes off, the Product base vibrates and beeps one time per second. The alarm can also be turned off.

To set the velocity alarm:

1. Push .
2. Push to access the **Set Alarm** function.
3. Push to turn the alarm on or off.
4. Push .
5. If the alarm is turned on, push ▲ and ▼ to increase or decrease the alarm setting.
6. Once the correct setting shows, push .

ALARM shows on the display if the alarm is active when in velocity mode. The alarm position is kept and stays active until the alarm is stopped. If the Product is turned off the alarm adjustments are kept.

Clear All

To clear all stored readings:

1. Push .
2. Push (**Clear All**). The Product asks "**Clear All?**".
3. Push . Notice that the **Samples** indicator changes to **0**.

The stored readings have been cleared.

Recall

To recall a sample:

1. Push .
2. Push (**Recall**). **RECALL** shows on the display. The sample number also shows on the display.
3. To move through the samples, push ▲ and ▼. The data for each sample is shown on the display.

Calculate Average

To calculate the average from the samples that have been stored push . "**AVG**" shows on the display and the average of the stored readings is computed and shown.

Maintenance

Warning

For safe operation and maintenance of the Product:

- **Replace the batteries when the low battery indicator shows to prevent incorrect measurements.**

Caution

To prevent damage to the Product:

- **Remove batteries to prevent battery leakage and damage to the Product if it is not used for an extended period.**
- **Be sure that the battery polarity is correct to prevent battery leakage.**

How to Clean the Product

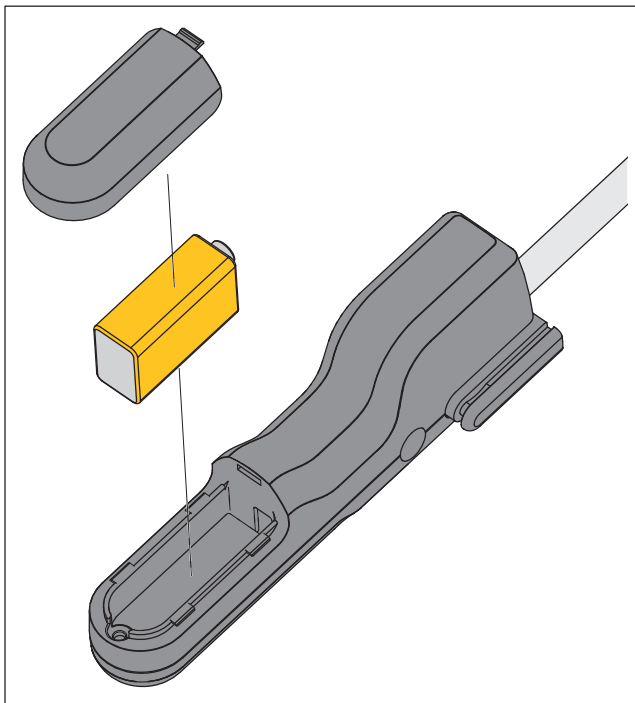
Regularly wipe the case and holster with a damp cloth and mild detergent.

 **Caution**

To prevent damage to the Product, do not use abrasives or solvents to clean the Product case.

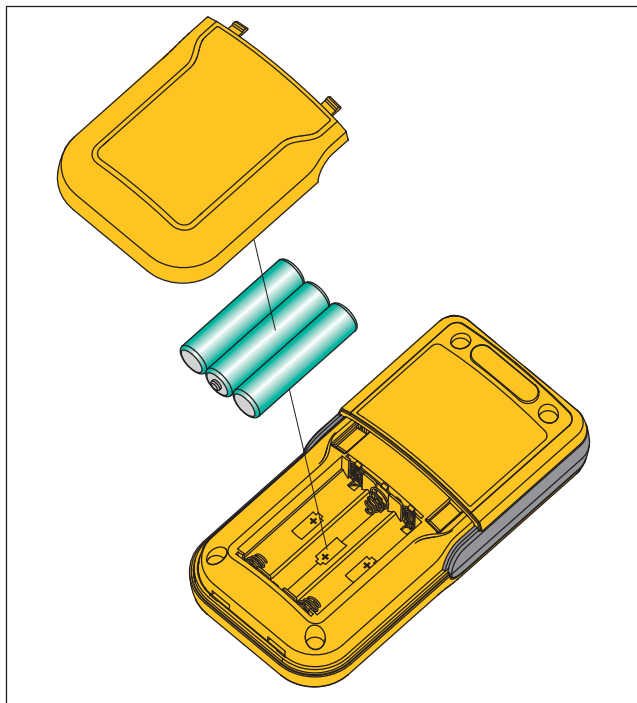
How to Change the Batteries

The Product modules are energized by batteries. The Probe uses a 9-Volt battery and the Product base uses three AAA batteries. See Figures 5 and 6.



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Figure 5. Probe Battery Replacement



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Figure 6. Base Battery Replacement

How to Contact Fluke

To contact Fluke, call one of the following telephone numbers:

- Technical Support USA: 1-800-44-FLUKE (1-800-443-5853)
- Calibration/Repair USA: 1-888-99-FLUKE (1-888-993-5853)
- Canada: 1-800-36-FLUKE (1-800-363-5853)
- Europe: +31 402-675-200
- Japan: +81-3-6714-3114
- Singapore: +65-738-5655
- Anywhere in the world: +1-425-446-5500

Or, visit Fluke's website at www.fluke.com.

To register your product, visit <http://register.fluke.com>.

To view, print, or download the latest manual supplement, visit <http://us.fluke.com/usen/support/manuals>.

Specifications

Electrical Specifications

Air Velocity (standard)	Range	0.20 m/s to 20.00 m/s, 40 fpm to 3940 fpm
	Resolution	0.01 m/s, 1 fpm
	Accuracy (m/s)	5 % + 3 digit of reading or 1 % + 1 digit full scale
	Accuracy (fpm)	5 % + 6 digit of reading or 1 % + 1 digit full scale
Air Flow	Range	0 to 99999 m ³ /hr, cfm, liter/sec
	Resolution	0.001 to 100
	Accuracy	Function of velocity and duct size
Temperature	Range	-20 °C to 60 °C -4 °F to 140 °F
	Resolution	0.1 °C, 0.1 °F
	Accuracy (°C)	0.5 °C from 0 °C to 45 °C 1.0 °C from -20 °C to 0 °C and 45 °C to 60 °C
	Accuracy (°F)	1.0 °F from 32 °F to 113 °F 2.0 °F from -4 °F to 32 °F and 113 °F to 140 °F

Mechanical Specifications

Size (H X W X L)	(5.3 x 8.9 x 43.2) cm (2.1 x 3.5 x 17) in
Weight	.385 kg (.85 lb)

Environmental Specifications

Operating Temperature	0 °C to +50 °C
Storage Temperature	-20 °C to +60 °C
Operating Humidity	Non condensing (<10 °C) 90 % RH (10 °C to 30 °C) 75 % RH (30 °C to 40 °C) 45 % RH (40 °C to 50 °C) (Without Condensation)
Operating Altitude	2,000 meters
Storage Altitude	12,000 meters
Vibration Requirements	MIL-T-28800F, Class 2
Drop Test Requirements	1 meter
Temperature Coefficients	Add 0.1 x specified accuracy for each °C >28 °C or <18 °C

Safety Compliance

Design Standards and Compliance	IEC/EN 61326-1 IEC/EN 61010-1, Pollution Degree 2
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Miscellaneous Specifications

Power Requirements	(3) AAA NEDA 24A IEC LR03 base, (1) 9 V NEDA 1604 IEC 6LR61 probe
Auto Power Off	15 minutes