

# Variable Speed Zebra™



by Zebra Instruments



## Uses Simple-to-Operate Microprocessor Controlled Tests to:

- Accurately diagnose exactly which component has failed in a Variable Speed System that isn't working correctly
- Assist in System Setup by reporting CFM airflow and motor RPM as room vents and other controls are adjusted
- Allow easy adjustment of all available settings and options on ECM (Variable Speed) Blower Motors to obtain maximum customer comfort

More Features and Explanations on Back

Zebra Instruments

888-HI-ZEBRA (888-449-3272)

sales@ZebraInstruments.com

www.ZebraInstruments.com

# Take This Quiz -

**Q** • What is the **Number One Problem** found in defective ECM Motors?

- A • Shorted Windings
- B • Seized Shaft Bearings
- C • Open Windings
- D • “Blown” Electronics Module

**A** • Sadly, the answer is: none of the above. G.E. (who makes the vast majority of these type motors) reports that **over 41%** of all motors returned actually have **no problem found**. Sombody (your company - or your customer) bought a very expensive motor needlessly.

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**Q** • What tools can I use to correctly diagnose problems in an ECM System?

- A • True RMS AC Voltmeter/Wattmeter
- B • Ohmmeter/Continuity Tester
- C • Dedicated ‘Motor Test Box’ from manufacturer
- D • Sledge Hammer

**A** • Another disappointing answer. Most of the Techs who returned all those “no problem found” motors already owned the first three tools (maybe the fourth!) - and still missed the problem. With **as many as 21 wires** going to these motors, the days of Common-High-Medium-Low are starting to disappear. With **over 10 million** of these systems in use, chances are that you will run into one with a problem *sooner* than *later*.

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The best tool to diagnose what’s going on in an ECM System is an in-line diagnostic tool. The Variable Speed Zebra is exactly that: a tool that connects *between* the air handler’s circuit boards and the motor. It operates *in-line* with the system, in *real time*, testing *both major sections* (motor and control boards) simultaneously. It monitors the signals going out of the circuit boards, displays them for you and then either (a) passes them along to the motor, or (b) allows you to interrupt the signals and control all the functions of the motor directly.

The Variable Speed Zebra also displays the motor’s **CFM airflow**, the **motor’s RPM**, and the control voltages being sent to the motor’s electronics module. The outputs of the four System Taps are graphically displayed with 3-color LEDs to show the condition of the Delay Profile, Adjust Profile, and the Cooling and Heating Profiles.

If the problem is determined to actually be in the motor, a special “Winding Test” circuit analyzes the motor for opens, shorts, insulation problems, magnet strength, and frame shorts; advising you if the motor itself needs replacement, or if the much-less-expensive electronics module is at fault.

With only 4 switches, the Variable Speed Zebra is simple to operate; but don’t let the simplicity fool you. At its heart is a Microprocessor Controller that takes the guesswork out of what is wrong when you are called to repair a malfunctioning Variable Speed System. The Variable Speed Zebra is housed in a rugged carry case to protect it and its harnesses. **Two DVD’s are included** to teach ECM Theory and ECM Troubleshooting; a printed manual is also included. The Variable Speed Zebra is covered by a manufacturer’s One-Year Warranty.

**Made in the U.S.A. by:**

**Zebra Instruments**

[www.ZebraInstruments.com](http://www.ZebraInstruments.com)  
[sales@ZebraInstruments.com](mailto:sales@ZebraInstruments.com)

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