



# Universal Zebra<sup>TM</sup>

Basic ECM Motor Testing and  
Troubleshooting for HVAC/R

**“Mini-Manual”**



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## *Specifications*

|                             |                           |
|-----------------------------|---------------------------|
| Maximum Input Voltage ..... | 29 Volts AC               |
| Unit Size .....             | 6.5"L x 4.5"W x 2.25"H    |
| Unit Weight .....           | 13 oz                     |
| Warranty .....              | One-Year Limited Warranty |

## *Safety Information*

We, at Zebra Instruments, value the time of HVAC/R technicians, and know reading a thick manual for each of their tools is not ideal. We have provided this “Mini-Manual” for quick-reference; therefore, it is NOT a comprehensive training or complete tutorial on how to use the Universal Zebra System.

We urge all technicians to visit our website at **UniversalZebra.com** before use to watch short training videos on the following:

- Universal Zebra tool
- All Universal Zebra adapters
- All Universal Zebra power harnesses
- EC motors and their power supply circuits have voltages that can be lethal. Capacitors inside modules retain high voltages after the power supply is removed; heed the motor's cautions and warnings to remain safe

## *Safety Information*

- Make certain the 24VAC power source that you are connecting the UZ-1's connection clips to is REALLY 24VAC; even a brief touch of a clip to line voltage will destroy your tool and the motor and will expose you to dangerous voltages. Verify the voltage present at the connection point first!
- Inspect the tool before each use. If any part of the tool (including, but not limited to: the case, wire insulation, connection clips, or connection clip insulators) becomes damaged, loose, broken, or frayed, discontinue use of the tool until repaired or replaced.
- Harnesses and adapters are designed to fit and test specific motor series. Do not attempt to test a motor that a UZ-1 adapter was not designed for; even if you think the connector may fit. Improper voltages or conditions may exist that will damage the tool, the motor, or you. (See page 7 for a list of current available adapters and other UZ-1 accessories.)

## *Using UZ-1*

After watching the online tutorials at **UniversalZebra.com**, basic tool use is as follows:

- Plug correct adapter into motor
- Plug correct adapter into the UZ-1 harness.
- Place magnetic overlay (corresponding to the adapter being used) into its designated location inside the UZ-1. Read any motor-specific instructions.
- Provide 24VAC power to the UZ-1 through the connection clips (certain motors require you to attach the black clip to 24V common, and the red clip to 24V hot.)
- Use switch selections and LED indicators to test the motor in various conditions.

### Note:

- ▶ Most motors will not have all six available speeds to test. Because of the use of serial data streams, some motors can only be operated in one speed with this type of tool.
- ▶ Bench testing can be performed on EC motors. See page 7 for a list of power harnesses with the special motor plugs required.

The Universal Zebra System is constantly being improved. We, at Zebra Instruments, are committed to designing new, low-cost adapters for every new EC motor that you might encounter. A list of all currently available adapters can be found on page 7 of this manual as well as online at **UniversalZebra.com**

See your distributor to order any Universal Zebra accessories.

Zebra Instruments relies heavily on and greatly appreciates any and all feedback from technicians in the field; if you encounter a motor that we do not yet provide an adapter for please email us at [Support@ZebraInstruments.com](mailto:Support@ZebraInstruments.com). Our goal is to provide all HVAC/R technicians the best available tools for ECM system diagnostics and repair at an affordable price.

# **UZ-1 Add-Ons**

## **Adapters - Simply Plug into a Specific Motor Series**

- ▶ Adapter A (UZHMA): GE, Regal Beloit, & GENTEQ - 2.0 & 2.3 ECM's w/ 16-pin plugs
- ▶ Adapter B (UZHMB): GENTEQ - 3.0 ECM's w/ 4-pin plugs
- ▶ Adapter C (UZHMC): GE, Regal Beloit, & GENTEQ - X-13 & X-Motor ECM's with 5-pin plus 4-pin plugs
- ▶ Adapter E (UZHME): GE, Regal Beloit, & GENTEQ - ECM 124 Multi-Speed Signal ECM's
- ▶ Adapter F (UZHMF): Evergreen IM Series

## **Motor Power Plugs - For Motor Bench Testing**

- ▶ UZPH1: GE, Regal Beloit, & GENTEQ 2.0, 2.3, 2.5, & 3.0 ECM's
- ▶ UZPH2: X-13, X-Motor ECM's, Evergreen 'AH'
- ▶ UZPH3: ECM 142 Multi-Speed ECM's
- ▶ UZPH4: Evergreen 'IM' Series

## **Accessories - Complete your system!**

- ▶ UZEXT: 36" Extension or Replacement Main Harness
- ▶ UZACC: Accessory Case for UZ-1 and it's Adapters

## ***One-Year Limited Warranty***

For a period of one year from the original end-user's date of purchase, Zebra Instruments warrants that this tool is without manufacturing defects. Should you encounter any problems, please contact us and we will attempt to resolve your problem as quickly as possible. This resolution may include replacement, exchange, or repair of a defective tool; at our option. This warranty does not apply to tools that have been exposed to: voltages and/or currents that are higher than those specified in this manual; abuse or rough handling; any damage to connectors, harnesses, or adapters; or damage from moisture or chemicals. Out-of-warranty repairs are available for nominal charge plus shipping. Please contact us for an RMA (return merchandise authorization) before returning a tool for repair.

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