Automation-Ready Cable and Harness Testers

CableEye® Upgrades and Reconditioning

![CableEye Model Upgrade Options](image)

**Fig. 1:** Multiconductor testers are powerful tools used for qualifying electrical integrity. They can provide full measurement data, simultaneously, for every pin-to-pin connection. Here we describe cost-effective ways of updating the capabilities of your CableEye tester.
Overview

CAMI Research Inc. (Acton, MA) has been producing innovative bench top CableEye test systems for over 25 years. Checking continuity (shorts, opens, miswires, intermittent faults), resistance, capacitance, in-line components (value and orientation), and insulation quality (Insulation Resistance, Dielectric Strength) of cables and harnesses, the testers are highly configurable, and automation-ready.

CableEye system capabilities can be expanded post-purchase by adding software and/or hardware options, and by upgrading the tester model itself. CAMI and several of its worldwide, authorized distributors offer these upgrade services making it easy for users to modernize their testers, and to add functionality to meet growing business demands and changing needs. Software upgrades are near instantaneous. Scheduled hardware upgrades are completed within two business days of receipt of system. Light Director™ aside, CAMI Research or an approved distributor must carry out all of the hardware upgrades described here.

Software Upgrades / Updates

CableEye benefits from a common, easy-to-use software platform across all models, simplifying learning, cross training, and staffing. All testers can be upgraded by downloading the latest operating software, or a variety of optional add-on software modules such as Connector Designer™, PinMap™, and AutoBuild™ Guided Assembly.

Hardware Upgrades

Model Upgrade

Upgrading the tester Model is a cost-effective way for you to expand test capabilities and improve competitiveness and productivity. We offer CableEye model upgrade paths as summarized in Fig. 1 to modernize your serial port tester.
Upgrade Serial Port to USB – Hardware/Software/Warranty/Calibration Upgrade bundle

Although serial port testers are obsolete, for less than the price of a new system, and for a limited time, you may upgrade your serial port CableEye tester to USB if your tester is a model M2-Basic, M2, M3, or M3A. These Serial Port systems were manufactured between 1997 and 2010, and this program is typical of the CAMI’s dedication to delivering excellent and sustained customer service.

Upgrading will improve your test capabilities and allow you to become more productive - giving you faster (x4) measurement capabilities. The latest software alone provides additional features and capabilities. All the hardware (e.g. boards/interface fixtures) you have developed for your serial port unit will be compatible with the upgraded unit. You will even be able to use newly released connector boards that require the most current software.

All upgraded modules are returned to the customer with a new one-year warranty and the latest software. The M3 to M3Z upgrade includes calibration (calibration is not relevant to the M2U series testers). Upgrading to a USB model from a serial port variant is about half the price of a new system.

Will we need to upgrade the tester’s expansion modules?

Depending on the model of your tester and your chosen upgrade path, your existing expansion modules may not be compatible with your upgraded control module and will also need to be upgraded. Refer to the table below for a summary of expansion module compatibility.

<table>
<thead>
<tr>
<th>Model Upgrade Path</th>
<th>to M2U Basic</th>
<th>to M2U</th>
<th>to M3Z</th>
</tr>
</thead>
<tbody>
<tr>
<td>from M2 Basic</td>
<td>N/A</td>
<td>—</td>
<td>—</td>
</tr>
<tr>
<td>from M2</td>
<td>—</td>
<td>Compatible</td>
<td>—</td>
</tr>
<tr>
<td>from M3 or M3A</td>
<td>—</td>
<td>—</td>
<td>Upgrade Required</td>
</tr>
</tbody>
</table>

Footnote: Expansion modules MUST be returned with the control module for upgrade service.
Add-On Upgrade

More Test Points

Any of your testers, with the exception of M2U-Basic, may be readily expanded. Expansion modules are stacked beneath the control module, increasing the number of test points by 128 per expansion modules. This upgrade service includes calibration when relevant.

More Sensitive and Precise Resistance Measurement

The 4-Wire Kelvin module is an add-on option for the CableEye HVX high voltage cable tester that permits expanded testing for contact and wire resistance as low as 1 mΩ. After checking for opens, shorts, miswires, and resistance limits, the 4-wire Kelvin measurement applies a user-selectable test current from 10 mA to 1 A to determine connection resistance within 1 mΩ. The resistance profile of a model cable may be stored and used as a basis of comparison during later testing to reveal cold solder joints, faulty crimps, recessed pins, pin contact contamination, improper wire gauge, and stress-extruded wire.

Four-wire measurement eliminates any effect of fixture resistance to obtain a precise value of the unit under test (UUT) resistance only. The same high-accuracy measurement may be obtained with a short fixture attached directly to the tester, or with a large wire harness fixture that may extend a considerable distance to reach the UUT. Users may optionally set up a high-current stress test for wiring by driving up to 1 A of current through each conductor, and setting a dwell time from 100ms to 3 min. Increasing resistance during the dwell period may show problems not detected with a shorter measurement interval.

More Control

A Remote Control can be added to HVX-series testers if you need to mount the tester behind a panel or place it in an inaccessible area. The switch permits enabling of a high-voltage emergency stop and HV-active relay contacts.

More Accurate and Faster Connector Assembly

Available for any tester except the M2U-series, the Light Director™ system mounts to the top of the control module, and provides more accurate and faster connector assembly. It requires the AutoBuild™ Software upgrade to operate. The Light Director upgrade service can include the mounting and programming of your supplied mating connectors. Light Director detaches readily from the tester.

Light Director provides a computer-guided technique for assembling connectors used in aerospace, medical, and other high-reliability applications. This system uses light fibers driven by super-bright LED lamps to individually illuminate target cavities in the connector being assembled. When the technician enters the wire code printed on unconnected wires, or touches a wire connected at the other end, the CableEye software turns on the appropriate fiber, thereby causing a bright, flashing light to project from inside the target cavity guiding the technician to the proper insertion point. Correct insertion is confirmed by the elimination of light from that location, whereas insertion into an incorrect location leaves the flashing light visible.
Using synthetic speech, Light Director can read the pin number to the technician, further reinforcing the target location. Speech can be activated in English, Spanish, French, German, Chinese, Hebrew, Japanese, Korean, Polish or Turkish when a matching generic voice font has been downloaded. Speech recognition is also available as an option permitting the technician to speak wire codes to the system, thus eliminating the need for a keyboard or monitor.

Normally, technicians crimp pins on wires in advance of assembly to the connector. Wires may be identified during the assembly process by numeric code, bar code, color code, or if no codes are present, by electrical detection using a wrist-strap if the far end of the cable has already been assembled and can be electrically connected to the system. Field sting has shown that the Light Director doubles assembly rate over manual methods while nearly eliminating errors. Because the Light Director greatly reduces the perceptual challenge of manually locating pin cavities in a complex connector, technician fatigue is greatly reduced, permitting a continuous, high productivity rate throughout the workday.

Reconditioning

CAMI offers warrantied, reconditioned CableEye testers for sale. All of these pre-owned testers and expansion modules have been tested, and are in excellent working condition. Testers that require calibration (e.g. M3 series, M4, HVX) will have been calibrated. All reconditioned systems ship with the latest software.

Summary

CAMI has several upgrade offerings that will allow you to extend the life of your tester keeping it relevant to your changing business and testing needs. Because of the robustness of our design and these upgrade opportunities, we have many customers using testers that are well into their second decade of use.

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CableEye is a highly versatile, expandable and upgradable diagnostic and Pass/Fail check Cable and Harness Test System that’s PC-based. It’s used for assembly, prototyping, production, and QC of standard or custom wire cables and harnesses. The entire suite of products is powered by the same easy-to-use operating software and, with the help of its signature easy-to-interpret color-coded graphics, instantly identifies not only when there is a fault, but what type of fault and where. There are several models:

Low Voltage: M2U-basic, M2U
For diagnostic and Pass/Fail Testing - Find, display, log, & document continuity (opens, shorts, miswires, intermittent connections) and diode orientation.

Low Voltage: M3 Series
For all of the above plus resistance (contact, isolation, embedded), and diode forward voltage and reverse breakdown.

Low Voltage: M4
For all of the above plus precision resistance (4-wire), and capacitance (twist wire relationship, length of cable, length to break, capacitors).

Low Voltage and High Voltage: HVX, HVX-21
For all as described for M3 plus HiPot (dielectric withstand voltage and insulation resistance), 4-Wire Kelvin Measurement and Advanced Measurement Options (capacitance, twist wire relationship, length of cable, length to break, capacitors) are available.

Free 2-Week Trial

Experience CableEye first-hand. See how your own cables and connectors can be auto-detected and accurately represented on our graphic-rich, touch screen compliant GUI. Find cable problems fast, and understand why customers tell us “… we cannot live without CableEye” (Kabelservice), declaring it the “… best, easiest to use, system” (Digital Video Products).

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