CableEye® Catalog

Blue Boxes are HOT LINKS! Click to jump...

Large photos of all items: camiresearch.com/catalog

Toll Free (USA, Canada)
(800) 776-0414

Edition of April 1, 2017

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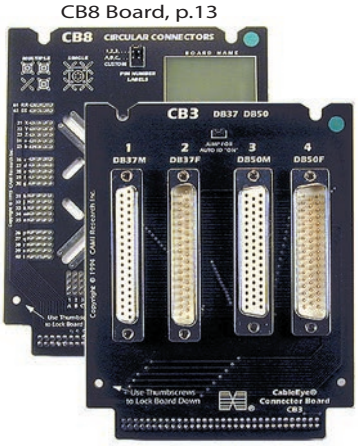
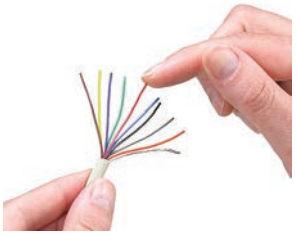


CB3 Board, p.12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Custom Interfacing, p.40

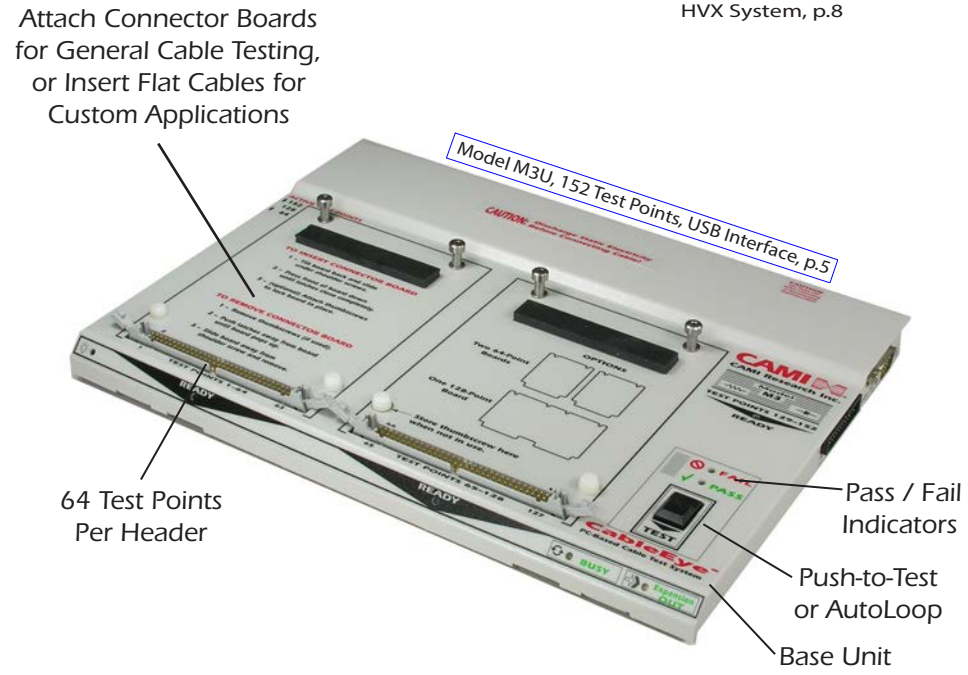
CAMI Research Inc. 42 Nagog Park, Suite 115 Acton, MA 01720
Tel: +1 978-266-2655 *web:* camiresearch.com

THE CABLEEYE SYSTEM

Hipot Available!
2100 Vdc
1200 Vac
HVX System, p.8

Test Cables

- Many standard plug-in connector boards available.
- Test simple two-ended cables and complex multi-headed cables.
- Blank connector boards available to mount unusual connectors.
- Extend test points to custom fixtures with 64-conductor flat cable.
- Design your own custom boards.
- Press-to-Test or AutoLoop.
- Use with laptop computers for field testing.
- Carrying case available, p.37.



Test Harnesses

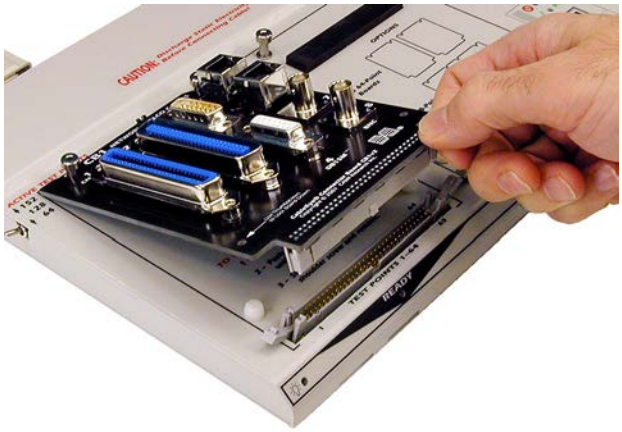
- Expand to over 2500 test points by adding 128-point modules.
- Test points available on industry-standard 64-pin dual-row header to extend to custom fixtures.
- Special plug-in boards available to mount harness adapter cables.
- Switch on just the number of test points needed for maximum scan speed.
- Special fixtures available that easily link testers to harness boards.
- Use Plug-in boards at any time for cable testing.
- Integrate with automation systems using our API/.NET and LabVIEW Programming Interfaces, p.32.

What is a "test point"?
Simply, it's a connection point for one pin of one connector. To determine the number of points you need, consider the largest cable or harness you expect to test, and add up all the pins on all the connectors, including shields. *Example:* for an 8-wire shielded ethernet cable, you would need 18 test points.

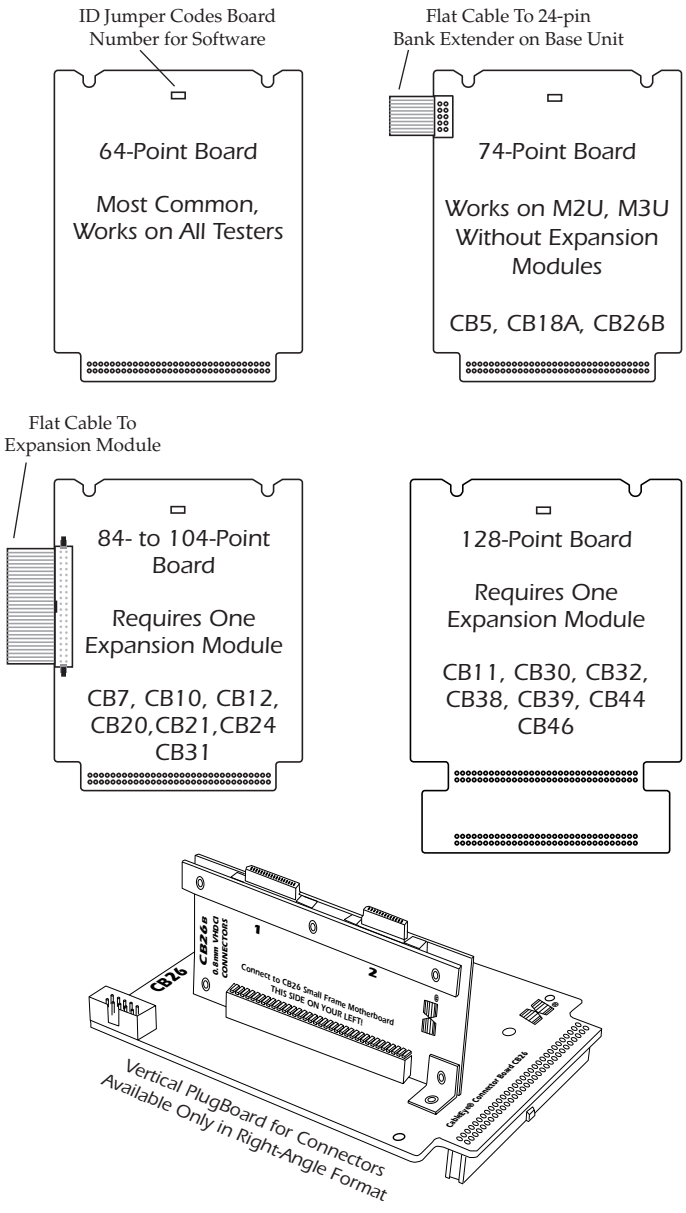
Sofware Included! All testers ship with a comprehensive software package that provides test functions, cable database, graphic wiring display, reporting, data logging, and automation scripting. Optional software available, p.30, for custom interfacing, import/export, and guided assembly.

CONNECTOR BOARD INDEX

Note: more boards available than shown here. See
camiresearch.com/catalog



Types of Plug-In Boards



To look up boards by connector type, go to:
camiresearch.com/board_finder

To check minimum test points needed for each board, go to:
camiresearch.com/cb-compatibility

SYSTEM SELECTION GUIDE

Start

Do you need to set resistance thresholds or measure embedded resistors?

NO

Will you ever need to test cables with more than 64 conductors?

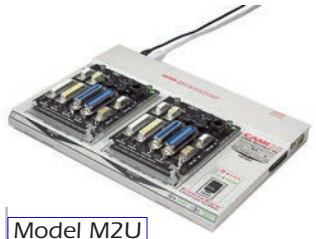
NO

Model M2U-Basic
Item 810U,
Page 5

YES

Do you presently need to test cables with more than 68 conductors?

NO



Model M2U
Item 811U,
Page 5

YES

Model M2U
Item 811U, 512 Test Points,
Page 6

YES

Do you need to test at high voltage for dielectric breakdown and insulation resistance?

NO

Do you presently need to test cables with more than 68 conductors?

YES

NO

Model M3U
Item 821U,
Item 821UH,
Page 5

YES

Hipot
HVX: 1500 Vdc, 1000 Vac
HVX-21: 2100 Vdc, 1200 Vac

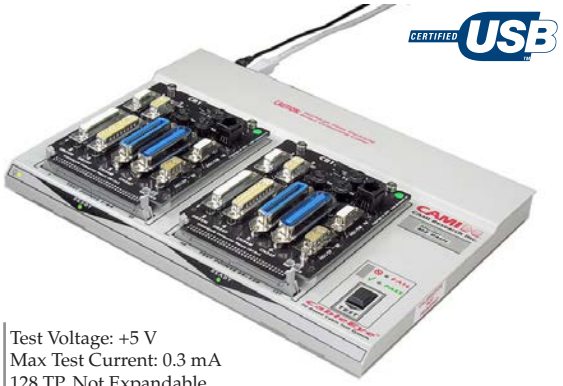
Models HVX, HVX-21
HVX: Item 829, 128 TP,
HVX-21: Item 829A, 128 TP,
Page 8

Model M3U
Item 821U, 512 Test Points,
Page 6

TEST SYSTEMS (Low Voltage)

Item 810U, CableEye M2U-Basic.....

Includes a 128-point fixture and electronics (test cables with a maximum of 64 conductors, not expandable), CB15 board set, PC software, database of over 200 standard cables, USB interface, power module, User's Guide, one-year warranty, one-year free tech support, and one-year free software and database upgrades. Connector types on the CB15 board set (Item 745) include DB25 male and female (serial and parallel interface cables), DB9 male and female (serial interface and monitor cables), HD15 male and female (video cables), DVI-I (digital video), USB-A, USB-B, RJ45 shielded (ethernet cables), miniDIN4, miniDIN6, miniDIN8, and modular jack (6-position, 6-conductor for modem and telephone cables, RJ12). Substitute another board set of equivalent value if desired. TEST pushbutton and READY, MATCH, and ERROR indicators for one-button operation. Cable measurement time one-quarter second. Industry-standard 64-pin dual-row latch headers interface to external test fixtures. Rugged 1/16"-thick aluminum case with scratch-proof Lexan surface for long life in an industrial environment. Calibration not required. USB interface. *Ready to use.*

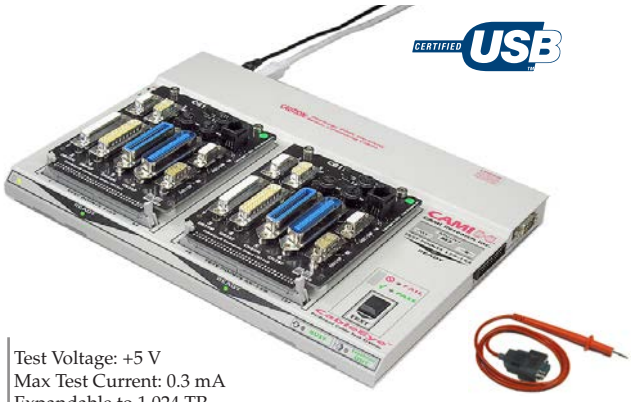


Test Voltage: +5 V
Max Test Current: 0.3 mA
128 TP, Not Expandable
Continuity Only, No Ω

CableEye M2U-Basic (Item 810U)
with CB15 Boards (Item 745) Installed

Item 811U, CableEye M2U.....

Same as M2U-Basic (Item 810), but includes enough test points to test cables with up to 72 conductors, and is expandable to 1,024 test points by connecting expansion modules (Item 813, 128 points per module). Choose 64, 128, or 152 active test points with a switch for optimum measurement time. Additional features include a remote control socket to be used for either an external footswitch (Item 714) or for a custom remote control to extend panel indicators, and a DB9 Probe socket. Includes probe. Calibration not required. USB interface. *Ready to use.*



Test Voltage: +5 V
Max Test Current: 0.3 mA
Expandable to 1,024 TP
Continuity Only, No Ω

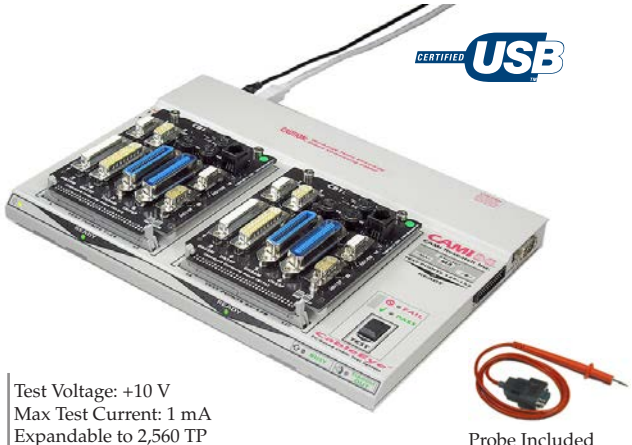
Probe Included

CableEye M2U (Item 811U)
with CB15 Boards (Item 745) Installed

Item 821U, CableEye M3U (0.3 Ω – 10 MΩ).....

Item 821UH, CableEye M3UH (0.1 Ω – 5 MΩ).....

Model M3U has all of the same features as Model M2U, uses the same case and software, but employs a different electronic design capable of measuring resistance. With Model M3U, you may set upper and lower resistance thresholds. For wire resistance, set the low threshold to as low as 0.3 Ω, and for isolation resistance, set the high threshold as high as 10 MΩ. Measure embedded resistors from 100 Ω to 999 kΩ with 1% accuracy, and with less accuracy from 0.3 Ω to 10 MΩ. Measure diodes and resistor/diode combinations, and automatically learn networks of diodes and resistors for comparison against electronic modules with similar networks. Expandable to 2,560 (M3U) or 1,024 (M3UH) test points by connecting expansion modules (Item 823, 128-points per module). Use with our Guided Assembly software (see p.33), and the Light Director system (CB37A, CB38A) for connector assembly (see p.28). Includes probe and Certificate of Calibration with measurement data. Calibration recommended yearly (see p.39). USB interface. *Ready to use.*



Test Voltage: +10 V
Max Test Current: 1 mA
Expandable to 2,560 TP
Continuity, Resistance 0.3 Ω to 10 MΩ

Probe Included

CableEye M3U (Item 821U)
with CB15 Boards (Item 745) Installed

EXPANSION MODULES (Low Voltage)

Item 813, CableEye M2U-AEX Expansion Module..

Item 823, CableEye M3U-AEX Expansion Module...

Item 823H, CableEye M3UH-AEX Expansion Module...

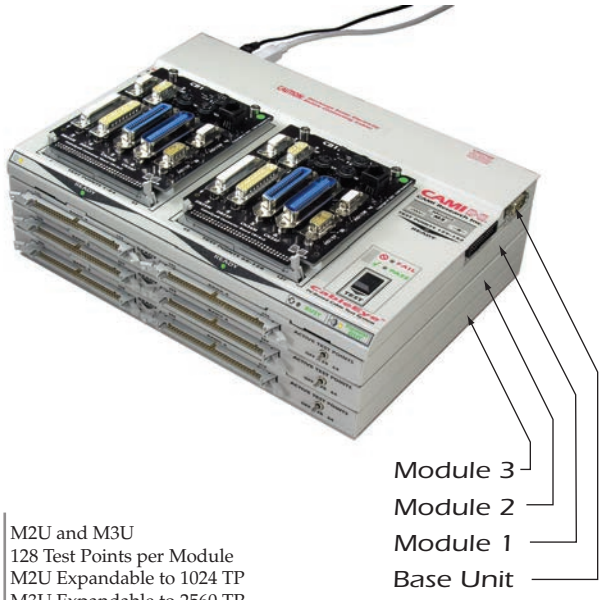
Each module adds 128 test points to M2U or M3U testers and permanently attaches to the bottom of a base unit leaving the bench footprint no larger than the base unit alone. Stack the attached expansion modules vertically until the desired number of test points is achieved, up to a maximum of 1,024 test points for the M2U (consisting of one base unit and seven stacked expansion modules) and 2,560 test points for the M3U (consisting of one base unit and nineteen stacked expansion modules). Our software recognizes the additional test points automatically. All standard software functions scale up to work with the additional test points. Set the Active Test Points switch on each module to 64 or 128 to add just the number of points you need to the test point chain. Scanning time increases as more modules are added.

Two 64-pin latch headers provide 128 test points per module. Unlike the base unit, these 64-pin headers exit the case with pins parallel to the table top. Use a 64-conductor flat cable with wiremount socket to extend the test points to your custom test fixture or harness board. See Items 850-855 for custom flat cable and connectors (p. 34-35).

You may add expansion modules to an M2U or M3U unit at any time. M2U-AEX (Item 813) is a field-installable unit. If you already have an M2 and wish to expand it, or add more modules to an existing AEX unit, you may complete the installation yourself in several minutes.

M3U units require factory recalibration when an expansion module is added. The recalibration cost is included in the price of any new M3 expansion modules.

A620B Standard
The M2U permits cable and wire harness testing against the A620B industry-standard across classes 1 and 2 for continuity and shorts. The M3U additionally permits those for class 2a Insulation Resistance, and class 3 Continuity.



M2U and M3U
128 Test Points per Module
M2U Expandable to 1024 TP
M3U Expandable to 2560 TP

Attached Expansion Module
M2U (Item 813) or M3U (Item 823) with CB15 Boards (Item 745) Installed
512-Point M3U System Shown

M3U
128 Test Points per Module
Expandable to 2560 TP

Attached Expansion Module
M3U, Item 823
No Connector Boards Installed
1,536-Point M3U System Shown

EXPANDED SYSTEM SPECIAL OFFERS

We offer a special reduced price when purchasing a new M2U or M3U CableEye with one expansion module. Each package includes the base module, one expansion module, and the CB15 board set.

Item 800B, M2U (Item 811U) with One Attached Expansion Module, 256 TP (Item 813).....

Item 820B, M3U (Item 821U) with One Attached Expansion Module, 256 TP (Item 823).....

Because attached expansion modules stack vertically, only two CB boards may be accommodated (mounted on the base unit) regardless of how many attached expansion modules are connected. If you need to mount more than two CB boards to a system with vertically stacked expansion modules, use our separate QuickMount™ housing, Item 712, described below.

M2U and M3U
Expandable to 2560 TP

Attached Expansion Module (M2U, Item 813 or M3U, Item 823) with CB15 Boards (Item 745) Installed 256–Point M3U System Shown

Item 712, QuickMount™ Housing for CAMI Connector Boards.....

This free-standing board fixture supports most CAMI CB connector boards. Use this for connecting CB boards to an expansion module, or for applications in which the connector boards must be separated from the tester. Boards may be locked in place, if necessary, using supplied nylon thumbscrews. Add CB Board Expansion Cables of any length (Item 856, p.35) to extend the housing away from the tester. For systems larger than 256 test points, use multiple QuickMount housings with increasingly longer expansion cables (we will build to order); refer to the photo below right.

QuickMount Housing (Item 712) CB15 connector boards (not included) shown mounted to illustrate function.

1408 TP system below uses 11 QuickMount Housings to provide 22 board positions.

Item 712A, Tilt Stand for QuickMount™ Housing.....

Two aluminum brackets with rubber feet attach to the back of the QuickMount housing using supplied 4-40 screws and lockwashers. Once attached, these brackets tilt the unit forward at a 30° angle. Additional holes on the bottom of each bracket permit the entire assembly to be secured to a table top, if desired. Recommended for high-volume production or when using our Light Director™ connector assembly system (p.28).

Tilt Stand Brackets (Item 712A)

TEST SYSTEMS (High Voltage)

Item 829, CableEye HVX High Voltage Test System, 128 Test Points, 1500 Vdc, 1000 Vac Max.....

Item 829A, CableEye HVX-21 High Voltage Test System, 128 Test Points, 2100 Vdc, 1200 Vac Max.....

Options for Items 829 or 829A:

Item 828, HVX 128-point Expansion Module.....
Attaches to Base of Item 829. Max 1024 TP, See 828C Below

Item 828A, HVX-21 128-point Expansion Module.....
Attaches to Base of Item 829A. Max 512 TP

Item 828C, HVX 128-point Repeater Module.....
Replaces one Item 828 Expansion Module when Item 829 Expanded Beyond 512 TP

Item 832, 4-Wire Kelvin Resistance Measurement.....
1 milliohm to 15 Ω, Prog. Test Current, 1000 mA Max

Item 829X, Remote Control Option.....
Use for Deadman Switch or for External Control Panel

Includes a 128-point fixture, electronics, and software, expandable to 1024 test points by connecting HVX Expansion Modules (Item 828). Circuitry similar to the M3U low-voltage tester performs basic continuity and resistance checks. Set resistance thresholds for contact resistance down to 0.1 Ω, and for low voltage isolation up to 5 MΩ. Measure embedded resistors from 100 Ω to 1 MΩ with 1% accuracy, and lesser accuracy from 0.1 Ω to 5 MΩ. Four-wire Kelvin measurement option available for resistance measurement to 1 milliohm at up to 1000 mA test current. Measure diodes and diode forward voltage. The high voltage test phase permits expanded testing for insulation resistance and dielectric breakdown. After checking for opens, shorts, miswires, and resistance limits, the HVX system will apply a user-selectable voltage from 10 V to 1500 Vdc, or 10 V to 1000 Vac RMS (Item 829), or 10 V to 2100 Vdc, or 10 V to 1200 Vac RMS (Item 829A), to each connection group in the cable. Ramp rates and dwell time are adjustable. Current leakage detected during the high voltage test phase provides a measure of insulation resistance up to 1 GΩ (Item 829) or 5 GΩ (Item 829A), and any leakage current exceeding a preset limit reveals the presence of moisture, flux, or other contamination on exposed contacts.

Use the HVX series testers to meet the industry-standard A620B guidelines for cable and wire harness testing. The system also produces archival-quality reports for each cable tested showing the test voltage, leakage current, and insulation resistance for each wire group, and clearly denotes PASS or FAIL at the top of the report. The additional External Terminals permit basic insulation testing on transformers, chassis, and individual components.

A TEST pushbutton with READY, PASS, and FAIL indicators permits one-button operation. Software includes scripting capability for fully-automatic production testing. Guided assembly and other software options available. Low-voltage cable measurement time less than 0.5 s. Industry-standard 64-pin dual-row latch headers easily interface to external test fixtures of your own design for custom applications. Also includes a remote control socket for an external footswitch (Item 714) or for a custom remote control to extend panel indicators, and a probe socket. Rugged, 1/16"-thick aluminum case with scratch-proof Lexan surface for long life in an industrial environment. The price includes

Hipot

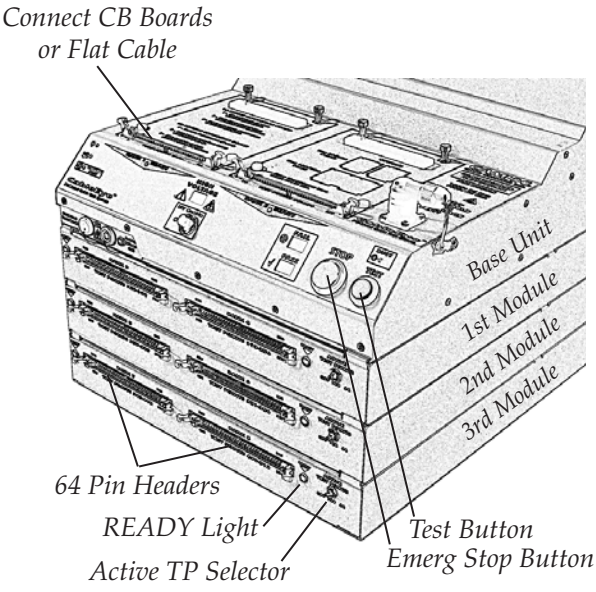
Meets A620B Industry Standards!

HVX System
128 TP Shown
Expandable to 1024 TP

CableEye HVX System (Item 829) with CB29 Boards (Item 759) Installed

External Terminals for Chassis and Component Testing

Item 829X
Optional Remote Control for Dead-Man Switch
(includes connector, wired plugs and instructions)



HVX System with Three Expansion Modules

a CB29 board set (Item 759, Screw Terminals) or your choice of another board set of equivalent value, PC software, User's Guide, one-year warranty, one-year free tech support, one-year free software and database upgrades. *Ready to use.*Three expansion modules added to a base unit provide a total of 512 test points in the system shown at the right. Another expansion stack of 512 points may be combined with this unit to provide a total of 1024 test points.

The HV Remote Control Option (black connector on top) along with the remote output available on the back of the unit make available all necessary control signals for an external User-designed control panel. This would allow the tester to be fully enclosed behind a connector rack or in a specially-designed case protecting for special applications. This option includes pre-wired plugs for the HV remote and LV controls with wiring diagram and instructions.

You may either plug in one set of connector boards on the top of the unit to test small cables, or attach 64-conductor flat cables to one or more of the eight available 64-pin test point headers leading to a custom cable or harness interface. CAMI Research has applications engineers available to advise customers on any type of custom electrical interface that may be required.

Item 704C, Pelican™ Carrying Case with Wheels (128-256 Test Points).....

Item 704D, Pelican™ Carrying Case with Wheels (384-512 Test Points).....

Transport or store the HVX tester in this rugged, foam-lined carrying case. A rubber seal keeps out moisture and dust, and the large, safe-release latches make the case easy to open and yet secure from accidental release during transportation. Use the handles on the top or side for hand-carrying, or the extendable handle and wheels for easy rolling on smooth surfaces. Two padlock holes are available for extra security during shipment or while being stored. The internal layered foam conforms to the size of the HVX tester and may be removed layer-by-layer to grip the tester when removing from or inserting it into the case. Sufficient additional space is available in the case for cables, probe, connector boards, or other accessories.

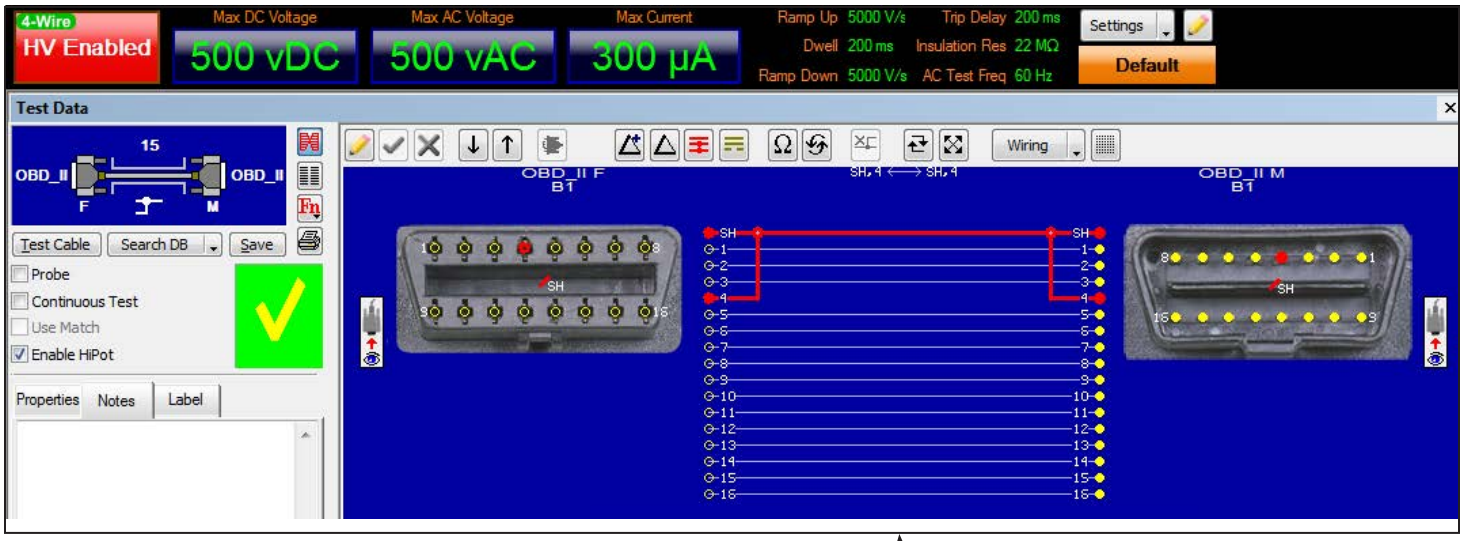
HVX System
512 TP Shown
Expandable to 1024 TP

CableEye HVX System (Item 829 or 829A) with Three Expansion Modules (Item 828) and Remote Control Option (Item 829X)

A620B Standard
All HVX models permit cable and wire harness testing against the A620B industry-standard across all classes for Continuity, Shorts, Dielectric Withstanding Voltage, and Insulation Resistance.

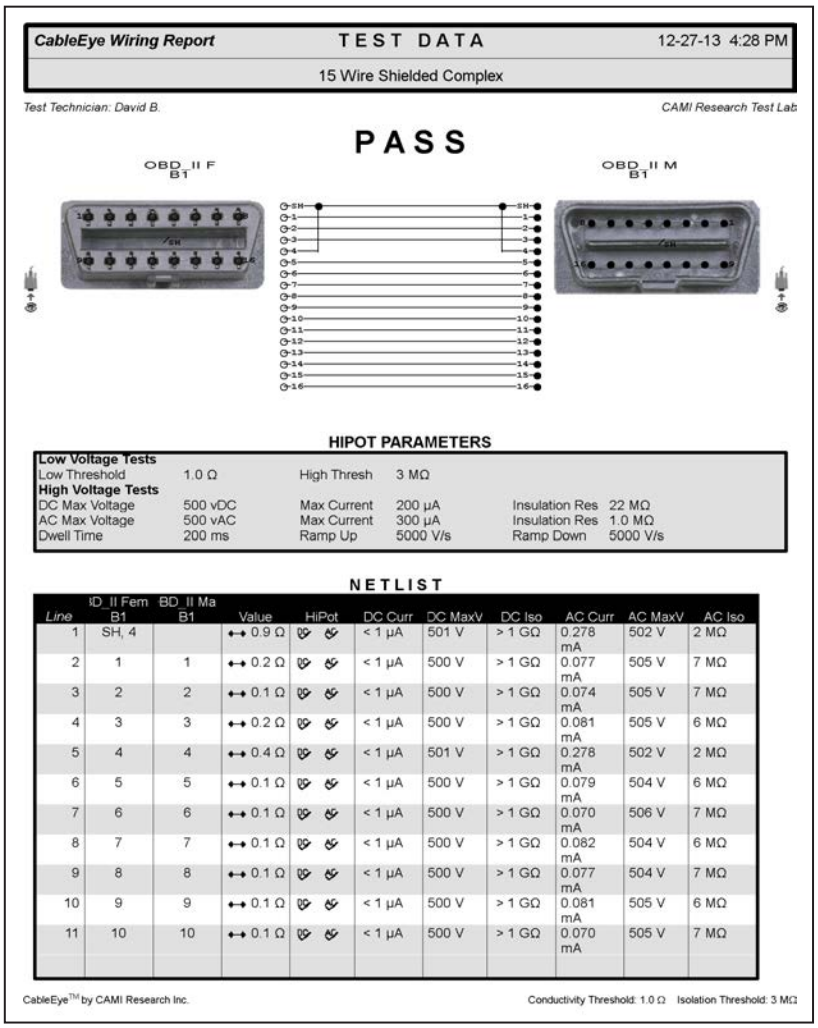
HVX TEST REPORT EXAMPLES

Video Screen Report



Click wire to highlight. Pins in connector graphic corresponding to highlighted wire also highlight.

Example Print Report



CableEye Wiring Report — TEST DATA — 12-27-13 4:28 PM

15 Wire Shielded Complex

Test Technician: David B. — *CAMI Research Test Lab*

PASS

OBD_II F B1 — OBD_II M B1

HIPOT PARAMETERS

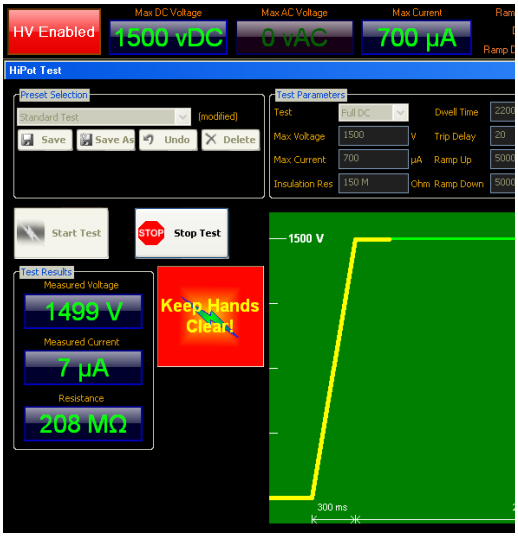
Low Voltage Tests					
Low Threshold	1.0 Ω	High Thresh	3 MΩ		
High Voltage Tests					
DC Max Voltage	500 vDC	Max Current	200 µA	Insulation Res	22 MΩ
AC Max Voltage	500 vAC	Max Current	300 µA	Insulation Res	1.0 MΩ
Dwell Time	200 ms	Ramp Up	5000 V/s	Ramp Down	5000 V/s

NETLIST

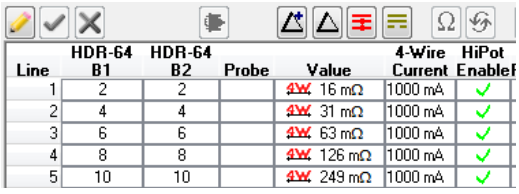
Line	ID_II Fem B1	BD_II Ma B1	Value	HiPot	DC Curr	DC MaxV	DC Iso	AC Curr	AC MaxV	AC Iso
1	SH, 4		↔ 0.9 Ω		< 1 µA	501 V	> 1 GΩ	0.278 mA	502 V	2 MΩ
2	1	1	↔ 0.2 Ω		< 1 µA	500 V	> 1 GΩ	0.077 mA	505 V	7 MΩ
3	2	2	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.074 mA	505 V	7 MΩ
4	3	3	↔ 0.2 Ω		< 1 µA	500 V	> 1 GΩ	0.081 mA	505 V	6 MΩ
5	4	4	↔ 0.4 Ω		< 1 µA	501 V	> 1 GΩ	0.278 mA	502 V	2 MΩ
6	5	5	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.079 mA	504 V	6 MΩ
7	6	6	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.070 mA	506 V	7 MΩ
8	7	7	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.082 mA	504 V	6 MΩ
9	8	8	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.077 mA	504 V	7 MΩ
10	9	9	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.081 mA	505 V	6 MΩ
11	10	10	↔ 0.1 Ω		< 1 µA	500 V	> 1 GΩ	0.070 mA	505 V	7 MΩ

CableEye™ by CAMI Research Inc. — Conductivity Threshold: 1.0 Ω — Isolation Threshold: 3 MΩ

External Terminals Control Screen



4-Wire Test Result Screen



Line	HDR-64 B1	HDR-64 B2	Probe	Value	4-Wire Current	HiPot Enable
1	2	2		4W 16 mΩ	1000 mA	✓
2	4	4		4W 31 mΩ	1000 mA	✓
3	6	6		4W 63 mΩ	1000 mA	✓
4	8	8		4W 126 mΩ	1000 mA	✓
5	10	10		4W 249 mΩ	1000 mA	✓

CE Compliance-Tested for Safety and Electromagnetic Compatibility

CableEye® TECHNICAL SPECIFICATIONS

	Low Voltage Only				Low Voltage plus High Voltage	
	M2U-B Item 810U	**M2U** Item 811U	**M3U** Item 821U p.5	**M3UH** Item 821UH	**HVX** 1500 Vdc 1000 Vac Item 829 p.8	**HVX-21** 2100 Vdc 1200 Vac Item 829A p.8
Test Points Available	128	64,128,152 Switch Selectable	64,128,152 Switch Selectable		64, 128, 152 Switch Selectable (for LV tests) 64, 128 Switch Selectable (for HV tests)	
Expandable	No	Yes, to 1024	Yes	M3U to 2560 Max M3UH to 1024 Max	Yes, to 1024 Max	Yes, to 512 Max
Test Time	0.2 s		0.2 s One Threshold 0.25 s Two Thresholds		Depends on voltage, ramp rate, and test algorithm selected	
USB Interface	USB 1.1, Fast		USB 1.1, Fast		USB 1.1, Fast, Two Ports	
Resistance Thresholds	46 kΩ, Fixed		M3U: 0.3 Ω to 10 MΩ M3UH: 0.1 Ω to 5 MΩ		0.1 Ω to **1 GΩ**	0.1 Ω to **5 GΩ**
Resistance Measurement	No		2% from 10 Ω to 100 Ω 1% from 100 Ω to 1 MΩ Lesser accuracy over full range.		Same as M3UH under 1 MΩ. 5% 1 MΩ to 100 MΩ, Lesser accuracy above 100 MΩ	
4-Wire Kelvin (option)					1 mΩ ± 1 mΩ, 1 mΩ –15 Ω Test Current 100 mA –1 A	
Diode Measurement	Orientation Only		Orientation and Forward Voltage		Orientation and Forward Voltage, Rev. Breakdown	
Test Voltage	5 V		10 V		10 - **1500** Vdc or 10 - **1000** Vac_{rms} in Increments of 1 V	10 - **2100** Vdc or 10 - **1200** Vac_{rms} in Increments of 1 v
Test Voltage Accuracy					DC: ± 2%, ± 1.5 V AC: ± 4%, ± 2 V_{rms}	
Max. Test Current	0.3 mA		M3U: 1.0 mA M3UH: 3.3mA		LV: 3.3 mA HV: Adj 25 µA – 1.5 mA	
Dielectric Withstand Range (DWR)					DC: 25 µA – 1.5 mA AC: 50 µA – 1.5 mA	
Dielectric Withstand Theshold Accuracy					DC: ± 5%, ± 5 µA AC: ± 5%, ± 100 µA	
Dwell Time Range	1 µs to 100 ms		1 µS to 100 ms		LV: 1 µs to 100 ms HV: 10 ms - 300 s	
Insulation Resistance Measurement Range			10 MΩ Max at 10 V		2 MΩ - 1 GΩ at 1500 Vdc 2 MΩ (min) at 1000 Vac Current Sensitivity: **1 µA**	2 MΩ - 5 GΩ at 2100 Vdc 2 MΩ (min) at 1000 Vac Current Sensitivity: **0.2 µA**
Calibration	Not required		Recommended Yearly		Recommended Yearly	
Test Point Connectors	64-pin dual-row headers, 0.1" (2.54 mm) centers. Two per 128-point module					
Remote Control Socket	No	MiniDIN8 Connector for Footswitch, External Control Panel			Optional HV Remote Socket	
Probe Socket	No	Yes. Probe included with tester. Accessory port also useable with minihook cables.				
Power Requirement	9 Vdc at 300 mA (max) 3 W, from wall module		18 Vdc at 500 mA (max) 9 W, from wall module or desktop supply		100 - 250 Vac, 130 W (max), IEC-standard universal C14 chassis plug	
Weight	2 lbs 6 oz (1.1 kG)		2 lbs 10 oz (1.2 kG)		21 lbs (9.5 kG)	
Computer Requirements	Any Windows-capable machine running Windows XP-SP3, Win7, Win8, or Win10. Compatible with touchscreen and laptop PCs.					
Warranty	One year, parts and labor, with free tech support and free software upgrades. Renewable yearly.					

CONNECTOR BOARD SETS

These boards come as a ***set of two.*** Boards from different sets may be mixed to accommodate any combination of connectors. In most cases, you may connect a cable to only one connector at a time on each board.

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 731, CB1 Connector Board Set for Telco and SCSI 50-pin, RJ44/45, DB15, and BNC Cables.....

Each board includes connectors for Centronics 50-pin male and female (Telco 25-pair and SCSI-I cables), DB15 male and female (network and video cables), two shielded RJ44/45 modular connectors (8-position, 8-conductor network and telephone cables), and two coax BNC connectors (network and video cables). Set of two boards.

Item 732, CB2 Connector Board Set for IDC Flat Cables, with Shrouded Latch Headers (large sizes).....

Use CB2 to test flat cables with IDC wiremount sockets. This board includes dual-row headers for 60, 50, 40, 34, and 26 pins (see Item 732A below for small header sizes). One 64-position footprint is open for a User-supplied custom size. Substitute bare headers or no headers for shrouded latch headers on special order. Set of two boards.

Item 732A, CB2A Connector Board Set for IDC Flat Cables, with Shrouded, Latch Headers (small sizes)...

This board is identical to Item 732, but includes dual-row headers for 24, 20, 16, 14, and 10 pins. Other header sizes can be provided also; specify when ordering. One 64-position footprint is open for a User-supplied custom size. Substitute bare headers or no headers for shrouded latch headers on special order. Set of two boards.

Item 733, CB3 Connector Board Set for DB37 and DB50 Cables.....

Each board includes connectors for DB37 male and female (RS449), and DB50 male and female (digital control and communications cables). These and all other Dsub connectors we use are manufactured with machined pins (not stamped pins) for long life. Set of two boards.

Item 734, CB4 Connector Board Set for v.35 and DB25 Cables.....

Each board includes connectors for v.35 male and female (all 34 pin positions loaded), and DB25 male and female. Jackscrews on the v.35 connectors are removed for rapid connect and disconnect of cables. Set of two boards.

Item 735, CB5 Connector Board Set for SCSI-I, -II and -III Cables.....

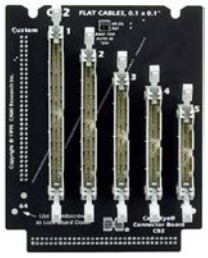
Each board includes connectors for cables that have Centronics 50-pin male (SCSI-I), mini-Centronics 50-pin male (SCSI-I, -II), miniD 50-pin male (SCSI-I), and miniD 68-pin male (SCSI-II, -III) connectors. Use a gender changer for female cables. *Requires 152 test points; will not work with Model M2U-Basic!* Set of two boards with expander cable.

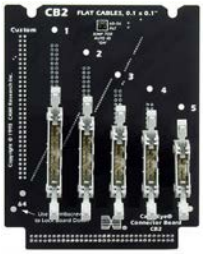
Large color photos of all CB boards:
camiresearch.com/catalog

Find Boards by Connector Type:
camiresearch.com/board_finder

Tester Requirement for Each Board:
camiresearch.com/cb-compatibility

CB1
CN50, DB15
RJ45, BNC
(Item 731)



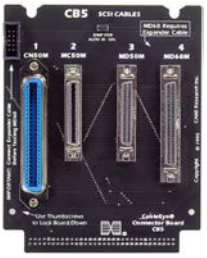


CB2 (Item 732) **CB2A** (Item 732A)
Large and Small Dual-Row Headers for IDC Flat Cables

CB3
DB37, DB50
(Item 733)

CB4
v.35, DB25
(Item 734)

CB5
CN50, MC50
MD50, MD68
(Item 735)



Item 736, CB6 Connector Board Set for High-Density Dsub Cables.....

Each board includes connectors for HD15 male and female (used on video boards and monitors), HD26 male and female (used in networks and high-speed communications), and HD44 male and female (used in communications and control applications). Set of two boards.

Item 737, CB7 Connector Board Set for High-Density Dsub Cables.....

Each board includes connectors for HD62 male and female, and HD78 male (used in digital control systems, factory automation and communications). *Requires 192 test points; expansion module needed; see p.6. For use with Models M2U (Item 811U) or M3U (Item 821U).* Set of two boards with expander cable.

Item 738, CB8 Connector Board Set for Circular Connectors and Custom Interfaces.....

This generic board accepts a wide range of circular or other connectors. The customer provides the connector of interest and mounts it on the CB8 using supplied standoffs and screws. Any panel-mount circular connector with four mounting holes fits the "X"-pattern slots on this board. Connector pins are wired to labeled pads surrounding the board. Connectors of up to 62 pins can be accommodated. When the wiring is displayed, a generic dual-row header is shown for the circular connector, and a jumper setting on the board determines whether lettered or numbered pin labels are used. You may mount up to four small circular connectors (mounting hole spacing less than 0.9"), or one large connector (mounting hole spacing less than 2.3"). If desired, noncircular connector types may be mounted also, provided that they can be supported with standoffs and the pin count is 62 or fewer. Bare area provided for custom labeling. You may use two CB8 boards together, or a CB8 in combination with any other CB board or built-in connector to accept any cable type. Set of two boards with kit of standoffs and screws. See CB30 on p.22 for a higher capacity board (128 pins) with the same basic design as CB8.

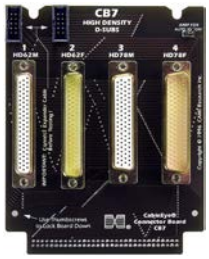
Item 739, CB9 Connector Board Set for Molex, Single-Row Headers, and Power Supply Connectors.....

Each board includes connector positions for Molex strip headers and sockets (both 0.156" and 0.100" centers) up to 25 pins, AMP Mate-n-Lok™ connectors (2-, 3-, and 4-pin male and female), AMP Mate-n-Lok Matrix connectors (male, up to 15-pin), and Molex Mini-Fit™ (male, up to 10-pin). Because power connectors come in many different arrangements, we provide a standard set of connectors in a separate package, unsoldered, so Users may configure the board to best suit their needs. For each board, the unmounted connector package includes a Molex 24-pin breakaway header strip (0.156" centers), a Molex 25-pin breakaway header strip (0.100" centers), a Molex 13-pin header socket (0.156" centers), a Molex 25-pin header socket (0.100" centers), and Mate-n-Lock male 2-, 3-, and 4-pin headers (for female cables). Matrix connectors not included. Software for connector graphics self-adjusts to measured wiring. Set of two boards with connector kit.

CB6
HD15, HD26
HD44
(Item 736)

CB7
HD62, HD78
(Item 737)

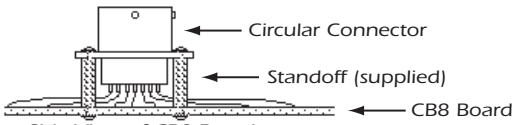
Requires Expansion Module!



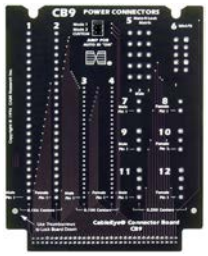
CB8
Circular Connectors
(generic)
(Item 738)

Example Connector Mounted on CB8

CB8 Standoff Kit



Side View of CB8 Board with Connector Mounted



CB9
Power Connectors
(Item 739)

CB9 Connector Kit

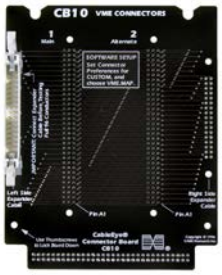
NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 740, CB10 Connector Board Set for 64- and 96-Pin VME Cables.....

Each board has positions for two DIN-standard VME connectors (0.1 x 0.1" centers). Both positions are left open for User installation of desired connectors. Footprint consists of three columns of 32 pins each with 0.1" (2.54mm) pin grid spacing, 0.032" (0.081mm) hole dia. *Requires 192 test points to test 96-conductor cables – one expansion module needed; see p.6. When mounting 64-pin connectors on this board (columns a and c), an expansion module is not necessary and any tester may be used.* Set of two boards with expander cable.

CB10
VME Connectors
(Item 740)

Requires Expansion Module!

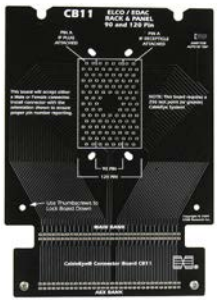


Item 741, CB11 Connector Board Set for Elco 90- and 120-pin Rack & Panel Connector (used in Audio Patch Panels).....

The one open connector position provided on this board will accept either a 90- or 120-pin Elco/Edac Rack & Panel connector of either the male or female type. *The price does not include this connector.* If the User provides the connectors, we will solder them into position and test the boards at no charge. *Requires 256 test points; expansion module needed; see p.6.* Cannot be used with M2U-Basic. Set of two boards with expander cable.

CB11
Elco/Edac 90- and
120-Pin Connectors
(Item 741)

Requires Expansion Module!

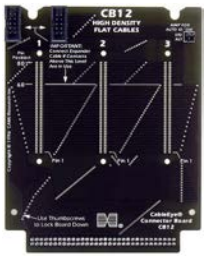


Item 742, CB12 Connector Board Set for High-Density IDC Flat Cables with Shrouded Latch Headers.....

Use CB12 to test high-density flat cables with IDC wire-mount sockets (0.025" wire centers, 0.050 x 0.100" pin centers). Three 80-pin positions are available on each board. Because of the many varieties of high-density connectors available, the board is shipped without connectors as shown in the photo. We will populate the board with connectors the User provides, or with standard AMP, 3M, or T&B connectors, for a modest configuration charge; contact us for details. Standard header sizes are: 80, 68, 60, 50, 40, 34, 30, 26, and 20 pins. *Important: To use this board with connectors of more than 60 pins, an expansion module is required; see p.6.* Set of two boards with expander cable.

CB12
High-Density Flat Cable
Connectors (0.050 x 0.100")
(Item 742)

Pads



Item 742A, CB12A Connector Board Set for High-Density IDC Flat Cables with Shrouded Latch Headers.....

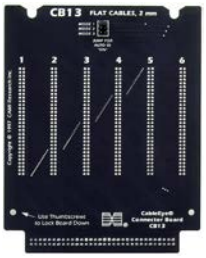
Same as CB12 but with pin centers at 0.050 x 0.050". May also be used with surface-mount connectors having either 0.050 x 0.100" or 0.050 x 0.050" leg spacing.

CB12A
High-Density Flat Cable
Connectors (0.050 x 0.050")
(Item 742A)

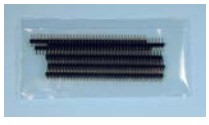
Pads

Item 743, CB13 Connector Board Set for 2 mm (0.079") Cables.....

Each board includes connector positions for 2 mm single- or dual-row headers up to 60 pins. Six identical connector positions are available. Because 2mm connectors come in many different arrangements for both single- and dual-row, we provide a standard set of connectors in a separate package, unsoldered, so Users may configure the board to best suit their needs. A single position will accept two headers, one top-justified and the other bottom-justified, if the combined length can be accommodated by the height of that position. Single-row headers may be mixed with double-row headers. For each board, the connector kit includes three 72-pin dual-row breakaway headers and three 36-pin single-row breakaway headers. Software for connector graphics self-adjusts to measured wiring. Set of two boards.



CB13
2 mm Connectors
(Item 743)



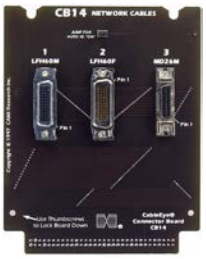
CB13 Connector Kit

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 744, CB14 Connector Board Set for Molex 60-pin LFH Connectors, Male and Female, and 26-pin miniD Female Connector for Male cables.....

This board was configured especially for router cables used in network and telecom applications. Included are male and female 60-pin Molex LFH connectors, and a female MD26 connector used for male cables. Set of two boards. *Note: See CB30C for LFH 160-Pin, and CB30D for LFH 200-Pin on page 23.*

CB14
Molex LFH Connectors
(Item 744)



Item 745, CB15C Connector Board Set for Common Computer and Peripheral Device Cables.....

CB15 includes 14 standard connectors commonly found on computers and peripheral devices. Represented are DB9 male and female (serial port), DB25 male and female (serial port, printer port), high-density HD15 male and female (analog monitors), DVI female (digital monitors), USB-A and USB-B, miniDIN4, miniDIN6, and miniDIN8 (for male cable, used with older mice, keyboards, and printers), RJ12 (6-position 6-conductor, used with modem and telephone), RJ45 (8-position 8-conductor, used with ethernet cables). MiniDIN sockets may be configured for 5- and 7-pin mini-DIN sizes on special order. Set of two boards. *See CB22 (next page) or CB26 (p.18) for additional USB, Firewire, and DVI connectors.*

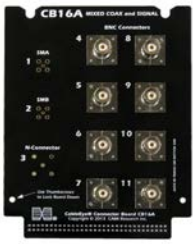
CB15C
Computer Connectors
(Item 745)

Item 746A, CB16A Connector Board Set BNC, SMB, SMA, and N Connector Cables.....

CB16A includes eight BNC connectors for coaxial cables, and ***open footprints only*** for SMB, SMA, and N connectors. Note that the SMB, SMA, and N connectors *are not installed.* If you provide these connectors, we will solder them in place and test both boards for a nominal assembly charge.

CB16A
Video Connectors
(Item 746A)

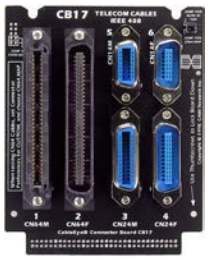
*Note: SMB, SMA, and N connectors **not** included! Board footprints present. We will install customer-provided connectors.*



Item 747, CB17 Connector Board Set for Telecommunications Cables and IEEE 488 Cables.....

Use CB17 for AMP Champ connectors (full-size Centronics-style connectors) in 64-pin male and female (for Telco central office and other applications), 24-pin male and female (IEEE 488 and HPIB instrument bus cables), and 14-pin male and female. Set of two boards.

CB17
Telecom Connectors,
IEEE 488
(Item 747)



NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 748, CB18 Connector Board Set for RJ45 Multi-Head (Octopus) Cables.....

Item 748A, CB18A, for SHIELDED Connectors...

Eight identical RJ45 modular sockets (8p8c) are provided. Use one at a time, or up to eight simultaneously. Mix one of these boards with any other CB board on the other side to test octopus and other multi-headed cables. CB18A requires 152 test points (M2U or higher). Set of two boards.

Item 748B, CB18B Connector Board Set for Multi-Head RJ12/11 Cables Connectors.....

Same as CB18 (Item 748), but with TEN unshielded RJ12 sockets (6p6c). Set of two boards.

Item 748C, CB18C Connector Board Set for Multi-Head (Octopus) RJ45 Shielded Cables.....

Same as CB18A (Item 748A), but with plugable connectors. For high-volume production environments, Users may replace worn connectors easily by removing hold-down plate. Set of two boards, includes 8 replacement connectors.

Item 749, CB19 Connector Board Set for Audio Cables...

This board includes XLR 3-pin shielded male and female, dual Phono Jack, 1/4" phone jack mono, 1/4" phone jack stereo, 1/8" phone jack mono, 1/8" phone jack stereo, DIN5 (for MIDI cables), Neutrik Speakon 2- and 4-pole, and four conductor pushpin terminal. Set of two boards.

Item 750, CB20 Connector Board Set for SCSI III and Ultra SCSI Cables *(mini-Centronics Connectors)*.....

Item 751, CB21 Connector Board Set for SCSI III and Ultra SCSI Cables *(mini-D connectors)*.....

CB20 and CB21 are identical in design by employ different connector styles. Three connectors in sizes of 68 pins, 80 pins, and 100 pins permit testing of fast-wide SCSI cables or other types using these connectors. *Requires 256 test points; expansion module needed for use with Model M2U or M3U; see p.6.* Bare board available for other large-format connectors that fit the 4-row staggered-pin footprint of these connectors; contact us for details and pricing for the bare board version. Set of two boards with expander cable.

Item 752, CB22 Connector Board Set for USB, IEEE 1394 (Firewire™) and DVI Cables.....

This board provides connectors for USB-A, USB-B, IEEE 1394 4- and 6-circuit, DVI-D, and DVI-I connectors. Each board contains *two* USB and *two* 1394 connectors offering a backup connector on each board. The USB-A and both 1394 connectors are right-angle types so cables would be connected from the left side of one board to the right side of the other. The DVI-I connector will also accept the DVI-A cable connector. All connectors on this board are female, and all standard cables are usually offered with male connectors at both ends. Set of two boards.

CB18
Multiple RJ45
(Item 748)

CB18A
Multiple Shielded RJ45
(Item 748A)

CB18B
Multiple RJ12
(Item 748B)

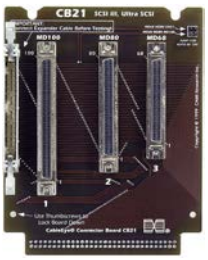
CB18C Multiple Shielded
RJ45, Plugable Sockets
(Item 748A)

CB19
Audio Cables
(Item 749)

Fast, Wide SCSI Cables

CB20 (Item 750)
(mini-Centronics)

CB21 (Item 751)
(mini-D)



Requires Expansion Module!

CB22
USB, IEEE 1394,
DVI-I, DVI-D Cables
(Item 752)

Item 753, CB23 Connector Board Set for mini-Centronics and CHAMP FH Connectors.....

CB23 includes the most common sizes of mini-Centronics style connectors (also known as CHAMP FH) used in SCSI II and III, parallel printer ports (36-pin), and other applications requiring high density impedance-controlled connections. Board includes female connectors with 20, 26, 36, 50, and 68 pins. *Requires 152 test points; compatible with Model M2U (Item 811U) or M3U (Item 821U) testers.* Bare board available for other connectors that fit the 4-row PCB footprint of these connectors; contact us for details and pricing for the bare board version. Set of two boards with expander cable.

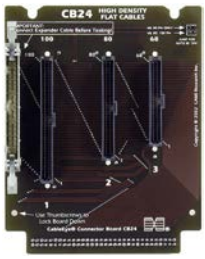
CB23
Mini-Centronics
and CHAMP Cables
(Item 753)

Item 754, CB24 Connector Board Set for High-Density IDC Flat Cables.....

Use CB24 to test high-density flat cables with IDC wire-mount sockets (0.025" wire centers, 0.050 x 0.100" pin centers). Four-wall headers for 100-pin, 80-pin, and 68-pin cables are provided on each board. *Requires 256 test points; expansion module needed for use with Model M2U (Item 811U) or M3U (821U) testers; see p.6.* Bare board available for other large-format connectors that fit the 2-row footprint of these connectors; contact us for details and pricing for the bare board version. Set of two boards with expander cable.

CB24
High-Density
IDC Flat Cables
(Item 754)

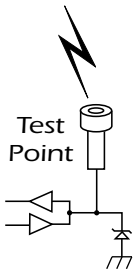
Requires Expansion Module!



Item 755, CB25 Connector Board Set, Transient Suppressor Board for High Static Environments and Long Cables
.....

Use CB25 when regularly testing cables longer than 10 feet (3 meters), when testing cables with a large surface area shield or conductor, or when working in a high-static environment to guard your CableEye tester against damage from electrostatic discharge. On each board, 64 transient suppressor diodes especially designed for fast switching divert any overvoltages to ground before damage to CableEye's electronics can occur. The CB25 mounts to the CableEye tester like any CB board and is physically secured with supplied stainless steel thumbscrews. Attach the CB boards you use directly to CB25. Use with CableEye model M3U only. *Not compatible with M2U-Basic or M2U.* Not necessary with model HVX. Set of two boards with ground bypass wire, thumbscrews, and setup instructions.

CB25
Transient
Suppressor Board
(Item 755)

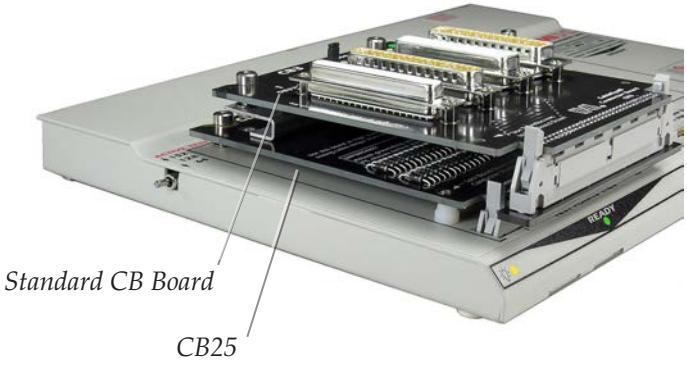


For an explanation of how cables can become charged with static electricity and damage test equipment, go to:

http://www.camiresearch.com/prot_your_cable_tester.html

Item 755A, CB25A Riser Board.....

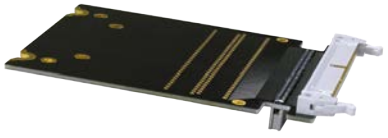
CB25A is the same as CB25 but with no diodes. Use this to mount extra-wide CB boards on the QuickMount housing or as a header isolator to protect built-in headers on any tester from bent pins and wear. See photo on p.27.



Item 755B, CB25B Connector Board Set, Vertical to Right-Angle Transition Board.....

CB25B converts the vertical header on a CableEye base unit to a right-angle type to simplify a flat-cable interface to the tester when expansion modules are attached. No diodes or other components are present on this board. Set of two boards.

CB25B
Right-Angle
Transition Board
(Item 755B)



NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

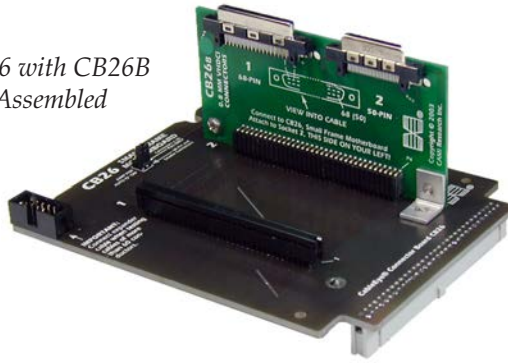
Item 756, CB26 Small Frame Motherboard.....

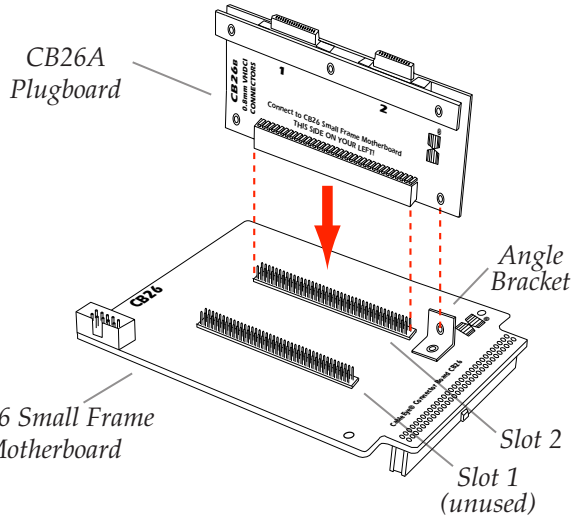
CB26 provides the support frame part of our two-board system of mounting connectors available only in right angle format. This board uses two 68-pin 2 mm headers designed to mate with any of the plugboards described below (sold separately). Up to two plugboards may be attached simultaneously and are held in place with right-angle brackets. Set of two boards.

NOTE: You need a CB26 Small Frame Motherboard to mount the plugboards described below. Up to two plugboards may be attached simultaneously to one motherboard.

CB26
Small Frame
Motherboard
(Item 756)

CB26 with CB26B Assembled





Item 756A, CB26A Plugboard for 26-pin Smart Serial Connectors.....

CB26A offers two Cisco-style 26-pin Smart Serial connectors. The connectors may be used independently or together for a multi-ended cable. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

CB26A Smart Serial Connectors (Item 756A)

Item 756B, CB26B Plugboard for 50-pin and 68-pin 0.8 mm VHDCI Connectors.....

CB26B offers two 0.8mm VHDCI connectors, one of 50 pins and the other of 68 pins. Will not work with M2U-Basic (insufficient test points)! *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards with Expander Cable.

CB26B 0.8 mm VHDCI Connectors (Item 756B)

Item 756C, CB26C Plugboard for 4-, 6-, 8-, and 10-pin Modular Plugs.....

CB26C supports four sizes of modular plugs. The 4p4c jack for handset cords, a 6p6c jack for RJ11/RJ12 cables, a shielded 8p8c jack for RJ45 cables, and a shielded 10p10c jack for RJ48 cables. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards. *Other boards with modular plugs:* CB1 (RJ45x2 Shielded); CB15 (RJ12,RJ45 Shielded); CB18 (RJ45x8); CB18A (RJ45x8 Shielded).

CB26C RJ Modular Connectors (Item 756C)

Item 756D, CB26D Plugboard for Serial ATA, USB miniB, and IEEE1394b (Firewire) Connectors.....

CB26D accepts the Firewire 1394b connector (9 pins, two shields), the USB miniB connector (5 pins, shield), and the Serial ATA connector (7 conductors). *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

CB26D SATA, USBmB, 1395b Connectors (Item 756D)

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 756E, CB26E Plugboard for HDMI (High Density Multimedia Interface) Connectors.....

CB26E provides two 19-pin HDMI connectors. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

Item 756F, CB26F Plugboard for Molex InfiniBand™ Connectors.....

CB26F accepts the 25-pin InfiniBand™ connector. Two independent connectors are provided. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

Item 756H, CB26H for iPass Connectors.....

CB26H accepts the 36-pin external and 26-pin internal iPass connectors. The internal connector mounts along the short edge of the board. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

Item 756i, CB26i Quad Serial ATA Connectors.....

CB26i accepts four independent SATA connectors. All four connectors may be simultaneously connected for dual or quad cables. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

Item 756K, CB26K for Displayport Connectors.....

CB26K accepts two Displayport connectors. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

Item 756L, CB26L for MicroD 9-, 15-, and 25-pin Female Connectors.....

CB26L accepts 9, 15, and 25-pin MicroD *Female* connectors. See CB41-44 for the full range of Micro D sizes and genders, p.26. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

Item 756N, CB26N for USB 3.0A, 3.0B, and MicroUSB 3.0 A/B Combo Connectors.....

CB26N accepts any USB 3.0 connector with two independent 3.0A and 3.0B connectors, and a single side-mounted microUSB 3.0 A/B Combo. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

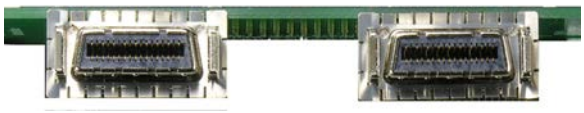
Item 756S, CB26S Plugboard for Mini-SAS/SFS Connectors.....

CB26S for mini-SAS (Serial Attached SCSI) accepts 36-pin connectors, and the SFS 20-pin connectors, used in high-speed peripheral and server applications. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

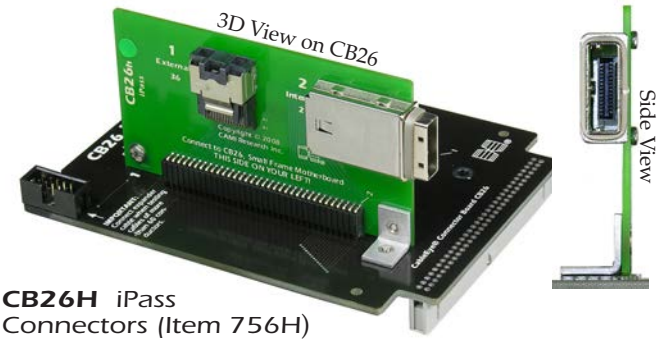
Item 756T, CB26T Plugboard for Mini-HDMI and mini-Displayport Connectors.....

CB26T two independent mini-HDMI connectors, and two independent miniDisplayport connectors. *Requires the CB26 Small Frame Motherboard (Item 756) for operation.* Set of two boards.

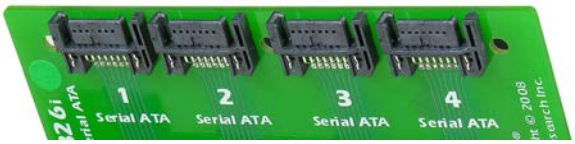
CB26E HDMI Connectors (Item 756E)



CB26F Infiniband Connectors (Item 756F)



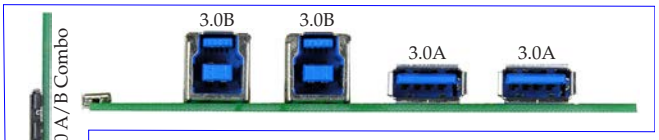
CB26H iPass Connectors (Item 756H)



CB26i Quad SATA Connectors (Item 756i)

CB26K Displayport Connectors (Item 756K)

CB26L MicroD 9-, 15-, and 25-Pin (Item 756L)



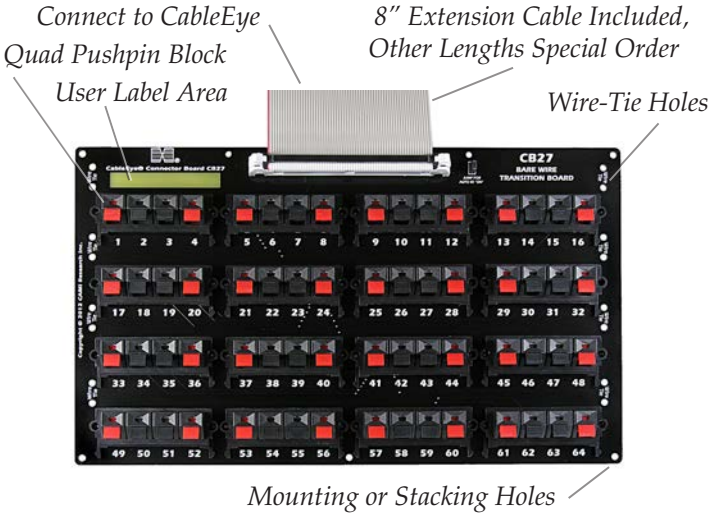
CB26N USB 3.0A, 3.0B, 3.0A/B Combo (Item 756N)

CB26S
Mini-SAS/SFS
(Item 756S)

CB26T
Mini-HDMI
Mini-Displayport
(Item 756T)

Item 757, CB27 Bare Wire Transition Board for 64 Conductors.....

CB27 employs 16 quad pushpin blocks to provide an interface for cables or harnesses that terminate in bare wires. Up to 64 wires can be accommodated per board. While similar to screw terminals, the pushpin blocks use spring-loaded levers that open easily with finger pressure and, when released, clamp down on a bare wire to hold it firmly in place. This provides very fast attachment and removal of bare wire connections. For longer-term set-ups, holes along the sides allow the use of wire ties to control wire bundles that exit from either side. Each 6.4 x 10.9" board, made using rugged 0.093" thick fiberglass, includes rubber feet for tabletop use. Corner holes allow the boards to be stacked or screwed down to a fixed surface. Includes an 8" long 64-conductor extension cable for direct connection to CableEye. 0.1" pushpin opening will easily accept wires up to 18-gauge or one prong of a lug. High-voltage rated to 800 V when using IDC flat cable. Rated to 2100 Vdc when using Ampmodu-based discrete-wire cable (see below). *Sold as a single board, not a board set.*



CB27
Bare Wire Transition Board
(Item 757)

Item 864A, Ampmodu Cable for CB27.....

This optional 12"-long cable allows to CB27 board to be used at test voltages above 800 Vdc. Tested to 2100 Vdc and 1200 Vac (not shown; see p.35 for description)

Replacement Pushpin Connector
(Item 757C)

Item 757C, Replacement Pushpin Connector.....

This connector replaces worn connectors on the CB27 board.

Item 758, CB28 Connector Board Set for AMP Mate-n-Lok™ Connectors.....

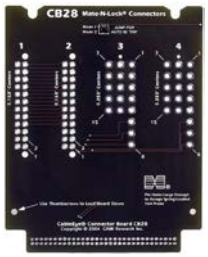
This board includes connector footprints for Mate-n-Lok™ connectors with 0.163" and 0.250" grid spacing. The footprint patterns were sized so that the largest connector in the family will fit. Refer to example connector configurations below. Because of the wide variety of connectors available for this board and the many possible customer configurations, *the board is sold without any connectors.* Customers should obtain their own mating connectors suitable for their application from their local AMP/Tyco distributor. Software automatically sizes the connector graphics to fit the measured wiring. We designed the board with large-diameter holes on all footprints so that they will accept either standard production connectors or AMP's test probe connectors with wide-gauge spring-loaded pins. Use the test probe connectors to preserve connector life during high-volume production. Set of two boards.

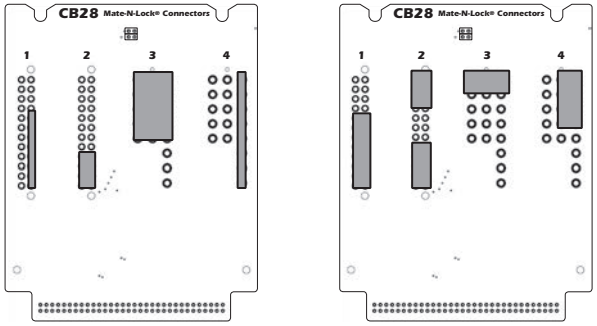
Example Mating Connectors Available from AMP:

1-172162-9, 12-pin Matrix Socket (female), 0.163" Centers
794072-1, 24-pin Dual-Row Header (male), 0.163" Centers
643406-3, 5-pin Pin Strip (male), 0.250" Centers
194013-1, 15-pin Pin Matrix (male), 0.250" Centers
350848-6, 2x3 Pin Spring-Loaded Test Probe, 0.250" Centers

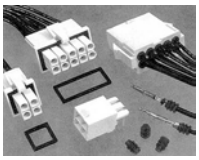
When ordering connectors, choose post length suitable for a 0.093" thick PCB (the board thickness of CB28).

CB28
Mate-n-Lok
Connectors
(Item 758)





Example Configurations



Example Mate-n-Lok Connectors
(not included with CB28 Boards)

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 759, CB29 Connector Board Set for Bare Wire Connections.....

This board has four 16-pole screw terminal blocks (64 terminals, total) that will accept bare wires from 12- to 30-gauge in size. The metal jaws firmly grip an inserted wire without damaging or distorting the end. We normally include the terminal blocks shown in the photo, soldered in place and ready to use. These terminal blocks have 5 mm (0.197") spacing between the contacts. The board may also be supplied without terminals for customer-mounted terminal blocks (order Item 759BB shown below). The board footprint includes hole patterns for 5 mm (0.197") hole spacing for each of the four rows, so any type of terminal block with this spacing can be accommodated. The space between each 16-pole terminal block may be used as a wire channel to guide bundles of wires neatly to the side. A pair of holes is provided on the right through which wire ties may be inserted to hold the wire bundles in place. Note: terminal block color may be either blue (as shown) or black, depending on availability. HV-rated to 1500 Vdc, 1000 Vac. Set of two boards.

Item 759H, CB29H Connector Board Set for Bare Wire Connections.....

Same as CB29 (above) but HV- rated to 2100 Vdc and 1200 Vac.

Item 759A, CB29A Wire Harness Transition Board.....

This variation of the CB29 board serves as a transition board between wire harness mating connectors and the CableEye tester. Mount the CB29A on or under a harness board, terminate the mating connectors to screw terminals on this board, and connect the 64-pin right-angle headers to CableEye using 64-conductor flat cable *(not included, see Item 854, p.35)*. Stackable, as shown in the photo. Rated to 800 Vdc with flat cable, or 1500 Vdc with Ampmodu cable. Includes kit of screws and standoffs. Set of two boards.

Item 759AH, CB29AH Connector Board Set for Bare Wire Connections.....

Same as CB29A (above) but high-voltage rated for 2100 Vdc and 1200 Vac when used with Ampmodu discrete-wire extension cable (not illustrated, not included). See p.35 for Ampmodu Extension Cable, Item 864.

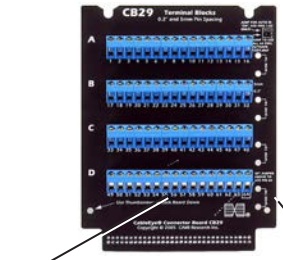
Item 759BB, CB29BB Bare Wire Harness Transition Board (no terminal blocks, 1500 Vdc, 1000 Vac).....

Item 759HB, CB29HB Bare Wire Harness Transition Board (no terminal blocks, 2100 Vdc, 1200 Vac.....

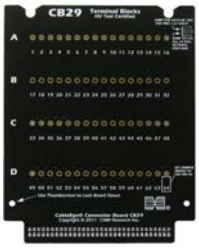
Same as CB29 and CB29H (above) but with no terminal blocks installed. Use with your own terminal blocks, as an adapter cable interface, or for other purposes.

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

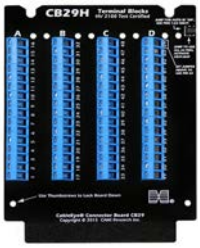
CB29
Screw Terminals
(Item 759)



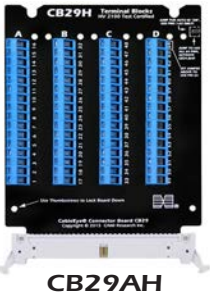
CB29BB
Bare Screw Terminal Board
(Item 759BB)



Close-Up of Terminal Block



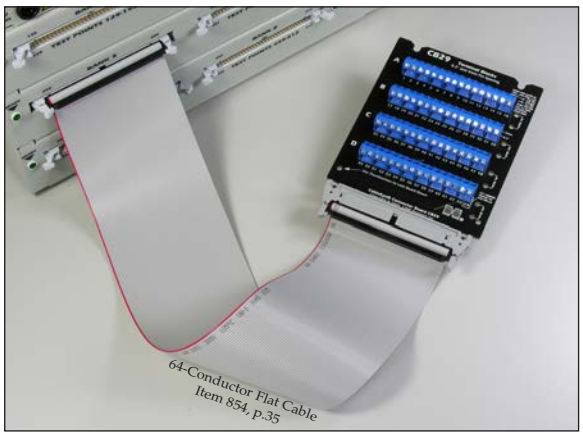
CB29H
HV Screw Terminals
(Item 759H)



CB29AH
HV Wire Transition Board
(Item 759HA)

CB29A
Wire Transition Board
(Item 759A)

CB29A is sold as a set of two boards. Three boards are shown stacked in this photo for illustrative purposes only.



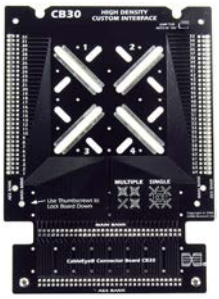
CB29A Connected to a CableEye Tester

Item 760, CB30 Connector Board Set for Custom Interfaces up to 128 Test Points.....

This generic board, similar in design to the CB8, accepts a wide range of circular connectors, rectangular connectors, bracket-mounted assemblies, and adapter cables. Users mount connectors of interest using supplied standoffs and screws. Panel-mount circular connector with four mounting holes fits the "X" pattern slots on this board. Mount up to four small circular connectors (mounting hole spacing less than 0.9"), or one large connector (mounting hole spacing less than 2.3"). Holes may be drilled in the board to accommodate other mounting arrangements. Wire pins from the attached connector to labeled pads surrounding the board. Use the numerous small holes around the board for nylon lacing to hold wiring in place. Alternatively, mount dual-row headers of up to 64-pins (Item 851, p.34) to the right and left footprints, spaced on a 0.1" grid. Use these headers for a custom-designed daughter board that plugs into the CB30 (see the CB30A, B, C, and D boards, next pages) or for flat cables. Instead of a single 64-pin header, attach combinations of smaller headers that have a 0.1"x0.1" footprint. A total of up to 128 test points can be accommodated per board.

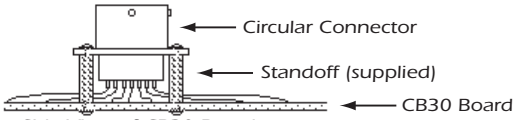
When the wiring is displayed, a generic dual-row header is shown for the connector. Use the optional PinMap software (Item 708, p.30) to choose a different graphic from the CableEye connector library and assign custom pin labels. Use two CB30 boards together, or a CB30 in combination with any other CB board to accept any connector combination. Set of two boards with expander cables. *Requires 256 test points; expansion module needed; see p.6.*

CB30
High-Capacity
Custom Interface
(Item 760)

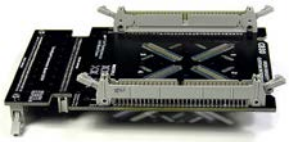


CB30 Standoff Kit

Requires Expansion Module!



Side View of CB30 Board
with Connector Mounted



Side View of CB30 with
64-Pin Headers Attached
(headers not included)

CB30 Mounted on a 256-
Point CableEye System

See photos of custom CB30 applications on the CAMI web site: www.camiresearch.com/Catalog_Pages/CB30_application.html

Item 760A, CB30A Connector Board Set for AMP Mictor Connectors.....

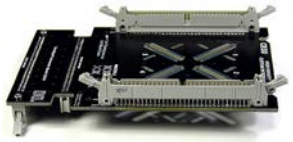
This board supports 38-, 76-, and 114-pin surface-mount AMP Mictor connectors. A secondary bank in the lower part of the board provides backup footprints in the event that any of the connectors in the primary bank should become damaged or suffer intermittent connections from wearout. Pad spacing on this board is 0.025" (0.64mm), and the pads are arranged in groups of 38 (19 on each side). These boards ship without Mictor connectors. We will populate the board with connectors the User provides for a modest configuration charge. If we install connectors, a set of test cables should also be supplied so that we may test the interface before returning it to the customer.

Important: These CB30A boards are daughter boards intended to mount on a set of CB30s (see photo on right). Plan on ordering a set of CB30s with the CB30A if you do not already have a set.

Set of two boards with four 64-pin latch headers. *Requires 256 test points and a set of CB30 boards.* Note that the latch headers supplied with the CB30A should be mounted to the CB30 boards to accommodate the 64-pin sockets on the bottom of the CB30A; CAMI Research will configure this for you if the CB30s are ordered at the same time as the CB30A.

CB30A
Mictor Connectors
(Item 760A)

Requires Expansion Module!



Side View of CB30 with
64-pin Headers Attached
(headers included with
CB30A or CB30B, not CB30)

CB30A Mounted
on CB30

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 760B, CB30B Connector Board Set for ITT Cannon DL-156, DL-96, DL-60 ZIF Connectors.....

We designed the PCB footprint on this board to accept any of three connector sizes: 156 pins, 96 pins, or 60 pins. Only one connector of these three sizes may be mounted on the board. *Connectors are not included!* The customer must provide us with the desired connectors and we will mount them on the boards and test them. Assembly and test are included in the price of the board. Because of the complex and dense nature of these connectors, we do not advise customer-installation unless proper wave soldering equipment is available. If possible, please supply a set of test cables so that we may test the interface before returning it to you. Note that these mating connectors are expensive and may require some lead time to obtain.

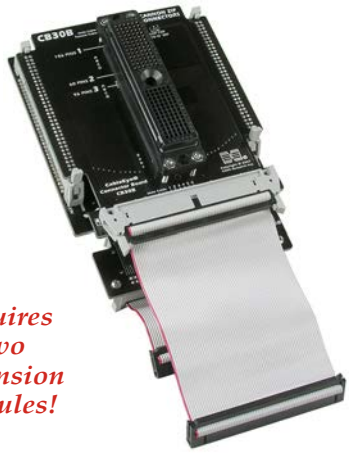
ITT Cannon Connector Part Numbers:

156 pins, DL1-156RW6B, Catalog #110536-1007
96 pins, DL2-96RW6B, Catalog #110855-0014
60 pins, DL3-60RW6B, Catalog #110901-0010

Important: These CB30B boards are daughter boards intended to mount on a set of CB30 boards (see photo on right). Plan on ordering a set of CB30s with the CB30B if you do not already have a set.

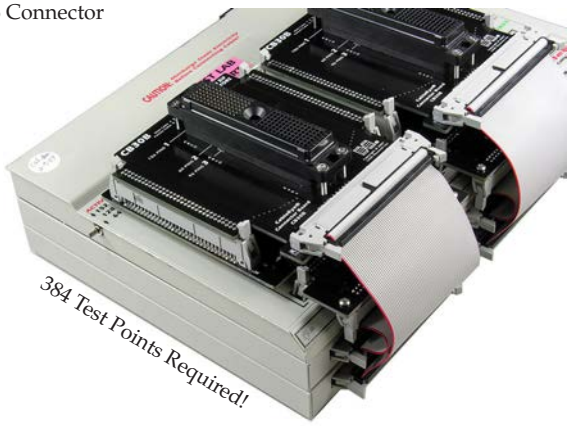
Set of two boards with four 64-pin latch headers. *Requires 384 test points and a set of CB30 boards (Item 760, described on the previous page).* Note that the latch headers supplied with the CB30B should be mounted to the CB30 boards to accommodate the 64-pin sockets on the bottom of the CB30B; CAMI Research will configure this for you if the CB30s are ordered at the same time as the CB30B.

DL-156 Connector



Requires Two Expansion Modules!

Top View of CB30B (Item 760B) Mounted on CB30 (Item 760)



384 Test Points Required!

Item 760C, CB30C Connector Board Set for Molex 160-Pin LFH Connectors.....

Use this board for 160-pin Molex LFH (low-force helix) connectors. *Connectors are not included!* The customer must provide us with the desired connectors and we will mount them on the boards and test them. Assembly and test are included in the price of the board. Because of the complex and dense nature of these connectors, we do not advise customer installation unless proper wave soldering equipment is available. If possible, please supply a cable so that we may test the interface before returning it to you. Note that these mating connectors are expensive and may require some lead time to obtain.

Molex Connector Part Number (two required): 71624-1003
Mating connector is *Male* for *Female* Cable Connector

Important: These CB30C boards are daughter boards intended to mount on a set of CB30 boards (see photo on previous page). Plan on ordering a set of CB30s with the CB30C if you do not already have a set.

Set of two boards with four 64-pin latch headers. *Requires 384 test points and a set of CB30 boards (Item 760, described on the previous page).* Note that the latch headers supplied with the CB30C should be mounted to the CB30 boards to accommodate the 64-pin sockets on the bottom of the CB30C; CAMI Research will configure this for you if the CB30s are ordered at the same time as the CB30B.

Requires Two Expansion Modules!

CB30C
Molex 160-Pin LFH Connectors (Item 760C)

Mounts on tester exactly as does CB30B above.

CB30D for Molex 200-pin Connectors is available on special order. Contact CAMI Research for price and availability.

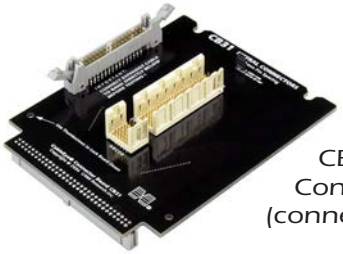
Item 761, CB31 Connector Board Set for Metral Connectors

We designed the CB31 for Metral connectors (manufactured by FCI) which have 4 x 24 and 5 x 6 pin layouts on a 2 mm grid. *This board comes without connectors installed.* Users should provide, and may easily solder in, connectors of the needed sizes. When using 4 x 24 (96-pin) and 5 x 6 (30-pin) connectors with the Auto-ID jumper in place, the CableEye software automatically assigns the pin numbers as defined by the manufacturer for connectors of these sizes. For smaller connectors, use the optional PinMap software (Item 708, p.30) to select an appropriate graphic and assign pin labels. CAMI Research will solder in connectors provided by the customer if desired, in which case a set of test cables should also be supplied so that we may test the interface before shipment. Set of two boards with expander cables. *Requires 256 test points; expansion module needed; see p.6.*

Metral connectors may be obtained from Framatome/FCI:
www.fciconnect.com/electrical-connector/metral.htm

CB31
Metral Connectors
(Item 761)

Requires Expansion Module!



CB31 with Metral Connectors Mounted (connectors not included)

Item 762, CB32 Connector Board Set for DB104 High Density Connectors

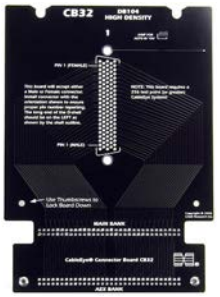
Use CB32 for DB104 male or female connectors. *This board comes without connectors installed.* Users should supply and may easily solder in one vertical male or female connector on each board, as needed. CAMI Research will solder in connectors provided by the customer if desired, in which case a set of test cables should also be supplied so that we may test the interface before shipment. Set of two boards with expander cables. *Requires 256 test points.*

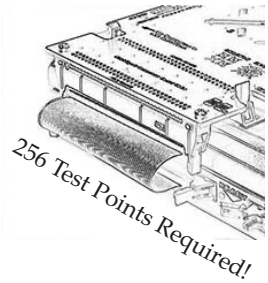
DB104 connectors may be obtained from Positronic Industries (many variants) or TE Connectivity.

TE Connectivity: 208877-1, DB104 Receptacle
208871-1, DB104 Plug

CB32
DB104 Connectors
(Item 762)
(connectors not included)

Requires Expansion Module!





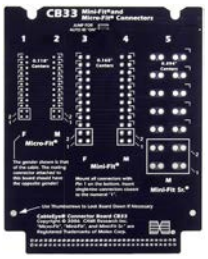
CB32 Mounted and Connected to Expansion Module

Item 763, CB33 Connector Board Set for Molex MiniFit™, MiniFit Sr., and MicroFit Connectors

This board includes connector footprints for MiniFit connectors with 0.118", 0.165", and 0.394" pin centers. The footprint patterns were sized so that the largest connector in the family will fit. Because of the wide variety of connectors available for this board and the many possible customer configurations, the board is sold without any connectors. Customers should obtain their own mating connectors suitable for their application. Connector graphics are automatically sized to fit the measured wiring. Set of two boards.

When ordering connectors, choose post length suitable for a 0.093" thick PCB. This is the board thickness of all CAMI CB boards.

CB33
MiniFit, MicroFit Connectors
(Item 763)
(connectors not included)



NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 764, CB34 Connector Board Set for Cirris™ Adapter Cards.....

This board will accept one 64-point Cirris adapter board or two 32-point Cirris adapter boards, and show test results as a 64-pin header numbered 1-64 on each bank. The CableEye software does not compute the board or cable Signature, or automatically identify which Cirris board is connected. Use the PinMap software, p.30, to obtain a proper graphic and pin numbering. Most Cirris-made boards are numbered so that the test point number corresponds with the connector's pin number, so the pin numbering shown on the 64-pin header will be correct even if the graphic is not. You may use this board with CableEye HVX systems. It has been certified to operate at test voltages of up to 1500 Vdc and 1000 Vac assuming that a suitably-rated Cirris board is also used. Set of two boards.

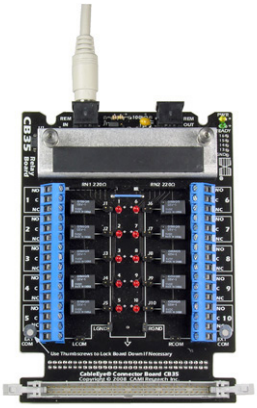
CB34
Cirris™
Adapter Interface
(Item 764)

Item 765, CB35 Relay Control Board for External Digital Control (single board, for M3U or HVX Testers only)....

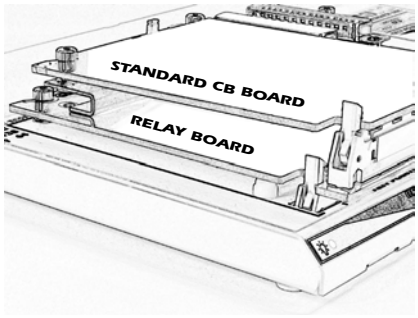
Item 768P, +5v Accessory Power Module (needed when 3 or more relay boards are cascaded).....

Ten independently-controlled SPDT relays with dry contacts allow program control of circuits associated with the unit under test. Issue Macro or JavaScript commands to close or open a relay coil, then perform the desired test. Other uses: illuminate a bin where a failed cable should be placed; illuminate different bins to show locations for devices sorted by resistance or resistance tolerance; trigger a visual or audible signal indicating the end of a batch; or for a marking device to emboss test results on the wire or connector body.

CB35
Relay Board
(Item 765)



Mount the relay board in either Banks 1 or 2. It uses no test points on that bank; special brackets allow a standard CB board to be mounted *above* the relay board to operate in the normal manner using all 64 pins in that bank position.

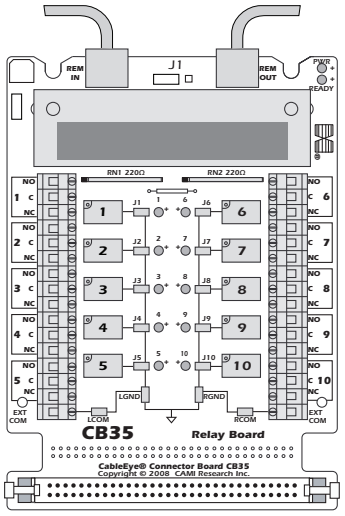


Mounting a Standard CB Board
Above the Relay Board

Each relay coil has an associated LED lamp which turns on when the coil activates. The terminal block provides three output terminals for each relay: Common, Normally Open, and Normally Closed. The jumper configuration on the board lets you leave all relay common terminals floating, tie the common terminals together linked to an external common, or tie the common terminals to the local signal ground.

From CableEye
REMOTE Socket

To 2nd Relay Board
or Footswitch



The relay board is sold as a single board, not a board set. Each board includes a control cable that links to an M3U tester. Multiple relay boards may be used on a CableEye tester if desired. The relays operate at +5 V and derive power from the tester which is capable of supplying two relay boards. An external +5 V supply is required for more than two boards. Independent Power and Ready LEDs show the status of the board.

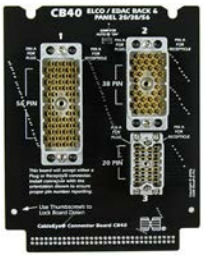
Relay Specifications

Relay Type: Omron G5V-1 or Equivalent
Contact Load: 0.5 A at 125 Vac, 1 A at 24 Vdc
Contact Resistance: 100 mΩ max.
Insulation Resistance: 1000 MΩ min.
Dielectric Strength:
400 Vac, 50/60 Hz between contacts

Item 770, CB40 Connector Board Set for Elco/Edac 20-, 38-, and 56-pin Rack & Panel Connector (used in Audio Patch Panels).....

Three connector positions provided on this board will accept either a male or female 20-, 38-, and 56-pin Elco/Edac Rack & Panel connectors. *The price does not include connectors,* and the board ships as a bare board. If the User provides the connectors, we will solder them into position and test the boards for a nominal charge (contact us for details). Set of two boards.

CB40
Small Elco/Edac Rack & Panel Connectors
(Item 770)

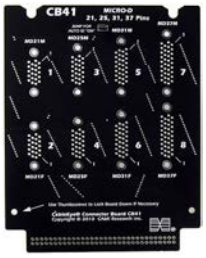


Item 771, CB41 Connector Board Set for 21-, 25-, 31-, and 37-Pin Micro D Connectors.....

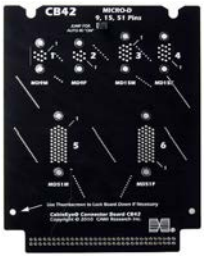
Item 772, CB42 Connector Board Set for 9-, 15-, and 51-Pin Micro D Connectors.....

These boards provide connector footprints for small- and medium-size Micro D connectors. Each board offers one position for male and female connectors of each size. *The price does not include connectors,* and each board ships as a bare board. If the customer provides the connectors, we will solder them into position and test the boards for a nominal charge; contact us for details. Set of two boards.

Note: When ordering connectors, choose post length suitable for a 0.093" thick PCB. This is the board thickness of all CAMI CB boards.



CB41
Micro D Connectors,
21-, 25-, 31-, 37-Pin
(Item 771)



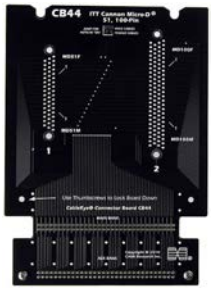
CB42
Micro D Connectors,
9-, 15-, 51-Pin
(Item 772)

Item 773, CB43 Connector Board Set for 9-, 15-, 21-, 25-, 31-, and 37-Pin Micro D Connectors.....

Item 774, CB44 Connector Board Set for 51 and 100-Pin Micro D Connectors.....

Like the CB41 and CB42 boards, these boards provide connector footprints for Micro D connectors, with the following difference in design: Each board offers one position only for each size, and each board should be populated with either all male or all female connectors. The boards are sold as a set, and you may either install male connectors on one board and female on the other, or all one gender on both boards. A jumper on the board configures the board for the proper gender. Also different is that the CB44 offers a footprint for a 100-pin connector, and thus a *256-point CableEye system is required to use it. The price does not include connectors,* and each board ships as bare board. If the customer provides the connectors, we will solder them into position and test the boards for a nominal charge; contact us for details. Set of two boards with expander cable.

CB43
Micro D Connectors,
9- through 37-Pin
(Item 773)



Requires Expansion Module!

CB44
Micro D Connectors,
51- and 100-Pin
(Item 774)

Item 775, CB45 Connector Board Set 1mm and 0.5mm Surface-Mount Connectors.....

The connector positions provided on this board accept single- and dual-row surface-mount connectors with 1mm aligned pins (32 x 32 max), 1mm staggered pins (26 x 25 max), 0.5mm aligned pins (32 x 32), and 0.5mm single-row pins (64 x 1). *The price does not include connectors,* and the board ships as a bare board. If the User provides the connectors, we will solder them into position and test the boards for a nominal charge (contact us for details). Set of two boards.

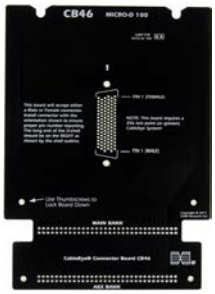
CB45
1mm and 0.5mm SMT
(Item 775)

NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

Item 776, CB46 Connector Board Set for 100-pin MicroD Connectors, Airborn-style Footprint.....

One connector position provided on this board will accept an Airborn-style 100-pin MicroD connector (6 rows of pins, (16-16-17-17-17-17). *The price does not include connectors,* and the board ships as a bare board. If the User provides the connectors, we will solder them into position and test the boards for a nominal charge (contact us for details). *256-point CableEye system is required to use this board!* Set of two boards with expander cable.

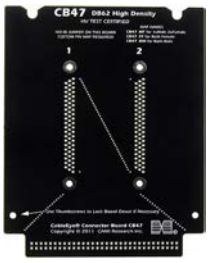
CB46
100-Pin Micro-D
(Item 776)



Item 777, CB47 Connector Board Set for DB62HD Connectors (certified for operation up to 1000v DC)....

Two connector positions provided on this board will each accept either male or female DB62HD connectors. Specify your gender preference when ordering and the connectors will be mounted as needed. Certified to operate at 1000 Vdc, 700 Vac for high voltage testing. Set of two boards.

CB47
DB62HD
(Item 777)



Item 778A, CB48A Header Isolator Set, Vertical Header (certified for operation up to 1500v DC, 1000Vac).....

Item 778B, CB48B Header Isolator Set, Right-Angle Header (certified for operation up to 1500v DC, 1000Vac)....

These boards fit the 64-pin headers on any CableEye tester, top deck or expansion module, and will protect the built-in connectors from broken pins and wear when attaching cables directly to the tester. Use the CB25A Riser Board to achieve the same header isolation function when using CB boards (see p.17).

CB48A
Header Isolator,
Vertical
(Item 778A)

CB48B
Header Isolator,
Right-Angle
(Item 778B)

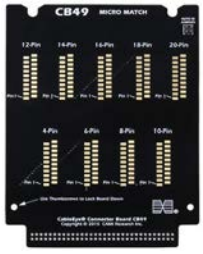
CB48 A (Front) and B (Top)
Installed on an
HVX Tester
(may be used on
M3U testers also)

CB25A
Riser Board serves
as Header Isolator
for CB Boards
(see p.17)

Item 779, CB49 Connector Board Set for MicroMatch Connectors (SMD Style).....

Nine 20-position SMD connector footprints are provided for customer installation of the desired connector sizes. *The price does not include connectors,* and the board ships as a bare board. Footprints are labeled for standard sizes ranging from 4 to 20 pins, and an auto-ID map is provided for these. However, the user can create a custom map, if desired, for any combination of connectors. If the User provides the connectors, we will solder them into position and test the boards for a nominal charge (contact us for details). Set of two boards.

CB49
MicroMatch
(Item 779)



NOTE: Unless otherwise stated, all CAMI CB boards are high-voltage rated for a minimum of 500 V DC/AC. Some boards are rated for higher voltages.

LIGHT-GUIDED CONNECTOR ASSEMBLY

REDUCE ASSEMBLY ERRORS, INCREASE PRODUCTIVITY!

Item 767A, CB37A, 64-Pin Light Director Board.....

Item 768A, CB38A, 128-Pin Light Director Board....

CB37A and CB38A are sold as a single board to be used with M3U or HVX Testers only. Each board includes 64 light fibers (128 with CB38A), connector support plate, mounting hardware, and fiber shroud. Power cable included with 1st board ordered. *AutoBuild software option required; see Item 728, p.33. CB38A requires an expansion module!*

Item 768P, +5v Accessory Power Module (needed when 2 or more CB38A boards are cascaded).....

Item 858B, Extra Light Fiber 6" Long .....

Item 858C, Kit of 32 Extra Light Fibers .....

Item 610, Assembly and Programming of CB37A...

Item 611, Assembly and Programming of CB38A....

We will mount and program mating connectors you provide. Send us connectors with open cavities only, no pins installed. Include a cable schematic or pin assignment table.

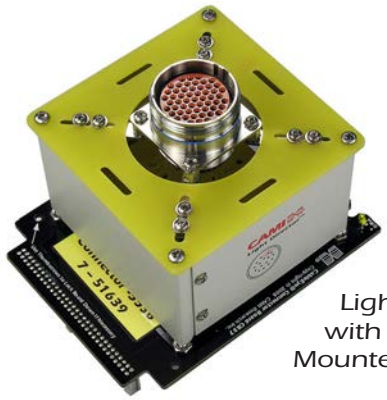
Our Light Director™ system provides a, computer-guided technique for assembling connectors used in aerospace, medical, and other high-reliability applications. This system uses light fibers driven by super-bright LED lamps to individually illuminate target cavities in the connector being assembled. When 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.

The Light Director also employs high-quality synthetic speech in English, Spanish, German, or French to read the pin number to the technician, further reinforcing the target location. *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.

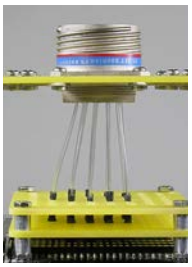
Field testing has shown that the Light Director doubles assembly rate over manual methods while nearly eliminating errors. Because the Light Director greatly reduces the perceptual challenge of manually locating pin cavities in a complex connector, *technician fatigue is greatly reduced*, permitting a continuous, high productivity rate throughout the work day.

The Light Director™ system is an accessory for CAMI's CableEye® PC-Based cable test system. The CB37A or CB38A boards include everything needed to mount the customer-supplied mating connector. All parts are reusable. *Requires the AutoBuild Guided Assembly Software (Item 728); a high-quality voice font is optional (Item 792); see p.33.*

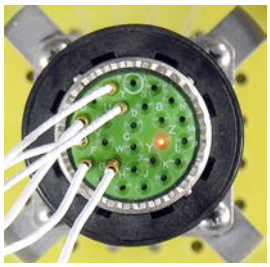


CB37A
Light Director Board
with 55-Pin Connector
Mounted and Ready to Use
(Item 737A)

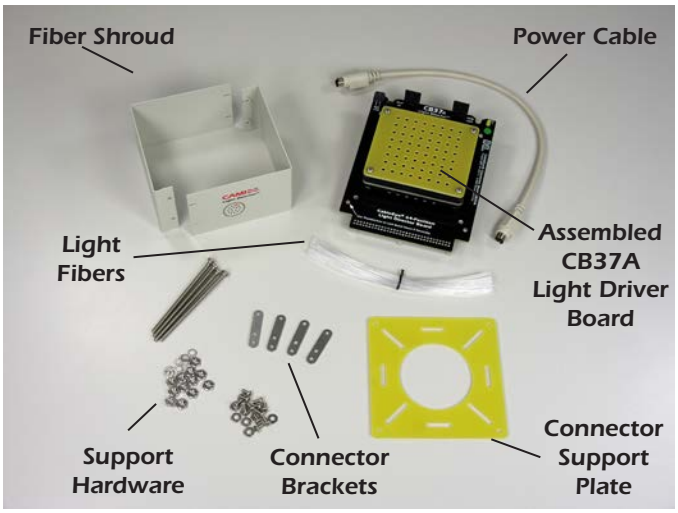
Videoclip Demo
on CAMI Web Site



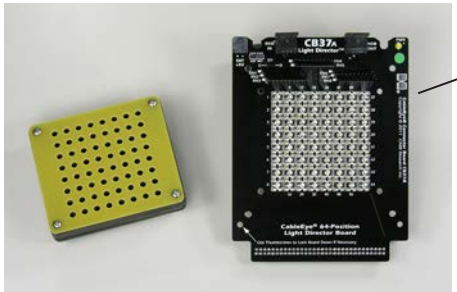
Side View Showing Fibers
Entering Mating Connector



Flashing Light Shows
Target Pin



Components of the CB37A Board Kit (Item 767A)



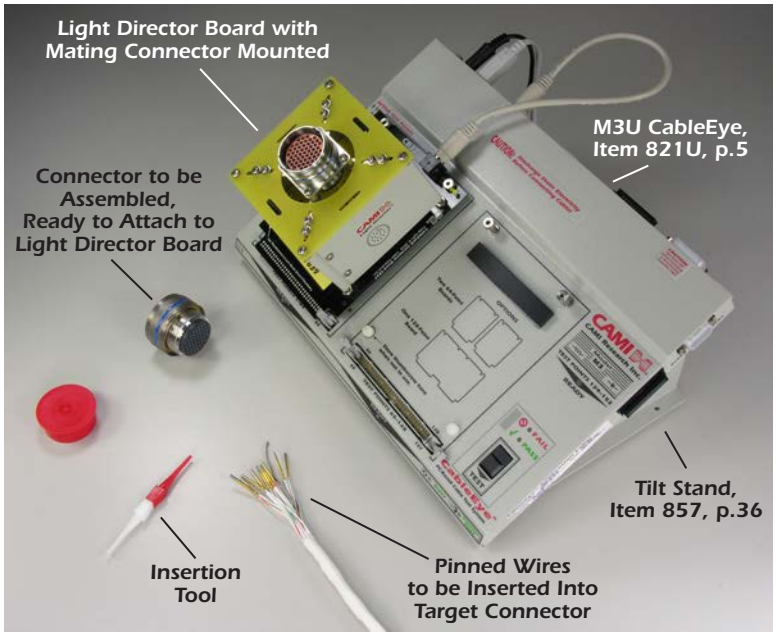
CB37A Board with 64 Mounted LEDs

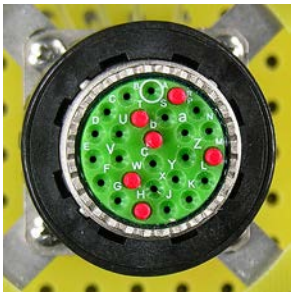
Friction Block Gasket Used to Support Fibers (left)

LIGHT-GUIDED CONNECTOR ASSEMBLY

Light Director Bench Setup

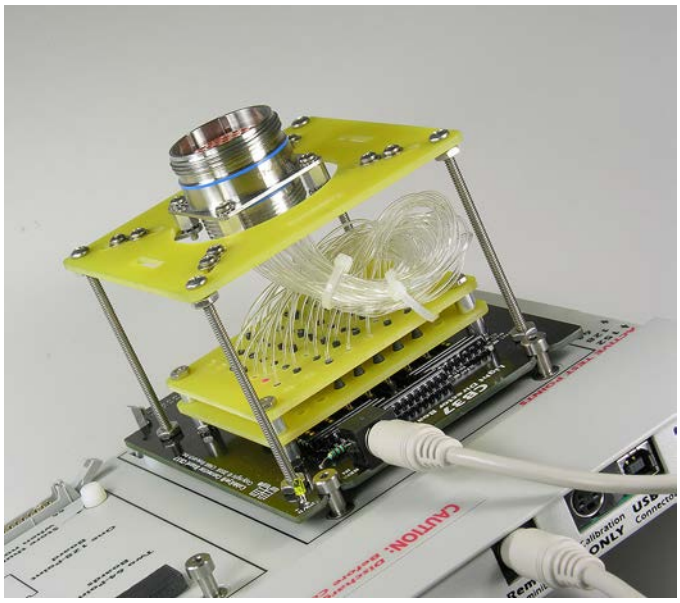
In this photo, you see a 55-pin mating connector mounted to a CB37A board. The connector to be assembled is on the bench along with the pre-pinned wires ready to be inserted. In this case, each wire is numbered to correspond with a printed insertion list. If assembled manually, the insertion list would tell the technician which cavity number should receive each numbered wire. The technician would then carefully locate the cavity, sometimes counting forward or backward from a reference location, and insert the pin into this cavity. During manual pin insertion, locating the correct cavity takes time and requires the technician's full concentration. ***Using the Light Director system, the technician simply looks for the cavity with a flashing light and inserts the pin there.*** Neither reading cavity numbers from the target connector nor counting forward or backward from a reference position is necessary. This reduces the perceptual challenge in finding the target, and therefore speeds assembly, improves accuracy, and reduces the fatigue level that would be experienced after several hours of manual pin-insertion work.

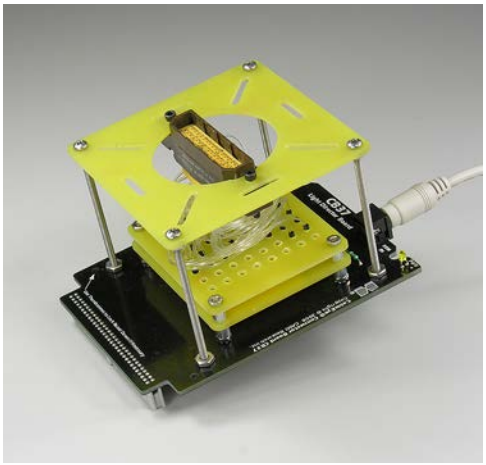




Moisture Plugs

Prior to pin placement, we illuminate all cavities requiring moisture plugs to allow rapid plug insertion. Blocking cavities not requiring pins further reduces the chance for insertion error.



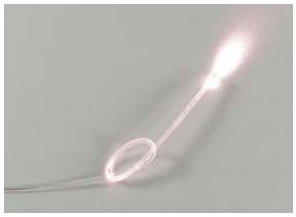


Rectangular Connectors

Mount connectors of all shapes on the connector support plate.

Flexible Light Fibers

Our Rayon light fibers flex easily to accommodate widely varied connectors. Longer fibers permit more convenient assembly and readily coil under the connector when the fixture is secured.



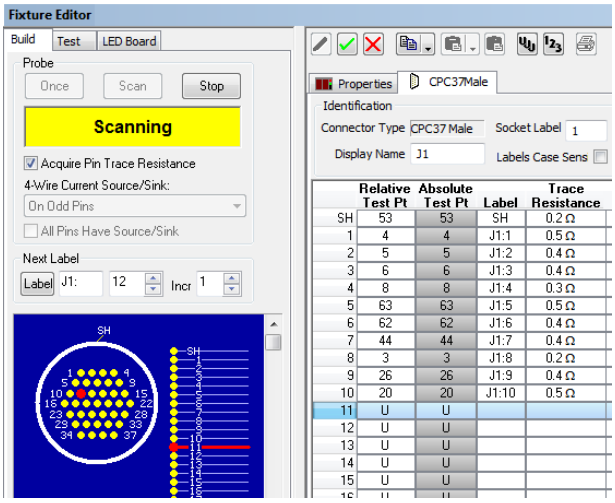
Cost/Benefit Study
camiresearch.com/Light_Director/Cost_Benefit_Analysis.pdf

OPTIONAL SOFTWARE for Custom Interfacing

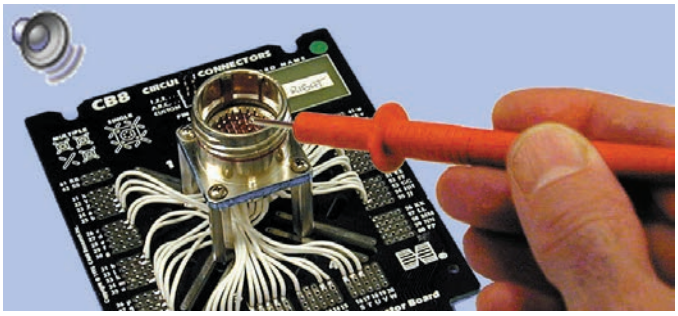
Note: With the exception of AutoBuild, all optional software comes as a Site License!

Item 708, PinMap™ Software.....

Use PinMap to link custom test fixtures, custom CB boards, specially-built connector panels, or pigtail adapters to the CableEye software. This software assigns test point numbers to connector types and applies standard pin designations to the pin numbers. For each custom connector, first choose a connector graphic from our large library to match your connector. Then touch CableEye's probe to the connector pins one-by-one to automatically detect and assign a test point to each pin. A short beep tone sounds as you touch them (Windows XP, Win7, Win8, Win10) so you don't need to take your eyes off the connector you're probing. Finally, enter pin labels of your choice if you wish to override the standard designations. Create custom pin labels of up to seven alphanumeric characters, an especially valuable feature for labeling wiring harness connectors. When you finish probing all pins, you store a "map" file for the custom fixture. A menu within the CableEye application lets you easily select the desired map file. Cut and paste connector maps between different map files to mix maps from different CableEye CB boards with custom interfaces. Includes an electronic directory of all connector images available in our graphics library. Site license; permits company-wide use with all CableEye systems. *Note:* requires probe! Probe included with new M2U, M3U, and HVX testers. *PinMap is not recommended for use with M2U-Basic testers which neither include a probe nor have a socket to connect one.*



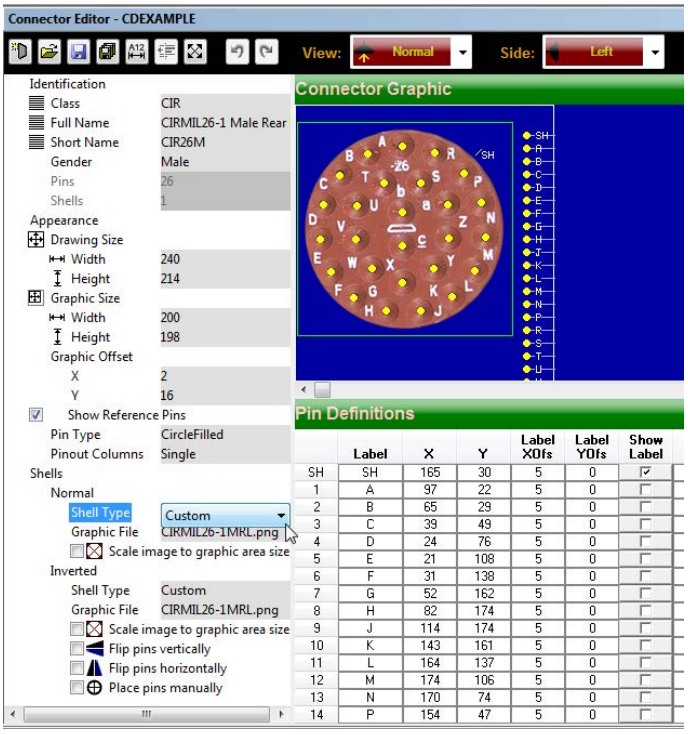
PinMap Screen Shot (Item 708)



Using the Probe when Making a Pin Map

Item 707, Connector Designer™ Software.....

CableEye's Connector Designer lets you create custom graphic images for unusual connectors not found in our library. This application aims primarily at the many and varied kinds of circular connectors found in military and aerospace applications and permits you to choose a graphic size, position, and pin numbers, as necessary. The software will create a wire frame image, or will accept your photographic image of a connector in .png or .bmp form as shown on the right over which you may apply the pins, and pin numbering, if pin designations do not appear in the photo. Note that our standard software includes an automatic graphic tool for rectangular, D-shape, and matrix connectors, so for these types of images, you do not need the Connector Designer. However, if you need graphic images for circular or oddly shaped connectors, order the Connector Designer with your system. Site license permits company-wide use with all CableEye systems.



Connector Designer Screen Shot (Item 707)

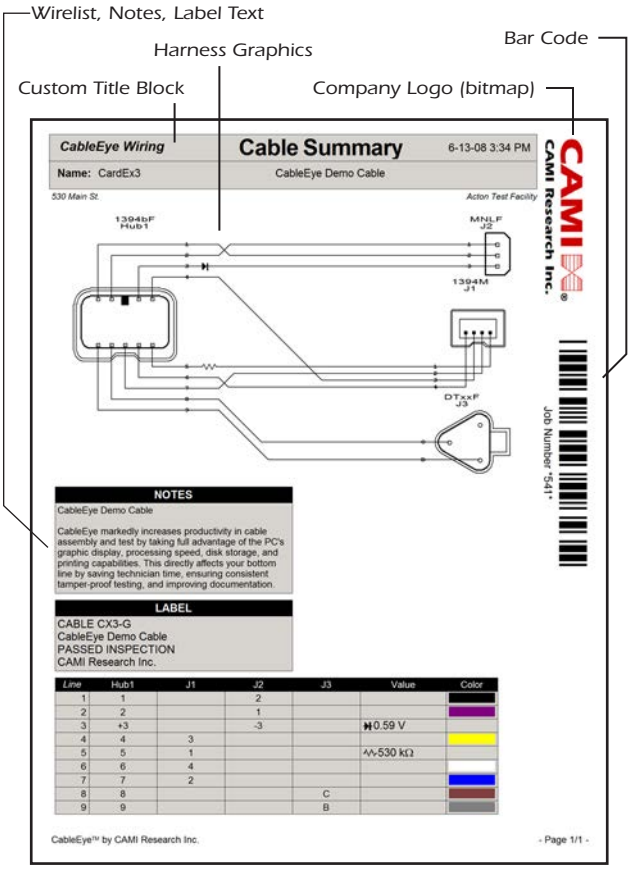
OPTIONAL SOFTWARE for Custom Reports, Labels, Standalone Operation

Item 860, Custom Reporting and Labeling Option....

Item 861, Custom Labeling Option Alone.....

The CableEye application that comes with each tester includes standard reporting forms for printing a cable's netlist with schematic, a differences list showing wiring errors, a batch report when logging test results, and a report for intermittent connection errors. It also includes a variety of standard label forms you may use for printing cable, carton, or ID labels. Order the Custom Reporting and Labeling Option if you wish to create *fully-customized reports and labels* for special purposes. This option will permit you to add your company logo to each report, bar code fields, custom title blocks, and choose how and where cable data appears on the report. Requires some knowledge of database or Visual Basic™ form creation. Site license permits company-wide use with all CableEye systems.

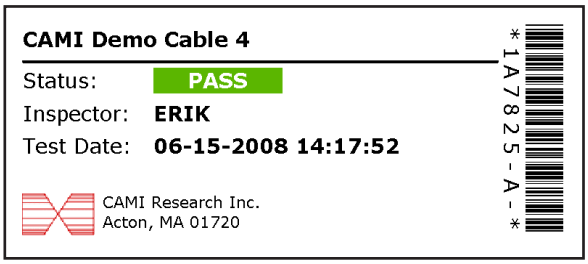
When using the Labeling Option Alone (Item 861), a simplified setup does not require any prior experience with form creation or labeling programs. Will work with any printer having a Windows driver. Site license permits company-wide use with all CableEye systems.



Example Custom Report (Item 860)

Item 729, Standalone Software License.....

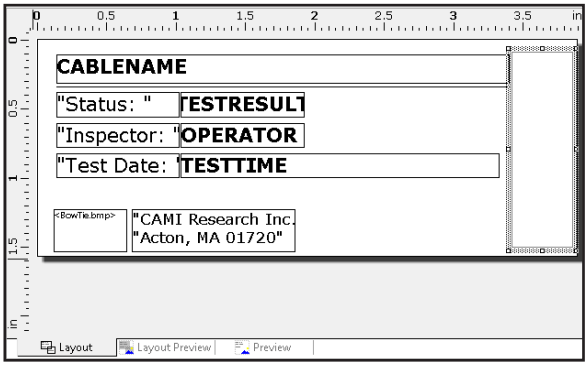
The CableEye application software supplied with any tester you purchase requires that the tester be connected to your computer to function. Order this standalone license if you wish to install the software on additional computers and operate it without the CableEye test unit being connected. You may find this useful for database management, report printing, label printing, cable design, Macro editing, and log printing. This license also permits installation on a server for company-wide access. When you order this license, your installer CD will include an enabling key for standalone operation. Use this CD to install the software on additional computers, or on your server. (no photo or screen shot available)



Example Custom Label (Items 860, 861)

Item 831, Software Validation Procedure.....

This written procedure with checklist identifies specific software functions to test and gives the expected results to observe. Use this for regression testing to validate software function when installing new releases or meeting standards requirements. 22 pages; two-hour test by technician familiar with tester operation. Free upgrades on request when the procedure is expanded to reflect the addition of new software functions.

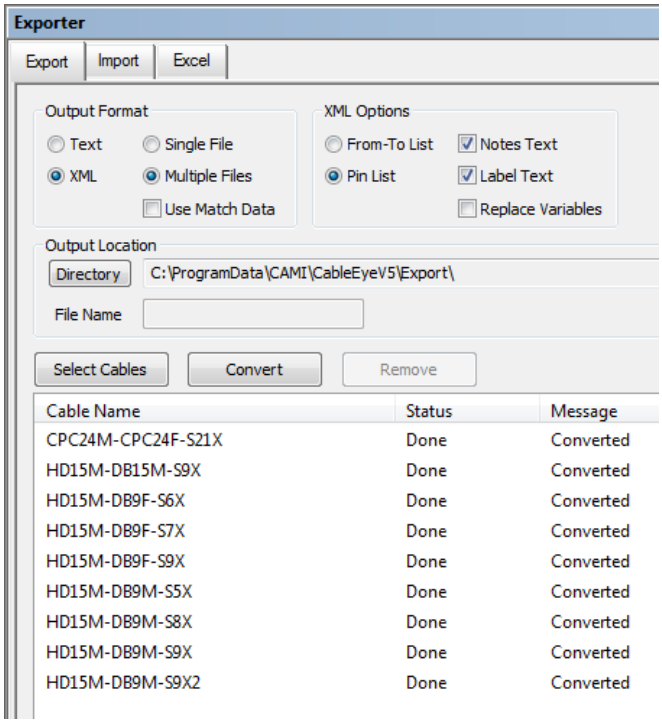


Custom Label Setup Screen (Item 860, 861)

Item 709, Exporter Software.....

CableEye stores your custom cable and harness data in its own internal format especially optimized for wire-list searching. Use our Exporter software to export and import cable data in standardized formats. Exported cable data may then easily be imported into commercial database, spreadsheet, or word processor software for custom report generation. You may also import wirelist text back into the internal CableEye format. Exported data may be organized in several forms: (a) as a From-To list in which one connection appears on each line; (b) as a Single-Column Pin List in which all connections to a wire appear on one line with connector and pin number individually specified for each connection (good format for large wire harnesses); (c) as a Multi-Column Pin List in which all connections to a wire appear on a single line with pin numbers separated by tabs (or commas) and in order by connector (good format for cables or small wire harnesses).

At present, we support files with tab- and comma-separated fields, or in XML format. We plan to support other more specialized formats in the future. Contact us for further information or to request the addition of a new format. Site license permits company-wide use with all CableEye Systems.



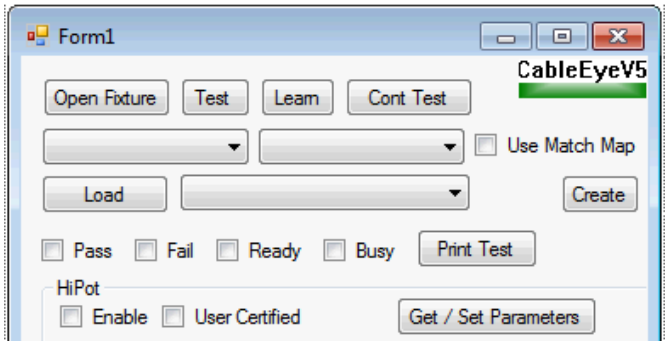
Exporter Software Screen Shot *(Items 709)*

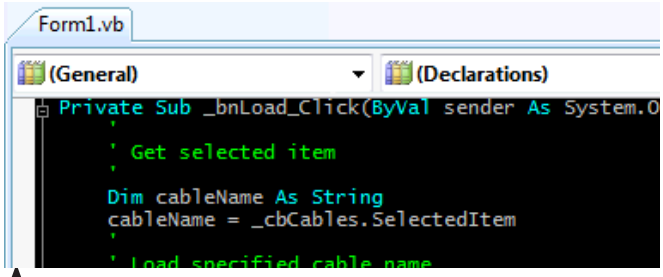
Item 730, Win32/.NET API Software License with LabVIEW™ Interface.....

The CableEye tester normally ships with a complete software application for production, incoming inspection, and R&D. We also offer an optional Application Programming Interface (API), a software library that enables control of the tester by an external program. Using the API, test engineers may now write software for CableEye in Visual Basic, C#, any other .NET-based language, or from any other software environment capable of hosting our ActiveX control. We also include a LabVIEW™ interface that lets you integrate CableEye tester control directly into your LabVIEW programs.

The API provides a library of software primitives used to exercise control over all basic functions of the tester. This permits engineers to embed the tester's function within a larger system that may include electrical cable lockdown, label printing equipment, pass-fail marking devices, diverter gates, and automatic molding equipment. Engineers may also write their own fully-custom user interface for the tester for special, simplified applications like a touch-screen display.

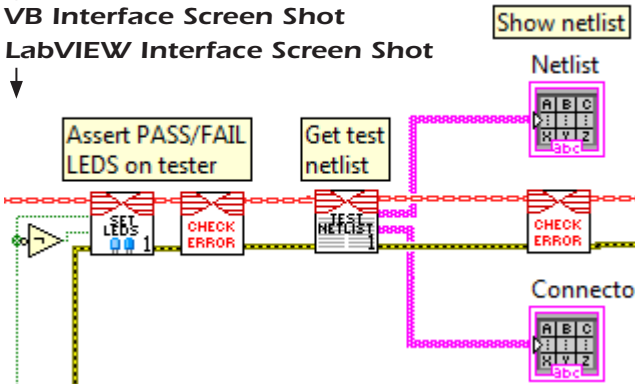
The API software includes the development environment for creating custom control screens and integration with external software. Runtime modules created with this software may be used without further license fees on any other CableEye testers within your organization. We also include the source code for several working examples that you may use as a reference or modify to suit your needs. This option requires some knowledge of programming.





VB Interface Screen Shot

LabVIEW Interface Screen Shot



OPTIONAL SOFTWARE for Guided Assembly and Synthetic Speech

Item 728, AutoBuild™ Guided Assembly Software...

CableEye's AutoBuild™ software provides guided assembly with speech for cable and wire harness manufacturing. You may choose among several modes of operation, depending on the nature of your application. When the far end(s) of the cable or harness can be electrically connected to the tester ("2nd-sided pinning"), the technician touches an unterminated wire using either a probe (included with all testers), or a finger with wrist strap (Item 859, p.37), and the software reads the intended connection point using synthetic speech. The software also shows a connector graphic with the target pin highlighted. Once the connection is made, audible feedback confirms a proper connection or warns of an error.

When the far end of the cable or harness has not yet been assembled or cannot be electrically connected to the tester ("1st-sided pinning"), you may use one of two methods to assist in assembly: (a) blind assembly in which the software reads the next pin to be assembled and shows a graphic of the target pin, but cannot sense insertion (no mating connector necessary); and (b) light-guided assembly in which the mating connector is loaded with LED light fibers to illuminate the target cavity from the inside, thus eliminating the need for a computer screen (requires the Light Director™ board, Item 767A, p.28). Note that the Light Director system has been shown through field testing to improve productivity by at least 30% and up to 50% over manual methods. Refer to our web site for more information on each of these guided assembly methods.

Synthetic speech increases throughput, and helps the technician avoid repetitive motion injury to the neck and shoulders by eliminating the need to look constantly between the workpiece and the videoscreen. A simple half-open headset permits the speech to be easily heard in a noisy environment without interfering with other workers.

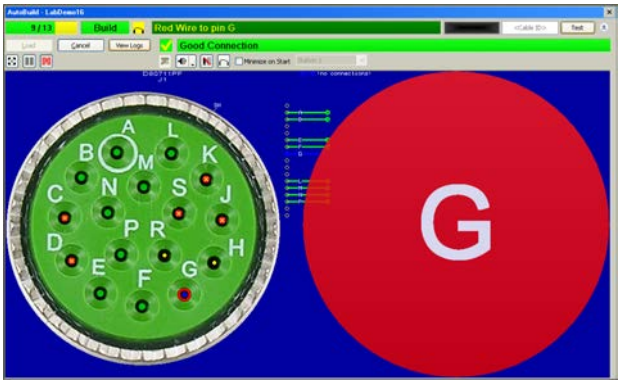
When finished, a printed report shows construction time and operator performance. Assembly times and error data may be logged for future study. Programmable tones accompany the graphic screen to give clear signals to the operator when good connections are completed or when incorrect connections, resistance violations, or reversed diode insertions are detected. ***Order one AutoBuild option per workstation; this is not a site license.*** *Video Demonstration on CAMI Web site!*

Item 792, AT&T Natural Voices Voice Fonts.....

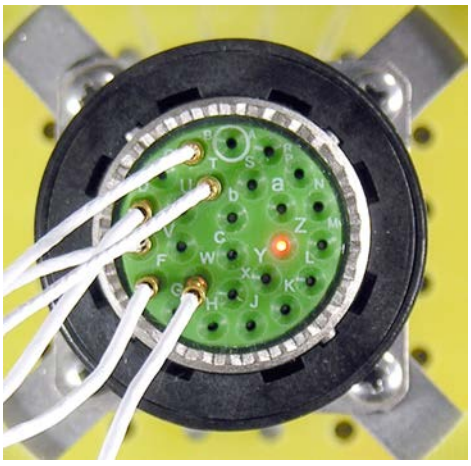
These voice fonts provide clearer, more easily understandable speech than the voice fonts typically included with your Windows™ operating system. *Order one voice font per workstation; this is not a site license.* Available in various languages:

English:	Item 792A Male	Item 792B Female.
Spanish:	(male not available)	Item 792C Female
German:	Item 792D Male	Item 792E Female
French:	Item 792F Male	Item 792G Female

AutoBuild™ Guided Assembly with Speech
Setup for 2nd-Sided pinning with Electrical test.
Target pin highlighted and read aloud. (Item 728)



AutoBuild Screen Image
Setup for 1st-Sided pinning.
Target pin highlighted and read aloud.



AutoBuild with the Light Director
Setup for 1st-Sided pinning. Target cavity is illuminated from below with LED light fiber.
See "Light-Guided Assembly" on p.28.

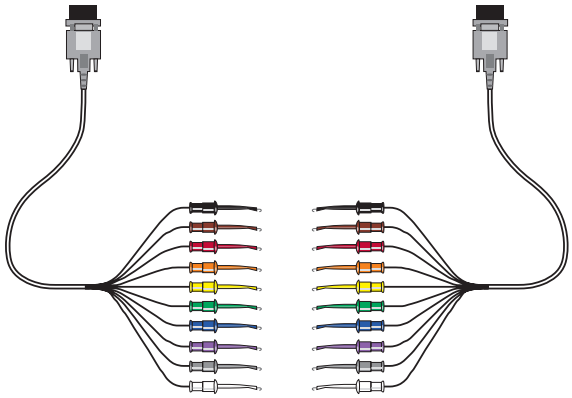
Speech Sample on CAMI Web Site . . .

ACCESSORIES

Item 710, Minihook Test Cables (set of two).....

Item 711, Minihook Test Cable (each).....

Allows testing of bare wire terminations. Each cable attaches to CableEye with a DB9 connector terminating in 10 color-coded minihook test clips for testing connectorless cables, PC boards, and backplanes. Special connector graphics show a color image of the actual test probes with the measured wiring. Use both probes together, or one probe alone with a connectorized cable at the other end to determine wiring terminations in a sealed connector. *Requires CB15 (Item 745) for use.*



Item 714, Footswitch Control.....

Connects to the REMOTE socket on the M2 (Items 811U) or M3 (Items 821U) CableEye base unit. Functions exactly like the TEST pushbutton and permits hands-free operation during batch testing. Constructed of rugged, heavy-gauge metal for long life in an industrial environment. Secures to a fixed base or floorboard using mounting holes in the base. This low-profile design rises only 0.75" from the floor, and its 2.5" x 3.5" dimensions require little room on your work-area floor. Includes a 10-foot cord with a miniDIN8 connector. *Cannot be used with M2U-Basic!*

Footswitch
(Item 714)

Item 850, 64-pin IDC Socket with Strain Relief...

Attaches to a 64-conductor flat cable (such as Item 852) to build an extension from the 64-pin headers on CableEye.

64-Pin IDC Socket
(Item 850)

Item 851, 64-pin Vertical IDC Boardmount Header with Ejection Latches (PCB mount).....

Interfaces custom PCB connector fixtures of your own design, or mounts in the "Custom" position of the CB2 or CB2A boards (Items 732 and 732A) for testing 64-conductor flat cable. Identical to the connectors used on CableEye base units (for example, Item 821U).

64-Pin Vertical Boardmount Header
PCB Pins
(Item 851)

64-Pin Right-Angle Boardmount Header
PCB Pins
(Item 851R)

Item 851R, 64-pin Right-Angle IDC Boardmount Header with Ejection Latches (PCB mount).....

Like Item 851, this header interfaces custom PCB connector fixtures of your own design but mounts at a right angle to the PC board (connector pins parallel to PCB surface). Identical to the 64-pin connectors used on CableEye attached expansion modules (for example, Item 823).

Item 852, 64-conductor IDC Flat Cable.....

For use with IDC connectors (Items 850 and 853). Available in spools of 250 feet; inquire about spool price.

64-Conductor Flat Cable
(Item 852)

Item 862, 80-pin Bare Header with Breakaway Pins....

Use in CB2 boards for custom configuration or any application that accepts 0.025" square posts on a 0.1" x 0.1" grid.

80-Pin Vertical Bare Header with Breakaway Pins
(Item 862)

ACCESSORIES *(continued)*

Item 853, 64-pin Vertical Surface-Mount IDC Header with Ejection Latches and Mounting Brackets.....

Mounts on harness boards or other flat surfaces to link mating connectors to a removable 64-conductor flat cable.

64-Pin Surface-Mount Header (IDC)
(Item 853)

Item 854, 64-Conductor Pre-Assembled Cable .....

We mount 64-pin IDC headers at each end, assemble and test. For applications requiring a connector at just one end, order twice the length you need and cut in half.

64-Conductor Pre-Assembled Cable
(Item 854)

Item 855, 64-pin Boardmount Socket.....

Use this connector to interface custom-designed CB boards to the CableEye base unit or QuickMount Housing (Item 712, p.7).

64-Pin Boardmount Socket
(Item 855)

Item 863, AMPMODU™ Socket Body and Pins.....

Consists of a 64-pin socket body with open cavities and a kit of 65 gold-plated female crimp pins (64 plus 1 extra) for 22-26 gauge wire. When assembled, this socket plugs into any of the 64-pin headers used on CableEye testers or expansion modules and would be employed when building rugged custom interfaces where IDC flat cable would be inappropriate, or where test voltages up to 2100 Vdc or 1200 Vac must be sustained. Crimp pins suitable for other gauge sizes or with different plating are available; contact us for information. *Note: appropriate crimping tool required!*

AMPMODU Socket Body and Pins
(Item 863)

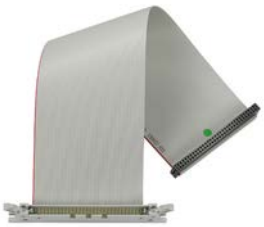
Item 864, 64-Conductor Pre-Assembled AMPMODU™ Cable.....

We use two AMPMODU 64-pin sockets as described above to build a female-to-female cable with discrete wire suitable for high voltage testing up to 2100 Vdc and 1200 Vac. Crimped gold contacts ensure low-resistance, strain-relief connections. Custom-assembled to the length you specify. Recommended for use with CB27 (p.20) and CB29AH (p.21) when these boards are used in high voltage applications with test voltages above 500 V.

AMPMODU Cable 64-Pin, Assembled
(Item 864)

Item 856, CB Board Extension Cable.....

If you need to test cables less than 5" long, remove one CB board from the fixture and electrically reconnect it using this 64-conductor extension cable. You may then position the free-floating CB board as close to the second CB board as necessary to accommodate short test cables; see photo below right.



CB Board Extension Cable (Item 856)

MISCELLANEOUS ITEMS

Item 857, Tilt Stand.....

Mount these two sturdy aluminum brackets to the base of M2U-Basic, M2U, and M3U testers to tilt the unit forward at a 30° angle. Rubber feet protect the table top, and holes in the bottom flange of these brackets permit them to be bolted to the work table if desired. May be used with expansion modules attached. Recommend for high-volume production stations or when using our Light Director™ connector assembly system (p.28). Will not work with older model M2-Basic testers (Item 810) having serial numbers earlier than 004350. Includes two brackets, screws, and installation instructions.

Tilt Stand
(Item 857)

Item 725, CB Board Storage Rack.....

Conveniently store CB connector boards not in use. Twenty slots will hold between ten and twenty boards; certain boards, such as CB4, require two positions because of the height of the connectors. This 7" x 20" rack is made of rugged red or black plastic, weighs 2 lbs, and has carrying handles on the front and rear. *Also available built into a carrying case – see Item 704B, next page.*

CB Board Storage Rack
(Item 725)

NOTE: Color may be Red or Black, depending on availability.

Item 800, CB-T1 Training and Validation Board.....

Use this board to familiarize new employees with the CableEye test system. Training may be self-directed with this board to quickly demonstrate how the system responds to opens, shorts, miswires, diodes, resistance, and intermittent connections. As a system validation tool, the CB-T1 allows customers to verify the tester functions properly by quickly sampling the full spectrum of fault detection without use of example fault cables.

Training and Validation Board
(Item 800)

Item 701U, M2U Power Module.....

Provides 9 Vdc at 1.3 A for operation of the CableEye hardware. Input 100-240 Vac, 50-60 Hz. USA prongs. Lightweight, efficient switching regulator.

Item 703U, M3U Power Module.....

Provides 18 Vdc at 1.3 A for operation of the CableEye hardware. Input: 100-240 Vac, 50-60 Hz. USA prongs. Lightweight, efficient switching regulator.

M2U and M3U Switch-Mode Power Supply
(Item 701U or 703U)

Items 706E, 706B, 706A, Power Module Prong Adapters for Europe, the UK, and Australia (respectively).....

Adapts wall-module prongs to appropriate country standard. This is an additional charge if we replace the USA prongs with the prongs intended for the listed countries.

Prong Adapters for Europe, UK, and Australia
(Item 706)

Desktop Switch-Mode Power Supply for 640+ TP Systems

Item 721B, 3.3 A for expanded systems up to 2560 TP Systems.....

Provides 18 Vdc regulated output for M3U testers with Expansion Modules. Input 100-240 Vac, 50-60 Hz. Standard IEN 3-prong equipment socket accepts power cords from any country. Power cord provided for USA and Europe plugs. *Power cord not included for UK or Australia.*

Regulated Desktop Power Supply
(Item 721A)

MISCELLANEOUS ITEMS *(continued)*

Item 704, Pelican Carrying Case (M2U,M3U Testers, 128-256TP).....

Item 704E, Pelican Carrying Case (M2U,M3U Testers, 384-512TP).....

This rugged, Pelican case includes a foam-lined compartment for a CableEye tester up to 256 test points (512 TP for 704E), power module, USB cable, and one or two board sets (depending on the board type). The mechanical hinges and latches are designed for long-term durability. The cover includes a rubber gasket to block moisture and prevent outside air from penetrating the case. Includes lock and key. 20" long, 14" wide, and 5" deep. Color: Tan.

Item 704A, Basic Carrying Case (M2U,M3U Testers).....

Use this simple blow-molded foam-lined case for storage and basic transport. Color: Black.

Pelican Carrying Case
(Item 704, 704E)

Basic Carrying Case
(Item 704A)

Item 704B, Carrying Case for CB Boards.....

The CB board case weighs about 6 lbs empty and can store between 10 and 20 CB boards in the 20-slot rack, depending on the size of the boards' connectors. Additional space in the front of the rack is wide enough for additional CB boards packed in their original bubble bags, and for other accessories. The outside dimensions of this case are 18.5" long, 14" wide, and 7" deep. Color: Black.

Order the CB Board rack by itself without the carrying case for CB board storage on your workbench – see Item 725, previous page.

Item 718, Probe Cable.....

All new M2U, M3U and HVX testers include a probe like this when ordered *(not included with M2U-Basic testers).* Order this item as a replacement or an extra. Connect this probe to the DB9 connector on the right side of the tester and use it to identify pins or bare wires using CableEye's Probe function.

Item 859, Wrist Strap.....

Use this optional wrist strap in place of the probe above to touch wires, pins, or electrical contacts of interest with your fingers, freeing the hand that would normally hold the probe. A one Megohm resistor isolates the body contact from CableEye but allows sufficient current to flow for detection. Use with CableEye's *Probe* function, the *AutoBuild* guided assembly software (Item 728, p.33), and *PinMap* (Item 708, p.30). M3U or HVX testers only!

Pelican Carrying Case (Item 704)

CB Board Carrying Case
(Item 704B)

CB boards not included. Shown here for illustrative purposes only.

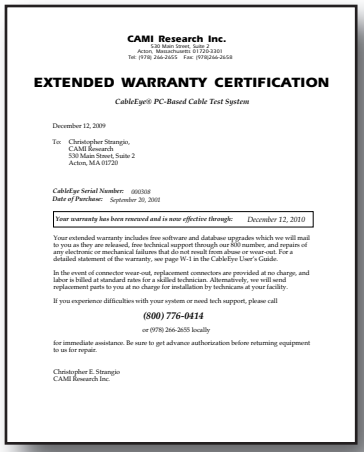
Color may be Red or Black depending on availability.

Probe Cable
(Item 718)

Wrist Strap
(Item 859)

EXTENDED WARRANTY

Item 700, One-Year Warranty Renewal, M2UB, M2U, M3U, M3UH.....
Item 700E, Units with 1-7 Expansion Modules.....
Item 700E8, Units with 8+ Expansion Modules.....
Item 700H, One-Year Warranty Renewal, HVX, HVX-21.....
Item 700HE, Units with Expansion Modules.....



CAMI Research Inc.
530 Main Street, Suite 2
Acton, Massachusetts 01720-2101
Tel: (978) 266-2655 Fax: (978)266-2658

EXTENDED WARRANTY CERTIFICATION

CableEye® PC-Based Cable Test System

December 12, 2009

To: Christopher Strangio,
CAMI Research
530 Main Street, Suite 2
Acton, MA 01720

CableEye Serial Number: 000308
Date of Purchase: September 20, 2001

Your warranty has been renewed and is now effective through: December 12, 2010

Your extended warranty includes free software and database upgrades which we will mail to you as they are released, free technical support through our 800 number, and repairs of any electronic or mechanical failures that do not result from abuse or wear-out. For a detailed statement of the warranty, see page W-1 in the CableEye User's Guide.

In the event of connector wear-out, replacement connectors are provided at no charge, and labor is billed at standard rates for a skilled technician. Alternatively, we will send replacement parts to you at no charge for installation by technicans at your facility.

If you experience difficulties with your system or need tech support, please call

(800) 776-0414

or (978) 266-2655 locally

for immediate assistance. Be sure to get advance authorization before returning equipment to us for repair.

Christopher E. Strangio
CAMI Research Inc.

Warranty Coverage Includes:
1 - Repair of Hardware Failures You Do Not Cause (parts and labor)
2 - Free Software Upgrades
3 - Free Tech Support

This item renews the one-year warranty that applies to all new CableEye systems. Customers automatically receive a notice that offers this renewal option 30 days before their warranty expires and again after the warranty has expired.

Summary of what's provided with an active warranty:

1 – *Coverage of free parts and labor for unprovoked equipment failure.*

2 – *Free software upgrades.* We continually improve and advance the software by adding new capabilites, new reports, ensuring compatibility with the latest Windows operating systems, and correcting problems reported to us by our customers. All software upgrades are backward compatibile to every tester we have ever made!

3 – *Free technical support.* If you need help with the software, advice on creating a custom interface to the tester, or encounter an automation challenge with Macros or Javascript, we will provide assistance at no charge. Up to eight hours of support per tester per year which includes two hours of personalized online training for new employees, as needed. More extensive fee-based training can be arranged.

Hardware coverage includes connector boards and accessories. You will receive a Warranty Certificate and software update CD by mail. Software updates during the warranty year may be downloaded from the Customer Services section of the CAMI web site. You may order the extended warranty in advance for as many years as desired with the purchase of new system to ensure future coverage. Refer to our web site for warranty details and how to send your tester back for repair:

camiresearch.com/warranty

Renewing an Expired Warranty

Expired warranties may be renewed. Contact us for details.

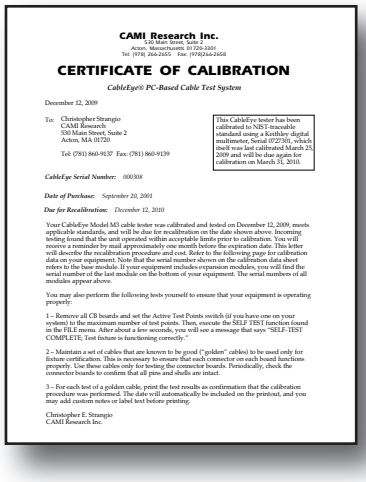
Warranty and Calibration Contracts

For customers with multiple CableEye testers, set up a yearly support contract for all of your testers to include warranty renewal, calibration, or both. Save the hassle of continually renewing individual testers as they expire at different times through the year, and receive a discount on the total cost. Contact us for details.

CALIBRATION

Item 717, M3U Calibration (base unit alone).....
Item 717E, Units with 1-7 Expansion Modules.....
Item 717E8, Units with 8+ Expansion Modules.....
Item 717H, HVX Calibration (base unit alone).....
Item 717HE, HVX Calibration (with expansion modules).

Recalibration of the CableEye Model M3U or HVX-Series testers is recommended yearly. When ready, send your tester with attached expansion modules, if any, being sure to include the power unit with M3U testers. It is not necessary to send your CB boards or other accessories. We will normally complete the calibration and return ship to you within two business days, including a Calibration Certificate with data for your records. *Note: CableEye Models M2U and M2U-Basic do not require calibration!*



CAMI Research Inc.
530 Main Street, Suite 2
Acton, Massachusetts 01720-2202
Tel: (978) 264-2655 · Fax: (978)264-2658

CERTIFICATE OF CALIBRATION

CableEye® PC-Based Cable Test System

December 12, 2009

To: Christopher Strangio
CAMI Research
530 Main Street, Suite 2
Acton, MA 01720

Tel: (781) 860-9137 Fax: (781) 860-9139

This CableEye tester has been calibrated to NIST-traceable standard using a Keithley digital multimeter, Serial 0727301, which itself was last calibrated March 25, 2009 and will be due again for calibration on March 31, 2010.

CableEye Serial Number: 000308

Date of Purchase: September 20, 2001

Due for Recalibration: December 12, 2010

Your CableEye Model M3 cable tester was calibrated and tested on December 12, 2009, meets applicable standards, and will be due for recalibration on the date shown above. Incoming testing found that the unit operated within acceptable limits prior to calibration. You will receive a reminder by mail approximately one month before the expiration date. This letter will describe the recalibration procedure and cost. Refer to the following page for calibration data on your equipment. Note that the serial number shown on the calibration data sheet refers to the base module. If your equipment includes expansion modules, you will find the serial number of the last module on the bottom of your equipment. The serial numbers of all modules appear above.

You may also perform the following tests yourself to ensure that your equipment is operating properly:

1 – Remove all CB boards and set the Active Test Points switch (if you have one on your system) to the maximum number of test points. Then, execute the SELF TEST function found in the FILE menu. After about a few seconds, you will see a message that says "SELF-TEST COMPLETE; Tool fixture is functioning correctly."

2 – Maintain a set of cables that are known to be good ("golden" cables) to be used only for fixture certification. This is necessary to ensure that each connector on each board functions properly. Use these cables only for testing the connector boards. Periodically, check the connector boards to confirm that all pins and shells are intact.

3 – For each test of a golden cable, print the test results as confirmation that the calibration procedure was performed. The date will automatically be included on the printout, and you may add custom notes or label text before printing.

Christopher E. Strangio
CAMI Research Inc.

Item 717S, M3U Calibration Kit.....
Item 717SH, M3U plus HVX Calibration Kit.....

Calibrate an M3U or HVX-Series tester at your facility using this item. Each kit includes a calibration board with precision reference resistors, special software, a procedure, and various cables. In addition, you will need your own calibrated digital multimeter capable of resolving to 0.1 mV. The M3U plus HVX Calibration kit (Item 717SH) also includes a special voltage-divider switch box and software that allows you to calibrate the HVX high voltage test system.

Item 780, Calibration Verification Board, M3U Testers.....
Item 780H, Calibration Verification Board, HVX Testers.....
Item 778AS, Single CB48A Header Isolator (use to connect the Calibration Check board to expansion modules).....

The Calibration Check Board allows you to periodically verify proper resistance measurements of the CableEye tester.

A range of precision resistors and two diodes cover all 64 test points available on this board and span values form 0.5 Ω to 9 MΩ (4.5 MΩ for HVX testers). You should manually move the board to additional banks and retest to cover all test points. If you have expansion modules, you may wish to order a CB48AS Header Isolator, Item 778AS, to permit connection of the board to expansion modules. *This board is sold as a single board, not a set of two.*

CB50
Calibration
Verification
Board
(Item 780)

CB48A
Header
Isolator
(Item 778A)

Item 726, CableEye Software Upgrade (earlier than v5.3)..
Item 726B, CableEye Software Upgrade (from v5.3 or later).....

All new CableEye systems sold by CAMI Research include the latest software with one year of free software updates. This item is for customers who own older CableEye equipment with outdated software. The software upgrade includes CD ROM, installation instructions, *and* upgrades any optional software previously purchased with your system such as PinMap, Connector Designer, or Auto-Build.

Item 726C, CableEye Software Upgrade for Multiple Testers ... .(discounted price, contact us for a quotation)

For companies with two or more CableEye testers currently running obsolete software, ***upgrade all testers at one time*** at a discounted price. Contact us with the serial numbers of your testers for a quotation. All testers owned by your company must be upgraded to qualify for a discount.

Refer to our web site for further detail on calibration:

camiresearch.com/calibration

CUSTOM INTERFACE DEVELOPMENT

Item 899C, Custom Connector Interface Assembly, Quotation Provided on Request.....

We will design and build custom interfaces for your unusual cables and wire harnesses. The interface may employ mating connectors hard-wired to a CB8 or CB30 board, adapter cables, a connector panel, a mating harness, or other configuration based on our discussion with your technical personnel. See examples at right. After we develop an initial plan and receive sample cables and mating connectors from you, we will evaluate the requirements and provide you with a quotation. Allow two to four weeks for design and assembly once we receive your approval. When complete, you will receive a "turnkey" solution – tested and ready to use, complete with setup instructions.

In order that we produce an accurate quotation, you need to provide us with:

1 – A sample cable or harness.
2 – Mating connectors or adapter cables.
3 – A wire list or schematic of the cable or harness.

Once you place your order, we will:

1 – Design the custom interface, including layout plan, determining the best connector orientation, and design mock-up to ensure fit and function. We take special care to design an interface that will be easy to setup and use for efficient production.

2 – Design any custom printed circuit boards that may be required as specified in the quotation.

3 – Assemble any adapter cables that may be necessary.

4 – Cut and strip wiring, then mount and solder mating connectors or adapter cables, as appropriate, to CB8, CB30, or other standard boards. If a custom printed circuit board is designed for the project, it will be assembled at this time.

5 – Create a software interface to the CableEye tester.

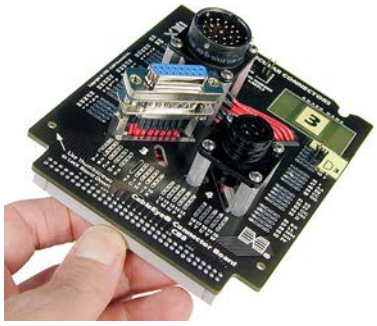
6 – Design any custom graphics that may be necessary.

7 – Label the boards, cables, connectors, and interface as necessary.

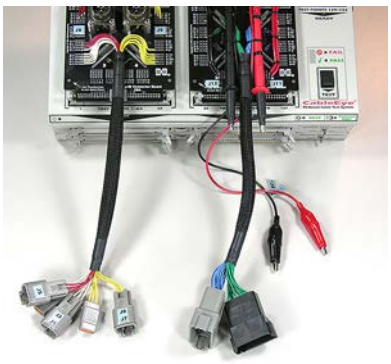
8 – Write setup and operating instructions with any photographs or drawings that may be needed.

9 – Perform final test and cleanup of the interface.

We offer a one-year warranty against defects in workmanship. Contact us for further information or to arrange sending cable samples and mating connectors.



Circular and Dsub Connectors Mounted on a CB8 Board



Adapter Cables, with Alligator Clips to Accept Lugs on Flying Leads

Adapter Cables for a Complex Four-Board Harness Interface

Adapter Cable and Flying Leads for Automotive Harness

Elco 56-pin Male and Female Connectors

Connector Panel for Custom PLC Connectors and Flying Leads