

## 2 Things you Should Know About CableEye®

### About this Section

This section contains an introduction to the CableEye software, folder structure, optional software, CB Boards and more.

You will learn about the CableEye software main screens, most common menus and functions, how to navigate between screens and access the CableEye help system.

We also show you how to setup your folders in a shared network environment, export and import cable files and how the CableEye CB Boards work.

This section is intended for people who want to know more about CableEye before testing. If you need to immediately begin testing cables, skip this section and go to **Section 3 - Basic Operations**. However we recommend you return to this section to further expand your knowledge about CableEye.

Follow this index to jump quickly to a topic of interest:


— Click on any entry to jump to the page —

2.1	Screen Layout and General Operation.....	2-2
2.2	Messages, Tones and Speech .....	2-17
2.3	Use of Hotkeys.....	2-18
2.4	Printing Reports and Labels.....	2-18
2.5	Software Operation without a Tester Connected .....	2-19
2.6	HELP Menu .....	2-19
2.7	The CableEye Database .....	2-20
2.8	Placing your Databases on a Server.....	2-20
2.9	Importing and Exporting Cable Data.....	2-21
2.10	Using Connector Boards .....	2-21
2.11	ID Jumpers on Connector Boards .....	2-22
2.12	Sharing Test Points on Connector Boards .....	2-22
2.13	Attaching Multi-Headed Cables .....	2-23
2.14	Connector Graphics.....	2-24
2.15	User Names, Passwords and Privileges.....	2-25
2.16	Bar Code Scanning.....	2-26
2.17	Calibration .....	2-27
2.18	The Self-Test Function.....	2-27
2.19	License Files .....	2-28
2.20	Connector Wear-Out .....	2-28
2.21	CB Board Compatibility Chart.....	2-29

## 2.1 Screen Layout and General Operation

The figures on the next three pages illustrate the control screen layout. You will interact with CableEye almost entirely through this screen and by use of some simple mouse or keyboard operations. All CableEye functions are initiated from this screen and will return you to this screen when complete. Intermediate screen displays may appear temporarily when a function operates, such as the Progress Bar when an operation takes more than 3 seconds to complete, or User-created operator messages that appear during Macro execution.

### 2.1.1 Operator Controls

The control screen shown on page 2-3 includes button controls, display windows, two summary boxes, a text editing area, and pull-down menus. You operate CableEye manually from this screen. In this case, specific actions you take determine each processing or display event. For example, you may click Test Cable  to measure a cable, then click on the Show Netlist button  to view its wire list, and finally press Search Database  to locate a cable in the database that matches this wiring.

You may also set up CableEye for automatic operation to speed and simplify production testing. When you activate a Macro in the Automatic Test mode (button found along the left side of the screen), you only need to press the “TEST” pushbutton on the CableEye fixture to trigger an automatic test sequence. Pass/Fail results appear on LED lamps just above the pushbutton, and you never need to touch the mouse or keyboard, or look at the video display. We provide some standard Macros with the software that will satisfy many test needs. You may also create your own custom Macros for unusual applications. Section 6 explains Automatic Testing and how to run and edit Macros.



Large buttons along the left side of the CableEye screen, like the “AUTO” button above, turn on or off various system functions and optional software components. Refer to page 2-5 for a [summary of each button's function](#). Note that some buttons like “MAP” (PinMap, Item 708) and “BUILD” (AutoBuild, Item 728) will appear on your screen only if you have purchased these options. Some functions, such as TEST and MATCH, may be turned on simultaneously, in which case the screen divides equally between the two functions. Other functions, like MAP (PinMap) require the entire screen for operation and temporarily close other windows that may be visible at the moment.

The control buttons operate as Click-On/Click-Off. When a function is turned off, its associated window disappears. Clicking the close box in a display window does the same as clicking the control button off. Normally, when two or more windows share the screen, their space divides equally. If desired, you may move the dividing line between the windows to a different proportion, making one window larger and the other smaller.

The button settings that exist when you close the program are remembered and will be restored when you begin your next session. If you resize the main Application window, this too will be remembered when you restart the application.

**IMPORTANT:** if you have a small screen or have reduced the size of the main application window, buttons and indicators on the far right or far bottom of the screen may be cut off. If you suspect that some items are hidden from view, temporarily click the maximize button to confirm that. We recommend a minimum application window of 1024x720 pixels.

Primary control functions for testing, learning, saving, and loading cables:

**Test Cable** initiates a measurement cycle for the cable attached to the test fixture. The results appear in the Test Data window to the right. Pressing the TEST button on the fixture does this also.

**Search Database** scans stored cables for a match to the Test Data.

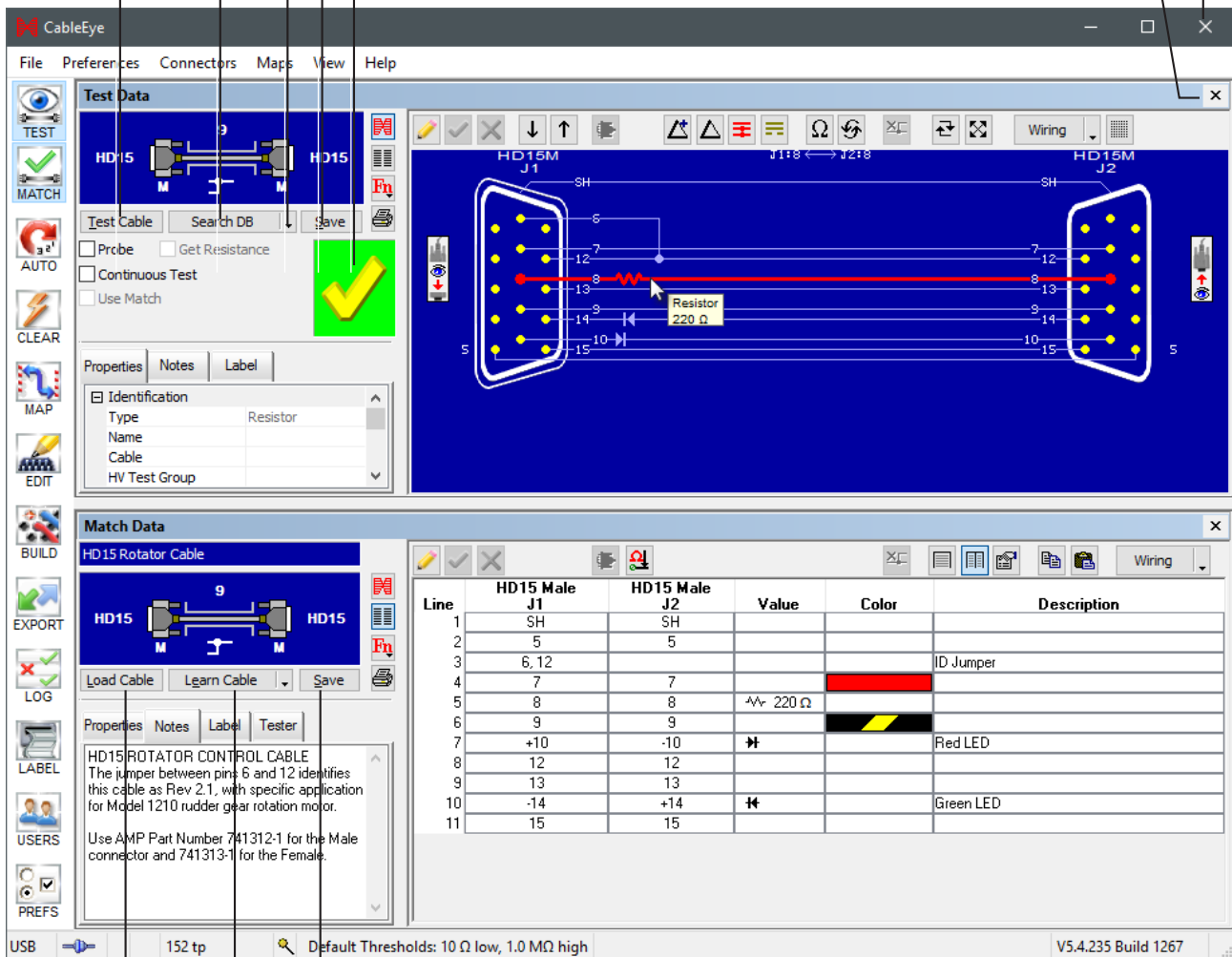
This pull-down menu offers search options if an exact match is not found.

**Save** stores the Test Data in the cables database.

This indicator shows whether Test Data and Match Data compare exactly. If Test Data wiring or resistance differ from Match Data, you will see a red block with a black X.

Close Test Data Window

Exit CableEye



**Save** stores learned cable data or edited Match Data in the cables database.

**Learn Cable** measures the cable attached to the test fixture and uses the result as a model cable. Data acquired using Test Cable will be compared to this model data.

**Load Cable** reloads stored data to serve as a model cable. Resistance thresholds are set to those in effect at the time the cable was stored. Data acquired using Test Cable will be compared to this model data.

The Test Data and Match Data summary boxes in the upper left part of the screen are surrounded by buttons that let you manually control the software.

Edit Test Data  
 Save Editing Changes  
 Discard Editing Changes  
 Highlight Wire (down)  
 Highlight Wire (up)  
 Add Connector  
 Show Differences between Test and Match  
 Show Differences Overlaid on Wiring  
 Show Shorts Only  
 Show Opens Only  
 Measure Resistance of Highlighted Wire  
 Continuously Measure Resistance  
 Delete Selected Wire  
 Swap Test Data and Match Data  
 Expand to Full-Screen View  
 Add or Delete Wiring  
 Show Grid  
 Change Direction of View  
 Comparison Between Test and Match  
 Print Report  
 Show Netlist  
 Show Wiring Diagram  
 Test Data Summary  
 Match Data Summary  
 Screen Control Buttons (next page)

**Test Data**  
 TEST  
 MATCH  
 TEST Cable Search DB Save  
 Probe  Get Resistance  
 Continuous Test  
 Use Match  
 Properties Notes Label  
 Identification  
 Type Resistor  
 Name  
 Cable  
 HV Test Group

**Match Data**  
 HD15 Rotator Cable  
 HD15  
 Load Cable Learn Cable Save  
 Properties Notes Label Tester  
 HD15 ROTATOR CONTROL CABLE  
 The jumper between pins 6 and 12 identifies this cable as Rev 2.1, with specific application for Model 1210 rudder gear rotation motor.  
 Use AMP Part Number 741312-1 for the Male connector and 741313-1 for the Female.

Line	HD15 Male J1	HD15 Male J2	Value	Color	Description
1	SH	SH			
2	5	5			
3	6,12				ID Jumper
4	7	7			
5	8	8	~ 220 Ω		
6	9	9			
7	+10	-10	⚡		Red LED
8	12	12			
9	13	13			
10	-14	+14	⚡		Green LED
11	15	15			

USB 152 tp Default Thresholds: 10 Ω low, 1.0 MΩ high V5.4.235 Build 1267  
 Message Bar  
 Current Resistance Thresholds (double-click to show Resistance Prefs)  
 Full/Fast Resistance  
 Active Test Points  
 Linked to Fixture Port Type  
 Paste Wirelist from Clipboard  
 Copy Wirelist to Clipboard  
 Choose Optional Columns  
 Show One Column per Connector  
 Show as To-From List

These control buttons along the left side of the CableEye screen turn on various system functions and optional software components. Note that the some buttons like “MAP” and “BUILD” will appear on your screen *only* if you have purchased the optional software.

	<p>TEST turns on or off the Test Data window. Normally you would leave this window on. Turning it off enlarges the screen for other functions.</p>
	<p>MATCH turns on or off the Match Data window. Normally, you would leave this window on. Turning it off enlarges the screen for other functions.</p>
	<p>EXTERN turns on the High Voltage External Terminals control screen. This screen allows you to setup and use the External Terminals output (only available on CableEye HVX testers).</p>
	<p>AUTO turns on or off the Automatic Test window which lets you create, execute, and run Macros (also called Scripts) for production testing or any repetitive operations.</p>
	<p>CLEAR deletes any cable data shown in the Test and Match Data window. It warns you of any unsaved changes to Test or Match Data before clearing it.</p>
	<p>MAP activates the optional PinMap software (Item 708) which is used to assign connector graphics and pin labels to custom connector interfaces you build. This button will appear only if you’ve ordered PinMap.</p>
	<p>EDIT activates the optional Connector Designer software (Item 707) which allows you to design and edit your own custom connector graphics. This button will appear only if you’ve ordered the Connector Designer.</p>
	<p>BUILD activates the optional AutoBuild software (Item 728) which provides guided assembly for cable and wire harness manufacturing. This button will appear only if you’ve ordered AutoBuild.</p>
	<p>EXPORT activates the Exporter software (Item 709) which permits export and import of cable data in various formats for use by other programs. This button will appear only if you’ve ordered Exporter.</p>
	<p>LOG displays a pop-up control window that lets you view and display log files created when you test a batch of identical cables using a Macro.</p>
	<p>LABEL prints one label based on label text in the currently loaded Match Data. No data will print if the Match Data’s Label field is empty. Set up the label format in \Preferences\Labels...</p>
	<p>USERS permits a new user to log in. Setup User controls and access privileges in \Preferences\Operators... The name of the User presently logged-in will appear on reports and will be stored with archived test reports.</p>
	<p>PREFS displays a pop-up control window for CableEye Preferences. You may access the same information from the \Preferences window.</p>
	<p>HELP activates contextual help. Click this button, then hover the mouse over any control button or area of the program and click again to obtain an explanation of that item.</p>

### 2.1.2 Summary Boxes

When you measure a cable using *Test Cable*, information about the cable appears in the *Test Data Summary* box. A similar representation appears in the *Match Data Summary* box for cables you load from the database or learn using *Learn Cable*. The figure below shows the summary boxes for various cable examples. You see much of the information you need to know about the cable here, including the connector type, the connector gender, the number of conductors, whether the cable is shielded or not, and the nature of the wiring. The Test Data Summary describes that cable in the Test Data buffer (usually a cable that was measured), whereas the Match Data summary box describes the cable in the Match Data buffer, usually a cable loaded from the database.

When you load Match Data with a cable from the database, that cable's name appears in a small box immediately above the wiring summary. If you learn a cable attached to the tester, you see the message *Learned Match Data, Not Yet Saved* as a reminder of the cable's origin.

**Test Data Summary Box**

Graphic for Two Connector Cable  
Number of Conductors  
Shield Present

**Two-Ended Measured Cable**  
DB9 Male to DB9 Female  
9 Conductors, Shielded  
1:1 Wiring Between Connectors

**Match Data Summary Box**

File Name  
Shield Absent

**Two-Ended Cable from Database**  
RJ45 Male to miniDIN8 Male  
4 Conductors, Unshielded  
Complex-Style Wiring  
Between Connectors

**Match Data Summary Box**

**Multi-Headed Cable or Wire Harness from Database**  
Four Connectors Share  
16 Conductors

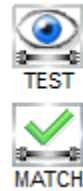
**Wiring Style Key**

- 1:1 Direct Extension: Pin 1 to 1, 2 to 2, ...
- Cross Connect: Pin 1 to 2, 2 to 3, ...
- Null Modem: Pin 2 to 3, 3 to 2, ...
- Complex: Pin 2 and 3 to 5, ...

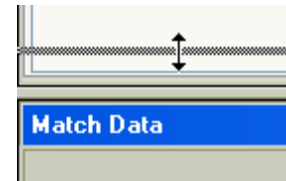
The Test Data and Match Data summary boxes show basic information about cables you measure or load from the database. The connector icons will never change shape, but the identifying characteristics around them will change to give the nature of the cable and its wiring.

### 2.1.3 Display Windows

Control individual display windows for Test Data and Match Data using the TEST and MATCH buttons along the left side of the screen. Each button serves as a toggle to turn *on* or *off* the associated window. When *on*, Test Data always appears at the top, and Match Data below it, just as in the order of the buttons along the left edge. When viewing wire harness or cables with large connectors, it may be helpful to devote the entire screen area to the schematic, turning off all other windows.

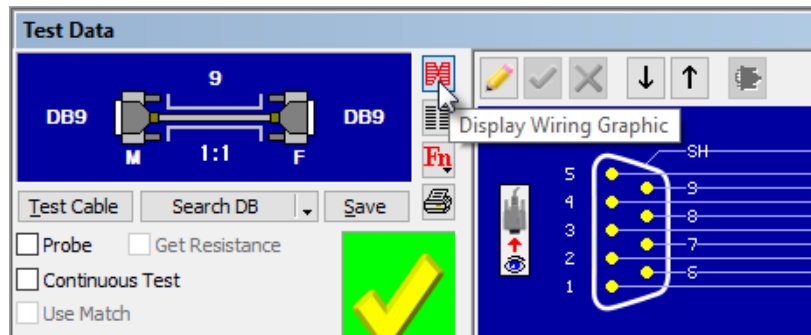


Click and drag on the border between Test and Match data to change the proportion of screen devoted to each.

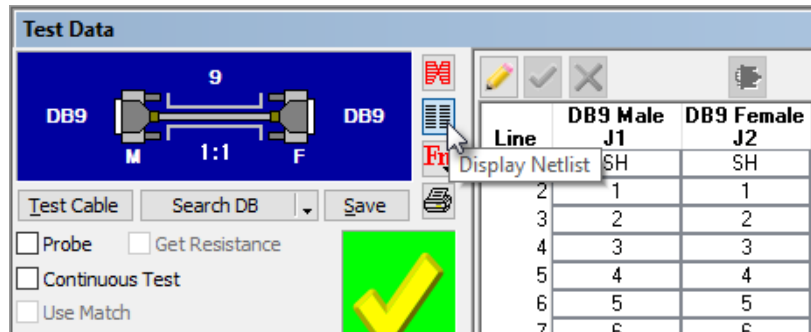


For both Test and Match Data, you may view detailed cable wiring as either a *graphic wiring diagram* or a *netlist* (wire list). The wiring diagram is the default view when the program starts the first time, however, you may easily change the view by pressing the desired control button to the right of the summary box.

Click  to view a wiring graphic.



Click  to view a netlist.



These buttons will alternate *on* and *off* like a switch; when a wiring graphic is visible, the netlist is off, and vice versa.

The *View Direction Icon* visible on the wiring display screen serves to indicate the *direction of view* into the connector, and also as a *button* to flip the connector graphic around to see the view from the opposite direction. A View Direction Icon appears next to every connector in the display and acts independently on that connector.

With the eye at the bottom of the icon and the arrow pointing up, we are looking INTO THE PINS.

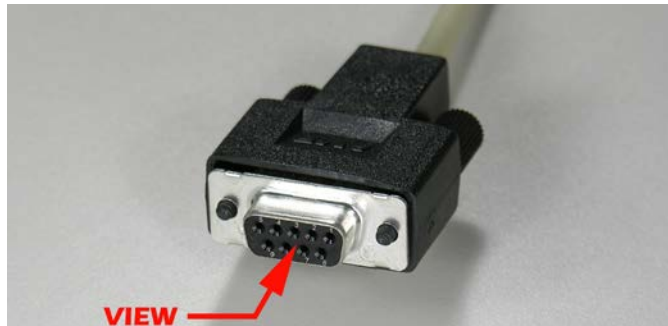


With the eye at the middle of the icon and the arrow pointing down, we are looking INTO THE TERMINATIONS.

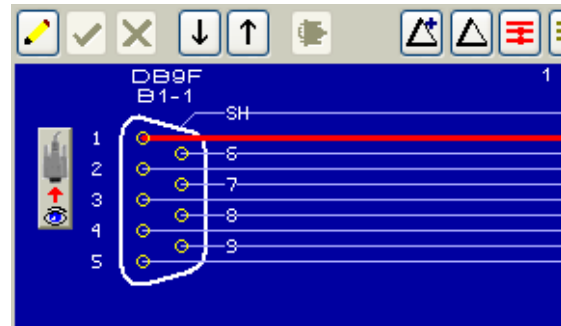




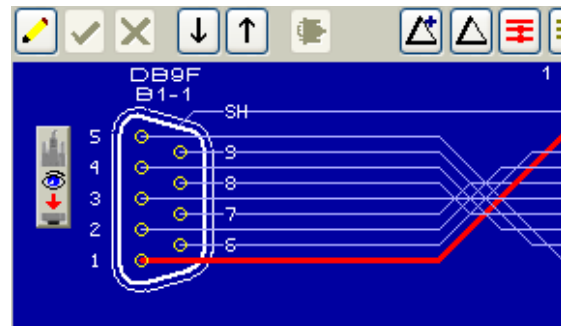
Note in the screen images below that we draw a line around the connector shell to emphasize that the view is from the rear. The orientation you see on the screen when you save a cable will be preserved when that cable is loaded as Match Data, and will be retained when the cable report is printed.



View of a DB9 Female connector looking INTO THE PINS



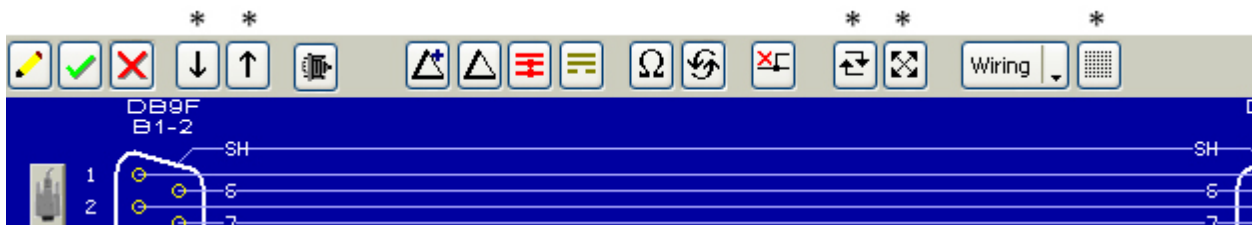
View of a DB9 Female connector looking INTO THE TERMINATIONS



You may set the default orientation to either *Pin 1 on Top* or *View Into Pins* in */Preferences/Connectors*. Changing the view direction can also be helpful in straightening out wiring that appears twisted in the default view.

### 2.1.4 Graphic Display Tool Bar

Each display mode includes a variety of control buttons in a tool bar just above the display. Some buttons perform identical functions in either mode, while others are unique to that mode. The *graphic wiring tools* and their descriptions appear below:





\* Functions Available in Graphics Mode Only!

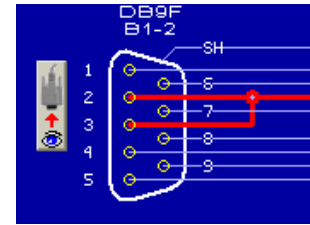
**Edit Connections or Values** – Permit editing changes to wiring, connector types, resistance values, and other data related to the cable.


**Save Editing Changes** – Save changes in memory and turn off Edit mode. *Changes are not saved in the database until you click the Save button!*




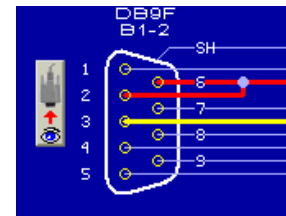
 **Cancel Editing Changes** – Discard any changes you made, revert to the original data, and turn off Edit mode.


 **Select Wires in the Graphic Display by Scrolling Down or Up the Graphic** – Selected wires have a red highlight and identify a particular wiring connection that you would like to follow and show wiring that will be affected by *Delete Wire* or *Measure Resistance* (see descriptions below). You may also select wires using the *cursor control keys* on the keyboard, or by *clicking on them with the mouse*.

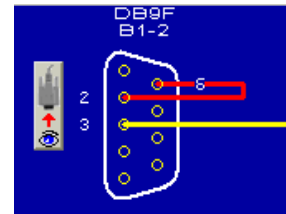




 **Add Connectors** – Add a new connector to the wiring when in *Edit* mode. A pop-up window will offer a list of all connector graphics in the library and permit you to select one. The new connector will be positioned at the bottom of the wiring diagram below existing connectors. Once added, you must then draw wires (graphic display) to the open pins of the new connector, or type in wiring connections (netlist display).


 **View Wiring Differences Overlaid on Good Wiring** – When Match Data is available, differences between Test and Match Data appear overlaid on the correct wiring. *Open Circuits* (missing connections) appear *Yellow*, while *Short Circuits* (extra connections) appear *Red*. In the example on the right, there is a short between pins 2 and 6, and a missing wire on pin 3.



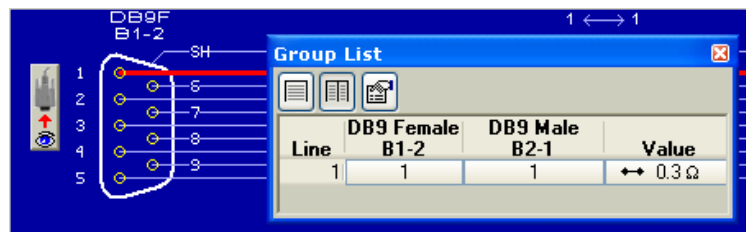
 **View Wiring Differences Alone** – When Match Data is available, differences between Test and Match Data appear isolated without the correct wiring visible. While similar to seeing errors overlaid on good wiring, this view offers a clearer image of wiring differences when the wiring is complex or contains many errors.





 **View Short Circuits Alone** or  **View Open Circuits Alone** – These functions further simplify the display by showing only short circuits or only open circuits. This helps focus on problems when viewing a complex wiring display. As above, shorts appear as highlighted red wires, and opens appear as highlighted yellow wires.


 **Measure Resistance of Highlighted Wire (M3U, M4, and HVX testers only!)**


– Select a wire and click this tool to measure the actual resistance of that wire. A small netlist grid appears showing only the wiring of the highlighted connection (may involve more than two test points), and the resistance of the connection as seen above. Click the *Measure Resistance* tool again to remeasure, or measure continuously using the *Continuous Resistance* tool (below).




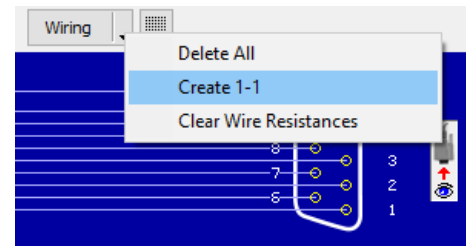
 **Measure Resistance Continuously (M3U, M4, and HVX testers only!)** – Measures the resistance of a selected wire continuously until this button is pressed again, or the *Measure Resistance* button is pressed to stop it.


 **Delete Wire** – Removes a highlighted connection from the graphic display or wire list when in *Edit* mode. If the highlighted connection includes multiple branches going to different pins, all wiring to all pins will be deleted. You may also right-click on a highlighted connection and choose *Delete Component* from the pull-down menu (*Edit* mode only).

 **Momentarily Swap Match Data with Test Data** – Click and hold this button to temporarily replace the *Test Data* with *Match Data*, then release the button to restore the original view of Test Data. This function can be very helpful in seeing where minor differences in wiring are located in a complex cable.

 **Expand Wiring Graphic to Full Screen** – Temporarily expand the graphic display window to fill the entire screen. A similar button with arrows facing inward restores the normal view.

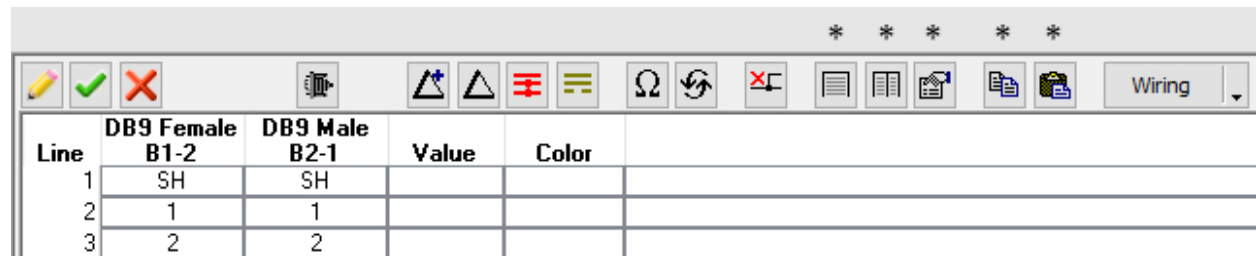
 **Add or Remove Wiring on All Pins** – Click this pull-down menu to choose between *Delete All*, which removes all wiring present leaving open connectors, or *Create 1-1*, which adds wiring *Pin 1 to Pin 1, Pin 2 to Pin 2*, etc., to a pair of connectors. Create 1-1 works only when two connectors appear on the display and is not selectable with one connector or more than two connectors. *Clear Wire Resistances* will remove all resistors from the cable.




 **Show Grid** – Overlay a dot grid on the graphic display to aid in positioning three or more connectors. The positions you choose for connectors stays with the data when saved in the database, and will be restored when reloaded as Match Data.

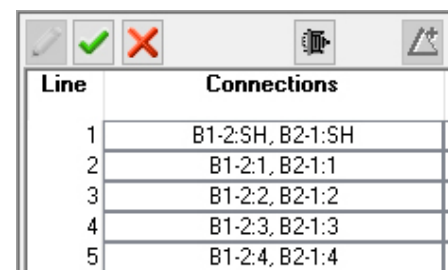
### 2.1.5 Netlist Display Tool Bar


Most of the functions shown in the Netlist Display tool Bar *operate identically* to those in the Wiring Display tool Bar described previously. Only functions unique to the Netlist Grid are described below.

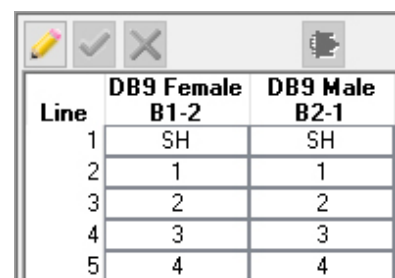


\* Functions Available in Netlist Mode Only!


 **Single-Column Netlist** – This form of netlist shows all connections on a single line with commas separating each point. Use the Single-Column format when you view wiring harnesses or cables with a large number of connectors for a more compact display. The green check and red X show that we are presently in *Edit* mode (pencil grayed-out).

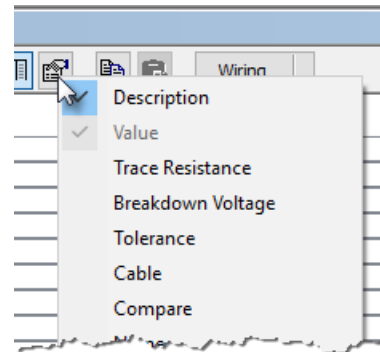


 **Multi-Column Netlist** – In this case, each connector has its own column in the netlist. On a given line, any connections appear as a pin number in the connector’s column. A blank space in a connector column shows that no connection exists for that line. The multi-column netlist presents a clearer picture of a cable’s wiring than the single-column display, but becomes impractical when more than four or five connectors are present. The yellow pencil shows that we are in *View* mode (green check and red X grayed-out)



**IMPORTANT:** Note that in the netlist example in the previous page, the notation “B1-2:1” refers to Bank 1, Socket 2, Pin 1. You see pin numbers in this format when you view measured data from a cable attached to a CB board or custom fixture in which sockets have labels. However, when you save this cable in the database and then later load it back as Match Data, the Bank and Socket information are replaced by a generic connector name such as “J1” or “J2” (you may choose the designation when the Test Data is saved) – fixture information, such as the bank where the cable had been plugged in when learned, is NOT stored by default so that in the future you may plug this cable into *any* position, or in the opposite direction, and get a match if the wiring is identical. If you prefer to match by bank and socket, set this option in /Preferences/Connectors/Connector Matching.

 **Show/Hide Other Columns** – The netlist display normally shows columns for each connector (or a single column for Connections), and a Value column that shows resistor and diode values. You may add other columns to the netlist if desired using the *Show/Hide Other Columns* button. Some of the possibilities appear on the right.




**Description** provides a place for free-text comments. Here, you may enter such things as wire gauge, signal name, and bundle locations. The field will accept any practical number of characters you may wish to enter.

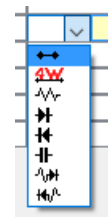
**Value** shows numeric values associated with wires and resistors, diodes, and other components. These values may arise as a result of testing, or may be pre-defined in Match Data as properties that are expected for a connection. Four possibilities appear in the sample netlist on the right.

Line	DB9 Female B1-2	DB9 Male B2-1	Value
1	SH	SH	
2	1	1	↔ 8.0 Ω
3	2	2	⚡ 120 Ω
4	+3	-3	⚡ 0.65 V
5	-4	+4	⚡ 0.79 V

**The several value options are described below:**


**Nothing** (blank space) shown in the Value column following a test, denotes a wire connection that passes the global threshold set in the Resistance control panel. If Match Data shows a blank in the value column, this says that we expect the connection to be a wire and pass or fail based on the global threshold setting.

A **wire symbol**  and value denote a wire with a conduction threshold that differs from the global setting. On Line 2, we see a value of 8 Ω given, which means the wire connection from pin 1 to pin 1 must have a resistance of *less than 8 ohms* to pass. If a resistance of 8 Ω or more is found, this connection will fail. Whether it passes or fails, the actual resistance measured will appear in the Test Data netlist following a test.




Normally, you set the wire symbol in the Match Data netlist to define a connection to be a wire with a threshold different from the global one. To do so, click on a Value cell while in Edit mode and select from the pull-down menu. Then type in the desired value.

NOTE: when a wire symbol is used, the default tolerance is +0%/-100%.

A **resistor symbol**  and value show that resistance *above the global conduction threshold* exists. If you see a resistor symbol in the Test Data following a test, this means that the connection exceeded the maximum resistance permitted for a good connection.


Insert a resistor symbol and resistance value in the Match Data to define a connection as a *resistor*. During testing, if a connection is found to have resistance and the corresponding connection in Match Data shows a resistor, that connection will *pass* as long as the resistance value falls within the global tolerance set in


the Resistance control panel. You can override the global tolerance with a tolerance specific to the resistor you've defined using the Tolerance column (explained below). For more information about entering and measuring resistance values, read Section 4 - Measuring Resistance.

A **diode symbol**  shows that a difference in resistance exists when the test current is reversed during testing. Usually, this indicates the presence of a diode, although the diode symbol may also result from unpowered semiconductors (which may look like diodes), capacitors, or inductors in the cable. The diode orientation will be shown by the direction of the symbol, and also by the location of + and - signs on the netlist connection.

Testers with resistance measurement capability will also allow the measurement of forward voltage drop (choose this option under */Test Settings/Diodes*) and if selected, a numeric value will appear next to the diode symbol following a test. Note that LED lamps of different colors exhibit different forward voltages, and this fact may be used to test for the presence of a particular color LED.

Insert a diode symbol and optional forward voltage in the Match Data to define a connection as a *diode*. During testing, if a connection is found to have polarity and the corresponding connection in Match Data shows a diode with the same polarity, that connection will *pass*. If you enter a forward voltage in Match Data, the diode will pass as long as the measured forward voltage in test data falls within the tolerance.



A **resode symbol**  tells the tester that this component combines a resistor and a diode in the same connection. The value defined is the resistance of the combined forward-biased component.

A **capacitor symbol**  denotes a capacitor component value in the connection or a capacitance coupling with another connection in the cable. Only Model M4, or HVX testers so equipped, can measure capacitance.

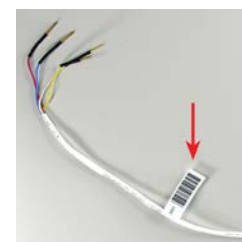
**Trace Resistance** value defines the resistance introduced by a test fixture, which ideally you want to ignore from the measured resistance result. The value inserted in this column will be subtracted from the measured value. For more information about Trace Resistance, read Section 4 - Measuring Resistance.

**Breakdown Voltage** value is used to define the reverse breakdown voltage of a Zener diode.

**Tolerance** values override the global tolerances set in the Resistance control panel. Enter a single numeric digit for plus and minus *percent* tolerances of equal value, or separate digits for different + and - tolerances. Leaving this field blank leaves the default tolerance in force. For more information about Tolerance, read Section 4 - Measuring Resistance.

Value	Tolerance
 120 Ω	±8%
 1.0 MΩ	+5% / -20%

**Cable** applies primarily to CableEye's optional AutoBuild™ Guided Assembly software (Item 728) and typically contains a wire number or electrical reference. During Guided Assembly, individual prepared wires intended for insertion into connectors typically have cable numbers printed on the insulation or applied as labels. Numbers entered in the Cable field must correspond with scanned numbers from the cable itself before an assembly instruction is given. This general-purpose field may be used for other purposes if desired.



**Compare** enables comparison of a connection during testing. The normal, default state is checked. Disable *Compare* in Match Data to cause that connection to be ignored in determining the Pass or Fail result. Use this feature to ignore variations in wiring of the test cable that have no bearing on its electrical function. For example, if redundant ground connections cause the netlist to vary slightly from one cable to another, disable comparison of the affected connections to avoid false failures.



Comp




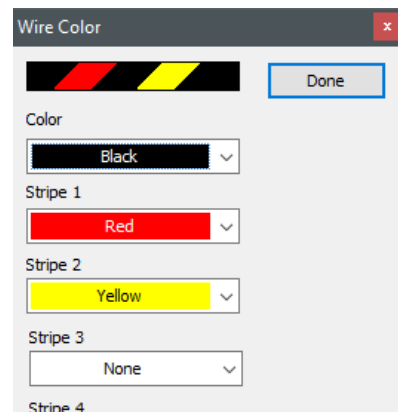


**Name** provides an optional field to name a component. Some components, like connectors and cables, require names. For wires, resistors, and diodes, it is optional.



**Color (Graphic)** and **Color (Text)** permit you to assign wire insulation color to a connection. To show color graphically, use *Color (Graphic)* and the actual color and stripe pattern you choose will be shown in the netlist cell. *Color (Text)* depicts color by name. You may display the color by graphic, text, or both. Choosing the color by graphic changes its text name automatically, and vice versa. Use the text name in the netlist when you need to print reports on a monochrome printer, or if someone who is color-blind will be reading the report.

Color	Color
	Red
	Black, Red, Yellow

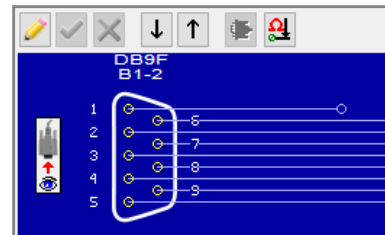
To assign a color, click in a cell (or double-click if you are not already in Edit mode), and click on the menu button  to open the color edit window. You may choose a base color and up to four stripes.



You can also assign the base color by typing the first letter of the color. Typing B, per example, will choose *Black*, but typing B again will then change it to *Brown*. By doing this you can cycle through different colors that start with the same letter.

**Differences (+/-)** appears only in the differences list and shows extra connections (short circuits) as a "+", and missing connections (open circuits) as a "-". Click the Delta button  to view the differences list alone, or the Delta+ button  to view the differences list overlaid on correct wiring.

**Single-Ended** designates a connection as having only a *single pin on one side*, and an unconnected wire on the other. You may apply this to just one wire in a cable, or to all wires to create a single-ended cable (for example, a cable having only one connector with unterminated wires at the other end). Choosing *Single-Ended* in the Netlist options displays a column called Probe, a read-only column, that shows a small circle when only a single pin number appears in that row.





Create single-ended connections in Match Data, or Test Data that you are about to store in the database. Single-ended connections can only be tested using the CableEye probe. Clearly, an unterminated wire with a single connection point cannot be electrically tested until contact is made, if only temporarily, with the open end.

Line	DB9 Female B1-2	DB9 Male B2-1	Probe
1	1		○
2	2	2	
3	3	3	
4	4	4	

**HiPot Enable, HV Test Group and All Hipot Values** add columns to set parameters for HiPot testing (HVX testers only). All these options are explained in the HVX Getting Started Booklet included with your tester. Please refer to the booklet for detailed information.

**4-Wire Enable, Resistance and Current** add columns to set the parameters for 4-wire testing (HVX testers only). Check section 4 - Measuring Resistance for detailed information.

 **Copy to Clipboard**,  **Paste from Clipboard** – Export the cable data visible in either the Test Data or Match Data using the Copy function. The data may then be imported into Wordpad, Excel, or a similar program, for external use using the Paste function in that program.

Line	DB9 Female B1-2	DB9 Male B2-1	Value
1	SH	SH	↔ 1.5 Ω
2	1	4	↔ 1.0 Ω
3	4	8	↔ 0.9 Ω
4	5	5	↔ 1.1 Ω
5	6	2	↔ 1.4 Ω
6	7	1,7	
7	8	6	↔ 1.0 Ω
8	9	3	↔ 1.0 Ω



CableEye exports the multi-column netlists like the one seen on the right in Tab-Delimited form. Netlists in single-column mode export in Comma-Delimited form (commas separate the pin connections). No connector information transfers with the netlist. However, resistance values and other optional columns you have turned on in the CableEye grid will be exported.

	SH	SH	1.5
1	1	4	1.0
4	4	8	0.9
5	5	5	1.1
6	6	2	1.4
7	7	1, 7	
8	8	6	1.0

Data from the cable in the netlist in the previous page pastes into WordPad and Excel as shown in the two screen shots on the right.

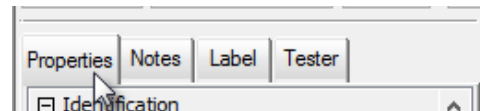
Importing data into CableEye works in just the reverse fashion. Select the data you wish to import by clicking and dragging in WordPad or Excel and paste it into the clipboard. Then, within the CableEye application, ensure that you have an appropriate cable structure ready to accept the data (connectors selected but without wiring, and any optional columns for description, wire color, etc., turned on). Then, click the Edit button, and the Paste button to import.

	A	B	C
1	SH	SH	1.5
2	1	4	1
3	4	8	0.9
4	5	5	1.1
5	6	2	1.4
6	7	1, 7	
7	8	6	1
8	9	3	1
9			

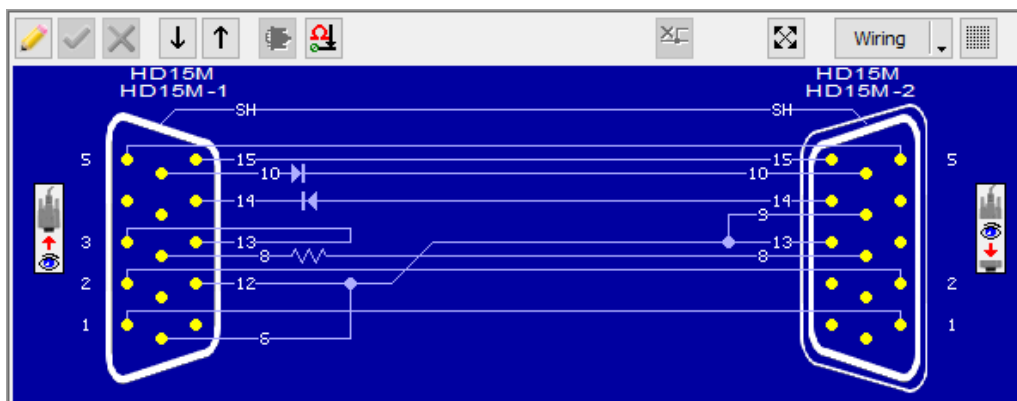
Using the clipboard to copy cable data between applications operates on *just the cable currently loaded*. CableEye's optional *Exporter* software provides a much more complete form of import and export, and can operate on either a single cable or your entire database. Refer to Section 11, *Database Utilities*, for more information about Exporter.

### 2.1.6 Summary Box Tabs

**Properties** - The netlist and wiring graphic shown below describe a two-ended cable using DB15HD connectors. This netlist shows wires, a resistor and two diodes. Properties like wire color and description are defined in some of the items in this list. As long as you turn on the additional columns in the netlist, you will be able

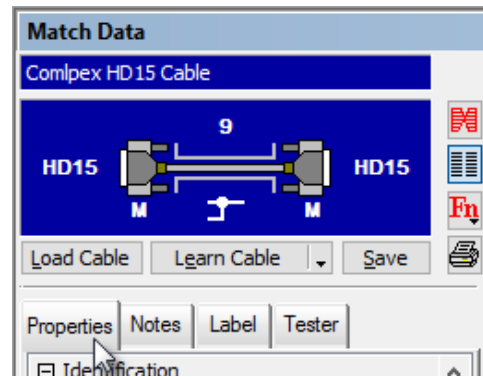



Line	HD15 Male HD15M-1	HD15 Male HD15M-2	Value	Name	Cable	Color	Description
1	SH	SH			4001		
2	1	1	↔ 4.0 Ω	EMI Shield	4002		18 Gauge Sh...
3	2	2			4002		
4	3,13				4004		
5	5	5			4005		
6	6,12	9,13			4006		
7	8	8	⌋ 100 Ω	Inrush Limit	4007		Carbon Film
8	+10	-10	⌋ 0.73 V		4008		Black, Axial
9	-14	+14	⌋ 0.69 V	Transient ...	4009		
10	15	15			4010		

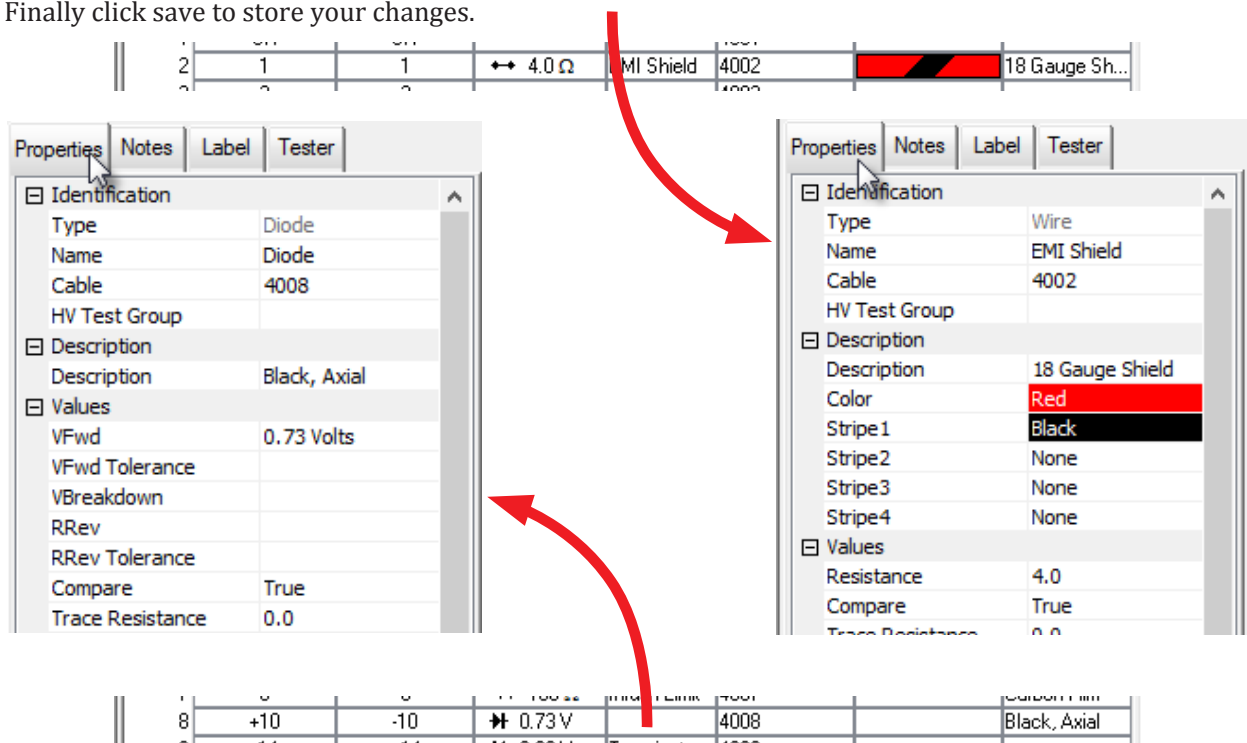




to see the properties in the table. Moving the mouse over wires in the wiring diagram produces hover-text that also displays key properties. However, there is another way of showing the properties of a wire. The *Properties* tab addresses this option by detailing all property information stored for *any wire or component* shown in the netlist. Click on the Properties tab as shown on the right, and then click on an item in the netlist, or a wire or component in the wiring diagram, that you wish to examine.



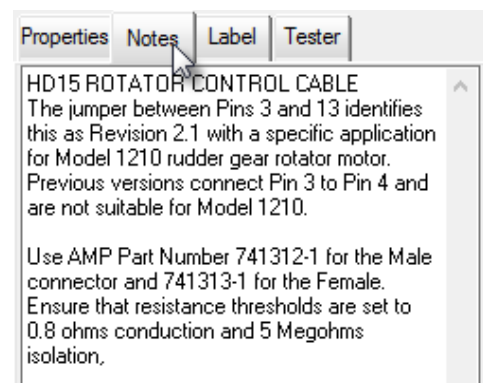
Click on a wire in the netlist to see its properties. Edit the properties by clicking on the Edit button  and typing in your changes either in the netlist or in the properties window. Finally click save to store your changes.



**Notes** - Use this field to write free-form descriptive text about the cable.

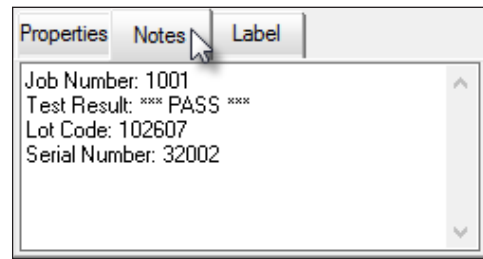
Typically, notes explain the purpose of the cable, give assembly and vendor information, provide operator setup instructions, or offer other special information that may aid in rebuilding or retesting the cable in the future.

There may be times that you wish to enter notes or instructions to the CableEye operator that would be visible on the screen *but will not print*. To do so, simply enclose text in curly brackets “{“ and “}”, to suppress this text during printing {like this}.



Match Data Notes generally provide a *permanent record* of cables you save in the database. Match Data notes remain blank until you type in the desired descriptive information.

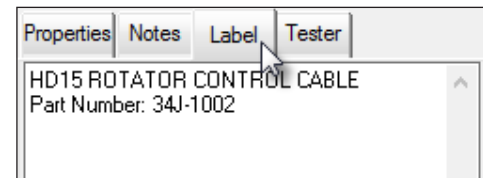
Test Data Notes provide space for test results and other *automatically-generated* information following a test. For example, you can show the *PASS/FAIL* result, the operator’s name, test date and time, unit serial number, lot code, or other information that may be scanned or entered at the time of testing.



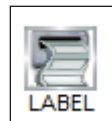
You may embed program variables in the Notes field as *placeholders* for the date and time, operator name, or other information (*Example: <OPERATOR>*)

Automatically-inserted data remains valid until the next test at which time that data is overwritten by new data pertaining to the new test. NOTE: Automatically-inserted data functions only while executing a macro. Read Section 6 - Automatic Testing for details.

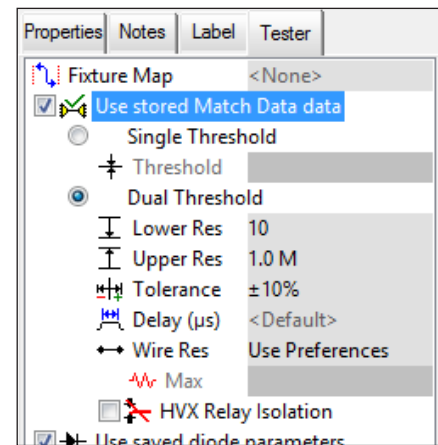
**Labels** - Both Match Data and Test Data include a *Label* field in which you enter text intended for printed labels. Like the Notes field, the Label field accepts free-form text. You may also embed program variables in the label field as in the Notes field and the value of that placeholder will be inserted in the label at the time of printing.



Print labels manually by clicking the *Label* button, and Match Data label text will be sent to the currently defined label printer. For more information about defining and printing labels, read Section 5 - Printing Reports and Labels.



**Tester** - This tab is used to define local testing parameters for a specific cable. Learned cables will use the default global settings defined either in the Test Settings menu.

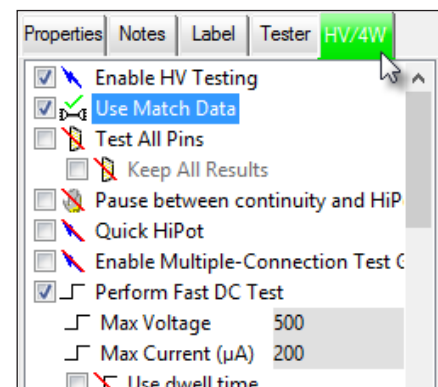


Settings like Resistance Thresholds, Tolerance, Dwell Time and Diode detection preferences can be overridden using the Tester tab.

To accomplish this, click on the Tester tab and enable the “Use stores Match Data” check box. Make the proper settings changes and save your cable.

If the global settings change, this will not affect the local changes stored with this specific cable.

**HV/4W** - The High Voltage and 4-Wire tabs operate similarly to the Tester tab. Settings defined in this window are stored locally with the cable when it’s saved overriding any global settings defined for HiPot or 4-wire testing in the Test Settings menu.

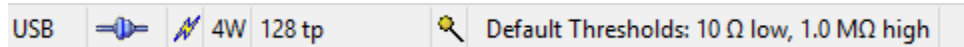



To learn more about setting High Voltage testing parameters, check the HVX Getting Started booklet.

To learn more about 4-Wire testing, check Section 4-Measuring Resistance.


### 2.1.7 Operation Status Indicators

The software shows the state of the tester with various indicators on the control screen. Refer to the status indicator bar at the bottom of the CableEye screen. The indicator bar looks like this:



**Communications Link** -  A USB link to the computer must exist before cable data may be acquired from the fixture. Refer to the *Fixture Status Indicator* in the lower left corner of the screen to confirm that a communications link has been established.

At startup, the program tries to communicate with the fixture. If it succeeds, the fixture comes on-line, and the *Tester Ready LED Indicator* turns on. Once connected, the number of active test points found also appears, shown as “128 tp” in the screen image above. If the fixture does not respond, the Ready indicator remains off, and an advisory message appears. Unless you have purchased the [Standalone Software License \(Item 729, see Section 2.5 on this manual\)](#), you will be unable to use the software if a CableEye tester cannot be found attached to the USB ports. Refer to the Section 1.5 “Possible Startup Problems” on page 1-4 if the software fails to establish communications with the tester when everything seems connected properly.

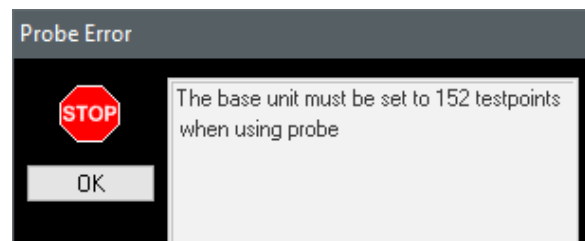
When you have the Standalone Software License installed and the tester is not connected, you will see the unconnected symbol . In this mode you can use all the functions in the CableEye software that don’t require data acquisition from the tester.

**Resistance Thresholds** - If your tester has resistance measuring capabilities (M3U, M4, HVX), you will find the *Default Resistance Thresholds* at the status bar as well, which shows the present threshold settings. Double-click in this box to open the *Resistance Preferences Panel* which permits you to change the thresholds. Refer to Section 4, *Measuring Resistance*, for more information about thresholds.

Default Thresholds: 10 Ω low, 1.0 MΩ high

## 2.2 Messages, Tones and Speech

The software provides messages to flag the completion of a task, warn of incomplete or erroneous results, offer instructions to proceed and many more. Most messages appear in a pop-up window that must be answered with an OK, Cancel, or other action before proceeding.



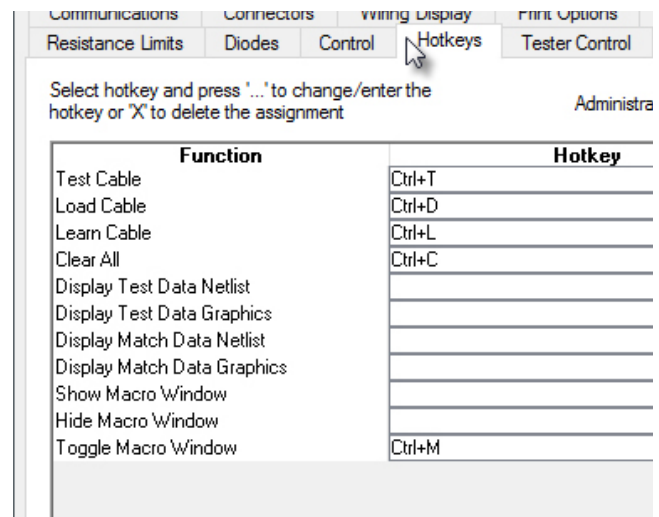
The software also produces several tones and sounds to draw your attention to screen messages, or other conditions. Some of these sounds include PASS and FAIL tones used in Macros, warning tones when an error occurs, and confirmation tones when using the test probe, just to mention a few.

The CableEye software is also capable of speech, which is very helpful to speak instructions to an operator during cable assembly using the optional Autobuild software (Item 728), or to confirm the probed pin when creating a custom map or using the probe test function.

## 2.3 Use of Hotkeys

CableEye supports the use of *HotKeys* (keyboard shortcuts) which you can set in the */Preferences/Hotkeys* menu. With Hotkeys, you may trigger many basic CableEye operations with keystrokes rather than mouse clicks. This may speed repetitive tasks for people who are familiar with the keyboard and use CableEye frequently.

In the example in the right, we have defined five shortcuts for the most widely used functions in the CableEye main screen. Note that by default, this list is empty and you need to assign your own shortcuts.



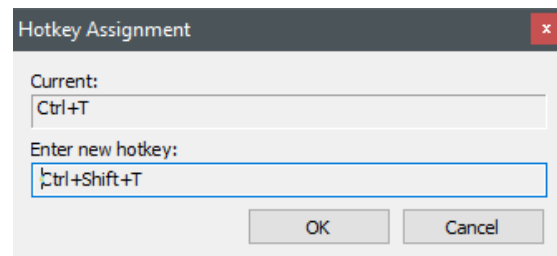
Valid Hotkeys are any of the following:

- Any of the function keys (F1, F2, etc).
- Any alphanumeric character (A-Z, 0-9) with the *Control* and/or *Alt* key pressed. The *Shift* key may also be pressed, but must be pressed in combination with the *Control* and/or *Alt* keys.

### 2.3.1 Entering or Editing HotKeys


To enter or edit a HotKey, select the function to assign the hotkey to by clicking on it or using the up or down arrows. Then click the  button to the right of the window, and the window shown below appears:

You can simply enter the individual keys comprising the HotKey, e.g., by pressing the *Control*, *Shift* and *T* at the same time.



Finally click the OK button and the HotKey is assigned to the selected function.

### 2.3.2 Deleting HotKeys

To delete a HotKey, simply select the function to delete. Then click the  button to remove the HotKey assignment.

If you duplicate an existing HotKey used in another function, you will be warned and asked if you want to replace the HotKey and delete it from the original assignment.

## 2.4 Printing Reports and Labels

The CableEye software provides many different report options to print. Print reports and labels easily on a dedicated printer connected directly to your computer, or on a network printer available elsewhere.

Before you print, select the proper printers for the different types of reports from the *Preferences / Printers and Reports* menu. You may, if desired, identify separate printers for Reports, Logs, and Labels to simultaneously print different formats on appropriate media.

For detailed information read Section 5 - Printing Reports and Labels.

## 2.5 Software Operation without a Tester Connected

Normally, the CableEye software requires a tester connected and powered-on to enable the software. If you wish to use the software in a separate location, or on a network, for report generation, cable design, or other functions that do not require data acquisition, you need to purchase the *Standalone Software License* (Item 729), which permits the software to be installed on a standalone computer, or on your server and used by any computer on the network. You may also move the tester itself to any computer with the standalone license installed and perform actual tests there.

## 2.6 HELP Menu

The Help menu includes several resources to find information about the CableEye Software.

The first option, *Help...* will open the CableEye Help System. You can search and navigate through this system to learn about the CableEye Software functions. Use the help system to obtain information quickly about CableEye or when the User’s Guide is not at hand.

*? Help On..* activates *contextual help* (same as clicking on the “?” button along the left side of the screen). After clicking *?Help On..*, a question mark appears next to the cursor and lets you click on anything visible on the screen to obtain a description of it.

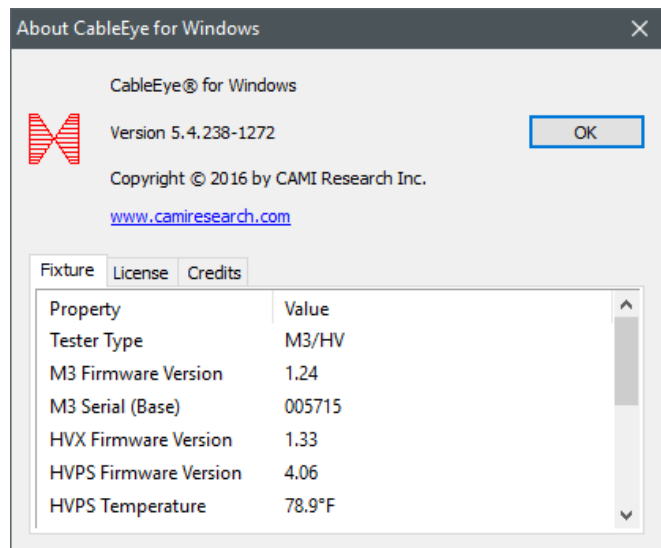
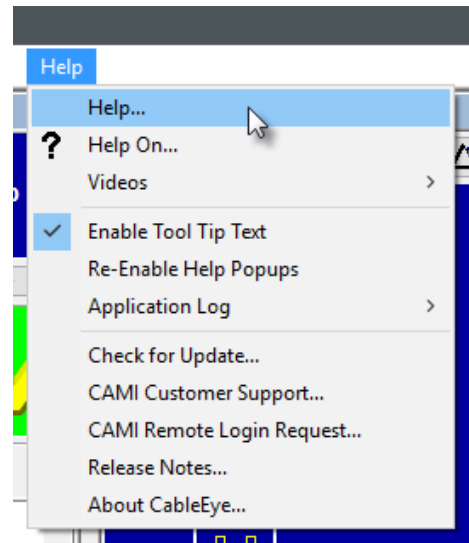
*Enable Tool Tip Text* turns on *Hover Text* which posts short descriptions of each button or control when the mouse pointer hovers over it.

*CAMI Customer Support...* will bring you to the *Customer Services* area of the CAMI web site for the latest software releases and new product information. You will also find here links to review our policy on warranty service, out-of-warranty service, warranty renewal, calibration, tester “healthcheck” service, software upgrades, and hardware upgrade options for older testers.

*CAMI Remote Login Request...* sends a request to CAMI’s Support Staff to view and control your computer remotely. This service is not actively monitored and you should talk in advance with a CAMI representative to set up your tech support session.

*Release Notes...* provides a chronological history of new features, bug fixes, and corrections, permitting you to see what changes have been made between various versions of CableEye.

*About CableEye...* gives you information about the software version you are now running, the tester type, firmware version, and other data as shown on the right. The *License* tab summarizes what optional software will function in your system.



## 2.7 The CableEye Database

CableEye's *Databases* folder holds information about your stored cables and harnesses, connector graphics, and custom fixture information. Normally, CAMI-provided data resides in subfolders named "CAMI" whereas customer-created data resides in subfolders named "Custom". A cable file contains:

1. the wire list,
2. names of connectors used in the cable,
3. component values, color codes and other properties seen in the netlist,
4. the resistance thresholds active at the time you measured the cable,
5. the name of a custom map file if defined,
6. any test points that should be *excluded* from the measurement of new cables.

**IMPORTANT: Keep regular backups!** If your cable files or other custom files are damaged by hard disk failure or a virus, you will need a backup to restore them. Without a backup, all cables you stored must be remeasured and your notes reentered. In addition, your Log files and your custom operator notes files will be lost, and all Macros and Map files must be redeveloped. Refer to the File menu, "Backup to ZIP..." for an easy, built-in backup function for all of your custom CableEye data. We strongly encourage you use this convenient backup utility!

## 2.8 Placing your Databases on a Server

The CableEye installer places your Cables and other data folders in the */Program Files/Software/Databases/* folder at the time of installation. You may wish to relocate some or all of your custom folders to a network computer's hard drive for several reasons. First, by placing your critical custom data folders on a server, you can rely on regular back-ups performed by your systems administrator without needing to do so yourself, ensuring recovery from failure of your computer or hard drive. Second, you may wish to share your databases with other CableEye test stations connected to your network. Sharing common data from a server provides universal access to a database common to everyone, and making the various CableEye test stations in your facility all operate consistently.

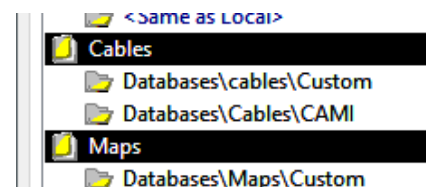
*Note:* Keep in mind that locating your databases on an external network drive makes you dependent on the network. Should the network or server fail, or be shut down for maintenance, you will be unable to access your data. Network hardware generally exhibits high reliability and this should not be of great concern, but you should be aware of the possibility.

Set up a shared database by first creating a *Shared Folder* on your server, or on the computer you wish to designate for your master databases.

Copy the *Cables* and other custom folders to your newly shared folder.

Finally, from CableEye's *Preferences* menu, choose *Directories* and then select the directories you wish to relocate.

When the directory list appears, highlight the folder that you want to redirect and click the New button to add the new path by navigating to the shared folder.





### 2.9 Importing and Exporting Cable Data

CAMI Research developed a custom database engine specifically to handle cable files efficiently. As a result, our Cables database has a unique format not directly readable by commercial database programs. However, we described how individual cables can be copied and pasted into other applications earlier in this section using the [Copy to Clipboard button](#) (p. 2-13).

We also provide an optional program called *Exporter* (Item 709) that translates our custom file format into CSV or XML format and can be applied to the entire database at one time rather than just individual cables. Once in CSV or XML format, you may import your cable files into most commercial database, spreadsheet, and word processor software for special report generation. You may also modify the files outside of CableEye and reimport them, as long as you follow the proper format. We include instructions for using *Exporter* (which can also import data) in Section 11, *Database Utilities*.

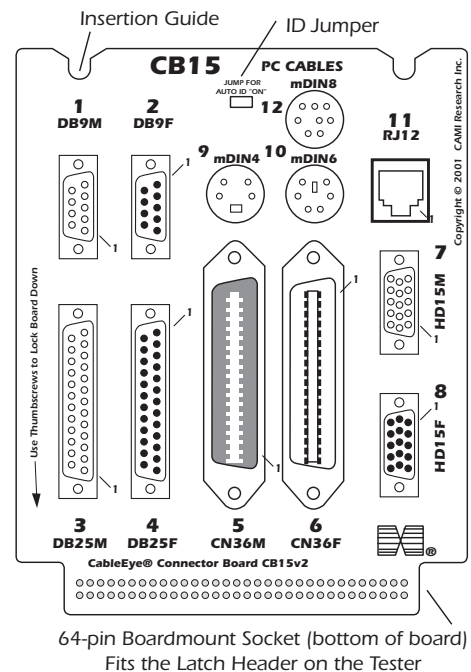
### 2.10 Using Connector Boards

CableEye Connector boards attach to the tester housing to provide mating connectors for cables you test. You see one of the many boards available for CableEye on the right. Each board connects to the system using an industry-standard 64-pin dual-row header. The 64 test points brought onto the board through this header are distributed to multiple connectors available on the board.

When using a board, attach one end of a cable to an appropriate mating connector on that board, and the other end to a mating connector on a second board. In general, *use only one connector per board* when testing cables unless that connector board's information sheet states that multiple connectors may be used simultaneously with that particular board. You may mix and match connector boards as needed to obtain the right combination of mating connectors for your cable.

When testing multi-headed cables or wire harnesses that require more than two plug-in boards, connect additional boards using the QuickMount housing (Item 712) connected to an attached expansion module (Item 823). In this case, connect as many boards as you need to attach all connectors on the cable or harness. Figure on the right shows one QuickMount housing added to a 256-point CableEye system to provide a total of four board positions.

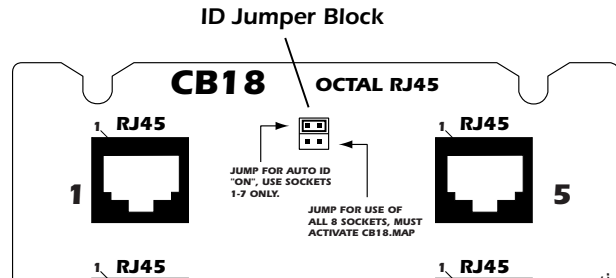
CableEye CB boards offer a quick, convenient, and automatic solution to interface a variety of cable connectors to the tester. Simply choose the boards you need, connect them to the tester in any order, attach a cable, and test. CableEye creates the connector graphics, wiring, and netlist for your cable in less than one second. Because CB boards serve general purposes, however, they cannot anticipate which connectors will *not* be needed, and thus by reserving space for multiple connectors per board, cannot use the 64 test points on each board very



efficiently. For example, using only a DB9 connector on one CB15 board requires 10 test points and leaves 54 test points unassigned. When you have complex cables or wire harnesses with many connectors, CB boards become too inefficient to be practical, and a *custom interface* must be designed. We devote Section 9, *Adapting to Custom Fixtures*, to explaining how this may be done.

### 2.11 ID Jumpers on Connector Boards

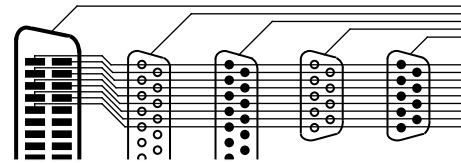
Most standard CB boards include an *ID Jumper* located towards the top-center of the board as shown in the drawing in the right. The ID jumper creates a connection between test point 64 and one other test point specially assigned to that board, thus permitting the software to identify which boards are connected to the tester. We've made the jumper removable to allow these boards to be used in custom applications. However, as long as you are using the connector boards in their intended manner, the jumper must be present. If removed, you will get the message *Setup Error...* when measuring a cable, indicating that the software could not identify the board or connectors that are attached.



Some boards have two or more jumper positions to facilitate different connector function or display options as is the case for the CB18 board shown in the drawing. You will find information about a particular board's jumper options on the data sheet that ships with each CB board set.

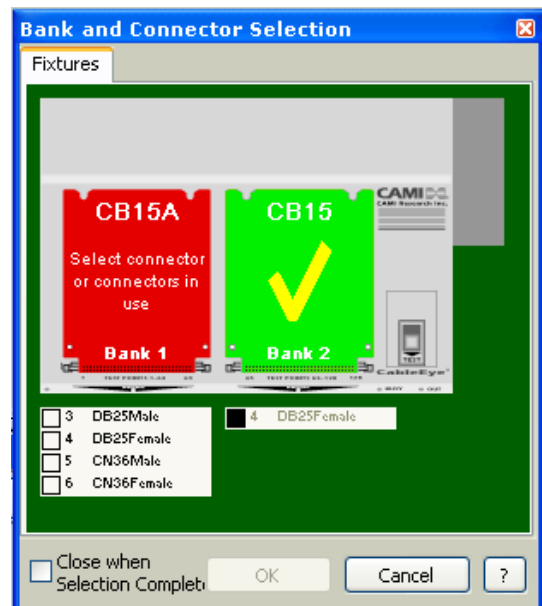
### 2.12 Sharing Test Points on Connector Boards

To obtain the most effective use of available test points, the connectors on a board share test points as shown here. When test points are shared, you may use only one connector at a time on a board. Note that test point 1 from the 64-pin header *does not normally join to pin 1* on the board's connectors. Instead, the test points are assigned in the manner that allows the greatest number of connectors to be placed in the most convenient position on that board, with the proviso that no test point be used twice on the same connector. We employ a *pin map* to translate the scrambled test point sequence into the correct order for a given connector. We store map files in */Program Files/CableEye/Software/Databases/Maps*, and assign them an extension ".fixture".



Notice in the drawing above how the shells of each connector join to separate test points unused by any other pins. This fact permits the software to distinguish which connector is actually in use when you test a cable with a shield conductor. In general, as long as *at least one pin* of a connector is assigned to a test point not shared by any other pin on that board, the software will correctly identify the connector you're using.

If some of the pins in your test cable are unwired, it is possible that the software will be unable to identify a connector because its unshared test points remain undetectable. If this happens, the software will show a *Connector Selection* window as seen on the right, asking you to supply the missing information. In the image you see here, a list of four connector choices appear for the left side (the number next to each box represents the



socket number). Check on the connector in use and click OK to continue. Note that the gender given in this list is the cable's gender, *not the gender of the connector on the CB board!*

There are several user-selectable options for handling the situation where a connector identification cannot be resolved from test points in use. In this case, your *Preferences* choice for *Connector ID* as seen on the right determines what happens next.

Connector ID

User Choice when Ambiguous

Default to Last Choice

Default to Match Data, then Last Choice

Default to Match Data Only

Use Smart Select when appropriate

Include Mini-Hooks on CB15 Boards

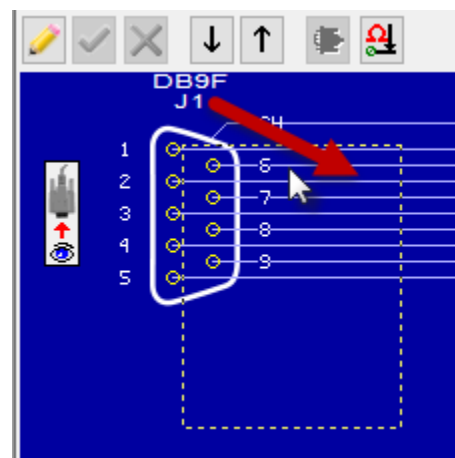
See *Preferences\Connectors* panel.

- *User Choice when Ambiguous* always causes a Connector Selection window shown on the previous screen, to appear if the connector cannot be determined. You are asked to choose the connector in use from a list of possibilities.
- *Default to Last Choice* remembers the last connector used. The Connector Selection window will appear on the first measurement only, and subsequent measurements will default to the previous choice. If your current measurement detects wiring that makes the previous connector choice impossible, the Connector Selection window is again displayed. Note that you may reset the memory of the last connector at any time by clicking the *Clear* button on the left side of the screen (shows a lightning-bolt).
- *Default to Match Data, then Last Choice* chooses the connectors of the currently loaded Match Data that would be consistent with the measured data. If no Match Data is loaded, it defaults to the last connector choice. If no last choice can be found, it shows the Connector Selection window and asks you to choose. We recommend that this be your default setting for most applications.
- *Default to Match Data Only* immediately posts the Connector Selection window if Match Data is not loaded.
- *Use Smart Select when appropriate* allows some boards to hide from the selection screen the connectors that are not in use.
- Minihooks can be displayed as an option on CB15s if you check the last item, *Include Minihooks*.

## 2.13 Attaching Multi-Headed Cables

You can often attach a cable to the tester in more than one way. This is possible because the needed mating connectors may be available on more than one CB board. If you save Match Data for a good cable with the connectors in one orientation (say, attached to the board plugged into Bank 1), and then later test the cable with the connectors in a different location (Bank 2) or on different boards, CableEye will align the connectors correctly and properly compare them in almost all cases. If it needs help, it will show the Connector Selection window and ask you to resolve any ambiguities.

If you test a multiheaded cable, you may move the connectors around on the screen before saving the cable so the wiring display better resembles the physical cable. The connector locations and orientations you choose will be remembered in the Match Data.



To move a connector, **click** on the connector name and **drag it** to the desired location. Using the *Search*

function to find a cable in the database will not be affected by the connector positions on the screen.

## 2.14 Connector Graphics

The images of connectors you see when displaying wiring diagrams come from a graphic library developed and maintained by CAMI Research. This information resides in two places:

*/Program Files/CableEye/Software/Databases/Graphics* - contains the connector graphic information, either as a wire frame graphic or an actual photographic image.

*/Program Files/CableEye/Software/Databases/Connectors* - contains the connector files used by CableEye. A connector file includes all the properties of the connector itself.

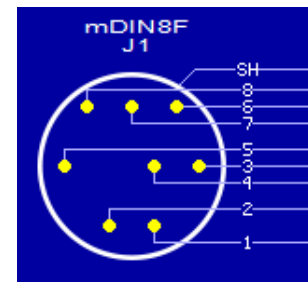
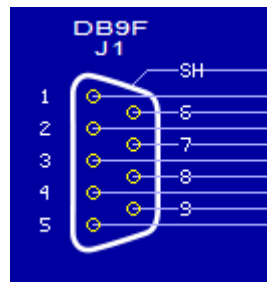
Our large library of connectors comes with your software to support all CAMI CB boards. Other connectors in the library result from customer requests and special projects. You may employ any of these pre-existing graphics for your own custom fixtures using the *PinMap* software (Item 708). If our library does not contain the graphic you need, we offer the *Connector Designer* software (Item 707) which allows you to create any custom connector graphics you need.

For some connectors, we use a *wire frame* graphic. For other connectors, an actual digital photo of the connector is employed, especially if the connector will be used with the AutoBuild™ Guided Assembly software.

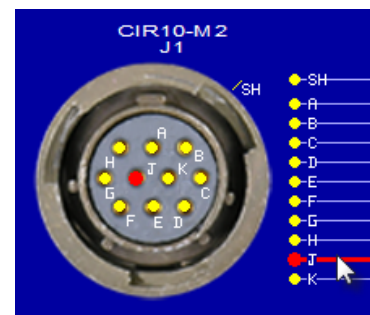
### Wiring Pins

Graphic wires are defined by the connection between two or more pins on one or more connectors. CableEye shows wiring in 2 possible ways.

**PinOut Pins** - Relatively narrow connectors (less than 6 pins wide) or small-pin-count connectors generally allow room for wiring to be drawn directly into the pins, as shown on the right.



**Reference Pins** - For most circular connectors or customer-drawn connectors, we use *reference pins*, that is, a row of pins to one side of the graphic which serve as termination points for wiring, as shown right. Note that when you highlight a reference pin (red wire), the corresponding pin within the connector image highlights also to easily associate a pin's geometric position with its pin number.



Your CableEye software includes maps for all CB boards CAMI manufactures. As long as you use these boards, you will never need to be concerned with creating pin maps. However, should you use a “pigtail cable” or build a custom test fixture, you will want to create a custom pin map showing appropriate connector graphic and pin labels. Section 9, *Adapting to Custom Fixtures*, explains how to do this.

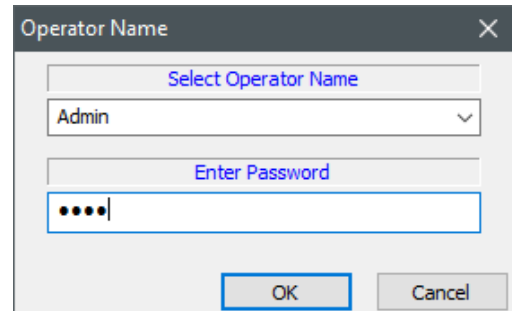
It is possible that the connectors that you need are not included in our extensive library. If so, you can use optional software Connector Designer to create your own custom connectors. Check Section 10 - Connector Designer to learn more about this option.

## 2.15 User Names, Passwords and Privileges

You may set up CableEye to require *login* at startup if the tester will be shared by several people, or if you wish to shield critical data from inadvertent changes or tampering. This requires that you assign *user names* with *passwords*, and a *level of privilege* appropriate to that person’s responsibility. Once someone logs in, their name becomes available to appear on printed reports and labels, or be embedded in stored test data to track who performed the testing.

One or more individuals may be assigned *Administrator* privileges which permit full access to all functions, including control of the system access and adding or editing operator data. *Supervisors* have almost the privilege of an Administrator and may change anything except passwords. *Operators* have the lowest level of privilege and will be unable to learn cables, alter Match Data, modify Macros, change thresholds, or make any critical preference changes.

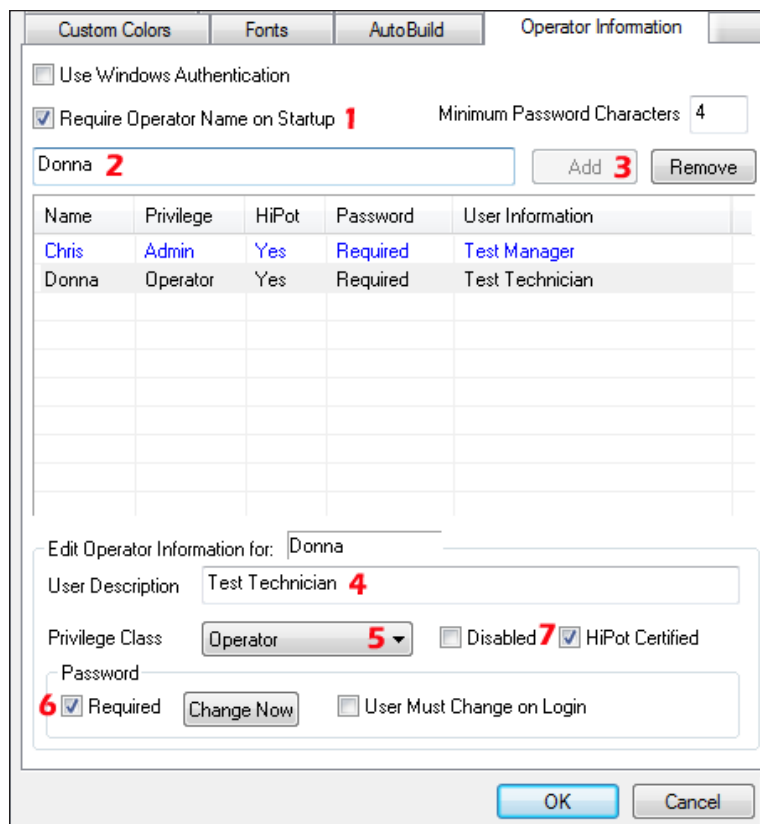
When the Administrator requires login at startup, you see the window shown on the right. Operators select their name from a pull-down menu and then type in their password. Alternatively, they may use a bar code reader to scan their badge for entry of name and password automatically.



You may change operators at any time without shutting down the software. To do so, click on the *Users* button along the left side of the screen to activate the same Operator Name pop-up. The next operator would then enter or scan their information.

In a newly-installed CableEye system, before operators are assigned, anyone may define user names and privileges. At least one Administrator is required and should be entered first. Once an Administrator is named, any number of Supervisors or Operators may be entered. *Only* someone with Administrator privilege may later make changes to the assignments once the initial choices have been saved. Note that assigning names, privileges, and passwords in the Operator Information panel is not required. If you make no assignments, the software will start without login, and all operations will be enabled.

From the **Preferences** menu, choose **Operators** to open the Operator Information control panel shown on the right. **Follow the red numbers sequence** to add a new operator.





The Administrator may opt to select a password for individuals named on the list or allow each individual to choose their own password on next login. Once all names have been entered, check **Require Operator Name on Startup** to activate password-protected login, and **click OK**. The panel will not close unless an administrator has been named to avoid the possibility of locking yourself out of the panel. You may name two or more Administrators if desired.

If a User forgets his password, it cannot be retrieved from the system or looked up by the Administrator. A new password must be defined which the Administrator may enable by checking the box *User must Change on Login*.

**IMPORTANT:** If the Administrator forgets his password and *Require Operator Name on Startup* is checked, **he becomes locked out of the system**. The only way to regain control of the Administrator panel **is to reinstall the software** (be sure to save your cable databases, Macros, Logs, and Notes in another folder to preserve them before reinstalling). *Note that CAMI Tech Support has no means of recovering a lost password!*

If you assign some users passwords and others not, it is possible for anyone to use the system under the name of someone without a password. You may wish to create a *Guest* entry for such circumstances.

## 2.16 Bar Code Scanning

Bar code scanners automate the process of text entry to speed production testing, reduce errors, and make text entry more convenient.

Most scanners with a USB connection, when plugged, are ready to use instantly. The scanner might need to be set up in advance using instructions provided by the manufacturer for the protocol your bar codes employ (for example, *Code 39*, *128*, *UPC*, etc.).

Use the bar code reader with CableEye any time text should be entered; the software cannot distinguish typed characters from scanned characters. Note that when typing manually, you would normally type in the characters and then press *ENTER* or *RETURN*. Bar code scanners conveniently add an *Enter* character automatically to the end of each scan sequence. This means that when you scan bar codes into a pop-up window like that produced when you log in, the window disappears immediately after a successful scan without any further action necessary.

Application examples:

- *Scan serial numbers on cable labels* or connectors. Once scanned, the serial number may appear on printed reports, be saved to disk, to entries in the log file, or on printed labels.
- *Scan operator badges* with barcoded names when someone logs in at startup. The scanned name may then appear on printed reports, may be saved to disk, printed log reports, or on printed labels.
- Provide a test technician with a *bar-coded work order sheet* on which the Match Data name, customer part number, lot code, operator name, or other relevant data are given in both text and bar codes. This provides complete, automatic setup information before starting a job.



## 2.17 Calibration

All CableEye testers capable of measuring resistance require periodic calibration (M3U, M4, and HVX testers). We recommend yearly calibration for these models.

Calibration ensures that CableEye measurements fall within an allowable tolerance with respect to a reference standard. That reference standard is a precision digital multimeter in the CAMI laboratory which itself is calibrated against National Bureau of Standards (NIST) sources. Calibration compensates for the natural variation in component values between devices, and over time, as compared to ideal design values.

We calibrate the CableEye tester *digitally* using special software developed by CAMI Research. The *calibration file* that results from this process contains a series of numbers, one for each test point, that we employ in the resistance calculation when a cable is measured. Note that periodic recalibration *does not* involve changing any components or adjusting any potentiometers. We recommend yearly calibration if you use the tester regularly, and generally can complete the calibration process within 48 hours.

If you own two or more CableEye testers or require calibration more frequently and wish to perform calibration in-house, you may purchase our *calibration kit*, Item 717S (or 717SH for HVX testers), consisting of our calibration software and special test cables. You need to provide a calibrated digital multimeter with resolution to 0.1 mV or better.

When we recalibrate your tester, we return it with a CD having a new calibration file, a calibration certificate, and numerical data showing the key voltage measurements and some of the calibration constants. To install the new calibration file, start the software, go to the *File* menu, and choose *Calibration File...* A pop-up window will appear. Simply open the CD and drag the calibration file you see there into this pop-up window.

## 2.18 The Self-Test Function

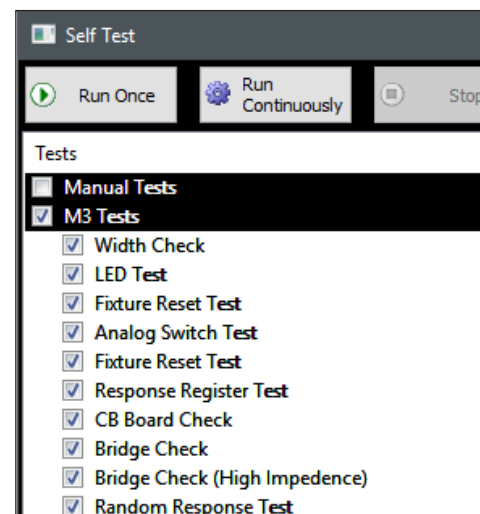
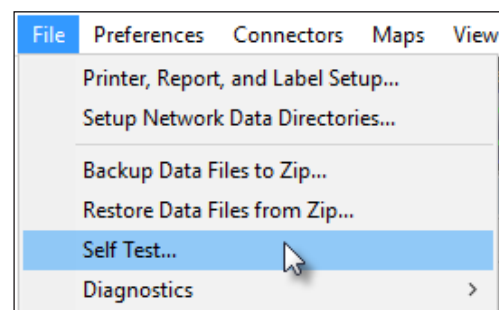
You may check CableEye's communications and switching circuits using the built-in *Self-Test* function. Note that Self-test does not check calibration!

*Before running the self-test, be sure to remove all connector boards and fixturing. The 64-pin headers on the base unit and any attached expansion modules must be disconnected from any external wiring or the Self-Test will fail for a good tester.*

Set the *Active Test Points* switch on the base unit to 152, and any expansion modules that may be connected to 128. Then, from the **File** menu, choose **Self-Test**.

When the Self-Test control window appears, click **Run Once** for a single pass, or **Run Continuously** to allow the system to repeat the test indefinitely. Click **Stop** or press the TEST pushbutton to stop a continuously running test.

Successful completion of all internal tests produces a large green box with a yellow check. Any internal problems detected result in a red box with a black X, with indications about failed tests on the bottom of the Self-Test window (not shown).

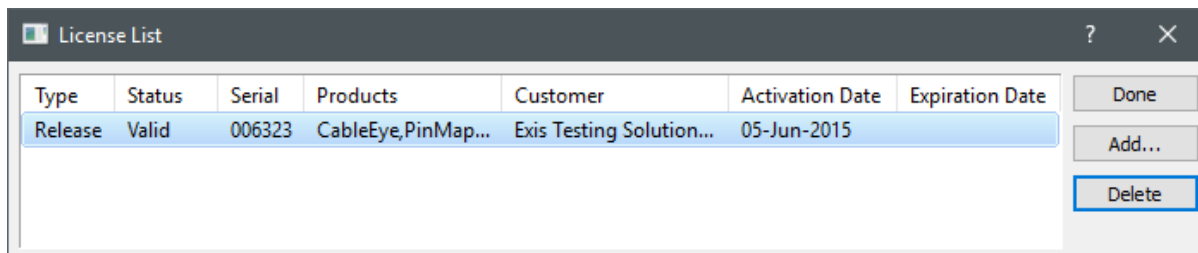


## 2.19 License Files

When you purchase a CableEye tester, you receive a license to use the software. The license assigns your name and company to the serial number of your tester. The software license also enables optional software you may have purchased with the tester, including PinMap (Item 708), Exporter (Item 709), AutoBuild (Item 728), Standalone Enabler (Item 729), Connector Designer (Item 707), and the .NET API (Item 730). With the exception of the .NET API, all optional software comes embedded in the main application and enabled according to your license file.

If you initially purchase the tester with no software options, you may at a later time purchase any needed options and we will provide an updated license file to enable those options.

The license file installs *automatically* from the CD when you install the software, and no special action need be taken. Should you later purchase new software options, you will receive an updated license file by e-mail or on a CD. Install a license update by going to the *File* menu and choosing *Software License...* This will open the *License List* as shown below. Simply drag the new license file into this window to install it and activate the software option you purchased. Instead of Drag-and-Drop installation, you may also click the *Add...* button and navigate to the file.



We can provide a short-term *Demo* license for any software option you may evaluate to try before committing to purchase. If we send you a Demo license, you will see an expiration date given in the License List window.

We store the license file itself in */Program Files/CableEye/Software*. If you place a license file here directly, you must still go to */File/Software License* to open the License List, click *Add...*, and navigate to the new license.

You may install the CableEye software on as many computers as you wish, and move the tester between those computers if the test system will be shared by several people. Note that the software will not start if a hardware fixture cannot be found attached to the computer, or if a demo software license has expired.

## 2.20 Connector Wear-Out

CB board connectors wear out over time as a result of friction when connecting and disconnecting cables. Wear ultimately results in pins on the test cable failing to make contact with board connectors when the cable is firmly seated, and can cause false comparison errors during a test. Connectors on all CableEye CB boards can be replaced when they wear out, and can be done quickly and easily by returning the product to CAMI Research.

The expected connector lifetimes for the connectors on your boards range from 100 to 10,000+ insertion cycles, largely depending on the connector type. Please keep in mind that the *connector life also depends strongly on the care used in connecting and disconnecting the cables*, and connector quality of the cable you are testing.

To check the condition of the connector boards, we suggest you maintain a set of cables known to be good (“golden” cables) and use them *only for fixture certification*. With the golden cable attached, make a measurement to confirm that all pins are detected. Then use the *Continuous Test* function to check for intermittent connectors and sensitivity to insertion angle. Refer to Section 3.4 - *Checking for Intermittent Connections* for more detail.

Periodically check the connector boards to ensure the integrity of all pins and shells. Connector wear-out generally results in intermittent connections, broken pins, and bent or intermittent shells. For each test of a golden cable, print the test results as confirmation that the test procedure was performed. The date will automatically be included on the printout, and you may add custom notes or label text before printing.

## **2.21 CB Board Compatibility Chart**

CableEye’s CB-series connector boards physically mate with all CableEye Models and the QuickMount™ Housing. Most boards include connectors of 64 or fewer pins, and are compatible with all CableEye models. However, certain boards include high-pin-count connectors that require an expander cable to access test points from an expansion module. In these cases, more than 128 test points are needed. To verify the compatibility of a specific board with your tester, please visit the following link in our website:

<http://www.camiresearch.com/cb-compatibility.html>