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Section 1: INITIAL SETUP

1 Initial Setup

A separate booklet included with your system called ***Getting Started*** provides a quick setup procedure for experienced computer users. ***Section 1*** of the User's Guide (what you are reading) covers the same material in a bit more detail. Once you've connected the test fixture and started the software, you should be able to learn how to use CableEye without the manual for many basic operations. However, to get the most out of the software, you should return to this manual and continue reading. Definitely plan to come back and read about Automatic Testing (Section 6) which can totally automate your repetitive testing procedures. Enjoy!

1.1 CableEye Parts List

The CableEye M2 and M3 systems (catalog Items 810 for M2-Basic, 811 for M2, and 821 for M3, 821U for M3 with USB Port) include both hardware and software components as listed below:

1 – The CableEye test fixture to which you attach connector boards. This thin, rectangular housing has two 64-pin latch headers, a TEST pushbutton, LED indicators, and a fixture for mounting CB connector boards.

2 – A connector board set with mating connectors for the cables you will test. Most CableEye systems are shipped with at least one connector board set consisting of two plug-in boards. You should find two connector boards installed when you receive your equipment.

3 – A serial or USB interface cable. If the tester you purchased comes with a serial port, a DB9 male-to-female cable will be provided. If the tester you purchased has a USB port, a USB-A to USB-B cable will be provided.

4 – A power supply that provides operating power to the test fixture. M2 power modules produce 9v at 300ma. M3 power modules produce 15v at 500ma. If you order an M3 tester with expansion modules, a desktop power supply will be included instead of a wall-mounted power module.

5 – A green ground wire to connect the CableEye test fixture to the PC chassis. We recommend you attach this wire when feasible.

6 – A CD ROM containing the CableEye control program, graphic descriptor files, connector data, cable database, preferences file, and other files.

7 – The CableEye User's Guide (what you are reading).

8 – An Applications Guide booklet (one-page description for each function).

9 – A letter of introduction including a registration fax sheet. *Be sure to complete the registration sheet and fax back to CAMI Research using the number on this sheet!*

Many optional accessories are available and will be included if you've ordered them. Some of the possibilities: additional connector board sets (Items 731 through 765, over 35 different CB board types supporting over 200 different connectors are available), Mini-Hook cables (Item 710), PinMap software (Item 708, for custom connector fixtures), the Exporter software (Item 709, for export and import of the custom cable database), and an M2 or M3 Expansion Module (Items 812 or 813 for M2, and Items 822 or 823 for M3). We also include a copy of our brochure and CableEye Catalog for your records.

You can set up and operate CableEye if you have at least the basic items 1 to 6. If any parts you have ordered are missing, please call CAMI Research at once: (800) 776-0414.

1.2 Equipment You Need

CableEye requires a Windows® PC, desktop or laptop, that meets the following requirements:

1 – Computer Type and Operating System

You need a Windows™ PC to run the CableEye software. This software directs all data acquisition, database, display, and printing functions. The operating system should be Windows 2000, XP, or Vista. Note that the CableEye test fixture measures the cable under test and transmits raw measurement data to the PC. The test fixture itself contains only the connector interface, electronic measurement circuitry, status indicators, TEST pushbutton, and serial interface ***and cannot be operated without a computer!***

2 – System RAM

Any computer supporting Windows 2000 or above includes sufficient RAM for CableEye.

3 – Video Display Card

Any computer supporting Windows 2000 or above includes a video card capable of displaying CableEye's graphic images.

4 – Serial Port and USB Port Systems

Your CableEye tester will include either a serial port or USB port, depending on the model you ordered. An appropriate cable is provided. *Important:* if you have a serial port tester, you will not obtain satisfactory performance using a serial-to-USB adapter on computers that do not have serial ports. The amount of data exchanged between the computer and CableEye tester overloads the microcontroller protocol converter in these devices. If your computer does not have a serial port, you may obtain an inexpensive PCI plug-in card with serial ports to provide the port you need, or for laptops, a PCMCIA card with a serial port will work.

5 – Printer

Any laser, inkjet, or thermal printer for which you have a printer driver should work with CableEye. Once the software is started, go to the *File* menu and choose the printer you wish to use. You may use multiple printers if desired, one for report printing, one for label printing, and one for log printing. Separate printer assignments appear in the File menu for each category.

6 – Network Operation

You may install the CableEye software on a network, or individually on as many computers as you wish. However, using the standard software license, the software will not actually start unless the CableEye fixture is attached to the computer and detected during the startup sequence. If you purchase our *Standalone Enabler* option (Item 729), the software license will be extended to allow startup if the fixture is not present, permitting other users to view and edit cables, view reports, print labels, and perform any function that does not require data acquisition from the test fixture. The extended license allows the software to be used by any computer attached to your network.

1.3 Hardware Setup

Figure 1-1 shows the hardware setup for a typical CableEye tester. If you are using Models M2 or M3 with one or more detached expansion modules (Item 812 for M2 or 822 for M3), Figure 1-2 (page 1–6) shows how to connect them. No special setup is needed for attached expansion modules (Item 813 for M2 or 823 for M3). Note that Model M2-Basic (Item 810) cannot be expanded.

Setup Notes (no expansion module present)

1 – For USB testers, connect the CableEye test fixture to an available USB port on the computer. If you use a USB hub, it should be a *powered* hub to ensure accurate data transmission. If you experience inconsistent response or data errors during operation when using a hub, shut down the hardware and try reconnecting directly to a USB connector on the computer.

For serial-port testers, connect the CableEye test fixture to an available COM port, COM1 through COM4, using the supplied DB9 Male-to-Female cable. If you do not have a serial port on your computer, obtain a PCI plug-in card with serial ports, or a PCMCIA serial card for laptops. *Note that a serial-to-USB adapter will not work with CableEye!* The CableEye serial interface acts as a DCE device (similar to a modem) and uses signals from pins 2, 3, 4, 5, 6, 7, and 8 on the DB9 connector, as well as the shield (wiring diagram on page 2–14). If you need to use a cable other than the one supplied, be sure that these pins are *direct-wired straight through* to corresponding pins on the DTE side of the cable. No internal cross-connects or self-connects are necessary.

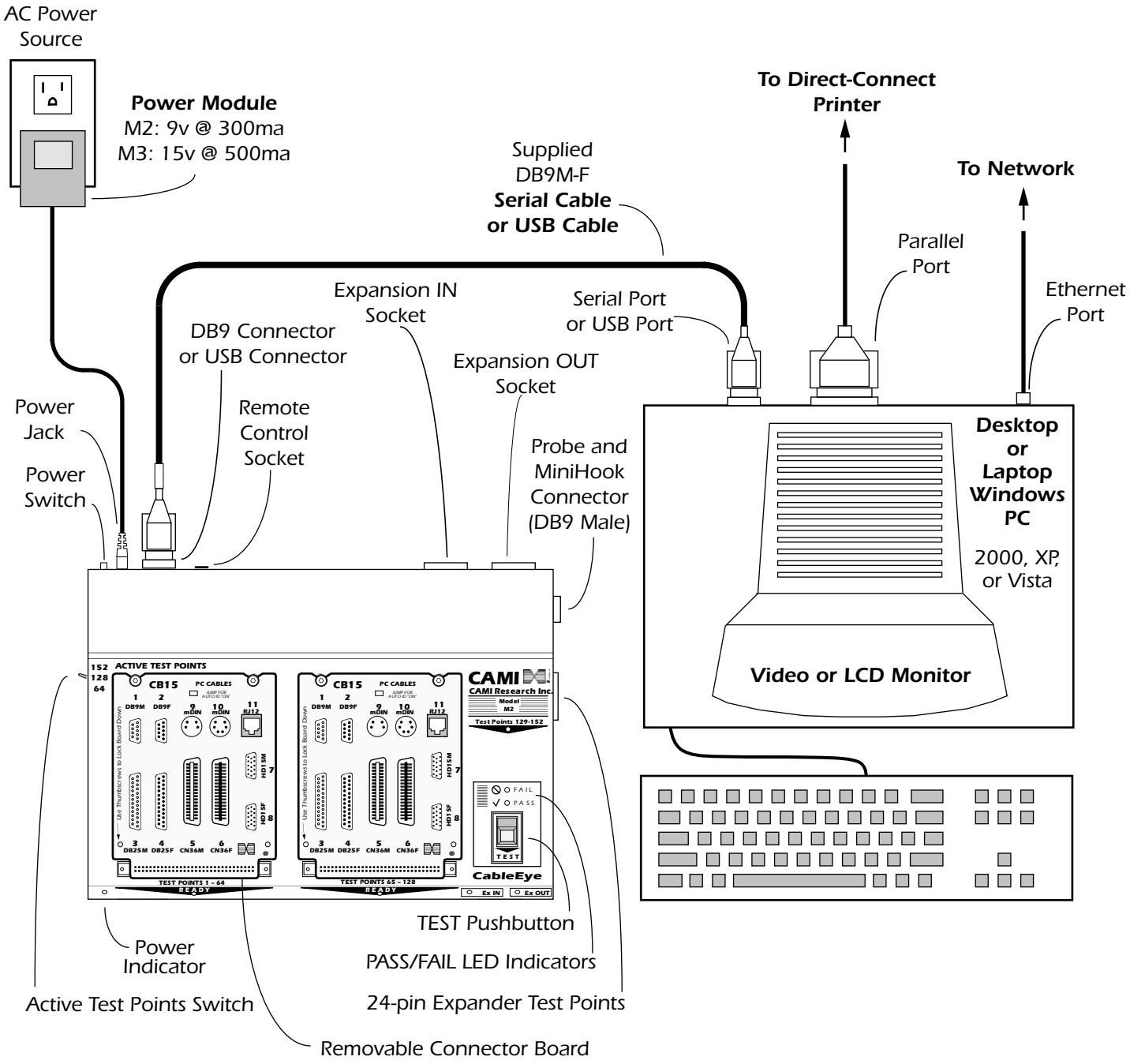
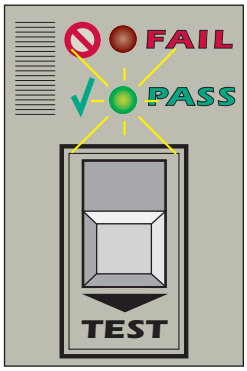


Figure 1-1: The CableEye test fixture with its basic connectors, controls, and indicators. This drawing shows an M2 tester. Model M3 looks similar, and Model M2-Basic lacks certain connectors and options shown in this drawing.

2 – Connect the power module to a source of power, and press the circular plug into the jack in the left rear corner of the CableEye test fixture. Press the power switch to turn on the fixture. You will see a yellow lamp glow when the circuitry is receiving power. The circular power plug has a 5.5mm diameter with a 2.5mm center opening and 12mm barrel, with center positive.

> ***CAUTION:*** *If you use both M2 and M3 testers in your facility, be sure to use the correct power supply with each tester model.* Using an M3 supply with an M2 tester will cause it to overheat and may damage the regulator. Using an M2 supply with an M3 tester will produce incorrect resistance readings.



3 – The TEST pushbutton on the CableEye test fixture is software-scanned only and has no direct-action hardware function. Pressing the TEST pushbutton triggers an automatic test sequence if a Macro is loaded, or executes TEST CABLE if no Macro is loaded. The READY lamps near the bank connectors will be ON whenever the button is being scanned and OFF at all other times. In most cases, you may press ENTER on the keyboard instead of pressing the TEST pushbutton if it is more convenient.

The *Remote Control* socket on the back of M2 and M3 testers has one pin that operates in parallel with the pushbutton and may be used for an external Test button built on your own panel, or a footswitch (see Item 714).

4 – The *Active Test Points* switch sets the number of test points active in the hardware. Normally, you should set this for 128 to enable two standard CableEye CB boards. Set it to 152 if you use the CB5 board or any other CAMI board that requires an *Expander Cable* to be connected to the 24-pin Expander Connector on the right side of the tester. The 64-point setting only applies when a single custom board is connected on the left side and you wish to scan very quickly for intermittent connections.

5 – You may change CB boards without turning off the power or shutting down the software. Our CB boards contain no active components and do not draw power or affect the system when you are not running a test.

6 – If you test cables longer than 10 feet (3 meters), you may need to increase the Dwell Time to get a correct measurement. From the Preferences menu, choose Communications and set the dwell time to 200 microseconds to start. If you see false diodes in the wire list, double the dwell time and try again. Continue doubling until the diodes disappear.

7 – CAUTION: Static discharge from a very long cable 50 feet (17 meters) or longer may damage the tester. Discharge the cable using a grounding plug (see page 2-12) before attaching it to the tester.

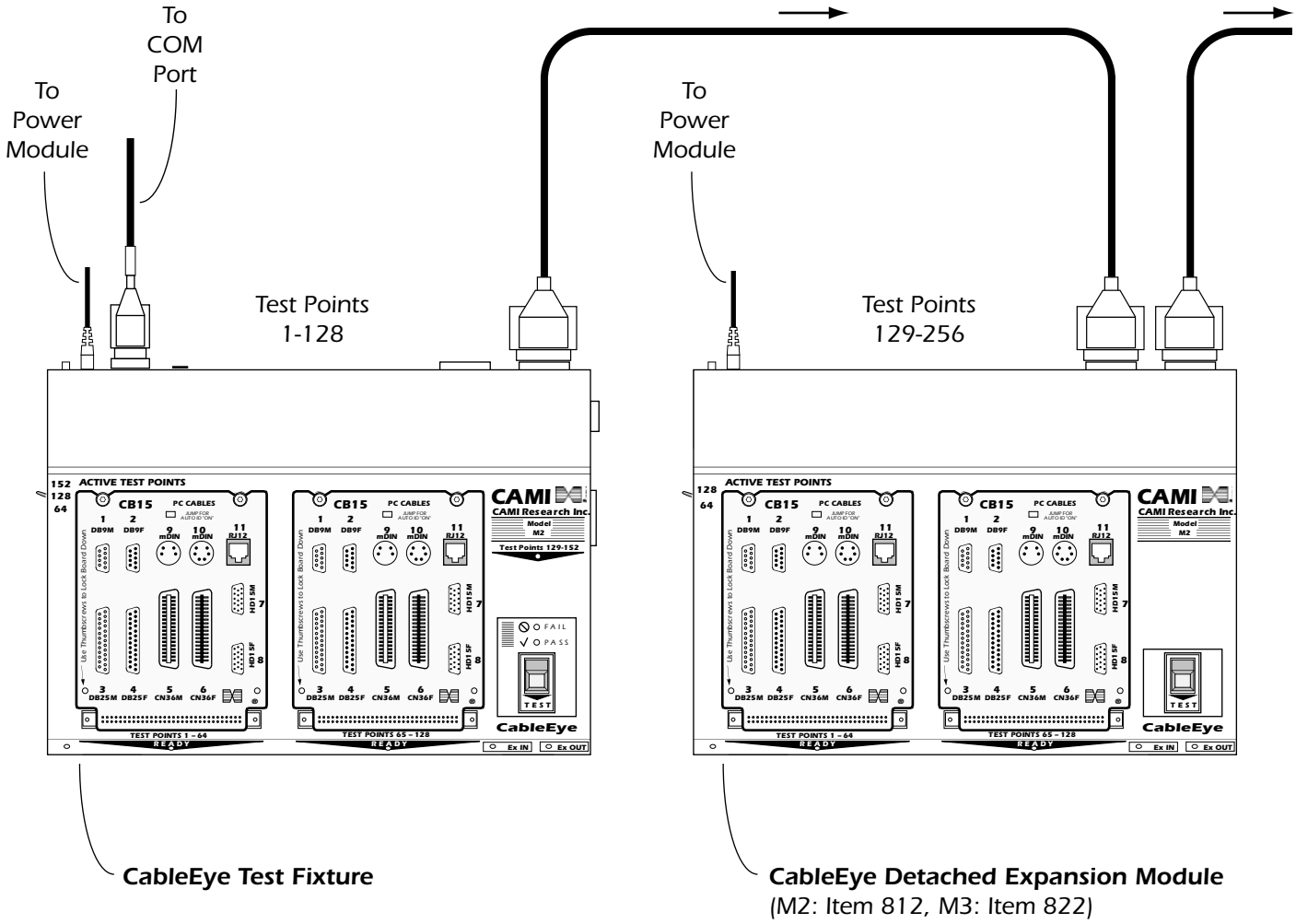


Figure 1-2: The CableEye test fixture with one side-by-side expansion module. Cascade side-by-side modules up to a maximum of seven modules (1024 test points). Attached expansion modules are also available which connect underneath the base unit. Attached modules do not require any special connections.

Setup Notes *(one or more side-by-side expansion modules present)*

1 – Only the base module (left side in Figure 1-2) connects to the computer. Add-on modules interconnect only to the base unit using supplied cables.

2 – Add-on modules may be either additional M2 base units (which may also be used separately) or M2 expansion modules. Model M3 may be expanded using only M3 expansion modules.

3 – Each expansion module adds 128 test points to the chain. A separate power supply should be used with every other M2 module, or for each M3 module.

4 – You may separate M2 modules by as much as 20 feet if adequate cable is provided. M3 modules should not be separated by more than 6 feet, the length of the cable we include.

1.4 Software Setup (Windows 2000/XP/Vista)

You will receive the CableEye software on a CD ROM with new orders, or by download from our FTP site. Follow the same installation procedure whichever method you use.

1 – On the CD, you will find a single executable file, "Setup Bxxx.exe" where "xxx" represents the Build number of the software. For example, the name at the time of this writing is "Setup B663.exe" for Build 663. Double-click on this executable to begin installation.

The CD also contains a description of the new software, a step-by-step introduction, and a problem reporting form. You will also have received printed copies of these items with your CD and need not print them again unless you misplace the originals.

2 – Once the installer starts, it should finish in about 15 seconds.

Note: The speed and simplicity of this installation, unlike those done using Install Shield or the Microsoft installer, should not suggest that the CableEye software package is in any way minimal. In fact, the installer we use is just better designed than the others and much more efficient, saving everyone's time.

We prepared the CD ROM you received especially for your order. It includes the Calibration File (for M3 testers only) unique to your tester hardware, and a License File that activates any optional software you purchased (such as PinMap). The Calibration and License files are placed in the proper locations on your disk automatically by the installer and you need not take any special action.

The installer creates a new folder in your Program Files folder named "CableEyeV5" and places a CableEye Icon on your desktop. If you use Windows Vista, the installer also creates a new folder in your Data Files folder, also called "CableEyeV5" which contains your cable database and stores all custom data you create as you use the system. This completes the installation and you are now ready to test!

We provide a printed copy of the *CableEye Applications Guide* with your tester. This also appears in .pdf format on your installer CD. The Applications Guide offers a brief, one-page introduction to every important function of the tester. If you have not used CableEye before, this 24-page booklet provides an excellent introduction to the system and will get you up and running very quickly.

If you have an earlier version of the CableEye software on your computer, the installer will find this folder and ask if you wish to translate any of your old cable files, maps, or other data. This is optional, and whether or not you choose to do so, the prior version of the software will remain untouched and available if you wish to use it.

IMPORTANT: Keep regular backups! If your cable files or other custom files are damaged or destroyed by hard disk failure or a software virus, you will need a backup to restore them. Without a backup, all cables you stored must be re-measured and your notes reentered. As well, your LOG files and your custom operator notes files will be lost, and all Macros and MAP files must be redeveloped. Using various commercial backup utilities, you may schedule automatic backups to a network hard drive external to your machine. We strongly encourage you to do so!

1.5 Starting the CableEye Software

Be sure your CableEye test fixture is connected and its power is "on" (yellow LED visible). The power switch is located next to the power plug in the rear of the machine. Note that when you turn on a USB tester for the first time, Windows finds your new hardware and acknowledges this with a small message. This only happens the first time you turn on the hardware.

The installer placed a CableEye shortcut on your desktop. Double click this icon to start the CableEye application. You should see the CableEye startup screen, and a PAUSE button in the lower left part of this screen; click PAUSE if you need to copy our phone number, address, or web site URL. When the software establishes communication with the test fixture, the CableEye control screen appears and READY LEDs found on the front of the tester will turn on . You may now begin testing cables!

NOTE: if you don't see the READY LEDs come on or if an error message appears, read the next section. Otherwise, skip to Section 1.7 and continue.

1.6 Possible Startup Problems

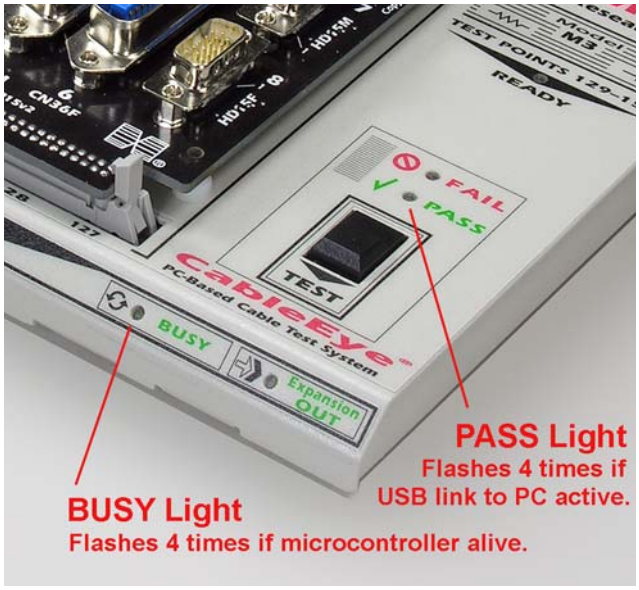
For USB machines, there are only a few possible problems, listed in order of likelihood:

1 – You've connected the USB cable to an unpowered hub, or a hub that does not conform with standard USB design guidelines. Shut down the software, turn off the test fixture, and try connecting directly to one of the computer's USB connectors.

2 – The USB driver was not installed correctly. This might happen if you connected and powered-up the CableEye tester before installing the software. In this case, turn off the tester, uninstall the CableEye software, restart the computer, and reinstall the CableEye software.

3 – You have a defective or intermittent USB cable (rare but possible). Try changing cables.

4 – If a USB tester will not link to the computer, check the BUSY and PASS LED lamps at the moment of power-up. If the BUSY lamp flashes four times, this indicates that the microcontroller IC in the test fixture is alive and operating. If the PASS light also flashes four times, this additionally shows that a low-level link has been made between the USB controller ICs in the CableEye test fixture and the computer. If both lamps flash on power-up and you are still unable to communicate with the tester, then there is likely a driver problem.



For Serial Port testers, an error communicating with CableEye test fixture may occur under any of the following conditions in order of likelihood:

1 – The yellow "Power" lamp located in the front left of the tester "off". Ensure that the power module is connected and receiving AC power and the power switch in the left rear of the unit is pushed in.

2 – The serial cable is loose, connected to the wrong port, or unconnected. It should be attached to the serial port on CableEye with the jackscrews tightened, to the COM1:, COM2:, COM3:, or COM4: port on your PC.

3 – You're using the wrong serial cable. The cable that came with your tester is a straight-through 9-conductor male-to-female DB9 cable with shield, and has been tested before being sent. If you've lost this cable and have replaced it, be sure it is straight-through with all wires connected. *A null-modem cable contains internal crossovers and will not work!*

4 – An incorrect COM port is selected in the CableEye software. On initial start-up, the software defaults to COM1:. If you are physically connected to other than COM1:, you will need to change the selection in *\Preferences\Communications.*To edit the Serial Port Preference, click the "Preferences . . ." button when the CableEye Communications Error message appears. Make your change and click "OK" to try this setting.

5 – The default Baud Rate not set for your hardware. All new CableEye testers with serial ports are designed to operate at 115K Baud and this is the default setting in the software. If you are using an older tester, the Baud rate must be lowered. For XP1 testers, set this to 38.4K Baud. For the original M1 tester, set this to 9600 Baud. You should make any changes in the CableEye Communica-

tions Preferences Panel described above. *The values set in CableEye's Serial Port Preferences override all other settings made in your Windows serial port control panel.*

6 – An internal modem or other internal hardware using the serial port in your computer may override any signals applied to an external COM port connector. If this is true, you must set your modem driver software to allow use of the external COM port socket (thus, deactivating the modem), or connect CableEye to a different COM port.

7 – CAMI's high-speed serial port driver is incompatible with the serial chip in your computer. This driver offers much faster performance than the standard Microsoft driver. If you are unable to link up to the computer properly, or link up but get no cable data or garbage data when a cable is tested, use of our driver may not be possible. To turn off our driver, go to \Preferences\Communications and uncheck the box that says "Accelerated Serial Port" . Click "OK" to try again.

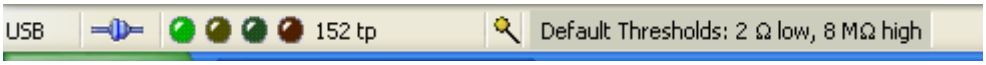
8 – You have PCI cards plugged in, or other hardware in your computer, that share the same port address or interrupt address as your serial port. Scanners, e-card readers, and other external hardware have been known to use the same interrupt address as the serial port (this is an impermissible situation but sometimes exists due to installation errors). If you suspect this to be a problem, unplug any suspicious hardware, and check the Properties of your hardware in the System/Device Manager control panel.

9 – In some cases, the "plug-and-play" function may cause improper operation of your serial port when it is used with CableEye. Check to be sure that the plug-and-play function is disabled. To do so, go to the CMOS RAM setup during the computer's startup cycle, locate the serial port settings, and ensure that plug-and-play are turned off.

If you still cannot link to the fixture, try temporarily moving to a different computer and installing the software on this machine to determine if there is a problem with your serial port hardware.

If you cannot resolve startup problems having checked all of the above items, call CAMI Research at 800-776-0414 (or e-mail "tech@camiresearch.com" and ask for technical support. We will do our best to help you.

During normal start-up, the program attempts communication with the CableEye test fixture, and if a proper data exchange takes place, the channel is opened. Once a channel is opened, software enables the data acquisition functions. A strip along the bottom of the screen shows the communication state and other system conditions:



If there is no response from the test fixture as a result of the power being off or a problem with the USB or serial port, the software will be disabled.

1.7 Ready to Test!

We suggest you now refer to the CableEye Applications Guide (a small booklet included with your CableEye system) and try working through some of the examples. Locate a spare cable (such as a DB25 male to DB25 female) that you can use while checking our examples. Any cable that mates to the connectors on the CB board you are using will suffice. If your Applications Guide has been mislaid or is not available, please refer to your software installer CD where the Applications Guide is available in .pdf form.

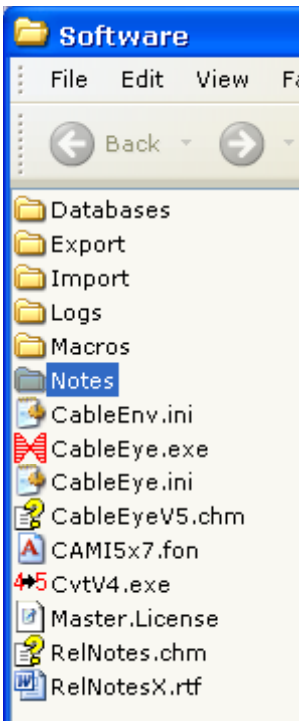
While you are working with CableEye, please observe the following precautions:

> ***Never insert a live cable into the test fixture!*** Disconnect both ends of the cable from any devices to which it may be connected before testing. Attaching a live cable to the tester may cause serious damage that is not covered by the warranty.
>
> Always discharge static electricity before connecting a cable to the test fixture! Once you are positioned in front of the test fixture, touch yourself to a grounded object before attaching the cable. The hardware can sustain small discharges without damage. Large or repeated discharges may damage internal components.

1.8 Contents of Your CableEye Folder

The CableEye Installer CD creates a new folder on your hard drive:

\Program Files\CableEye



The Software folder inside the CableEye folder contains all of the important software components of the system, as shown here.

> *Databases* holds stored cables, custom fixture maps, and connector graphics definitions. See the next page for more details on the Databases folder.
>
> *Export* and *Import* act as data receptacles when you use the optional *Exporter* software option (Item 709).
>
> *Logs* contains log files and data archives acquired during production testing.
>
> *Macros* stores your automatic test scripts.
>
> *CableEnv.ini* preserves the state of your windows, their sizes and locations, color and format preferences.
>
> *CableEye.exe* is the CableEye application itself

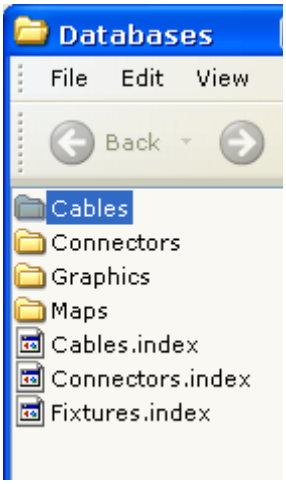
CableEye.ini holds the preferences you select in the *Preferences* menu.

CableEyeV5.chm, *RelNotes.chm* and *RelNotes.rtf* encode the Help text built into the program, and the latest release notes.

CAMI5x7.fon is a special small character font we use for screen pin labels.

CvtV4.exe is a translator program the converts old v4 cable files into the new v5 format. This would be used only by customers who have pre-existing v4 files.

Master.License is a software license that enables the software and any options you may have ordered with it (PinMap, Exporter, AutoBuild, Standalone Software). You will also see an *Update.License* if you purchase options later and enhance the license to activate them.



The *Databases* Folder contains includes databases for custom cables, custom connector graphics, and custom pin maps. Each subfolder includes a *CAMI* and *Custom* folder so that standard data provided by CAMI Research may be separated from, and updated independently of, data that you create while using the CableEye software.

Note that you may redirect these folders to a different location on your computer, or through a Shared folder to another computer or server. Refer to the \Preferences\ Directories option to set custom locations for your critical data files. Doing so may benefit sharing these folders on a network, or backing them up automatically through your server.