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Huntron, Inc.

# Huntron Workstation Manual

21-2108

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# Introduction

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## **Technical Support**

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Internet: <http://www.huntron.com/>

### **Navy Gold Disk Program User Technical Support**

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FAX: (757) 396-0801

E-mail: [help@nor.nuwc.navy.mil](mailto:help@nor.nuwc.navy.mil)

Internet: <https://www.nor.nuwc.navy.mil/mtr/>

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## **Main Window**

Welcome to Huntron Workstation. All of the key features of this software can be accessed from the Main Window. Some of the menu items on the Main Window are active only when a specific tree level is highlighted:

The menu bar contains:

File Menu

Tree Menu

Control Menu

Report Menu

Utility Menu

Settings Menu

Button Menu

Help

### **System:**

Displays the current System in use and allows the selection of other systems.

### **Board:**

Displays the current Board in use and allows the selection of other boards in the current system.

### **Revision:**

Displays the current Revision of the board in use and allows the selection of other revisions of the current board.

**Unit or Gold Disk No.:**

This field is entered Unit name given to in the Board dialog.

**Section:**

Displays the current Section in use and allows the selection of other sections of the current board/revision.

**Component:**

Display the current Component in use and allows the selection of other components of the current section.

**For Help, press F1:**

Changes to the percent completed during Backup, Restore, Convert and Import.

**No Test Hardware:**

Changes to the hardware selected in the Hardware Settings dialog.

**System:**

Displays the currently selected level on the tree.

**Note:** Use the right mouse button to click on the System, Board, Revision, Section or Component to edit or insert a new item if the list is empty.

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## New Features

**Version 3.5**

Huntron Access Prober Support

USB ProTrack Support

View Signatures of Section after scan.

Range Names Change To Voltage, Resistance, Frequency Selection

Hardware Connection in Pins Dialog

Removed Prober RP388 Support

Removed Tracker 5300 Support

Removed Millenia III Support

**Version 3.4**

Prober IIc Support

Prober IIIc Support

Router Solutions CAD Integration

Discontinued Support for Windows 95 and Windows NT

# Tutorials

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## Board Test Strategies Info

**Note:** The following steps cover the suggested approach to building a computerized Tracker board test. The Board Test check list can be printed and used with each additional board to ensure a successful procedure. For more information see Build Test Routine Tutorial.

### 1 Develop a Block Diagram.

Take a moment and think about what you want to accomplish. Make a plan on paper showing how you want to test the board. Record the components in a block diagram format using a data book or other source to establish any re-occurring paths like bus lines and data lines. The test designer can photo copy data sheet pin outs (see following) and paste these into the block diagram positions. These will be valuable later for comparison troubleshooting and identifying manufacturing differences.

### 2 Determine your priorities.

#### Speed

If you want speed, test the input-output (I/O) circuitry and power supply nodes with a 50 impedance (low) range and an appropriate 1k to 25k impedance (DS Med1 / DS Med2) range. Test the kernel logic towards the center of the board with 1 range (1k to 25k). Disable the "Show Signatures with Prober" and the "Show Pin/Range on Scan" in the Preferences dialog on the Settings menu. The best way to scan the board is to start from the outside (I/O devices, power supply and connectors) and scan towards the center of the board. Keep your camera exposure at 400 or below. Keep in mind that the higher the sine wave frequency, the faster the sample time.

#### Thoroughness

If you want thoroughness, organize the components to test the highest fatality components first or scan the complete board starting in one corner and scanning across. Scan using at least two or three impedance ranges and possibly four. Scan all nodes and components. Investigate and possibly correct major signature differences between like boards. Keep the tolerance low.

### 3 Divide Boards

Determine if you want to scan the whole board in one scan or scan individual areas using multiple scans. The multiple scans are created for large boards, boards where a specific area may be a problem or to group similar components. The prober can only scan one complete section without operator intervention. If you prefer to scan a complete board with a prober unattended, the complete board test needs to be in one section.

### 4 Combine Components

When you enter component data into the software, it may be beneficial to form a single component group for capacitors, diodes, transistors, and other like components. For example, there are 6 diodes on the test board that we want to test, the first step is to make a "6 pin, probe-package" component called *DIODES*. Name the individual pins in the *pin name* screen 1-CR1-, 2-CR2+, etc. The - or + indicate the placement of the probe on the diode, (- = cathode) and (+ = anode). Most diodes only require scanning at one end since the other end usually goes to a ground or reference common.

**Note:** Test the integrated circuits individually.

For example, nine transistors would equate to a 27 pin, probe package (3 terminals x 9 transistors = 27). Name the pins 1-Q101-B, 2-Q101-E, 3-Q101-C, etc., where Q101 is the first transistor and B = base, E = emitter and C = collector.

## **5 J Lead ICs**

When testing J bend lead ICs, for example a PLCC, try placing an inexpensive socket on the top of the component. The socket mounts upside down. There are small circuit cards available that solder on the socket or just cut the "through hole pins" flush with the socket creating an easy target for the prober or had probes. This simplifies the targeting and probing while eliminating the positioning problems of components float on the solder pads.

## **6 Remove plugable components**

Test removable components in a ZIF socket or with hand probes. Any components you can remove from the overall test will be just that many fewer circuits to analyze. Be sure to note or mark on the block diagram the mounting position of any plugable components.

## **7 EPROMs**

EPROMs require verification in a programmer to check programming.

## **8 Crystals**

Crystal oscillators should be powered and verified with a scope or frequency meter.

## **9 RAM**

RAM memory requires a functional diagnostic for verification of internal memory cells.

## **10 Instructions**

Insert instructions after you have established your test rather than at the beginning. The instructions often change as you build your test routine requiring constant editing. It is simply easier to wait till you have finished the test and write instructions one time. Include the common connection point and any notes about switch settings, straps, pots and plugable chips.

## **11 Probe Tips**

Be sure you have a straight probe that's proper for the application. To test a probe for straightness, roll it on a flat surface. As a rule, use the three pronged probe for through hole, the four point SMT probe for surface mount and the sharp single point with the double spring force for conformal coating.

## **12 Camera Offset**

It is important that you have a correct camera offset. You can do the camera offset, using a target on the test board mounted in the prober. See Camera Offset dialog for more information.

## **13 Use Two Boards**

Have two identical boards at hand, one to mount in the prober and one to hold for viewing. Use the board in the hand to determine component position and proper range. If you do not have a second board, make a copy on a copier or draw the components you want to place in the test on a sheet of paper. Always save these materials for later reference. Don't continually remove the mounted board from the prober to view components and check ranges, especially after you start the teach process. This is also an opportunity to use your paint program to assign positions and or reference designators to the components.

## **14 Common Connection**

Select a common, probably ground, possibly power. Be sure to check for isolated circuits and voltages. When an isolated circuit is detected, either use the multiple common feature to select different references or just short all the references together.

## **15 Board Mounting**

Mount the board in the appropriate slot (usually top slot) allowing for the Z travel to clear any components. If you are working on a through hole type board, mount the board component side down. Be sure the board is held securely in the prober bed. Any board movement will invalidate the XY positions. Be sure to use the mounting spacers included with your prober. These bring the board away from the walls to the actual probing field.

## **16 Alignment Points**

Select two alignment points that are appropriate for the type of board you are testing. SMT requires more care and accuracy than through hole. Do not use silk screen markings. Select targets, feed-through vias, or foil patterns.

## **17 Ranges**

With red probe in hand, view signatures from components on the hand held board to determine the most effective ranges. Enter the range data into the Pins dialog. Select two ranges, a low and medium impedance range for power circuits and edge connectors. Select one or two medium impedance ranges for logic. Typically you can select a medium impedance range that will give good results over the whole board and then adjust the range for specific pins where needed.

## **18 Build Command**

As a note of caution, if you use the Build command while entering data be sure the initial component does not have teach (XY) coordinates. The XY coordinates will carry over with the other component data.

## **19 Surface Mount Components**

If you have 20 mil (actually 19.6) pitch chips in the central logic. Place these components at the end of your test or in a separate section. They require very careful positioning and extra care. Rather than spending a lot of time probing these components it may be more productive to consider bypassing them. Is there a history of failure with the large components? Often not, and remember you have probably looked at these pins already by probing the opposite end of the foil run where they connect to another component.

## **20 Mounting Diagram**

Draw a mounting diagram in the software with a paint program, on paper or use a digital photo that shows the mounting of the board in the prober for future reference.

---

# Board Check List

## **General**

- Carefully inspect the suspect board for problems or possible clues to faults.
- Plan a troubleshooting approach, consider speed and thoroughness.
- Draw a block diagram to help understand the board design.
- Identify components and include logic diagrams of IC's in your block diagram.
- Group components to simplify and accelerate testing.
- Remove plugable components and test separately, out of circuit.
- The three components that require functional testing are EPROMs, RAM and crystals.
- Insert board and section instructions at the conclusion of your test

## Prober Hardware

- Choose proper probe, the straightness can be checked by rolling on a flat surface.
- Adjust your focus and light intensity for the camera image.
- Once the camera is set, try not to readjust.
- Are you sure of your camera offset? If in doubt, check it out.
- Try doing the "camera offset" on the test board.
- Mount the board and select appropriate alignment points.
- During the "teach" of the first component, set your "Z" to clear the highest component on the board.

## Prober-specific

- Use a second identical board, held in hand, to edit board information, locate parts on the mounted board and determine ranges to use.
- In addition to the previous list decide the "common" connection or connections.
- Decide which side of the board to probe, possibly both sides.
- Choose appropriate alignment points and home corner.
- Mount the board into position in the highest slot possible.
- Be sure the probe clears the highest component when you set the "Z."
- Place the 20 mil and smaller ICs at the end of the test.
- For later reference consider putting a mounting diagram in the software or include it with your block diagram above and save.

---

# Quick Tree Building

In this software, test routines are created using tree. These tree structures consisting of Systems of boards containing sections of components.

See Build Test Routine Tutorial for more detailed instructions. See Board Test Strategies Info for more information.

### Add a New System

**Note:** Moving from field to field is accomplished in one of two ways. The first is by moving the mouse to the respective box and clicking the left mouse button. The second is the Tab button.

- 1** On the Main Window move cursor to **System:** and click the left mouse button to highlight the system.
- 2** Press the INSERT button to activate the System dialog. Two other ways of entering the insert/edit window are to click with the right mouse button on the system or selecting the Add New System for the Tree menu.
- 3** Then enter the Name and path for the system and any instructions relating to the system into their respective fields. A browse button is provided for the quick selection of a path.
- 4** Press the OK button.

### Add a New Board

1 Move to the Board and activate the Board dialog as stated in Step 2 of the Add a New System instructions. (Right click, INS, Tree-Add New)

**Note:** The Tree menu commands will change to end with Board instead of System. This change adapts the instructions in the Tree menu to the current box the user is in.

2 Then enter the Name/Part #, Revision Level, and Unit (optional). Any instructions relating to the Board may be entered in the Instructions. The user is given the option, at this level, to name the Top and Bottom side of the board (defaults with component for the top and solder for the bottom). The user also selects the order in which the sections are arranged (by alphanumeric or by order of entry).

3 Press the OK button.

### **Add a New Section**

1 Move to the Section and activate the Section dialog.

2 Enter the Name, Align name and any instructions relating to the Section.

3 Select the Side of Board being scanned, Prober slot being used, and the order in which the Components are arranged (by alphanumeric or by order of entry).

4 Press the OK button.

### **Add New Component**

1 Move to the Component and activate the Component dialog.

2 Enter the Name, select the Package and enter or select the Number of Pins. Enter Type, Replacement, Supplier, and any instructions relating to the component.

3 If pin information does not need to be changed or updated, then press OK. If pin information needs to be modified, follow Add Pin Information.

### **Add Pin Information**

1 After entering the number of pins in the Component dialog, the Pin Button will show active. Click on it to activate the Pins dialog.

2 The user may enter a Name for each pin and a Net Name.

**Note:** To advance to the next pin, use the next button located next to the pin number.

3 User may also specify Filter (Yes/No), Channel (A/B), Tolerance, Delay and Max. Samples.

4 Select Tracker Common pins or Prober Common Pins and Ranges.

**Note:** Pressing Set All button will set all pins to the current pin's information except Name and Net Name.

5 Press OK button. This returns the user to Component dialog.

6 Press OK button again.

---

## **Build Test Routine Tutorial**

In this software, test routines are created using tree structures. These tree structures consisting of Systems of boards containing sections of components.

This tutorial will go step by step through the process of building a tree. To get started faster, see the Quick Tree Building. For more information on building trees for your own boards see Board Test Strategies Info.

For best results, print a copy of this help topic and related topics before following the tutorial. This will make it easier to view the tutorial and make notes while entering data into the program. To print help topics, click on File from the Help menu and click Print Topic while viewing the topic desired. If using the printed copy, click on File from the Help menu and click Exit.

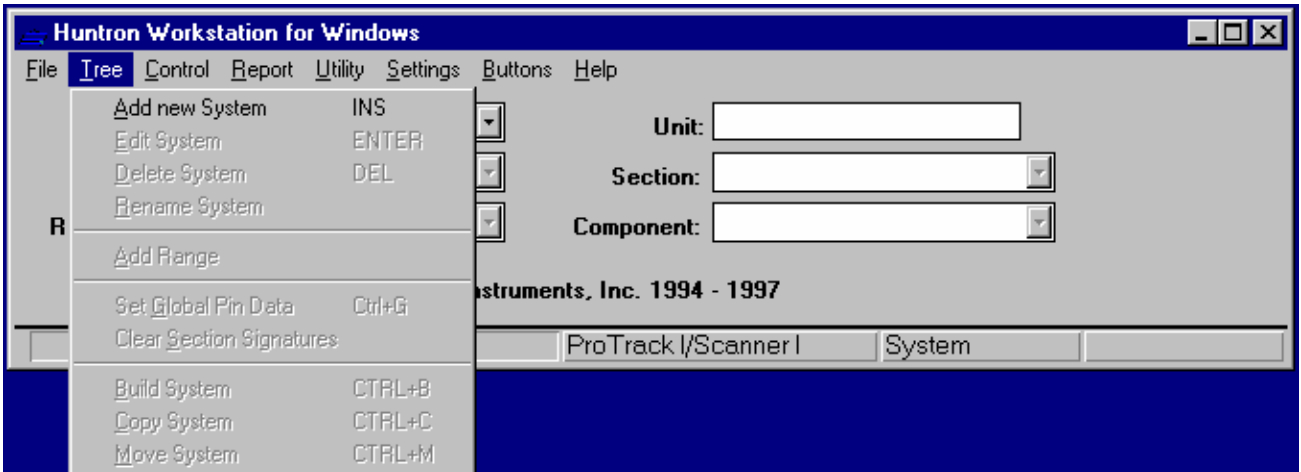
This tutorial uses a training board, part number 06-3097, from Huntron, for test routine creation. If you do not have this board, use another board and substitute data entry with appropriate settings.

### Adding the Tutorial System



Main Window

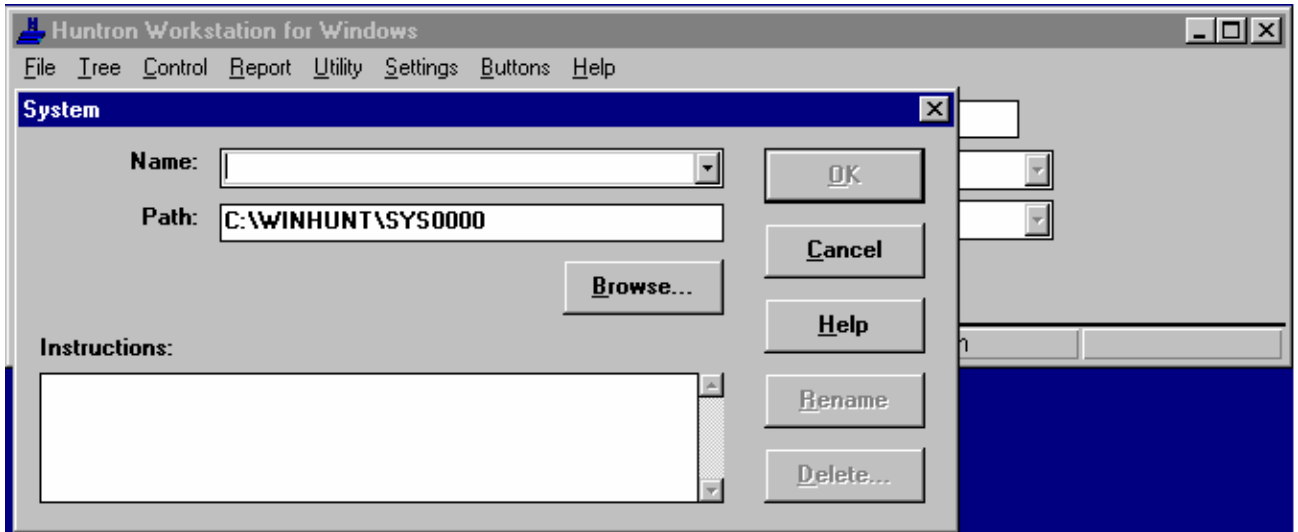
- 1 Position the mouse cursor over Tree on the menu and click the left mouse button.



Main Window with Tree Menu

Click on Add New System to display the System dialog.





System Dialog

- 3 Enter the System Name: TUTORIAL

The name of the system should relate to the boards that will be contained in the system. This can be the manufacture of the boards, the equipment the boards are from, alphanumeric breakdown (A-C, D-G, 1-2 etc.). It is a good idea to use many systems. A small number of boards in each system makes it easier to select and maintain boards. As a general rule, limit the number of boards in a system to what can be displayed in the Main Window Board Drop Down without scrolling.

- 4 Click the OK button to save the system.

This system will use the default path generated by the program. This path can be edited to store boards in a different location on the computer or the network.

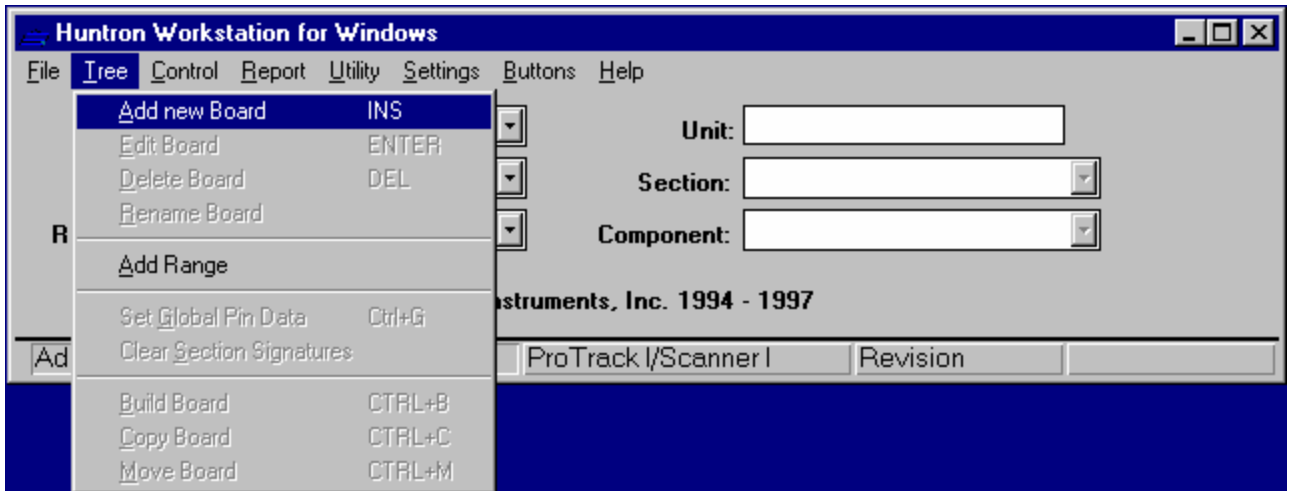
This concludes the system portion of the tutorial.

#### Adding a board to the Tutorial System



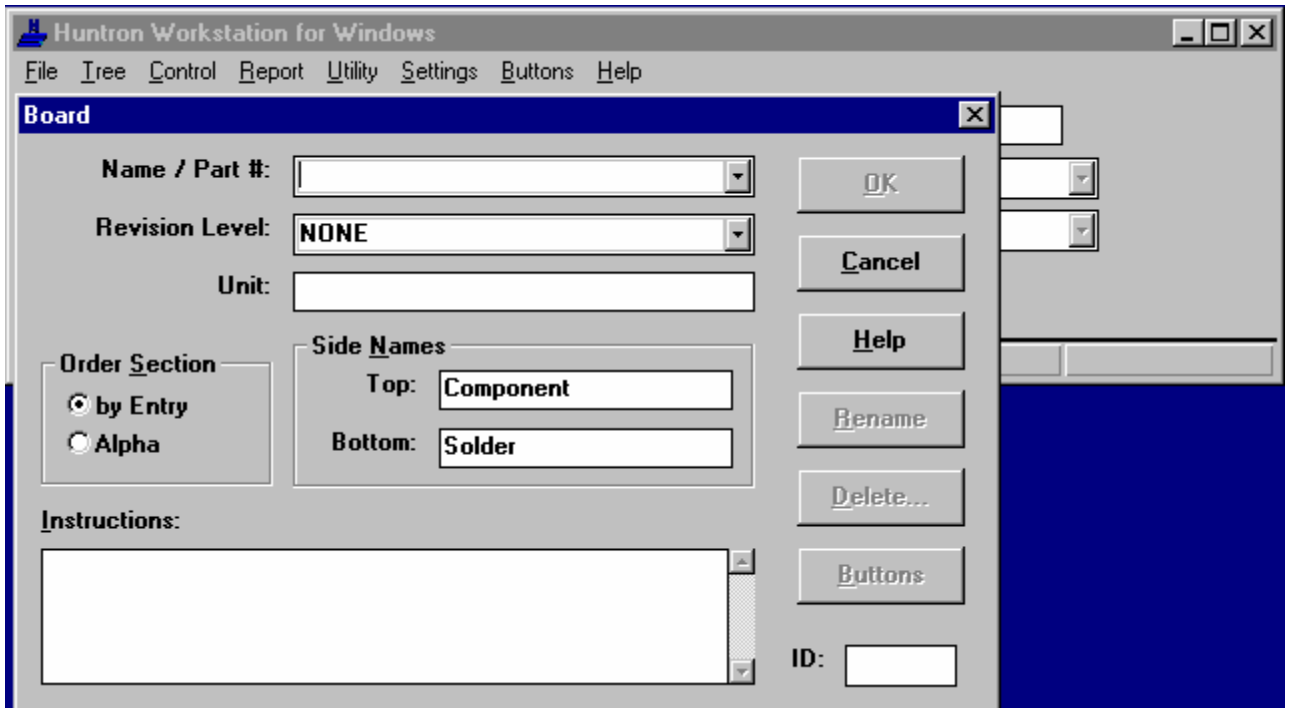
Main Window

- 1 Click on **Board:** on the Main Window to select the board level of the tree.
- 2 Position the mouse cursor over Tree on the menu and click the left mouse button.



Main Window with Tree Menu

- 3 Click on Add New Board to display the Board dialog.



Board Dialog

- 4 Enter the Board Name/Part#: 06-3097

The name of the board should be what the board is normally referred as. This is usually the part number of the assembled board. It can also be a name like Training Board.

- 5 Press the Tab key to move to and enter the Revision Level: REV. A

This is the version of the board. This is important because as the board changes the test may need to be modified. Revision levels of boards are stored as completely different boards. To create a new revision of a board, copy the board and change the revision level. Then make the necessary changes.

6 Press the Tab key to move to and enter the Unit: TRAINING BOARD

The unit is used to describe where the board came from. A personal computer system has several units (Monitor, keyboard, printer, etc.). If the name of the board is used for the Name/Part# then this could be used for the part number.

7 Click the OK button to save the board.

This concludes the board portion of the tutorial.

### Adding a section to the 06-3097 Board



Main Window

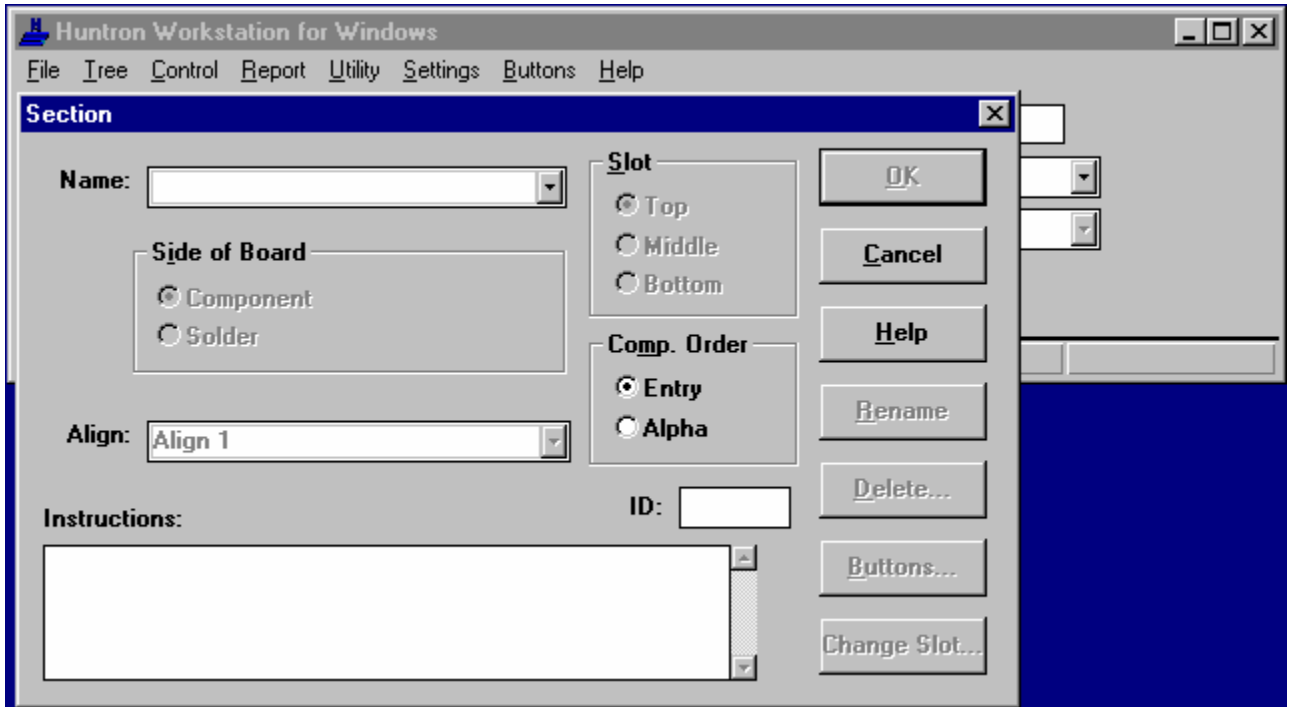
1 Click on **Section:** on the Main Window to select the section level of the tree.

2 Position the mouse cursor over Tree on the menu and click the left mouse button.



Main Window with Tree Menu

3 Click on Add New Section to display the Section dialog.



Section Dialog

- 4 Enter the Section Name: DIGITAL DEVICES

The name of the section should relate to the components that will be contained in the section. This can be logical circuit areas, failure categories, cables used to connect or all components in one section.

- 5 Click the OK button to save the section.

This concludes the section portion of the tutorial.

#### Adding the first component to the Digital Devices Section.



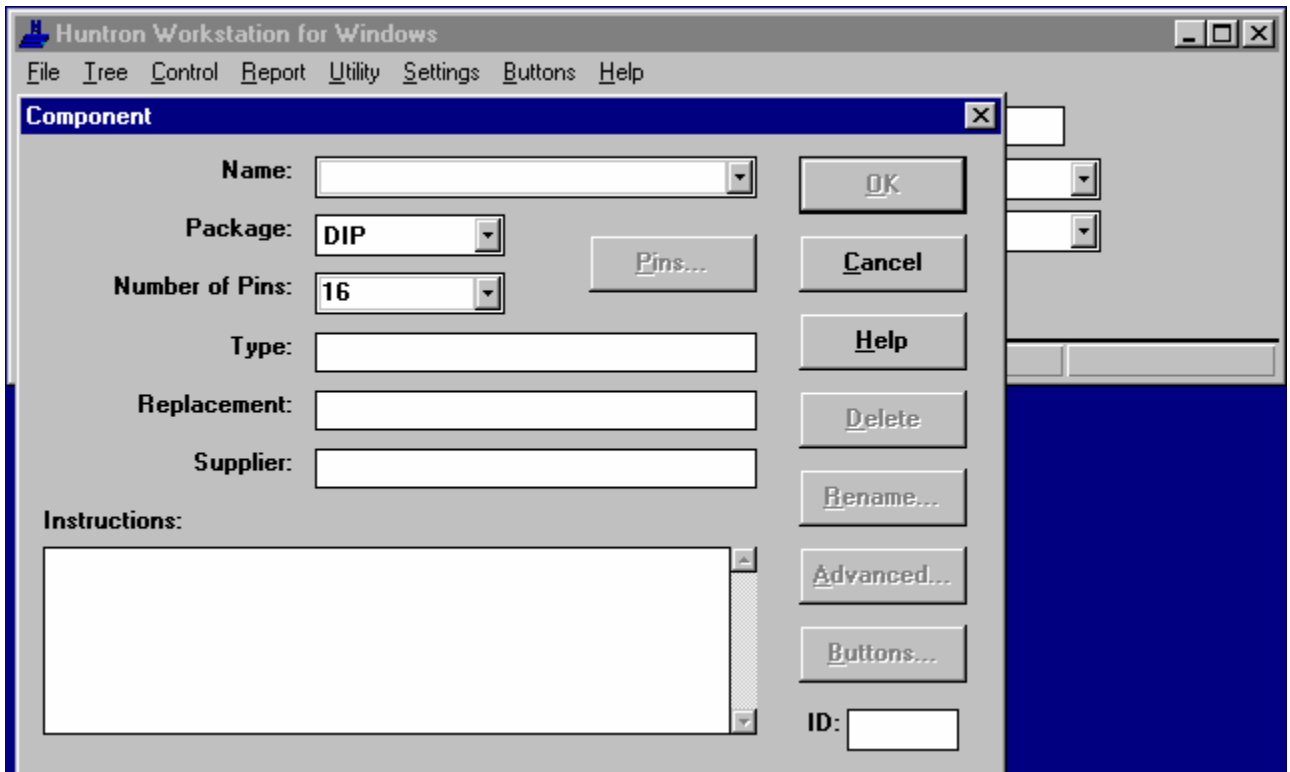
Main Window

- 1 Click on **Component:** on the Main Window to select the component level of the tree.
- 2 Position the mouse cursor over Tree on the menu and click the left mouse button.



Main Window with Tree Menu

- 3 Click on Add New Component to display the Component dialog.



Component Dialog

- 4 Enter the Component Name: U10

The name of the component is usually the reference designator. If the board has a component grid, the grid location can be added to the name. This helps in locating the component of the board. If the board does not have reference designators, create a graphic picture of the board. Add the reference designator to the picture. Attach this picture to a button. See Button Setup dialog for information on creating buttons.

5 Press the Tab key twice to move to and enter the Number of Pins: 14

This is the number of pins on the component to be tested.

6 Press the Tab key to move to and enter the Type: 7404

The type is used for the part number or value of the component.

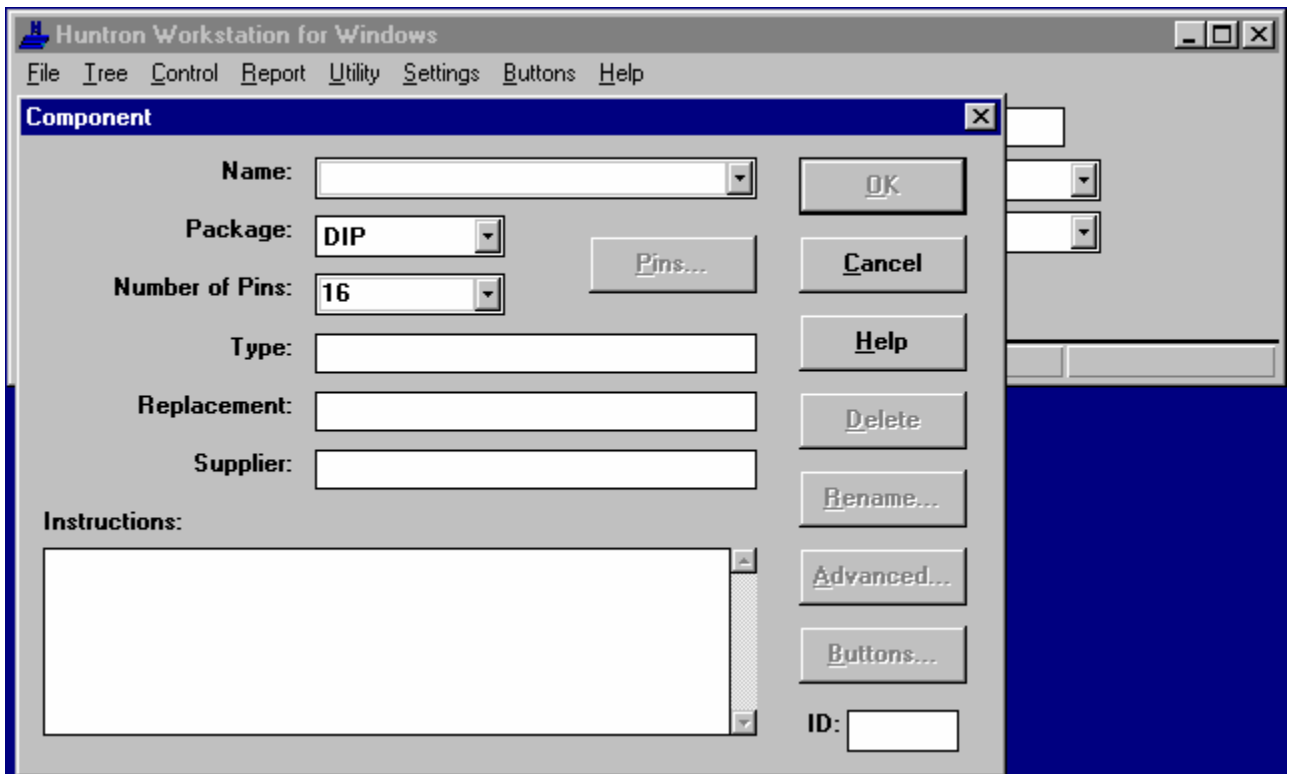
7 Press the Tab key three times to move to and enter the Instructions: MAKE SURE COMMON IS CONNECTED TO THE COM TERMINAL ON THE BOARD. MAKE SURE THE COLORED STRIPE ON THE CLIP CABLE IS BY PIN 1.

8 Click the OK button to save the component.

This concludes the first component portion of the tutorial.

### Adding the second component to the Digital Devices Section.

1 Make sure the U10 is highlighted and press the INS key.



Component Dialog

2 Enter the Component Name: R17

3 Click on the Package box and click on Probe.

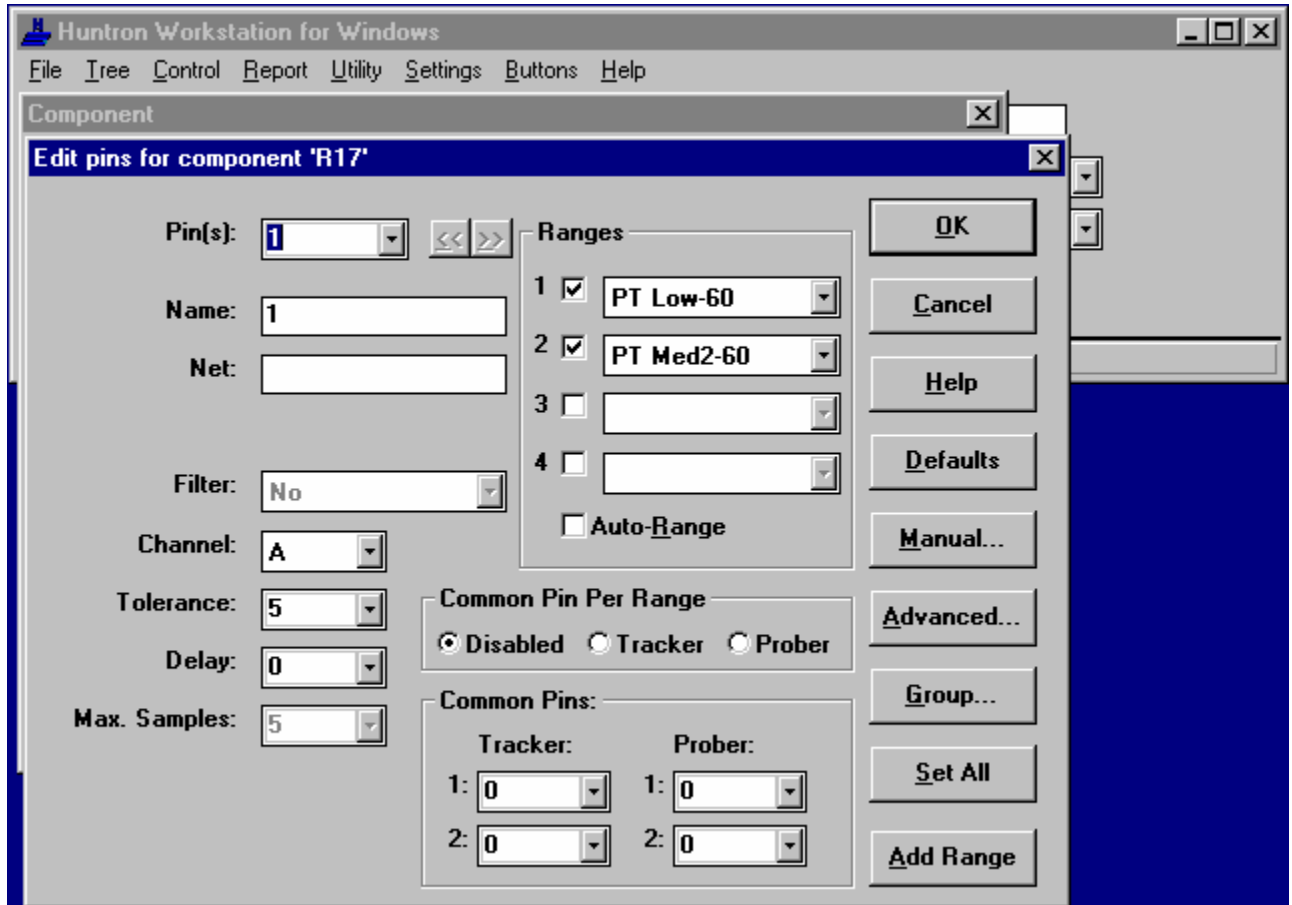
The package determines the numbering of the pins of the component.

4 Click on the Number of pins box and enter 1

5 Press the Tab key and enter Type: 1k ohm

6 Press the Tab key three times to move to and enter the Instructions: MAKE SURE COMMON IS CONNECTED TO THE COM TERMINAL ON THE BOARD. PLACE THE RED PROBE ON THE END OF R17 BY SW4.

7 Click the Pins button to display the Pins Dialog.



Pins Dialog

Select 200mV, 1Kohm and 60Hz for range 1 (DS Low for Tracker 5100DS or Tracker 5500).

Select 5V, 1Kohm and 60Hz for range 2. See Select Range for more information (DS Med1 for Tracker 5100DS or Tracker 5500).

Click the OK button to return to the Component dialog.

Click the OK button to save the component and pin information.

This concludes the second component portion of the tutorial.

This concludes the Build Test Routine tutorial. If viewing from help click on File from the Help menu and click Exit.

## Run Test Routine Tutorial

This tutorial will go step by step through the process of scanning a board. Running a board test routine in the program is referred to as scanning. Provided are steps to scan the signatures with a ProTrack I and ProTrack Scanner. The first step is to scan the board and store signatures. The second step is to scan the board, compare to stored signatures and view the results.

For best results, print this help topic and related topics before following the tutorial. This makes it easier to view the tutorial while running the program to scan the board. To print help topics, click on File from the Help menu

and click Print Topic while viewing the topic desired. If using the printed copy, click on File from the Help menu and click Exit.

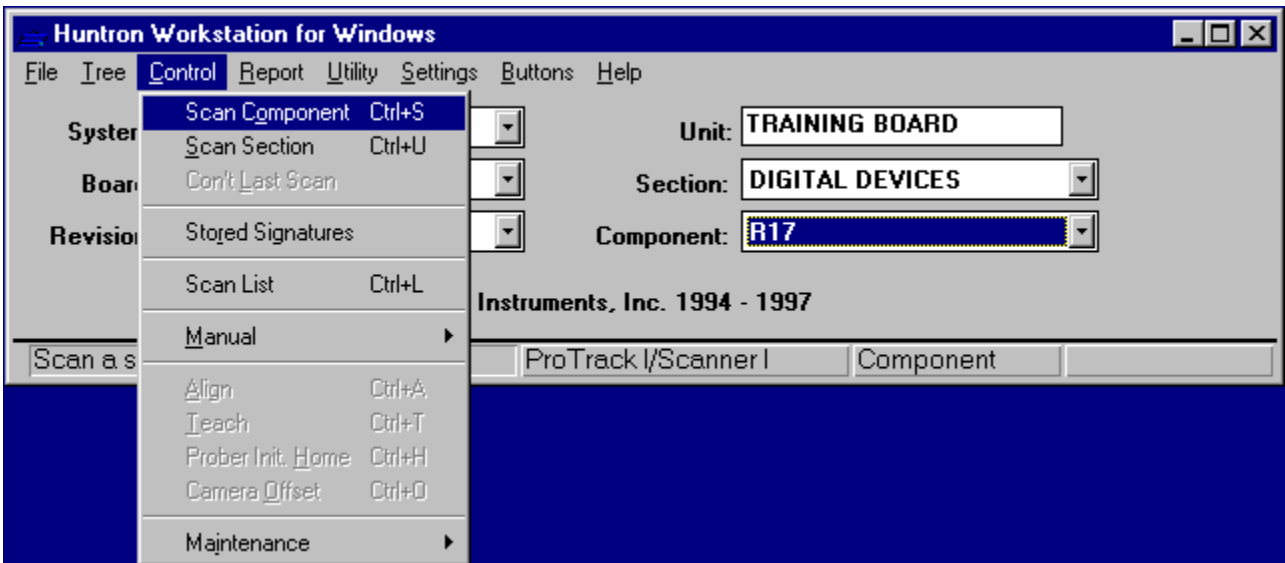
This tutorial uses a training board from Huntron for scanning signatures. Make sure all of the switches of SW4 are pressed down on the NORMAL side. If you do not have this board, use a board with similar components.

### Storing Signatures of the Tutorial Board



Main Window

- 1 Click on the Component box.
- 2 Click on U10.
- 3 Position the mouse cursor over Control on the menu and click the left mouse button



Main Window with Control Menu

- 4 Click Scan Component.



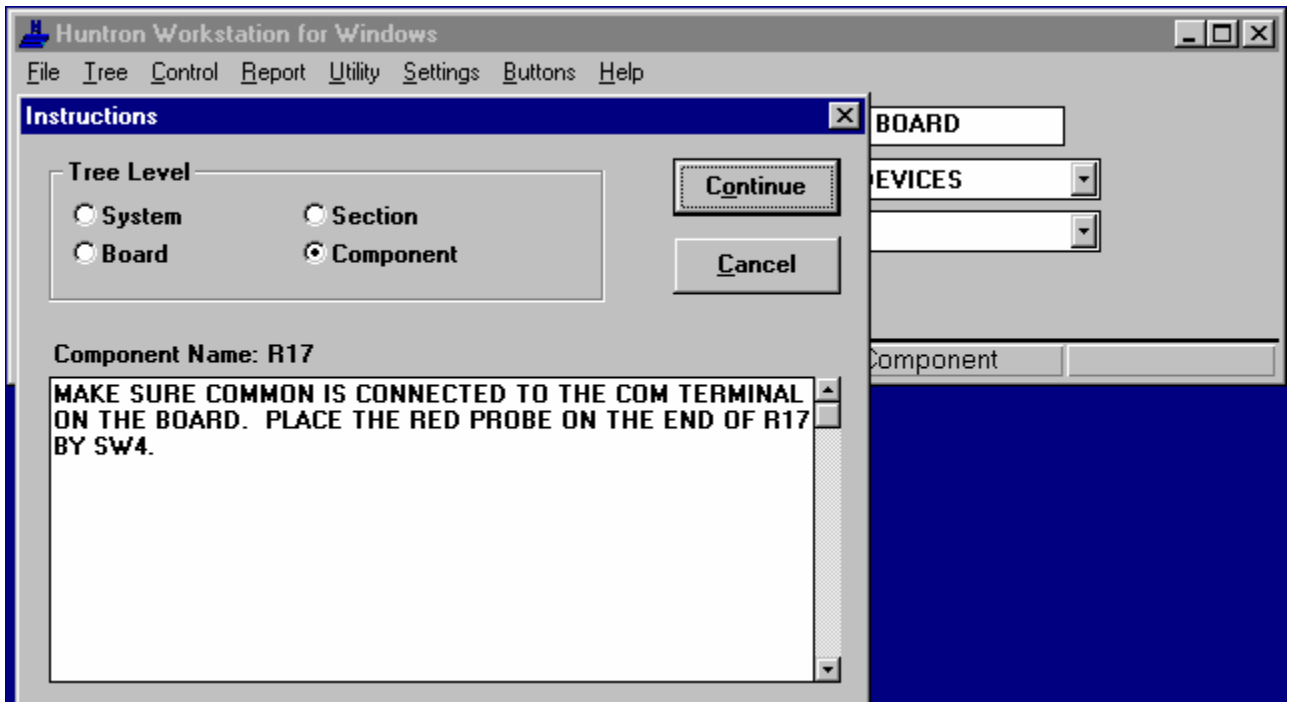


Serial Number Dialog

- 5 Enter Serial Number: 0001

The serial number denotes a specific board of the current part number / revision level. This number is could be on a sticker on the board (possibly bar code). This marks which board signatures were stored from and test results belong to. If there is no serial number, then invent one and attach it to the board.

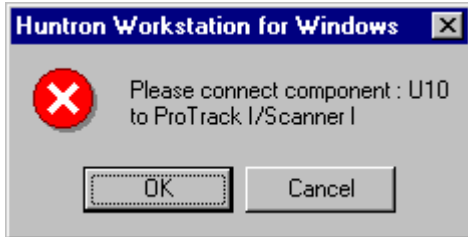
- 6 Click OK.



## Instructions Dialog

7 Read and follow the instructions and then click Continue.

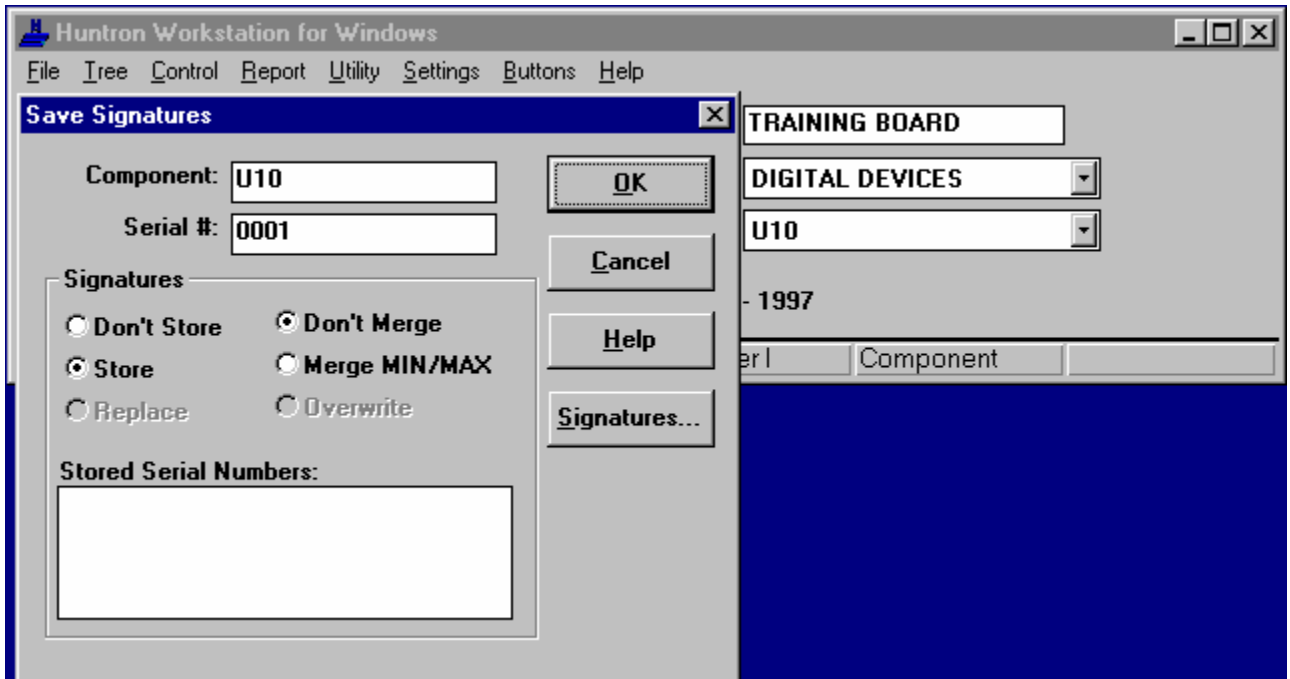
If using a board with similar components, connect common to the ground on the board.



## Connect Message Box

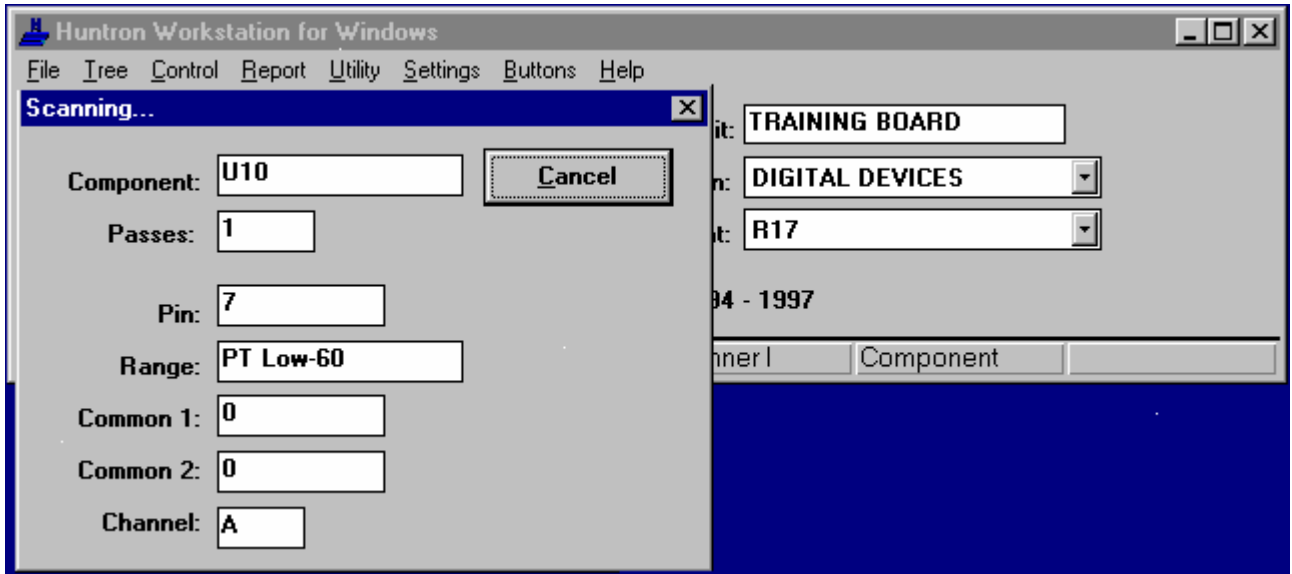
8 Click OK.

The instructions already explained how to connect to the component.



## Scanning Dialog

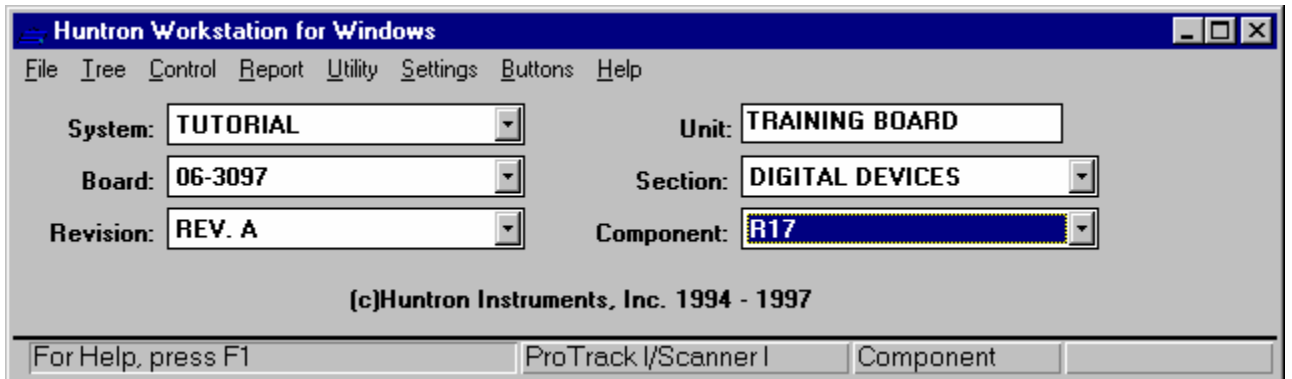
9 Watch the Scanning dialog count through the pins and display the ranges as the ProTrack displays the signatures.



Save Signatures Dialog

- 10 Click OK.

This will Store the signatures for each range of each pin of U10 under the serial number 0001.



Main Window

- 11 Position the mouse cursor over Control on the menu and click the left mouse button.



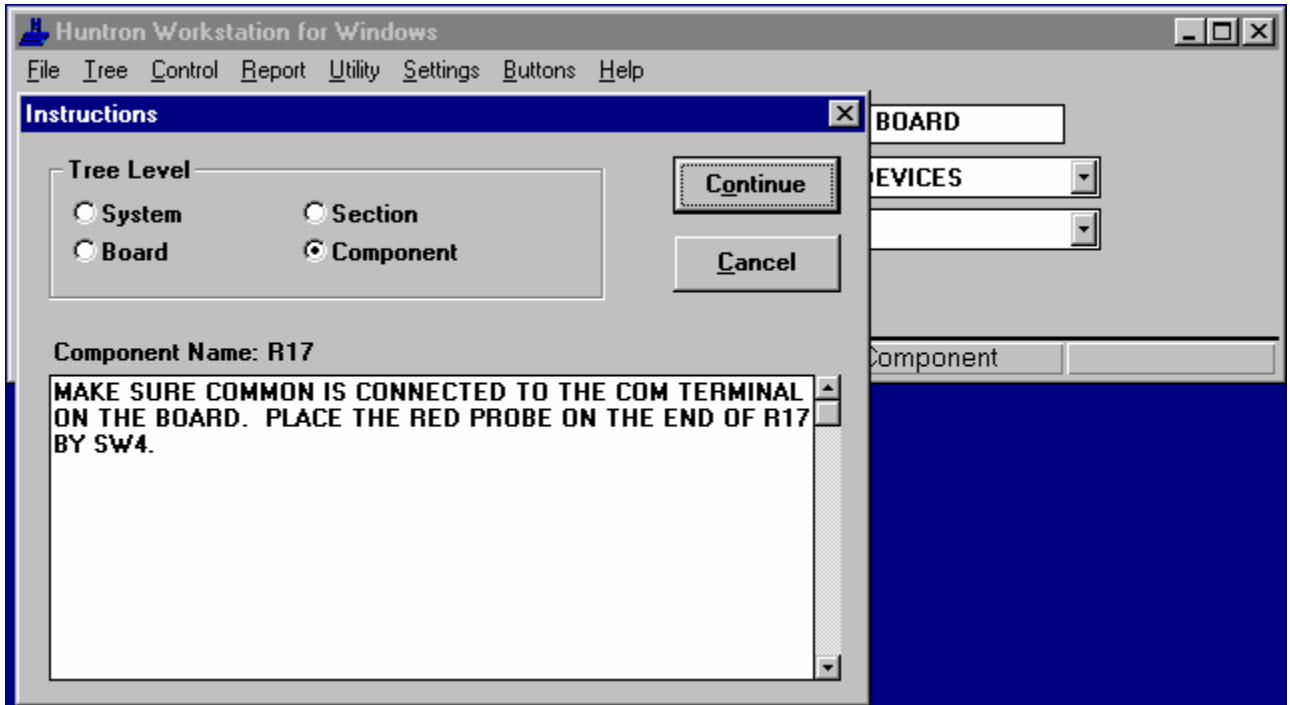
Main Window with Control Menu

- 12 Click Scan component to scan R17.



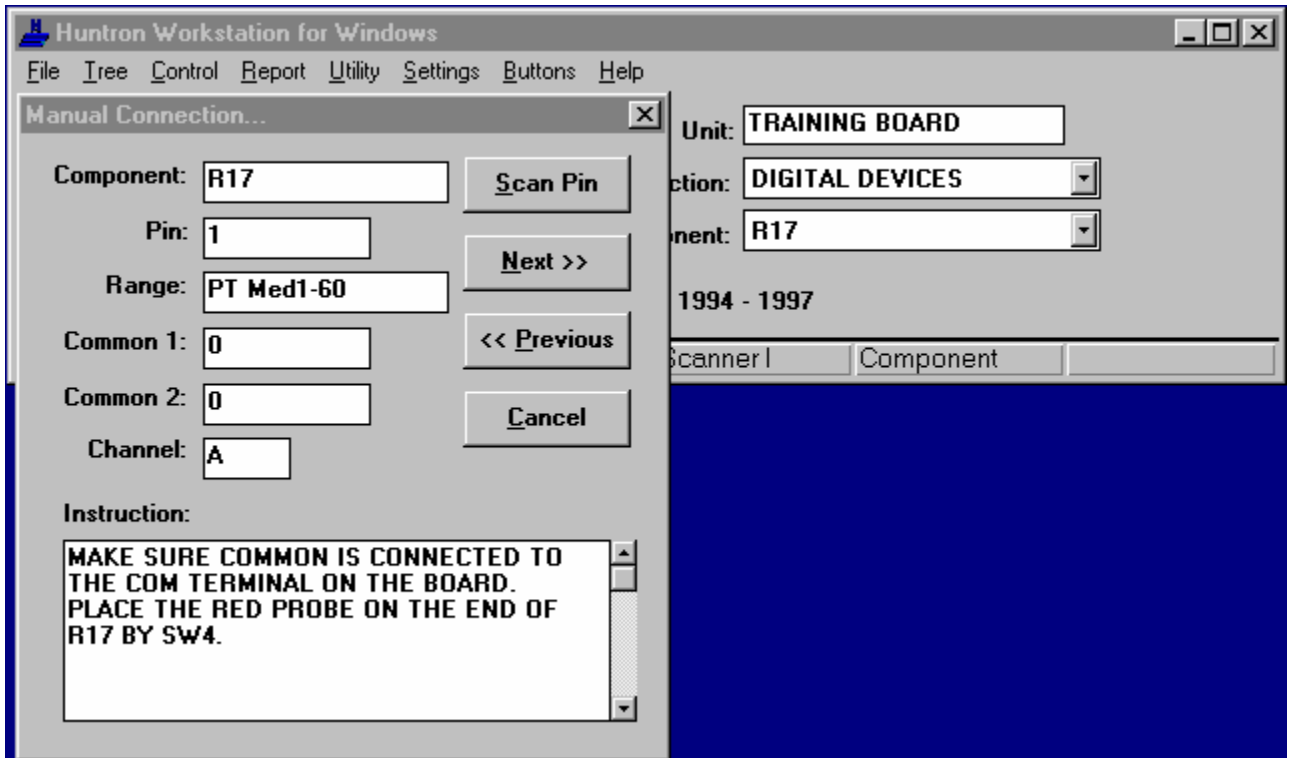
Serial Number Dialog

- 13 Click OK.  
This will use the same serial number as U10.



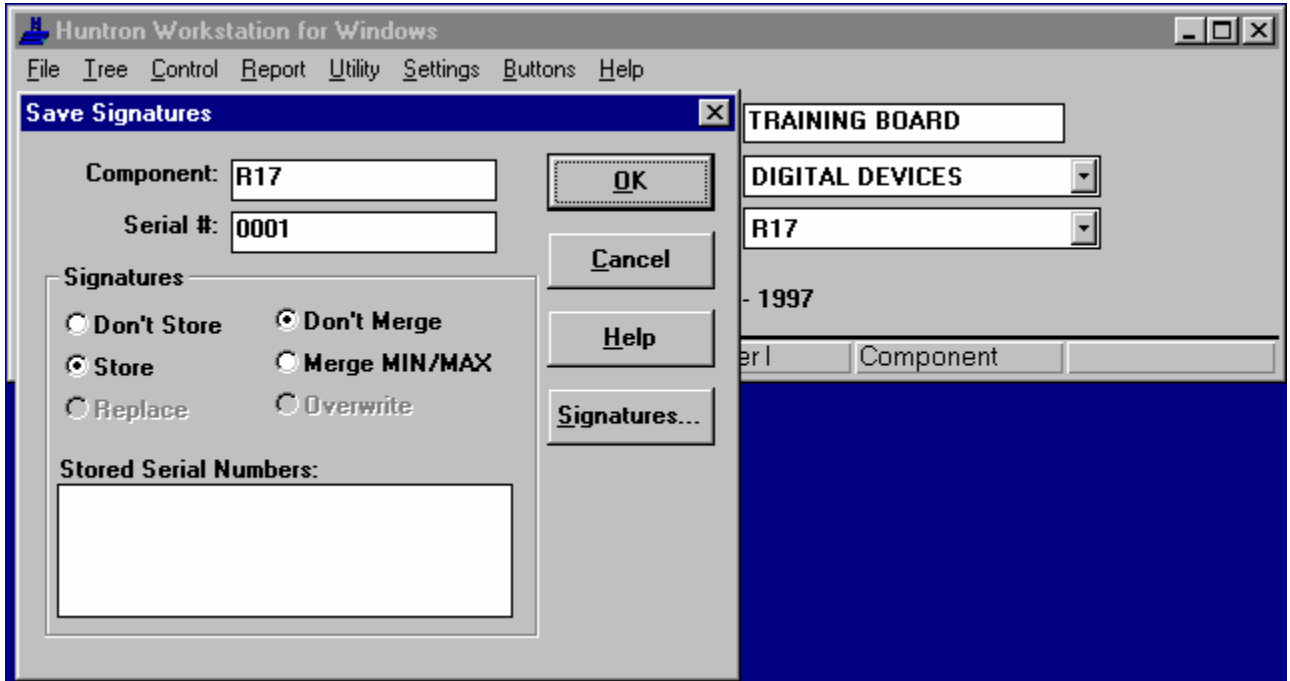
Instructions Dialog

- 14 Read and follow the instructions and then click Continue.



Manual Connection Dialog

- 15 Make sure the red probe is on R17 and click Scan Pin.



Save Signatures Dialog

- 16 Click OK.

This will Store the signature for R17 under the serial number 0001.

This concludes the signature storing portion of the tutorial.

### Comparing Failed Signatures of the Tutorial Board

Make sure all of the switches of SW4 are pressed down on the NORMAL side except switch 4 which should be in the FAULT position. If you do not have this board, use components on one of your own boards and jumper a diode across the resistor on your board. If it does not change the signature try reversing the diode.

- 1 Position the mouse cursor over Control on the menu and click the left mouse button



Main Window with Control Menu

- 2 Click Scan Section.

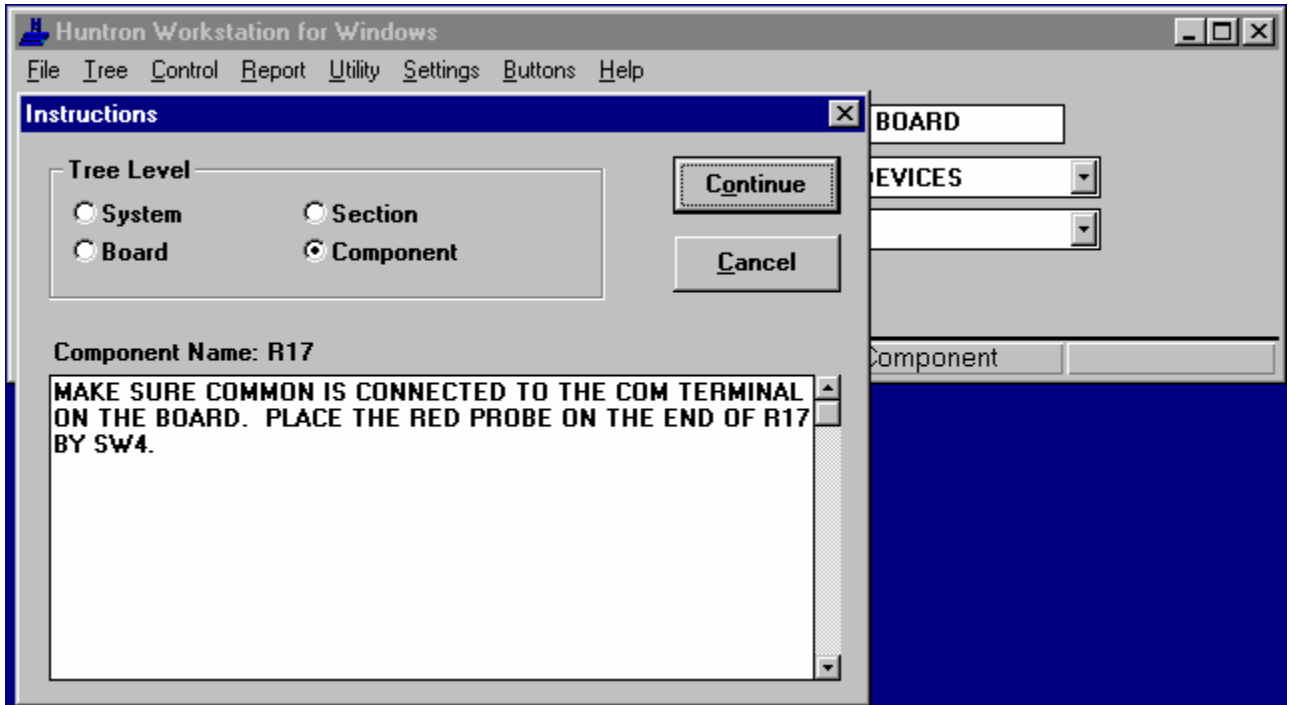


Serial Number Dialog

- 3 Enter Serial Number: 0001

Leave the serial number the same as when storing because this is the same board that was used to store the signatures. If scanning a different board, its serial number would be entered.

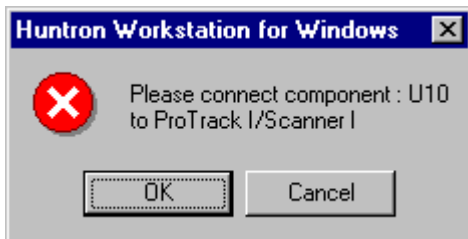
- 4 Click OK.



Instructions Dialog

5 Read and follow the instructions and then click Continue.

If using a board with similar components, connect common to the ground on the board.

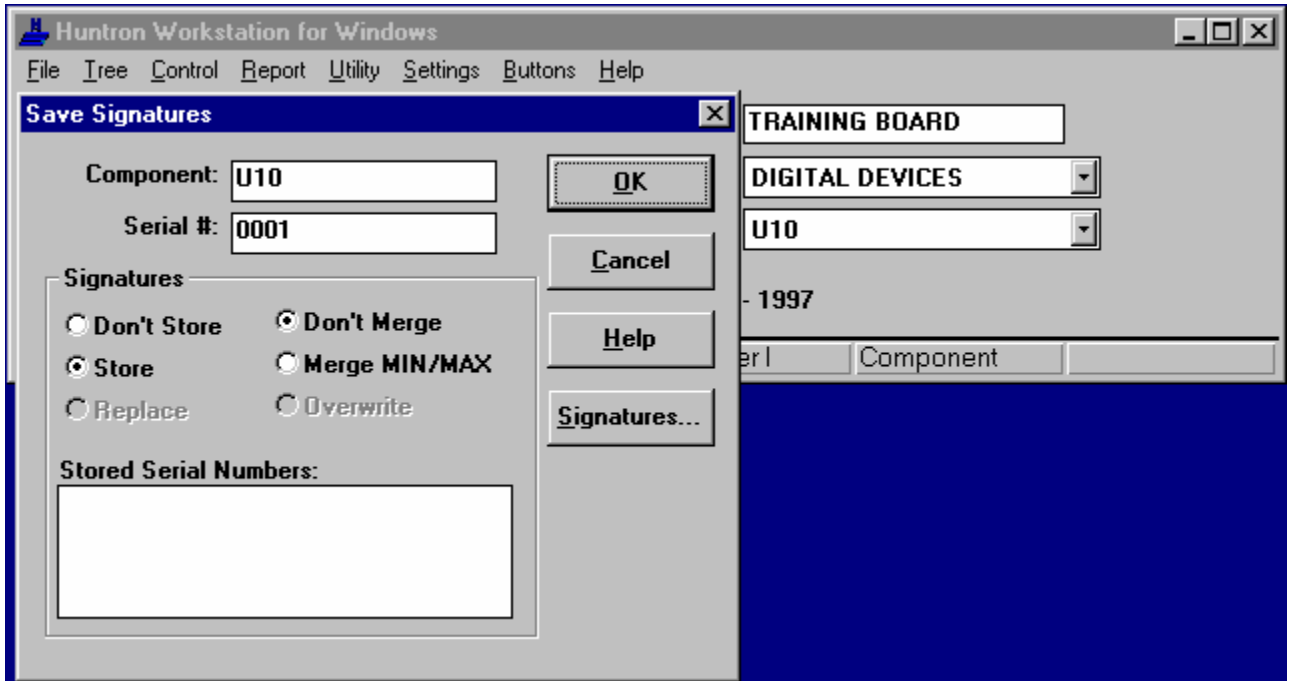


Connect Message Box

6 Click OK.

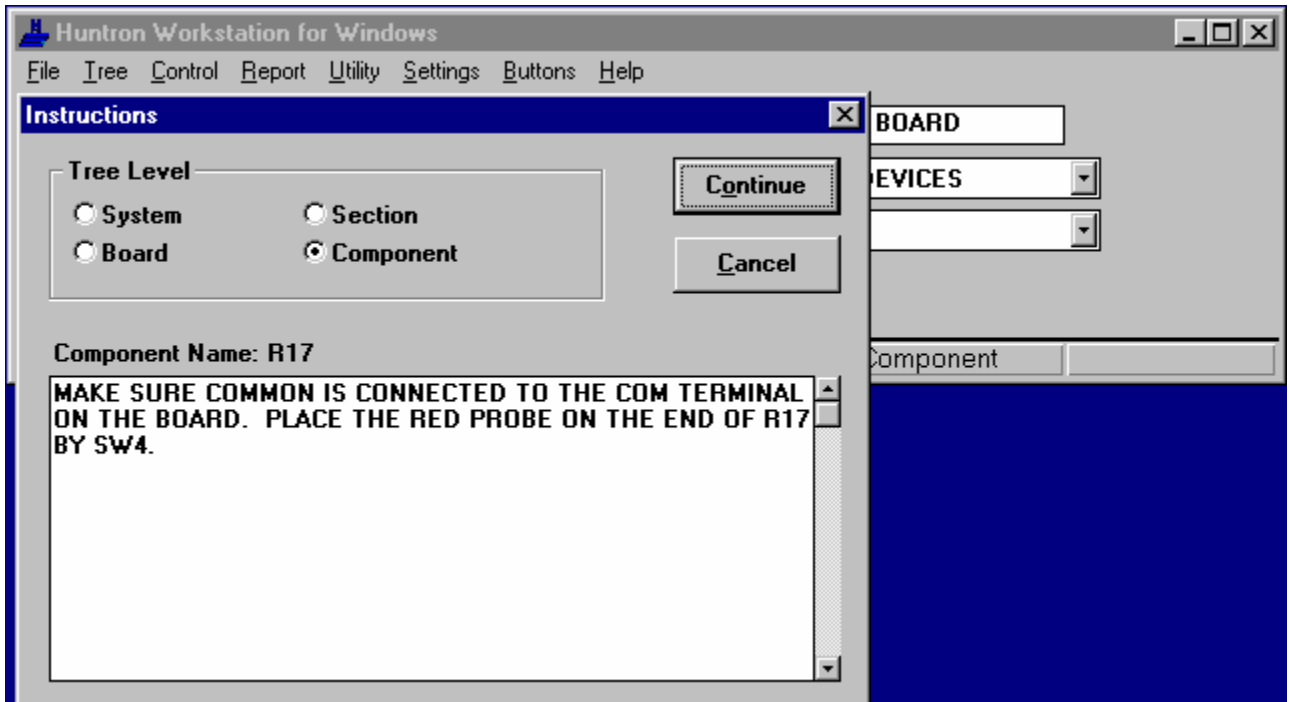
The instructions already explained how to connect to the component.





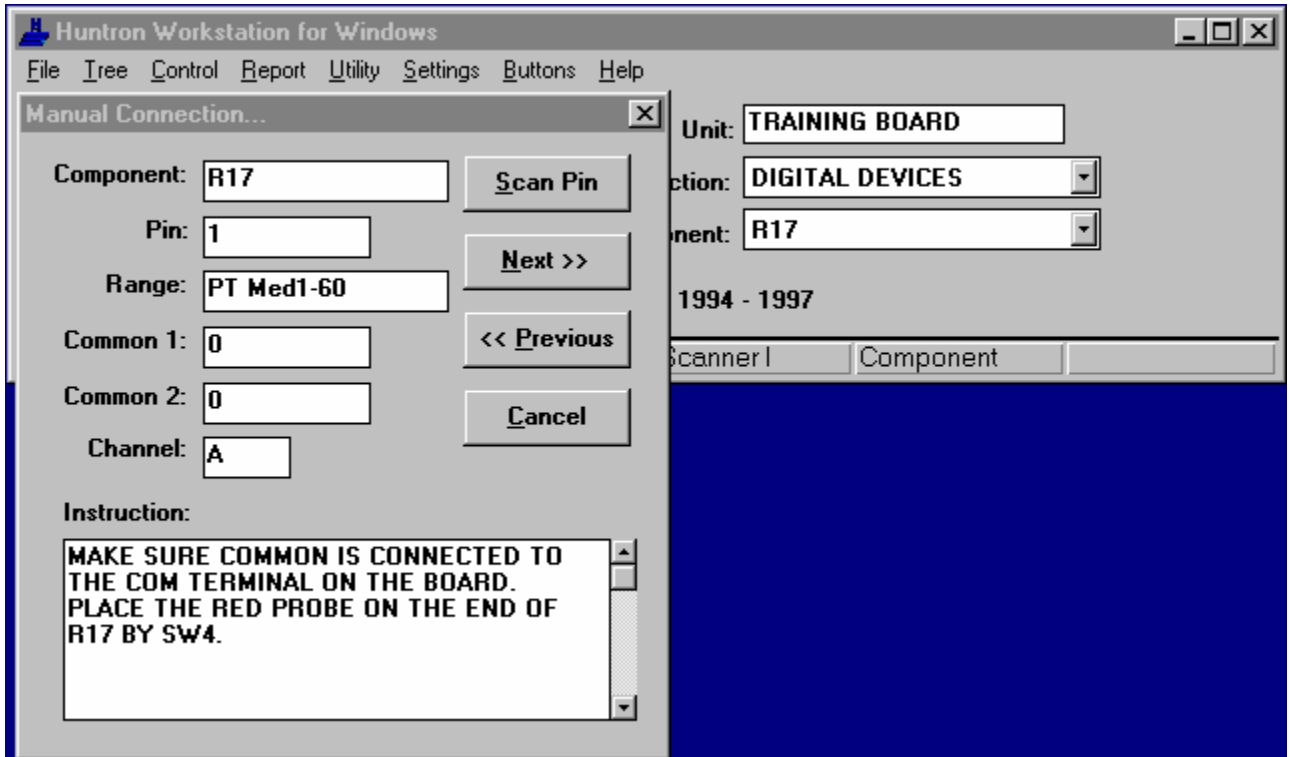
Scanning Dialog

7 Watch the Scanning dialog count through the pins and display the ranges as the ProTrack displayed the signatures.



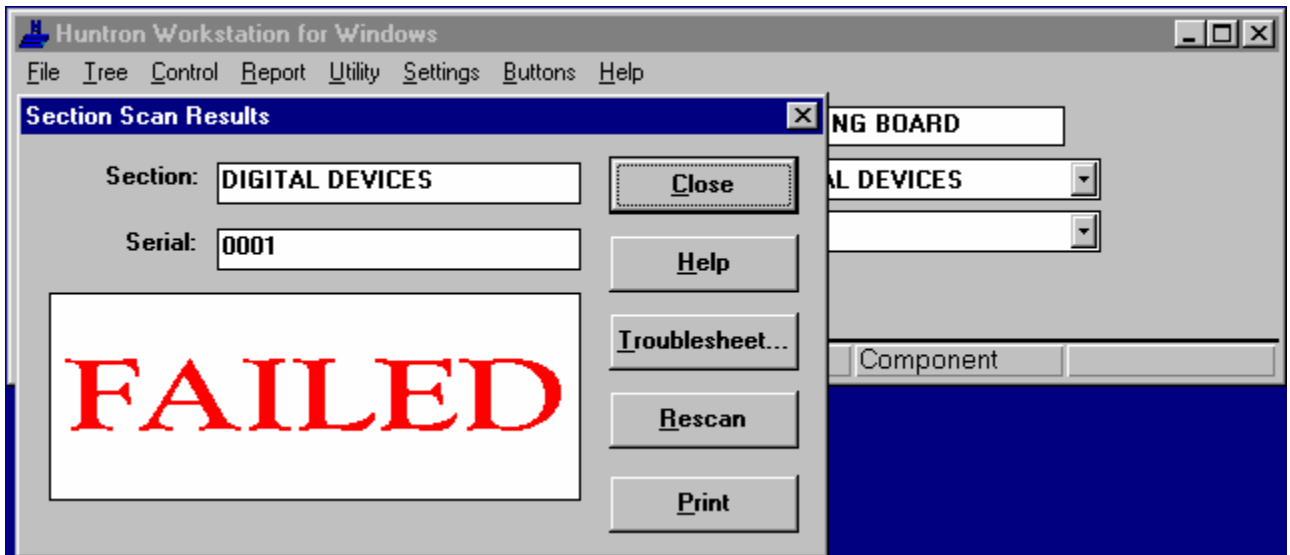
Instructions Dialog

8 Read and follow the instructions and then click Continue.



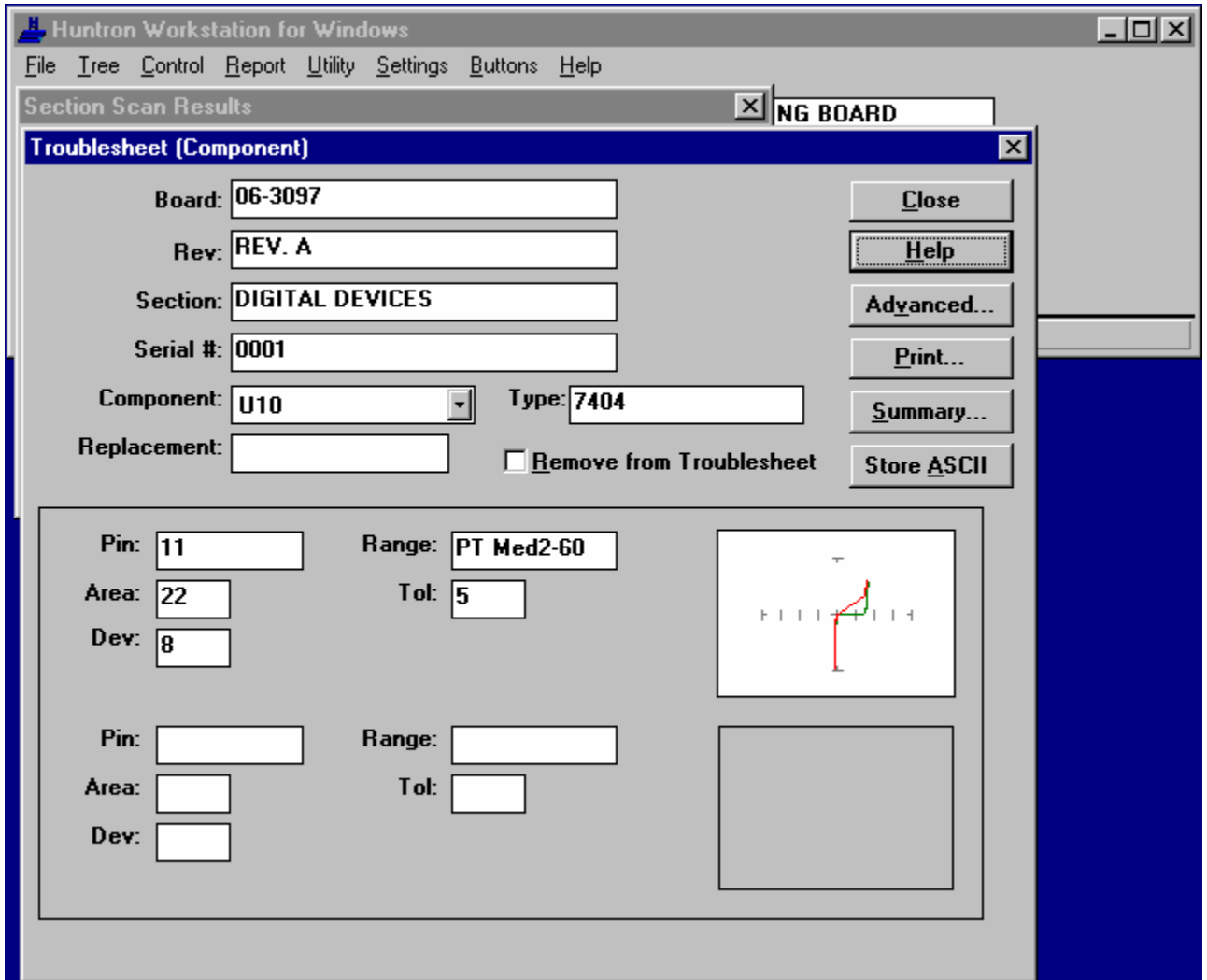
Manual Connection Dialog

- 9 Make sure the red probe is on R17 and click Scan Pin.



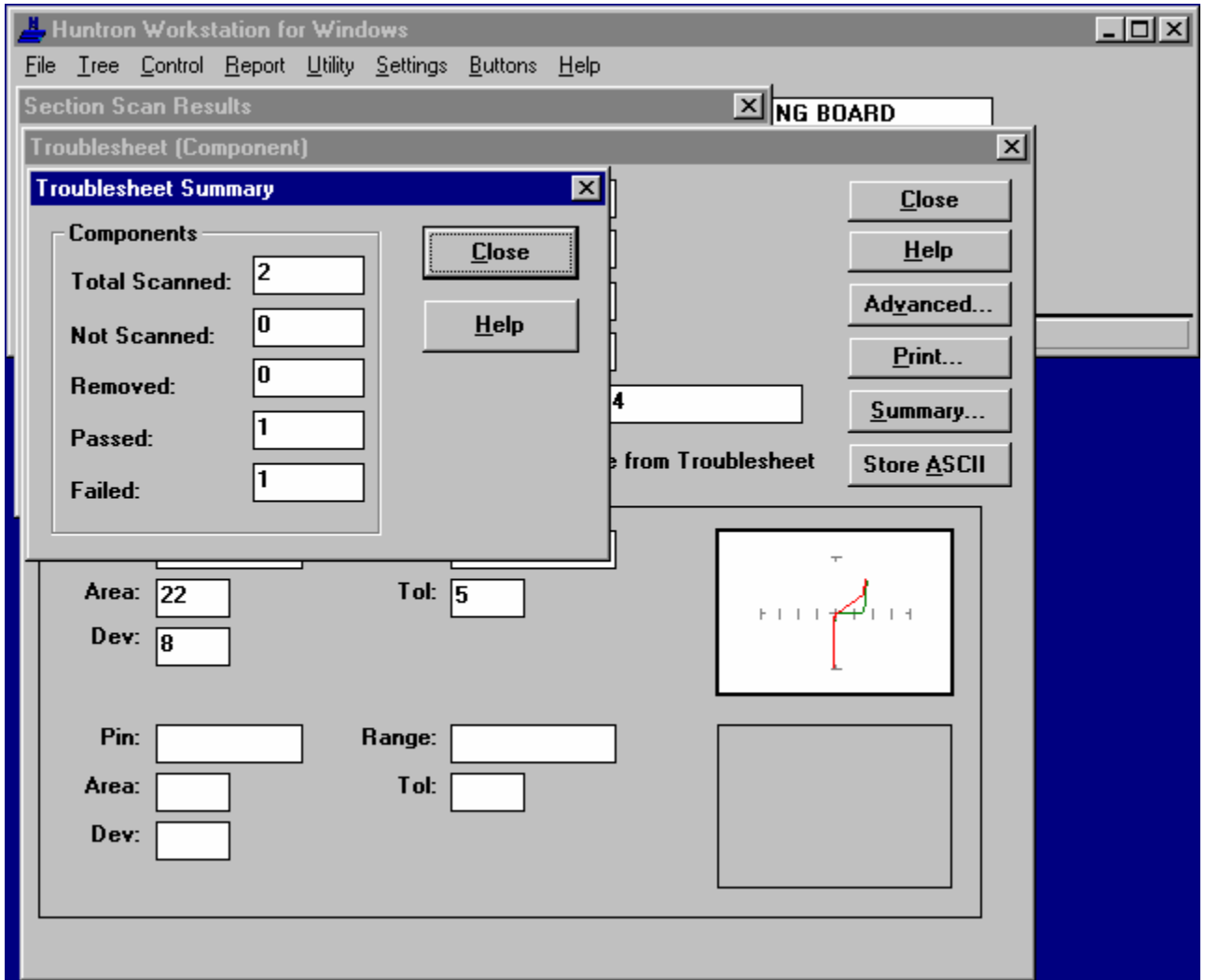
Section Scan Results Dialog

- 10 Verify that the Section Scan Results dialog says FAILED.
- 11 Click Troubleshoot.



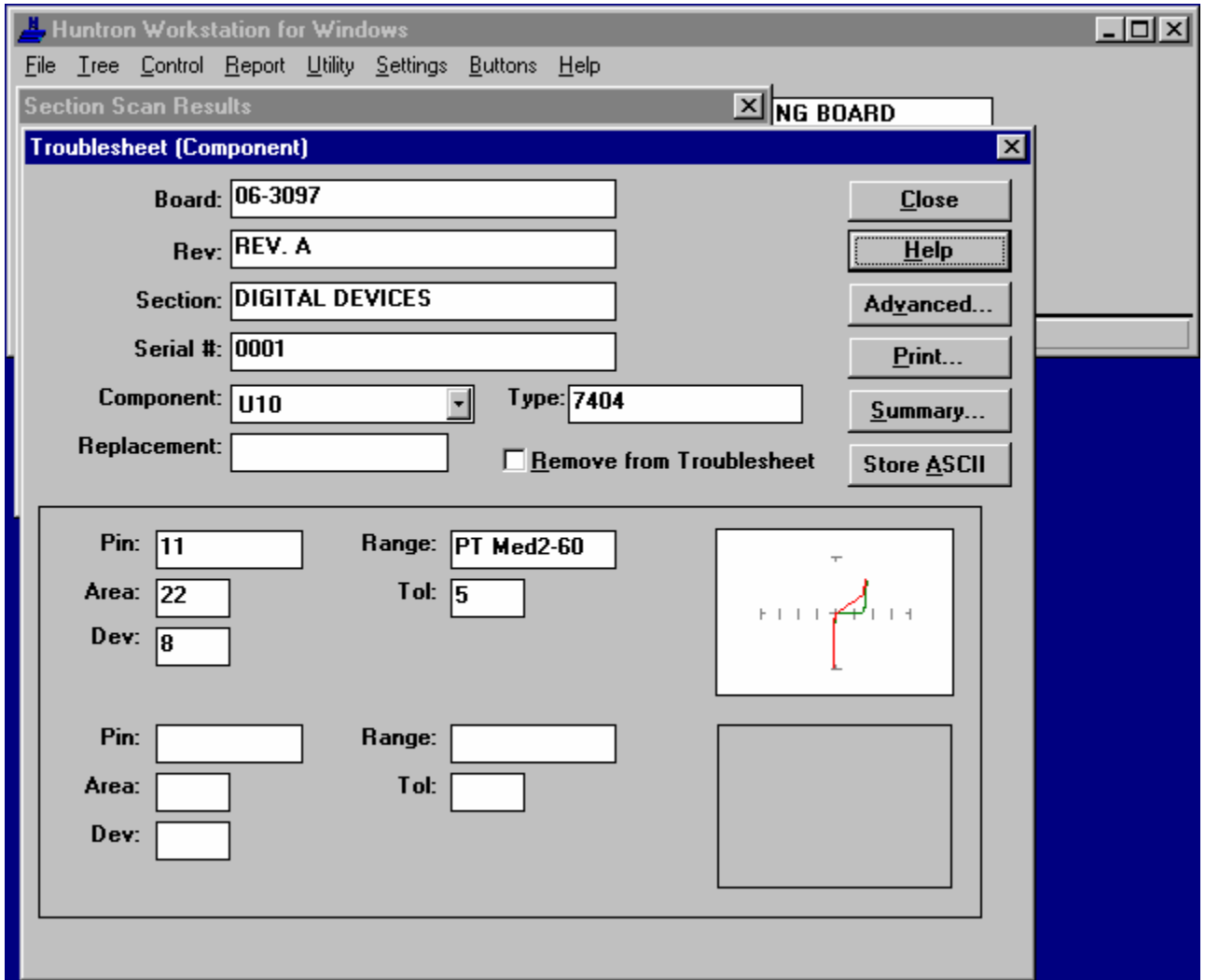
Troubleshoot Dialog

- 12 Click Summary.



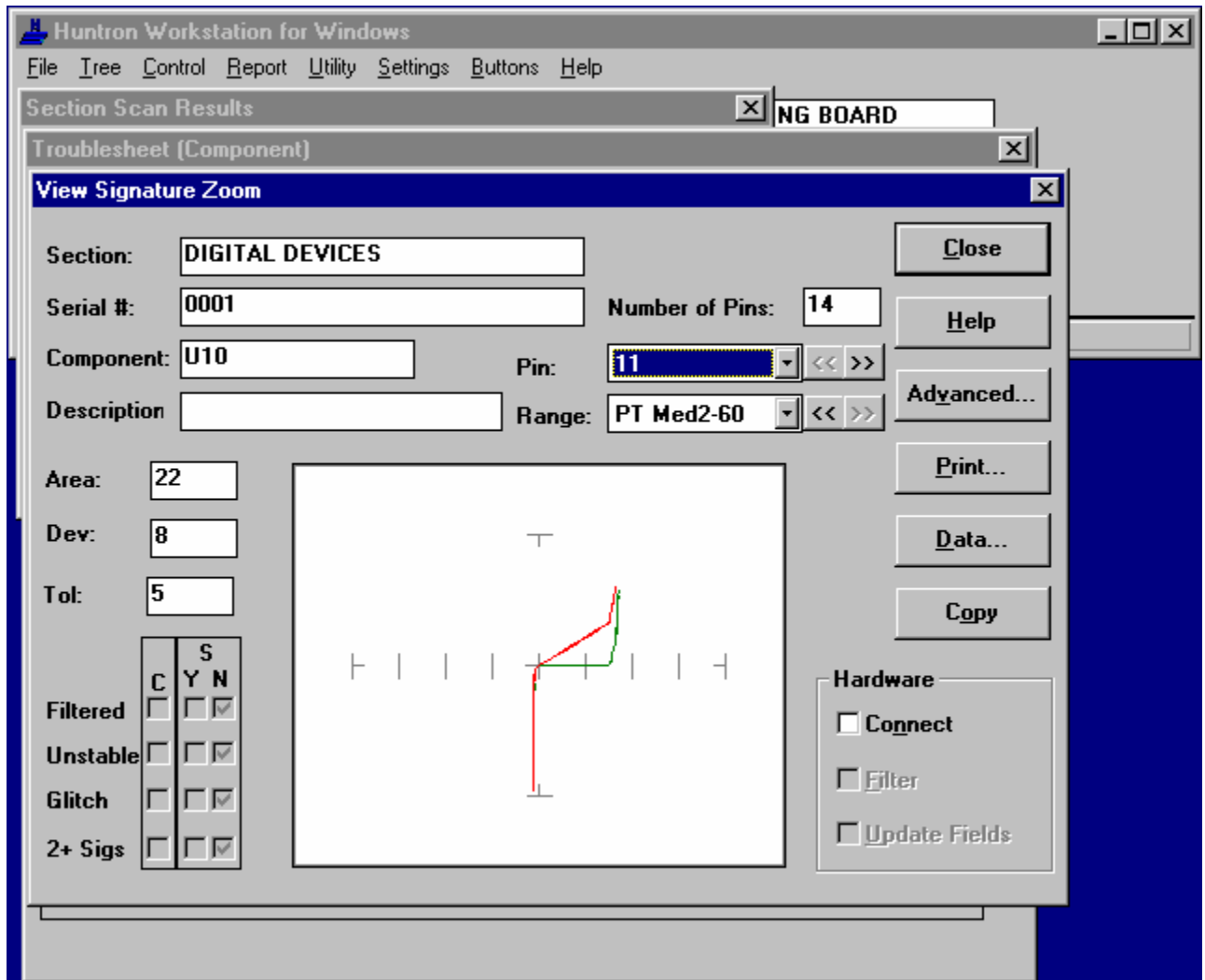
Troubleshoot Summary Dialog

- 13 Verify that the Troubleshoot Summary dialog says 2 scanned, 1 passed and 1 failed.
- 14 Click Close.



Troubleshoot Dialog

- 15 Click on the signature.



View Signature Zoom Dialog

16 If not checked, click Connect.

This will activate the hardware and update the signature in real-time.

17 Toggle SW4 switch 4 to see the signature difference appear and disappear.

18 Click Close to exit the View Signature Zoom dialog.

19 Click Close to exit the Troubleshoot dialog.

20 Click Close to exit the Section Scan Results dialog.

This concludes the failed signature comparing portion of the tutorial.

### Comparing Passed Signatures of the Tutorial Board

Make sure all of the switches of SW4 are pressed down on the normal side. If using your own board, be sure to remove jumpers from components.

1 Position the mouse cursor over Control on the menu and click the left mouse button



Main Window with Control Menu

- 2 Click Scan Section.
- 3 Press the Yes button to clear the troubleshooting files.

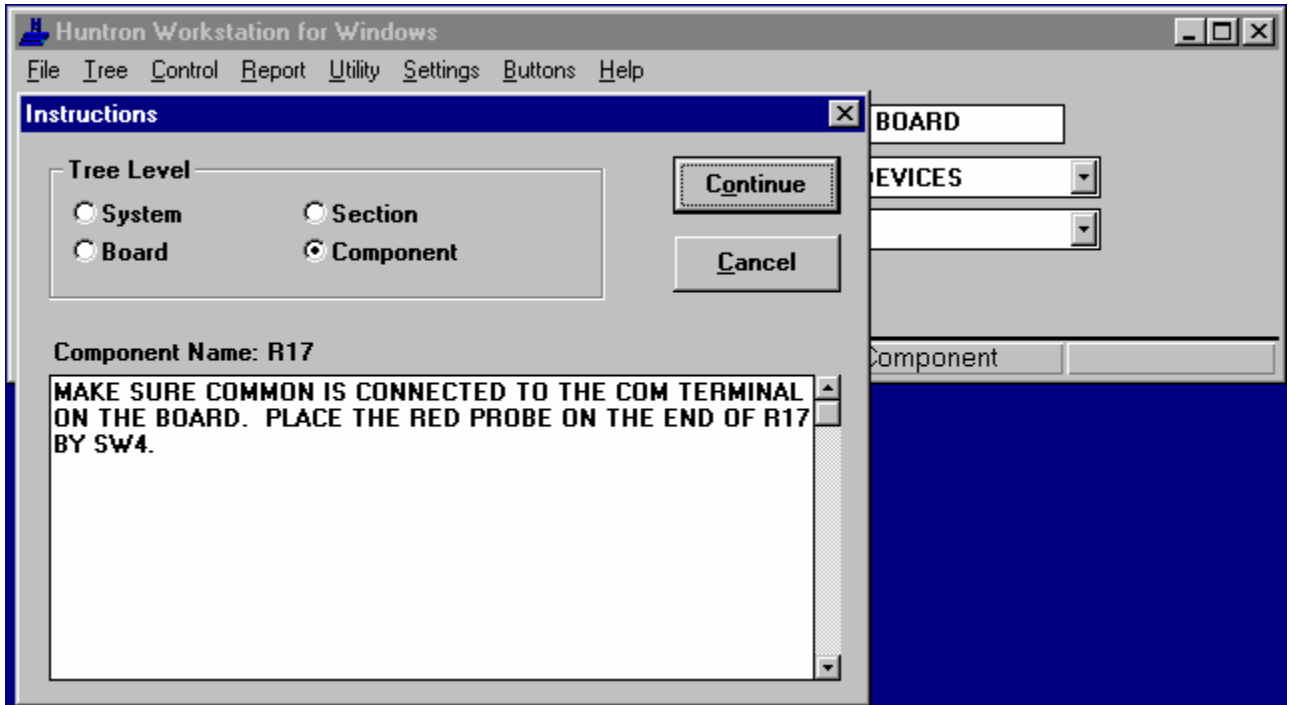


Serial Number Dialog

- 4 Enter Serial Number: 0001

Leave the serial number the same as when storing because this is the same board that was used to store the signatures. If scanning a different board, its serial number would be entered.

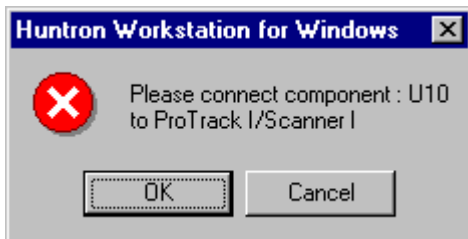
- 5 Click OK.



Instructions Dialog

6 Read and follow the instructions and then click Continue.

If using a board with similar components, connect common to the ground on the board.

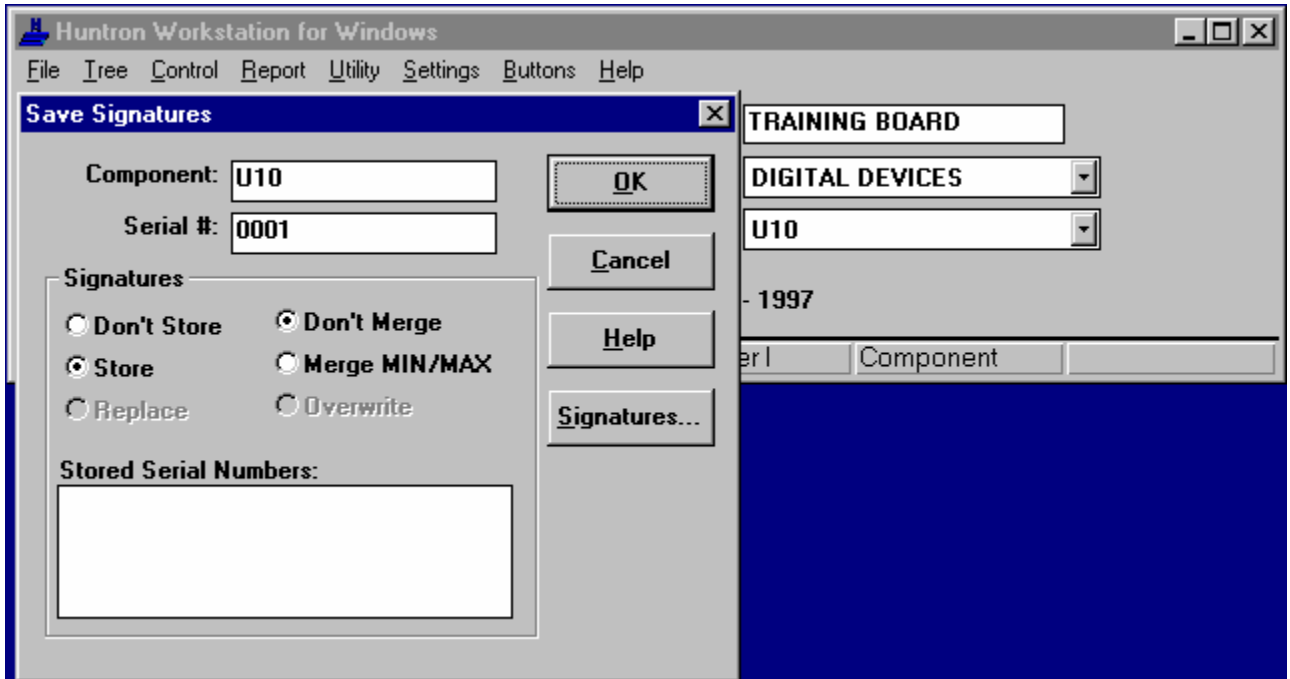


Connect Message Box

7 Click OK.

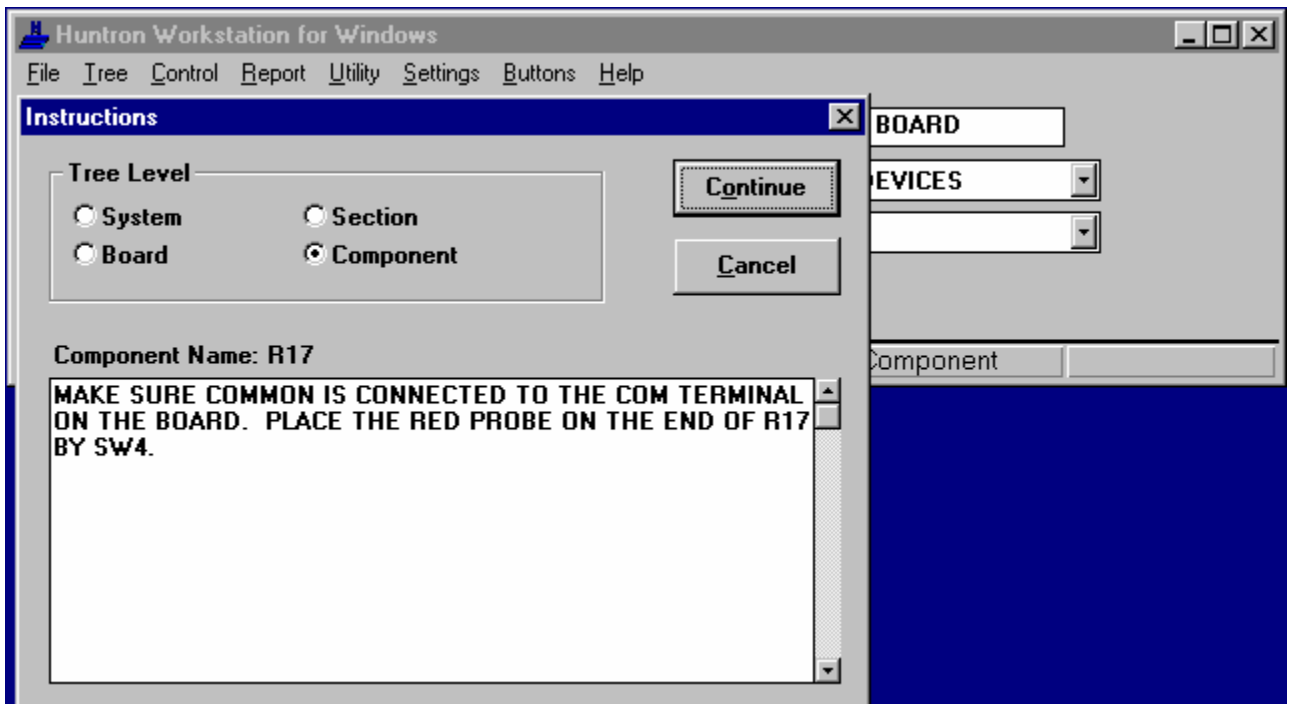
The instructions already explained how to connect to the component.





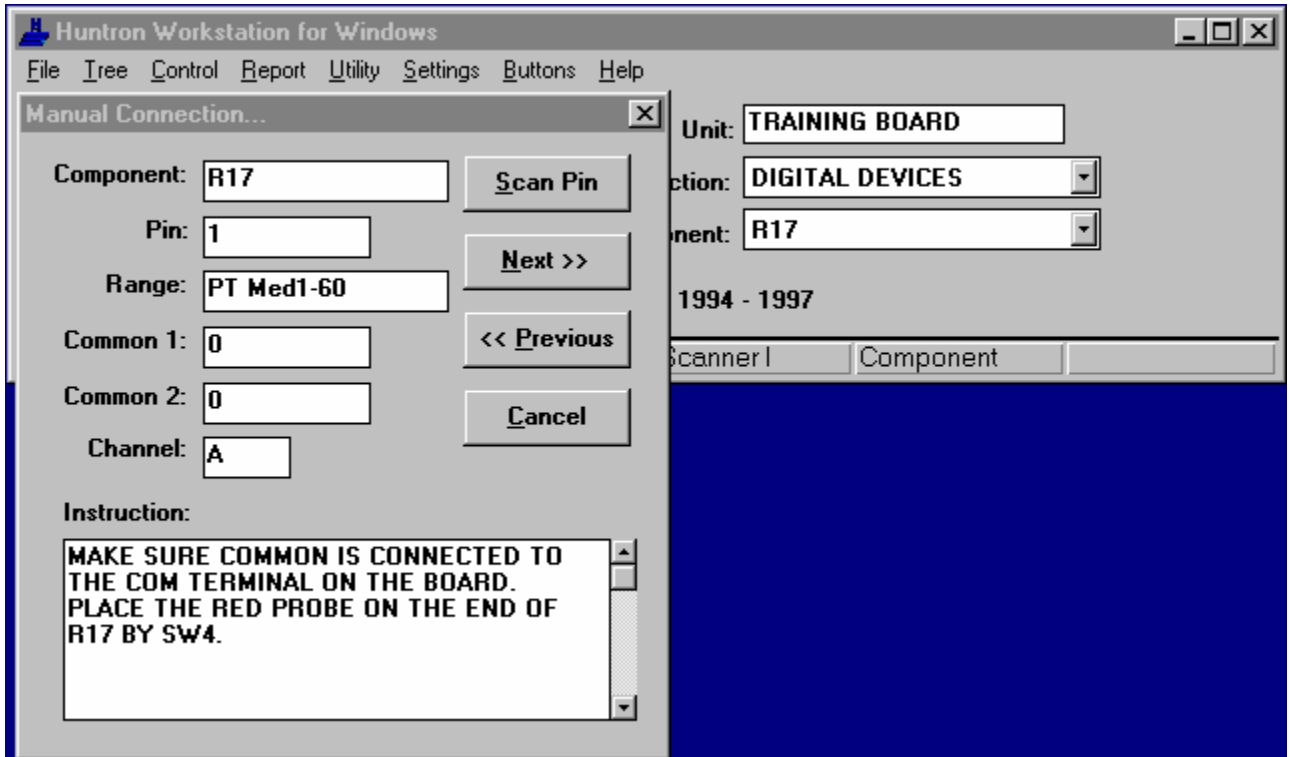
Scanning Dialog

- 8 Watch the Scanning dialog count through the pins and display the ranges as the ProTrack displayed the signatures.



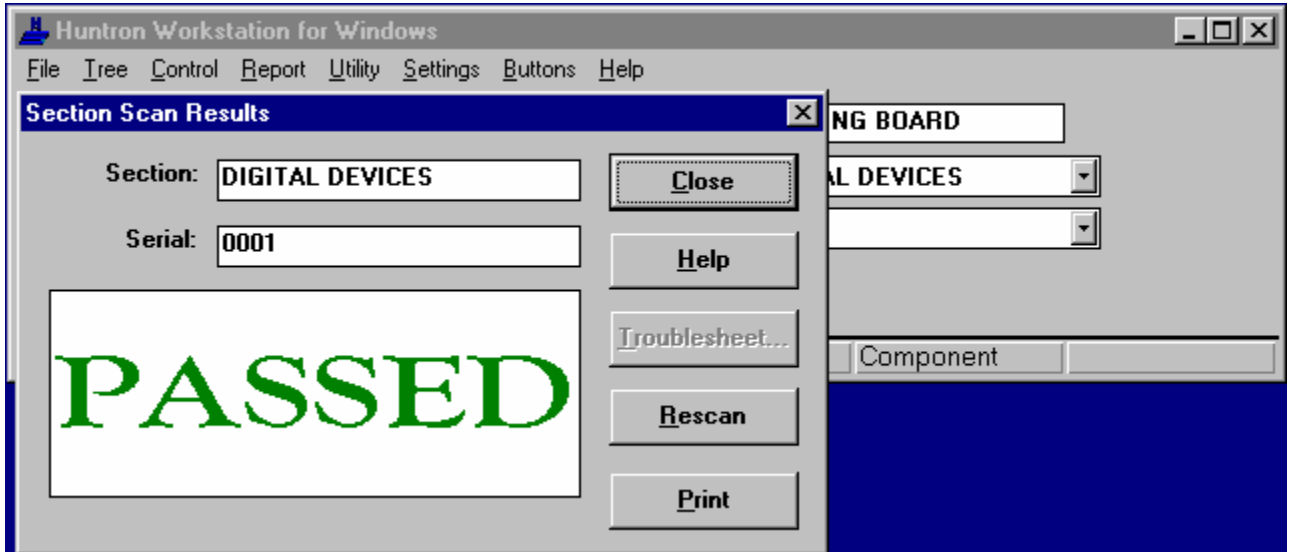
Instructions Dialog

- 9 Read and follow the instructions and then click Continue.



Manual Connection Dialog

- 10 Make sure the red probe is on R17 and click Scan Pin.



Section Scan Results Dialog

- 11 Verify that the Section Scan Results dialog says PASSED.

- 12 Click Close.

This concludes the passed signature comparing portion of the tutorial.

This concludes the Scan tutorial. If viewing from help click on File from the Help menu and click Exit.

---

## Using Probers

The following are the instructions for setting the prober information used by the 5500 probers and Probers I,II,III.

Camera Offset Instructions

Align Instructions

Teach DIP, SIP, Both and Front Package Instructions

Teach Probe Package Instructions

Teach Multi Package Instructions

Teach Height Instructions

---

## Camera Offset Instructions

The following instructions step through setting Camera Offsets.

**1** Clamp the supplied Offset board into the back right corner of the prober. The large cross-hair on the board should be in the left front corner.

**2** Select Camera Offset on the Control menu to display the Camera Offset dialog.

**Note:** Camera Offset can be set using the board under test. Choose a location on the board that can be accurately positioned over with the camera and probe tip. Do not press the Board button when setting camera offset in this manner. You must have a section defined in order to perform Camera Offset.

**Note:** If using a B/W camera and the camera image is not showing a clear image, make intensity or focus adjustments by clicking the Live button so changes may be immediately observed. Once done switch back to the Still mode. For more information see Camera Problems.

**Warning:** Do not adjust the camera focus after this point in the Camera Offset procedure. Only adjust the camera focus at the beginning of camera offset and not in the Align dialog or the Teach dialog.

**3** Move the camera until the red cross-hair of the camera matches with the position selected on the board.

**4** Press the Set Prober button.

**5** Move the probe down with Down button, until the probe tip barely touches the board with the Z travel set to 8 mils.

**6** Move the probe in the X or Y direction until the tip touches the center of the cross-hair on the board. Set the appropriate XY Travel and use the Left, Right, Back and Fwd buttons to move.

**7** Press the XY Set and Z Set buttons.

**Note:** To adjust the Z Probe Height Offset only, press the Set Prober button and move the probe tip down until contact is made, press Z Set button and then the OK button.

---

# Align Instructions

The following instructions step through the alignment of the section.

- 1 Select the section on the Main Window.
- 2 Select Align from the Control menu to display the Align dialog.
- 3 Press the First button. If the camera image is not showing a clear image, make light intensity or focus adjustments by clicking on the Live button so changes may be immediately observed. Once done switch back to the Still mode. See Camera Problems for more information. If the alignment points have been stored the camera will move to the position of the first alignment point.
- 4 Move the camera to the desired alignment point using the Left, Right, Back and/or Fwd buttons or click the left mouse button when the red camera image cross-hair is over the alignment point. If the mouse was used to make the last movement, each time the mouse is clicked the position of the crosshairs is set and step 5 can be skipped. If one of the buttons was used last, perform step 5 to set the position.

**Note:** For more accurate alignment, press the Zoom button and change the Travel to 1 or 2 mils and use the Left, Right, Back and Fwd buttons to position.

**Note:** All point locations must be at least 15 mm (0.6 inches, 600 mills) from the walls. If alignment points have been stored, use the original button to see the image of the stored position.

- 5 Press the Set button.
- 6 Press the Last button. If the alignment points have been stored, the camera moves to the second alignment point.
- 7 Move the camera to the desired alignment point.
- 8 Press the Set button.
- 9 Press the OK button. If this is the first time alignment of the section the alignment points are stored. If not, all pin positions will be adjusted to the new board position.

## Re-Align

Re-alignment of the board sets new alignment points for an existing board.

**Note:** Backing up the board before re-aligning is highly recommended.

- 1 First the section must be aligned to the existing alignment points. Follow the above steps 1 through 9 above using the original alignment points.
- 2 Press the Re-Align button.

**Note:** If you are not sure about any of the dialog questions, press cancel.

- 3 Follow the above steps 1 through 9 using the new alignment points. When the OK button is pressed all of the pin locations for the section will be updated to the new board position.

---

# Teach DIP, SIP, Both and Front Package Instructions

The following instructions step through the teaching of DIP, DIP2X, SIP, SIP2X, Both and Front component package types. DIP, DIP2X and Both packages consist of two rows of pins. SIP, SIP2X and Front packages consist of a single row of pins.

**Note:** If left mouse button is clicked to set the pin position, the set button does not need to be pressed.

**1** Select the component on the Main Window.

**2** Select Teach from the Control menu to display the Teach dialog. If the section has not been aligned, the Align dialog will appear. Align the section before proceeding. See Align Instructions.

**3** Press the First button. The Pin changes to pin number 1. If the component has been taught before, the camera will be positioned over pin 1.

**Note:** If using a B/W camera and the camera image is not showing a clear image, make intensity adjustments by clicking the Live button so changes may be immediately observed. Once done switch back to the Still mode. For more information see Camera Problems.

**4** Click the left mouse button on the first pin of the component. If the pin is not visible in the camera image, click at the edge of the image closest to the pin. If the pin is a long distance away, set the appropriate Travel and use the Left, Right, Back and Fwd buttons to move close to the first pin. If the left mouse button was used last to move, skip step 5.

**Note:** For more accurate positioning, press the Zoom button and change the Travel to 1 or 2 mils and use the Left, Right, Back and Fwd buttons to position.

**5** Press the Set button.

**6** Press the Last button. The Pin changes to the number of pins (last pin). The travel distance automatically adjusts for the standard DIP spacing. If the component has been taught before, the camera will be positioned over the last pin.

**7** Move to the last pin of the component. For DIP and DIP2X packages, the last pin is the pin directly across from pin one on the other row. For a Both package, this is the pin of the other end of the other row. If the left mouse button was used last to move, skip step 8.

**8** Press the Set button

**9** If the component has a SIP, SIP2X or Front package type skip to step 13.

**10** Press the Diagonal button. The Pin changes to pin number equal to half of the pins plus one (i.e. pin 11 on a 20 pin component). The travel distance automatically adjusts for the standard DIP spacing. If the component has been taught before, the camera will be positioned over the diagonal pin.

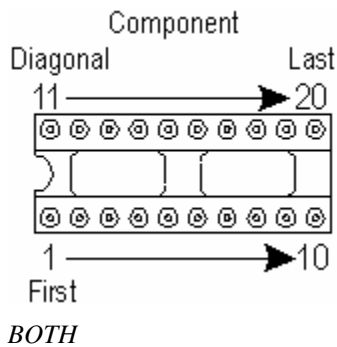
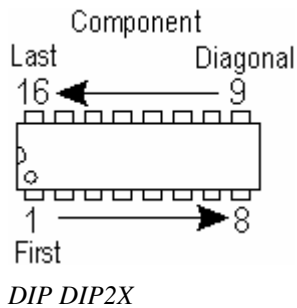
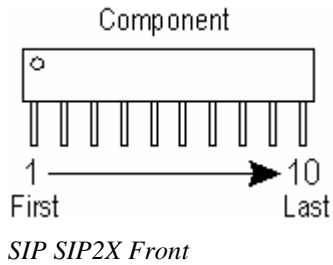
**11** Move to the diagonal pin of the component. The diagonal pin is the pin at the other end of the row from the last pin. If the left mouse button was used last to move, skip step 12.

**12** Press the Set button

**13** Press the Set All button, to allow the software calculate and set the other pin positions.

**Note:** If height has not been set for any of the components in the section, push Height button to display the Teach Height dialog. See Teach Height Instructions for more information.

**14** Press the OK button to save the pin positions.




---

## Teach Probe Package Instructions

The following instructions step through the teaching of a Probe component package type. The Probe package consists of individual pins.

**Note:** If left mouse button is clicked to set the pin position, the set button does not need to be pressed.

- 1 Select the component on the Main Window.
- 2 Select Teach from the Control menu to display the Teach dialog. If the section has not been aligned, the Align dialog will appear. Align the section before proceeding. See Align Instructions.
- 3 Press the First button. The Pin changes to pin number 1. If the component has been taught before, the camera will be positioned over pin 1.

**Note:** If using a B/W camera and the camera image is not showing a clear image, make intensity adjustments by clicking the Live button so changes may be immediately observed. Once done switch back to the Still mode. For more information see Camera Problems.

**4** Click the left mouse button on the first pin of the component. If the pin is not visible in the camera image, click at the edge of the image closest to the pin. If the pin is a long distance away, set the appropriate Travel and use the Left, Right, Back and Fwd buttons to move close to the first pin. If the left mouse button was used last to move, skip step 5.

**Note:** For more accurate positioning, press the Zoom button and change the Travel to 1 or 2 mils and use the Left, Right, Back and Fwd buttons to position.

**5** Press the Set button.

**6** Press the Next button. The Pin changes to the next pin number. If the component has been taught before, the camera will be positioned over the next pin.

**7** Move to the next pin of the component. If the left mouse button was used last to move, skip step 8.

**8** Press the Set button

**9** Repeat steps 6-8 for the remaining pins of the component.

**Note:** If height has not been set for any of the components in the section, push Height button to display the Teach Height dialog. See Teach Height Instructions for more information.

**10** Press the OK button to save the pin positions

---

## Teach Multi Package Instructions

The following instructions step through teaching a Multi component package type. Multi packages consist of multiple rows of pins (i.e. Quad Flat Package, Pin Grid Arrays, etc.). Each row of pins is considered a Group.

**Note:** If left mouse button is clicked to set the pin position, the set button does not need to be pressed.

**1** Select the component on the Main Window.

**2** Select Teach from the Control menu to display the Teach dialog. If the section has not been aligned, the Align dialog will appear. Align the section before proceeding. See Align Instructions.

**3** Press the Begin button. The Pin is the first pin of the group.

**Note:** If using a B/W camera and the camera image is not showing a clear image, make intensity adjustments by clicking the Live button so changes may be immediately observed. Once done switch back to the Still mode. For more information see Camera Problems.

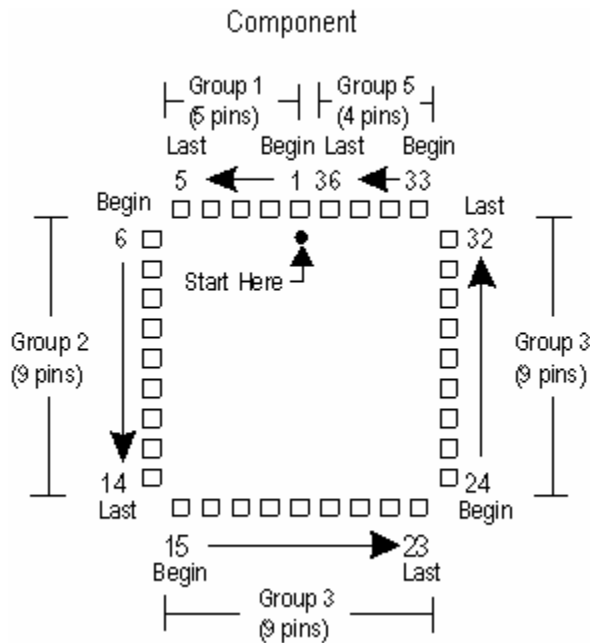
**4** Click the left mouse button on the first pin of the component. If the pin is not visible in the camera image, click at the edge of the image closest to the pin. If the pin is a long distance away, set the appropriate Travel and use the Left, Right, Back and Fwd buttons to move close to the first pin. If the left mouse button was used last to move, skip step 5.

**Note:** For more accurate positioning, press the Zoom button and change the Travel to 1 or 2 mils and use the Left, Right, Back and Fwd buttons to position.

- 5 Press the Set button.
- 6 Press the Group button. The Pin changes to the number of pins (last pin). The travel distance automatically adjusts for the standard DIP spacing. If the component has been taught before, the camera will be positioned over the last pin.
- 7 Enter number of pins in the group. Defaults to the last group size or the number of pins remaining on the component if less the previous size.
- 8 Move to the last pin of the group. This is the last pin of the row. If the left mouse button was used last to move, skip step 9.
- 9 Press the Set button
- 10 Press the Set Group button for the software to calculate and set the other pins of the group.
- 11 Repeat set 3 - 10 until all groups are set for the component.

**Note:** If height has not been set for any of the components in the section, push Height button to display the Teach Height dialog. See Teach Height Instructions for more information.

- 12 Press the OK button to save the pin positions.



## Teach Height Instructions

The following instructions step through teaching the Height positions of the components of the section. The Down position is the position used to scan the pin of the component, the probe tip is compressed on the pin of the component on the board. The Up position is the position the probe moves up to when moving from pin to pin.



**Note:** Teach Height is only required for the first component and the rest will default to the same Height positions.

**Note:** To use the Section Up position when moving between components uncheck Home Between Components on the Preferences dialog.

- 1 Select the component on the Main Window.
- 2 Select Teach from the Control menu to display the Teach dialog. If the section has not been aligned, the Align dialog will appear. Align the section before proceeding. See Align Instructions.
- 3 If the component has not been taught, teach the component. See Using Probers for more information.
- 4 Press the Height button on the Teach dialog to display the Teach Height dialog.
- 5 To set the Section Up position, press the Down button until the probe tip is at the desired height, make sure the probe tip will clear all components.
- 6 Press the Section Up button to set the up position for the entire section of components. The Up position is the position the probe moves up to when moving from pin to pin.
- 7 To set the Down position, press the Down button until the probe tip compresses to make good contact with the selected pin. Check for a valid signature to appear.
- 8 Press the Section Down button to set the same down position of all the pins of the section. The Down position is used to scan the pin of the component, the probe tip is compressed on the pin of the component on the board.
- 9 Press the Check button to test the height positions. The probe will move to the Down position for each pin of the component and to the Section Up position when moving between pins.
- 10 Press the OK button to store the Height positions.

# File Menu

---

## Backup

The Backup command creates a backup file for selected boards. The backup file stores all information about the board, including component test results and user defined buttons. The boards are cataloged by their Board and Revision names. Boards can be added to or updated in the backup file at any time after the initial backup occurred.

**Note:** Before starting backup, select the system to back up from .

To activate backup select Backup from the File Menu. When Backup is selected the Select Destination dialog appears. Select or enter the path where the backup file is to be stored or already exists. Next the Edit Backup dialog appears. Add the boards to be backed up.

**Note:** The backup file can backup several boards simultaneously, however, we suggest backing up as few boards as possible at a given time. Backup only creates HUNTRON.HBK files. This means that only one file can be created in a directory, create other directories for other backups.

---

## Select Destination Dialog

This dialog allows the selection of a drive and directory.

**Directories:**

Allows the selection of a directory on the current drive.

**Drives:**

Allows the selection of a disk, network or other drive.

**OK Button:**

Exits the dialog and selects the drive and directory.

**Cancel Button:**

Exits the dialog and the current process.

**Help Button:**

Displays the context sensitive help for this dialog.

---

## Edit Backup Dialog

This dialog allows the additions to and overwriting of board/revisions in a Backup file.

**System:**

This displays the current system.

**Board/Revision:**

Lists the boards/revisions located in the current system.

**Board/Revision in Backup:**

Lists the board/revisions that will be in the backup file. Board/revisions with trailing asterisks (\*) will be added or overwritten. Boards without asterisks are currently in the backup file.

**Add All > Button:**

Moves all the boards/revisions from the Board/Revision list to Board/Revision in Backup list. An asterisk will be added to the end of the names.

**Add> Button:**

Moves the selected boards/revisions from the Board/Revision list to Board/Revision in Backup list. An asterisk will be added to the end of the names.

**<Remove All Button:**

Removes all the board/revisions from the Board/Revision in Backup list that are not already in the backup file.

**<Remove Button:**

Removes the selected board/revisions from the Board/Revision in Backup list that are not already in the backup file.

**Backup Button:**

Updates the Huntron backup file and exits the dialog.

**Cancel Button:**

Exits the dialog and the backup process without changing the backup file.

**Help Button:**

Displays context sensitive help for the dialog box.

---

## Restore

The Restore command retrieves selected boards from a backup file. Depending on the size and number of boards, this may take a while.

**Note:** Select the system to restore boards into.

Restore is activated by selecting Restore from the File Menu. When Restore is selected, the Open Backup File dialog appears. Select the backup file (\*.hbk) to restore from. Then the Board List dialog is displayed. Select the board/revisions to restore. If the board/revision exists in the current system the Item Already Exists dialog is Displayed. Select Rename or Overwrite. If rename is selected the New Name dialog is displayed. Enter a new name.

---

## Open Backup File Dialog

This dialog is used to select the backup file to be restored from and its location.

**Filename:**

Backup always creates a huntron.hbk file. Select the filename from the list or enter it.

**List Files of Type:**

Shows the type of files to be listed in the file list. Defaults to backup files (\*.hbk)

**Directories:**

Allows selection of the directories on the current drive.

**Drives:**

Shows the disk, network and other drives available.

**OK Button:**

Exits the dialog and returns the file selected.

**Cancel Button:**

Exits the dialog and the current process.

**Help Button:**

Displays context sensitive help for the dialog.

**Network Button:**

Allows the attaching of network drives not mapped to a drive letter.

---

## Convert

The Convert command converts databases from the DOS software versions. This allows boards that were previously setup using the DOS versions to quickly move over to Windows for testing. Boards that were backed up or copied with the DOS software may also be directly converted for use with the Windows software.

**Note:** Select the system to convert boards into.

Convert is activated by selecting Convert from the File Menu. When Convert is selected the Source Database dialog is displayed. Select the Data Type and Source Type.

**Note:** Checking the "No High range in conversion" will stop any High Range information from being converted. Converting from 8.x software automatically sets the connection hardware to Cable for DOS 5100DS sections and Prober for DOS RP388 sections.

If a Backup or Copy source type was selected, the Next Disk dialog is displayed. Put the floppy in the drive if needed and enter the correct path. If the board already exists in the system the Item Already Exists dialog will be displayed. Select Rename or Overwrite. If rename is selected the New Name dialog is displayed. Enter a new name.

If Original source type was selected, the Source Path dialog is displayed. Select the drive/path used in the DOS software to store the boards. Next, the Board List dialog is displayed, select the board(s) to convert. If the board already exists in the system the Item Already Exists dialog will be displayed. Select Rename or Overwrite. If rename is selected the New Name dialog is displayed. Enter a new name.

**Note:** Board names and revision levels containing commas will have the commas replaced with semi-colons during conversion. This because Huntron Workstation uses commas to separate names.

**Note:** Image files are stored when the alignment points are set. These files are stored as \*.hif (Huntron Image Format) in a non standard bitmap format. When converting a database and alignment points have not been stored, then no Image files exist and the converting of the database will display Alignment Point Image file not Present error messages. These messages do not indicate a problem unless alignment points have been stored.

---

## Source Database Dialog

This dialog allows the selection of the type of Huntron DOS database to be converted.

**Data Type:**

Select the type of DOS database to convert boards from. The choices are 5100DS 6.X, 5100DS 7.X, 5100DS 8.X, DSI 700 1.X, 5300 1.X and 5500 1.X..

**Source Type Original:**

Converts databases in their native format.

**Source Type Backup:**

Converts databases that were backed up.

**Source Type Copy:**

Converts databases that were moved or copied to floppy disks.

**No High range in conversion:**

Checking this will remove all High ranges and their signatures from the pins of the new database. This is useful when converting from older Huntron products to the ProTrack I which does not support the High range.

**OK Button:**

Exits the dialog, continuing the process.

**Cancel Button:**

Exits the dialog and the current process.

**Help Button:**

Displays context sensitive help for the dialog.

---

## Import

The IMPORT feature is designed to eliminate the data entry required to build board tests and to teach XY test point locations for the prober. This is done by importing a Huntron ASCII CAD file (e.g. BOARD.HNT or BOARD.HAF). HAF files are created using Huntron CAD tools powered by Router Solutions Technologies. HNT files are created by the discontinued Huntron CAD tools powered by Sun-Up Software tools.

The Import Type Dialog is displayed to allow the choice of ASCII CAD file formats.

---

## Import Type Dialog

The Import Type Dialog is displayed to allow the choice of ASCII CAD file formats.

**Import Type:** Select HAF or HNT.

**OK Button:** Proceeds with the process of importing the ASCII CAD File.

**Cancel Button:** Stops the process of importing the ASCII CAD File and returns to the Main Window.

---

## Importing a HAF File

HAF files are imported to create databases in two formats: COMPONENT and NET. With the COMPONENT format, a component is created for each of the components in the CAD file. This database structure is similar to the normal way the system is used (i.e., all pins of all components are tested). If the NET format is used, the database that is created will test only one pin per net (node). The number of separate nets is divided by 512 (e.g., a board with 1050 nets will have two 512 pin components and one 26 pin component after a NET import).

**Note:** All components are created with a Multi package type for maximum flexibility.

Each time a HAF file is imported, a board is created in the current system. Since only XY locations are imported, the Z Up and Down positions must be set for the section. Some pin locations may need to be adjusted due to the mounting of components on the board.

After the import of the board is complete the board is then aligned. The align screen allows the user to view all the test point locations on the board, using the view PCB button. The Alignment Points are highlighted to help locate them quickly.

The Z Up and Down positions are established for that section of the board. Component and pin settings are defaulted and will probably need to be adjusted for optimal test conditions.

- 1 From Main menu, select Import from File menu.
- 2 Select HAF from the Import Type dialog. Follow the Import Wizard prompts to create the necessary CAD information for import into the Huntron Workstation software.

**Note:** The time to import a board varies with the size and complexity of the board and the speed of the computer you are using.

- 3 Align the board using the original alignment points. Use View PCB to view the original alignment points if needed. The first pin of the first component imported is the first alignment point. The first pin of the last component imported is the second alignment point. Re-align the board to the same alignment points to store the correct alignment positions. Edit the section if the Slot needs to be changed.

**Note:** When Re-aligned, XY locations will be changed to match where the board is actually located.

- 4 At this point, go into Teach Height to set the Z height data. Repeat this set if some components have different heights.

This completes the instructions for the importing of a CAD file into a PROBER database.

If the default ranges are not appropriate for your board, change the range settings using Set Global Pin Data from the Tree pull down menu at the section level for global changes or edit each component if the range requirements vary. Then scan the board as normal.

---

## Importing a HNT File

HNT files are imported to create databases in two formats: COMPONENT and NET. With the COMPONENT format, a component is created for each of the components in the CAD file (except zero pin components and one pin components with no connection e.g., mounting holes). This database structure is similar to the normal way the system is used (i.e., all pins of all components are tested). If the NET format is used, the database that

is created will test only one pin per net (node). The first pin of the net is used for testing. The number of separate nets is divided by 512 (e.g., a board with 1050 nets will have two 512 pin components and one 26 pin component after a NET import).

**Note:** All components are created with a Multi package type for maximum flexibility.

Each time a Huntron ASCII CAD file is imported, a section is created in the current board/revision. This allows for both net and component tests to be generated for the same board. This also allows, the adding of an imported section to an existing board. Since only XY locations are imported, the Z Up and Down positions must be set for the section. Some pin locations may need to be adjusted due to the mounting of components on the board.

After the import of the board is complete the board is then aligned. The align screen allows the user to view all the test point locations on the board, using the view PCB button. The Alignment Points are highlighted to help locate them quickly.

The Z Up and Down positions are established for that section of the board. Component and pin settings are defaulted and will probably need to be adjusted for optimal test conditions.

To activate Import, select Import from the File Menu. When Import is selected the Import Type dialog is displayed. Select HAF and Click OK. The HAF Import Wizard will be displayed. Follow the steps of the HAF Import Wizard.

If the default ranges are not appropriate for your board, change the range settings using Set Global Pin Data from the Tree menu at the section level for global changes or edit each component if the range requirements vary. Then scan the board as normal.

---

## HNT File Description

IMPORT can read 2 types of HNT files. These files are carriage-return line-feed <CR/LF> delimited files. The Indented lines use the TAB character. The information on the right side of the sample files in parenthesis is explanation information only and should not be included in actual files. The lines marked (Value not used) are for possible future implementation but must be included in the file. Use full names in lines marked with a limited number of characters. The file should be broken into two sections if some components can only be accessed on each side of the board. These sections are labeled TEST LAYER.

Locations beyond the probing area of the Prober will not be reached (this includes negative locations). The Prober will move as far as it can and then put the probe down. The maximum travel limits of different Probers varies. These limits do not take into account the camera offsets or the offsets created by align when the board is placed in the Prober. If the board is rotated or offset prior to importing, make sure the locations are within the limits. When setting up a board for testing locations on the bottom side of the board, make sure the XY locations are setup looking at the board from the bottom side. Most CAD packages use XY locations looking through the top side of the board. If this is the case, the XY locations will need be mirrored to allow correct probing of the bottom side of the board. If the file is divided into 2 TEST LAYERS, mirror only the BOTTOM SIDE section.

### Import Component Format

The COMPONENT Format contains a block of information about each component with a group of lines for each pin. In order to use the CAD data with a Prober, the user must know where the Alignment Points (AP) are located. The COMPONENT format uses the first pin of the first component as AP #1 and the first pin of the last component as AP #2. The pins should be listed in numeric order. The components will be tested in the order they are listed in the file. Some type of sorting may be required to minimize test times.

See Component - Huntron ASCII CAD Sample File.

### Import Net Format

The NET Format contains a block of information about each net with a group of lines about each pin on the net. The first pin of each net will be used for testing. When using the Prober with surface mount components, it may be more effective to list a via as the first pin of a net to avoid probing component leads. Make sure to list all pins on the net as this information may also be used in future versions. The net format uses the first pin of the first net as AP #1 and the first pin of the last net as AP #2. The nets are tested in the order they are listed in the file. Some type of sorting may be required to minimize test times.

See Net - Huntron ASCII CAD Sample File.

#### Sorting Algorithm

Some type of sorting may be required to minimize XY travel and reduce test times. The sort algorithm should use the location of each first pin for sorting data. The nets/components should be sorted starting with the upper right corner (0, 0) of the board. On boards that are broken into sections, each section should be sorted individually.

The sorting technique would be a band sort with configurable bandwidth. This technique would default to 1 inch wide bands in the direction of the longest length of the board. All components/nets would be sorted by coordinate in the direction of the bands and then the other coordinate. Alternate the direction the bands are sorted to minimize XY travel distances (i.e. down the first band, back up the second band, down the third band, etc.). The last band of the board should be a minimum of half the band width and a maximum of 1 1/2 the bandwidth. The bandwidth in mils should be user configurable to allow optimizing of the algorithm. Other algorithms may give better optimization on certain types of boards (e.g. Traveling Salesman).

---

## HNT Component Sample File

BOARD NAME : full path of source file i.e. C:\CAD\BOARD.DAT (Value not used)

BOARD ROTATION : 0, 90, 180 or 270 degrees (used for display purposes)

BOARD OFFSET : x offset : y offset (used for display purposes)

TIMESTAMP : time (Value not used)

DATESTAMP : date (Value not used)

TEST LAYER : TOP\_LAYER (Side of board for testing section)

COMPONENT NUMBER : 1 (Start of component block, value not used)

REFERENCE DESIGNATOR : R1 (Right most six characters used)

PACKAGE : R5 (Value not used)

TYPE : 100K (Left most fourteen characters used)

NUMBER OF PINS : 2 (More than 64 pins creates multiple components)

COMPONENT ROTATION : 180 (Value not used)

COMPONENT SIDE : TOP (Value not used)

PIN NAME : 1 (Left most three characters used)

NET NAME : NET1 (Value not used)

PIN POSITION : 1279 : 1038 (X and Y in mils)

PIN ACCESS : ALL (Value not used)

PIN DRILL : 37 (Value not used)

PIN NAME : 2 (Left most three characters used)

NET NAME : NET2 (Value not used)



PIN POSITION : 1279 : 1638 (X and Y in mils)  
 PIN ACCESS : ALL (Value not used)  
 PIN DRILL : 37 (Value not used)  
 ENDCOMP (End of component block)  
 COMPONENT NUMBER : 2 (Start of component block, value not used)  
 REFERENCE DESIGNATOR : C1 (Right most six characters used)  
 PACKAGE : C2 (Value not used)  
 TYPE : 100MFD (Left most fourteen characters used)  
 NUMBER OF PINS : 2 (More than 64 pins creates multiple components)  
 COMPONENT ROTATION : 180 (Value not used)  
 COMPONENT SIDE : TOP (Value not used)  
 PIN NAME : 1 (Left most three characters used)  
 NET NAME : NET1 (Value not used)  
 PIN POSITION : 1279 : 1038 (X and Y in mils)  
 PIN ACCESS : ALL (Value not used)  
 PIN DRILL : 37 (Value not used)  
 PIN NAME : 2 (Left most three characters used)  
 NET NAME : NET2 (Value not used)  
 PIN POSITION : 1279 : 1138 (X and Y in mils)  
 PIN ACCESS : ALL (Value not used)  
 PIN DRILL : 37 (Value not used)  
 ENDCOMP (End of component block)  
 TEST LAYER : BOTTOM\_LAYER (Side of board for testing section)  
 COMPONENT NUMBER : 3 (Start of component block, value not used)  
 REFERENCE DESIGNATOR : R2 (Right most six characters used)  
 PACKAGE : R5 (Value not used)  
 TYPE : 10K (Left most fourteen characters used)  
 NUMBER OF PINS : 2 (More than 64 pins creates multiple components)  
 COMPONENT ROTATION : 180 (Value not used)  
 COMPONENT SIDE: BOTTOM (Value not used)  
 PIN NAME : 1 (Left most three characters used)  
 NET NAME : NET1 (Value not used)  
 PIN POSITION : 1279 : 1038 (X and Y in mils)  
 PIN ACCESS : BOTTOM (Value not used)  
 PIN DRILL : 37 (Value not used)  
 PIN NAME : 2 (Left most three characters used)  
 NET NAME : NET2 (Value not used)

PIN POSITION : 1279 : 1138 (X and Y in mils)  
PIN ACCESS : BOTTOM (Value not used)  
PIN DRILL : 37 (Value not used)  
ENDCOMP (End of component block)  
COMPONENT NUMBER : 2 (Start of component block, value not used)  
REFERENCE DESIGNATOR : C2(Right most six characters used)  
PACKAGE : C2 (Value not used)  
TYPE : 1MFD (Left most fourteen characters used)  
NUMBER OF PINS : 2 (More than 64 pins creates multiple components)  
COMPONENT ROTATION : 180 (Value not used)  
COMPONENT SIDE: BOTTOM (Value not used)  
PIN NAME : 1 (Left most three characters used)  
NET NAME : NET1 (Value not used)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN ACCESS : BOTTOM (Value not used)  
PIN DRILL : 37 (Value not used)  
PIN NAME : 2 (Left most three characters used)  
NET NAME : NET2 (Value not used)  
PIN POSITION : 1279 : 1138 (X and Y in mils)  
PIN ACCESS : BOTTOM (Value not used)  
PIN DRILL : 37 (Value not used)  
ENDCOMP (End of component block)  
END (End of File)

---

## HNT Net Sample File

BOARD NAME : full path of source file i.e. C:\CAD\BOARD.DAT (Value not used)  
BOARD ROTATION : 0, 90, 180 or 270 degrees (used for display purposes)  
BOARD OFFSET : x offset : y offset (used for display purposes)  
TIMESTAMP : time (Value not used)  
DATESTAMP : date (Value not used)  
TEST LAYER : TOP\_LAYER (Side of board for testing section)  
NET NAME : NET1 (Right most six characters used)  
PIN NAME : 1 (Used in cross-reference netlist)  
COMPONENT : R1 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)

PIN NAME : 1 (Used in cross-reference netlist)  
COMPONENT : C1 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
NET NAME : NET2 (Right most six characters used)  
PIN NAME : 1 (Used in cross-reference netlist)  
COMPONENT : R2 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
PIN NAME : 1 (Used in cross-reference netlist)  
COMPONENT : C2 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
TEST LAYER : BOTTOM\_LAYER (Side of board for testing section)  
NET NAME : NET3 (Right most six characters used)  
PIN NAME : 2 (Used in cross-reference netlist)  
COMPONENT : R1 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
PIN NAME : 2 (Used in cross-reference netlist)  
COMPONENT : C1 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
NET NAME : NET4 (Right most six characters used)  
PIN NAME : 2 (Used in cross-reference netlist)  
COMPONENT : R2 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
PIN NAME : 2 (Used in cross-reference netlist)  
COMPONENT : C2 (Used in cross-reference netlist)  
PIN POSITION : 1279 : 1038 (X and Y in mils)  
PIN DRILL : 39 (Value not used)  
END

---

## Board List Dialog

This dialog list the board/revisions currently available to be processed.

**Boards:**

Select the boards/revisions to be processed.

**OK Button:**

Exits the dialog, checking the path and continuing the process.

**Cancel Button:**

Exits the dialog and the current process.

**Help Button:**

Displays context sensitive help for the dialog.

---

## Item Already Exists Dialog

This dialog is displayed when the current tree item name is being used by another tree item at the same level. It allows the new item to be renamed or the old item to be overwritten with the new item.

**Name Button:**

Allows the item to be renamed using the New Name dialog.

**Overwrite Button:**

Erases the currently stored item and replaces it with the new item.

**Cancel Button:**

Exits the dialog and the current process.

---

## New Name Dialog

This dialog is used to change the name of tree items.

**New Item Name:**

Enter a different name to rename the tree item. Defaults to the same name as the existing tree item.

**Revision Name:**

Enter a different revision to rename the board. Defaults to the same revision and the current board. This field is only displayed when renaming boards.

**OK Button:**

Exits the dialog and continues the process.

**Cancel Button:**

Exits the dialog and the current process.

**Help Button:**

Displays context sensitive help for the dialog.

---

## Next Disk Dialog

This dialog prompts for the insertion of a floppy disk or the path of a file.

**Path/Drive:**

Enter the drive path of the files to be processed. Do not include the file name.

**OK Button:**

Exits the dialog, and processes the files on the disk or path.

**Cancel Button:**

Exits the dialog and the current process.

---

## Source Path Dialog

This dialog is used to select the filename to be processed.

**Path:**

Enter the path and file name of the file to be processed.

**OK Button:**

Exits the dialog, checking the path and continuing the process.

**Cancel Button:**

Exits the dialog and the process.

**Help Button:**

Displays context sensitive help for the dialog.

**Browse Button:**

Displays a common dialog for browsing and selecting the desired Path field.

---

## Printer Setup

The Print Setup command displays the Windows Printer Setup dialog from printer driver.

**Note:** Print signatures and waveforms in resolution values of 400 or less for best results.

---

## Exit

The Exit Command close this application.

# Tree Menu

---

## Add New

The Add New command adds a new system, board, section or component to the tree depending on which tree branch is highlighted.

To add a new system, click on System in the Main Window. Click on the Tree menu and then on Add New System to display the System dialog.

To add a new board, click on Board in the Main Window. Click on the Tree menu and then on Add New Board to display the Board dialog.

To add a new section, click on Section in the Main Window. Click on the Tree menu and then on Add New Section to display the Section dialog.

To add a new component, click on Component in the Main Window. Click on the Tree menu and then on Add New Component to display the Component dialog.

---

## Edit

The Edit command allows modification of a system, board, section or component of the tree depending on which tree branch is highlighted.

To edit a system, click on System in the Main Window. Click on the Tree menu and then on Edit System to display the System dialog.

To edit a board, click on Board in the Main Window. Click on the Tree menu and then on Edit Board to display the Board dialog.

To edit a section, click on Section in the Main Window. Click on the Tree menu and then on Edit Section to display the Section dialog.

To edit a component, click on Component in the Main Window. Click on the Tree menu and then on Edit Component to display the Component dialog.

**Note:** The Edit function can be activated by right mouse clicking on the item to edit.

---

## Delete

The Delete command erases a system, board, section or component of the tree depending on which tree branch is highlighted.

To delete a system, click on System in the Main Window. Click on the Tree menu and then on Delete System. Click Yes to Delete or No to keep the system.

To delete a board, click on Board in the Main Window. Click on the Tree menu and then on Delete Board. Click Yes to Delete or No to keep the board.

To delete a section, click on Section in the Main Window. Click on the Tree menu and then on Delete Section. Click Yes to Delete or No to keep the section.

To delete a component, click on Component in the Main Window. Click on the Tree menu and then on Delete Component. Click Yes to Delete or No to keep the component.

**Note:** The Edit or Delete function can be activated by Pressing the Del or Delete Key.

---

## Rename

The Rename command allows the name of a system, board, section or component of the tree to be changed depending on which tree branch is highlighted.

To rename a system, click on System in the Main Window. Click on the Tree menu and then on Rename System to display the New Name dialog.

To rename a board, click on Board in the Main Window. Click on the Tree menu and then on Rename Board to display the New Name dialog.

To rename a section, click on Section in the Main Window. Click on the Tree menu and then on Rename Section to display the New Name dialog.

To rename a component, click on Component in the Main Window. Click on the Tree menu and then on Rename Component to display the New Name dialog.

---

## Set Global Pin data

The Set Global Pin Data command allows the global information for a section to be set or changed without having to access each individual component in that section. To change the pin information click on Section. Click on the Tree and then on Set Global Pin Data. This will display the Global Pin Data dialog.

**Note:** The Ctrl and G keys can be pressed at the same time to activate Set Global Pin Data.

---

## Global Pin Data Dialog

This dialog allows the changing of pin and component settings for all the components of the current section. To activate this dialog, select a section and press the Ctrl and G keys together or select Set Global Pin Data from the Tree menu. See Component dialog, Advanced Component dialog, Pins dialog and Advanced Pin dialog for more information.

A selection of "Do Not Set" will leave that field unmodified for that particular setting. Exercise caution when using the Reset XYZ Position check box as this will delete all XYZ information for the selected section.

**Net:**

Entering a name will make all of the pins on all of the components in the section have the same net name. It is strongly recommended leaving this blank.

**Filter:**

Updates the Filter to Yes or No for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>.

**Channel:**

Updates the Channel to A or B for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>.

**Tolerance:**

Updates the Tolerance to 0 to 99 for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>.

**Delay:**

Updates the Delay to 0 to 10 seconds for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>.

**Max. Samples:**

Updates Max. Samples for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>.

**Scan Order:**

Sets the Scan Order to Pins/Range or Ranges/Pin for all components in the section. To leave unchanged select the default <DO NOT SET>.

**Ranges 1:**

Check the box to activate Range 1 for scanning all pins of all components in the section. Uncheck the box to deactivate the Range 1 for scanning all pins of all components in the section. Deactivating does not delete signatures. Gray the box to not change the setting.

Select a range to change Range 1 for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>. Set the appropriate Voltage, Resistance and Frequency settings for the range in the dropdown lists on the right.

**Note:** The numbered ranges should be added from top to bottom (1-4). The ranges are scanned from 1 to 4.

**Ranges 2:**

Check the box to activate Range 2 for scanning all pins of all components in the section. Uncheck the box to deactivate the Range 2 for scanning all pins of all components in the section. Deactivating does not delete signatures. Gray the box to not change the setting.

Select a range to change Range 2 for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>. Set the appropriate Voltage, Resistance and Frequency settings for the range in the dropdown lists on the right.

**Note:** The numbered ranges should be added from top to bottom (1-4). The ranges are scanned from 1 to 4.

**Ranges 3:**

Check the box to activate Range 3 for scanning all pins of all components in the section. Uncheck the box to deactivate the Range 3 for scanning all pins of all components in the section. Deactivating does not delete signatures. Gray the box to not change the setting.

Select a range to change Range 3 for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>. Set the appropriate Voltage, Resistance and Frequency settings for the range in the dropdown lists on the right.

**Note:** The numbered ranges should be added from top to bottom (1-4). The ranges are scanned from 1 to 4.



**Ranges 4:**

Check the box to activate Range 4 for scanning all pins of all components in the section. Uncheck the box to deactivate the Range 4 for scanning all pins of all components in the section. Deactivating does not delete signatures. Gray the box to not change the setting.

Select a range to change Range 4 for all pins of all components in the section. To leave unchanged select the default <DO NOT SET>. Set the appropriate Voltage, Resistance and Frequency settings for the range in the dropdown lists on the right.

**Note:** The numbered ranges should be added from top to bottom (1-4). The ranges are scanned from 1 to 4.

**Set to Default Connection:**

Checking resets the Connection of all components in the section to the default for the selected hardware.

**Reset XYZ Position:**

Checking resets the XYZ locations of all the components in the section.

**Warning:** When checked, all section components will have to be taught again.

**Reset Tracker Common Pins:**

Checking resets the Common Pins to 0. Components will require a common lead from the COM or Common Banana Jack on the front panel to the board.

**Disable Common Pin Per Range:**

Checking disables Common Pin Per Range for all components in the section.

**Auto Range:**

Checking enables Auto-Range for all components in the section. Unchecking disables Auto-Range for all components in the section. Once components have been scanned and signatures exist, Auto-Range cannot be performed. Gray the Check Box to leave the settings unchanged.

**Open Check:**

Checking enables Open Checking for all components in the section. Unchecking disables Open Checking for all components in the section. The Open Check option is set for components from the Advanced Component dialog. Gray the Check Box to leave the settings unchanged.

**Short Check:**

Checking enables Short Checking for all components in the section. Unchecking disables Short Checking for all components in the section. The Short Check option is set for components from the Advanced Component dialog. Gray the Check Box to leave the settings unchanged.

**Pause Before Scan:**

Checking enables Pause Before Scan feature of all components in the section. Unchecking disables Pause Before Scan feature of all components in the section. Pausing and displaying component instructions during a prober Section Scan is disabled if this box is checked. Gray the Check Box to leave the settings unchanged.

**Prober Common Pins 1 and 2:**

Assigns one of the common jacks 1-4 to Common Pin 1 and Common Pin 2 . Updates for all components in the section. If set to 0, components will require a common lead from the COM or Common Banana Jack on the front panel to the board. To leave unchanged select the default <DO NOT SET>.

**OK Button:**

Exits the dialog and updates all components in the section.

**Cancel Button:**

Exits dialog without updating any component.

**Help Button:**

Displays context sensitive help for the dialog.

---

## Clear Section Signatures

The Clear Section Signatures command deletes all of the signatures for all of the components / pins / ranges of the section. To clear the signatures click on Section on the Main Window. Click on the Tree menu and then on Clear Section Signatures.

**Warning:** All Stored and merges signatures of the section will be deleted.

---

## Build

The Build command duplicates a system, board, section or component of the tree depending on which tree branch is highlighted. The new name is created by incrementing the number at the end of the name or by extending the name with a "1", if the name does not end with a number. All other data remains the same as the current component when

To build a system, click on System in the Main Window. Click on the Tree menu and then on Build System.

To build a board, click on Board in the Main Window. Click on the Tree menu and then on Build Board.

To build a section, click on Section in the Main Window. Click on the Tree menu and then on Build Section.

To build a component, click on Component in the Main Window. Click on the Tree menu and then on Build Component.

Note: The build feature copies the pin XY positions from the current component. Press Reset in the Teach dialog to clear the pin XY positions.

**Note:** The Ctrl and B keys can be pressed at the same time to activate Build.

---

## Copy

The Copy command makes a copy of a board, section or component to a same tree level destination. The Copy command is selected from the source item and prompts the user for the destination.

To copy a board, click on Board in the Main Window. Click on the Tree menu and then on Copy Board to display the Copy/Move dialog.

To copy a section, click on Section in the Main Window. Click on the Tree menu and then on Copy Section to display the Copy/Move dialog.

To copy a component, click on Component in the Main Window. Click on the Tree menu and then on Copy Component to display the Copy/Move dialog.

**Note:** Copying components does not copy their signatures. To copy signatures the entire section must be copied.

**Note:** The Ctrl and C keys can be pressed at the same time to activate Copy.

---

## Move

The Move command moves a board, section or component to a same tree level destination. The Move command is selected from the source item and prompts the user for the destination.

**Note:** Move deletes the source item after copying to the destination.

To move a board, click on Board in the Main Window. Click on the Tree menu and then on Move Board to display the Copy/Move dialog.

To move a section, click on Section in the Main Window. Click on the Tree menu and then on Move Section to display the Copy/Move dialog.

To move a component, click on Component in the Main Window. Click on the Tree menu and then on Move Component to display the Copy/Move dialog.

**Warning:** Moving components erases their signatures.

**Note:** The Ctrl and M keys can be pressed at the same time to activate Move.

---

## Copy/Move Dialog

The Copy/Move dialog allows the selection of the tree item destination for a Copy or Move. This dialog is accessed from Copy or Move on the Tree menu.

**System:**

Select the system of the destination tree item.

**Board:**

Select the board of the destination tree item. This is used for sections and components only.

**Revision:**

Select the revision level of the destination tree item. This is used for sections and components only.

**Section:**

Select the section of the destination tree item. This is used for components only.

**Copy all sub-items:**

Copies all sub-items to the specified destination. For boards this copies all sections and components. For sections this copies all components. This is not available for components or when moving tree items. Move always moves all sub-items.

**OK Button:**

Exits the dialog and continues the process.

**Cancel Button:**

Exits the dialog and quits the current process.

**Help Button:**

Displays context sensitive help for the dialog.

**Note:** When a section is being copied from one board to another board, a dialog will pop up asking for a new alignment name. The alignment name is used by the prober and not by stand alone instruments, as the software needs a new alignment name to allow a copy to occur.

This dialog allows the selection of the destination for moving and copying tree items. To activate this dialog, select Copy tree item or Move tree item from the Tree Menu.

---

## System Dialog

This dialog allows the adding new, editing existing, renaming and deleting of systems.

A system, the top level of the tree structure, is used to keep track of groups of boards in different sub-directories. This dialog can be accessed by clicking the right mouse button on System on the Main Window, pressing the Enter key or from Add System or Edit System on the Tree menu. For a tutorial of creating a tree, see Build Test Routine Tutorial or Quick Tree Building.

**Warning:** Deleting a system will also delete the directory the system resides in and any files or sub-directories stored under that directory! Also, if the system is shared over a network, it will be deleted for all users. Please be careful!

**Note:** If the software is being run on a computer connected to a network, the system path location can be on another computer or can be accessed by the other computer. If the system path is being shared, then anyone has access to any of the boards in the system path. Also, if the system is read only, board testing can still be accomplished by selecting the Temp Path as TS path is in the preference setting window.

**Name:**

Description of the group of boards contained in the path. Select from the list of systems to edit or enter a new name. To continue adding new systems, change the name and path.

**Path:**

Complete file path of the directory used to store the group of boards. Once the system is stored in the database, the path cannot be changed. **Invalid system paths** are any paths that contain an existing system in this installation, or the directory containing this program, or the Windows directory. A valid path can be any path that points to an empty directory, a directory with no system in it, or a new directory. Although this program directory and the Windows directories are invalid, their sub-directories are valid. Also, systems cannot be stored in the sub-directories of other systems. If you have a system in the path "c:\systems\sys001", then the following path are invalid: c:\systems, c:\systems\sys001, c:\systems\sys001\newsys.

**Browse Button:**

Displays the Browse dialog for selecting the Path field.

**Instructions:**

Enter instructions related to testing the system.

**OK Button:**

Exits dialog saving any changes made. If the OK button is disabled, the system path may be invalid.

**Cancel Button:**

Exits dialog without saving any changes made.

**Help Button:**

Displays the context sensitive help for this dialog.

**Rename Button:**

Displays the New Name dialog allowing the system name to be changed.

**Delete Button:**

Deletes the current system and its directory.

---

## Board Dialog

This dialog allows adding new, editing existing, renaming and deleting of boards.

A board is the level below System of the test tree structure. The Board is used to keep track of sections or groups of components. This dialog can be accessed by clicking the right mouse button on Board or Revision on the Main Window, pressing the Enter key or from Add Board/Edit Board on the Tree menu. For a tutorial of creating a tree, see Build Test Routine Tutorial or Quick Tree Building.

**Name/Part # or Part No.:**

Description of the board or the part number of the board. Select from list of boards to edit or enter a new name. To continue adding new boards, change the name and revision level as necessary. The board name and Revision Level combination must be unique for the system.

**Revision Level:**

Enter the revision found on the circuit board.

**Unit or Gold Disk No.:**

Enter the piece of equipment the board is from.

**Section Order Entry:**

Lists sections in order of entry.

**Section Order Alpha:**

List sections in Alphanumeric order by the ASCII value of the characters from left to right. Sections beginning with numerical characters are placed first in the list in ascending order with respect to the first character. Next, sections beginning with alpha characters are placed in the list in alphabetical order. Upper case letters come before lower case letters.

**Side Names Top:**

A quick, short description of what side is to be the top of the board. Mainly used with probers and boards with component on both sides (no Component or Solder side identification). Use a main component reference designator on the top side of the board.

**Side Names Bottom:**

A quick, short description of what side is to be the bottom of the board. Mainly used with probes and boards with component on both sides (no Component or Solder side identification). Use a main component reference designator on the bottom side of the board.

**Instructions:**

Enter instructions related to testing the board.

**ID:**

This hex number (0000-FFFF) is assigned by the program to the board. It is used to create the directory name under the system path used to hold section information and board button files.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without saving any changes made.

**Help Button:**

Displays the context sensitive help for this dialog.

**Rename Button:**

Displays the New Name dialog allowing the board name/part# to be changed..

**Delete Button:**

Deletes the current board and all of its sections and components.

**Buttons Button:**

Displays the Button Setup dialog allowing the user to assign a quick context sensitive access to other programs and files.

---

## Section Dialog

This dialog allows adding new, editing existing, renaming and deleting sections.

The section is the level below board of the test tree structure. The section is used to create logical groups of components to be scanned together. This dialog can be accessed by clicking the right mouse button on Section on the Main Window, pressing the Enter key or from Add Section/Edit Section on the Tree menu. For a tutorial on creating a tree, see Build Test Routine Tutorial or Quick Tree Building.

**Name:**

Description of the group of components. Unique name for board/revision. To continue adding new sections, change the name.

**Side Of Board Component:**

Selects the top or component side of board. Text of button is controlled by the Side Name Top Field in the Board dialog; If side of board is changed after teaching, flip coordinates. This is only used with probe hardware selected.

**Side Of Board Solder:**

Selects the bottom or solder side of board. Text of button is controlled by the Side Name Bottom Field in the Board dialog; This is only used with probe hardware selected.

**Slot Top:**

Selection of the Top slot of the prober. Only used with prober hardware selected.

**Slot Middle:**

Selection of the Middle slot of the prober. Only used with prober hardware selected.

**Slot Bottom:**

Selection of the Bottom slot of the prober. Only used with prober hardware selected.

**Slot Base:**

Selection of the Base slot of the prober. Only used with Prober IIIc.

**Component Order Entry:**

List the components in the order they were entered.

**Component Order Alpha:**

List component in Alphanumeric order by the ASCII value from first to last character. Components beginning with numerical characters are placed first in the list in ascending order with respect to the first character. Next, components beginning with alpha characters are placed in the list in alphabetical order. Upper case letters come before lower case letters.

**Align:**

Select the section containing the alignment points for the current section. The default is Align 1. Used to allow testing of multiple sections that use the same alignment points without realigning or stopping the test. Only used with prober hardware selected.

**Note:** Use a different align name whenever alignment points are different on the same board/revision.

**Instructions:**

Enter instructions related to testing the Section.

**ID:**

This hex number (0000-FFFF) is assigned by the program to the section. It is used to create the directory name under the board path used to hold component information, section and component button files.

**OK Button:**

Exits this dialog saving any changes made.

**Cancel Button:**

Exits this dialog without saving any changes made.

**Help Button:**

Displays the context sensitive help for this dialog.

**Rename Button:**

Displays the New Name dialog allowing the section name to be changed.

**Delete Button:**

Deletes the current Section.

**Buttons Button:**

Displays the Button Setup dialog allowing the user to assign a quick access for programs and files.

**Change Slot Button:**

Displays the Change Prober Slot dialog allowing the slot and align name to be changed. The button is active if the section has been saved and aligned. If the button is not active the slot and name can be changed in the Section dialog.

---

## Change Prober Slot Dialog

The Change Prober Slot dialog allows the prober slot and align name to be changed for a section that has been saved and aligned. This dialog is accessed by pressing the Change Slot button on the Section dialog.

**New Align Name:**

Name for new alignment points. Used if the slot is changed, side of board is changed or to isolate from other sections using the same alignment points.

**New Slot Top:**

Changes the slot to the Top slot. Adjusts the Probe Up and Down positions as needed.

**New Slot Middle:**

Changes the slot to the Middle slot. Adjusts the Probe Up and Down positions as needed.

**New Slot Bottom:**

Changes the slot to the Bottom slot. Adjusts the Probe Up and Down positions as needed.

**New Slot Base:**

Changes the slot to the Base slot (Prober IIIc Only). Adjusts the Probe Up and Down positions as needed.

**Existing Align Names:**

Displays the existing align names. These cannot be used for new align names.

**OK Button:**

Exits this dialog and updates the align name, Slot and probe height positions selected.

**Cancel Button:**

Exits this dialog without making any changes.

**Help Button:**

Displays the context sensitive help for this dialog.

---

## Component Dialog

This dialog allows adding new, editing existing, renaming and deleting components.

A component is the level below section of the test tree structure. This dialog can be accessed by clicking the right mouse button on Component on the Main Window, pressing the Enter key or from Add Section/Edit Section on the Tree menu. For a tutorial on creating a tree see Build Test Routine Tutorial or Quick Tree Building.

**Name or RSN:**

Reference Designator of the component (i.e. U1, R12, C57 etc.). Must be a unique component name for the section. To continue adding new components, change the name.

**Package:**



Select Both, DIP, DIP2X, Front, Multi, Probe, SIP, or SIP2X package types. The DIP2X and SIP2X are only truly supported with ProTrack I/Scanner I or Prober Hardware combinations.

**Number of Pins:**

Select the number of pins on the device. The number of pins for a component cannot be changed once the component is scanned and signatures exist. Choices are limited to the appropriate values for the selected package types. Maximum number of pins is 512 with Multi or Probe package types selected, the DIP2X with 66-128 pins, and the SIP2X with 65-128 pins. DIP, SIP, and Both packages allow a maximum of 64 pins, with the exception of the Front package. The Front setting allows for a maximum of 32 pins. DIP, DIP2X and Both packages only allow an even number of pins.

**Type or Part No.:**

The value or part number of the component (i.e. 7404, 1K ohm, etc.)

**Replacement or NSN:**

The value or part number of the component used to replace this component when it fails.

**Supplier or CAGE:**

The supplier of the replacement component.

**Instructions:**

Enter Instructions related to testing the component.

**ID:**

This hex number (0000-FFFF) is assigned by the program to the component.

**Pins Button:**

Displays the Pins dialog to allow entry of pin settings. It also allows access to the Advanced Pin dialog and Group Pins dialog. An error will occur if the ranges set for the pins contain invalid ranges for the current hardware selection. To modify the ranges selected the original hardware or No Hardware in the Hardware Settings dialog.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without saving any changes made.

**Help Button:**

Displays the context sensitive help for this dialog.

**Delete Button:**

Deletes the current component.

**Rename Button:**

Displays the New Name dialog allowing the component name to be changed.

**Advanced Button:**

Displays the Advanced Component dialog for other component settings including Open/Short Checking, Connections, and Scanning Order.

**Buttons Button:**

Brings up the Button Setup dialog allowing the user to assign a quick key access for programs.

---

# Advanced Component Dialog

This dialog allows setting of component short, open, connection, scan order and pause before scanning features. It is available from the Component dialog Advanced button.

**Shorts None:**

Deactivates short checking during scanning. The program automatically defaults to this setting.

**Shorts Adjacent:**

Activates short checking during scanning of numerically adjacent pins.

**Note:** Short checking is disabled with DIP2X and SIP2X.

**Note:** Only available with a 5100DS or ProTrack I/Scanner I.

**Shorts Full:**

Activates short checking during scanning of all pin combinations.

**Note:** Short checking is disabled with DIP2X and SIP2X packages.

**Note:** Only available with a 5100DS or ProTrack I/Scanner I.

**Opens None:**

Deactivates open checking during scanning.

**Opens Check:**

Activates open checking during scanning and is a default setting.

**Opens Recheck:**

Activates open checking during scanning and rechecks opens with a probe at a lower position set by Opens Depth.

**Opens Depth:**

Sets the additional probe down travel distance for rechecking open pins.

**Connection Manual:**

Selects the probes as the source of scanning. The probes are connect to the front panel banana jacks and to the component being scanned.

**Connection Cable:**

Selects the clip or other cable as the source of scanning. The clip or other cable is connected to the front panel dual row connectors on the front panel and to the component being scanned. The component can also be placed in the ZIF socket on the front panel. This only effects scanning when a ProTrack I/Scanner I or 5100DS hardware is used. If other hardware is used the connection will be treated as Manual.

**Connection Prober:**

Selects the prober as the source of scanning. This only effects scanning when a prober is used. If other hardware is used, the connection will be treated as Cable or Manual depending upon the package type of the component

and the hardware used. DIP, DIP2X, SIP, SIP2X, Front and both packages will be treated as Cable. Probe and Multi packages will be treated as Manual.

**Scan Order Pin/Range:**

Scans all pins of the component in the first range. Scans all of the pins of the component, before changing ranges. This will allow Trackers and Probers to get signatures in the same order to help with Charging Effects. This setting will cause the prober to probe each component one time for every range (1-4) enabled on the pins.

**Scan Order Range/Pin:**

Scans all of the ranges of the pin then changes pins. Scans all of the ranges of the pin, before changing pins. This will allow Trackers and Probers to get signatures in the same order to help with charging effects.

**Pause Before Scanning:**

Displays component instructions before scanning component in Section Scan when using a prober. It only works if the "Show Instructions" box is checked in Preferences and there are Instructions for the specified Component.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without saving any changes made.

**Help Button:**

Displays context sensitive help for this dialog.

---

## Pins Dialog

This dialog allows the setting of pin features for each pin of the component. It is available from the Component dialog Pins button. For a tutorial on creating a tree see Build Test Routine Tutorial or Quick Tree Building.

**Note:** The numbered ranges indicate the order in which the ranges are scanned. Ranges for pins should be added from TOP to BOTTOM (1-4).

**Note:** If the selected package is either a DIP2X or SIP2X, then Common Pins and Channel functions are disabled.

**Note:** Do not change Selected ranges that are blank. These are not supported by this hardware. Select No Test hardware in the Hardware Settings dialog and exits pins again to see all ranges.

**Pins:**

Select pin to update. Type the pin number or select from the list.

**Next >> Button:**

Moves to the next pin and remembers the changes to the current pin, before moving.

**Previous << Button:**

Moves to the previous pin and remembers the changes to the current pin, before moving.

**Name:**

The functional name or renumber name of the pin (ie. AD1, Vcc, A1 etc.). Defaults to pin number. Unique name per component is required.

**Net:**

The name of the net or circuit node containing the pin.

**Filter:**

Each pin may have the filter set to "YES" or "NO". Since the filter algorithm is designed for certain types of unstable signatures, pins that are stable on a given IC can be set to "NO" while oscillating pins are set to "YES". Be sure to check all ranges to be used in VIEW before setting the filter to "NO". Adjust the selected ranges by reducing the voltage and/or resistance to remove the oscillations, with a ProTrack I. The ProTrack I only filters the DS Low, DS Med1 and DS Med2 ranges for compatibility with the Tracker 5100DS.

**Channel:**

For ProTrack I support of channels A and B. Defaults to A. If using a SIP2X or DIP2X component, the channel is disabled.

**Tolerance:**

Tolerance level for comparison (0-99). Defaults to 5.

**Delay:**

The amount of delay after the signal is applied to the pin before the signature is digitized. Defaults to 0. This can be used with a prober to wait for the probe tip to penetrate conformal coatings on the board. It can also be used to allow circuit nodes to charge or settle before digitizing signatures.

**Max. Samples:**

The Maximum Number of Samples of the signatures to be taken. Defaults to 5.

**Ranges 1:**

The check box activates or deactivates Range 1 for scanning. Deactivating does not delete signatures. Select the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information. If Connect box is checked, sets the hardware to this range.

**Ranges 2:**

The check box activates or deactivates Range 2 for scanning. Deactivating does not delete signatures. Select the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information. If Connect box is checked, sets the hardware to this range.

**Ranges 3:**

The check box activates or deactivates Range 3 for scanning. Deactivating does not delete signatures. Select the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information. If Connect box is checked, sets the hardware to this range.

**Ranges 4:**

The check box activates or deactivates Range 4 for scanning. Deactivating does not delete signatures. Select the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information. If Connect box is checked, sets the hardware to this range.

**Auto-Range:**

Activates or deactivates the automatic selection of the most suitable range for the current pin. Auto-Range selects the best matching range for the current pin of the active ranges on the FIRST SCAN ONLY. The unselected ranges will be de-activated.

To use Auto-range on components that already have signatures, all the section signatures must be cleared by highlighting the section and choosing Clear Section Signatures from the Tree menu before Auto-range can be enabled.

**Connect:**

Checking this box activates the hardware to allow the viewing of signatures in Range 1.

**Common Pin Per Range:**

Enables common pin settings for individual ranges of a given pin. Common Pin Per Range information will be displayed in the Zoom Signature Screen. Defaults to disabled.

Selecting Tracker changes to common pin per range for each of the 4 ranges (1 through 4) and hides the prober common pins. These common pins are activated through the Dual row connectors on the front panel. This feature requires a ProTrack I w/ Scanner I or a Tracker 5100DS.

Selecting Prober changes to common pin per range for each of the 4 ranges (1 through 4) and hides the Tracker common pins. These common pins are activated through the banana jacks on the front panel of the prober. This feature requires a Prober I, Prober II, Prober III, Tracker 5300 or Tracker 5500.

An example of the Common Pin Per Range feature scans the same range twice with different common pin for each range. A pin can be scanned with reference to ground and 5V. Another example is when trying to isolate discrete components through a bed of nails common can be switched to different nodes to see different components.

**Tracker Common Pin 1-2:**

Common pin numbers 1 and 2 set the signal reference for the current pin. Set to 0 when using a common lead from the COM or Common banana jack on the front panel. They are only available for the ProTrack I/Scanner I and the 5100DS. Active when either the Common Pin Per Range is disabled or set to Tracker. When Common Pin Per Range is disabled and common Pin 1 & 2 are both set, they are connected together shorting pins on the board.

**Tracker Common Pin 3-4:**

Common pin numbers 3 and 4 for the current pin are only available for the ProTrack I/Scanner I and the 5100DS. Active only when the Common Pin Per Range is set to Tracker.

**Prober Common Pin 1-2:**

Common pin numbers 1 and 2 for the current pin. Set to 0 when using a common lead from the COM or Common banana jack on the front panel. They are only available for the probers. Active when either the Common Pin Per Range is disabled or set to Prober.

**Prober Common Pin 3-4:**

Prober common pin numbers 3-4 for the selected pin(s) are only available for the probers. Active only when the Common Pin Per Range is set to Prober.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without saving any changes made.

**Help Button:**

Displays context sensitive help for the dialog.

**Defaults Button:**

Changes all of the current pin settings to the default settings.

**Manual Button:**

Displays the ProTrack I Manual Control dialog, 5100DS Manual Control dialog or 5500 Manual Control dialog that allows control of the Tracker hardware to view signatures to aid in selecting pin settings. If a prober is connected it will access the pins with the prober.

**Advanced Button:**

Displays the Advanced Pin dialog that allows setting of Pulse Generator, Scan Pin, Unique Pin, and displays the XYZ positions for the current pin.

**Group Button:**

Displays the Group Pins dialog allowing other pins to be setup the same as the current pin.

**Set All Button:**

Sets all the pins on the component with same settings as the current pin except the name and net.

**Def. Ranges Button:**

Changes the ranges of the current pin to the default ranges set in the Preferences Dialog.

**Link Button:**

If Huntron CAD Tools are installed, Displays the Current Component Pin and its Net in the CAD Program.

---

## Advanced Pin Dialog

This dialog allows the setting of Pulse Generator, Scan Pin, Unique Pin, and displays the XYZ positions for the current pin in the Pins dialog. It is available from the Pins dialog Advanced button.

**Note:** All Pulse Generator features are only available with a ProTrack I.

**Note:** XYZ positions are only available with a prober.

**Pulse Generator Type Off:**

Disables the Pulse Generator for the pin. This is the default.

**Pulse Generator Type DC:**

Enables the Pulse Generator DC output, Level, Pulse + and Pulse - for the pin.

**Pulse Generator Type Pulse:**

Enables the Pulse Generator output and the Pulse +, Pulse -, Pulse +/-, Duty Cycle and Level for the pin.

**Pulse Generator Pulse:**

Select the voltage polarity of the waveform.

**Pulse Generator Duty Cycle:**

Select the duty cycle of the pulse to be from 2% to 50% of the waveform.

**Pulse Generator Level:**

Select the voltage level from 0V to 10V. The level is positive and/or negative depending on the Pulse setting.

**Scan Pin:**

When unchecked the current pin is not scanned. Defaults to Checked.

**Unique Pin:**

Identifies the pin(s) of the component that are not on a bus. Check if pin is a chip select or other such pin. Defaults to not checked. Not used at this time but may be used in future releases of the software.

**XYZ Position X:**

The prober X position for the pin. Read only.

**XYZ Position Y:**

The prober Y position for the pin. Read only.

**XYZ Position Z:**

The prober down position for the pin. Read only.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without saving any changes made.

**Help Button:**

Displays context sensitive help for the dialog.

---

## Group Pins Dialog

This dialog allows the settings of the current pin to be quickly added to any combination of pins of the component. This dialog is activated from the Pins dialog Group button.

**Pins Box:**

Displays all of the pin numbers and their names except the current in Pins dialog.

**Fields Filter:**

Enables the update of the Filter of the selected pins to the Filter of the current pin.

**Fields Channel:**

Enables the update of the Channel of the selected pins to the Channel of the current pin.

**Fields Tolerance:**

Enables the update of the Tolerance of the selected pins to the Tolerance of the current pin.

**Fields Delay:**

Enables the update of the Delay of the selected pins to the Delay of the current pin.

**Fields Max. Samples:**

Enables the update of the Max. Samples of the selected pins to the Max. Samples of the current pin.

**Fields Tracker Common Pins:**

Enables the update of the Tracker Common Pins of the selected pins to the Tracker Common Pins of the current pin.

**Note:** The Common Pins Per Range are set for other pins selected if either Tracker or Prober Common Pins is selected.

**Fields Prober Common Pins:**

Enables the update of the Tracker Common Pins of the selected pins to the Tracker Common Pins of the current pin.

**Note:** The common pins per range are set for other pins selected if either Tracker or Prober Common Pins is selected.

**Fields Ranges:**

Enables the update of the Ranges of the selected pins to the Ranges of the current pin.

**Fields Pulse Generator:**

Enables the update of the Pulse Generator settings of the selected pins to the Pulse Generator settings of the current pin.

**Fields Scan/Unique Pin:**

Enables the update of the Scan Pin /Unique Pin settings of the selected pins to the Scan Pin /Unique Pin settings of the current pin.

**Cancel/OK Button:**

Exits the dialog. The button is Cancel when dialog is displayed. After updating pins, the Cancel button becomes the OK button. Changes are made by pressing the Update button.

**Help Button:**

Displays context sensitive help for the dialog.

**Update Button:**

Updates all the selected pins with the selected settings from the current pin.

**Select All Button:**

Selects all the pins.

**Clear All Button:**

Unselects all of the pins.

# Control Menu

---

## Scan Component

The Scan Component command scans the current component on the Main Window. This is activated by selecting Scan Component on the Control menu.

First the Serial Number dialog is displayed. Enter the serial number of the board being scanned. If the component has instructions the Instructions dialog is being displayed. If not using a prober, the Connect dialog



is displayed. If shorts check is activated and there are shorted pins, the Shorted Pins dialog is displayed. Next depending on the component package and connection the Probing dialog, Scanning dialog, or Manual Connection dialog is displayed. If Opens Check is activated and open pins are found the Open Pins dialog is displayed. After scanning is completed, either the Component Scan Results dialog or the Save Signatures dialog is displayed. The Component Scan Results dialog is displayed if signatures have been stored for the component, otherwise the Save Signatures dialog is displayed. See Run Test Routine Tutorial for more information.

---

## Scan Section

The Scan Section command scans the components of the current section. This is activated by selecting Scan Section on the Control menu.

First the Serial Number dialog is displayed. Enter the serial number of the board being scanned. If the component has instructions the Instructions dialog is being displayed. If not using a prober, the Connect dialog is displayed. If shorts check is activated and there are shorted pins, the Shorted Pins dialog is displayed. Next depending on the component package and connection the Probing dialog, Scanning dialog, or Manual Connection dialog is displayed. If Opens Check is activated and open pins are found the Open Pins dialog is displayed. After scanning is completed, either the Component Scan Results dialog or the Section Scan Results dialog is displayed. The Component Scan Results dialog is displayed if signatures have been stored for the component, the component FAILED and Stop On Difference was selected. Otherwise, the Section Scan Results dialog is displayed. See Run Test Routine Tutorial for more information.

---

## Serial Number Dialog

The serial number dialog allows the entry of serial number before the first component of the section is scanned. Defaults to the previous serial number until troublesheet is cleared.

**Note:** To store signatures when Scan Section is selected after the first scan, Stop On Difference must be checked.

### **Serial Number:**

Allows the user to enter the serial number of the board. This could be found on a sticker on the board. If serial number is not found, enter something that distinguishes this board from others of the same type.

### **Technician:**

Enter the technician scanning the board.

### **Stop On Difference:**

Stops the section scan when encountering a different signature on a component. Then displays the Component Scan Results dialog.

### **Section Save:**

Automatically stores or merges the signatures of each component scanned depending on the selections below. There is no way to reverse this process so make sure the board scanned is known good. All signatures including opens will be stored or merged. When selected Stop on Difference has no effect.

### **Store On Scan:**

Saves an individual learn of the signatures during the scan of the section. If Scan Component was selected, this has no effect. Default is set in the Preferences dialog.

**Merge On Scan:**

Starts merged learn of the signatures during the scan of the section. If Scan Component was selected, this has no effect. Default is set in the Preferences dialog.

**Both:**

Saves and merges the signatures during the scan of the section. If Scan Component was selected, this has no effect. Default is set in the Preferences dialog.

**Section Scan Default Scan Order:**

When checked, all the components of the section are scanned in the order they are listed on the Main window. When unchecked, the Scan Order File is read to get the list of components to scan. The components are scanned in the order they are listed in the file. If Scan Component was selected, this has no effect.

**Scan Order File:**

Select the scan order file if the Default Scan Order is unchecked.

**Compare Priority Same Serial:**

Compares current scan with a stored signature with same serial number. Defaults to All Serials setting if no match is found on a component.

**Compare Priority Merged:**

Compares current scan with a merged stored signature. Defaults to All Serials if no merge is found on a component.

**Compare Priority All Serials:**

Compares current scan with all stored signatures. Defaults to merged if no individual learns are found on a component.

**OK Button:**

Exits the dialog and continues the Scan process.

**Cancel Button:**

Exits the dialog and the Scan process.

**Help Button:**

Displays context sensitive help for the dialog.

**Scan List Button:**

Displays the Scan List dialog that allows creation of Scan Order files to be used when Default Scan Order is unchecked.

---

## Instructions Dialog

The Instructions dialog displays the instructions for the current tree items. It is only displayed if Scan Instructions is checked in the Preferences dialog and the component being scanned has instructions. The dialog is displayed when Scan Section is selected when using a prober, only if, Pause Before Scanning is checked in the Advanced Component dialog.

**Tree Level System:**

Changes the instructions and the label above to the current system. The instructions are entered in the System dialog.

**Tree Level Board:**

Changes the instructions and the label above to the current board. The instructions are entered in the Board dialog.

**Tree Level Section:**

Changes the instructions and the label above to the current section. The instructions are entered in the Section dialog.

**Tree Level Component:**

Changes the instructions and the label above to the current component. The instructions are entered in the Component dialog.

**Continue Button:**

Exits the dialog and continues scanning.

**Cancel Button:**

Exits the dialog and stops scanning.

**Instructions Text Box:**

Text entered in the Instructions of the tree item selected.

**Note:** This dialog is also displayed when selecting system, Board/Revisions and sections on the Main Window. This can be disabled by unchecking Tree Instructions in the Preferences dialog.

---

## Shorted Pins Dialog

The Shorted Pins dialog displays the pins that are shorted during a scan. Shorted pin checking is enabled in the Advanced Component dialog.

**Note:** Shorted pins checking is only available with a ProTrack I/Scanner I or a 5100DS. All common connections must be removed during short checking.

**Display By Name:**

When checked, the pin names are displayed in the New Shorts and Stored Shorts List. When unchecked, the pin numbers are displayed.

**Display Only Differences:**

When checked, the New Shorts List only displays the shorts not in the Stored Shorts List.

**Component:**

Displays the name of the current component.

**New Shorts:**

Displays pins with shorts down the left column. Displays the pins that they are shorted to it separated by dashes ("-") to the right. Each shorted pin is only displayed once. (i.e. 1 shorted to 2 only creates one row).

**Stored Shorts:**

Displays pins with shorts down the left column. Displays the pins that they are shorted to it separated by dashes ("-") to the right. Each shorted pin is only displayed once. (i.e. 1 shorted to 2 only creates one row).

**Note:** The 5100DS scans for shorts in Low Range while ProTrack I/Scanner I uses settings of 2V, 50 ohms, and 200 Hz

**Continue Button:**

Exits the dialog and continues the scanning process.

**Cancel Button:**

Exits the dialog and stops scanning.

**Help Button:**

Displays context sensitive help for the dialog.

**Save Button:**

Save the shorted pin information to pass those shorted pins in following scans.

**Rescan Button:**

Scans the pins again looking for shorts. If no New Shorts are found the dialog is exited and scanning continues.

---

## Probing Dialog

The Probing dialog shows the status of a scan when prober is probing.

**Passes:**

Displays the number of scans performed on the component. The scanning performs a single pass on each component. Multiple passes occur when Rescan button is selected in the Section Scan Results dialog or Component Scan Results dialog and the component does not fail the scan. (re: number of times scanned during a rescan.)

**Component:**

Displays the name of the component being scanned.

**Range:**

Displays the range being scanned, if Show Pin/Range on Scan is checked on the Preferences dialog.

**Pin:**

Display only the current pin number being scanned, if Show Pin/Range on Scan is checked on the Preferences dialog.

**Signature:**

Displays the signature being digitized, if Show Signature with Prober is checked on the Preferences dialog.

**Cancel Button:**

Stops probing and exits the scan.

---

## Scanning Dialog

The Scanning dialog shows the status of a scan when cables are used with a 5100DS or ProTrack I/Scanner I.

**Component:**

Displays the name of the component being scanned.

**Passes:**

Displays the number of scans performed on the component. The scan performs a single pass on each component. Multiple passes occur when Rescan button is selected in the Section Scan Results dialog or Component Scan Results dialog and the component does not fail the scan.

**Pin:**

Display only the current pin number being scanned. If Show Pin/Range on Scan is checked on the Preferences dialog.

**Range:**

Displays the range being scanned. If Show Pin/Range on Scan is checked on the Preferences dialog.

**Common 1:**

Displays only the common pin 1 for the current pin/range in scanning.

**Common 2:**

Displays only the common pin 2 for the current pin/range in scanning.

**Channel:**

Displays only the channel used for scanning (ProTrack I/Scanner I).

**Cancel Button:**

Exits the dialog and the scan process.

---

## Manual Connection Dialog

The Manual Connection dialog steps through the scanning of a component with probes.

**Note:** When Using a ProTrack I/Scanner I, if the Scanner is not connected to the ProTrack I or is not turned on, this dialog will be displayed in place of the Scanning dialog.

**Component:**

Displays the name of the component.

**Pin:**

Displays the pin number being scanned.

**Range:**

Displays the range being scanned.

**Common 1:**

Displays the common pin 1 used in scanning. This must be connected by the operator.

**Common 2:**

Displays the common pin 2 used in scanning. This must be connected by the operator.

**Channel:**

Displays the channel used for scanning.

**Scan Pin Button:**

Tests the selected pin according the advanced settings for that component. The Foot Pedal connected to the ProTrack I can activate the Scan Pin.

**Finished Button:**

Replaces the Scan Pin button after the last pin has been scanned. Exits the dialog and continues the scanning process. This allows the rescanning of pins after the last one is scanned.

**Next >> Button:**

Used to change to the next pin without scanning. All pins must be scanned to complete the scan.

**<< Previous Button:**

Used to change to the previous pin without scanning. This allows pins to be rescanned if needed.

**Link Button:**

Selects the position in the Huntron CAD Tools if used.

**Cancel Button:**

Exits the dialog and stops the scanning process.

---

## Open Pins Dialog

The Open Pins dialog displays pins with open signatures that are not stored. Open Pin checking is enabled in the Advanced Component dialog.

**Component:**

Displays the current component name.

**# Opens Pins:**

Displays the number of open pins found.

**Open Pins:**

Displays the pins that have open signatures. Click on a pin name to rescan the pin for opens. An asterisk will be added to the end of the name to show it has been rescanned.

**Rescanned Signature:**

Displays the new signature when retesting the pin.

**Close Button:**

Exits the dialog. Prompts to save open pattern. Press Yes only if stored opens are uncorrected. Pins that after rescanning are not open, will not be stored as opens. The scan process will continue.

**Exit Scan Button:**

Exits the dialog and stops the scanning process.

**Help Button:**

Displays context sensitive help for the dialog.

**Update Button:**

Updates the stored open pins for the component. These are the pins that are supposed to be open due to the circuit design.

**Rescan Pin Button:**

This button is activated when an open pin is selected and manual connection hardware is used. When active the button can be pressed by pressing the Enter key. This help to free up hands for holding probes on the device being tested when used with the Foot Pedal.

**Instructions Button:**

This button displays the Instructions dialog to allow viewing of the System, Board Section and Component Instructions.

---

## Component Scan Results Dialog

The Component Scan Results dialog displays the Passed/Failed status of a Component Scan. This dialog is displayed at the end of a component scan or during a section scan, if Stop on Difference was checked in the Serial Number dialog. It is also accessed with scan on the Report menu if at the component level.

**Component:**

Displays the name of the component scan.

**Serial:**

Displays the serial number of the component scanned.

**Remove From Troubleshoot:**

If checked, results information is not stored. The default is not checked. If removed from the troubleshooting, the Troubleshoot Button is disabled.

**Next Button:**

Exits the dialog and goes to the next component.

**Cancel Button:**

Exits the dialog and remains at the current component.

**Help Button:**

Displays context sensitive help for the dialog.

**Troubleshoot Button:**

Displays the Troubleshoot dialog to view why the component failed.

**Signatures Button:**

Displays the View Signatures dialog to view all of the scanned signatures.

**Save Button:**

Displays the Save Signatures dialog to store the signatures.

**Rescan Button:**

Continuously rescans the component until it fails or the Cancel button is pressed.

---

## Save Signatures Dialog

The Save Signatures dialog allows the scanned signatures of the component to be stored or merged. This dialog is accessed from the Component Scan Results dialog.

**STORE** will create a “Signature set” for that component. You can store up to 10 signature sets per component. If a test signature matches one of these signature sets, it will be considered ‘passed’.

**MERGE MIN/MAX** will create a minimum/maximum signature that stores the upper and lower limits that a test signature will have to fall within to be considered “passed”.

**Note:** To store Signatures after the first scan: In the Serial Number dialog enter a new Serial Number and select Stop On Difference. The program will allow the saving of signatures of components that have "Different" signatures.

**Serial #:**

Serial number of the component scanned.

**Signatures Don't Store:**

Select to not store current signatures as an individual learn. Default is set in the Preferences dialog.

**Signatures Store:**

Stores current signatures in next available individual store position. Not valid if maximum (10) stores have been used. Default is set in the Preferences dialog.

**Signatures Replace:**

Replaces the selected Stored Serial Numbers Signatures with the new signatures.

**Signatures Stored Serial Numbers:**

Select the stored Serial Number for replacement.

**Signatures Don't Merge:**

Does not merge current signatures. Default is set in the Preferences dialog.

**Signatures Merge Min/Max:**

Merges the current signatures with the existing merges. Stores as a merge even if the first time merged. Default is set in the Preferences dialog.

**Signatures Overwrite:**

Replaces all the merged signatures with the new signatures.

**OK Button:**

Exits the dialog saving the signatures as selected.

**Cancel Button:**

Exits the dialog without saving the signatures.

**Help Button:**

Displays context sensitive help for the dialog.

**Signatures Button:**

Displays the View Signatures dialog to review the signatures before storing.



---

## Section Scan Results Dialog

The Section Scan Results dialog displays the Passed/Failed status of a section scan. It is also accessed with Scan on the Report menu if at the section level. To access Scan Component Results, select the component on the Main Window and then select Scan on the Report menu.

**Section:**

Displays the name of the section scanned.

**Serial:**

Displays the serial number of the section scanned.

**Close Button:**

Exits the dialog and the scanning process.

**Help Button:**

Displays context sensitive help for the dialog.

**Troubleshoot Button:**

Displays the Troubleshoot dialog to view the different signatures of the Section Scan.

**Signatures Button:**

Displays the View Signatures dialog to view all of the scanned signatures.

**Rescan Button:**

Continuously rescans the section until it fails or the cancel button is pressed.

**Print Button:**

Displays the Windows Print dialog to print a summary of the scan.

---

## Cont Last Scan

The Continue Last Scan command continues the Section Scan from the last component that had been scanned before the section scan was aborted.

---

## Stored Signatures

Displays the View Signatures dialog that allows the viewing of all of the stored signatures of the component.

---

## View Signatures Dialog

The View Signature dialog displays signatures of components. The current signatures are displayed in red unless changed in the Colors dialog. Stored signatures are displayed in green unless changed in the Colors dialog. This dialog is accessed from the Component Scan Results dialog, Section Scan Results dialog and Stored Signatures on the Control menu. If accessed from stored signatures, only stored signatures will be displayed.

**Section:**

Displays the name of the current section.

**Component:**

Select the name of a component to display its signatures. When changing components the Serial Number is maintained if it matches exactly with a serial number on the new component.

**Serial #:**

Select the serial number of the stored signatures to display. The list contains all the serial numbers of the scans stored and merge, if merged.

**Pin:**

The number of the pin for each signature.

**Ranges Fields:**

The name of the range for each signature.

**Signatures:**

Displays the current and selected stored signatures for the pin/range. Click on a signature to display the View Signature Zoom dialog.

**Vertical Scroll Bar:**

Changes the pins displayed. In Pin Mode, the buttons scroll the rows of signatures one at a time going to the next set of four pins. The thumbnail scrolls the rows two at a time going to the next set of eight pins. In Range Mode, the buttons scroll the rows of signatures one at a time to display the next pin. The thumbnail scrolls the rows two at a time to show the next two pins.

**Horizontal Scroll Bar:**

Changes the Ranges displayed. In Pin Mode, the buttons scroll the signatures to the next range. The thumbnail scrolls to the first and last ranges. In Range Mode, the scroll bar is not displayed.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Advanced Button:**

Displays the Advanced View Signatures dialog to change signature display settings.

**Print Button:**

Displays the Print dialog to print the signatures displayed.

---

## Signature Data Dialog

This Signatures Data dialog displays the digitized data for the current and stored signatures. This dialog is accessed from the View Signature Zoom dialog.

**Byte:**

The digitization point of the signature.

**Current "H" field:**

The horizontal data corresponding to the voltage of the Current signature at the byte position.

**Current "V" Field:**

The vertical data corresponding to the electrical current of the Current signature at the byte portion.

**Stored 1 "H" Field:**

The horizontal data corresponding to the voltage of the stored signature at the byte position. Minimum signature if merged.

**Stored 1 "V" Field:**

The vertical data corresponding to the electrical current of the stored signature at the byte position. Minimum signature if merged.

**Stored 2 "H" Field:**

The horizontal data corresponding to the voltage of the stored signature at the given byte position. Maximum signature if merged or else not used.

**Stored 2 "V" Field:**

The vertical data corresponding to the electrical current of the stored signature at the byte position. Maximum signature if merged and else not used.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Print Button:**

Displays the Select Print Options dialog.

---

## Select Print Options Dialog

This dialog displays the print options for printing Displayed Pins, All Pins, and Bad Pins. This dialog is accessed from the View Signature Zoom dialog.

**Displayed Pins Option:**

Prints the pins displayed on the dialog.

**All Pins Option:**

Prints all the pins displayed on the dialog.

**Bad Pins Option:**

Prints all the bad pins displayed on the dialog.

**OK Button:**

Displays the Windows Print dialog to print the signature data.

**Cancel Button:**

Exits the dialog.

---

## Scan List

Displays the Scan List dialog that allows the setting of the scan order of selected components in a section.

---

## Scan List Dialog

The Scan List dialog allows the setting of the scan order of selected components in a section. This dialog is activated from Scan List on the Control menu or the Scan List button on the Serial Number dialog.

To change the scan order, highlight the desired components and click the >> button to move them to the Scan Order side in the desired order or double clicking on the component name with the left mouse button. Multiple components can be moved by using the shift key to highlight multiple component names. The order of scanning can be changed by clicking on any component name and dragging it to the desired position. This scanning information is stored in the list file.

**Section Path:**

Complete file path of the directory used to store the scan list.

**List File:**

Name of the scan list file which must have the extension LST. File names may not exceed 8 characters. The user has the liberty to create as many different List files as needed. The default name is LIST.LST.

**Components:**

The components that have not been stored in the Scan List.

**Scan Order:**

Components selected to be stored in the current Scan List.

**OK Button:**

Saves current Scan List changes to the current specified file and returns to Main window.

**Cancel Button:**

Aborts current changes and returns to Main window.

**>> Button:**

Moves the selected component to the Scan Order side at the end of the list. If none are selected, then all remaining components are moved.

**<< Button:**

Moves the selected component to the Components side at the end of the list. If none are selected, then all remaining components are moved.

**Insert > Button:**

Inserts the selected component on the Components side before the component selected on the Scan Order side.

---

## Manual

The commands in the Manual menu display dialogs to control Trackers, Probers and Cameras.

The Trackers use the following:

5100DS Manual Control dialog

5500 Manual Control dialog

ProTrack I Manual Control dialog

The Probers use the Manual Prober dialog

The Camera uses the Manual Camera Control dialog for all Probers.

---

## 5100DS Manual Control Dialog

The dialog allows Tracker 5100DS to be used without creating a tree structure. This dialog is accessed by selecting Tracker 5100DS on the Manual menu of the Control menu. Or by pressing the Manual button in the Pins dialog.

**Scan Button:**

Scans through the pins and active ranges until pressed again.

**Store Button:**

Saves the signature for the current pin/range combination and displays it in the stored signature color.

**Next Pin >> Button:**

Changes to the next pin.

**<< Prior Pin Button:**

Changes to the previous pin.

**Ranges High:**

Checking enables the High range, selecting activates High range. The "S" shows if a signature is stored.

**Ranges Med2 Box:**

Checking enables the High range. The "S" shows if a signature is stored.

**Ranges Med1:**

Checking enables the High range, selecting activates High range. The "S" shows if a signature is stored.

**Ranges Low:**

Checking enables the High range, selecting activates High range. The "S" shows if a signature is stored.

**Pin:**

Sets the current pin.

**Filter:**

Sets the filter to Yes or No.

**Signature:**

Displays the current and stored signatures.

**Tol:**

Enter or select the tolerance that the current signature and the stored signature are compared with.

**Area:**

Displays the sum of the deviations between the current signature and the stored signature.

**Dev:**

Displays the largest deviation between the current signature and the stored signature.

**Real-Time:**

If checked, the current signature is continuously updated.

**Use Probes:**

If checked, the pins are disabled.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Setup Button:**

Displays the 5100DS Manual Setup dialog.

**Print Button:**

Displays the Windows Print.

**Data Button:**

Displays the Manual Signature Data dialog.

**Copy Button:**

Copies the signature(s) to the Windows clipboard.

**Cursor:**

If the cursor passes over the signature box and SigAssist™ has been activated on the Preferences dialog, the SigAssist™ tooltip will be displayed.

---

## 5100DS Manual Setup Dialog

The 5100DS Manual Setup dialog controls the settings for the 5100DS Manual Control. This dialog is accessed by pressing the Setup button on the 5100DS Manual Control dialog.

**Package:**

Select the package type of the component.

**# of Pins:**

Enter or select the number on pins of the component.

**Common 1:**

Enter or select common pin 1 for the component.

**Common 2:**

Enter or select common pin 2 for the component.

**Form Signature:**

Display the signatures as signatures.

**Form Waveform:**

Displays the signatures as voltage and current waveforms.

**Stored Style Off:**

Select to hide the stored signature.

**Stored Style Dotted:**

Select to display the stored signature as a dotted line.

**Stored Style Line:**

Select to displays the stored signature as a solid line.

**Scan Rate:**

Select the rate that the pins and ranges are scanned.

**Current Style Off:**

Select to hide the current signature.

**Current Style Dotted:**

Select to display the current signature as a dotted line.

**Current Style Line:**

Select to display the current signature as a solid line.

**On Top Test:**

Select to display the test signature on top of the stored signature.

**On Top Stored:**

Select to display the stored signatures on top of the current signature.

**Graticule Off:**

Select to hide the graticule.

**Graticule Dotted:**

Select to display the graticule as dotted lines.

**Graticule Line:**

Select to display the graticule as solid lines.

**OK Button:**

Exits the dialog saving the settings.

**Cancel Button:**

Exits the dialog without saving the settings.

**Help Button:**

Displays context sensitive help for the dialog.

---

## 5500 Manual Control Dialog

The 5500 Manual Control dialog allows a Tracker 5500 to be used without a tree structure. This dialog is accessed by selecting Tracker 5500 on the Manual menu of the Control menu or by pressing the Manual button on the Pins dialog.

**Scan Button:**

Scans through the active ranges until pressed again.

**Store Button:**

Saves the signature for the current range and displays it in the stored signature color.

**Ranges High:**

Checking enables the to High range. Selecting activates the High range.

**Ranges Med2:**

Checking enables the Med2 range. Selecting activates the Med2 range.

**Ranges Med1:**

Checking enables the to Med1 range. Selecting activates the Med1 range.

**Ranges Low:**

Checking enables the to Low range. Selecting activates the Low range.

**Filter:**

Select the filter to Yes or No.

**Signature:**

Displays the current and stored signatures.

**Tol:**

Enter or Select the tolerance that the current signature and the stored signature are compared with.

**Area:**

Displays the sum of the deviations between the current signature and the stored signature.

**Dev:**

Displays the largest deviation between the current signature and the stored signature.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Setup Button:**

Displays the 5500 Manual Setup dialog.

**Print Button:**

Displays the Windows Print dialog.

**Data Button:**

Displays the Manual Signature Data dialog.

**Copy Button:**

Copies the signature(s) to the Windows clipboard.

**Real-Time:**

If checked, the current signature is continuously updated.

---

## 5500 Manual Setup Dialog

The 5500 Manual Setup dialog controls the settings for the 5500 Manual Control. This dialog is accessed by pressing the Setup button on the 5500 Manual Control dialog.

**Common Connections COM1:**

Check to activate the COM1 banana jack. Any two common connections may be checked at one time.



**Common Connections COM2:**

Check to activate the COM2 banana jack. Any two common connections may be checked at one time.

**Common Connections COM3:**

Check to activate the COM3 banana jack. Any two common connections may be checked at one time.

**Common Connections COM4:**

Check to activate the COM4 banana jack. Any two common connections may be checked at one time.

**Form Signature:**

Display the signatures as signatures.

**Form Waveform:**

Displays the signatures as voltage and current waveforms.

**Stored Style Off:**

Select to hide the stored signature.

**Stored Style Dotted:**

Select to display the stored signature as dotted line.

**Stored Style Line:**

Select to display stored signature as solid line.

**Scan Rate Slow/Fast:**

Select the rate that the ranges are scanned.

**Current Style Off:**

Select to hide the current signature.

**Current Style Dotted:**

Select to display the current signature as a dotted line.

**Current Style Line:**

Select to display the current signature as a solid line.

**On Top Test:**

Select to display the signature on top of the stored signature.

**On Top Stored:**

Select to display the stored signature on top of the current signature.

**Graticule Off:**

Select to hide the graticule.

**Graticule Dotted:**

Select to display the graticule as a dotted line.

**Graticule Line:**

Select to display the graticule as a solid line.

**OK Button:**

Exits the dialog saving the settings.

**Cancel Button:**

Exits the dialog without saving the settings.

**Help Button:**

Displays context sensitive help for the dialog.

---

## ProTrack I Manual Control Dialog

The ProTrack I Manual Control dialog allows a ProTrack I to be used without creating a tree structure. This dialog is accessed by selecting ProTrack I on the Manual menu of the Control menu or by pressing the Manual button on the Pins dialog.

**Scan Button:**

Scans through the pins and active ranges until pressed again. Only scan pins if ProTrack I/Scanner I is used and Use Probes is unchecked.

**Store Button:**

Saves the signature for the current pin/range combination and displays it in the stored signature color.

**Next >> Pin Button:**

Changes to the next pin.

**<< Prior Pin Button:**

Changes to the previous pin.

**Range 1:**

Selecting activates range position 1. The "S" shows if a signature is stored. Checking enables position 1 range.

**Range 2:**

Selecting activates range position 2. The "S" shows if a signature is stored. Checking enables position 2 range.

**Range 3:**

Selecting activates range position 3. The "S" shows if a signature is stored. Checking enables position 3 range.

**Range 4:**

Selecting activates range position 4. The "S" shows if a signature is stored. Checking enables position 4 range.

**Version:**

Displays the ProTrack I firmware version.

**Channel:**

Select channel A, Alt to switch between the A and B, or channel B. When using SIP2X and DIP2X packages, channel selection is disabled.

**Pulse Width:**

Select the of the duty cycle percentage from 2% to 50% for the Pulse Generator signal.

**Pulse Level:**

Select the input Pulse Generator voltage level from -10 Volts to +10 Volts

**V:**

Select the voltage level of the current range position.

**R:**

Select the resistance of the range position.

**Hz:**

Selects the frequency of the current range position.

**+**:

Checking selects Pulse Generator positive polarity.

**-** :

Checking selects Pulse Generator negative polarity.

**DC:**

Checking selects DC Pulse Generator output. Unchecking selects pulsed output.

**Real-Time:**

Checking causes the current signature to be updated continuously until unchecked.

**Use Probes:**

Checking disables control of Scanner pins. This is only available if a Scanner is used.

**Tol:**

Enter or Select the tolerance used to compare the current and stored signatures.

**Area:**

Displays the sum of the deviation between the current and stored signatures.

**Dev:**

Displays the largest deviation between the current and stored signatures.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Setup Button:**

Displays the ProTrack I Manual Setup Dialog.

**Print Button:**

Displays the Windows Print dialog.

**Data Button:**

Displays the Manual Signature Data dialog.

**Copy Button:**

Copies the signature to the Windows clipboard.

**Advanced:**

Displays ProTrack I Manual Control Advanced dialog.

**Reset Button:**

Sets the current range to its default settings.

**Cursor:**

If the cursor passes over the signature box and SigAssist™ has been activated on the Preferences dialog, the SigAssist™ tooltip will be displayed.

---

## ProTrack I Manual Setup Dialog

The ProTrack I Manual Setup dialog controls the settings for ProTrack I Manual Control. This dialog is accessed by pressing the Setup button on the ProTrack I Manual Control dialog.

**Scan Rate:**

Select the speed at which the scanning changes pins/ranges.

**Scan:**

Pin/range checking scans all pins of one range before changing ranges. Scan range/pin checking scans all ranges of one pin before changing pins.

**Filter:**

Disabled.

**Form Signature:**

Display the signatures as signatures.

**Form Waveform:**

Displays the signatures as voltage and current waveforms.

**On Top Test:**

Select to display the test signature on top of the stored signature.

**On Top Stored:**

Select to display the stored signature on top of the current signature.

**Stored Style Off:**

Select to hide the stored signature.

**Stored Style Dotted:**

Select to display all stored signature as dotted line.

**Stored Style Line:**

Select to display all stored signature as solid line.

**Current Style Off:**

Select to hide the current signature.

**Current Style Dotted:**

Select to display the current signature as a dotted line.

**Current Style Line:**

Select to display the current signature as a solid line.

**Graticule Off:**

Select to hide the graticule.

**Graticule Dotted:**

Select to display the graticule as a dotted line.

**Graticule Line:**

Select to display the graticule as a solid line.

**Package:**

Select the package type of the component.

**# of Pins:**

Enter or select the number of pins on the component.

**Common 1:**

Enter or select Common Pin 1 for the component.

**Common 2:**

Enter or select Common Pin 2 for the component.

**OK Button:**

Exits the dialog saving the settings.

**Cancel Button:**

Exits the dialog without saving the settings.

**Help Button:**

Displays context sensitive help for the dialog.

---

## ProTrack I Manual Control Advanced Dialog

The ProTrack I Manual Control Advance dialog allows the setup of ranges. This dialog is accessed by pressing the Setup button on the ProTrack I Manual Control dialog.

**Position:**

Select the range position.

**Name Pull Down Bar:**

Select from stored Range Names containing pre-set Voltage, Resistance and Frequency ranges. Select the range for the range position.

**Voltage Display Box:**

Displays voltage level for the selected range.

**Resistance Display Box:**

Displays the resistance level for the selected range.

**Frequency Display Box:**

Displays the frequency level for the selected range.

**OK Button:**

Sets the selected range to the selected range position.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for dialog.

**Beep Button:**

Creates audible tone for testing sound feature of the ProTrack I.

---

## Manual Signature Data Dialog

The Manual Signature Data dialog shows the values for each digitized data points of the signature. This dialog is accessed by pressing the Data button on the ProTrack I Manual Control dialog, 5100DS Manual Control dialog or 5500 Manual Control dialog.

**Signature Data:**

Displays the Horizontal, Vertical and Sine wave difference at each point for the stored and current signatures. Also displays the difference between the stored and current signatures at each point.

**Filtered:**

Checked if the current/stored signature was filtered.

**Unstable:**

Checked if the current/stored signature was unstable.

**Glitch:**

Checked if the current/stored signature was glitch fixed.

**2 + sample:**

Checked if the current/stored signature was sampled more than twice.

**Difference:**

Displays the largest difference between the stored and current signatures.

**Stored Sine Diff.:**

Displays the largest sine difference for the stored signature.

**Current Sine Diff.:**

Displays the largest sine difference for the current signature.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Print Button:**

Displays the Windows Print dialog to print signature data.

---

## Manual Prober Dialog

The Manual Prober dialog allows control of the prober. This dialog is accessed by selecting Prober on the Manual menu of the Control menu.

**Version:**

Displays the version of the Prober firmware.

**Travel:**

Enter the travel distances for the X, Y, and Z directions.

**Position:**

Displays the current X, Y and Z positions.

**Left:**

Select to move the probe to the left.

**Right:**

Select to move the probe to the right.

**Fwd:**

Select to move the probe towards the front of the prober.

**Bkwd:**

Select to move the probe toward the back of the prober.

**Up:**

Select to move the probe up.

**Down:**

Select to move the probe down.

**Location:**

Select to move the probe to the position.

**Move X Button:**

Moves the probe in the selected X direction, the selected X travel distance. If location is selected the probe moves the X location.

**Move XY Button:**

Moves the probe in the selected X and Y directions, the selected X and Y travel distances. If location is selected the probe moves to the X and Y location.

**Move Y Button:**

Moves the probe in the selected Y direction, the selected Y travel distance. If location is selected the probe moves to the Y location.

**Move Z Button:**

Moves the probe in the selected Z direction, the selected Z travel distance. If location is selected the probe moves to the Z location.

**Z Home:**

Moves the probe up to the home position.

**Motor On:**

Turns the prober motors on.

**Motor Off:**

Turns off the prober motors.

**Limit Switch On:**

Turns the prober Limit Switches on.

**Limit Switch Off:**

Turns the limit switch off.

**Close Button:**

Exits the dialog and the manual controls.

**Help Button:**

Displays context sensitive help for the dialog.

**Camera Button:**

Displays the Manual Camera Control dialog.

**XYZ Home Button:**

Moves the probe up, back and right to the home position.

---

## Manual Camera Control Dialog

The Manual Camera Control dialog allows manual testing of the camera. To activate, select Camera on the Manual menu under the Control menu.

**Note:** Set the camera to LIVE when trying to adjust the focus, intensity, and exposure. See Camera Problems for more information.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Zoom Button:**

Enlarges the view in the center of the camera image.

**Live/Still Button:**

The Live Button sets the mode where the camera image is continuously updated and is very useful when changing camera settings. The Still Button selects a mode where the image is updated only when the Image Button is pressed. This button is not available when using a Prober with a color camera (it is always in Live mode).

**Image Button:**

Updates the image on the computer monitor. This button is not available when using a Prober with a color camera (it is always in Live mode).

**Set Exposure Button:**

Updates the exposure setting to the value displayed below. This value is used for all camera images throughout the software. This button is not available when using a Prober with a color camera.

**Set Exposure:**

Allows for the entry of a numerical exposure setting. The smaller the number, the darker the image may appear. Conversely, larger exposure settings can lighten camera images by allowing more light to illuminate the image. The default exposure setting is 200. If the camera image is too light/dark and the intensity control on the Prober cannot correct the problem, change the exposure setting. This button is not available when using a Prober with a color camera.



---

# Align

Align is the command used to setup two points on the board-under-test for future reference. See Align dialog for more information.

Since the board corner fits in one corner of the Prober, it will be impossible to position the next board in exactly the same location. PCBs are not precisely sheared at their edges so two boards will not be mounted in exactly the same location. Therefore it will be extremely difficult to maintain position repeatability using data from a known-good board.

The software solves this problem by forcing you to align the board using two alignment points which should be diagonal to each other. The alignment points could be datum marks, solder joints or holes. The selection of these points is left to the user.

Once the XY locations of those points are stored, you simply have to align the board-under-test before testing. The Z axis mechanism will move to the first alignment point and if the center of the camera image is not exactly superimposed over the center of the alignment point, move the mouse cursor to the center to set the new position. The Z Axis mechanism will then move to the second alignment point for a similar adjustment. The software is designed to compensate for the offset between the stored alignment board positions and the board-under-test.

**Note:** The two alignment points should be as far apart as possible. Make sure that the two points are diagonal from each other. Select alignment points that are approximately 0.6 in (15mm) away from the rear and the right walls.

---

## Align Dialog

The Align dialog allows the alignment of sections and the storing of section alignment points. The Align dialog is activated from Align on the Control menu. If the section has not been aligned, the Align dialog will be displayed when other functions requiring alignment are activated. See Align Instructions for step by step instructions for aligning a board.

**Note:** There must be an Alignment Name before Align function can be activated. When aligning a board, it is beneficial to use two diagonal points with a large distance between to ensure better alignment. Also, the Alignment Points must be 600 mils from all edges and 1000 mils apart.

**Note:** Run Camera Offset from the Control menu before setting up new alignment points.

**Note:** Follow the prompts at the bottom of the dialog.

**Current X Position:**

Displays the current X position of the alignment point or the mouse cursor (if mouse cursor is on image).

**Current Y Position:**

Displays the current Y position of the alignment point or the mouse cursor (if mouse cursor is on image).

**Stored X Position:**

Displays the stored X Position of the alignment point.

**Stored Y Position:**

Displays the stored Y position of the alignment point.

**First Button:**

Changes to the first alignment point settings and moves to the first alignment point.

**Back Button:**

Moves the specified travel distance toward the back (top of image) of the probing area.

**Left Button:**

Moves the specified travel distance toward the left of the probing area.

**Home Button:**

Returns the probe tip to the home position located at the coordinates (0,0) in the XY plane with the probe tip up.

**Right Button:**

Moves the specified travel distance toward the right of the probing area.

**Last Button:**

Changes to the last alignment point settings and moves to the last alignment point.

**Forward Button:**

Moves the specified travel distance toward the front of the probing area.

**Set Button:**

Sets the alignment point to the current position of the camera cross-hair.

**Realign Button:**

Allows setting of new alignment points the alignment points which will replace the stored (old) alignment points. See Teach Alignment for step by step instructions.

**Travel:**

Displays and allows editing of the travel distance.

**Pin:**

Specifies the pin and allows the user to switch to another pin. The pin name is displayed just to the right side of the pin number.

**# Pins:**

Always displays 2 for the number of alignment pins.

**Camera Image:**

Displays the current image of the prober camera. The camera will move to the position selected by clicking the left mouse.

**OK Button:**

Exits the dialog and accepts the alignment values.

**Cancel Button:**

Exits the dialog without making any changes.

**Help Button:**

Displays context sensitive help for the dialog.

**Zoom Button:**

Enlarges a section in the center of the Camera Image and can be used to more accurately obtain XY locations.

**Live/Still Button:**

The Live button causes the camera image to be continuously updated. The Still button causes the image to be updated only when the probe moves. Use this for adjusting the camera light intensity. This button is not available when using a Prober with a color camera (it is always in Live mode).

**Warning:** Do not adjust the camera focus in this dialog or Teach dialog. Only adjust the focus at the beginning of Camera Offset.

**Save Image Button:**

Replaces the stored image of the alignment point with the current image.

**View PCB Button:**

Displays all the pin positions of the section, including the highlighted alignment points.

**Original/Current Button:**

The Original Button views the previously saved alignment point camera image. The Current Button displays the current camera image for the current prober location.

---

## Teach

Teach is the command used to teach the location of the component pins. The user teaches the software by the use of aligning the camera crosshairs over the necessary pins. Necessary pins are those pins needed to teach the software the package layout. See Teach dialog for more information.

First set up the system, board, section and component information. The board-under-test is then clamped into the appropriate slot of the prober clamping system. The Camera Offset procedure needs to be done in order to setup the distance between the center of the camera image and the probe tip. Two alignment points are selected on the board-under-test and are stored.

The Teach procedure does not require you to teach every pin of standard component package types like SIP's, DIP's and 4 sided surface mounted devices. For SIP's (Single-Inline-Packages), where pins are in a single row spaced at a specific distance, only the first and last pins need to be setup. For DIP's (Dual-Inline-Packages), where component pins are in two rows, only the first, last and the corner (or diagonal) pins need to be setup. The software will then automatically calculate the other pin locations. For surface mounted devices, where there are 4 rows of pins in a rectangular shape (Multi Package), the software allows you to group each row and specify the number of pins in that group. Then setup the XY locations for the first and last pin of that group and then all the other pins locations are automatically setup for that group. Then do the other 3 rows in a similar way. Pin locations of components can also be setup one at a time.

After the Teach procedure has been completed for all the components of a section, you can scan the section to store the component signatures. Scanning another board will then automatically compare to the learn signature and produce a Troubleshoot report on the differences. Analyzing the report will assist you in troubleshooting the board.

---

## Teach Dialog

The Teach dialog allows setting of the XY positions of each pin of a component. It also, allows access to the Teach Height dialog for setting up and down probe positions. The Teach dialog is activated with Teach on the Control menu.

**Note:** Follow the prompts at the bottom of the dialog.

**Note:** If the Camera image is not clear see Camera Problems.

For step by step instructions to perform a teach of a component, select one of the following:

Teach DIP, SIP, Both and Front Package Instructions

Teach Probe Package Instructions

Teach Multi Package Instructions

**Component Drop Box:**

Displays the components in the selected section. Selecting a different component will save the positions of the current component.

**Current X Position Field:**

Displays the current X position of the camera or the mouse cursor (if mouse cursor is on image).

**Current Y Position Field:**

Displays the current Y position of the camera or the mouse cursor (if mouse cursor is on image).

**Stored X Position Field:**

Displays the stored X Position of the camera.

**Stored Y Position Field:**

Displays the stored Y position of the camera.

**First Button:**

Changes to the first pin settings and moves to the first pin.

**Back Button:**

Moves the specified travel distance toward the back (top of image) of the probing area.

**Previous Button:**

Moves to the previous pin .

**<< Left Button:**

Moves the specified travel distance toward the left of the probing area.

**Home Button:**

Returns the probe to the home position located at the coordinates (0,0) in the XY plane with the probe tip up.

**Right >> Button:**

Moves the specified travel distance toward the right of the probing area.

**Last Button:**

For a DIP or DIP2X package changes to the last pin settings and moves to the pin across from pin 1. For Both packages, changes to the last pin and moves to the pin diagonal from pin 1.

**Fwd Button:**

Moves the specified travel distance toward the Front (bottom of image) of the probing area.

**Next Button:**

Changes to the next pin settings and moves to the next pin.

**Diagonal Button:**

Changes the pin number to half the number of pins plus one (ie. pin 11 of 20 pin component). For a DIP, DIP2X package, this pin is diagonal from pin 1. For a Both package, this pin is across from pin 1.

**Set Button:**

Sets the alignment point to the current position of the prober. This is also accomplished when clicking the left mouse button on a point on the camera image.

**Set All Button:**

For SIP, SIP2x, Front packages, sets all the other pin positions based on the positions of the First and Last pins. For DIP, DIP2x and Both packages, sets all the other pin positions based on the positions of the First, Last and Diagonal pins.

**Reset Button:**

Sets all of the pin positions to zeros.

**Travel:**

Displays and allows editing of the travel distance. Pressing the Left, Right, Back and Fwd buttons will move the camera the specified travel distance.

**Auto Travel Update:**

Checking allows the travel to be updated to the appropriate distances for 100 mil through hole components. Unchecking leaves the travel the same while setting pin positions.

**Pin:**

Allows the current pin to be changed. Displays the name for the pin, just to the right. The default name is the pin number.

**Pkg:**

Displays the component package type.

**# Pins:**

Displays the number of pins on the component.

**Camera Image:**

Displays the current image of the prober camera. Click left mouse button on the image to center the camera over that point. To make adjustments with the light intensity, first click the Live button so changes may be immediately observed.

**OK Button:**

Exits the dialog and saves any changes made.

**Cancel Button:**

Exits the dialog without making any changes.

**Help Button:**

Displays context sensitive help for the dialog.

**Zoom Button:**

Enlarges a section in the center of the Camera Image and can be used to more accurately obtain XY locations or set positions with the mouse.

**Live/Still Button:**

The Live button causes the camera image to be continuously updated. The Still button causes the image to be updated only when the probe moves. Use this for adjusting the camera light intensity. This button is not available when using a Prober with a color camera (it is always in Live mode).

**Warning:** Do not adjust the camera focus in this dialog or Align dialog. Only adjust the focus at the beginning of Camera Offset.

**View PCB Button:**

Displays all of the pin positions of the section including the highlighted alignment points.

**Height Button:**

Displays the Teach Height dialog to allow settings of the probe up and down positions.

---

## Teach Height Dialog

The Teach Height dialog allows the setting of the probe up and down positions for component pins. The Teach Height dialog is activated from the Height button on the Teach dialog. The Teach dialog is activated with Teach on the Control menu. See Teach Height Instructions for step by step instructions on performing a teach height.

The down position is setup with the probe is making contact with the pin on the board. The up position is setup so that the probe moves up to this position instead of moving all the way up to the home position. When the probe moves from the last pin of the component to the first pin of the next component, the probe will move all the way up to the Z home position. This can be disabled from the Preferences dialog.

**Note:** Follow the prompts at the bottom of the dialog.

**Component:**

Displays the components in the selected section.

**Pin:**

Displays the pin numbers of the selected component. Displays the name for the specified pin. The default name is the pin number.

**Stored Up:**

Displays the stored up position. This is the up position the probe will move to when moving from pin to pin. This position should always be higher than the tallest component on the board.

**Stored Down:**

Displays the stored down position. This is the down position the probe will move to when making contact with a pin.

**Probe Offset:**

Displays the probe offset setting from Camera Offset. This compensates for the length of the probe tip.

**Current Position:**

Displays the current position of the probe tip.

**Travel:**

Set the up/down travel distance of the probe.

**Home Button:**

Returns the probe tip up to the home position.

**Stored Up Button:**

Moves to the stored up position. This position should always be higher than the tallest component on the board.

**^Up Button:**

Moves up the selected travel distance.

**vDown Button:**

Moves down the selected travel distance.

**Stored Down Button:**

Moves to stored down position. This is the down position the probe will move to when making contact with a pin.

**Section Up Button:**

Sets the stored up position which is used for all components in the section to the current position of the probe. This position should always be higher than the tallest component on the board.

**Pin Down Button:**

Sets the down position of the current pin to the current position of the probe.

**Comp Down Button:**

Sets the down position of all of the pins of the current component to the current position of the probe.

**Section Dn Button:**

Sets the down position of all of the pins of all of the components in the current section to the current position of the probe.

**Reset Button:**

Sets the down position for all pins of the current component to zero .

**Signature:**

Graphically displays the current signature data from the connected hardware.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without making any changes.

**Help Button:**

Displays context sensitive help for the dialog.

**Check Button:**

Performs a quick check to verify height settings. This moves the probe tip down on each pin like it was being scanned.

---

## Prober Init. Home

Moves the probe to the back right corner and initializes location references. Be sure nothing is in the way of the probe before selecting.

---

## Camera Offset

Sets the offset distance between the camera and probe tip. Also sets the length of the probe tip. See Camera Offset dialog for more information.

This procedure is necessary for setting the distance between the camera center and the probe tip. This procedure also sets up the maximum down movement for each slot of the prober clamping system. A separate Camera Offset routine is necessary for each slot.

The basic process involves moving the camera to a clear sharp visible point on the board-under-test or the supplied Offset board. When this position is setup using the camera image, the probe tip needs to touch the center of this point. Setting this point will allow the software to calculate the distance between the camera center and the probe tip.

If this routine is not accurately done, the probe will miss the test points setup during the Teach process. The offset point on the board-under-test can be any visible point on the board. Choose cross-hair markings of small test points for the offset image.

Once the Camera Offset is done, it is not necessary to change it unless under the following circumstances:

- 1 A new probe tip is used or changed to a different size. The camera offset routine will allow you to setup the maximum downward movement so that a longer probe tip will not damage or crash into the board-under-test.
- 2 A part on the prober related to the belts, Z axis assembly, or Camera lens was changed or serviced. These parts affect the distance between the probe tip and the center of the camera lens.
- 3 The camera lens moves accurately to each test point, but the probe tip consistently misses test points by the same distance. The camera offset routine will allow you to setup the correct offset for accurate placement of the probe tip.
- 4 You are testing a board with many fine pitched devices. Since accuracy is critical on surface mount boards, it is advisable to use a clear sharp "corner" type image on this board to do the camera offset routine. Any point on the board can be utilized as the offset point. If a camera offset point is not available, use a small sticker with a printed cross-hair pattern on it, and apply it to the board-under-test. Ensure that the center is clearly visible in the camera image and when the probe tip touches the center.
- 5 The board under test is in a different slot of the prober.

---

## Camera Offset Dialog

The Camera Offset dialog allows the setting of the distance between the Camera crosshairs and the center of the probe tip. The Camera Offset dialog is activated with Camera Offset on the Control menu.

**Note:** Be sure to perform a Camera Offset any time a different slot of the prober is used.

**Note:** To adjust the Z Probe Offset only, move to the desired location and press the "Set Prober" button, then move the probe tip down until contact is made at the same location as was in the crosshairs. Press "Z Set" and then the "OK" button to complete Z Offset. This should only be done if you only want to change the maximum down position of the probe.

**Note:** If the Camera image is not clear, see Camera Problems.



See Camera Offset Instructions for step by step instruction on performing a camera offset.

**Note:** Follow the instructions at the top of the dialog.

**Warning:** Only adjust the camera focus at the beginning of camera offset and not in the Align dialog or the Teach dialog.

**^Back Button:**

Moves the specified travel distance toward the Top of the probing area.

**<< Left Button:**

Moves the specified travel distance toward the left of the probing area.

**XY Home Button:**

Returns the probe tip to the home position located at the coordinates (0,0) in the XY plane with the probe tip up.

**Right >> Button:**

Moves the specified travel distance toward the right of the probing area.

**vForward Button:**

Moves the specified travel distance toward the bottom of the probing area.

**XY Set Button:**

In Set Camera Mode, sets the X and Y camera positions for calculating the camera offset. In Set Prober Mode, sets the X and Y probe positions for calculating the camera offset.

**XY Travel:**

Displays and allows editing of the travel distance.

**Camera Offset X:**

Displays the X axis offset.

**Camera Offset Y:**

Displays the Y axis offset.

**Camera Image:**

Displays the current image of the prober camera. The probe tip will move to the selected position by left mouse clicking on the position.

**Z Travel:**

Specifies the distance the probe tip will travel in the up or down direction. The maximum travel is 300 mils and the minimum value is 8 mills. This field is used only when calculating the probe offsets.

**^Up Button:**

Moves the probe tip up the Z travel distance.

**vDown Button:**

Moves the probe tip down the Z travel distance.

**Z Home Button:**

Returns the probe tip to the home or up position.

**Z Set Button:**

Sets the offset to account for the length of the probe tip. When setting this value, the probe tip should be lowered until it first makes contact with the board with the Z Travel set to 8 mils.

**OK Button:**

Exits the dialog saving any changes made.

**Cancel Button:**

Exits the dialog without making any changes.

**Help Button:**

Displays context sensitive help for the dialog.

**Zoom Button:**

Enlarges a section in the center of the Camera Image.

**Live/Still Button:**

The Live button causes the camera image to be continuously updated. The Still button causes the image to be updated only when the probe moves. Use this for focusing the camera and adjusting the camera light intensity. This button is not available when using a Prober with a color camera (it is always in Live mode).

**Set Prober/Set Camera Button:**

Switches modes between the Set Prober and Set Camera positions to calculate the offset. Set Prober Mode allows the setting of the position with the probe tip on the offset board point. Set Camera allows the setting of the position with the camera cross-hair on the offset board point.

**Board Button:**

Moves the probe tip to the offset location on the supplied Offset board.

---

## Maintenance

The commands in the Maintenance menu display dialogs to assure the hardware is functioning within specified parameters using the following:

**Analog Diagnostics.** Analog Diagnostics dialog allows control of internal control lines of the Tracker 5100DS, Tracker 5300 and Tracker 5500 for diagnostic purposes.

**Calibration Check.** The Calibration Check dialog allows the verification of the Tracker 5100DS, Tracker 5300 and Tracker 5500 calibration.

**Hardware Calibration Check.** The Hardware Calibration dialog allows the Tracker 5100DS, Tracker 5300 and Tracker 5500 to be calibrated.

**Performance Test.** The Performance Test uses the Performance Test dialog to verify performance of the Tracker 5100DS and Tracker 5500.

**Relay Test.** The Relay Test dialog allows the verification of the 5100DS pin relays.

**ProTrack I Diagnostics.** The ProTrack I Diagnostics runs the ProTrack I Diagnostics Program. See help in the Diagnostics Program.

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# Analog Diagnostics Dialog

The Analog Diagnostics dialog should only be used when directed by Technical Support for a Tracker 5100DS, Tracker 5300 or a Tracker 5500. This dialog is accessed by selecting Analog Diagnostics on the Maintenance menu on the Control menu.

**Mode Normal:**

Selects the normal mode. This is the Default.

**Mode Diagnostic:**

Selects the diagnostic mode.

**Waveform Sine:**

Selects the sinewave output. This is the Default.

**Waveform Triangle:**

Selects the triangle wave output.

**Signature Style Off:**

Does not display the signature.

**Signature Style Dotted:**

Displays the signature as a dotted line.

**Signature Style Line:**

Displays the signature as a solid line.

**Graticule Off:**

Does not display the graticule.

**Graticule Dotted:**

Displays the graticule as a dotted line.

**Graticule Line:**

Displays the graticule as a solid line.

**Controls Real-Time:**

When checked,, the signature and data fields are updated continuously. If unchecked, the signature and fields are only updated when a setting is changed. Default is checked.

**Controls Short:**

When checked, Relay(s) are activated to create a short. If unchecked, relay(s) are deactivated to create an open. Default is not checked.

**Controls Tracker:**

When checked, the Tracker output signal at the range generator is enable. If unchecked, it's disabled. Default is checked.

**Controls Signal:**

When checked, the Tracker signal at the power amplifier is enable. If unchecked, it's disabled. Default is checked.

**Offset Enable:**

When checked, the offset is checked before every signature and applied to the signature. If unchecked, the offset is not checked and not applied to the signature. Default is checked.

**Offset Horz.:**

Displays the horizontal offset value. Read only.

**Offset Vert.:**

Displays the vertical offset value. Read only.

**Signature:**

Displays the current signature. Also can display the graticule.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Print Button:**

Displays the Windows Print dialog.

**Data Button:**

Displays the Manual Signature Data dialog with the data of the current signature.

**Copy Button:**

Copies the signature box and all contents to the Windows clipboard.

**Ranges High Radio Button:**

Sets the High range.

**Ranges Med2 Radio Button:**

Sets the Medium 2 range. This is the default range.

**Ranges Med1 Radio Button:**

Sets the Medium 1 range.

**Ranges Low Radio Button:**

Sets the Low range.

---

## Calibration Check Dialog

The Calibration Check dialog allows the verification of a Tracker 5100DS, Tracker 5300 or a Tracker 5500 calibration. This dialog is accessed by selecting Calibration Check on the Maintenance menu on the Control menu.

**Open Horizontal High:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Horizontal Med2:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Horizontal Med1:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Horizontal Low:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Horizontal Offset:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Vertical High:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Vertical Med2:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Vertical Med1:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Vertical Low:**

Displays the calibration data in green if OK and red if out of calibration.

**Open Vertical Offset:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Horizontal High:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Horizontal Med2:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Horizontal Med1:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Horizontal Low:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Horizontal Offset:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Vertical High:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Vertical Med2:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Vertical Med1:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Vertical Low:**

Displays the calibration data in green if OK and red if out of calibration.

**Short Vertical Offset:**

Displays the calibration data in green if OK and red if out of calibration.

**Results Label:**

Displays "5100DS IN CALIBRATION" in green or "5100DS OUT OF CALIBRATION" in red.

Displays "5300 IN CALIBRATION" in green or "5300 OUT OF CALIBRATION" in red.

Displays "5500 IN CALIBRATION" in green or "5500 OUT OF CALIBRATION" in red.

**Note:** If the unit is OUT OF CALIBRATION, perform a Hardware Calibration and then run the Calibration Check again. If failures still exist contact Technical Support.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Test Button:**

Performs the calibration check and averages the data from three readings.

**Print Button:**

Displays the Windows Print dialog to print the results of the Calibration Check.

---

## Hardware Calibration Dialog

The Hardware Calibration dialog allows a Tracker 5100DS, Tracker 5300 or a Tracker 5500 to be calibrated. This dialog is accessed by selecting Hardware Calibration Check on the Maintenance menu on the Control menu.

**Note:** If the unit fails the Hardware Calibration, contact Technical Support.

**Step Label:**

Displays the step number and description text for steps 1-10.

**Instructions Label:**

Displays the instruction for the user for steps 1-10.

**Next >> Button:**

Proceeds to the next step of the calibration.

**<< Previous Button:**

Goes back to the prior step of the calibration.

**Cancel Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Note:** The Unit was calibrated at normal operating temperature. For best results, warm up the unit with the cover on, for three hours and run Calibration Check again. If still out of calibration, perform this calibration while warm.

---

## Performance Test Dialog

The Performance Test dialog allows the verification of the performance for a Tracker 5100DS, Tracker 5300 or a Tracker 5500. This dialog is accessed by selecting Performance Test on the Maintenance menu on the Control menu.

**Step Label:**

Displays the step number and description text for steps 1-20.

**Instructions Label:**

Displays the instruction for the user for steps 1-20.

**Prompt Label:**

Displays the description of the value to be entered for steps 1-20.

**Value Field:**

Allows entry of the value of the measurement for steps 1-20.

**Units Label:**

Displays the unit of measure for the value field for steps 1-20.

**Results List:**

List the results of the test.

**Next Button:**

Proceeds to the next step of the test.

**Previous Button:**

Goes back to the prior step of the test.

**Exit Button:**

Exits the dialog.

---

## Relay Test Dialog

The Relay Test dialog allows the verification of the performance of the pin relays of a Tracker 5100DS. This dialog is accessed by selecting Relay Test on the Maintenance menu on the Control menu.

**Results:**

List the relays that are open or shorted. For information on fixing failed relays contact Technical Support.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Test Button:**

Checks each relay and updates its check box.

**Print Button:**

Displays the Windows Print dialog to print the results of the Relay Test.

---

# ProTrack I Diagnostics

The ProTrack I Diagnostics allows the verification of the performance of the ProTrack I and Scanner I. This program is accessed by selecting ProTrack I Diagnostics on the Maintenance menu on the Control menu.

**SS#:**

This is the Silicon Serial Number of the ProTrack I.

**F/W Version:**

This is the firmware version of the ProTrack I.

**LRFP Version:**

This is the Front Panel controller version of the ProTrack I.

**Port Address:**

Displays the Address of the parallel port where the ProTrack I was found (USB is displayed if a USB connection is made).

**View Log Button:**

This displays the Diagnostics Log file with Windows Write or WordPad.

**Scanner:**

This is checked when a Scanner is turned ON and connected to the ProTrack.

**Foot Switch:**

This is Checked when a Foot Switch is connected to the ProTrack I and it is pressed.

**H/W Check Button:**

Displays the Hardware Check which performs the Data Check, Phase Check, Res Check, Volts Check, Hz Check, Pulse Check and the Scanner Test if the Scanner is connected.

**Loop Calc Button:**

Displays the ProTrack I Diagnostics Loop Calc after performing other diagnostics automatically. This creates Loop Compensation settings for the ProTrack I and connected hardware. This is not available when Diagnostics are started using the icon.

**Read ProTrack Button:**

This gets the user configuration and calibration data from the ProTrack I. The Read ProTrack button will retrieve calibration and user settings from the ProTrack I unit and store them as a text file on the connected computer. It is recommended this be performed when setting up the system for the first time. The file generated should be stored in a safe location.

**Write ProTrack Button:**

This restores previously read user configuration and calibration data to the ProTrack I. The Write ProTrack button will send the calibration and user information to the ProTrack I unit. This can be performed if it is suspected that the information stored in the FLASH memory of the ProTrack I has been corrupted.

**Data Check Button:**

Displays the Data Check dialog. This checks the ability of the PC and the ProTrack I to send and receive data.

**Volts Check Button:**

Displays the Volts Check dialog. This checks the accuracy of the ProTrack I voltages.



**Hz Check Button:**

Displays the Hz Check dialog. This checks the sampling clock of the ProTrack I Digitizer.

**Pulse Check Button:**

Displays the Pulse Check dialog. This checks the pulse generator outputs.

**Phase Check Button:**

Displays the ProTrack I Diagnostics Phase Check dialog. This checks digitizing signature functions.

**Scanner Test Button:**

Displays the ProTrack I Diagnostics Scanner Test dialog. This checks the Huntron Scanner I relays.

**Res Check Button:**

Displays the Res Check dialog. This checks the internal range resistance's.

**Meter/Frequency Check Button:**

Displays the Meter/Frequency Check dialog. This checks the internal meter of the ProTrack I.

**Sig Check Button:**

Displays the Sig Check dialog. This checks the consistency of signatures. This button is not available for ProTracks with KJ1 or KJ2 serial number prefixes.

**Close Button:**

This exits the window.

**Help Button:**

Displays context sensitive help for the dialog.

Contact Technical Support for more information.

---

## ProTrack I Diagnostics Phase Check Dialog

The ProTrack I Diagnostics Phase Check allows the verification of the Channel Relays are working correctly, the firmware Shift algorithm is working correctly, the Digitizer Delay is working correctly, YSel is working correctly and PSC is working correctly. This dialog is accessed by pressing the Phase Check button in ProTrack I Diagnostics selected from the Maintenance menu on the Control menu.

**Close Button:**

Exits the window

**Cancel Button:**

Stops the Check if in progress

**Check Button:**

Starts the selected checks

**Copy Button:**

Copies the results to the clipboard

**Help Button:**

Displays context sensitive help for the dialog.

**Shorting Relay Check:**

Test relays K34 and K36

**Channel Relay Check:**

Test relay K35

**Shift Algorithm Check:**

Test the data shift

**Digitizer Delay Check:**

Test the digitizer delay

**YSel Check:**

Test the loop trim control

**YRef Check:**

Measures the YRef signal

**Sine Offset (OA, OB):**

Measures the OA and OB signals

**PSC Check:**

Test the loop measuring

**Show Passed:**

Displays the results of the tests that pass when checked

**Voltage:**

Displays the voltage being used for testing

**Frequency:**

Displays the frequency being used for testing

**Resistance:**

Displays the resistance being used for testing

**Shift:**

Displays the shift being used for testing

**PSC:**

Displays the PSC being used for testing

**Passes:**

Enter the number of times to perform the tests

Contact Technical Support for more information.

---

## ProTrack I Diagnostics Scanner Test Dialog

The ProTrack I Diagnostics Scanner Test allows the verification of the operation of all relays of the

Scanner I connected to the ProTrack I. This dialog is accessed by pressing the Scanner Test button in ProTrack I Diagnostics selected from the Maintenance menu on the Control menu.

**Test Range: 10V, 200 ohm, 200hz:**

Displays the ProTrack range settings used to verify relays.

**List Box:**

Displays messages about the status of the check. When relays fail they are displayed by their PCB reference designator for easy replacement.

**Test Pins (Opens):**

Enables the Scanner Test with Test Pin only activated. Looks for shorted Common Relays. Control disabled while checking. Default Checked.

**Test/Common Pins (Shorts):**

Enables the Scanner Test with Test Pin and Common Pins activated. Looks for open Test and/or Common Relays. Control disabled while checking. Default Checked.

**Common Pins (Opens):**

Enables the Scanner Test with Common Pin only activated. Looks for shorted Test Relays. Control disabled while checking. Default Checked.

**Close Button:**

Exits the Window. Control disabled while checking.

**Check Button:**

Perform Test Pin Check if Check Box Checked.

Perform Test/Common Pin Check if Check Box Checked.

Perform Common Pin Check if Check Box Checked.

**Continuous Button:**

Check the relays as with Check Button continuously until a failure occurs or the Cancel Button is pressed. when a failure occurs, completes the current scan of 64 pins before quitting. Control disabled while checking.

**Cancel Button:**

Stops checking or continuous checking. Control disabled when not checking.

**Help Button:**

Displays context sensitive help for the dialog.

**Test Pin:**

Displays the Test Pin currently active.

**Common Pin:**

Displays the Common Pin currently active.

**Pass:**

Displays the pass number for continuous checking.

**Test Pin Check:**

Sets each Common pin and verifies that the path is open. This checks for stuck test relays.

**Test/Common Pin Check:**

Sets each Test pin and Common pin and verifies the resistance of the contacts.

**Common Pin Check if Check:**

Sets each Test pin and verifies that the path is open. This checks for stuck common relays.

Contact Technical Support for more information.

---

## ProTrack I Diagnostics Loop Calc

The ProTrack I Diagnostics Loop Calc compensates the signature on the CRT screen for cable and equipment capacitance. This capacitance will appear in the form of a loop on the CRT screen. This dialog is accessed by pressing the Loop Calc button in ProTrack I Diagnostics selected from the Maintenance menu on the Control menu.

**Note:** When the Loop Calc button is pressed Data Check, Res Check, Volts Check, Hz Check, Phase Check and if a Scanner I is connected the ScannerTest Check are performed. They all must PASS before Loop Calc can be performed.

**Warning:** If you do not use the supplied BNC cables, "Max(see Help)\*\*\*" messages can be expected between the time stamp messages. These messages should be frequency continuous up to F39. They indicate that the loops could not be compensated for at the voltage, resistance and frequency values displayed. If these Loop Calc values are used in the software, data will not be compatible with other hardware platforms. Any "Max(see Help)\*\*\*" messages that occur when using the supplied BNC cables or that are not continuous up to F39 are an indication of a ProTrack I hardware problem. Make sure front panel ProTrack I cables and the Prober probe tip are not connected to devices under test.

### **Message Box:**

This box displays the status messages of the loop calculation process.

### **Close Button:**

Exits the dialog.

### **Cancel Button:**

Stops the calculation process.

### **Calc Button:**

Starts the calculation process.

### **Help Button:**

Displays context sensitive help for the dialog.

### **Copy Button:**

Copies the contents of the message box to the Windows Clip Board.

### **Voltage:**

Displays the voltage being used.

### **Frequency:**

Displays the frequency being used.

### **Resistance:**

Displays the resistance being used.

The Loop Calc screen will display only three of the four choices open to you. You can click on either "Close", "Calc" or "Help" buttons. The "Cancel" button will be grayed out. If you click on the "Calc" button, you will be

prompted to make sure your hardware is properly configured and then Loop Calc will begin automatically. It will take about ten minutes to run. The "Cancel" button will be active at this time and you may click on this to end the calculation. The upper left of the screen will display a time stamp indicating when Loop Calc was started.

Once the Loop Calculation has been completed, the software will prompt to store the LoopCalc information in The ProTrack I. Storing this information in the ProTrack I will allow it to be used in Local mode in the current configuration. The software will add a second time stamp below the first and the "Close", "Calc" and "Help" buttons will be active. The "Cancel" button will gray out. At the same time there will be a loop on the ProTrack I CRT.

Click on the "Close" button. This will return you to the ProTrack I Diagnostics screen. Click on the "Close" button here. This will return you to the Huntron Workstation Main Window

Reset your ProTrack I: first press the "Help" button and hold it while you press and hold the other three named buttons on the front panel (Auto, Scan and Menu) and finally release all four. Wait until the ProTrack I boot screen disappears.

Select the Settings menu, and then click on the Hardware Settings menu item.

**Note:** The Loop Calculation should not have to be run again until you change the hardware configuration of the ProTrack I (add a Prober, Scanner, etc.).

Contact Technical Support for more information.

# Report Menu

---

## Scan Report

Scan displays the Section Scan Results dialog if the Section is selected in the Main window or displays the Component Scan Results dialog if an individual component was selected.

---

## Troubleshoot

Displays the Troubleshoot dialog to view failed signatures of a scan.

---

# Troubleshoot Dialog

The Troubleshoot dialog allows the display of failed signatures of scans.. This dialog is accessed by selecting Troubleshoot on the Report menu or the Troubleshoot button on the Section Scan Results Dialog or the Component Scan Results Dialog.

During Scanning, the troubleshoot tracks components tested and untested. The Troubleshoot components are sorted by the Area of the pin that failed the worst. Troubleshoots will be kept per section until the section is scanned again. Troubleshoots may be recalled for review or to finish testing. If Temp Path is TS Path is not checked in the Preferences dialog, troubleshoots are included when the board is backed up.

**Board:**

Displays the name of the board.

**Rev:**

Displays the revision level of the board.

**Serial Number:**

Displays the Serial Number of the board scanned.

**Component:**

Select the name of the component to review.

**Type or Part No.:**

Displays the type of component.

**Replacement or NSN:**

Displays the replacement for the component. Read only. Click on to display the View Signatures dialog.

**Remove from Troubleshoot:**

When selected, the remove from troubleshoot box hides the current component troubleshoot result when closing the troubleshoot. The troubleshoot can be recovered in the Component Scan Results dialog by unchecking Remove From Troubleshoot.

**Pin:**

Displays the pin name.

**Range:**

Displays the range name. Defaults to the worst range.

**Area:**

Displays the sum of the deviations for the signatures.

**Dev:**

Displays the highest deviation for the signatures.

**Signature:**

Displays the current and stored signature. Click on signature to display the View Signature Zoom dialog.

**Vertical Scroll Bar:**

Moves to next or previous worst two pins of the component.

**Horizontal Scroll Bar:**

Moves the next or previous highest/worst range.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Advanced Button:**

Displays the Advanced Troubleshoot Settings dialog.

**Print Button:**

Displays the Windows Print dialog to print the troublesheet.

**Summary Button:**

Displays the Troubleshoot Summary dialog.

**Store ASCII Button:**

Displays the Store ASCII dialog to store the troublesheet in an ASCII delimited file.

---

## View Signature Zoom Dialog

The View Signature Zoom dialog displays the signature of one Pin/Range at a time. The signature is four times larger than on the View Signatures dialog. This dialog is accessed by clicking on a signature on the View Signatures dialog or the Troubleshoot dialog.

**Section:**

Displays the name of the current section.

**Serial #:**

Displays the serial number of the stored signatures.

**Component:**

Displays the name of the component.

**Description Field:**

Not used at this time.

**Pin:**

Select a pin to view its signatures.

**>> Button:**

Changes to the next pin.

**<< Button:**

Changes to the previous pin.

**Range:**

Select the range to view its signatures.

**>> Button:**

Changes to the next range.

**<< Button:**

Changes to the previous range.

**Signature:**

Displays the current and selected stored signatures.

**Area:**

Displays the sum of the deviations between the current signature and the stored signature.

**Dev:**

Displays the largest deviation between the current signature and the stored signature.

**Tol:**

Displays the tolerance the current signature and the stored signatures were compared with.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

**Advanced Button:**

Displays the Advanced View Signatures dialog to change signature display settings.

**Print Button:**

Displays the Windows Print dialog to print the signatures displayed.

**Data Button:**

Displays the Signature Data dialog that show each data point for the current signatures.

**Copy Button:**

Copies the signature to the Windows clipboard.

**Link Button:**

Selects the Component pin position in the Huntron CAD Tools.

**Manual Button:**

Allows control of the hardware.

**Hardware Connect:**

If checked, the hardware is connected to the pin under test and the current signature is updated.

**Hardware Filter:**

If checked, the signatures from the hardware are filtered if needed. Only active if hardware Connect is checked. The ProTrack I does not support the filters.

**Hardware Update Fields:**

If checked, the Status fields of the signatures are updated when the current signature is updated. Only active if Hardware Connect is checked.

**Cursor:**

If the cursor passes over the signature box and SigAssist™ has been activated on the Preferences dialog, the SigAssist™ tooltip will be displayed.

---

## SigAssist™

SigAssist™ provides a tool tip containing signature values.



Helps determine proper range selection

Assists in Teaching/Learning Signature Analysis

Compare values to see the amount of change

The values consist of Resistance, Capacitance, Power, Forward Breakdown Voltage, and Reverse Breakdown Voltage. The formulas use the signature data and the range parameters to calculate the approximate values. Values for signatures that are close to opens or shorts will be shown as either +R+V+F or -R-V-F to indicate that the range parameters need to be increased or decreased to calculate values.

Resistance is calculated when the signature is a sloping line that is not close to vertical or horizontal.

Capacitance is calculated when the signature is capacitive elliptical that is not close to a vertical or horizontal line. It will also not calculate capacitance if the signature contains dominating resistance.

Power is always calculated

Forward and reverse breakdown voltages will be calculated for diode and zener type signatures. The voltages will be calculated when the vertical portion of the signature is not close to a short or open.

SigAssist™ is available in the View Signature Zoom Dialog, the ProTrack I Manual Control dialog, and 5100DS Manual Control dialog. SigAssist™ can be turned On/Off in the Preferences dialog.

---

## Troubleshoot Summary Dialog

The Troubleshoot Summary dialog displays results of the scan in quantities of components. This dialog is accessed from the Summary Button on the Troubleshoot dialog.

**Components Total Scanned:**

The number of components scanned in the section.

**Components Not Scanned:**

The number of components in the section not scanned.

**Components Removed:**

The number of components in the section removed from the troubleshoot.

**Components Passed:**

The number of components in the section that passed.

**Components Failed:**

The number of components in the section that failed.

**Close Button:**

Exits the dialog.

**Help Button:**

Displays context sensitive help for the dialog.

---

## Store ASCII Dialog

The Store ASCII dialog allows the change of settings to create a delimited ASCII file. This dialog is accessed from the Store ASCII button on the Troubleshoot dialog.

**Warning:** Do not use the selected ASCII Delimiter character in any of the other fields.

**Technician:**

Enter the name of the Technician doing the scan.

**Serial #:**

Contains the serial number of the board being tested.

**ASCII Delimiter:**

The character that separates fields in a ASCII data file. Delimiter characters found in entered fields will be change to and '\_'. If '\_' is used for the delimiter then they will be replaced with an "-".

**# Comp to Store:**

Select the quantity of the worst failed components to append to the file.

**File Path\Name:**

The file name and location for the ASCII delimited file.

**Problem:**

Enter a short description of the problem.

**Solution:**

Enter a short description of the solution to the problem.

**Include Pin Data:**

Changes the format for the output to Pin ASCII from Standard ASCII.

**OK Button:**

Exits the dialog and appends the data to the ASCII determined file.

**Cancel Button:**

Exits the dialog without appending the data.

**Help Button:**

Displays this context sensitive help for the dialog.

**Browse Button:**

Displays a Windows Save As dialog for selecting the desired File Name\Path.

**Standard ASCII Troubleshoot File Format**

This format and sample are shown with a comma used as the delimiter.

Section, Serial#, Date, Tech, Time, Problem, Solution, Comp, Type, Comp, Type, Comp, Type, Comp, Type

Sample of the two worst failing components (U18 has no type):

AT-GPIB,serial,11-26-1997,KC,07:21,problem,solution,U18,,U6,Relay

#### **Pin ASCII Troubleshoot File Format**

This format and sample are shown with a comma used as the delimiter.

System, Board, Rev, Section, Serial#, Date, Tech, Time, Problem, Solution, Comp, Type, Pin Name, R1Area, R1Dev, R2 Area, R2Dev, R3Area, R3Dev, R4Area, R4Dev

Sample of 24 pin component (pin 12 is passed):

SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,1,547,57,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,2,523,56,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,3,689,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,4,689,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,5,689,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,6,689,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,7,688,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,8,690,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,9,689,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,10,690,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,11,1083,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,12,0,0,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,13,519,55,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,14,1081,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,15,475,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,16,484,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,17,491,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,18,460,52,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,19,475,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,20,483,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,21,484,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,22,494,54,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,23,1083,90,0,0,0,0,0,0  
SYSTEM,BOARD,REV,SEC,Serial,11-13-1997,KC,08:35,Problem,Solution,U18,,24,302,39,0,0,0,0,0,0

#### **Automatic Pin ASCII Troubleshoot Logging**

To write Pin ASCII information to the file after every component is scanned, add the following key to Windows Registry:

HKEY\_CURRENT\_USER\Software\Huntron\Huntron Workstation (32Bit)\General Settings\TS ASCII Auto Store=Comp:Pin

To write Pin ASCII information to the file for every scanned component of the section, add the following key to Windows Registry:

HKEY\_CURRENT\_USER\Software\Huntron\Huntron Workstation (32Bit)\General Settings\TS ASCII Auto Store=Sect:Pin

The Problem and Solution fields will always be blank. Other Windows Registry keys that apply to automatic logging include:

HKEY\_CURRENT\_USER\Software\Huntron\Huntron Workstation (32Bit)\General Settings\Delimiter=44

HKEY\_CURRENT\_USER\Software\Huntron\Huntron Workstation (32Bit)\General Settings\Def Technician=KC

HKEY\_CURRENT\_USER\Software\Huntron\Huntron Workstation (32Bit)\General Settings\Components in TS ASCII File=9999

HKEY\_CURRENT\_USER\Software\Huntron\Huntron Workstation (32Bit)\General Settings\TS ASCII File Path=C:\TSDATA

Make sure to set the Components in TS ASCII File to a high number (i.e. 9999) to make sure all components are logged.

---

## Board Report

The Board Report displays the Report window with the boards of the current system. The following items are included in the report: system name and path, board name, revision, and unit.

---

## Section Report

The Section Report displays the Report window with the sections of the current board. The following items are included in the report: system name and path, board name and revision, section name, slot, side, and alignment name.

---

## Component Report

The Component Report displays the Report window components of the current section. The following items are included in the report: system name and path, board name and revision, section name, component name, package type, number of pins, short-check, connection, open-check, depth, scan order, pause, and type.

---

## Pin Report

The pin report menu item has two sub-menu items Pin Complete Report and Pin Partial Report.

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## Pin Complete Report

The Pin Complete Report displays the Report window with the pins of the current component. The following items are included in the report: system name and path, board name and revision, section name and component name, pin numbers, pin names, net name, channel, Tracker common pins 1&2, Prober common pins 1&2, Delay, filter tolerance, max., range (1-4), pulse, type, level, duty, scan and unique setting. See also Pin Partial.

---

## Pin Partial Report

The Pin Partial Report displays the Report window with the pins of the current component. The following items are included in the report: system name and path, board name and revision, section name and component name, pin numbers, pin names, net name, channel, Tracker common pins 1&2, Prober common pins 1&2, Delay, filter tolerance, max., range (1-4). See also Pin Complete.

---

## BOM

The Bill Of Materials displays the Report window with the component types in the section. The following items are included: quantity, type, component name, replacement, supplier, and system and board information.

---

## Report Window

The Report window displays the text of the Board, Section, Component, Pin Complete, Pin Partial, and BOM Reports.

**File Save As:**

Displays the Windows Save As dialog to store the report as a text file.

**File Print:**

Displays the Windows Print dialog to print the report.

**File Exit:**

Exits the Report Window.

# Utility Menu

---

## Security

Displays the Security dialog to allow control of user access.

---

# Security Dialog

The Security dialog allows modification of user security settings. This dialog is accessed with Security on the Utility menu.

**Note:** Security changes are not updated until the program is restarted. Areas where the user is granted access must be selected individually.

**User:**

Select a user or enter the name of a new user.

**Password:**

Enter the user's password.

**Categories:**

Once the user names and passwords have been entered, five main categories can be selected. These include: file, control 1, control 2, utilities, and settings.

**Access:**

**File:**

Access to Backup, Restore, Convert and Import is restricted by unchecking.

**Control 1:**

Access to Scan Component, Save Signatures dialog, View Signatures dialog, Signature Data dialog, Remove From Troubleshoot, Troubleshoot, Scan Section, Manual Control, Align, Align Store/Realign is restricted by unchecking.

**Control 2:**

Access to Teach, Camera Offset and Maintenance is restricted by unchecking.

**Utilities:**

Access to security is restricted by unchecking.

**Settings:**

Access to Preferences, View Signatures, Troubleshoot, Hardware and Color settings is restricted by unchecking.

**OK Button:**

Exits the security section and saves changes. The button becomes disabled after entering a user name until a password has been entered.

**Cancel Button:**

Exits the dialog without making any changes.

**Help Button:**

Displays context sensitive help for the dialog.

**Rename Button:**

Allows the user name to be changed.

**Delete Button:**

Removes a user from security.

**Note:** The user to be deleted must have the Utilities Security checked before deleting.

---

## Change Password

Displays the Change Password dialog to allow change of the current users password.

---

## Change Password Dialog

The Change Password dialog allows the current use password to be changed. This dialog is accessed with Change Password on the Utility menu.

**Old Password:**

Enter the old password for the current/selected user.

**New Password:**

Enter the new password.

**Confirm New Password:**

Re-enter the new password to confirm change in password. If the new password and the confirm password entries do not match, the password will not be updated.

**OK Button:**

Exits the dialog and saves the changed password.

**Cancel Button:**

Exits the dialog without changing the password.

# Settings Menu

---

## Preferences

Displays the Preferences dialog allowing control of the scan default settings.

---

# Preferences Dialog

The Preference dialog allows the user to set preferences on how the software operates. This dialog is accessed from Preferences on the Settings menu.

## **Hardware Connect on Zoom:**

Checking enables Connect in the View Signature Zoom dialog.

## **Force Alignment @ Section Change:**

Checking forces the user to align each time a section or board is changed. If unchecked, allows the user to change sections with the same alignment points without aligning.

## **Display Signature Boxes:**

Checking displays a box around signatures.

## **Audio:**

Checking enables computer speaker or sound card beeps throughout the software.

## **Show Signature with Prober:**

Displays the signature in the Probing dialog when pins are being probed with the prober.

## **Show Pin/Range on Scan:**

Checking displays the current pin number and test range in the Scanning dialog and Probing dialog.

## **Temp Path is TS Path:**

Checking uses the path in the Temp Path field for troublesheet files.

**Note:** If this is checked, troublesheets will not be backed up with boards.

## **Z Home Between Components:**

Checking causes the probe tip to move up to the home position when moving between components. Unchecking causes the probe tip to go to the Section Up position when moving between components.

## **Show Tree Instructions:**

Checking enables System, Board and Section Instructions dialog to be displayed when a tree item is selected on the Main Window.

## **Show Scan Instructions:**

Checking enables Section and Component Instructions dialog to be displayed in the Instructions dialog when scanning. Component instructions are not displayed when scanning a section with a prober unless Pause Before Scanning is checked in the Advanced Component dialog.

## **Skip Invalid Ranges:**

Checking disables errors for invalid ranges unless a pin is encountered with no valid ranges. After Scan Section, a list of components that had no valid ranges will be displayed.

## **Store Signatures:**

Checking sets the default for the Serial Number dialog and Save Signatures dialog to store signatures. Unchecking. sets the default for the Serial Number dialog and Save Signatures dialog to not store signatures.

## **Merge Signatures:**

Checking sets the default for the Serial Number dialog and Save Signatures dialog to merge signatures. Unchecking. Sets the default for the Serial Number dialog and Save Signatures dialog to not merge signatures.



**5100DS Comp. Reset:**

Checking maintains the same Hardware reset functions as in versions of software before 2.1. Unchecking disables some of the resets that takes place when scanning improving testing time.

**Activate SigAssist:**

Checking enables the SigAssist™ tool tip to be displayed when the cursor is over the signature box in the View Signature Zoom dialog, ProTrack I Manual Control dialog or 5100DS Manual Control dialog.

**Compare Priority Same Serial:**

Compares current scan signatures with a stored signatures of same serial number. Defaults to All Serials setting if no matching serial number is found. Sets the default for the Serial Number dialog compare priority.

**Compare Priority Merged:**

Compares current scan signatures with a merged signatures. Sets the default for the Serial Number dialog compare priority.

**Compare Priority All Serials:**

Compares current scan with all stored signatures. Sets the default for the compare priority.

**Normal Compare Resolution:**

Normal setting compares 20 data points during comparison of stored and current signatures.

**High Compare Resolution:**

High setting uses all 100 data points during comparison of stored and current signatures. This takes slightly more time and creates larger Areas.

**Short Resistance Minimum:**

Defines the minimum value for Short checking with the Shorted Pins dialog. Default is 0.

**Short Resistance Maximum:**

Defines the maximum value for Short checking with the Shorted Pins dialog. Default is 5.

**Temp Path:**

The path that's used when "Temp Path is TS Path" is checked. The default is the Windows Temp Path.

**Backup/Restore Temp Path:**

The path that is used for temporary files during Backup and Restore. The default is the Windows Temp Path.

**Default Ranges:**

Checking and selecting a range sets the default range for component adds and Mnaual Control.

**Default Range 1:**

The check box activates or deactivates Range 1 for creation of new components and Manual Tracker Control. Set the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information.

**Default Range 2:**

The check box activates or deactivates Range 2 for creation of new components and Manual Tracker Control. Set the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Ranges for more information.

**Default Range 3:**

The check box activates or deactivates Range 3 for creation of new components and Manual Tracker Control. Set the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information.

**Default Range 4:**

The check box activates or deactivates Range 4 for creation of new components and Manual Tracker Control. Set the range by selecting the Voltage, Resistance and Frequency from the drop down lists. See Select Range for more information.

**Auto-Range:**

Controls the default of Auto-Range a new component is created. Checking the box enables Auto-Range.

**OK Button:**

Exits the dialog and saves the changes until the program is terminated.

**Cancel Button:**

Exits the dialog without saving the changes.

**Help Button:**

Displays the context sensitive help for the dialog.

**Save Button:**

Exits the dialog and saves the changes permanently.

**Defaults Button:**

Returns all preferences to factory settings, except the range settings which are read from the registry, which matches the last save.

---

## View Signatures Settings

Displays the Advanced View Signatures dialog allowing the setup of how signatures are displayed.

---

## Advanced View Signatures Dialog

The Advanced View Signatures dialog allows the user to set preferences on how the signatures are displayed. This dialog is accessed from View Signatures on the Settings menu.

**Form Waveforms:**

Displays the signature as a waveform. Waveforms display the Voltage signal in the stored signature color and the Current signal in the current signature color.

**Form Signatures:**

Displays the signature as a signature.

**Mode Range:**

Displays all the signatures of a pin on one line in the View Signatures dialog.

**Mode Pin:**

Displays eight signatures of a range\worst range in the View Signatures dialog.

**Stored On Top:**

Displays the stored signature or waveform over the current signature or waveform.

**Current On Top:**

Displays the current signature or waveform over the stored signature or waveform.

**Order Numeric:**

Displays the signatures in order by the pin number starting with pin 1 and the ranges in order 1 to 4.

**Order Difference:**

Displays the signatures starting with the most different pin found when comparing current and stored signatures. Ranges are order 1 to 4.

**Order Range Difference:**

Displays only the failed signatures starting with the most different pin in its most different range.

**Stored Style Off:**

Hides the stored signature or waveform.

**Stored Style Dotted:**

Displays the stored signature or waveform as a dotted line.

**Stored Style Line:**

Displays the stored signature or waveform as a solid line.

**Current Style Off:**

Hides the current signature or waveform.

**Current Style Dotted:**

Displays the current signature or waveform as a dotted line.

**Current Style Line:**

Displays the current signature or waveform as a solid line.

**Graticule Off:**

Hides the graticule.

**Graticule Dotted:**

Displays the ends of the graticule lines.

**Graticule Line:**

Displays the graticule as solid lines.

**OK Button:**

Exits the dialog and saves the changes until the program is terminated.

**Cancel Button:**

Exits the dialog without saving the changes.

**Help Button:**

Displays the context sensitive help for the dialog.

**Save Button:**

Exits the dialog and saves the changes permanently.

---

## View Troubleshoot Settings

Displays the Advanced Troubleshoot Settings dialog allowing for signatures on the Troubleshoot dialog to be set.

---

## Advanced Troubleshoot Settings Dialog

The Advanced Troubleshoot Settings dialog allows setting of signature displays features for the Troubleshoot dialog. This dialog is accessed from View Troubleshoot on the Settings menu.

**Form Waveforms:**

Displays the signature as a waveform. Waveforms display the voltage signal in the stored signature color and the current signal in the current signature color.

**Form Signatures:**

Displays the signature as a signature.

**Stored On Top:**

Displays the stored signature or waveform over the current signature or waveform.

**Current On Top:**

Displays the current signature or waveform over the stored signature or waveform.

**Stored Style Off:**

Hides the stored signature or waveform.

**Stored Style Dotted:**

Displays the stored signature or waveform as a dotted line.

**Stored Style Line:**

Displays the stored signature or waveform as a solid line.

**Current Style Off:**

Hides the current signature or waveform.

**Current Style Dotted:**

Displays the current signature or waveform as a dotted line.

**Current Style Line:**

Displays the current signature or waveform as a solid line.

**Graticule Off:**

Hides the graticule on the graph.

**Graticule Dotted:**

Displays the graticule on the graph as dotted lines.

**Graticule Line:**

Displays the ends of the graticule lines.

**OK Button:**

Exits the dialog and saves the changes until the program is terminated.

**Cancel Button:**

Exits the dialog without saving the changes.

**Help Button:**

Displays the context sensitive help for the dialog.

**Save Button:**

Exits the dialog and saves the changes permanently.

---

## Hardware Settings

Displays the Hardware Settings dialog to allow connection of the hardware.

---

## Hardware Settings Dialog

The Hardware Settings dialog is where the hardware selection is made. This dialog is accessed from Hardware Settings on the Settings menu.

**Note:** Connect cables from the hardware to the computer. Make sure the hardware is turned on.

**Note:** Make sure when changing Probers to perform a Camera Offset.

**Note:** On a first time connection to a ProTrack I hardware combination, a warning will be displayed to run Loop Calc from the ProTrack I Diagnostics on the Maintenance menu on the Control menu.

**Note:** The ProTrack settings will auto detect a USB ProTrack before attempting to connect using the parallel port selected.

### Hardware Settings Example

To setup a ProTrack I/Scanner I perform the following:

- 1 Select Test Hardware ProTrack I/Scanner I
- 2 Select Parallel Port 278hex.
- 3 Press the Save button to always start the software with this hardware.
- 4 If this is the first time connection, a warning will be displayed to run Loop Calc from the ProTrack I Diagnostics on the Maintenance menu on the Control menu.

**Test Hardware:**

Selects the hardware to be used for scanning.

**Parallel Port 378h:**

Selects the computer parallel printer port 378hex:.

**Parallel Port 278h:**

Selects the computer parallel printer port 278hex:.

**Parallel Port 3BCh:**

Selects the computer parallel printer port 3BChex:.

**ComPort COM 1:**

Selects the computer serial communications port COM1:.

**ComPort COM 2:**

Selects the computer serial communications port COM2:.

**ComPort COM 3:**

Selects the computer serial communications port COM3:.

**ComPort COM 4:**

Selects the computer serial communications port COM4:.

**Correction Steps:**

Selects the number of times the Huntron Access prober attempts to correct its position. The default is 3. The Huntron Access only attempts to correct if it is not in the correct position. The higher the setting the more accurate the Access will be, but it may take longer for it to position itself. Recommend settings are from 0 to 9.

**Cover Install:**

Informs the software that the cover is installed on a prober.

**OK Button:**

Exits the dialog and saves the changes until the program terminates.

**Cancel Button:**

Exits the dialog without saving any changes.

**Help Button:**

Displays the context sensitive help for the dialog.

**Ext Setting Button:**

Displays the External Settings dialog for external prober connections.

**Save Button:**

Exits the dialog and saves the changes permanently.

---

## External Settings Dialog

The External Settings dialog allows the configuration of the Prober Trigger In and Trigger Out control lines. This dialog is accessed from the Hardware Settings dialog. See Using External Testers with a Prober for more information.

The Trigger Out Signal is sent to the external equipment to indicate that the probe tip is down on the pin. At this point the external equipment can perform tests on the pin. If using the Trigger Out only, the prober moves to the next pin when the duration times out.

Electrical specifications for the Trig-In and Trig-Out

TTL Compatible.

Trig-In Low voltage: -0.5 V Min, 0.8 V Max.

Trig-In High voltage: 2 V Min, 5 V Max.

Trig-Out Low voltage: 0.4 V Max

Trig-Out High voltage: 3 V Min. This output can sink or source 2.5 mA.

Rise Time of input and output is 20ms from the time the instruction is sent to the HS-1 controller.

The Trigger In Signal is input from the external equipment to the prober. The Trigger in looks for active state from the external during the duration. The prober moves to next pin when trigger pulse is encountered.

**Trigger Out Active State High:**

Trigger Out signal is normally Low and goes High when the probe tip is down.

**Trigger Out Active State Low:**

Trigger Out signal is normally High and goes Low when the probe tip is down.

**Trigger Out Duration:**

Enter the duration of the Trigger OUT in milli-seconds.

**Trigger In Active Check Box:**

Activates the Trigger In settings.

**Trigger In Active State High:**

Trigger In is normally Low and goes High when activated.

**Trigger In Active State Low:**

Sets the Trigger In is normally High and goes Low when activated.

**Trigger In Delay:**

Enter the duration to check for the Trigger In pulse in milli-seconds.

---

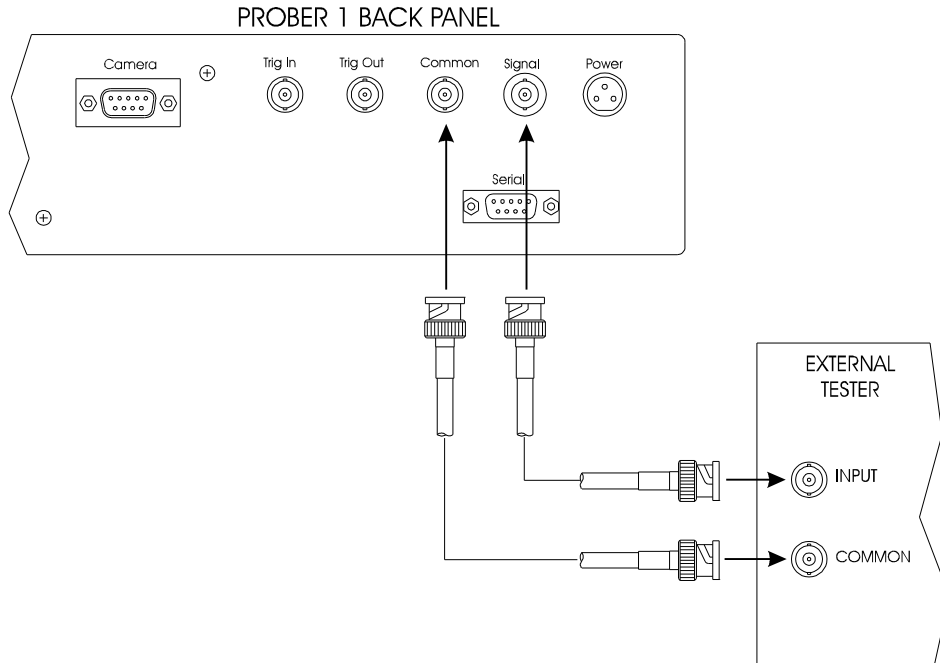
## Using External Testers with a Prober

Any tester capable of applying or monitoring test signals via the test probe can be connected to the prober. To accomplish this, some custom software has to be developed in order to make the testing automatic.

The hardware connection to the prober is via the Signal and Common BNC connectors at the back panel of the prober. The external tester's signal is connected to the Signal BNC connector and the return or Common connection for a typical two wire measurement is connected to the Common BNC connector.

This type of connection automatically routes the external tester's signal to the spring loaded test probe on the Z axis. The board-under-test Common is connected to the tester's Common terminal.

The external tester could be a digitizing Oscilloscope, RCL Meter, Volt Meter, Impedance Meter, Analog to Digital Converter, Fault Simulator, Logic Probe, or even a functional tester with a guided probe.



### Hardware Handshaking

The prober hardware also provides a TTL type output and input for allowing hardware handshaking with external testers. The prober Trigger-Out and Trigger-In signals are available via BNC connectors at the prober back panel.

### Prober Trigger In/Out Signals

The Trigger-Out signal is a 5 volt or 0 volt signal which can be used to indicate to the external tester to execute its test routine. At this time the prober test probe is in the down position, and is touching the test point on the board. The tester should now apply its signal.

The prober's Trigger-In signal is normally High. When this line is set to Low by an external tester, the prober will move the probe up and proceed to the next test point.

The Trigger In/Out activate states can be changed in the External Settings dialog.

### Time Duration/Delay

If the external tester has no Trigger In/Out capability, a Trigger Out Duration can be set so that the Probe will wait a specific number of milli-seconds in the Down position. While the probe is Down, the tester must execute its test routine. After the time delay duration expires, the Probe will move up and to the next test point.

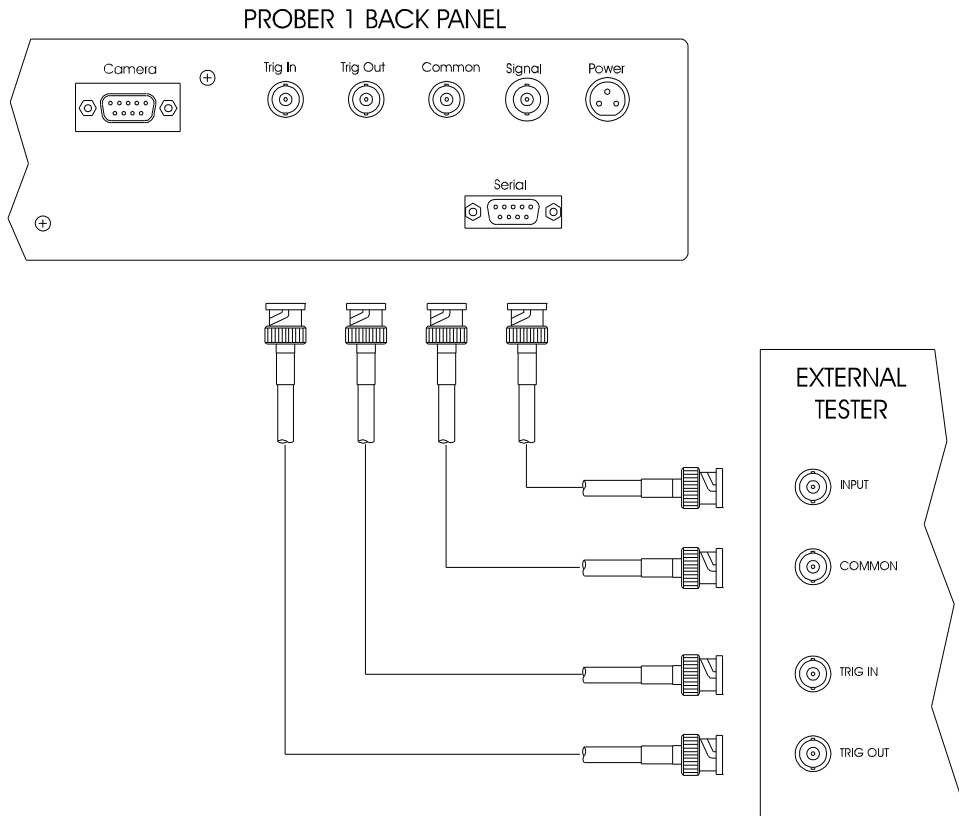
A Trigger In Delay can be set to control how long the software waits for the trigger signal from the external tester. If this delay expires before a Trigger In active state is detected, an error message is displayed.

Trigger Out Duration and Trigger In Delay can be set in the External Settings dialog.

### Example of Scanning with an External Tester

Let us assume that we have an external voltmeter that is capable of recording 64 readings and has a Trigger Input/Output capability. The voltmeter's Trigger Out line is setup so that it goes LOW whenever a reading is successfully recorded. The voltmeter's Trigger-In line is setup so that whenever a High signal is present, it should take another reading and record it.





Here is an example of the sequence of events for hardware handshaking.

- 1 The XY positions of 64 test pins are set up using the Align, and Teach.
- 2 In the External Settings dialog set the Trigger Out Active State to High. If the voltmeter takes 50ms (milli-seconds) to take a reading, set Trigger In Duration to 100ms to be sure to wait long enough.
- 3 After clicking Scan Component from the Control menu, the voltmeter is waiting for its Trigger-In to go High so that it can take a reading.
- 4 The probe moves to the first test point and is making contact with the test point on the board-under-test.
- 5 The prober's Trigger-Out line goes High, indicating to the voltmeter to go ahead and take the reading.
- 6 The voltmeter, upon detecting this signal, takes the reading and after the value is stored, set its Trigger-Out to a Low state.
- 7 The prober detects its Trigger-In as Low, indicating that the voltmeter is done taking the reading. The probe moves up and proceeds to the next test point, making contact with it. The prober's Trigger-Out then goes High indicating to the voltmeter to go ahead and take the next reading. This cycle is repeated until all 64 test points are accessed.

#### **Setting a Trigger Out Duration with Trigger In disabled**

In the External Settings dialog, set the Trigger Out Duration to 200ms and disable the Trigger In.

This will allow the probe to wait for 200ms after issuing a High on its Trigger-Out line while the probe is in the Down position. There is no monitoring of the Trigger-In signal.

---

# Colors

Displays the Colors dialog to allow the selection of signature and graticule colors.

---

## Colors Dialog

The Colors dialog allows the changing of signature display colors. This dialog is accessed from Color on the Settings menu.

**Note:** The default setting for viewing Waveforms is with the Red trace showing the Vertical / Current and the Green showing the Horizontal / Voltage.

**Stored Signature:**

Select the color for the display of stored signatures. Click the down arrow to display the Windows Color dialog.

**Current Signature:**

Select the color for the display of current signatures. Click the down arrow to display the Windows Color dialog.

**Graticule:**

Select the color for the graticule. Click the down arrow to display the Windows Color dialog.

**Signature Background:**

Select the background color for the signatures. Click the down arrow to display the Windows Color dialog.

**OK Button:**

Exits the dialog and saves the change until the program terminates.

**Cancel Button:**

Exits the dialog without saving any changes.

**Help Button:**

Displays the context sensitive help for the dialog.

**Save Button:**

Exits the dialog and saves the changes permanently.

**Defaults Button:**

Resets all colors to the factory settings.

# Button Menu

---

## Button Setup Dialog

The Button Setup dialog allows the definition of up to 6 buttons for each board, section and component to provide quick access to other programs.

**Button:**

Select one of the six optional buttons.

**Enable:**

Activates the current button.

**Note:** When disabling make sure that all buttons at lower levels the match the button being disabled are set to Unique before disabling

**Unique:**

The button for the given branch is unique. If the same button information exists in another branch use the Match... Radio Button instead.

**Match Board:**

Uses the settings of the same board level button number. This is only available at the section and component levels.

**Match Section:**

Uses the settings of the same section level button number. this is only available at the component level.

**Text:**

Enter the text to be displayed on the Button menu and the button on the button bar.

**Program:**

Enter the executable file name of the program to be activated. Button Help needs to explain how the file name paths work and where Board, section and Component files are stored. The path for the executable must be in the PATH setting of autoexec.bat or a full path must be used.

**File:**

Enter the name of file to be loaded by the program. For this to work the program must except command line file names. Path for the file (file the executable will load) can take either of the following forms:

**Full Path:**

If full path is specified (e.g. C:\MY\_SYS\MY\_FILE.TXT), program will search the full path. If not found, then program will search for the current board path or section path depending on the level of the button. Board buttons use the board path. Sections and Component buttons use the section path.

**File Name Only:**

If file name only is used (e.g. MY\_FILE.TXT), the program will search only the appropriate current board or section path.

If backed up\attached boards with buttons using full path for the files are used on a different PC, file path may be invalid. Make sure path for the files are correct and the files are copied to those directories. A solution for this would be to put the files on a network drive.

How to determine the board path and section paths:

The System Path can be found on the System dialog.

The board ID and section ID can be found at the bottom right corner of the Board dialog and Section dialog. The IDs will be in the range 0000 - FFFF in hex.

If the system path from the System dialog is C:\MY\_SYS and if the board ID is 0006, then the board path will be C:\MY\_SYS\BRD0006.

If the section ID is 0004, then the section path will be C:\MY\_SYS\BRD0006\SECT0004.

**Note:** Relative paths (e.g. \MY\_FILE.TXT) should not be used.

**OK Button:**

Exits the dialog and saves the changes.

**Cancel Button:**

Exits the dialog without saving changes.

**Help Button:**

Displays this context sensitive help for the dialog.

---

## Show/Hide Button Bar

Displays or hides the button bar.

---

## Button 1

Executes the specified function of button 1. The name of the menu item changes to match the text of the button.

---

## Button 2

Executes the specified function of button 2. The name of the menu item changes to match the text of the button.

---

## Button 3

Executes the specified function of button 3. The name of the menu item changes to match the text of the button.

---

## Button 4

Executes the specified function of button 4. The name of the menu item changes to match the text of the button.

---

## Button 5

Executes the specified function of button 5. The name of the menu item changes to match the text of the button.

---

## Button 6

Executes the specified function of button 6. The name of the menu item changes to match the text of the button.

# Tips and Hints

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## CMOS Troubleshooting

There are certain assumptions made when performing comparison testing using Trackers in general. The assumption is that two pins on a given board will always produce the same signature given the same stimulus (i.e., a certain range). When testing certain CMOS ICs, this can be invalid.

Capacitors are often connected in parallel with CMOS ICs to reduce noise which can cause one of two problems to occur. First, the signature may be slow in settling to the steady state. Second, the horizontal portion of the chair pattern can move upwards as a result of a charging effect. This charging effect is not a repeatable process.

**Note:** Match the testing time to the settling time.

**Note:** Eliminate the charging effect by putting a suitable resistance across the power supply.

---

## Command Line Parameters

Command Line Parameters are accepted for the convenience of starting the software with specific tree items selected. When selecting tree items from the Command Line, the following syntax must be followed for each item.

-S or -s or /S or /s: "system name"

-B or -b or /B or /b: "board name"

-R or -r or /R or /r: "board revision level"

-T or -t or /T or /t: "section name"

-C or -c or /C or /c: "component name"

When selecting a lower tree item, all upper tree items **MUST** be specified as well, even if they are defaulted to.

If the desired starting point is the HUNTRON system, TUTORIAL board, REV.A revision, DIGITAL DEVICES section and VIO component. Add the following to the executable name command line property of the Huntron Workstation icon:

```
/S: "Huntron"/B: "Tutorial"/R: "REV.A"/T: "Digital Devices" /C: "VIO"
```

**Note:** The items in the "" are case sensitive, so the names must match the exact names in the tree for the specified item.

---

## Select Range

ProTrack I Range Selection Guide

Tracker 5100DS and 5500 Range Selection Guide

### A Brief History

The basic Huntron Tracker technology was developed in 1976 using the concept of Analog Signature Analysis (ASA). This concept involves applying a current limited AC voltage signal to an electronic device. The current flowing between the device terminal and its reference terminal is then plotted against the applied voltage signal in an XY fashion. The resulting plot is called an analog signature. ASA involves comparing the signatures of a known good device to the signatures of a suspect device. A faulty device would most likely have a signature that is significantly different from that of a good device. This technique is used to troubleshoot electronic circuitry without applying power to the circuit.

### What is a Range?

The characteristics of a signature can be changed by modifying the applied AC voltage, resistance and frequency. These three characteristics of the applied signal create a "range". Two different test ranges may display different signatures for the same device. A device fault may show up in one test range but not in another. The ASA technique for troubleshooting also involves choosing the appropriate range(s) for maximum fault coverage.

### Voltage

This factor is the amplitude or peak voltage of the applied signal. The sine wave voltage affects the response of solid state devices. Tracker voltages are from 200 millivolts to 60 Volts peak.

In general the voltage should be set to give a signature about half as wide as the horizontal axis of the graticule.

TTL type integrated circuits are best viewed with 20 Volts (Med2).

LS type TTL and older MOS circuits are best viewed with 10 to 15 Volts (Low or Med1)

For most other circuits the 3 Volt range works well.

For zener diodes the voltage should be twice the zener diode breakdown voltage.

For capacitors, resistors and inductors in-circuit, use 200mV to mask the effects of connected solid state devices.

### Resistance

The resistance has the most effect on the shape of the signature. The resistance limits the current flowing through the device. Tracker resistance's are from 10 ohms to 100 kohms.

It is best to use two ranges with different resistance values to show a wider spectrum of faults.

For edge connectors, discrete components and filter caps the lower resistance ranges are suggested. These ranges allow the verification of true shorts.

For logic circuits use a resistance of 1k (or Med1) and 20 k (or Med2). Avoid using the Low resistance ranges on ICs - this will display excessive manufacturing differences.

### Frequency

This factor is the number of cycles that a sine wave makes in one second. By changing the frequency of the sine wave, the ellipse pattern response of capacitors and inductors becomes wider or narrower. Tracker sine wave frequencies are from 20 Hz to 5 kHz.

In general, when viewing capacitive or inductive signatures, adjust the frequency for the roundest signature. Smaller capacitors and inductors require higher frequencies.

If you are not able to display a satisfactory signature by adjusting frequency, adjust the resistance.

The recommended default frequency is 50/60 Hz. - this gives the best response for filter caps and power related failures.

The Tracker 5100DS and 5500 have a 200 Hz fixed frequency.

For MOS integrated circuits, a frequency of 1 kHz minimizes loops in the vertical leg of certain signatures. This can make the chair pattern more distinct.

---

## ProTrack I Range Selection Guide

**Note:** These ranges are suggested ranges only. Connection to different devices in-circuit and different component manufacturing techniques may require the use of different ranges. See Select Range for more information.

Component	Range
<b>Resistors in Ohms</b>	
10	200mV, 10 Ohm, 200Hz
20k	200mV, 20k Ohm, 200Hz
100k	200mV, 100k Ohm, 200Hz
<b>Capacitors</b>	
.001mF	200mV, 100k Ohm, 2kHz
.01mF	200mV, 100k Ohm, 200Hz
10mF	200mV, 1k Ohm, 60Hz
100mF	200mV, 50 Ohm, 60Hz

**Inductors**

1.5mH	200mV, 50W, 2kHz
-------	------------------

**Transistors**

2N3906	20V, 100k Ohm, 60Hz
--------	---------------------

**Integrated Circuits**

7404 (TTL)	15V, 1kOhm, 200Hz <i>10V, 50 Ohm, 200Hz</i>
74LS04 (LS)	10V, 1k Ohm, 200Hz <i>10V, 50 Ohm, 200Hz</i>
74S04 (S)	20V, 20k Ohm, 200Hz <i>20V, 100k Ohm, 200Hz</i>
74HC04(HC)	3V, 1k Ohm, 60Hz <i>3V, 10k Ohm, 60Hz</i>
Z80 (CPU)	10V, 10k Ohm, 60Hz <i>10V, 100k Ohm, 60Hz</i>
TI 486 (CPU)	3V, 10k Ohm, 60Hz <i>3V, 1k Ohm, 60Hz</i>
MC14069	10V, 10k Ohm, 60Hz <i>10V, 1k Ohm, 60Hz</i>
74F245 (F)	3V, 10k Ohm, 60Hz <i>3V, 1k Ohm, 60Hz</i>
MS62256A	10V, 10k Ohm, 60Hz <i>10V, 100k Ohm, 60Hz</i>

**Note:** For wider fault coverage it is advisable to use two ranges for ICs. The second suggested range above is in *italics*.

---

## Tracker 5100DS and 5500 Range Selection Guide

**Note:** These ranges are suggested ranges only. Connection to different devices in-circuit and different component manufacturing techniques may require the use of different ranges. See Select Range for more information.

Component	Range
<b>Resistors</b>	
10W	DS Low
20kW	DS Med2
100kW	DS High



### Capacitors

.001mF	DS High
.01mF	DS High
10mF	DS Med1
100mF	DS Low

### Inductors

1.5mH	DS Low
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### Transistors

2N3906	DS High
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### Integrated Circuits

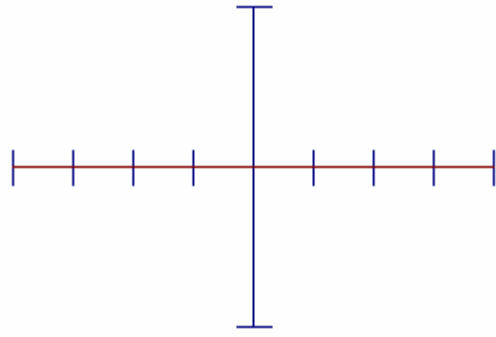
7404 (TTL)	DS Med2
<i>DS Med1</i>	
74LS04 (LS)	DS Med1
<i>DS Low</i>	
74S04 (S)	DS Med2
<i>DS High</i>	
74HC04(HC)	DS Low
<i>DS Med1</i>	
Z80 (CPU)	DS Med1
<i>DS Med2</i>	
TI 486 (CPU)	DS Low
<i>DS Med1</i>	
MC14069	DS Med1
<i>DS Med2</i>	
74F245 (F)	DS Low
<i>DS Med1</i>	
MS62256A	DS Med1
<i>DS Med2</i>	

**Note:** For wider fault coverage it is advisable to use two ranges for ICs. The second suggested range above is in *italics*.

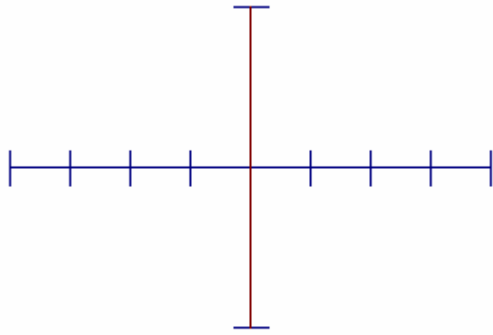
---

## Sample Signatures

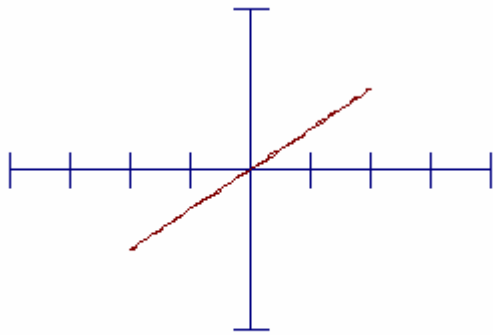
The following are several sample signatures from different types of components.



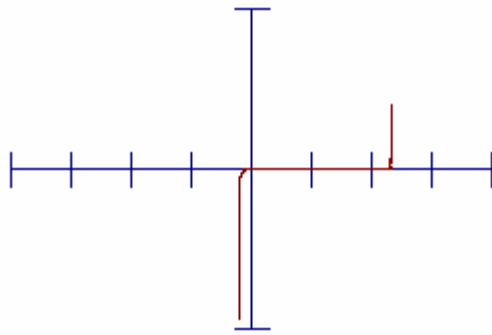
**Open Circuit**



**Shorted Circuit**

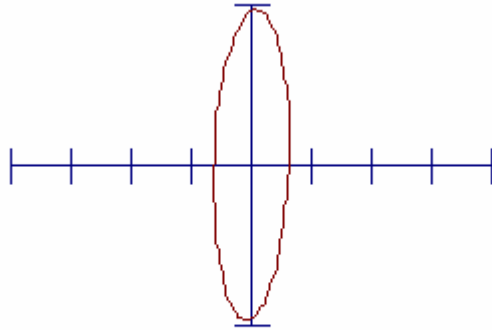


**Resistor  
Signature**



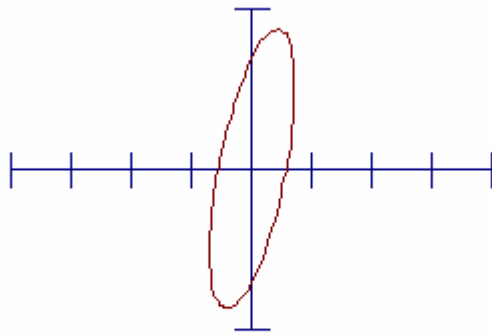
---

**Zener Diode  
Pattern**



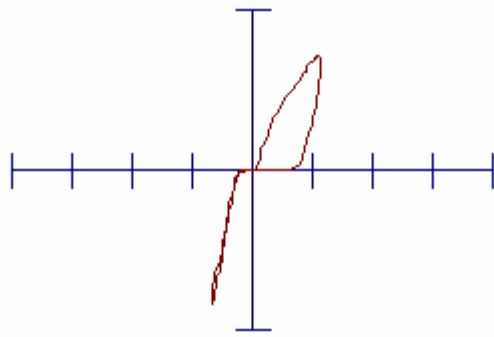
---

**Capacitor Signature  
without Leakage**



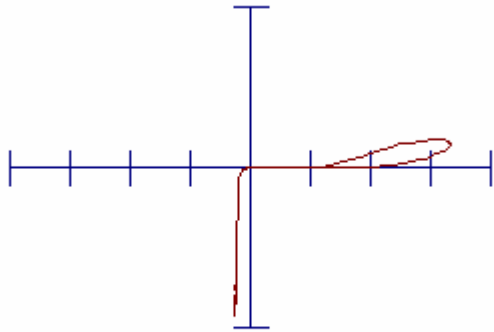
---

**Capacitor Signature  
with Leakage**



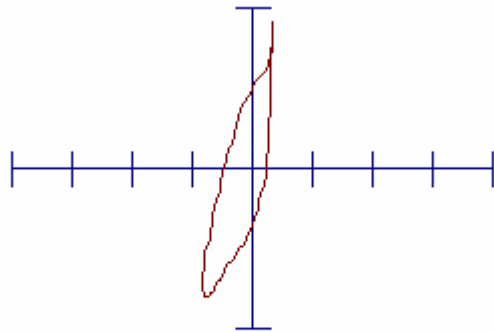
---

**CMOS  
Signature**



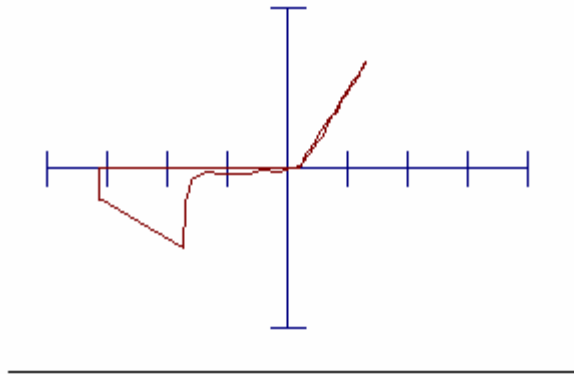
---

**CMOS  
Signature**

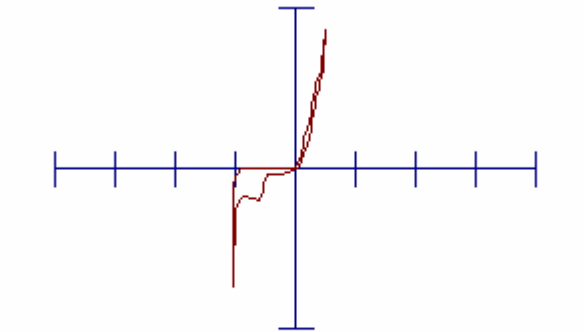


---

**Composite  
Signature**



**Composite  
Signature**



**Composite  
Signature**

# Error Messages

---

## Build Errors

The actual error messages are in bold and the text underneath is the explanation.

**Cannot build**

**New system path used by another system**

System Build no longer supported.

**Could not build board**

Make sure the current component name is not already maximum length.

**Could not build component**

Make sure the current component name is not already maximum length.

**Could not build section**

Make sure the current component name is not already maximum length.

**Could not build system**

System Build no longer supported.

Contact Technical Support for more information.

---

## Button Errors

The actual error messages are in bold and the text underneath is the explanation.

**Failed to execute program**

See Disk Problems for more information.

**The maximum number of characters is 15**

Enter a shorter button text.

**The maximum number of characters is 256**

Enter a shorter path.

**You must specify a program to run**

Enter the path and executable name of the program.

**You must specify the text for the button**

Enter the text to be displayed on the button and the Button menu.

Contact Technical Support for more information.

---

## Camera Problems

The following are solutions to problems with the camera image:

**Warning:** Only adjust the camera focus at the beginning of camera offset and not in the Align dialog or the Teach dialog.

**Unclear Image**

The image is out of focus.

- 1 Press the Live button (color cameras always live) on the Camera Offset dialog.
- 2 Adjust the knob on top of the camera lens housing until the image is clear.

3 Follow the Camera Offset Instructions to set the camera offset.

### **Image too Bright**

The camera LED intensity is too high.

Adjust the Intensity knob on the Z Axis housing.

The camera exposure in the Manual Camera Control dialog may be too high. Default value is 200. (Not available on Color Camera).

This may also be caused by too much external light.

See White Image.

### **Image too Dim**

The camera LED intensity may be too low.

Adjust the Intensity knob on the Z Axis housing.

The camera exposure in the Manual Camera Control dialog may be too low. Default value is 200. (Not available on Color Camera).

See Gray/Black Image.

### **White Image**

Adjust the camera brightness on the camera interface card. See below. (Not available on Color Camera).

Faulty camera system on Black/White Camera.

### **Gray/Black Image**

Make sure the camera interface card has been installed in the computer.

Check the camera cable connections.

Adjust the camera brightness on the camera interface card. See below.

Faulty camera system.

### **Colored Image**

Make sure the computer is in a 256 color mode.

Turn off screen savers that use colors.

Change the Windows Wallpaper to none.

### **Adjusting the Camera Brightness**

The camera brightness adjustment needs to be performed on the camera interface card with the computer and prober turned on. Perform the following steps:

**Note:** EDC-2000(PCI) camera brightness is adjusted using the Gain and Bias settings on the Manual Camera Control dialog. (Not available on Color Camera).

- 1 Exit the software and shutdown the computer.
- 2 Turn off the prober.
- 3 Remove the computer cover.
- 4 Place the monitor and computer in safe positions for operating with the computer cover off.
- 5 Turn on the prober.
- 6 Turn on the computer and start the Huntron Workstation software.

- 7 On the Control menu select Manual and then select Prober to display the Manual Prober dialog.
  - 8 Press the Move X and Move Y buttons until the camera is positioned over an area of the board.
  - 9 Press the Camera button.
  - 10 Press the Live button.
  - 11 Adjust the Intensity knob on the Z Axis housing to the center of its range.
  - 12 Locate R9, the second potentiometer from the back of the camera interface card.
  - 13 Rotate R9 slowly 1/2 to 2 turns counter clock-wise. Watch the camera image, which is updating slowly. Stop adjusting when the camera image brightness is at a good viewing level.
  - 14 Exit the software and shutdown the computer.
  - 15 Turn off the prober.
  - 16 Replace the computer cover.
  - 17 Turn on the prober.
  - 18 Turn on the computer and start the Huntron Workstation software.
  - 19 On the Control menu select Camera Offset to display the Camera Offset dialog.
  - 20 Perform the camera offset before any other use of the prober.
- Contact Technical Support for more information.

---

## Communication Problems

These errors can be caused by the following:

### **Incorrect communication port selected**

Verify the instrument is connected to the port specified in the Hardware Settings dialog.

### **Loose cable connections**

Press the cable in to the connectors and tighten the screws on both ends of the communication cable.

### **Instrument not turned on**

Verify the instrument power switch position and power on indicators.

### **Communication driver not setup correctly**

For GPIB instruments, check the settings in the wibconf program.

### **Faulty communication cable**

Check cable for bent pins, broken pins and/or broken wires.

### **Faulty or incompatible communication port**

Verify the port works with another computer peripheral.

Re-seat the communications port board and cable connections in the computer.

Replace the communications port.

### **Faulty instrument**

Make sure the power to the instrument is disconnected. Open cover of the instrument and re-seat boards, cables and socketed ICs.

Contact Technical Support for more information.



---

## Conversion Errors

The actual error messages are in bold and the text underneath is the explanation.

**Incorrect disk**

See Disk Problems for more information.

**Opening section database files**

See Disk Problems for more information.

**Reading board database files**

See Disk Problems for more information.

**The board name does not match**

See Disk Problems for more information.

**The database files were not found at this location**

See Disk Problems for more information.

**The revision name does not match**

See Disk Problems for more information.

**There are no valid components**

See Disk Problems for more information.

Contact Technical Support for more information.

---

## Database Errors

The actual error messages are in bold and the text underneath is the explanation.

**A record of the same name already exists**

See Disk Problems for more information.

**Attempted to add a duplicate record to the database**

An item of the same name already exists.

**Cannot create system on current working directory**

See Disk Problems for more information.

**Failed to append a record to the database**

See Disk Problems for more information.

**Failed to assign data to a database field**

See Disk Problems for more information.

**Failed to close the database correctly**

See Disk Problems for more information.

**Failed to create the database**

See Disk Problems for more information.

**Failed to delete a record from the database**

See Disk Problems for more information.

**Failed to initialize the database fields**

See Disk Problems for more information.

**Failed to open a database**

See Disk Problems for more information.

**Failed to pack the database files**

See Disk Problems for more information.

**Failed to properly flush data to the database**

See Disk Problems for more information.

**Failed to select the required index file**

See Disk Problems for more information.

**Failed to write a record to the database**

See Disk Problems for more information.

**Invalid database file**

See Disk Problems for more information.

**Invalid database index file**

See Disk Problems for more information.

**Invalid type for a database field assignment**

See Disk Problems for more information.

**The specified path already contains a system database**

See Disk Problems for more information.

**The specified record does not exist in the database**

See Disk Problems for more information.

**Use the path anyway?**

See Disk Problems for more information.

Contact Technical Support for more information.

---

## Directory Errors

The actual error messages are in bold and the text underneath is the explanation.

**Failed to copy the sub-directory**

See Disk Problems for more information.

**Failed to create the sub-directory**

See Disk Problems for more information.

**Failed to delete the sub-directory**

See Disk Problems for more information.

**Failed to move the sub-directory**

See Disk Problems for more information.

Contact Technical Support for more information.

---

## Disk Errors

The actual error messages are in bold and the text underneath is the explanation.

**Disk full**

See Disk Problems for more information.

**Failed to write**

See Disk Problems for more information.

**General failure**

See Disk Problems for more information.

Contact Technical Support for more information.

---

## Disk Problems

These errors can be caused by the following:

**Invalid filename**

Enter a valid eight character name, three character extension filename.

**File does not exist**

Check the filename and path entered.

**Wrong removable disk (floppy) inserted**

Insert the correct disk in the sequence.

**Path does not exist**

Check the path and enter one that exists.

**Disk is write protected**

Remove the write protection from this disk.

**Disk is full**

Check available space on the selected drive. Delete other files or select a different drive.

**Disk is too fragmented**

Run the defrag program. If running in Windows 3.X, exit windows before running.

**Crossed linked files**

Run the scandisk program. If running in Windows 3.X, exit windows before running.

**Bad areas on the disk**

Run the Surface Test feature of the scandisk program. If running in Windows 3.X, exit windows before running.

**Corrupted file/tree structure**

Restore file/board from the backup to a different name. After verifying the data from the backup is valid, delete the corrupted file/board.

**Disk not formatted**

Make sure the disk is formatted. If not, format the disk.

**Hard disk controller failure**

Exit windows and reboot the computer. If the error occurs during boot process, fix the computer hardware problem.

**Hard disk failure**

Exit windows and reboot the computer. If the error occurs during boot process, fix the computer hardware problem.

Contact Technical Support for more information.

---

## Hardware Errors

The actual error messages are in bold and the text underneath is the explanation.

**An invalid hardware combination was specified**

Contact Technical Support for more information.

**Checksum error**

See Communication Problems for more information

**Fail to get MaxV**

See Communication Problems for more information

**Fail to query footswitch**

See Communication Problems for more information

**Fail to query scanner**

Make sure Scanner is connected and its power is turned on.

See Communication Problems for more information

**Fail to set LEDs**

See Communication Problems for more information

**Fail to set Loop Compensation**

See Communication Problems for more information

**Fail to set MaxV**

See Communication Problems for more information

**Fail to set Trigger Out**

See Communication Problems for more information

**Failed in querying prober position**

See Communication Problems for more information

**Failed self diagnostic**

See Communication Problems for more information

**Failed to display camera image**

Contact Technical Support for more information.

**Failed to download new firmware**

See Communication Problems for more information

**Failed to enter diagnostic mode**

See Communication Problems for more information

**Failed to enter normal mode**

See Communication Problems for more information

**Failed to enter sine wave mode**

See Communication Problems for more information

**Failed to entry triangle wave mode**

See Communication Problems for more information

**Failed to execute automatic calibration**

See Communication Problems for more information

**Failed to get current range**

See Communication Problems for more information

**Failed to get GPIB board address**

See Communication Problems for more information

**Failed to get hardware version**

See Communication Problems for more information

**Failed to initialize Prober hardware**

See Communication Problems for more information

**Failed to initialize the prober to the home position**

See Communication Problems for more information

**Failed to move probe to position specified**

See Communication Problems for more information

**Failed to open Loop Compensation data file**

Run Loop Calc in Control menu -> Maintenance -> ProTrack I Diagnostics

**Failed to open the Tracker hardware connection**

See Communication Problems for more information

**Failed to read data from hardware**

See Communication Problems for more information

**Failed to reset hardware**

See Communication Problems for more information

**Failed to send LCD command**

See Communication Problems for more information

**Failed to set active range**

See Communication Problems for more information

**Failed to set all common pins**

See Communication Problems for more information

**Failed to set all test pins**

See Communication Problems for more information

**Failed to set alternate channel**

See Communication Problems for more information

**Failed to set beep**

See Communication Problems for more information

**Failed to set channel**

See Communication Problems for more information

**Failed to set common pin(s)**

See Communication Problems for more information

**Failed to set maximum number of pins**

See Communication Problems for more information

**Failed to set miscellaneous settings**

See Communication Problems for more information

**Failed to set per pin parameters**

See Communication Problems for more information

**Failed to set Prober communications port**

See Communication Problems for more information

**Failed to set prober limit(s) off**

See Communication Problems for more information

**Failed to set signature bytes**

See Communication Problems for more information

**Failed to set test pin**

See Communication Problems for more information

**Failed to set the component size**

See Communication Problems for more information

**Failed to set the CRT traces**

See Communication Problems for more information

**Failed to set the current range**

See Communication Problems for more information

**Failed to set the filter**

See Communication Problems for more information

**Failed to set the graphics palette for the camera image**

Contact Technical Support for more information.

**Failed to set the hardware delay**

See Communication Problems for more information

**Failed to set the maximum number of samples**

Contact Technical Support for more information.

**Failed to set the pulse level**

See Communication Problems for more information

**Failed to set the pulse value**

See Communication Problems for more information

**Failed to set the pulse width**

See Communication Problems for more information

**Failed to turn 'Testing' LED off**

See Communication Problems for more information

**Failed to turn 'Testing' LED on**

See Communication Problems for more information

**Failed to turn local mode off**

See Communication Problems for more information

**Failed to turn local mode on**

See Communication Problems for more information

**Failed to turn SAS off**

See Communication Problems for more information

**Failed to turn SAS on**

See Communication Problems for more information

**Failed to turn signatures off**

See Communication Problems for more information

**Failed to turn signatures on**

See Communication Problems for more information

**Failed to turn the CRT off**

See Communication Problems for more information

**Failed to turn the CRT on**

See Communication Problems for more information

**Failed to turn the LCD off**

See Communication Problems for more information

**Failed to turn the LCD on**

See Communication Problems for more information

**Failed to turn the output off**

See Communication Problems for more information

**Failed to turn the output on**

See Communication Problems for more information

**Failed to turn the prober limit(s) on**

See Communication Problems for more information

**Failed to turn the prober motor(s) off**

See Communication Problems for more information

**Failed to turn the prober motor(s) on**

See Communication Problems for more information

**Failed to turn Tracker off**

See Communication Problems for more information

**Failed to turn Tracker on**

See Communication Problems for more information

**Failed to verify home position of prober**

See Communication Problems for more information

**Failed to write command to hardware**

See Communication Problems for more information

**Function is not supported**

Contact Technical Support for more information.

**Fuse Error**

See Communication Problems for more information

**Hardware has been reset**

Make sure power is on and align the board again

See Communication Problems for more information

**Incorrect function called for this hardware**

Contact Technical Support for more information.

**Invalid argument**

Contact Technical Support for more information.

**Invalid frequency offset**

See Communication Problems for more information

**Invalid frequency selected**

Set the correct frequency on the Tracker 2000 and try the operation again.

See Communication Problems for more information

**Invalid offset**

See Communication Problems for more information

**Invalid prober version**

See Communication Problems for more information

**Invalid range and frequency offsets**

See Communication Problems for more information



**Invalid range offset**

See Communication Problems for more information

**Invalid Range**

Verify voltage is at or below MaxV setting of ProTrack I

See Communication Problems for more information

**Invalid scan code returned**

See Communication Problems for more information

**Prober hardware is not connected**

See Communication Problems for more information

**Prober move canceled or failed to get the cover status**

See Communication Problems for more information

**The frequency changed during scanning**

Set the correct frequency on the Tracker 2000 and do not change it during scanning.

See Communication Problems for more information

**The indicated range was not selected**

Set the correct range on the Tracker 2000 and try the operation again.

See Communication Problems for more information

**The instrument is out of adjustment**

Run the Control Menu Maintenance programs

See Communication Problems for more information

**The port selected for the Tracker is not available**

See Communication Problems for more information

**The range and frequency changed during scanning**

Set the correct frequency and range on the Tracker 2000 and do not change them during scanning.

See Communication Problems for more information

**The range changed during scanning**

Set the correct range on the Tracker 2000 and do not change it during scanning.

See Communication Problems for more information

Contact Technical Support for more information.

---

## Image Errors

The actual error messages are in bold and the text underneath is the explanation.

**An invalid format was specified**

See ASCII CAD for more information.

**Cannot create component**

See ASCII CAD for more information.

See Disk Problems for more information.

**File format does not match FORMAT value**

See ASCII CAD for more information.

**Incorrect number of pins**

See ASCII CAD for more information.

**Invalid name**

See ASCII CAD for more information.

**Invalid number of pins**

See ASCII CAD for more information.

**Section already exists**

See ASCII CAD for more information.

See Disk Problems for more information.

**Syntax error in HNT file**

See ASCII CAD for more information.

Contact Technical Support for more information.

---

## Import Errors

The actual error messages are in bold and the text underneath is the explanation.

**An invalid format was specified**

See ASCII CAD for more information.

**Cannot create component**

See ASCII CAD for more information.

See Disk Problems for more information.

**File format does not match FORMAT value**

See ASCII CAD for more information.

**Incorrect number of pins**

See ASCII CAD for more information.

**Invalid name**

See ASCII CAD for more information.

**Invalid number of pins**

See ASCII CAD for more information.

**Section already exists**

See ASCII CAD for more information.

See Disk Problems for more information.

**Syntax error in HNT file**

See ASCII CAD for more information.

Contact Technical Support for more information.

---

## Information Errors

The actual error messages are in bold and the text underneath is the explanation.

**Auto ranging is not available yet**

Contact Technical Support for more information.

**Scan report for component not exist**

The component has not been scanned since the troublesheet was cleared or the component signatures have never been saved.

**The import is complete**

The import of the HNT file to create a section(s) was completed successfully. This is not an error message.

**There are no more different components**

The last different component was removed from the troublesheet.

**There is no Troubleshoot or component failures information**

No components have been scanned since the troublesheet was cleared.

Contact Technical Support for more information.

---

## Misc. Errors

The actual error messages are in bold and the text underneath is the explanation.

**An error has been detected**

**Please try again**

Contact Technical Support for more information.

**Backup failed**

See Disk Problems for more information.

**Convert failed**

See Disk Problems for more information.

**Could not delete the troublesheet files**

See Disk Problems for more information.

**Could not get the status of the system files**

See Disk Problems for more information.

**Could not open the specified file**

See Disk Problems for more information.

**Invalid command line option**

See Command Line Parameters for more information.

**Out of memory.**

Close all other applications and try again.

Check and increase low DOS memory, Extended memory and/or the size of the Windows Swap File.

**Restore failed**

See Disk Problems for more information.

**Section is empty**

Create components before attempting to use this feature..

**The alignment points and slot do not match**

The selected alignment name is setup for a different prober slot.

**The source and destination are the same**

The operation cannot be performed on itself. Change the source or destination.

**The specified file does not exist**

See Disk Problems for more information.

**The specified range is invalid**

Change to a valid range or check Skip Invalid Ranges in the Preferences dialog.

**The specified range is undefined**

Change to a defined range.

**There are no more store positions available**

Use replace to overwrite one of the existing serial numbers.

**This command is not defined yet**

Contact Technical Support for more information.

**You must have a numeric as the last character in order to execute the build command**

See Build for more information.

**You must press the OK button to exit this dialog box**

Closing from the dialog's system box is not supported.

Contact Technical Support for more information.

---

## Pin Errors

The actual error messages are in bold and the text underneath is the explanation.

**An invalid number of pins has been specified**

Select a number of pins that is supported by the package type. See Component dialog for more information.

**Common Pins Error**

Select common pins that are supported by the number of pins and package type. See Pins dialog for more information.

**Error scanning pin**

See Communication Problems for more information

**No pins were selected**

Select the pins to be updated with the selected information.

**The selection is too large**

Contact Technical Support for more information.

**The selection must be an even number for the specified package type**

Select an even number supported by the package type. See Component dialog and Pins dialog for more information.

**You must specify a name for this pin that is unique for the component**

Check the other pin names and create a name that is not used.

Contact Technical Support for more information.

---

## Security Errors

The actual error messages are in bold and the text underneath is the explanation.

**Incorrect login, terminating...**

The limited number of logon attempts has been exceeded. Restart the program to try again.

**Incorrect login, try again**

The user name or password was not entered correctly.

**New password does not match the confirm password**

The new password and confirm password must be identical.

**Old password is incorrect**

Enter the correct password for the user.

**Write failed, password not changed**

See Disk Problems for more information.

Contact Technical Support for more information.

---

## Teach Errors

The actual error messages are in bold and the text underneath is the explanation.

**Alignment point is out of range**

The alignment point must be within the probing area.

**Begin Pin position not defined**

Set the Begin Pin position before pressing the Group button.

**Define the Begin Pin first**

Set the Begin Pin position before pressing the Group button.

**Diagonal Pin position not set**

Set the Diagonal Pin position before pressing the Set All button.

**First Pin position not set**

Set the First Pin position before pressing the Last button.

**Group Pin position not defined**

Set the position of the last pin of the group before pressing the Set Group button.

**Last Pin position not set**

Set the Last Pin position before pressing the Set All or Diagonal buttons.

**Re-calculate all pin XY positions**

Contact Technical Support for more information.

**XYZ pin positions of the component are invalid**

Use the Teach dialog to set the pin positions of the component.

Contact Technical Support for more information.

---

## Zip Errors

The actual error messages are in bold and the text underneath is the explanation.

**A general error has occurred**

**Make sure disk drive is ready**

See Disk Problems for more information.

**Media Error: Please make sure disk is in drive and ready**

**Also make sure disk is formatted, not write protected and not full**

See Disk Problems for more information.

Contact Technical Support for more information.

# Glossary Of Terms

## **2+ Sample Data**

The number of samples taken when attempting to capture a stable signature. If the data is noted as 2+, then two or more samples were taken. This applies only to the Tracker 5100DS, Tracker 5300 and Tracker 5500.

## **5100DS, Tracker**

This Huntron Tracker uses a GPIB computer interface. It uses 4 ranges DSLow, DSMed1 DSMed2 and DSHigh. It supports test and common pins. An RP388 prober can be added.

## **5300, Tracker**

The Huntron Tracker 5300 uses a GPIB, serial and proprietary camera computer interfaces.

This is a combination of a Huntron Tracker and a prober. It uses 4 3 volt ranges 5300Low, 5300Med1, 5300Med2 and 5300High. It has a probing area of 8" (20cm) x 7.5" (19cm). Also has 4 common pins.

## **5500, Tracker**

This Huntron Tracker 5500 uses GPIB, serial and proprietary camera computer interfaces.

It uses 4 3volt ranges DSLow, DSMed1, DSMed2 and DSHigh.

## **Add New**

The add function crates a new tree item. A new item can also be created by right mouse clicking on the item and overwriting the name.

## **Advanced Troubleshoot**

This button switches to the Advanced Troubleshoot Settings to dialog which control the appearance of troubleshoot signatures.

## **Align**

This function initializes and edits the alignment of a section of a board to be used with a prober.

**Note:** There must be an Alignment Name before either the Camera Offset or Align function can be activated. When aligning a section it is beneficial to use two diagonal points with a larger distance between to ensure better alignment. (Also, the Alignment Points must be 600 mills from the back and right walls of the prober.

## **All Serials**

Compare the latest can with all individual stored signatures.

## **Alphanumeric**

Alphanumeric refers to the use of numerical and alphabetical character together to form a name. Tree items can be sorted Alphabetically (Alpha), which involves sorting characters from left to right, or items can be sorted by Entry, which keeps items sorted in the order of input. This sorting order is selected at the next higher level of the tree and controls the scanning order.

## **Analog Data**

The values of the digitized signature. See Analog Signature Analysis for more information.

## **Analog Diagnostics**

This maintenance mode allows control of internal control lines of a Tracker 5100DS, Tracker 5300 and Tracker 5500. This is used for troubleshooting the instruments.

## **Analog Signature Analysis**

Analog Signature Analysis is a power-off troubleshooting technique that uses a sinewave stimulus to generate the voltage (V) vs. current (I) characteristics of an unpowered device. The VI characteristic is called an analog signature. The signature is then displayed on a CRT or computer monitor. Voltage is displayed horizontally and current is displayed vertically. An open circuit is thus represented by a horizontal line and a short circuit which draws the maximum current is represented by a vertical line. See Sample Signatures for examples.

## **Area**

The sum of all the deviation values of the digitized points used in comparison. See Compare Resolution for more information.

## **ASA**

An abbreviation for Analog Signature Analysis.

## **ASCII CAD**

A specific file format which can be imported to the Huntron Workstation program. This allows for the programming of X and Y locations of pins of a board. The purpose of these files is to eliminate the data entry required to build test boards and to automate XY test point programming. See Import and Importing a Huntron ASCII CAD file.

## **Auto-Range**

Auto-Range selects the most suitable range for the current pin. Range settings in the Pins dialog will be updated with the selected range for each pin.



## Back

The portion of the chair pattern rising vertically from the seat. This represents forward current. See Chair Pattern for more information.

## Back, Travel

Moves the probe tip backwards a distance specified by travel.

## Backup

Backup makes a duplicate record of the board and includes all information contained in the board. This includes sections, components, buttons and troubleshoots.

## Board

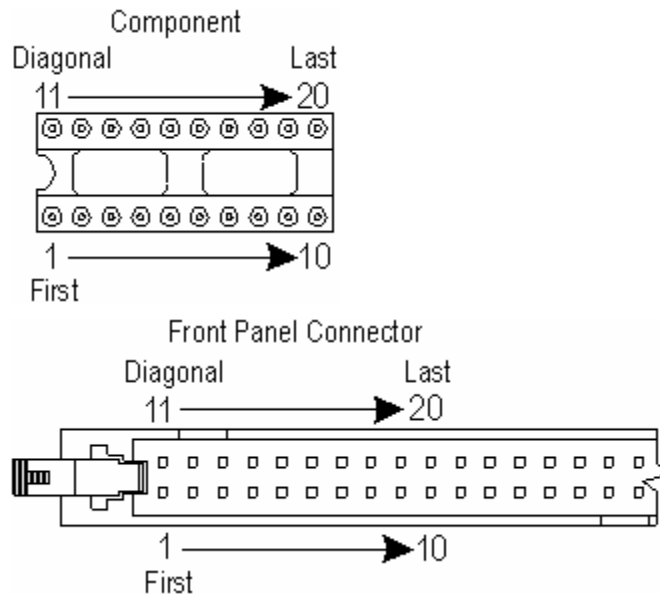
An electronic circuit board printed circuit board (PCB) or printed circuit assembly (PCA). The Board is located on the menu directly below the System on the Main Window.

## Bill of Materials (BOM)

The report of materials used, including replacement part number, supplier, etc.

## Both

Both package scans pins in two parallel rows on opposite sides of the package. Both rows are scanned in the same direction starting at the pin 1 end of the component.



## Browse

Enables the user to select a file/path from the existing directories and drives.

## **Build**

Duplicates the current tree item by incrementing number at the end of the name of the item. If the name does not end in a number, the number "1" will be added to the end of the name.

## **Button Bar**

The dialog which displays the user's defined buttons.

## **Calibration**

Adjusting instruments to allow data to be shared with other instruments.

## **Calibration Check**

Checks to make sure the instrument is calibrated.

## **Camera**

An optical device which allows the viewing of a circuit board through the computer monitor. The Camera is mounted on the right side of the Z Axis mechanism and consists of an image sensor, miniature lens, and optical filter. See Manual Camera Control dialog for more information.

## **Camera Offset**

The difference between the XY position of the camera and the prober Spring Probe Tip. See Camera Offset dialog for more information.

Note: When setting the prober offset, the probe tip should be lowered to the board so the tip barely makes contact with the board.

## **Camera Offset, XY Set**

A button on the Camera Offset dialog which sets the probe tip position to the current position. When setting the prober offset, the probe tip should be lowered to the board so that the tip barely makes contact with the board. See Camera Offset dialog for more information.

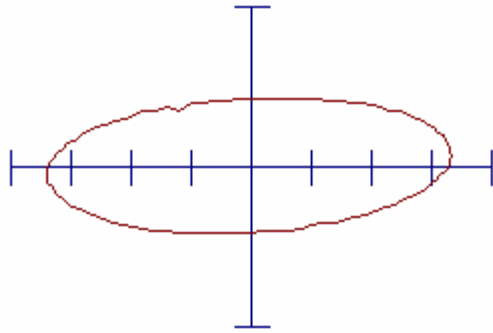
## **Camera Offset Board**

The black board with several cross-hairs provided with the prober for aligning the camera-probe tip offset.

## **Capacitive**

A signature or portion of a signature that is round or elliptical caused by the voltage and current being out of phase.

A Capacitor Signature is shown below.



---

**Capacitor Signature**

## Capacitor

An electric component designed to store electricity. Capacitors are widely used in circuits for producing time delays and filtering electrical oscillations. Capacitors and inductors alike cause a phase shift between voltage and current producing a circle or elliptical signature directly proportional to the amount of capacitance or inductance. See Sample Signatures for an example of a Capacitor Signature.

The signature pattern common to IC's and zener diodes that resembles a chair. The lower vertical part is the leg, the horizontal part is the seat, and the upper vertical part is the back. See Sample Signatures for example.

## Charging Effect

A condition where the seat of a chair pattern moves up and stabilizes over a short period of time.

## Circuit

An arrangement of electronic components which are connected in such a way that some function is performed.

## CMOS

Complementary Metal-Oxide Semiconductor. A wide range of IC's are CMOS. They are known for low power consumption making them useful in battery-operated devices. They are susceptible to damage from static electricity. CMOS integrated circuits are built with capacitors causing their signatures to display a loop in the back of the chair pattern. See Sample Signatures for an example of a CMOS Signature.

## Color

The Colors dialog controls the color of the stored signature, current signature, graticule, and signature Background.

Note: The default setting for viewing Waveforms with the Red trace showing the Vertical/Current and the Green showing the Horizontal/Voltage.

## Combo Box

The combination of a text box and a drop-down list box, allowing the user to enter the name of an item in the list box or select it from the list.

## **Common**

An electrical connection/wire which is at the same or common potential. The common is typically grounded or the negative terminal of a power supply and serves as a reference point for a component.

## **Common Pin**

The reference pin for the component. The common pin is typically the negative power supply or ground pin. See Edit Pins dialog for more information.

## **Compare Priority**

Sets the scan compare to one of three priority types Same Serial, Merge or All Serials.

## **Compare Resolution**

The number of digitized points on signature that are compared to stored signatures. Normal is 20 horizontal points and High is all 100 horizontal points. See Preferences dialog for more information.

## **Complete Pin Report**

The following items are included in the report: system name and path, board name and revision, section name, and component name, package type, pin numbers, pin names, channel, common pins 1&2, Delay, tolerance, max. # of samples, test range 1-4, pulse, type, level, duty, scan and unique setting.

## **Component**

A piece of electronic hardware that has a particular purpose, such as a resistor or transistor. The Component is at the bottom of the tree structure.

## **Component Down**

Sets the prober down position for all pins of the current component.

## **Component Report**

The Component Report displays the component information of a given section. The following items are included in the report: system name and path, board name and revision, section name, and component name, package type, number of pins, short-check, open-check, depth, scan order, pause, and type. The component report can be printed.

## **Composite Signature**

Any combination of the four basic signature patterns. A signature composed of resistive, capacitive, inductive, and/or semi-conductive characteristics. See Sample Signatures for examples of a Composite Signature.

## **Control**

The Control menu on the Main Window.

## **Convert**

Convert enables databases from earlier DOS-based software programs to be used with the Huntron Workstation.

**Note:** If an Alignment Point Image file not Present error message appears during conversion, this is to let the user know there were no camera images to convert.

## **Coprocessor**

An IC (integrated circuit) optionally installed in a computer to enhance the speed of math and graphic functions.

## **Copy**

Makes a duplicate of database information.

## **Cover Status**

Informs user is cover is installed or not.

## **CRT**

The Cathode Ray Tube used to display signatures on the Tracker.

## **Current**

The vertical component of a signature. Shorting the prober causes a maximum current flow and displays a vertical line on the CRT.

## **Current Style**

The way the latest signatures are presented on the screen or printer in either a solid or dotted line.

## **Data Type, Convert**

Converts data of various Data Types (backup, copy, original) from DOS versions of the Huntron control software.

## **Database**

Collection of the data about the system, board, section and component levels.

## **Degeneration**

The effect of a time or electrical stress on a component, causing a change in its ideal signature. This is a fault common to capacitors and solid-state junctions and results from such things as noise, loss of capacitance, resistance, etc.

## **Delete**

This function erases the selected information from memory.

## Dev

An abbreviation for Deviation.

## Deviation

The deviation is the amount that the value of one data point varies from the learned points outside of the tolerance.

## Diagnostics

Methods for troubleshooting instruments that are not working correctly. See Maintenance menu for more information.

## Diagonal Pin, Teach

The pin one more the half the number of pins, (i.e. pin 9 of a 16 pin component). For DIP and DIP2X package types it is the pin at the other end of the row of pins with the last pin (i.e. the pin diagonal from pin 1).

For a Both package it is the pin directly across from pin 1 on the other row of pins.

## Dialog

This refers to area on the computer screen surrounded by a border. Dialogs are used to allow entry of or displaying information. Also known as a window.

## Difference

This is one of the two signature orders. When in this mode, signatures are displayed from the most to least different in the most to least different range. Also see Numeric.

## Diode

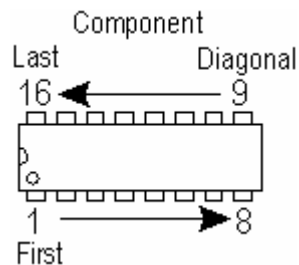
A component which allows current to flow through it in one direction only. Diodes are used in power supplies to convert or rectify alternating current to direct current. See Sample Signatures for example.

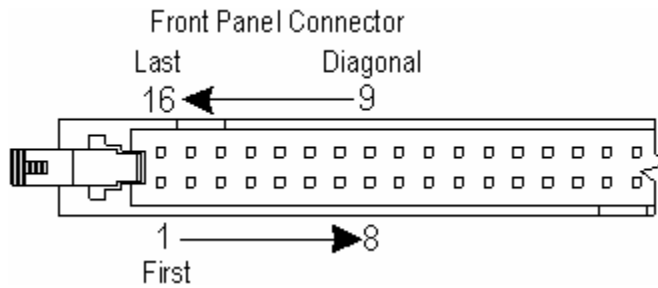
## Diode Pattern

See Diode.

## DIP

A DIP stands for Dual In-line Package and has its pins in two parallel rows on opposite sides of the package. The pins are scanned from pin 1, down the row across the other row and back up that row to the last pin.





## DIP2X

The DIP2X is an enhanced Dual In-line Package (DIP) having 66-128 pins.

## Discrete Component

A component that is a single device with a single purpose such as a resistor, capacitor, or diode.

## DSHigh

The range used typically for high impedance components and high voltage zener diodes. See Range List and Select Range for more information.

## DSLow

The range most often used for discrete components and determining shorts. See Range List and Select Range for more information.

## DSMed1

The range most useful for testing CMOS IC's. See Range List and Select Range for more information.

## DSMed2

The range most useful for testing TTL IC's and has a higher resistance and lower capacitance range than the Medium 1 Range. See Range List and Select Range for more information.

## Edit

Edit allows changes to an item of a tree structure.

## Error

An error is a problem occurring with the specific use of the software. See Error Messages for specific information.

## Exit

Exit ends the application.

## **Entry, Sort By**

Entry is one of two methods of sorting tree items. Entry, keeps items sorted in the order of input. The sorting order is selected at the next higher level of the tree.

## **Field**

A text box used for entering characters into the software.

## **File**

A group of data stored on a disk. The File on the Main Window displays the File menu.

## **Filter**

An algorithm that removes oscillations from certain types of signatures.

## **Filtered Data**

Data obtained using a filter.

## **First**

Pin 1 of the component.

## **Flagging**

Oscillations in a signature, usually located on the back of the chair pattern.

## **Flutter**

A signature or part of a signature oscillating. Flutter is common in capacitors and solid-state junctions.

## **Foot Pedal**

A ProTrack I hardware accessory to assist in the manual scanning process. In the Manual Connection dialog, the Foot Pedal activates the Scan Pin.

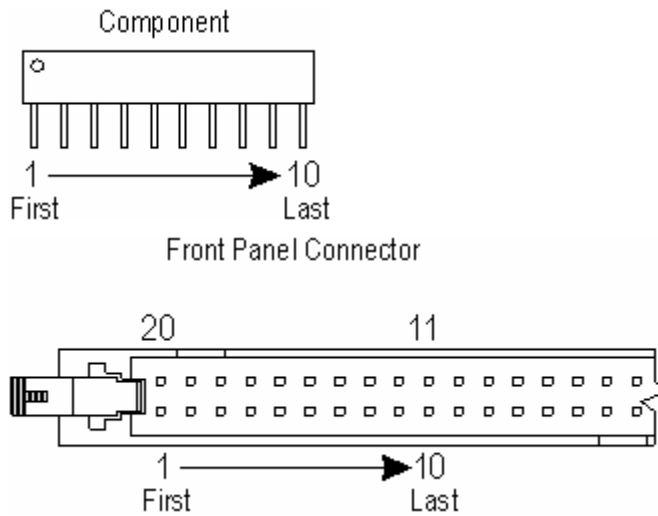
## **Forward, Travel**

Moves the probe tip forward a distance specified by travel.

## **Front**

The Front package type has a single row of pins. This is the row with pin 1 and is scanned from pin 1 to the last pin of the row.





## Gap

A missing section of a signature.

## Glitch, Data

Data obtained where the filter algorithm found signature glitches and removed them.

## Global Pin Data

Changes settings of pins and components for a whole section. See Global Pin Data dialog for more information.

## GPIB

General Purpose Interface Bus that conforms to the IEEE-488 standard. This is a standardized method of connecting instrument controllers or computers to peripherals such as test equipment.

## Graticule

The set of horizontal and vertical lines behind the signatures used to approximate turn-on voltages and aid in the comparison of signatures.

## Group

A specified collection of pins sharing some common settings. In Teach a series of pins in a row of a Multi package. See Group Pins dialog or Teach dialog for more information.

## Hardware

The Huntron instruments connected to the computer.

## Hardware Calibration

The adjustment of the instrument so data is compatible with other instruments.

## **Height**

Sets the up and down position of the probe. These must be set before Scanning section or component using the prober.

## **Home**

The far back right corner of the prober. Also, the probe in its highest up position.

## **Import**

Loads data from a Huntron ASCII CAD file. The purpose of this function is to eliminate the data entry required to build test boards and to automate XY test point programming. Each time a Huntron ASCII CAD file is imported, a new section of a board is created. See Import for more information.

## **Inductive**

A signature or portion of a signature that is this round or elliptic caused by voltage and current being out of phase.

## **Inductor**

An electric component used for filtering. Also, found in transformers

## **Instructions**

The instructions for tree items are designed to help the user scan and test boards. Instructions can inform technicians of things such as the correct orientation of a board or where to connect the common test lead.

## **Last**

The highest numbered pin of the component.

## **Left, Travel**

Moves the probe tip left a distance specified by travel.

## **Leg**

The vertical portion of a chair pattern extending downward from the seat.

## **Limit Switch**

Switches on the prober that are used when homing to prevent the prober from hitting the stops.

## **List Box**

A box displaying a list of items. If the number of items on the list exceeds the visible area, use the scroll bar to move up or down.

## Loop Calc

Whenever the software connects with the ProTrack I hardware it looks for a compensation table file. If the program cannot locate that table in the same directory as the program, the file must be created. The compensation table file is created by selecting ProTrack I Diagnostics in Maintenance on the Control menu.

## Maintenance

Assures test equipment is functioning with specified parameters through: Analog Diagnostics, Calibration Check, Hardware Calibration Check, Performance Test and ProTrack I Diagnostics.

## Manual Control

Manual Control allows the user to manually control the Hardware.

## Max. # of Samples

This field sets the upper limit of the number of times the hardware will attempt to capture an analog signature during a scan. Normally, the hardware will capture the analog signature on the first try. However, under certain conditions, the hardware may repeat capturing to insure the analog signature is stable and accurate. If the number of samples reaches the maximum number entered here, then the hardware uses the last sample for input.

## MaxV

The MaxV feature is an ASA safeguard that allows the ProTrack I test signal voltage to be globally limited. This feature is primarily intended for test applications that may have voltage sensitive components and will prevent unintentional over voltage conditions.

To activate MaxV on the ProTrack I front panel, press the Menu button, then the Prefs button. Then, press the Advanced button to display the Advanced menu screen. At the Advanced menu screen, press the MaxV button and use the encoder to select the desired voltage limit. Once you have selected the MaxV voltage, press the Store button in the same Advanced menu screen to save and then press the Menu button to return to the Main menu screen.

**Note:** Changing MaxV will cause all ranges in the software with voltages above the MaxV setting to be invalid.

## Merge

To store more than one signature and to create upper and lower comparison boundaries (min\max). The highest and lowest digitized point values that are created as signatures are merged. These are used to allow points with values in between to pass comparisons.

## Merged Learns

After signatures for a component have been stored, the component may be learned again and again on different known-good [boards](#) and merged to create MIN/MAX signatures.

## Mils

1 mil = 1 thousandth of an inch. 1 inch = 1000 mils. Equivalent to .0254 millimeters (mm).

## Mms

Millimeter. 1mm = .001 meter. Equivalent to .0394 inches (39.4 mils).

## Motor Setting

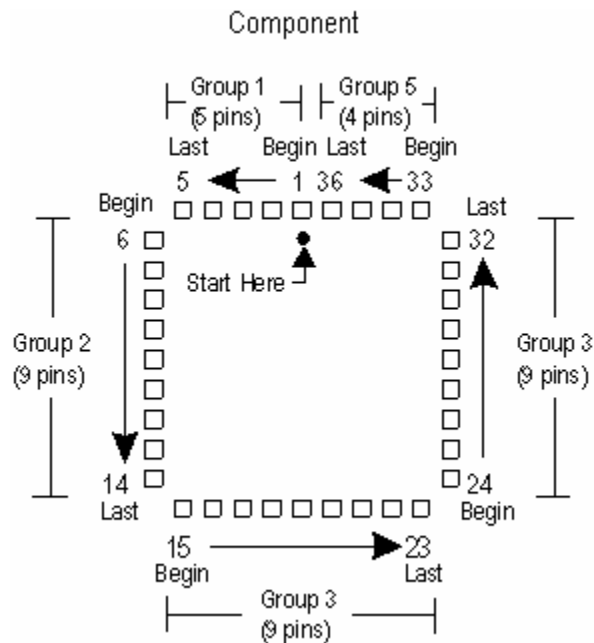
The power on state of the prober motors.

## Move

The Move function removes the selected item and places it in a different branch of a tree. Move can be performed on a board, section, and component, but not on systems.

## Multi

Packages containing multiple groups of pins. Multi package types can support up to 512 pins.



## Numeric

This is one of the two signature orders. When in this mode, the signatures are displayed by their pin number and from range 1 to range 4. The other mode is Difference.

## Offset

The calculated difference between the camera and probe tip and the probe tip to the board.

## Overwrite

Replaces existing information with the current information.

## Package

This controls how component pins are scanned. Packages include DIP, SIP, Probe, Multi, Both, or Front, DIP2X or SIP2X.

## **Partial Pin Report**

The following items are included in the report: system name and path, board name and revision, section name, and component name, package type, pin numbers, pin names, channel, common pins 1&2, Delay, tolerance, max. # of samples, test range 1-4.

## **Password**

A secret alphanumeric sequence which protects data from unauthorized use without the knowledge of the password. See Security for more information.

## **Path**

The drive and directories specifying to location of a file.

## **PCB**

Printed Circuit Board. A circuit board that has the electrical connections and component identification printed on it.

## **Performance Tests**

Tests how the Tracker is performing by measuring output voltages and current levels.

## **Pin**

The test point or lead of a component. See Pins dialog for more information.

## **Pin Down**

The down position for an individual pin.

## **Open Pin**

An Open Pin occurs when a pin gives a flat line signature. Often this occurs when a bad connection is made between the hardware and the selected component. In some cases, an Open Pin may be part of the circuit. If the Open Pins dialog appears, check to make sure good electrical contacts are made and check other higher ranges.

## **Pin Report**

The Pin Report displays the pin information of a given component.

## **Pin Shorted**

Pin with a low enough resistance to cause a vertical line signature.

## **Pitch**

Distance between component pins, pin spacing.

## **Print**

Prints the selected items. Printing Signatures and Waveform in resolution values of 400 DPI or less yields the best printing results.

## **Probe**

Probe is a component package type that disables all relays and prompts for connection of each pin. Mostly used with Huntron Probes. The Foot Pedal connected to the ProTrack I can activate the Scan Pin in the Manual Connection dialog.

## **Probe Tip**

The spring loaded test probe used with a prober to make contact with test points on the circuit board. Various probe styles are available depending on the component being tested. See Probe Tips for more information.

## **Prober**

A Huntron Robotic Test System that automates the testing of specified points on a printed circuit board. Probing hardware includes the following: RP388, Tracker 5300, Tracker 5500, Prober I, Prober II, and Prober III.

## **Prober Board Mounting**

The mounting adapters and slots on the inside walls are used to hold the board in place. See Board Test Strategies for more information.

## **Prober Offset**

See Offset and Camera Offset dialog for more information.

## **Prober Offset, Set**

See Offset and Camera Offset dialog for more information.

## **Pulse Generator**

ProTrack I outputs produce a DC voltage level or a square wave pulse.

## **Radio Button**

A small round button that is black when is selected and clear when unselected, used to indicate an option has been selected.

## **Range**

The test range applied to the component under test, such as DSLow, DSMed1, DSMed2, and DSHigh. See Range List and Select Range for more information.

## **Re-Alignment**

Changing the section alignment points to new positions.

## **Real-Time**

Continuous signature update mode.

## **Relay**

Hardware component used for test signal routing consists of switch contacts and a coil.

## **Relay Tests**

Tests the relays inside the hardware.

## **Rename**

Changes the name of selected item while keeping all other data the same.

## **Report, Scan**

Displays the Section Scan Results dialog or Component Scan Results dialog depending on the current tree level.

## **Resistive**

A linear response characterized by the angular trace/signature indicating voltage drop and current flow. See Sample Signatures for example.

## **Resistor**

An electrical component designed to resist electrical current flow. See Sample Signatures for examples.

## **Resolution**

The minimum distance that the probe tip is capable of moving.

## **Restore**

Add boards to a system from a Backup file.

## **Revision**

Indicator of the design version of a board.

## **Right, Travel**

Moves the probe tip right a distance specified by travel.

## **RP388**

The prober used with the Tracker 5100DS. The RP388, like the Prober II which has the same probing area dimensions, are the mid-sized probers with three slots.

## **Same Serial**

Compare the latest scan to stored signatures with the same serial name.

## **Sample**

A sample consists of a double reading of each signature. After processing for glitches and oscillations, the two readings are compared and must be similar or that sample is unstable. See Max. Samples for more information.

## **SAS**

Synchronous Application of Sinewave. When on the sinewave mode, this starts the trace in the same place so a stable signature may be seen.

## **Save**

Stores information to the disk.

## **Scan**

Connect to pins of a component and digitized signatures

## **Scan Component**

Scans the individual component. See Control menu for more information.

## **Scan Pins/Range**

Scans all of the pins of the component in the first range. Then scans all pins in the next range until all ranges have been scanned.

## **Scan Ranges/Pin**

Scans all of the ranges of the first pin. Then scans all of the ranges of the next pin until all pins have been scanned.

## **Scan Rate**

The pace at which the manual modes changes signatures.

## **Scan Section**

Scans the specified section and gives results following scanning. See Control menu for more information.

## **Seat**

The horizontal portion of a chair pattern.

## **Section**

A group of components on the circuit board.



## Section Down

Set the probe down position for all the pins of all the components in the section.

## Section Report

The Section Report displays the section information of a given board. The following items are included in the report: system name and path, board name and revision, section name, slot, side, and alignment name. This report may be printed.

## Section Up

Sets the probe up position for the section.

## Security

The option of setting an user's password and access privileges.

## Serial Number

The alphanumeric number of the actual board being scanned.

## Set Alignment

Records the first and second alignments point in the Align dialog.

## Set Teach

Record the pin location in the Teach dialog.

## Set All, Teach

Calculates the locations of the remaining pins from the first, last and possibly diagonal pin positions.

## Settings

The Settings menu on the Main Window.

## Settling Effect

A condition where the back of a [chair pattern](#) will stabilize over a short period of time.

## Sharp Corner

The sharp angle in the signature when a device conducts current.

## Short

An electrical connection of very low resistance allowing large amounts of current to flow.

## Side

The component or the solder side of the board.

## SigAssist™

SigAssist™ provides a tool tip of signature values.

## Signal

The analog input from the component pin.

## Signature

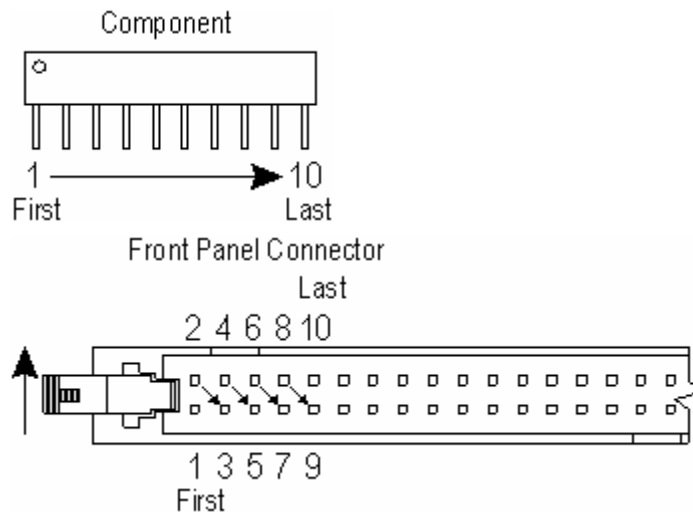
The VI characteristics of each component pin/range.

## Signature Style

The way the signatures are presented on the screen or on the printer, either off, a solid or dotted line.

## SIP

Single In-Line Package. A component package having a single line of pins, such as a connector or resistor pack.



## SIP2X

The SIP2X is an enhanced Single In-line Package (SIP) having 65-128 pins.

## Soft Corner

A curve rather than an sharp angle in the signature where a device conducts current and voltage. On some devices this is an indication of leakage. See Sharp Corner for more information.

## **STAR**

Smart Tracker Active Range (STAR) are designed to limit the maximum power of any test range available at the ProTrack I's output terminals. This hardware feature ensures that test range parameters cannot be set to any combination that might overpower the component under test. The ProTrack I's STAR feature is always enabled and can only be modified by the MaxV setting.

## **Stop on Difference**

Halts the Section Scan when a different component is encountered and allows the user to save the signatures.

## **Store**

Saves information, signatures, and values to the disk.

## **Stored Style**

The way the stored signatures are presented on the screen or printer, either off, solid or dotted lines.

## **System**

The collection of board, section and component information.

## **Teach**

This refers to translating the physical position of the probe to actual distances from the home position for each test point in the section.

## **Technical Information**

The hardware specifications and Huntron technical information for Huntron instruments is located in the user manuals or can be obtained from Huntron Technical Support.

## **Test**

Scanning to review differences from stored signatures.

## **Test Pin**

A pin of a component being scanned.

## **Tolerance**

The margin within which a component is still considered equivalent when being tested.

## **Tracker**

Huntron testing hardware that performs power off Analog Signature Analysis.

## **Tracker Signature Analysis**

Tracker Signature Analysis is a power-off troubleshooting technique that uses a sinewave stimulus to generate the voltage (V) vs. current (I) characteristics of an unpowered device. The VI characteristic is called a tracker signature. The signature is then displayed on a CRT or computer monitor. Voltage is displayed horizontally and current is displayed vertically. An open circuit is thus represented by a horizontal line and a short circuit which draws the maximum current is represented by a vertical line. See Sample Signatures for examples.

## **Travel**

How far the probe will move when movement buttons are pressed.

## **Tree**

A structured group of systems, boards, sections, and components used to store all of the information about a board that is to be scanned.

## **Troubleshoot**

A report showing all of the Different pins and components of the current scan. See Troubleshoot dialog for more information.

## **Troubleshooting**

Searching for the cause of failures based on test equipment results and symptom descriptions.

## **TSA**

An abbreviation for Tracker Signature Analysis.

## **UECA**

The Huntron Universal Edge Connector Adapter (UECA) makes edge connector testing using certain Trackers quick and easy. The UECA was designed to simplify the interfacing of printed circuit board (PCB) edge connectors to 64 pin compatible Trackers. This has proved to be a fast and efficient test technique for many circuit boards. The UECA interfaces to the test hardware through the 64 pin flat cable. The UECA has four open ended, standard edge connector sockets with the following pin spacing: 0.156", 0.150", 0.125", and 0.100". The open ends allow for easy insertion of any length edge connector. Four convenient templates are provided on the UECA to help you determine the spacing of your PCB edge connector. Just match your test PCB edge connector to the appropriate pattern.

## **Unstable Data**

A signature that required the maximum number of samples and still did not compare correctly.

## **Utility**

The Utility menu in the Main Window.

## **View PCB**

A graphic picture displayed on the computer monitor showing the position of all pins of a section. See Align dialog and Teach dialog for more information.

## Voltage

The horizontal portion of a signature. An open circuit (a horizontal line) represents maximum voltage.

## V/I

V = Voltage and I = Current, another name for ASA testing.

## Waveform

Displays the component voltage and current signals used to derive an analog signature.

## X Axis

The axis that runs left to right that the probe travels.

## Y Axis

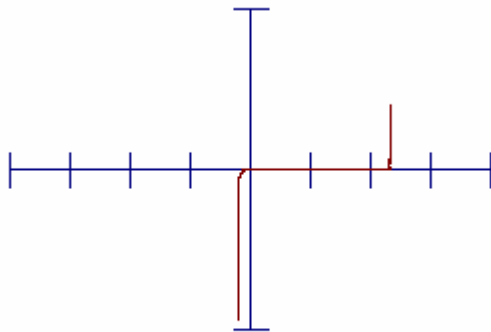
The axis that runs front to back that the probe travels.

## Z Axis

The axis that is used for the probe height.

## Zener Pattern

A pattern similar to a chair pattern although opposite in polarity. Corners indicate actual operating voltages. Common zener diodes will display a chair pattern that has a vertical break-over point at .6 volts (the conduction voltage of a silicon device) and a second break-over point at the rated voltage for the diode. See Sample Signatures for an example of a Zener Signature.



**Zener Diode  
Pattern**

## Zoom

Enlarges a signature Image to see more detail.



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