Verify User's Guide

Introduction to Verify
How to Verify Faults Using Verify
Verify Menus, Toolbars, Key Commands

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Chapter 1
Getting Started with Verify

About Verify

Verify is designed for PCB fault verification and test fixture debugging. The power of Verify is that it takes the fault data from your tester (i.e., coordinates of grid points, test point numbers, row and column locations, etc), and then Verify matches that information with the corresponding test points and pads in the PCB data. On a graphical representation of the PCB, Verify displays the test points in question and highlights the affected nets, making it easy to identify the elements to be tested for verification. For shorts, Verify can also run a proximity check between the two nets to identify probable fault areas. With Verify, you can:

Open the FixMaster/ProbeMaster Job File

Verify can import all data saved in the FixMaster or ProbeMaster job file. This includes the PCB database, and the tester-specific information. Verify uses this information to match fault data from the tester to the PCB data.

Set up a Verification Points Table

You can set up a table of fault points identified by the tester as shorts or open points. For some tester error file formats, you can import the fault data in a file. And you can also enter the fault data manually.

Configure a Proximity Check

You can set up a pad-to-pad, trace-to-trace, and trace-to-pad proximity check that is run on shorted nets. The proximity check finds probable fault areas where the two nets may be shorted, elements that are close to each other in the two nets. Verify highlights these probable fault areas on screen.

Control the Display of the Imported Data

Verify allows you to control what is shown on screen. You can display the top, bottom, and inner layers of the PCB data independently or together, and you can turn on or off the display of soldermask, silkscreen or board outline data. You can turn on and off the display of tester-specific data such as fixture drills, fixture grid points, fixture pins, wire wrap path, or moving probe fiducials. You can turn on and off the display of test point numbers and net numbers.

Examine the Error Data

Verify gives you several commands for inspecting the representation of the fault data on screen. You can display errors one at a time and select which verification points to turn on and off. There are commands to go to each verification point sequentially. For nets that have verification points displayed, Verify highlights the whole net, shows its traces and displays its net number next to its test points. For shorts, Verify runs a proximity check and color-codes probable fault areas. There are commands to go to each proximity check violation.

Send Us Your Comments

Lavenir is committed to continuous improvement. Your constructive comments on Verify will help us to correct problems and improve features.

- Please e-mail your comments and suggestions regarding Verify to **feedback@lavenir.com**.
- Visit the Lavenir Web Site at **http://www.lavenir.com**.
- You can reach Lavenir Technical Support at **(925) 680-7400** between the hours of 8 AM and 5 PM Pacific Time.
- Lavenir is located at:
  2440 Estand Way
  Pleasant Hill, CA 94523

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You can reach Lavenir Technical Support by:

- Telephone**: (925) 680-7400** between the hours of 8 AM and 5 PM Pacific Time.
- E-Mail: **support@lavenir.com**.
- Web Site: **http://www.lavenir.com**

Contact Lavenir Customer support with questions about Lavenir hardware and software or to arrange for training or maintenance.

Lavenir is located at:

2440 Estand Way
Pleasant Hill, CA 94523

Download Software Updates

Lavenir makes updated versions of Verify and updated Help files available to customers who have a current maintenance agreement or warranty. You can download the current Verify updates from the Lavenir Premier Support Web site.

To Download Verify Updates:

1. Have your **User Name** and **Password** ready before logging on to the Lavenir Premier Web Site. Your User Name and Password are printed on your User Password Letter. If you do not know your User Name and Password, call Lavenir at (925) 680-7400.
2. Go to the **Lavenir Web Site** at **http://www.lavenir.com**.
3. On the **Site Map**, click on **Premier Support**.
4. On the **User Name and Password** dialog, enter your **User Name** and **Password**.
5. Click on **Software Library**.
6. Follow the instructions to download the **VERIFY SETUP.EXE** update file to your system.
7. Double-click on the downloaded **VERIFY SETUP.EXE** file on your system and follow the setup instructions.

Chapter 2
How to Verify Fault Data Using Verify

This chapter contains a step-by-step outline of the fault verification process in Verify. And it also contains detailed procedures for most of the steps in that outline.

Fault Verification Step-by-Step Outline

Fault verification in Verify is a simple process in general, but the exact details of the procedure you use depend a lot on the type of tester you use. This procedure provides a general outline you can use to define your own procedures.

Fault Verification Procedure:

1. **Open the FixMaster/ProbeMaster Job File.** The .JOB file contains the PCB information that Verify will match to the tester fault information. See *Opening the FixMaster/ProbeMaster Job File* on page 6.
2. **Set up the Proximity Parameters.** The proximity check identifies areas in shorted nets where the shorts may have occurred. See *Setting up Proximity Parameters* on page 7.
3. **Set the Tester Error File Format.** The selected tester error file format controls many of the options available later in this procedure, so it is very important to do this before entering the verification points. See *Setting the Tester Error File Format* on page 8.
4. **Enter the Verification Points.** Verify uses the verification points from the tester to display the faults on screen. See *Entering Fault Data* on page 9.
5. **Set up the Verification Points Table Settings to Interpret the Verification Points Properly.** For some tester error file formats, Verify needs additional information to interpret the verification points properly. See *Setting the Verification Points Table Settings to Interpret Points Properly* on page 20.
6. **Examine the Faults.** Verify has many features to help you locate the points on the board that need to be verified. See *Examining Faults* on page 24.

Opening the FixMaster/ProbeMaster Job File

The first step in the fault verification process is to open the FixMaster or ProbeMaster .JOB file that was used to prepare the test files for the boards you are going to verify. The .JOB file contains the original PCB information that was imported into FixMaster or ProbeMaster. It also contains the database that matches the imported PCB design and test points to the tester locations (i.e., fixture grid points, wire wrap translation blocks, or moving probe test points). Verify will use this information to translate the fault locations reported by the tester back into a graphical representation of the fault locations on the PCB design.

To Open the FixMaster/ProbeMaster Job File:

1. On the **File** menu, click **Open**.
2. In the **Look in** box, click the drive, folder, or network location that contains the .JOB file.
3. In the folder list, double-click folders until you open the folder that contains the .JOB file you want.
4. **Double-click** the **.JOB file**.

Tip: *To open a .JOB file you've used recently, click the file name on the Recent Files List at the bottom of the File menu.*

Menu: *File-Open*

Button:

Key: *Ctrl+O*

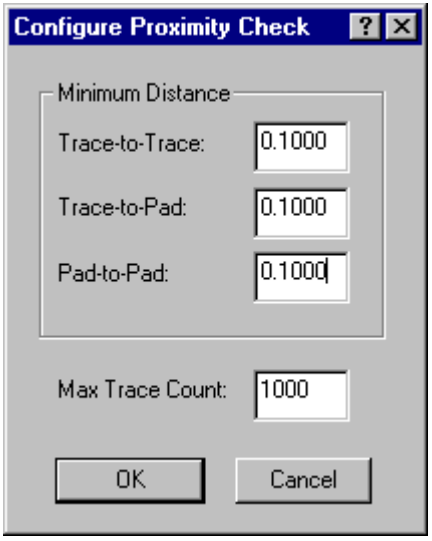
Setting up Proximity Parameters

To help find shorts between nets, Verify has a Proximity Check feature. The Proximity Check finds elements in the shorted nets that are closer than the minimum distance you enter. This feature locates elements in shorted nets that are close together and helps pinpoint areas on the board where the short may have occurred.

To set up the Proximity Check:

1. On the **Config** menu, click **Proximity Check**.

   Verify displays the **Proximity Check** dialog.



Proximity Check Dialog

2. In the **Minimum Distance** group box, enter the minimum distance allowed between elements. Elements that are in shorted nets and are closer than the minimum distance are considered to be proximity violations.
3. In the **Max Trace Count** field, enter the maximum size of nets to check. Verify will not check nets that have more than the maximum number of traces.
4. Click **OK**

Menu: *Config-Proximity Check*

Button: *None*

Key: *None*

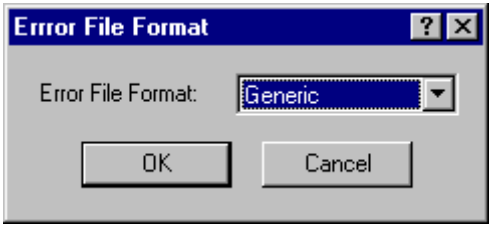
Setting the Tester Error File Format

Depending on the tester error file format selected, Verify changes the options available on certain dialogs and changes how the program interprets fault data entries. Because of this, it is important to set the tester error file format before entering the fault data.

To Set the Tester Error File Format:

1. On the **Config** menu, click **Error File Format**.

   Verify displays the **Error File Format** dialog.



Error File Format Dialog

2. Select the format of the error file and click **OK**.

   Menu: *Config-Error File Format*

   Button: *None*

   Key: *None*

Entering Fault Data

In general, in Verify you can enter the fault data in two ways, import a fault file from the tester or enter the fault data manually.

Each tester format handles these operations differently. For instance, not all tester formats allow you to import a fault file from a tester; some formats only allow fault data to be entered manually. And for the formats that do have the option to import fault files, each format has a different import dialog. In addition, the manual fault data for each tester format may be in a different form (i.e., test point numbers for moving probe testers; X, Y grid coordinates for universal testers; and translation hole numbers for wire wrapping). Because of this variation, it is important to set up the tester type before entering the fault data. See *Setting the Tester Error File Format* on page 8.

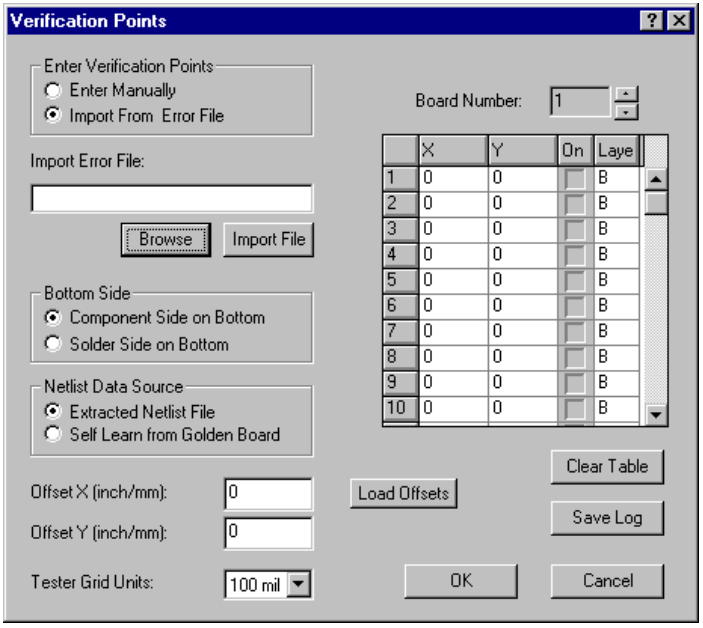
Importing a Fault File from the Tester

The values in the **Verification Points** table provide Verify the information it needs to correlate fault data with the PCB nets. Each tester format handles importing a fault file differently. For instance, not all tester formats allow you to import a fault file and instead they require you to enter the fault data manually. And for the formats that do have the option to import fault files, each format has a different import dialog. Because of this variation, it is important to set up the tester type before entering the fault data. See *Setting the Tester Error File Format* on page 8.

To Import a Fault File from the Tester:

1. On the **Action** Menu, click **Input Table**.

   Verify displays the **Verification Points** dialog. If the error file format you selected earlier is Generic, Integri, Viking, LM, ECT9090, TTI, TRACE948, PDI, or FASTEK, the **Verification Points** dialog that is displayed looks like the following. For other versions, see the sections following this procedure.



Verification Points Dialog used by Most Error File Formats

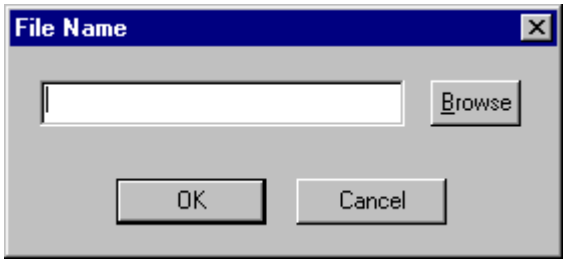
2. In the **Enter Verification Points** group box, select the option to **Import from Error File**.
3. In the **Import Error File** text box, enter the **name of the error file**, or click the **Browse** button to select a file from the available directories.
4. To import the file into Verify, click the **Import File** button.
5. After loading the file, set up the other settings on the **Verification Points** dialog to interpret the loaded verification points properly. See *Setting the Verification Points Table Settings to Interpret Points Properly* on page 20.

Menu: *Action-Input Table*

Button:

Key: *None*

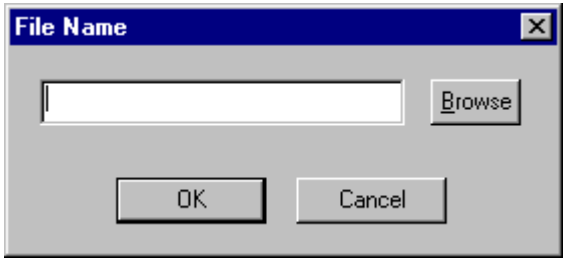
EMMA Verification Points Dialog



EMMA Verification Points Dialog

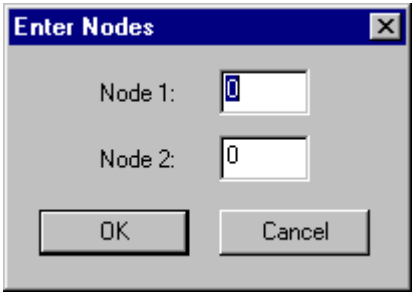
Note: *This dialog can be displayed using the menu command **Action-Input Errors-File**. The menu command **Action-Input Errors-Manual** displays a dialog in which you can enter EMMA verification points manually.*

UTRON Verification Points Dialog



UTRON Verification Points Dialog

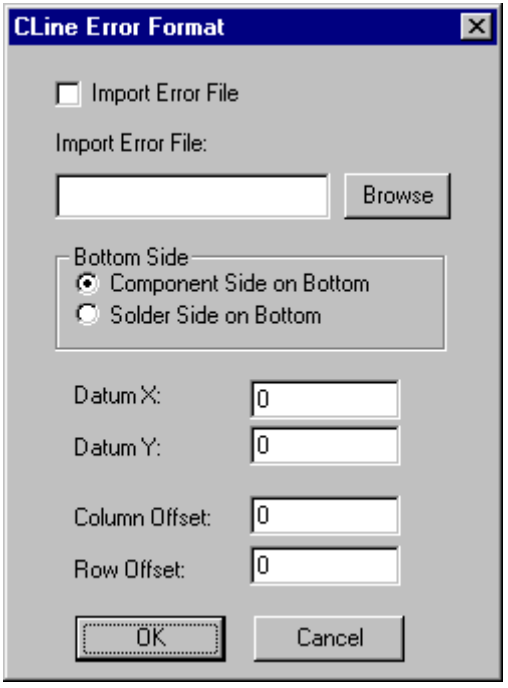
ECT/Custom Kyoei Verification Points Dialog



ECT/Custom Kyoei Verification Points Dialog

Note: *The **ECT/Custom Kyoei Verification Points Dialog** does not provide the option to import a file. This dialog is the same as the **ECT/Custom Kyoei Quick Input Table**. See **Quick Input Table** on page 13.*

Cline/TTI9600 Verification Points Dialog



Cline/TTI9600 Verification Points Dialog

Entering Fault Data Manually

For most tester error file formats there are two tables where you can enter fault data manually, the **Quick Input Verification Points Table** and the full **Verification Points Table**. Because the options available on these dialogs depend on the selected tester error file format, your particular format may or may not include all of the options discussed. For information on setting the tester error file format, see *Setting the Tester Error File Format* on page 8.

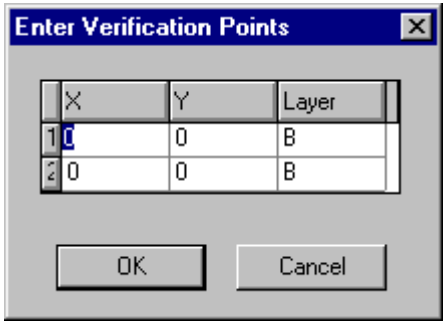
Quick Input Table

The quickest way to enter fault data manually is to use the **Quick Input Verification Points Table**. For most tester error file formats the **Quick Input Verification Points Table** allows you to enter pairs of verification points. This table is used when you want to quickly display one set of faults at a time.

To Enter Fault Data Manually from the Quick Input Verification Points Table:

1. Press the **forward slash (/) key**.

   Verify displays the **Quick Input Verification Points Table**. If the error file format you selected earlier is Generic, Integri, Viking, LM, ECT9090, Cline/TTI9600, TTI, TRACE948, PDI, or FASTEK, the **Quick Input Verification Points Table** dialog that is displayed looks like the following. For other versions, see the sections following this procedure.



Quick Input Table

2. In row **1**, enter the **X** and **Y** locations and the **board side** of the first verification point, and in row **2** enter the information for the second point.

Note: *If the **Quick Input Table** does not seem to be accepting data the way you expect (for instance, data following the decimal point disappears), check the **Verification Points Dialog** settings, to be sure they are correct. See **Setting the Verification Points Table Settings to Interpret Points Properly** on page 20.*

---

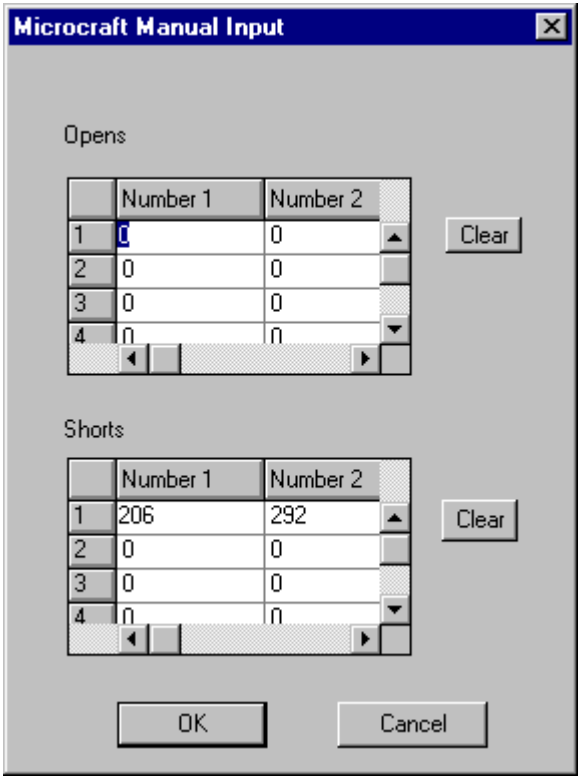
3. Click **OK**.

Menu: *None*

Button: *None*

Key: *Forward slash (/) key*

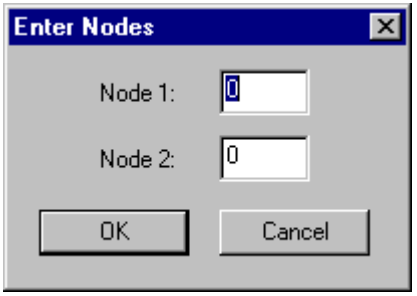
EMMA Quick Input Table



EMMA Quick Input Table

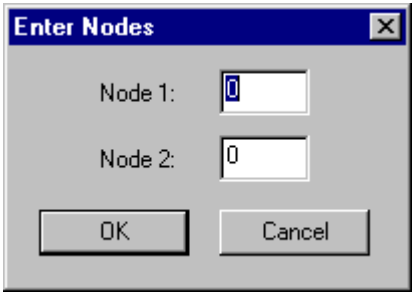
Note: *The **EMMA Quick Input Table** can also be displayed using the menu command **Action-Input Errors-Manual**. The menu command **Action-Input Errors-File** displays a dialog in which you can import an EMMA error file.*

UTRON Quick Input Table



UTRON Quick Input Table

ECT/Custom Kyoei Quick Input Table



ECT/Custom Kyoei Quick Input Table

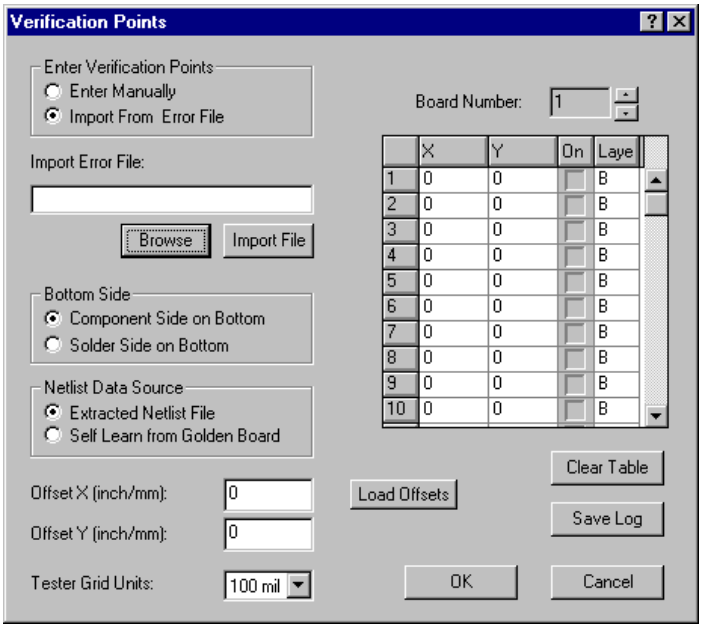
Full Verification Points Table

The other table where you can enter fault data manually is the full **Verification Points Table**. On the full **Verification Points Table** you can enter all the fault data at one time if you wish and control which data you want to display at any given time, or you can enter pairs of faults one at a time. For some tester error file formats, the table also has the ability to import the tester fault data file. See *Importing a Fault File from the Tester* on page 9. For some tester error file formats the table also contains other settings that allow Verify to interpret the fault data properly. See *Setting the Verification Points Table Settings to Interpret Points Properly* on page 20.

To Enter Fault Data Manually from the Full Verification Points Table:

1. On the **Action** menu, click **Input Table**.

   Verify displays the **Verification Points** dialog. If the error file format you selected earlier is Generic, Integri, Viking, LM, ECT9090, TTI, TRACE948, PDI, or FASTEK, the **Verification Points** dialog that is displayed looks like the following. For other versions, see the sections following this procedure.



Verification Points Dialog used by Most Error File Formats

2. In the **Enter Verification Points** group box, select the option to **Enter Manually**.
3. **Enter the verification points** into the **Verification Points** table. You can enter points in pairs, or you can enter points into the entire table.
4. For each point that you want to display click the **On** column so that it has a **checkmark**. If a point has **no checkmark**, then the point is **not displayed**. Generally you will only want to

turn on two points at a time, and those two points will represent a single fault, a short or an open.

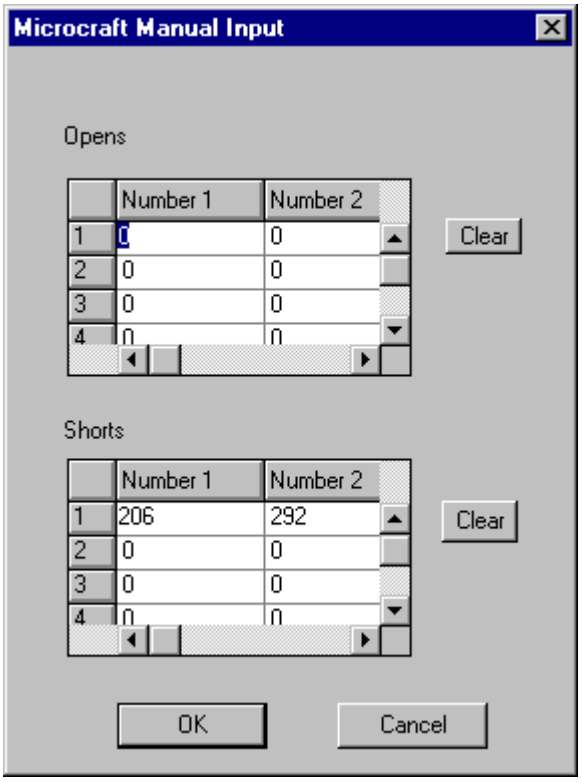
5. After entering the verification points, set up the other **Verification Points Table** settings to interpret the loaded verification points properly. See *Setting the Verification Points Table Settings to Interpret Points Properly* on page 20.

Menu: *Action-Input Table*

Button:

Key: *None*

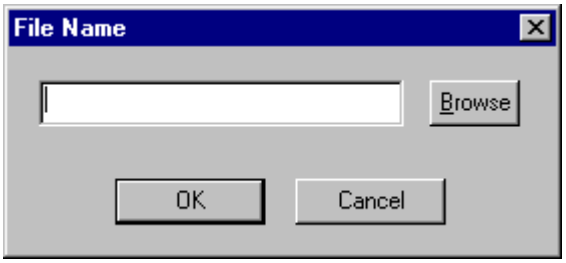
EMMA Verification Points Dialog



EMMA Verification Points Dialog

Note: *This dialog is the same as the **EMMA Quick Input Table** and is displayed using the menu command **Action-Input Errors-Manual**. The menu command **Action-Input Errors-File** displays a dialog in which you can import an EMMA error file.*

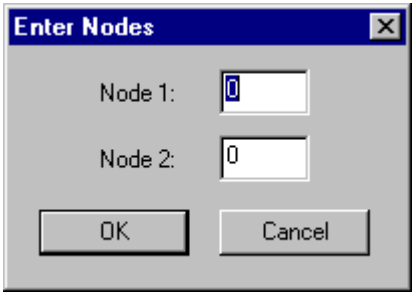
UTRON Verification Points Dialog



UTRON Verification Points Dialog

Note: *The **UTRON Verification Points Dialog** does not allow for manual input, so you will have to use the **UTRON Quick Input Table**. See **Quick Input Table** on page 13.*

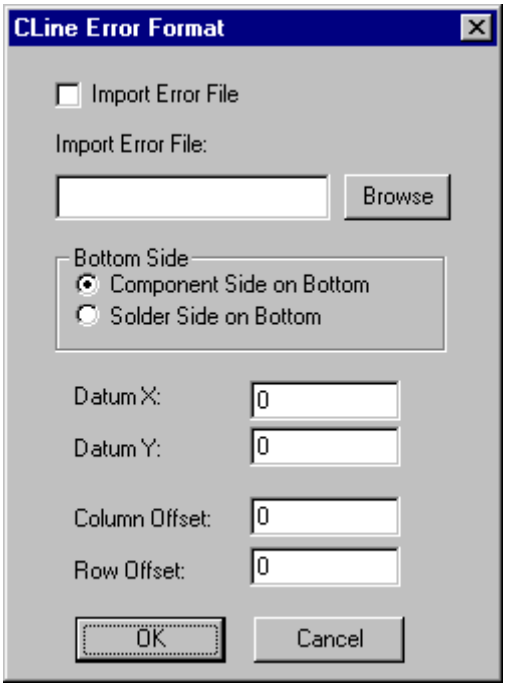
ECT/Custom Kyoei Verification Points Dialog



ECT/Custom Kyoei Verification Points Dialog

Note: *The **ECT/Custom Kyoei Verification Points Dialog** is the same as the **ECT/Custom Kyoei Quick Input Table**. See **Quick Input Table** on page 13.*

Cline/TTI9600 Verification Points Dialog



Cline/TTI9600 Verification Points Dialog

Note: *The **Cline/TTI9600 Verification Points Dialog** does not allow for manual input, so you will have to use the **Cline/TTI9600 Quick Input Table**. See **Quick Input Table** on page 13.*

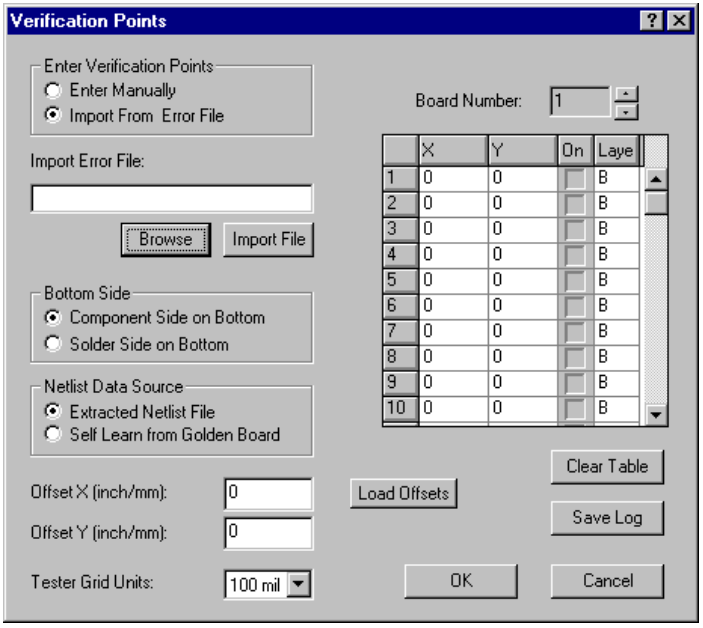
Setting the Verification Points Table Settings to Interpret Points Properly

For some tester error file formats, Verify needs some additional information in order to interpret the loaded verification points properly. Not all error file formats require these additional settings. For information on setting the tester error file format, see *Setting the Tester Error File Format* on page 8.

To Set the Verification Points Table Settings to Interpret Loaded Verification Points Properly:

1. If you are not already in the **Verification Table**, go to the **Action** menu, and click **Input Table**.

   Verify displays the **Verification Points** dialog. If the error file format you selected earlier is Generic, Integri, Viking, LM, ECT9090, TTI, TRACE948, PDI, or FASTEK, the **Verification Points** dialog that is displayed looks like the following.



Verification Points Dialog used by Most Error File Formats

2. In the **Bottom Side** group box, select whether the **Component Side** or **Solder Side** of the board was tested as the **Bottom Side**.
3. In the **Netlist Data Source** group box, select whether the netlist source is from an **Extracted Netlist File** or if it was **Self-Learned from a Golden Board**.

4. In the **Offset X** and **Offset Y** text boxes, enter the **X and Y distance** that the fault data is offset form the **Grid Origin**, if any.

   Note: *For some TTI type testers, you can automatically load the offsets by clicking the* ***Load Offsets*** *button.*

5. In the **Tester Grid Units** drop list, select the **Grid Units** used by the tester.
6. Click **OK**

Menu: *Action-Input Table*

Button:

Key: *None*

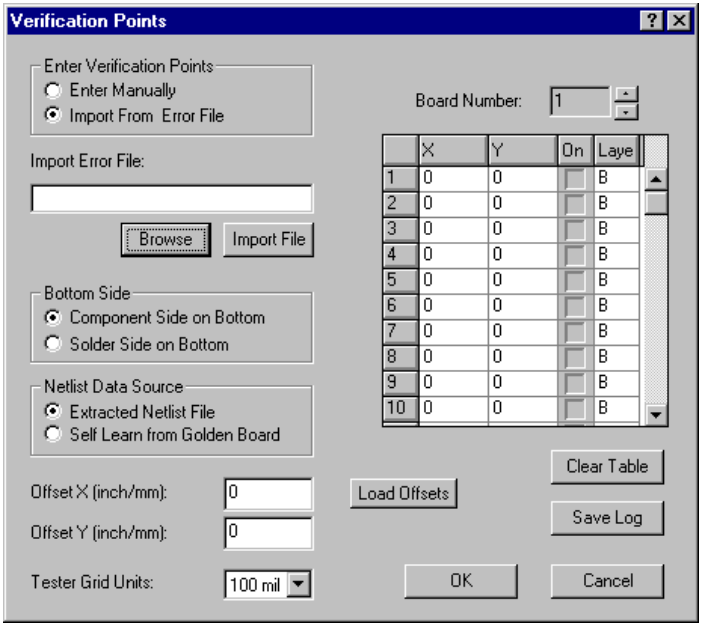
Saving a Log File of Verification Points

You can save a text log file that contains the verification points currently listed in the **Verification Points Table**. In addition to the verification points, the file contains the Pin ID, Reference ID, Signal ID and whether the error is a short or an open.

To Save a Log File of Verification Points:

1. If you are not already in the **Verification Table**, go to the **Action** menu, and click **Input Table**.

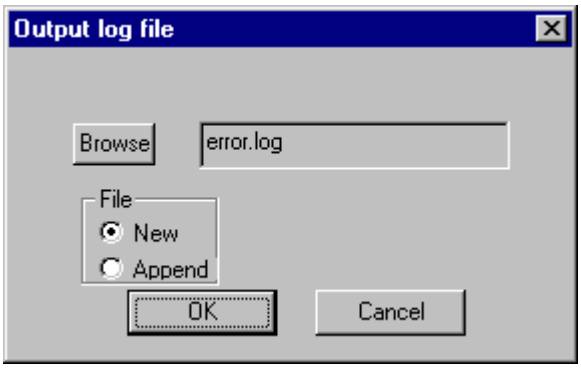
   Verify displays the **Verification Points** dialog. If the error file format you selected earlier is Generic, Integri, Viking, LM, ECT9090, TTI, TRACE948, PDI, or FASTEK, the **Verification Points** dialog that is displayed looks like the following.



Verification Points Dialog used by Most Error File Formats

2. With the verification points you want to save entered in the **Verification Points Table**, click the **Save Log** button.

Verify displays the **Output Log File** dialog.



Output Log File Dialog

3. Click the **Browse** button to select a directory and enter a file name.
4. In the **File** group box, select whether to save a **New** file, which will overwrite any existing file with the same file name, or to **Append** to any existing file with the same file name.
5. Click **OK**.

   Verify saves the log file.

Examining Faults

Verify provides a color-coded graphical representation of the PCB layout, the verification points, the highlighted nets containing the verification points, and the probable fault areas.

The exact procedures you will use for examining this representation depends on many factors: the tester error file format; whether the fault data is imported in a file or manually entered into the **Verification Points Table** or the **Quick Input Table**; and whether you are searching for shorts or opens. Regardless of the exact procedures you use, you will probably perform the following types of tasks:

Change the View of the Data on Screen

Depending on your test method, you will probably want to display some types of data and hide other types. For more on viewing data in Verify, see *Viewing Data in Verify* on page 33.

Display One Fault at a Time

You will need to turn on and off the sets of verification points that represent faults. In other words, you will probably want to display one fault at a time and turn off points that represent other faults. In most cases, this means you or Verify identify a pair of verification points that represent an open or short. Verify displays the two verification points in the viewing area marked with a white X and highlights the net(s) that contain the points. How you select which set of points to display depends on how the data was imported and the error file format.

Enter Faults One at a Time in the Quick Input Table

With some error file formats, the **Quick Input Table** only allows two verification points to be entered at a time. There are no other commands necessary to go to the next set of points. You enter one set of points into the **Quick Input Table** and examine that set of points and their highlighted net(s) on screen. Then when you are ready for the next set, you enter the next set into the **Quick Input Table**. For more information about the **Quick Input Table**, see *Quick Input Table* on page 13.

Use the Display Next or Previous Fault Command

With some error file formats, it is possible to load multiple sets of verification points for a single board. For instance, in some error file formats you can import a file that contains multiple pairs of points that are in error for a single board. And in some versions of the **Quick Input Table**, you can manually enter multiple pairs of points. In those cases where you have a table of pairs of points, you can use the **Display Next or Previous Fault** command to automatically skip to the next or previous fault. When you use the command, the next set of points and their highlighted net(s) are shown on screen. For more information about the **Display Next or Previous Fault** command, see *Displaying the Next or Previous Fault in the Verification Table* on page 33.

Use the Display Next or Previous Board Command

With some error file formats, it is possible to import fault data for more than one board. In this case you can use the **Display Next or Previous Board** command to automatically skip to the next or previous board. For more information about the **Display Next or Previous Board** command, see *Displaying Faults for the Next or Previous Board* on page 34. And you can use the **Display Next or Previous Fault** command to automatically skip to the next or previous fault for the current board. See *Displaying the Next or Previous Fault in the Verification Table* on page 33.

Turn Points On or Off manually in the Verification Points Table

With some error file formats, it is possible to enter into the full **Verification Points Table** a list of points that are in error, but are not grouped into pairs. Generally you want to display a pair of verification points that represent an open or short, so it is up to you to select which individual points to display at a time. In this case you open the **Verification Points Table**, and click the **On** column for the points that you want turned on so that there is a **checkmark**. Points that have **no checkmark** are turned **off**. Points that do have a **checkmark** are shown on screen, and their net(s) are highlighted. For more information about the **Verification Points Table**, see *Full Verification Points Table* on page 16.

Go to Each Verification Point that is Turned On

Once the verification points that represent the fault are turned on, you may want to go to those points for closer inspection. Each verification point that is turned on is displayed on screen as a white X. Use the **Go to Next Verification Point** command to snap the cursor to the active verification points. For more information on the **Go to Next Verification Point** command, see *Going to the Next Verification Point for the Selected Fault* on page 50.

Once the cursor is at one of the verification points, you can find out information about that point by selecting it. Selecting the point causes Verify to display information about the point in the **Status Bar**: net number, D Code, probe number, board side, etc. For more information about selecting elements, see *Selecting a Test Point or a Pad* on page 52, *Selecting a Pad* on page 52 and *Selecting a Test Point* on page 53. Also once you have identified the pad that contains the verification point, you can find the position of that pad relative to other pads. This makes it easier to locate the pad on the physical board so that you can test the point. For information on finding the position of a pad relative to other pads, see *Finding the Position of a Selected Pad Relative to Other Pads* on page 51.

Display the Next or Previous Proximity Check Violation

If the verification points that are turned on belong to different nets, then they represent a short between those nets, and Verify automatically runs a proximity check on those shorted nets. The proximity check identifies elements in the two nets that are close to each other. Those elements are potentially locations on the physical board where the short may have occurred. So the proximity check can help you find areas to check for shorts on the physical board. If there is a proximity violation between the two nets, then the nets are shown on screen highlighted in red, and the proximity violations are displayed on screen as a pair of elements highlighted in yellow. If there are no proximity violations, the nets are highlighted, but not shown in red. If the proximity check finds more than one proximity violation you can use the **Display Next or Previous Proximity Check Violation** command to display each proximity violation in turn. For more on the **Display Next or Previous Proximity Check Violation** command, see *Displaying the Next or Previous Proximity Check Violation* on page 34. For more on setting up the Proximity Check, see *Setting up Proximity Parameters* on page 7.

If the verification points that are turned on belong to the same net, then they represent an open within that net, and Verify does not run a proximity check. There is no proximity data to display. The nets are highlighted, but not shown in red.

Find the Position of a Pad Relative to Other Pads

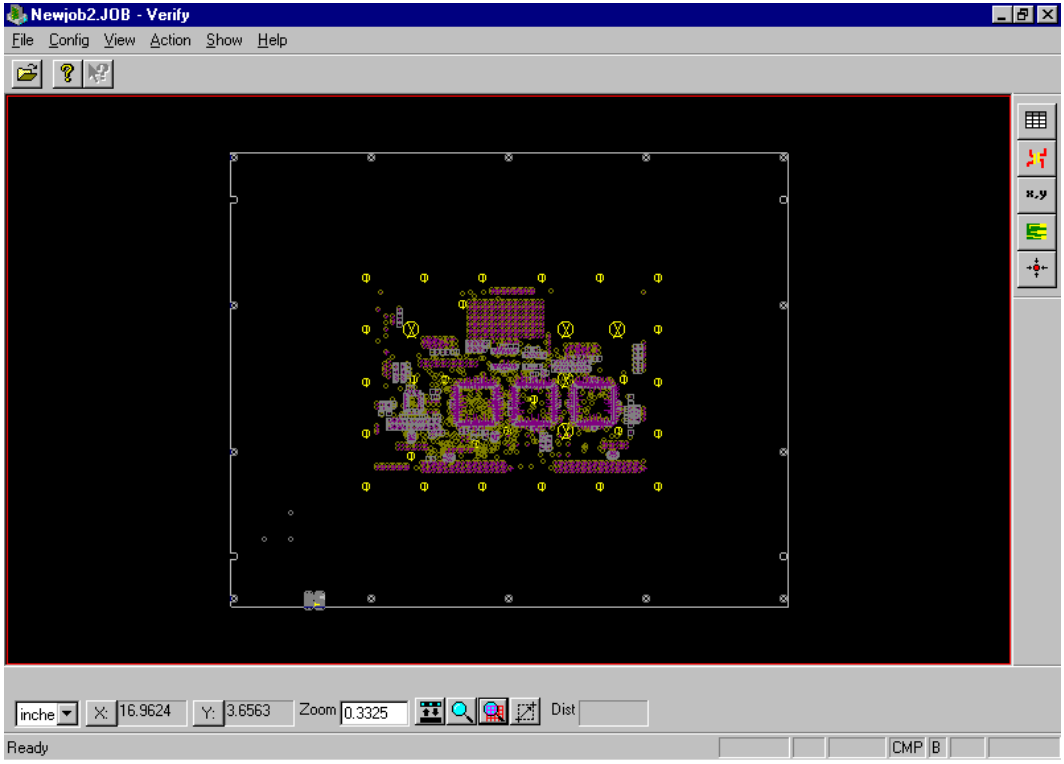
Once you have used the techniques above to identify a pad of interest, you can find the position of that pad relative to other pads. This makes it easier to locate the pad on the physical board so that you can test the point. For information on finding the position of a pad relative to other pads, see *Finding the Position of a Selected Pad Relative to Other Pads* on page 51.

Chapter 3
Verify Interface Overview

Verify has a point-and-click Windows interface with most functions available on command menus and command toolbars. Many functions can also be activated using shortcut key commands. This chapter provides a brief overview of the major elements of the interface. For more detailed descriptions of the commands represented on the individual menus and toolbar buttons, see the topics that describe the function you want to perform.

Application Window

The Verify Application Window has command menus at the top, toolbars around the edges, a status bar at the bottom and the viewing area in the center.



Verify Application Window

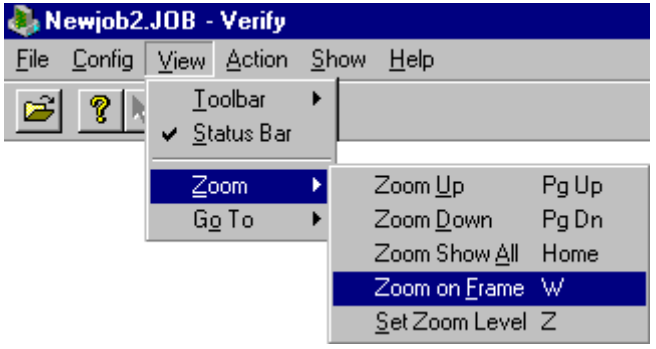
Command Menus

Most commands in Verify can be accessed through the command menus. Command menus are usually accessed by clicking on the command. In this manual, command menu commands are written in **bold** and the cascade menus are separated by a dash (-).

Command Menu Instruction Example:

- On the **View** menu, click **Zoom-Zoom on Frame**.

  The instruction in the example means to click the menu shown in the following graphic.



Command Menu Example

Access Keys for Menu Commands

Command menus can also be accessed from the keyboard using what are sometimes called access keys or accelerator keys. The underlined character in each menu indicates the access key for that menu selection. To use the access keys press the **Alt** key and the first access key indicated in the top-level menu. The menu drops down. Then press the other access keys indicated in each cascade menu.

Access Key Example:

1. For the example shown in the Command Menu Example graphic, press **Alt+V** together.

   The **View** menu drops down.

2. Press **Z**.

   The **Zoom** cascade menu drops down.

3. Press **F**.

   The **Zoom on Frame** command is selected.

Shortcut Keys for Menu Commands

Often a command on the command menus will have an even faster way to access the command by keyboard. These key commands are sometimes called shortcut keys or hotkeys. If there is an equivalent key command, it is usually indicated on the final cascade menu. In the example in the graphic, the shortcut key command is **W**. There are also shortcut keys for commands that are not on the menus. For more about shortcut key commands see *Key Commands* on page 32. For a listing of all shortcut key commands in Verify, see *Key Commands Summary* on page 65.

Command Toolbars

Many commands in Verify can be accessed through the command toolbars. Toolbar controls are activated by clicking on the toolbar button or control. In this manual, toolbar controls are either shown using a graphic, or the name of the button or control is written in **bold**.

To Find Out What a Toolbar Control Is:

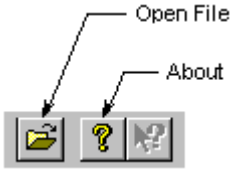
- Hold the cursor over the toolbar button or control for a moment.

  A ToolTip pops up next to the control. The ToolTip gives the name of the control and usually also gives the equivalent key command. The **Message Line** in the **Status Bar** gives some additional information about the control.

The following sections provide brief descriptions of each of the toolbars. For more detailed descriptions of the toolbar commands, see the topics that describe the function you want to perform.

Main Toolbar

The **Main** toolbar has the **Open File** command and the **About** command.



Main Toolbar

To Display the Main Toolbar:

1. On the **View** menu, go to **Toolbar** and look at **Main**.
   - If **Main** has a **checkmark** next to it, then the **Main** toolbar is being **displayed**.
   - If **Main** has **no checkmark** next to it, then the **Main** toolbar is **not being displayed**.
2. Click **Main** to switch between displaying or not displaying the **Main** toolbar.

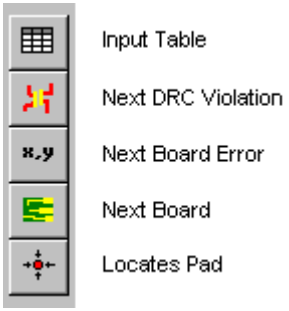
   Menu: *View-Toolbar-Main*

   Button: *None*

   Key: *None*

Side Toolbar

The **Side** toolbar has the main commands for performing fault verification.



Side Toolbar

To Display the Side Toolbar:

1. On the **View** menu, go to **Toolbar** and look at **Side**.
   - If **Side** has a **checkmark** next to it, then the **Side** toolbar is being **displayed**.
   - If **Side** has **no checkmark** next to it, then the **Side** toolbar is **not being displayed**.
2. Click **Side** to switch between displaying or not displaying the **Side** toolbar.

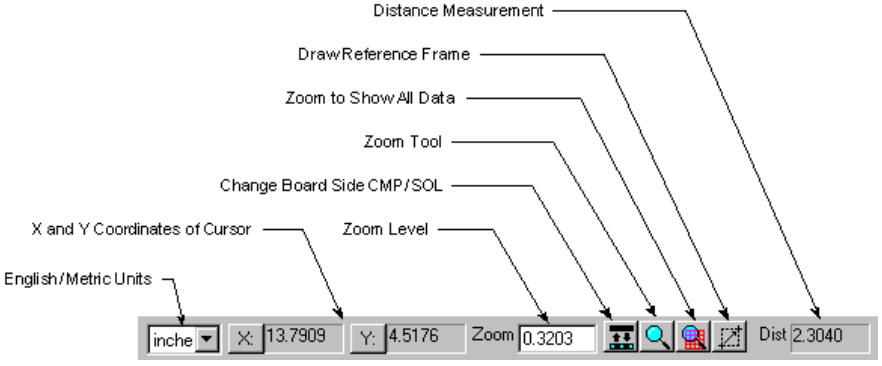
Menu: *View-Toolbar-Side*

Button: *None*

Key: *None*

Screen Toolbar

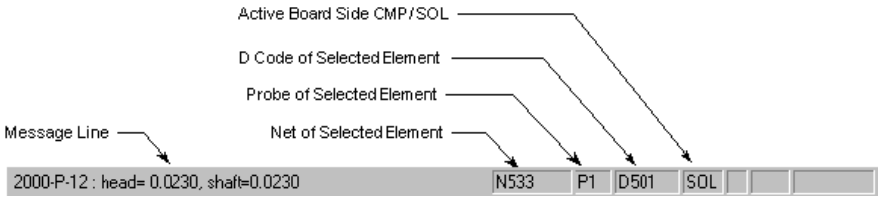
The **Screen** toolbar has controls for changing the view of the **Viewing Area** and changing how the cursor coordinates and distance are shown.



Screen Toolbar

Status Bar

The **Status Bar** provides information about the selected elements and displays messages from the system, such as prompts for commands.



Status Bar

To Display the Status Bar:

1. On the **View** menu, go to **Status Bar**.
   - If **Status Bar** has a **checkmark** next to it, then the **Status Bar** is being **displayed**.
   - If **Status Bar** has **no checkmark** next to it, then the **Status Bar** is **not being displayed**.
2. Click **Status Bar** to switch between displaying or not displaying the **Status Bar**.

   Menu: *View-Status Bar*

   Button: *None*

   Key: *None*

Key Commands

Many commands in Verify can be accessed through the keyboard using the key commands.

Shortcut Key Commands

Shortcut keys are the fastest way to activate commands. Shortcut keys are usually a single keyboard key (such as **R** or **D**), or they can use the **Shift** or **Ctrl** keys modifiers (such as **Shift+R** or **Ctrl+R**). For a complete list of all shortcut keys in Verify, see *Key Commands Summary* on page 65.

To Find the Shortcut Key for a Menu Command:

- Go to the menu command that you want to use.

  If there is a shortcut key for that command, it will be indicated on the final cascade menu.

To Find the Shortcut Key for a Toolbar Control:

- Hold the cursor over the toolbar button or control for a moment.

  A ToolTip pops up next to the control. If there is a shortcut key for that command, it will be indicated on the ToolTip.

Access Key Commands

Access keys are just an alternative way to activate a menu command. The underlined character in each menu indicates the access key for that menu selection. To use the access keys press the **Alt** key and the first access key indicated in the top-level menu, and then press the other access key indicated in each cascade menu. For more about access keys, see *Command Menus* on page 28.

Chapter 4
Viewing Data in Verify

Verify has many options for viewing data. You can choose what data to display on screen, highlight certain types of data, zoom up and down, go to specific locations or types of data, use an on-screen reference frame, use an on-screen positioning grid, measure distance, display job statistics, and switch between English and metric units.

Choosing What Data to Display

Verify has many commands that allow you to control what data is displayed on screen.

Displaying the Next or Previous Fault in the Verification Table

If there is more than one set of verification points in the **Verification Points Table**, then you can use the **Next Fault** or **Previous Fault** commands to display the next or previous set of verification points.

To Display the Next or Previous Fault in the Verification Table:

- Press **Shift+N** to see the next fault in the verification table, or press **N** to see the previous.

Menu: *None*

Button:

Key: *Shift+N = Next fault*
N = Previous fault

Displaying the Next or Previous Proximity Check Violation

If the currently displayed set of verification points represents a short, then Verify automatically runs a proximity check on the shorted nets using the proximity parameters you set up. For information on setting up the proximity parameters, see *Setting up Proximity Parameters* on page 7. The proximity check identifies elements in the two nets that are close to each other, and these proximity violations are locations where the short might have occurred. If there is a proximity violation between the two nets, then the nets are shown on screen highlighted in red. And the proximity violations are displayed on screen as a pair of elements highlighted in yellow. If there is more than one proximity violation for the set of verification points, then you can use the **Next Proximity Violation** or **Previous Proximity Violation** commands to display the next or previous proximity violation.

To Display the Next or Previous Proximity Check Violation:

- Press **Shift+V** to see the next proximity check violation for the selected fault, or press **V** to see the previous.

Menu: *None*

Button:

Key: *Shift+V = Next proximity check violation*
V = Previous proximity check violation

Displaying Faults for the Next or Previous Board

If you have imported an error file that includes faults for more than one board, then you can use the **Next Board** or **Previous Board** commands to skip to the first fault of the next or previous board.

Note: *Not all error file formats support fault data for more than one board, and the **Quick Input Verification Points Table** does not support fault data for more than one board. This feature only works if the imported error file includes data for more than one board.*

To Display Faults for the Next or Previous Board:

- Press **Shift+J** to see faults for the next board, or press **J** to see faults for the previous.

Menu: *None*

Button:

Key: *Shift+J = Next board*
J = Previous board

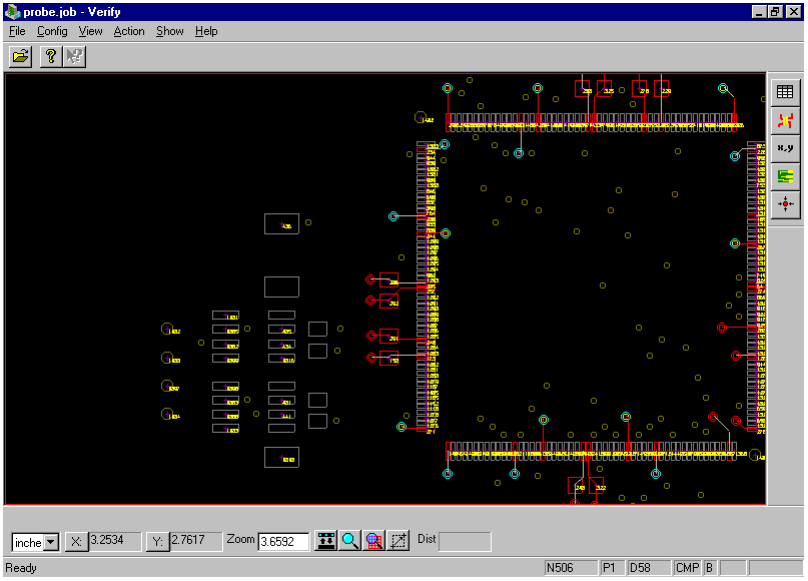
Displaying Verification Points with a Large White X

You can choose to display or not to display the verification points with a large white X. The large white X makes the verification points easier to see.

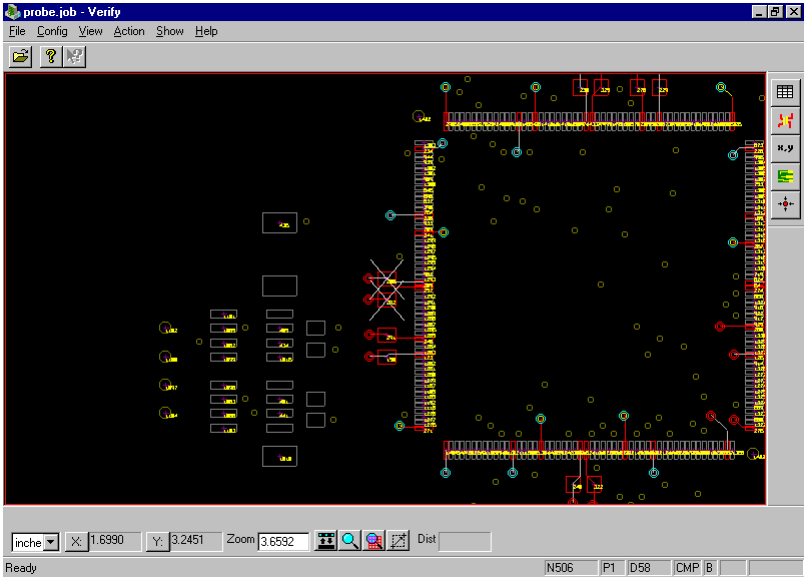
To Display the Verification Points with a Large White X:

1. On the **Show** menu, go to **Large Ver Points**.
   - If **Large Ver Points** has a **checkmark** next to it, then the verification points are being **displayed with a large white X**.
   - If **Large Ver Points** has **no checkmark** next to it, then the verification points are **not being displayed with a large white X**.
2. Click **Large Ver Points** to switch between displaying or not displaying the verification points with a large white X.

> ***Menu:*** *Show- Large Ver Points*
>
> ***Button:*** *None*
>
> ***Key:*** *None*



Large Verification Points Turned Off



Large Verification Points Turned On

Displaying the PCB Data

You can choose to display or not to display the imported PCB data.

Note: *If it ever appears that your PCB data has just disappeared, it may be that you have accidentally activated this command. Just press **B** again to restore it.*

To Display the PCB Data:

➢ Press **B**.

Menu: *None*

Button: *None*

Key: *B*

Displaying Component Side, Solder Side or Inner Layer Data

The PCB data may contain component side data, solder side data and inner layer data, and you can control which layers are displayed at any time.

To Display Component Side, Solder Side or Inner Layer Data:

1. On the **Show** menu, go to **CPU**, **CPL** or **Inner**.
   - If the layer you are interested in (**CPU**, **CPL** or **Inner**) has a **checkmark** next to it, then that layer is being **displayed**.
   - If you are interested in (**CPU**, **CPL** or **Inner**) has **no checkmark** next to it, then that layer is **not being displayed**.
2. Click **CPU**, **CPL** or **Inner** to switch between displaying or not displaying that layer.

Menu: *Show-CPU*
Show-CPL
Show-Inner

Button: *None*

Key: *Shift+L This key command controls the display of all of the layers. By pressing the key command repeatedly you can cycle through displaying various layer combinations. Each layer combination is indicated in the **Status Bar** by a one-letter code: all the layers together (A), both CPU and CPL (B), CPU only (C), CPL only (S), and Inner only (I).*

Setting the Active Layer

Verify allows you to control which board side (component or solder) is active. Only elements in the active layer can be selected. The currently active side is shown in the **Status Bar**, either CMP or SOL. In addition to controlling which PCB side is active, this command also controls which side of the fixture data, if any, is visible.

To Display Component Side or Solder Side Data:

- On the **Show** menu, click **Active Layer**.

  Menu: *Show-Active Layer*

  Button:

  Key: *Shift+O*

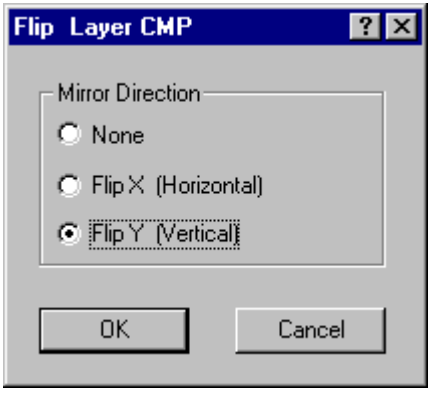
Flipping the Component Side or Solder Side Data

You can choose to display the component side and/or the solder side data in a mirrored orientation.

To Flip the Component Side or Solder Side Data:

1. On the **Show** menu, click **Flip CMP** or **Flip SOL**.

   Verify displays the **Flip Layer CMP** or **Flip Layer SOL** dialog.



Flip Layer CMP Dialog

2. On the **Flip Layer CMP** or **Flip Layer SOL** dialog, select the orientation in which you want to display the layer.
   - **None:** The layer is not flipped and is shown exactly as imported. This option can be selected to restore data that has been flipped to its original orientation.
   - **Flip X (Horizontal):** The layer is flipped in the **X-axis** so that left becomes right.
   - **Flip Y (Vertical):** The layer is flipped in the **Y-axis** so that top becomes bottom.
3. Click **OK**.

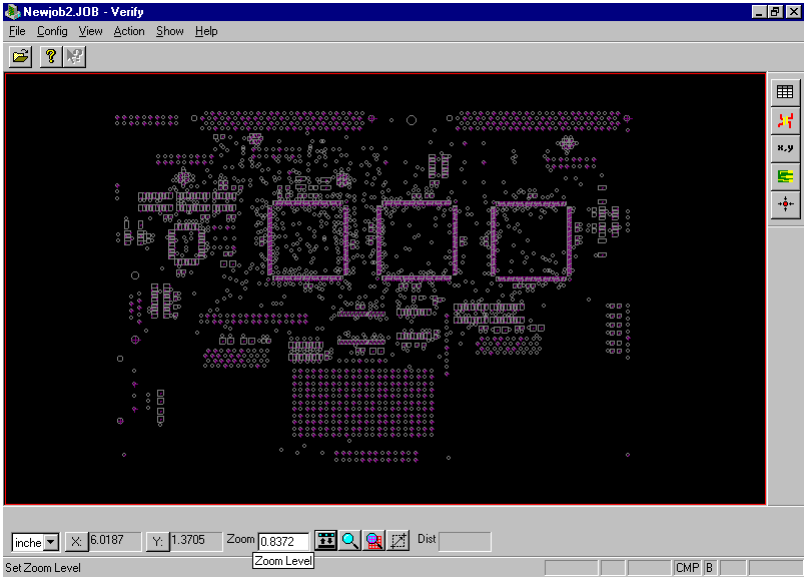
   Verify displays the data flipped in the orientation you selected.

Menu: *Show-Flip CMP*
Show-Flip SOL

Button: *None*

Key: *Shift+X = Flip CMP*
Ctrl+X = Flip SOL

Component Side as Imported, before Flip



Component Side After Flip Y

Displaying All Pads or Only Pads with Test Points

When the PCB data is being displayed you can choose to display all pads or only pads that have test points on them.

To Display All Pads or Only Pads with Test Points:

➢ Press **Shift+P**.

Menu: *None*

Button: *None*

Key: *Shift+P*

Displaying Silkscreen Data

If the FixMaster/ProbeMaster .JOB file contains a silkscreen data file, you can choose to display or not to display the silkscreen data.

To Display Silkscreen Data:

1. On the **Show** menu, go to **Silkscreen**.
   - If **Silkscreen** has a **checkmark** next to it, then silkscreen data is being **displayed**.
   - If **Silkscreen** has **no checkmark** next to it, then silkscreen data is **not being displayed**.
2. Click **Silkscreen** to switch between displaying or not displaying silkscreen data.

Menu: *Show-Silkscreen*

Button: *None*

Key: *K*

Displaying Soldermask Data

If the FixMaster/ProbeMaster .JOB file contains a soldermask data file, you can choose to display or not to display the soldermask data.

To Display Soldermask Data:

1. On the **Show** menu, go to **Soldermask**.
   - If **Soldermask** has a **checkmark** next to it, then soldermask data is being **displayed**.
   - If **Soldermask** has **no checkmark** next to it, then soldermask data is **not being displayed**.
2. Click **Soldermask** to switch between displaying or not displaying soldermask data.

Menu: *Show-Soldermask*

Button: *None*

Key: *None*

Displaying Board Outline Data

If the FixMaster/ProbeMaster .JOB file contains a board outline data file, you can choose to display or not to display the board outline data.

To Display Board Outline Data:

1. On the **Show** menu, go to **Board Outline**.
   - If **Board Outline** has a **checkmark** next to it, then board outline data is being **displayed**.
   - If **Board Outline** has **no checkmark** next to it, then board outline data is **not being displayed**.
2. Click **Board Outline** to switch between displaying or not displaying board outline data.

Menu: *Show-Board Outline*

Button: *None*

Key: *O*

Displaying the Fixture Grid Points

You can choose to display or not to display the fixture grid points. The fixture grid points appear on screen as small red crosses.

Note: *This command has no meaning for ProbeMaster .JOB files because they do not contain fixture grid points.*

To Display the Fixture Grid Points:

1. On the **Show** menu, go to **Grid**.
   - If **Grid** has a **checkmark** next to it, then the fixture grid points are being **displayed**.
   - If **Grid** has **no checkmark** next to it, then the fixture grid points are **not being displayed**.
2. Click **Grid** to switch between displaying or not displaying the fixture grid points.

Menu: *Show-Grid*

Button: *None*

Key: *None*

Displaying the Fixture Pins

You can choose to display or not to display the fixture pins that connect the test points to their assigned fixture grid points. The fixture pins appear on screen as blue lines between the test points and the gird points.

Note: *This command has no meaning for ProbeMaster .JOB files because they do not contain fixture pins.*

To Display Fixture Pins:

1. On the **Show** menu, go to **Probes**.
   - If **Probes** has a **checkmark** next to it, then the fixture pins are being **displayed**.
   - If **Probes** has **no checkmark** next to it, then the fixture pins are **not being displayed**.
2. Click **Probes** to switch between displaying or not displaying the fixture pins.

   Menu: *Show-Probes*

   Button: *None*

   Key: *None*

Displaying the Fixture Drills

You can choose to display or not to display the fixture drills. This option allows you to display the outside tooling, spacers and other drills that you add manually in FixMaster, not the probe drills that FixMaster creates.

Note: *This command has no meaning for ProbeMaster .JOB files because they do not contain fixture drills.*

To Display the Fixture Drills:

1. On the **Show** menu, go to **Fixture**.
   - If **Fixture** has a **checkmark** next to it, then the fixture drills are being **displayed**.
   - If **Fixture** has **no checkmark** next to it, then the fixture drills are **not being displayed**.
2. Click **Fixture** to switch between displaying or not displaying the fixture drills.

   Menu: *Show-Fixture*

   Button: *None*

   Key: *L*

Displaying the Wire Wrap Road Map

For wire wrapped jobs from FixMaster you can choose to display or not to display the wire wrap road map.

Note: *This command has no meaning for ProbeMaster .JOB files because they do not contain wire wrap information.*

To Display the Wire Wrap Road Map:

1. On the **Show** menu, go to **Road Map**.
   - If **Road Map** has a **checkmark** next to it, then the wire wrap road map is being **displayed**.
   - If **Road Map** has **no checkmark** next to it, then the wire wrap road map is **not being displayed**.
2. Click **Road Map** to switch between displaying or not displaying the wire wrap road map.

   Menu: *Show-Road Map*

   Button: *None*

   Key: *None*

Displaying Fiducials

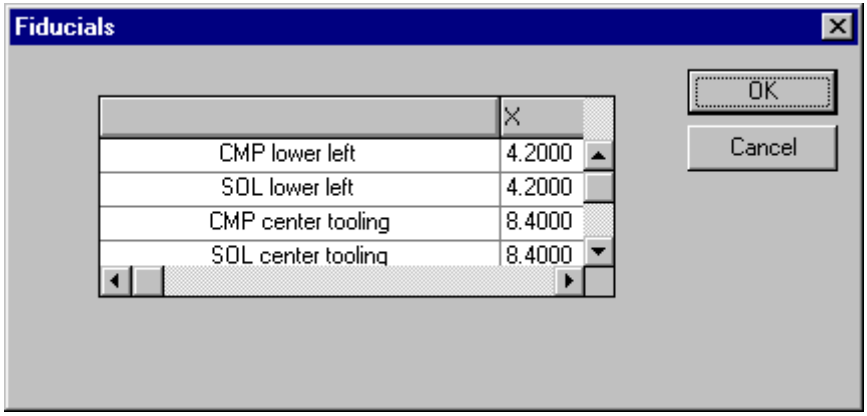
Verify has a command for displaying fiducials tagged in ProbeMaster.

Note: *This command has no meaning for FixMaster .JOB files because they do not contain fiducials.*

To Display Fiducials:

1. On the **Show** menu, click **Fiducials**.

   Verify displays the same **Fiducials** table that is displayed in ProbeMaster when the fiducials are set.



Fiducials Dialog

2. If the fiducial locations are correct, click **OK**. If they are not correct, enter the new locations and click **OK**.

   Each fiducial is displayed as a large magenta X.

Menu: *Show-Fiducials*

Button: *None*

Key: *None*

Displaying Net Numbers

Verify can display the net numbers of pads on screen. Net numbers are shown only for the nets in error that are currently highlighted. The net numbers appear next to the test points.

To Display Net Numbers:

1. On the **Show** menu, go to **Netcode**.
   - If **Netcode** has a **checkmark** next to it, then the net numbers are being **displayed**.
   - If **Netcode** has **no checkmark** next to it, then the net numbers are **not being displayed**.
2. Click **Netcode** to switch between displaying or not displaying the net numbers.

Menu: *Show-Netcode*

Button: *None*

Key: *F*

Displaying Test Point Numbers

Each test point is assigned a unique test point number when the test files are exported from ProbeMaster. Most moving probe testers report faults between test point numbers (i.e., a short between test points 14 and 25). Verify can display the test point number next to each test point.

Note: *This command has no meaning for FixMaster .JOB files because they do not contain test point numbers.*

To Display Test Point Numbers:

1. On the **Show** menu, go to **Test Point Numbers**.
   - If **Test Point Numbers** has a **checkmark** next to it, then the test point numbers are **being displayed**.
   - If **Test Point Numbers** has **no checkmark** next to it, then the test point numbers are **not being displayed**.
2. Click **Test Point Numbers** to switch between displaying or not displaying the test point numbers.

Menu: *Show-Test Point Numbers*

Button: *None*

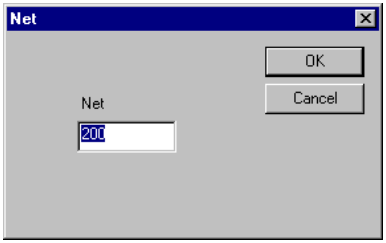
Key: *None*

Highlighting a Specific Net

You can highlight a specific net.

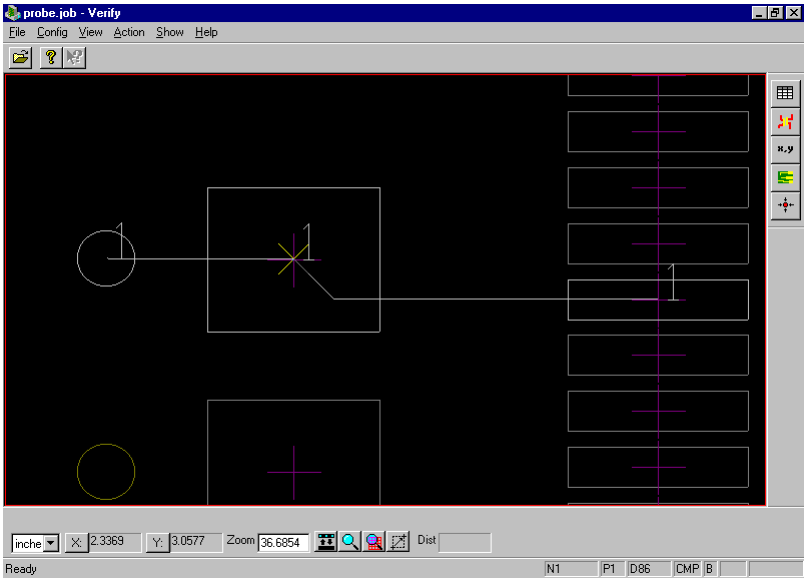
To Highlight a Specific Net:

1. On the **Show** menu, click **Netlist**.
   Verify prompts for a net number.



Highlight Net

2. On the **Net** dialog, enter the number of the net you want to highlight and click **OK**.
   Verify highlights the net and displays the net's traces if any.



Highlighted Net

Menu: *Show-Netlist*
Button: *None*
Key: *Shift+F*

Going to Specific Locations on Screen

Verify has many commands for going to specific location or specific types of data on screen.

Moving the Cursor Manually

You can manually move the cursor around on the viewing area using the mouse or the arrow keys.

Using the Mouse

Moving the mouse moves the cursor around the screen. You can use the mouse to move the cursor outside the viewing area to click on menus and buttons, which is something you cannot do using the arrow keys. When the screen grid is turned on, moving the cursor with the mouse allows you to position the cursor off of the grid points, which is also something you cannot do using the arrow keys.

Using the Arrow Keys

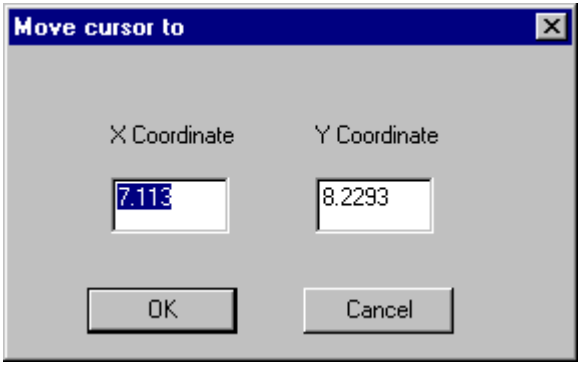
Pressing the **arrow keys** moves the cursor up, down, left or right on the viewing area. When the screen grid is turned on, pressing the **arrow keys** causes the cursor to hop from one grid point to the next. The **arrow keys** cannot be used to move the cursor outside the viewing area to click on menus and buttons.

Going to Specific X, Y Coordinates

You can go to a specific X, Y coordinate.

To Go to Specific X, Y Coordinates:

1. On the **View** menu, click **Go To-Coordinates**.
   Verify prompts for X and Y coordinates.



Move Cursor To dialog

2. On the **Move Cursor To** dialog, enter new X and Y coordinates and press the **Enter** key.
   Verify moves the cursor to the X and Y coordinates.

Note: *It is usually preferable to close the dialog using the **Enter** key instead of clicking **OK**. Clicking **OK** can sometimes cause you to jiggle the mouse and move the cursor off of the coordinates you set.*

Menu: *View-Go To-Coordinates*

Button:

Click the X or Y buttons.

Key: *X key or Y key*

Going to the Next Verification Point for the Selected Fault

A fault is generally defined by two verification points in the verification table which represent two points that are shorted or open. In addition you may select to display more than two verification points at a time by turning them on in the full **Verification Points Table**. You can use the **Go to Next Verification Point** command to go to each verification point that is being displayed.

To Go to the Next Verification Point for the Selected Fault:

- Press **P**.

  The cursor snaps to the next verification point for the selected fault.

Menu: *None*

Button: *None*

Key: *P*

Finding the Position of a Selected Pad Relative to Other Pads

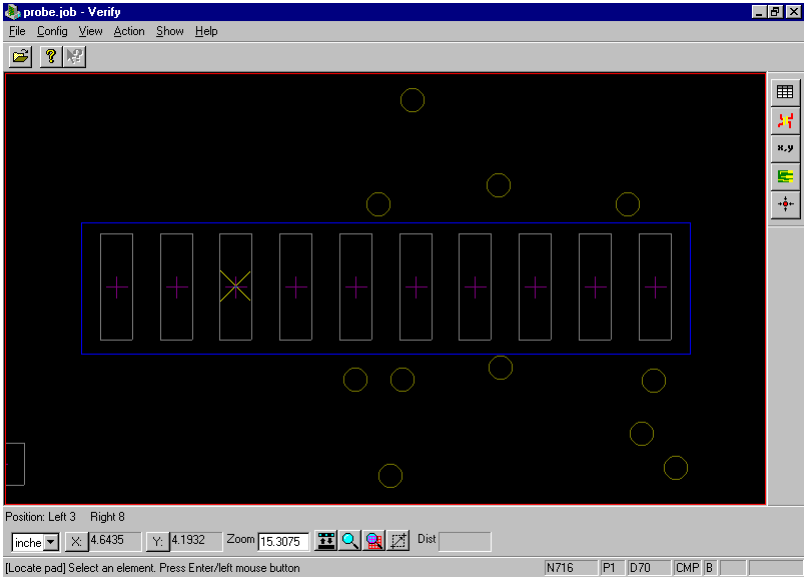
Verify can provide the location of a selected pad relative to other pads within the reference frame. For instance, in a block of ten pads, the location of a selected pad might be reported by Verify as, "Position: Left 3 Right 8." This would mean that the selected pad is the third from the left or the eighth from the right in the block. This feature makes it easier to find the pad on the physical board.

To Find the Position of a Selected Pad:

1. Position the **reference frame** around the block of pads containing the pad you want to locate.
2. Click the **Locates Pad** button .
3. Click on the **pad** you want to locate.

   The cursor hops to the center of the pad and marks it with a green crosshair.
4. Click again.

   In the **Message Line** of the **Status Bar**, Verify reports the position of the pad relative to the edges of the block of pads. For horizontal blocks the position is reported counting from the left and right edges. And for vertical blocks the position is reported counting from top and bottom edges.



The pad location is reported in the Status Bar, "Position: Left 3 Right 8"

Menu: *None*

Button:

Key: *None*

Selecting a Test Point or a Pad

Verify has a generic selection command for selecting a test point or a pad, whichever is closest. Selecting an element causes the cursor to hop to the selected element. It also causes the properties of the selected element (i.e., net number, D Code, probe number, and board side) to be displayed in the **Status Bar**. Only elements in active data can be selected.

To Select a Test Point or Pad:

1. Make the board side that contains the test point or pad **active** and **visible**. See *Displaying Component Side, Solder Side or Inner Layer Data* on page 37, and see *Setting the Active Layer* on page 38.
2. **Position the cursor** on the test point or pad.
3. Press **S**.

   The cursor hops to the selected test point or pad, and the element's properties are displayed in the **Status Bar**.

Note: *If a different test point or pad than the one you expected is selected, or if it looks like an element that you cannot see has been selected, check to be sure that the correct board side is **visible** and that it is **active**.*

Menu: *None*

Button: *None*

Key: *S*

Selecting a Pad

Selecting a pad causes the cursor to hop to the selected pad. It also causes the pad's properties (i.e., net number, D Code, probe number, and board side) to be displayed in the **Status Bar**. Only pads in active data can be selected.

To Select a Pad:

1. Make the board side that contains the pad **active** and **visible**. See *Displaying Component Side, Solder Side or Inner Layer Data* on page 37, and see *Setting the Active Layer* on page 38.
2. **Position the cursor** on the pad.
3. Press **Q**.

   The cursor hops to the selected pad, and the pad's properties are displayed in the **Status Bar**.

Note: *If a different pad than the one you expected is selected, or if it looks like an element that you cannot see has been selected, check to be sure that the correct board side is **visible** and that it is **active**.*

Menu: *None*

Button: *None*

Key: *Q*

Selecting a Test Point

Selecting a test point causes the cursor to hop to the selected test point. It also causes the properties of the selected test point's pad (i.e., net number, D Code, probe number, and board side) to be displayed in the **Status Bar**. Only test points in active data can be selected.

To Select a Test Point:

1. Make the board side that contains the test point **active** and **visible**. See *Displaying Component Side, Solder Side or Inner Layer Data* on page 37, and see *Setting the Active Layer* on page 38.
2. **Position the cursor** on the test point.
3. Press **Shift+Q**.

   The cursor hops to the selected test point, and the test point's properties are displayed in the **Status Bar**.

Note: *If a different test point than the one you expected is selected, or if it looks like an element that you cannot see has been selected, check to be sure that the correct board side is **visible** and that it is **active**.*

Menu: *None*

Button: *None*

Key: *Shift+Q*

Going to the Last Selected Test Point

Pressing **Ctrl+H** moves the cursor to the last selected test point. If the selected test point is off the screen, Verify redraws the screen at the current zoom level with the selected test point in the center. A green cross marks the selected test point.

To Go to the Last Selected Test Point:

- Press **Ctrl+H**.

Menu: *None*

Button: *None*

Key: *Ctrl+H*

Going to a Test Point

The **Go to Test Point** command causes the cursor to hop to the closest test point. Unlike the **Select Test Point** command, the **Go to Test Point** command does not cause the properties of the selected test point to be displayed in the **Status Bar**. The command only works for test points in active data.

To Go to a Test Point:

1. Make the board side that contains the test point **active** and **visible**. See *Displaying Component Side, Solder Side or Inner Layer Data* on page 37, and see *Setting the Active Layer* on page 38.
2. **Position the cursor** on the test point.
3. Press **A**.

   The cursor hops to the test point.

Note: *If the cursor hops to a different test point than the one you expected, or if it looks like the cursor hopped to an element that you cannot see, check to be sure that the correct board side is **visible** and that it is **active**.*

Menu: *None*

Button: *None*

Key: *A*

Going to a Trace

The **Go to Trace** command causes the cursor to hop to the closest trace. The command only works for traces that are displayed when a net that has a fault is being displayed. Unlike the selection commands, the **Go to Trace** command does not cause the properties of the selected trace to be displayed in the **Status Bar**.

To Go to a Trace:

1. Select some verification points to display so that the net(s) with the fault(s) are highlighted.
2. **Position the cursor** on the trace.
3. Press **Shift+A**.

   The cursor hops to the trace.

Menu: *None*

Button: *None*

Key: *Shift+A*

Going to the Datum Point

To Go To the Datum Point:

- On the **Show** menu, click **Datum Point**.

  The cursor goes to the datum point.

  Menu: *Show-Datum Point*

  Button: *None*

  Key: *None*

Moving between a Test Point and Its Grid Point

The **Move between a Test Point and Its Grid Point** command causes the cursor to hop from a selected test point to its assigned fixture grid point. This only works if the loaded .JOB file is a FixMaster job.

To Move between a Test Point and Its Grid Point:

1. Select the test point.
2. Press **E**.

   The cursor hops to the grid point.
3. Press **E** again.

   The cursor hops back to the test point.

   Menu: *None*

   Button: *None*

   Key: *E*

Zooming on Data

Verify has several commands for zooming up and down on the viewing area and zooming on specific areas of the screen.

Zooming Up or Down in Steps

You can zoom up or down by a fixed amount.

To Zoom Up or Down:

➢ On the **View** menu, click **Zoom-Zoom Up** or **Zoom Down**.

Verify zooms the viewing area up or down, centered on the cursor position.

Note: *It is usually preferable to run this command from the keyboard rather than the command menus because you have more control over the cursor position when the command is activated. This allows you to control the exact position to zoom on.*

Menu: *View-Zoom-Zoom Up or Zoom Down*

Button: *Click the button, then click in the viewing area to Zoom Up.*
No button for Zoom Down.

Key: *Page Up key or Page Down key*

Zooming to Show All Data

You can zoom so that all data fits in the screen.

To Zoom so that All Data is Shown on Screen:

➢ On the **View** menu, click **Zoom-Zoom Show All**.

Verify zooms up or down so that all data on screen fits inside the viewing area.

Menu: *View-Zoom-Zoom to Show All*

Button:

Key: *Home key*

Zooming on the Reference Frame

You can zoom on the Reference Frame.

To Zoom on the Reference Frame:

➢ On the **View** menu, click **Zoom-Zoom On Frame**.

Verify zooms on the Reference Frame.

Menu: *View-Zoom-Zoom on Frame*

Button: *None*

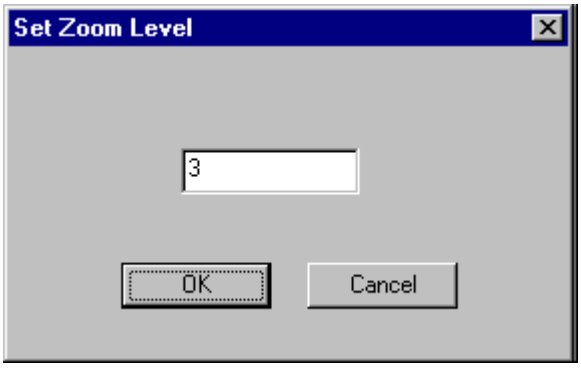
Key: *W*

Zooming to a Specific Zoom Level

You can set an exact zoom level.

To Zoom to a Specific Zoom Level:

1. On the **View** menu, click **Zoom-Set Zoom Level**.
   Verify prompts for a zoom level.



Set Zoom Level

2. On the **Set Zoom Level** dialog, enter the zoom level and click **OK**.
   Verify zooms to the zoom level you selected.

Menu: *View-Zoom-Set Zoom Level*

Button:

Type the zoom level into the control and then move the mouse into the viewing area.

Key: *Z*

Using the Reference Frame

Verify features a Reference Frame, which is used by many commands to select elements for an operation. You can draw a new Frame at a new location or a new size using a mouse-operated **Frame-drawing** tool. And you can also zoom on the Reference Frame. See *Zooming on the Reference Frame* on page 56.

Drawing a New Reference Frame

You can draw a new Frame at a new location or a new size using a mouse-operated **Frame-drawing** tool.

To Draw a New Reference Frame:

1. On the **Screen** toolbar, click the **New Window** button.

   The **New Window** button stays down and the **Frame-drawing** tool is selected.

2. Position the cursor where you want one corner of the Frame to be to be. Then click the mouse and drag the cursor to where you want the opposite corner.

   The **Frame-drawing** tool remains selected until you select another tool or press the **Escape** key.

Menu: *None*

Button:

Key: *Shift+W*

Using the Screen Grid

The program has a screen grid that can be used for precisely positioning the cursor. The grid can be turned on and off as needed.

When the grid is on:

- The cursor moves only on the grid points when moved with the arrow keys.
- The cursor can be moved off the grid using the mouse or by aligning to an element.

Some settings affect the behavior of the grid:

- The space between grid points can be **fixed** at one interval or can be set to be **variable** depending on the zoom level.
- The grid can be **anchored** so that it does not move, or it can be **dragged** by the cursor.

Turning the Screen Grid On or Off

You can turn the display of the screen grid on and off.

To Turn the Screen Grid On or Off:

➢ Press **G**.

Menu: *None*

Button: *None*

Key: *G*

Anchored or Dragged Grid

The grid can be **Anchored** in place so that it does not move. When the grid is set to **Anchored** mode and the cursor is moved, the cursor hops from one grid point to the next.

Or the grid can be **Dragged** so that it is moveable. When the grid is set to **Dragged** mode and the cursor is moved, the cursor drags the grid to a new position.

Generally the grid is left in **Anchored** mode and is only put in **Dragged** mode when it needs to be repositioned.

To Switch between an Anchored Grid and One that can be Dragged:

➢ Press **Shift+G**.

Menu: *None*

Button: *None*

Key: *Shift+G*

Fixed or Variable Grid

The grid can be set to **Variable** or **Fixed** mode. The difference between these two modes is the interval displayed between grid dots.

- **Variable Mode:** The program changes the displayed grid interval so that a comfortable number of grid dots appears on screen at any zoom level. The displayed grid interval will be equal to a multiple of the grid unit. The possible grid intervals are grid unit times a power of ten or any such value divided by two.

  As you increase the zoom level, the grid interval becomes smaller to the point of the finest resolution until it reaches the grid unit. It will never be smaller than the grid unit.

- **Fixed Grid:** The interval displayed between grid dots is always equal to the grid unit, at any zoom level. The grid interval does not change until the screen is almost filled with grid dots. When there are too many dots to display, the grid becomes invisible, but it is still on.

To Switch between a Fixed Interval Grid and One that is Variable with Zoom:

➢ Press **Ctrl+G**.

Menu: *None*

Button: *None*

Key: *Ctrl+G*

Measuring Distance

Verify allows you to measure distance in the viewing area in two different ways. You can measure the straight-line distance between two points in **Distance Measurement** mode. Or you can use a **Relative Origin**, which gives you the X and Y distances from one point to the other.

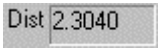
Using Distance Measurement Mode

When **Distance Measurement** mode is on, the **Screen** toolbar shows distance between the current cursor position and the starting point where the cursor was when **Distance Measurement** mode was turned on.

To Measure Distance with Distance Measure Mode:

1. Position the cursor at the point on screen where you want to measure distance from.
2. Press the **D** key.

   Verify marks the starting point on screen with a yellow X and goes into **Distance Measure** mode. The **Screen** toolbar begins displaying the distance between the starting point on screen and the cursor position.



Distance Displayed in the Screen Toolbar

3. Move the cursor to the point on screen where you want to measure distance to.

   The **Screen** toolbar displays the distance between the starting point on screen and the cursor position. Verify remains in **Distance Measurement** mode until you press **D** again.

Menu: *None*

Button: *None*

Key: *D*

Using the Relative Origin

Ordinarily the **Screen** toolbar shows the cursor's X and Y coordinate position relative to the absolute origin, X=0, Y=0. When the **Relative Origin** is turned on, the **Screen** toolbar shows cursor's dx and dy position relative to the **Relative Origin**, dx=0, dy=0. The **Relative Origin**, dx=0, dy=0, is the point on screen where the cursor was when the **Relative Origin** was turned on.

To Measure Distance with the Relative Origin:

1. Position the cursor at the point on screen where you want to measure distance from.
2. Press the **R** key.

   Verify switches to **Relative Origin** mode. Instead of the normal X, Y coordinates, the **Screen** toolbar begins displaying the cursor position as the dx and dy coordinates relative to the position on screen where **Relative Origin** mode was turned on.

Absolute Origin Mode

Relative Origin Mode

3. Move the cursor to the point on screen where you want to measure distance to.

   The **Screen** toolbar displays the dx and dy distance between the **Relative Origin** and the cursor position. Verify remains in **Relative Origin** mode until you press **R** again.

Menu: *None*

Button: *None*

Key: *R*

Showing the Job Statistics

Verify can display a dialog that shows statistics for the currently loaded .JOB file.

To Show the Job Statistics:

- On the **Show** menu, click **Dimensions**.

Test Information Statistics Dialog

Menu: *Show-Dimensions*
Button: *None*
Key: *F6*

Metric or English Units

Verify can convert units of measurement for the current job between English and metric units.

To Select Metric or English Units:

1. On the **Screen** toolbar, click the **Coordinate Units drop down**

and select either **Inches** or **mm**.

   Verify prompts, "Convert all data and parameters to metric/English?"
2. Click **Yes**.

   Verify converts the database to the new units.

Menu: *None*
Button:

Key: *None*

Chapter 5
Key Commands Summary

In Verify, many menu and toolbar commands have shortcut key equivalents, and some commands are only activated by key commands. Shortcut key commands are usually the fastest way to activate commands. In addition all menu commands can be accessed using access key commands, which are an alternative way of working the command menus. See *Command Menus* on page 28.

This section lists the shortcut key commands.

File Commands

Open a FixMaster/ProbeMaster Job File	Ctrl+O

Displaying Data

Display Component Side, Solder Side and Inner Data	Shift+L
Switch Active Layer	Shift+O
Display the PCB Data	B
Flip Display of Component Side or Solder Side Data	Shift+X or Ctrl+X
Display All Pads or Only Pads with Test Points	Shift+P
Display Net Numbers	F
Display Silkscreen Data	K
Display Board Outline Data	O
Display the Fixture Drills	L
Show Job Statistics	F6
Display the Next/Previous Fault in the Verification Table	Shift+N or N
Display the Next or Previous Proximity Check Violation	Shift+V or V
Display Faults for the Next or Previous Board	Shift+J or J

Highlighting Data

Highlight a Specific Netlist	Shift+F

Zooming

Zoom Up or Down	Page Up or Page Down
Zoom so that All Data is Shown on Screen	Home
Zoom on the Reference Frame	W
Zoom to a Specific Zoom Level	Z

Going to Locations on Screen

Move the Cursor	Arrow Keys
Go To Specific X, Y Coordinates	X or Y
Select a Pad or Test Point	S
Select a Pad	Q
Select a Test Point	Shift+Q
Go to a Test Point	A
Go to a Trace	Shift+A
Go to the Last Selected Test Point	Ctrl+H
Move between a Test Point and Its Grid Point	E
Go to the Next Verification Point	P

Screen Grid

Turn the Screen Grid On or Off	G
Anchored or Dragged Grid	Shift+G
Fixed or Variable Grid	Ctrl+G

Measuring Distance

Measure Distance with Distance Measure Mode	D
Measure Distance with the Relative Origin	R

Reference Frame

Draw a New Reference Frame	Shift+W

Enter Fault Data

Quick Input Table	Forward Slash (/)

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