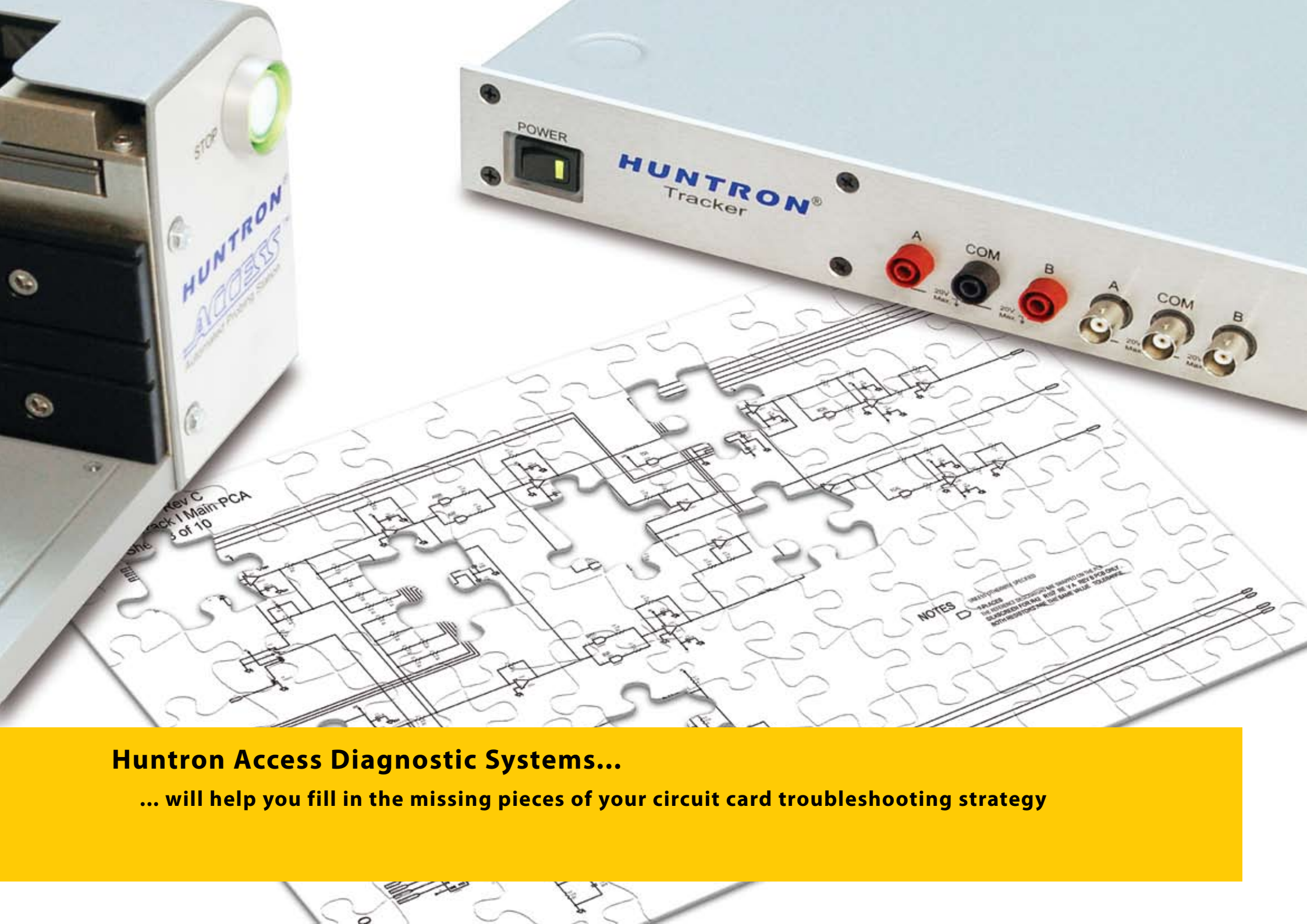


Huntron Access Diagnostic Systems...

... will help you fill in the missing pieces of your circuit card troubleshooting strategy

Missing Pieces

Consolidation, obsolescence, and OEM extinctions often create a repair and support logistics puzzle. For more than 34 years, Huntron has been helping people troubleshoot circuit card problems by manufacturing high quality tools that help isolate faulty electronic components on printed circuit assemblies (PCAs). Many of our customers tell us their primary issue is troubleshooting PCAs without the benefit of schematic diagrams. Because of this issue, many of these PCAs end up sitting on a shelf not repaired (commonly called "the bone pile"). We have the experience and products that will help you reduce your PCA bone piles. Here is how we can help:

Diagnosing Undocumented Boards

Schematics, ECO change documents, and technical manuals are not always available or have been lost as a product moves through its life cycle. Maintaining legacy systems without documentation drains valuable technician and engineering resources when having to diagnose component level problems. The lack of documentation is the missing piece of the troubleshooting puzzle and effectively ends their ability to diagnose circuit board faults. Huntron Trackers can be very effective in these situations. Power-off troubleshooting is performed at the component level. Using the Huntron Workstation software, a model of expected signatures from working PCAs can be stored and provide a baseline that can supplement the missing documentation.

Adding Component Level Diagnostics to Function Test Systems

Adding power-off diagnostics allows for the detection and isolation of faulty components on boards that complement power-on functional testing. The detailed diagnostic portion of the power-on test can be either supplemented or replaced with power-off diagnostics to achieve better fault isolation and reduce potential damage to the PCA. This allows the power-on test to provide the Go/No-Go and Ready For Issue (RFI) testing capabilities for which it was designed. Huntron Trackers combined with Huntron Access Probers and the Workstation software can be integrated into functional test systems using optional Software Development Kits.

Automate Component Level Test

Huntron Trackers, Workstation software and Access Probers provide the cost effective integrated solution that compliments functional test systems.

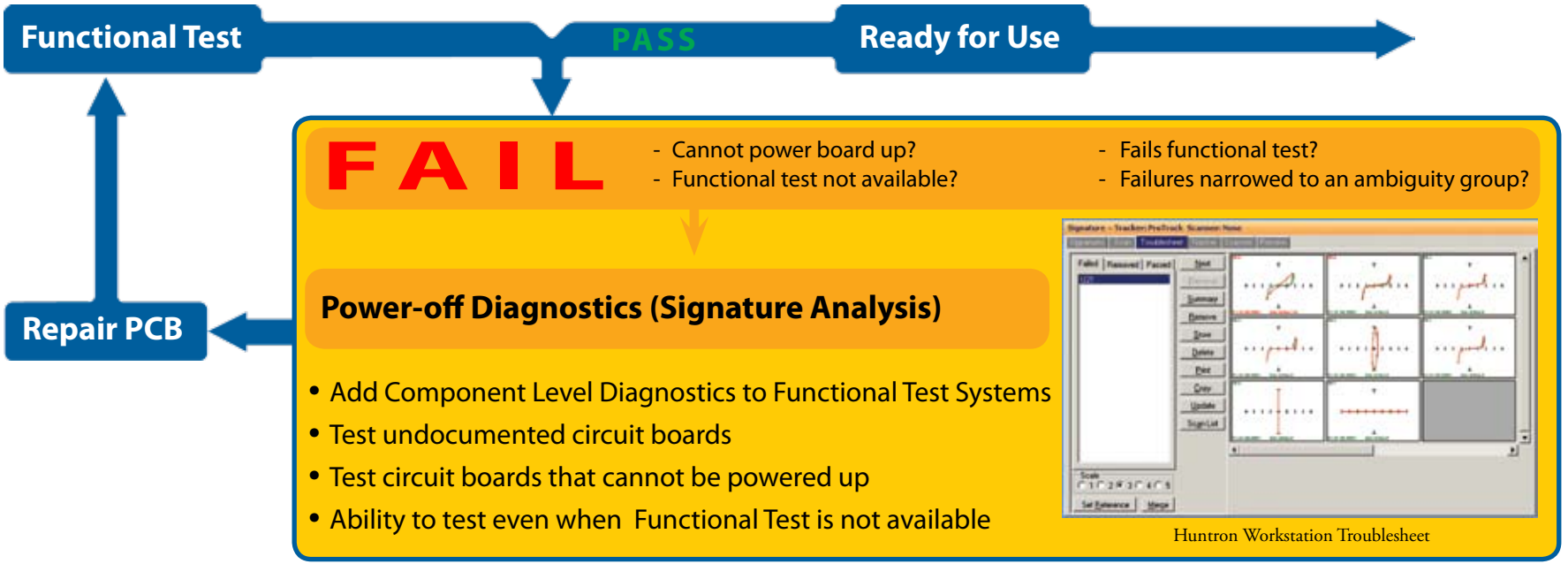
- Automating manual guided probing during diagnostics increases productivity and accuracy either with the Huntron Tracker test or any other measurement tool (multimeter, oscilloscopes...)
- Precision probing allows access to fine pitch ICs without expensive fixtures
- Once the test is established, the need to document probe point locations and reliably make contact without error is eliminated

Testing Without Power Applied

In repair situations it is often necessary to test the board without power applied due to uncertainty as to the nature of the failure. When this condition occurs it is necessary to use nondestructive test equipment to safely examine component signatures and validate good from bad. Huntron Trackers test boards without applying power.

- Test circuits boards that cannot be powered on without risking damage to the test bed or when they shut down under power
- Power-off test allows you to troubleshoot circuit boards regardless of their function

Circuit Board Test Strategy



Huntron Workstation Troublesheet

Power-off Diagnostics - Signature Analysis

Signature Analysis is a power-off test method that is used to troubleshoot circuit boards. A current-limited sinewave is applied across two points of an electronic component or circuit. The resulting waveform or "signature" is displayed using vertical deflection for current and horizontal deflection for voltage. This unique signature represents the overall health of the part being analyzed. By comparing the signatures of known good circuit boards to those of suspect boards, faulty nets and components can be quickly identified.

The Test Environment
• Huntron Workstation 4

The Test Hardware
• Tracker Model 30
• TrackerPXI

The Test Interface
• Access Probers
• Scanner II or Scanner 31S

The Test Results
• On-screen Troublesheet
• Multi-format Reports (PDF, HTML, etc...)

Huntron Hardware

Huntron makes Trackers to fit your needs and test strategy. The Tracker instrument generates the test signal that is applied to the circuit board under test. The parameters of the test signal such as voltage, frequency and source (internal) resistance can be varied allowing you to obtain optimum analog signatures.

Choose from the stand-alone Tracker Model 30 or add a TrackerPXI into your existing PXI based test system. Both Trackers can be connected to accessories such as Scanners, PXI switch cards and Access Probers.

You can also order a Huntron Access Prober with the Tracker Model 30 built-in making for an "All-in-One" test system.

Tracker Model 30 and TrackerPXI Specifications	
Open Circuit Voltage (Vs)	200mV, 400mV, 600mV, 800mV, 1V to 20V in 1V steps, 10V (Low), 15V (Med1), 20V (Med2)
Source Resistance (Rs)	10Ω, 20Ω, 50Ω, 100Ω 200Ω, 500Ω, 1KΩ, 2KΩ 5KΩ, 10KΩ, 20KΩ 50KΩ, 100KΩ, 54Ω (Low) 1.2KΩ (Med1), 26.7KΩ (Med2)
Frequencies (Fs)	20Hz to 190Hz in 10Hz steps; 200Hz to 1.9KHz in 100Hz steps; 2KHz to 5KHz in 1KHz steps
Connections	BNC (Signal and Common); Banana (Signal and Common)
Aux. Connections	9 pin mini jack with ground, Trigger IN, Trigger OUT, Calibration TP, Signal ON, Sinewave zero crossing, Line IN, Line OUT
Warranty	1 Year Limited
Part Numbers	99-0392 (Model 30) 99-0390 (TrackerPXI)

Tracker Model 30 and TrackerPXI

The Huntron Tracker Model 30 and TrackerPXI are software controlled Trackers used for troubleshooting PCAs to the component level. Both work in conjunction with the Huntron Workstation software. The Tracker Model 30 utilizes a USB interface while the TrackerPXI is designed to be added to new or existing PXI platforms. All Huntron Trackers are CE and ETL certified and come with a one year, parts and labor warranty.

Huntron Tracker Model 30


Huntron TrackerPXI

Huntron Tracker Model 30 and TrackerPXI

Huntron Tracker Model 30
(Part number 99-0392)
- USB connected Huntron Tracker designed for software control
- Power-off testing using Analog Signature Analysis (ASA)
- Available interface Accessories include: Scanner II, Scanner 31S and Access Probers

Huntron TrackerPXI
(Part number 99-0390)
- PXI-based instrument designed for adding power-off signature analysis to new or existing PXI test platforms
- Available Accessories include: Access Probers and third party switch cards

Huntron Scanners for Tracker Model 30 - Scanner II and Scanner 31S

Huntron Tracker Model 30 shown with Scanner II (Scanner Adapter mounted to the front allows for connection of IDC-style cables)

The Scanner II and Scanner 31S add multi-pin scanning capabilities to the Tracker Model 30. Common uses include DIP clip and cable interfaces, cable testing and custom cables to PCA connectors.

Huntron Scanner II (99-0393)
- Scanning accessory for the Tracker Model 30 for connection of cable interfaces
- Two channels of 64 pins each with selectable Commons
- Up to 8 Scanner IIs and be "daisy chained" to increase the available number of test pins

Huntron Scanner Model 31S (99-0399)
- Basic scanning accessory for the Tracker Model 30 for connection of cable interfaces
- Single channel of 64 pins

An Access Prober to Fit Your Needs

Huntron Access Probers connect to the Tracker Model 30 or TrackerPXI and allow economical, automated testing of densely packed surface-mount and other devices your most complex circuit boards. All Huntron Access Probers are CE and ETL certified and come with a one year, parts and labor limited warranty.

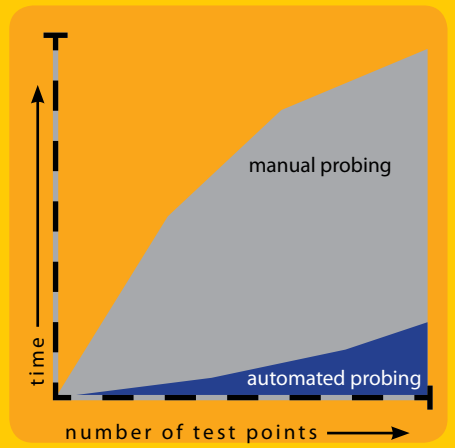
Huntron Access DH Prober	
Dual Head USB connected Robotic Prober for the Tracker Model 30 and TrackerPXI used with small to large sized circuit boards. The Access DH Prober can be configured with a Tracker Model 30 installed inside.	
Maximum Board-under-test size	23" x 27" (58cm x 68.6cm)
Maximum Board Probing Area	12" x 19" (30.5cm x 48.3cm)
Maximum Component Height	6" (15.2cm)
Minimum Resolution	0.00002" (0.4 microns)
Maximum Z Travel	5.5" (14cm)
Line Voltage	115VAC or 230VAC
Dimensions	39" W x 61" H x 53" D (99.1cm W x 154.9cm H x 134.5cm D)
Part Numbers	99-0421; 99-0416 (Tracker Model 30 inside)

Huntron Access 2 Prober	
Single Head USB connected Robotic Prober for the Tracker Model 30 and TrackerPXI used with small to large sized circuit boards. The Access 2 Prober can be configured with a Tracker Model 30 installed inside.	
Maximum Board-under-test size	22" x 23" (56cm x 58cm)
Maximum Board Probing Area	18.2" x 22.4" (46.2 cm x 56.9cm)
Maximum Component Height	4" (10cm)
Minimum Resolution	0.0003937" (10 microns)
Maximum Z Travel	4.2" (10.6cm)
Line Voltage	115VAC or 230VAC
Dimensions	36" W x 15.7" H x 29" D (91.4cm W x 39.9cm H x 73.7cm D)
Part Numbers	99-0394; 99-0397 (Tracker Model 30 inside)

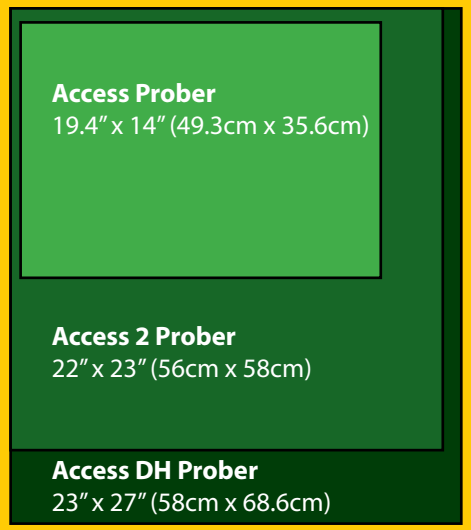
Huntron Access Prober	
Single Head USB connected Robotic Prober for the Tracker Model 30 and TrackerPXI used with small to medium sized circuit boards. The Access Prober can be configured with a Tracker Model 30 installed inside.	
Maximum Board-under-test size	19.4" x 14" (49.3cm x 35.6cm)
Maximum Board Probing Area	15.3" x 12.9 " (38.9cm x 33.8cm)
Maximum Component Height	2.375" (6cm)
Minimum Resolution	0.0003937" (10 microns)
Maximum Z Travel	2.21" (5.6cm)
Line Voltage	115VAC or 230VAC
Dimensions	26.5" W x 13" H x 24.5" D (67.3cm W x 33.1cm H x 62.3cm D)
Part Numbers	99-0395; 99-0396 (Tracker Model 30 inside)

ASA and Automation

The Tracker Model 30 with an Access Prober enables you to combine power-off testing with full automation. Automated probing will increase test speed tenfold when compared to manual probing. Huntron has the Robotic Prober to meet your needs.



Three Access Probers are available and offer different PCA handling capabilities.
Huntron Access Probers Maximum Board-under-test Size:



Huntron Workstation Software

The Huntron Workstation Software is designed to bring a high level of efficiency and flexibility to board test creation and troubleshooting. The multiple pane layout of Huntron Workstation allows for fast test creation, quick viewing of component signatures, control of robotic probers and synchronized viewing of PCA layout.

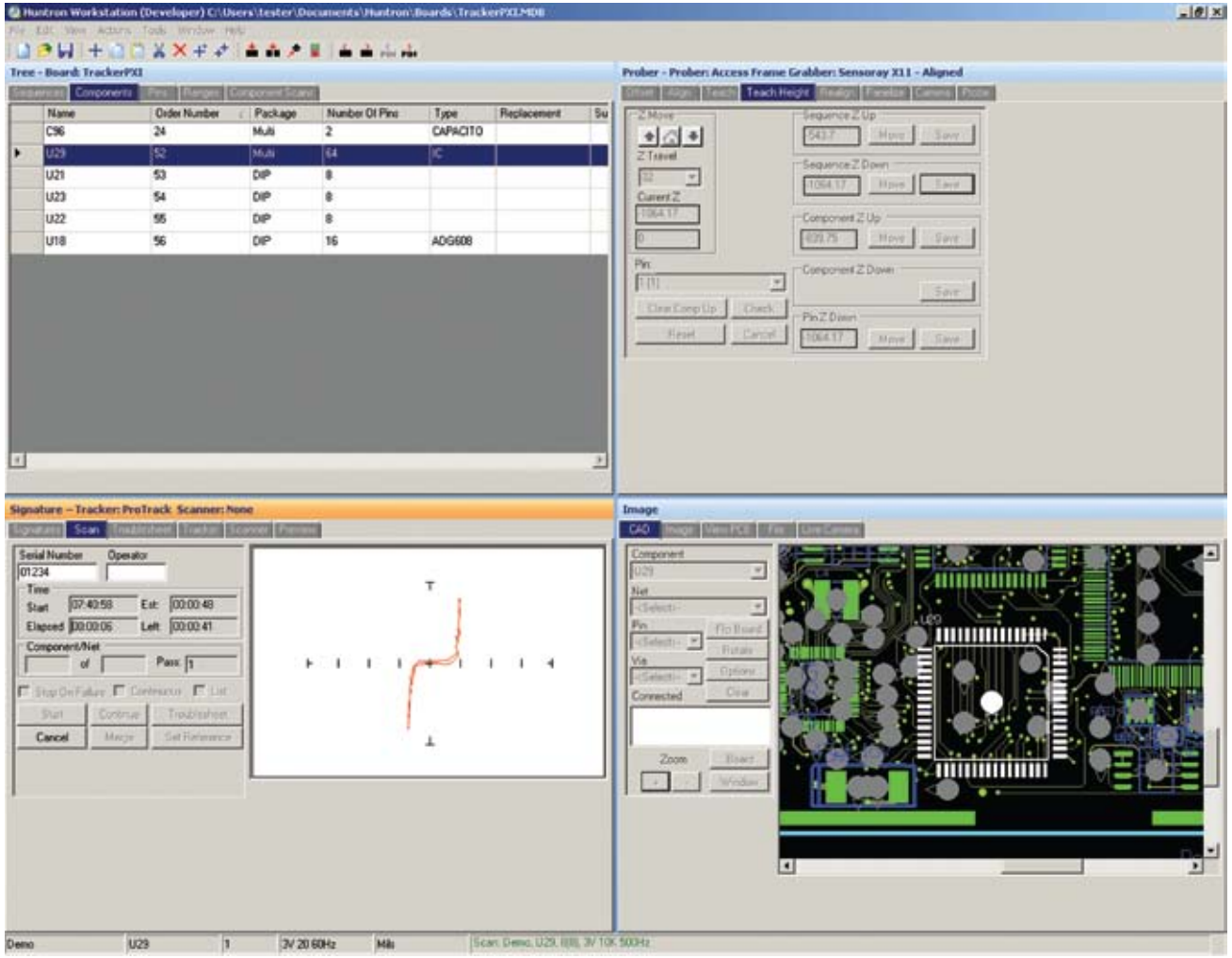
Huntron Workstation Features

- Create custom test routines for low volume manufacturing, repair and rework applications
  - Optional test creation using PCB ASCII CAD data; most popular CAD packages are supported
  - Easily create, modify and save Microsoft Access based test databases
  - View, print and store test results immediately in formats such as PDF and HTML
  - Includes an easy to use Test Only pane better suited to test execution in a production environment
  - Auto Align feature allows for automatic board alignment
  - Panes can be “undocked” to take advantage of large or multiple monitors
  - Toolbar buttons allow for quick access to common functions
  - User created Toolbar buttons that can control other Windows based programs such as a browser or PDF viewer
  - Optional Remote Control feature allows control from test executives such as NI TestStand
  - Optional Software Development Kits allow you to integrate your test measurement into Huntron Workstation or create your own custom software application for hardware control

Huntron Workstation Overview

Tree Pane
Development and editing of test database

Prober Pane
Access Prober controls - PCA Alignment, Component Location teaching

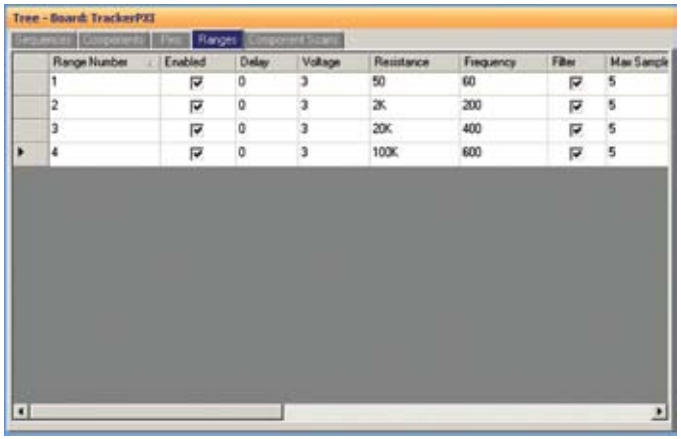


Signature Pane
Test execution, display of signatures and Test Results

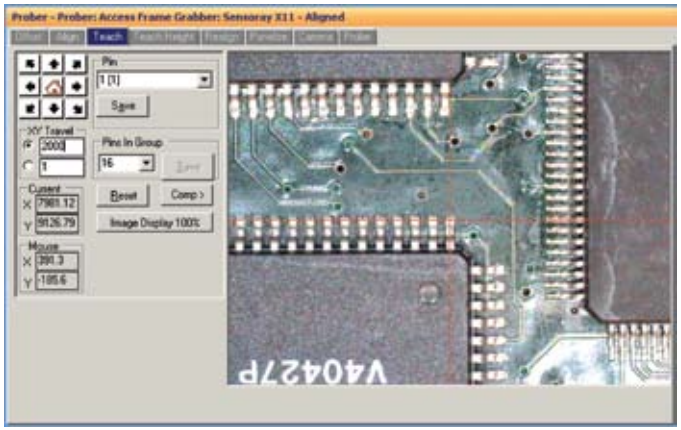
Image Pane
Display of CAD, Board overview and Test Point images and Probe Tip Camera video

Huntron Workstation Overview

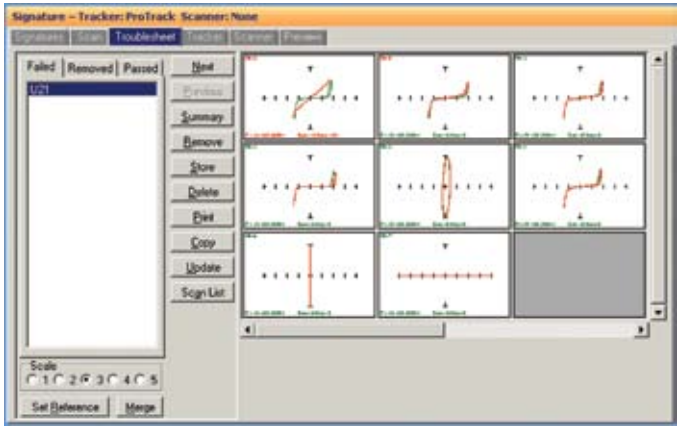
The design of the Huntron Workstation software places most functions only one click away avoiding unnecessary sub-menus. This makes for efficient editing and modifying of your test sequences.
The Workstation software takes advantage of today's large or dual monitor systems. Each of the panes can be "undocked" and enlarged for better viewing.



Tree Pane - Ranges Tab
Easily add and modify test ranges used during the test. The Tracker range sets the voltage, resistance and frequency parameters used when testing components on a circuit board.



Prober Pane - Teach Tab
Teaching test point locations is accomplished with the built-in color camera.



Signatures Pane - Troublesheet Tab
The test results are displayed in the Troublesheet Tab. The failed signatures (red) are displayed on top of the stored signatures (green).

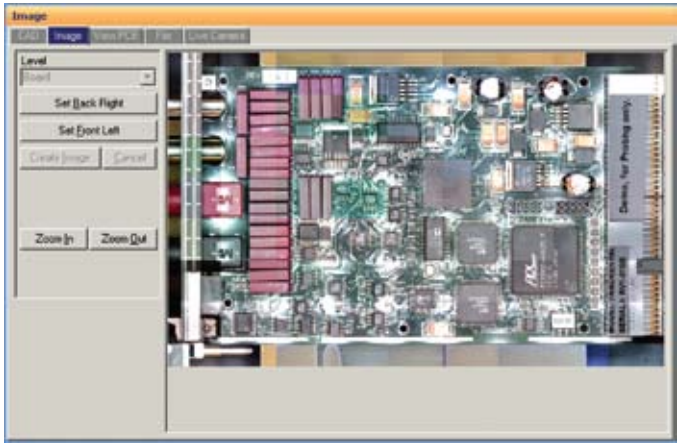
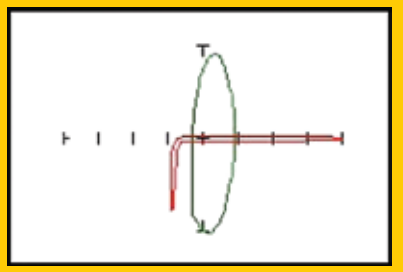


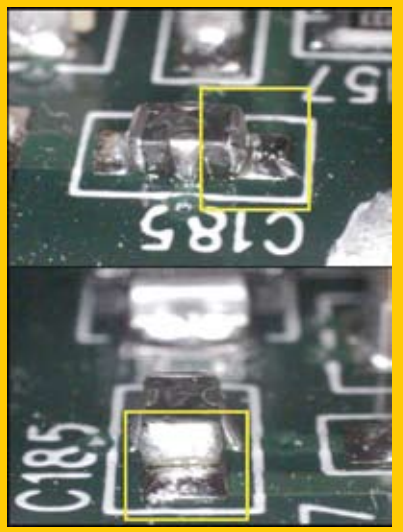
Image Pane - Image Tab
The board image is created by stitching captured images together. Clicking a point in the image will drive the Access Prober camera to that point.

Detecting faults with Signature Analysis

Signature Analysis relies on a change in electrical characteristics to detect problems on a circuit board. The types of changes can be related to causes such as component failures and PCA process errors such as bad soldering.

In this actual example, signatures from a known good PCA were stored into a Huntron Workstation database. When the suspect PCA was scanned, the signatures indicated a difference (a loss of capacitance) at one of the surface mounted capacitors.
Further inspection of the device on the PCA showed a bad solder joint at one end of the capacitor.

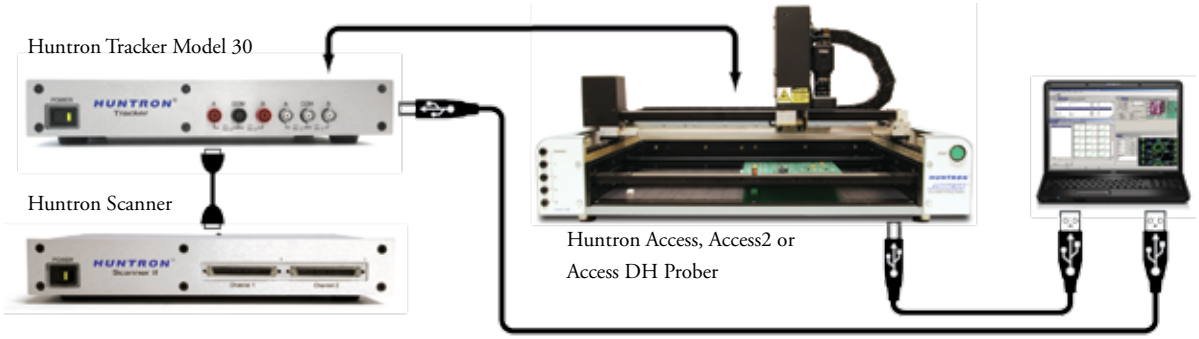




Huntron Hardware Selection Guide

UUT * Considerations	Tracker Model 30 only	Tracker Model 30 with Scanner	Tracker Model 30 with Single Head Access Prober	Tracker Model 30 with Dual Head Access Prober
UUT connection	Handheld probes - manual test	Clips and cables - manual test	Single probe - fully automated test	Dual probe - fully automated test
UUT complexity	Low density; through-hole and surface mounted components	Low density; through-hole and surface mounted components	Higher density; SMT or through-hole devices	Higher density; SMT or through-hole devices
UUT Test Time	6-12 test points per minute based on component style	6-40 test points per minute based on component style	40-60 test points per minute - automated test	30-50 test points per minute - automated test
Operator control requirements	Manual test - operator required to connect to each point with hand-held probes	Manual test - operator required to connect to each component with DIP clip or custom cable interface	Automated test - operator required for setup and test start	Automated test - operator required for setup and test start

* UUT - Unit under test



Training Support

Huntron provides training for our products through self-paced training courses, training at the Huntron factory or on-site training at your location. We cover Huntron TrackerPXI, Tracker Model 30, Scanner (Model 31S), Scanner II, Huntron Robotic Probers and the use of Huntron Workstation. Training is designed for new and experienced users.

Custom Test Routines

Huntron offers custom test programming services to develop baseline programs for your printed circuit assemblies. Our Technical Support personnel have many years of troubleshooting experience in real world applications and will provide a good starting baseline test for your PCA. You perform the final adjustments to customize the procedure, thus significantly reducing your test development times.

More Great Products from Huntron

- Huntron Access NFSA - Automated RF test on powered PCAs
- Custom Access Prober systems that automate your unique test needs
- Tracker 2800 and 2800S - Stand alone benchtop Tracker for component level troubleshooting

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About Huntron

Huntron, Inc. has been in the business of helping people solve circuit card problems since 1976. Efficient and knowledgeable customer service and technical support are always a primary goal.

Huntron products are supported worldwide through our network of sales and service partners.

Contact us for assistance or ask about our services such as factory training and custom test development.

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