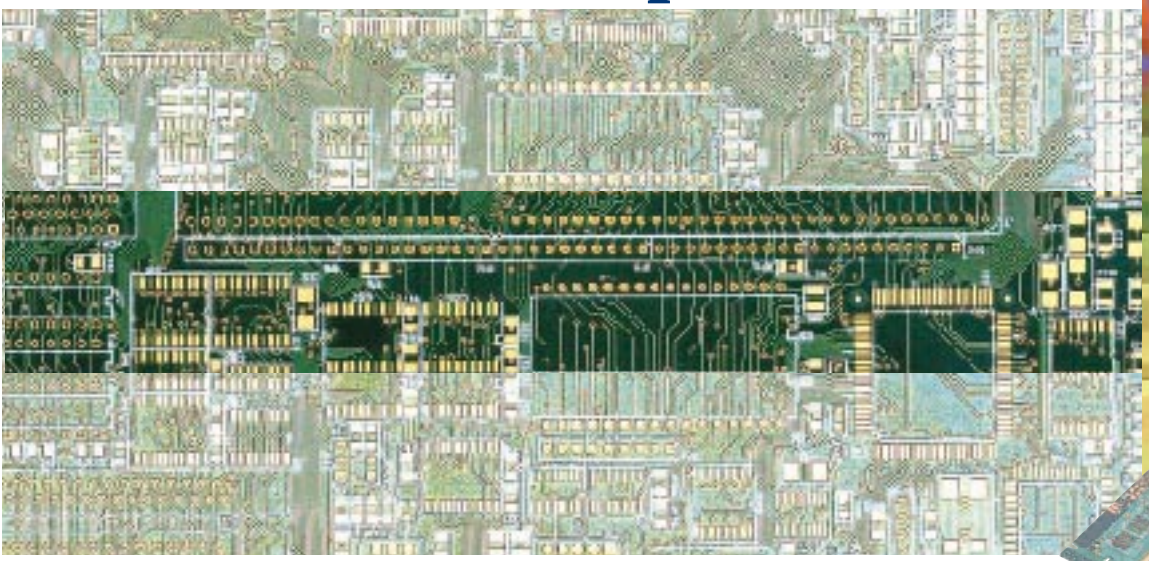
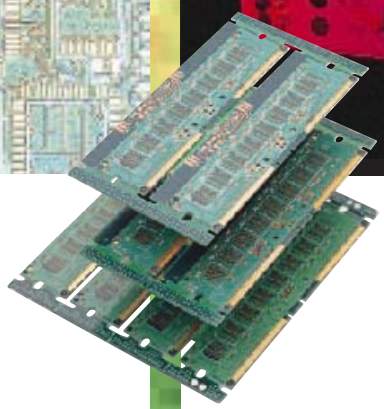
Toneohm 970
Bare board repair station





Integrated test system for location of short circuits in multi-layer PCBs

Pin-points location of short circuits

Dedicated system for bare board industry

Minimises scrap; increases yield

Eliminates possibility of damaging consequential loss claims

Polar

www.polar.co.uk

Increasing yields

PCBs are no longer the ‘low-cost’ component they once were. Today’s fine-line, multi-layer boards are expensive to produce. Customers demand 100% yield, with severe consequential loss penalties written into manufacturing contracts. Tight production schedules allow little time for repair of faulty boards.

If you are a manufacturer of PCBs, you are well aware of the pressures. But did you know that up to 90% of short circuit faults in PCBs occur in the outer layers? With Polar’s Toneohm 970, most of them can be located and repaired quickly and easily, with significant increases in yield possible as a result.

You can also use Toneohm 970 to demonstrate there are no shorts on a board, or to verify a short circuit repair. This data can provide an invaluable reference if you are facing consequential loss claims from customers finding problems with loaded boards.

Proven technology

The Toneohm 970 from Polar is the first shorts locator dedicated to the bare board industry. Based on Polar’s proven Vector Plane Stimulus technology, and dedicated CAD processing software, it will help you to pin-point the fault area with enough precision to allow visual location.

Vector Place Stimulus technique

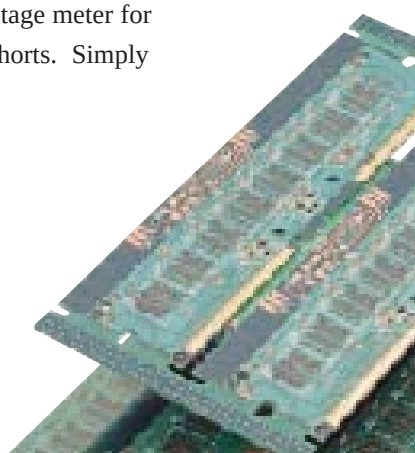
Conventional test tools cannot locate short circuits on multi-layer PCBs accurately, because of the influence of the ground and power planes. Polar’s innovative Vector Plane Stimulus technology uses a combination of current injection and field sensing techniques to overcome this problem, allowing you to home-in on the short circuit with the test probe

The system is not difficult to use. Repair station operators accustomed to finding their way around complex design drawings will find Toneohm 970 simple and intuitive. With a little practice, they will be able to locate shorts on most boards in just a few minutes.

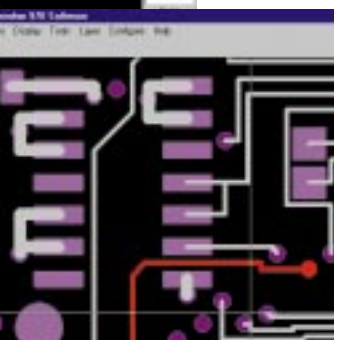
A powerful tool box

The Toneohm 970 combination of hardware and software provides a powerful tool box of techniques for identification of short circuits.

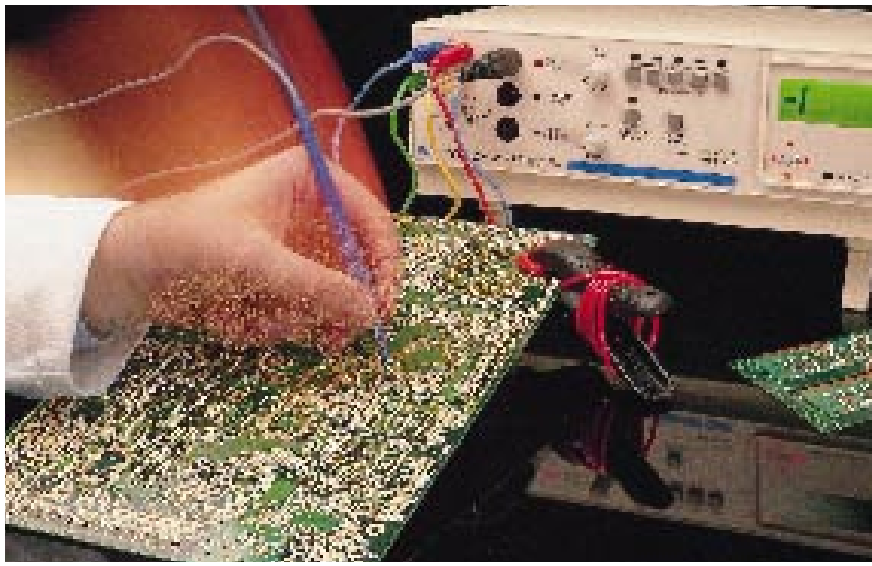
There are three tracking modes provided, to help you locate most common shorts. A track resistance meter for simple track-to-track shorts, a track voltage meter for plane-to-plane shorts and a current trace probe for high resistance shorts. Simply select the most appropriate mode via the front panel key pad.



Probe any node on the PCB, and directional LED arrows on the front panel of the instrument light up to indicate which way you should move the probe to find the fault. When you arrive in the region of the short, all four directional arrows are illuminated. As you probe, a digital display indicates the distance to the short, and there is an audio tone which rises in frequency as you get closer. This can be particularly useful in probing fine geometries, because it saves you having to look up from the board as you move between closely pitched nodes.



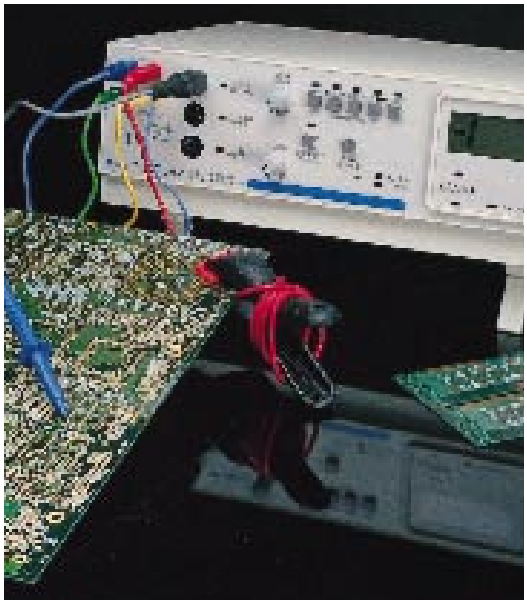
To aid fault location further, the Toneohm 970 software displays a graphic of the board design on screen. Use the screen cross hair to select any node and the entire path is highlighted in a contrasting colour, helping you to follow the track and find the short. Alternatively, you may enter an XY test point location, a channel number or net name identified by bare board test - and the path is similarly highlighted, allowing you to probe the appropriate region of the board.



Short circuits

Experience suggests that 90% of short circuit faults occur in the outer layers of a PCB, and can be repaired easily and economically. Most of them are simple track-to-track shorts, or plane-to-plane shorts which can be located easily with Toneohm 970. Although their occurance on bare boards is relatively rare, high resistance shorts can also be found with Toneohm 970

The Toneohm 970 software incorporates solve files for all the common bare board test systems. There is a zoom facility, to help you home in on the fault area, and a permanently displayed bird's eye view in the top right hand corner of the screen.



Toneohm 970 can be used successfully with most PCB designs including:

- PCBs with maximum copper outers
- High density PCBs
- Surface mount technologies
- Fine line designs
- PCBs with power and earth planes

“ By introducing Polar Toneohms into our production process, we are able to achieve maximum throughput of quality-approved boards in our repair facility. This has proved to be a sound economic investment for Motorola. ”

Barry Hayes,
Production Manager, Motorola, UK

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Toneohm 970 System Specification

Track Shorts	
Ranges	Five ranges labelled high sensitivity to low sensitivity
Range	High sensitivity, uncalibrated, approximately 40Ω full scale
Probe protection	Momentary contact up to 30V
Indication	Tone and meter in all ranges
Current trace	
Accuracy	Reading is proportional to detected magnetic field strength
Trace sensitivity	capable of detecting current flow with 200Ω resistance across drive source
Indication	Tone and meter in all ranges
Plane shorts	
Indication	Tone, meter and fault direction arrows
Sensitivity	Adjustable for differing plane resistance, capable of detecting shorts up to 20Ω
Plane stimulus	
Output voltage	550mV maximum, (current limited) active only when PLANE SHORTS is ACTIVE and outputs are connected to a plane
Drive source	
Output voltage	0 to 550m VAC, adjustable (protected to ±30V)

Minimum requirements

Pentium 350Hz PC, runninig Windows 95, Windows 98 or Windows NT, 64 Mb RAM, VGA monitor, (recomend 21")

Standard accessories

Toneohm 970 is supplied as standard with the following accessories:

Detachable needle probes
Detachable current trace/drive source probe
Detachable plane probe
Bare-board stimulus leads
Lightweight headphones
Operator manual

Physical characteristics	
Dimensions	305mm (12in) wide x 150mm (5.9in high x 275mm (10.8in) deep
Weight	3.5 kg
Flammability	Enclosure to UL94 V-0
Approvals	Conforms to applicable European Directives and is CE marked Polar Instruments Ltd is certified to ISO9001