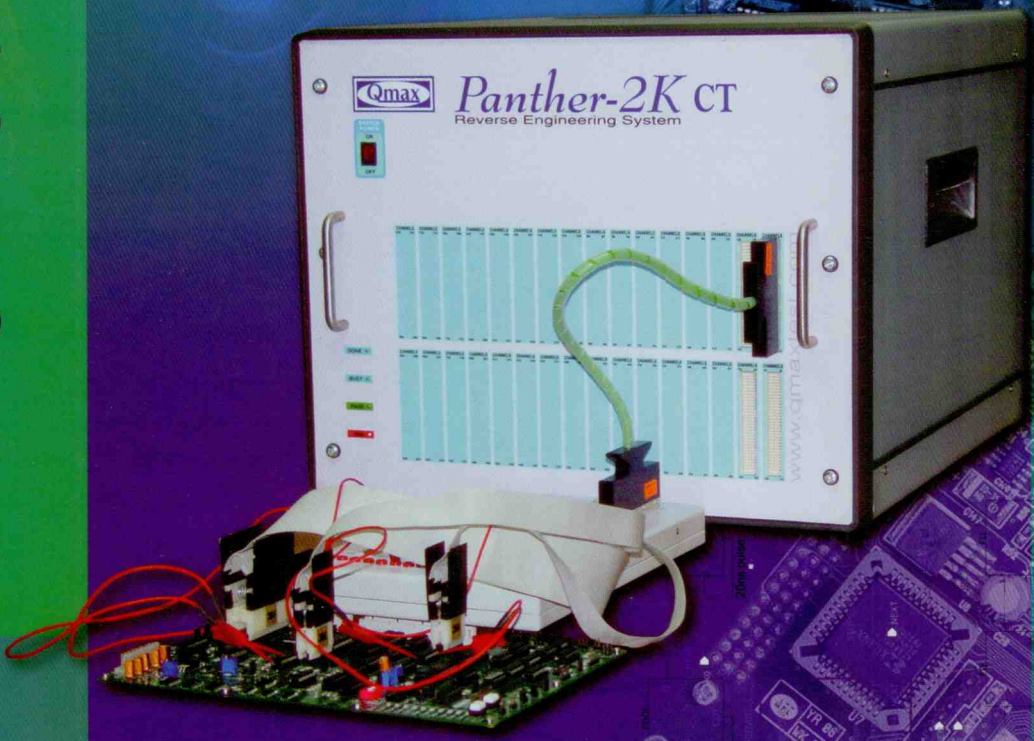




Panther-2K CT

Reverse Engineering System



Qmax Panther-2K-CT Reverse Engineering System

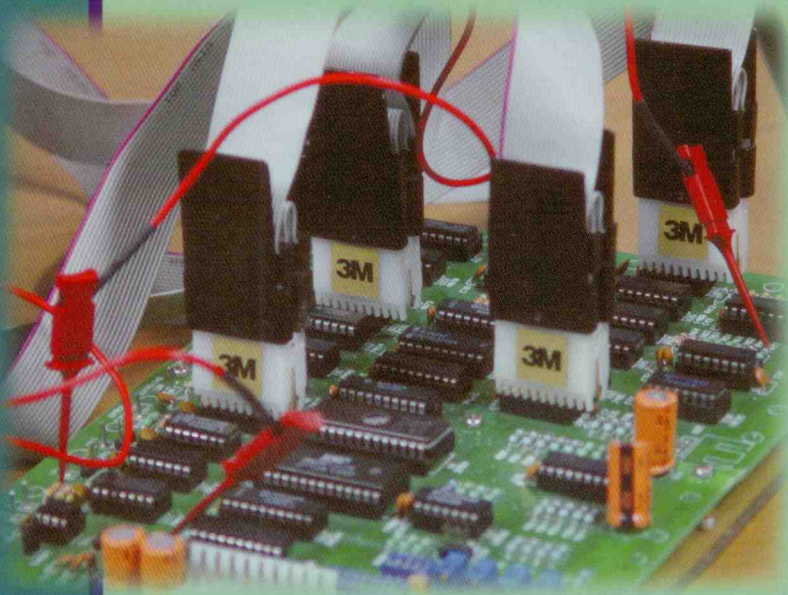
Key Features

- State-of-the-art hardware expandable up to 2048 channels
- Qmax Panther-2K-CT software, user friendly; yet powerful.
- Learns from a sample board
- Creates professional quality circuit diagrams and NetLists
- Qmax Panther-2K-CT system comes along with EDWin software
- Caters for digital, analogue and mixed technologies
- Adds to the benefits of automated testing
- Wide variety of Clips / Cables interface options

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Legacy Systems

In the Military / Avionics / Infrastructure and Engineering Industries essential electronic equipments and legacy systems are used for several years and usually the complete/ correct documentation of these systems are not supplied / available at the repair depots / service centres.

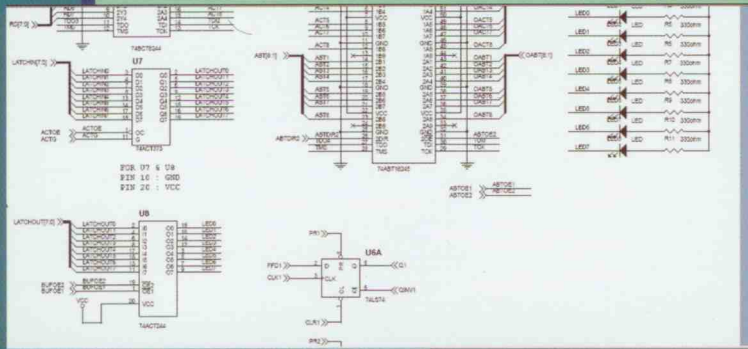
The Challenge

Severe challenges result from a lack of product documentation, which adversely affects all avenues of the support operation.

Very high costs, Extended repair time, dependence on the OEM are some more valid reasons, which pose the challenge to the user to effectively maintain these systems.

The engineers and technicians of various organisations try to repair and maintain these equipment in-house due to various reasons like OEM may no longer be in the business or the service support not available or cannot use third party.

Often such manual repair attempts are made by the technicians without any circuit schematic diagrams or documentation suffer and the end results are inadequate.



The Solution

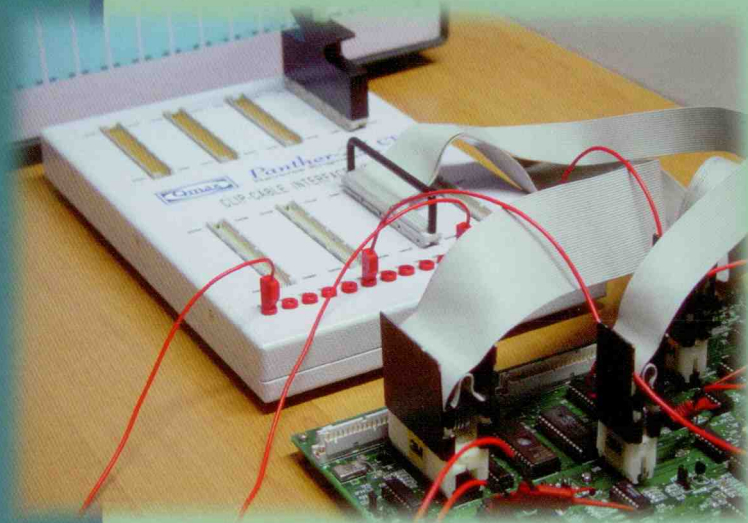
– Qmax Panther-2K-CT Reverse Engineering System

Panther-2K-CT is an effective solution to this challenge and overcomes the restrictions imposed by manual methods.

With **Panther-2K-CT** you can create essential product documentation so that you can have a maintenance strategy that is cost effective and independent of the original equipment manufacturer or the service provider and sharply increases chance of repairing the faulty board.

Panther-2K-CT is a versatile open / short tester designed especially for reverse engineering application of tracing circuits of un-documented PCB Boards. Its innovative measurement technology helps tracing PCB tracks between components in a given Circuit Board. It can accommodate various types of clips / grabbers and connectors to access the device pins to trace the connectivity.

It uses Force Current – Measure voltage methodology with voltage clamp to measure the resistance between device pins to determine the connectivity. The current



is programmable from 1mA to 50mA. The Voltage clamp is programmable from 200mV to 7.5V. Using 200mV voltage clamp eliminates any conduction of diodes as connectivity. Programmable time base from 1µs per test combination to 650ms helps eliminating large capacitors and inductors being detected as shorts.

Its intelligent software scans the links between devices for all combinations at a fast speed and then scans a second time only for the suspect links, using its advanced RAM based sequencing hardware with a slow speed to confirm links eliminating large capacitors as links and large inductors being detected as opens.

User friendly **Panther-2K-CT** software also guides the user to place and move clusters of IC clips and probes to learn the connectivity and generate a NetList.

Reverse Engineering

All the available digital channels (Up to max. of 2048 Channels) can be used for Reverse engineering (Circuit Tracing and Schematic Generation applications) by using the Qmax **Panther-2K-CT** software and when it is used along with EDWin software package, the user can reverse engineer the PCB by creating the schematic diagrams of the PCBs for which there are no circuit diagrams. Once schematics are created it can be used for product maintenance or duplicating the PCBs as spare PCBs.

User can define any number of clips / probes and the system will generate the sequence of placing the clips and probes automatically. The links between devices pins can be learnt and a net list is generated. The resistance threshold for a link can be defined by the user.

The user learns the interconnection between devices on a board in a sequence using Qmax **Panther-2K-CT** software. The software produces a NetList for the learnt devices.

Netlist

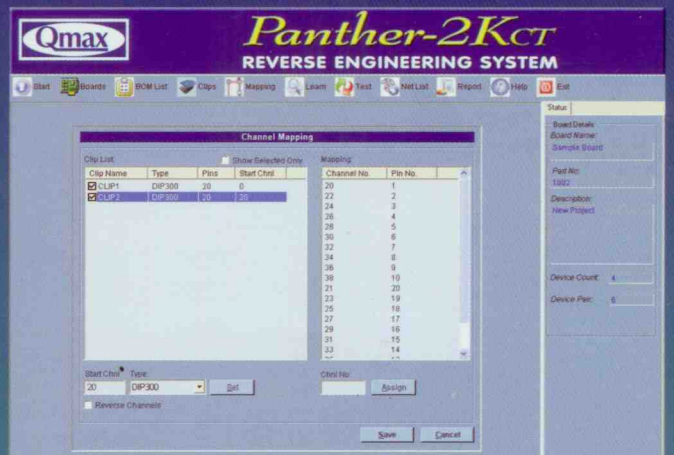
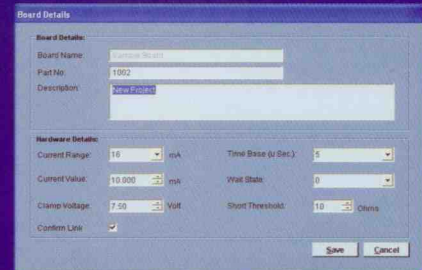
Place the clips and probes as directed by the software or at your own convenience and Qmax **Panther-2K-CT** software guides in easy steps to completely cover all the devices entered in BOM list and the NetList can be exported in EDWin compatible format such as EDIF.

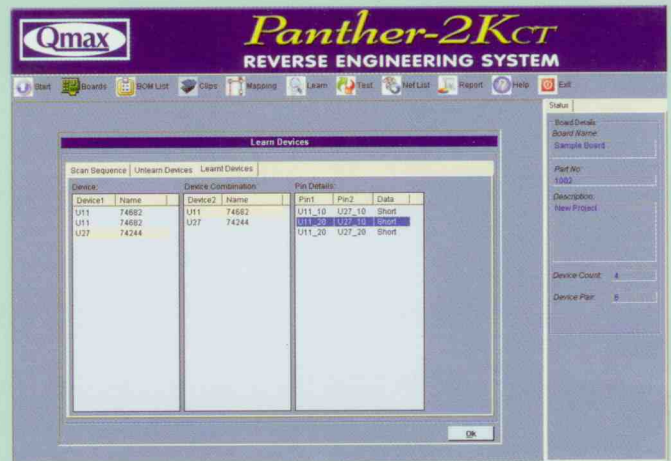
On importing this NetList in to EDWin software, the user can create a schematic diagram showing the interconnections.

Schematic diagram produced in EDWin Software

The schematic editor offers a lot of choices to edit the schematic diagram further. The schematic is created in EDWin using its extensive libraries. The user has options to add new devices to both Panther and EDWin libraries to create full schematic diagrams from a board.

Fully featured EDWin software provides "Auto-Place" and "Auto-Route" facilities to create professional standard circuit diagrams.





Technical Specifications & Key features

Panther-2K-CT hardware is fully features with multiple test methods like serial shift method, Fixed Reference Method, Half QSM Method for $n*(n-1)/2$ combinations, Full QSM Method for $n*(n-1)$ combinations and user defined RAM based sequence. Panther CT software automatically uses them depending on the situation for optimum performance.

No. of Channels

Each Mux card holds 256 channels with 4-wire measurement capability.

The basic configuration uses 256 channels. It can be upgraded to a max. of 2048 channels, using 8 cards (each of 256 channels) maximum.

Measurement Method

Panther-2K-CT tester uses fast analog switches for accurate voltage measurements and improves accuracy using 4 wire Kelvin measurement.

Voltage Clamp

Programmable voltage clamp with 14-bit accuracy within 0 to 7.5V facilitating accurate voltage clamps as required by user.

Time Base

Test Time is programmable from 1us to 256 μ s in 256 steps (1,2,3,4.. 256).

Wait States

Programmable Wait States from zero to 255 wait states for each test. These can be programmed in the 8-bit Wait State RAM and thus each test combination can have its own wait states to accommodate some pins with capacitance and without affecting the overall test speed.

Device pins / fixture wiring with varying capacitance may require either to slow down the test time or selectively insert wait states for those pins only. Slowing down the test time, common for all pins will greatly reduce the tester throughput and increased overall test time. **Panther-2K-CT** offers RAM based on the fly insertion of wait states for those pin combinations that are capacitive and thus increasing the overall test speed of the system.

Compare Threshold

Panther-2K-CT hardware has 4 independently programmable compare threshold voltages and 4 comparators to produce 5 Zone test result. CT software uses them as required. User can set his resistance threshold for a link or short depending up on the PCB track resistance.

Ask for a quote for details of Hardware / Software options and accessories available for Qmax **Panther-2K-CT** Reverse Engineering System.

Host PC and Operating System

Panther-2K-CT is interfaced to a host PC with a minimum configuration of Pentium P4, 2GB RAM, 160 GB Hard disc, and CD ROM through USB 2.0. The required operating system is WindowsXP Professional.

Physical Specifications

Dimensions : 430mm (H) X 510mm (W) X 600mm (D)

Weight : 35 Kg (Approx.)

System Power : 110V 60Hz / 230V 50Hz 500VA Max

System Operating Temperature : 25C +/- 3C

Qmax reserves the right to change the system specifications without prior notice.

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