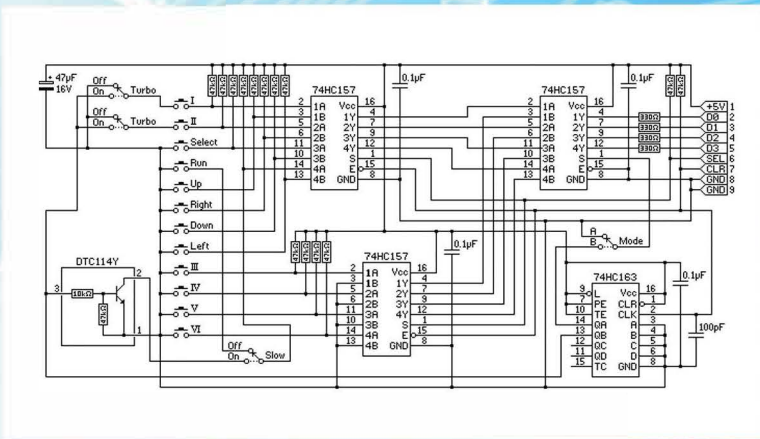


FROM PCB TO SCHEMATICS!



- Cut down fault finding time
- Improve turn around time
- Replace less components
- Reduce spares inventory
- Limit board write-offs

RevEng

Schematic Learning System

The ABI RevEng Schematic Learning System is a powerful yet simple to use system designed to generate professional schematics from a sample board.

Maintenance and repair of electronic equipment suffers from lack of circuit diagrams. With RevEng, implement a cost effective maintenance strategy that is independent of the original manufacturer or service provider.



www.abielectronics.co.uk

The Problem...

ISSUES IN MAINTENANCE

Maintenance and repair of electronics equipment suffers from a lack of circuit diagrams. This has been caused by a combination of actions such as :

Restrictive practices

Restrictive practice occurs when the only support available is through a single OEM or the supplier. This creates a non-competitive situation where the customer cannot seek an alternative provider. Whilst this may not be a bad situation, it does mean there is a lack of choice and a reliance on a single source of support.

Increased use of electronic systems

There has been a dramatic increase in the use of electronics in all areas of industry and commerce. This has led to a corresponding increase in awareness of the cost of maintenance and support.

Availability of local support

When products cannot be repaired locally and have to be sent overseas for repair, users suffer:

- Very high costs
- Extended repair time
- Loss of independence

Legacy equipment

These are old products that are not manufactured or supported by the original supplier. This is an increasingly pressing problem for users and maintainers of long life systems such as water and electricity utilities, military, air traffic control, aircraft maintenance, avionics simulation, traffic control, trains and signalling. For systems with an operational life of 25 years, the support strategy for spares and repairs are critical issues.

Changes in company structures

Over the past few years many famous and long established companies have been taken over, restructured or gone out of business. This has led to the growing situation where no support is available. Thus, there is no protection by choosing products from established and reputable companies.

Changes in technology

The rapid acceleration of change in technology have increased the problems of support. Many products are made obsolete and are not supported or manufactured long before the end of their service life. In recent years, the use of surface mount technology has increased dramatically. To meet this change, manufacturing companies have invested heavily in new assembly equipment. This has led to a corresponding decline in the manufacturing capability for through-hole technology products.

Availability of spares

Although many consumer products are replaced rather than repaired, this approach cannot be applied to long life systems. A standard offer from many suppliers is an upgrade to the latest product or the nearest equivalent. When a product is part of a large system, this solution is unacceptable unless the replacement is physically and functionally identical.

... The Solution

TAKE CONTROL OF YOUR BUSINESS

Create essential product documentation so you can implement a maintenance strategy that is cost effective and independent of the original manufacturer or service provider. RevEng is a schematic learning system that allows users to create a circuit diagram from a sample board. Using our multi-channel measurement unit, the RevWin graphical software guides the operator to place and move clusters of IC clips and probes to learn the connectivity and generate a net list.

Importing the net list into the fully featured software EdWin, operators are able to generate professional standard circuit diagrams using "auto-place" and "auto-route". RevEng is not limited by the size and complexity of the circuit or by the component technology used.



RevEng - Schematic Learning System

THE PROBLEM

Maintenance and repair operations continue to suffer from a lack of circuit diagrams.

THE SOLUTION

RevEng is an effective method of creating professional quality circuit diagrams from a sample board.

CONTENTS

RevEng comprises PC based measurement hardware, RevWin control software and EdWin, an integrated CAD package.

FUNCTIONS

RevEng learns the connectivity of a sample circuit (NetList) that EdWin uses to create a circuit diagram.

LEARN CONNECTIVITY

Learning is by clips, connectors and probes that are attached to clusters of components. RevWin guides the operator to place and move the clips around the reference circuit.

MEASUREMENT TECHNIQUE

RevEng measures the resistance between the component pins. The short circuit threshold is set at 7 ohms. The compliance is 5 volts into an open circuit and 10 mA into a short circuit. Typically the system delivers 10 uA into a circuit.

ACCURACY

A verification facility enables users to confirm the learned data is accurate.

CLIP CHECKS

To minimise operator errors, the system applies an orientation check and pin check to confirm clip contact and position.

INTELLIGENT CONTROL

RevWin generates an efficient sequence of clip combinations and movements that will learn all possible connections.

OPERATOR INTERVENTION

The operator can modify or override the automatic placement of the clips if necessary.

SAFETY

RevEng learns without applying power to the board. It limits the measurement voltage and current. Semiconductor gates are not affected and it is safe to use even on low power technologies.

COMPONENT ACCESS

A wide range of IC clips and connectors provide contact with the circuit. Handheld probe and buzzer facilities overcome physical access limitations of the board.

NET LISTS

Net list is a list of components and connections. It is a valuable document in test engineering and maintenance support for test engineers to trace signals, as input to CAD packages and as data input for ATE programs.

CAD

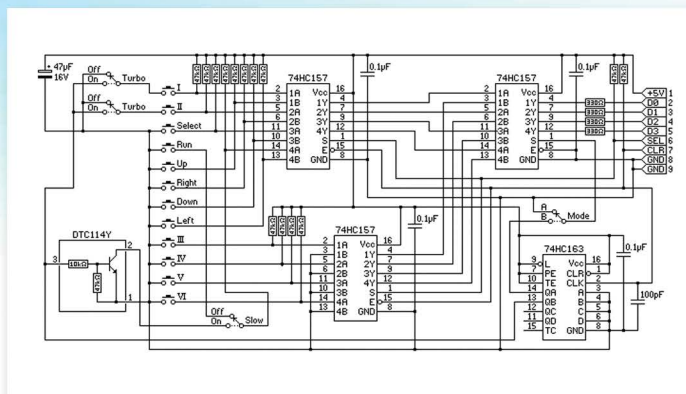
Edwin provides unique features that enable drawings to be generated in a short period of time. Edwin imports the net list and an automated process places components and routes signals. Drawings can include bus structures and multi-page schematics.

LIBRARY

There are over 12,000 components in the library. New and custom devices can be added easily without knowledge of the content or function.

UNIQUE and CAPABLE

RevEng was designed in the UK to provide an effective solution that overcomes the restrictions imposed by manual methods. It is not limited by the size and complexity of the circuit or by the component technology used.



Frequently Asked Questions

Is RevEng a tester?

NO. RevEng is optimised to learn connections between components. It does not use the expensive measurement channels used in ate. It is a "stand alone" facility that avoids the "bottleneck" suffered by a "multi use" system. RevEng offers a higher performance at a lower cost than the optional facility on an ATE.

Does the board need to be powered up?

NO. RevEng makes all measurements without applying power to the reference circuit.

What skills are needed?

There are two major parts to the process. Data entry and learn followed by schematic drawing. Technicians and draftsmen with a basic knowledge of electronics and circuit diagrams are more appropriate than graduates.

Will RevEng damage my board?

NO. RevEng uses a low compliance measurement. The technique is safe even for low power devices.

What devices are in the library?

Currently the library contains over 12,000 components and connectors. These include discrete components, analogue and digital ICs, microprocessors and memories.

Can RevEng handle custom and unknown devices?

YES. If the component is not in the library, you simply draw the symbol and define the number of pins on the component. There is no need to understand the function of the device or even which pins are inputs or outputs.

Can analogue and complex digital circuits be learned?

YES. RevEng is not limited by the component technology or circuit complexity. It caters for discrete components; analogue ICs, digital ICs, VLSI, processors and mixed technology high pin count ASICs.

What about low value resistors, inductors and transformers?

The measurement threshold is set to 7 ohms. This is the optimum value for most circuits. Low resistance components may appear as short circuits. These should be disconnected during the learning process.

I only have faulty boards. Can I still learn the circuit?

YES. Provided the fault does not cause a short circuit between nodes.

Do I need to understand the function of the circuit?

NO. Knowledge of the circuit function is not needed to use RevEng effectively.

Can I learn part of the circuit?

YES. Simply define those components to be included in the drawing and follow the standard procedure. Part or all of the remainder of the circuit can be included later.

Do poor connections cause errors?

NO. RevEng has a Pin Check that checks contact before every measurement. Operator warnings are given for contact errors and missing or misplaced clips.

How accurate is RevEng?

Very accurate. To ensure complete confidence RevEng offers ReScan and Verification procedures.

What is the benefit of buying more channels?

Reduced learn time. The time to learn is a function of the number of components and the number of clips available. The greater the number of clips the shorter the time to learn. The choice is a balance between capital investment and the time to learn. MultiLink systems are suitable for smaller circuits and Cabinet systems for larger circuits.

How many clips do I need?

The choice is a balance between the cost of the clips and the time to learn. The practical limits are from two for each IC package style to one for every IC.

Can I assemble my own clips?

YES. RevEng uses standard ribbon cable, DIN41642, IDC connectors and commercially available IC clips. These can be assembled to meet user requirements.

What about non-standard package styles and connectors?

These are not a problem. Virtually any style connector or clip can be used to attach to the component.

What happens if there is no clip for a component?

Wandering Probe and Buzzer modes are provided to cater for "unclippable" components.

Can I produce an artwork for the circuit board?

YES. The CAD software can be enhanced to include PCB layout, design verification and simulation. These options are available through your local distributor.



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