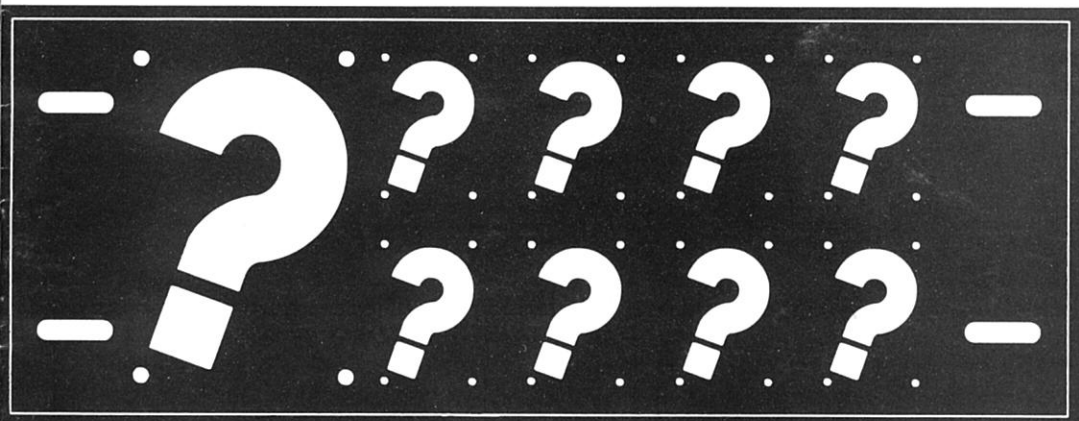
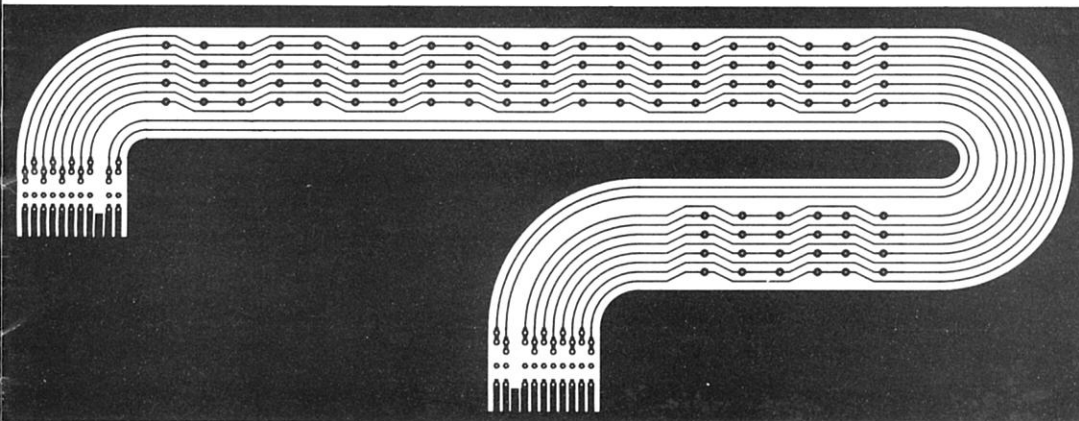
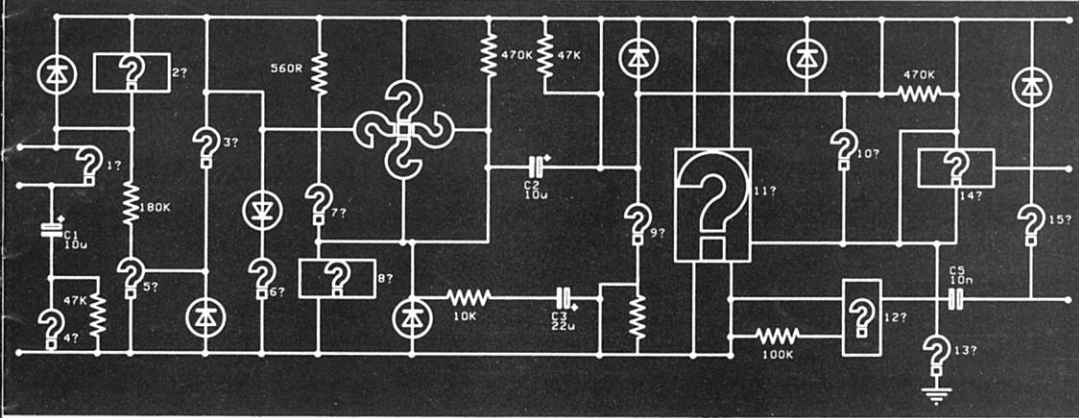


ROBOSYSTEM

ROBO
1000
TECHNICAL GRAPHICS SYSTEM

*ELECTRONIC
AND
ELECTRICAL
INDUSTRY
QUESTIONS
ANSWERED*



THE ROBOSYSTEM HAS ALREADY BROUGHT THE SPEED AND EFFICIENCY OF COMPUTER AIDED DRAFTING TO MANY COMPANIES IN THE ELECTRONIC AND ELECTRICAL INDUSTRY. IT CAN DO THE SAME FOR YOU. THIS BOOKLET EXPLAINS HOW, ANSWERING MOST OF THE QUESTIONS FREQUENTLY ASKED BY ENGINEERS.

All illustrations in this booklet have been produced using the ROBOSYSTEM.

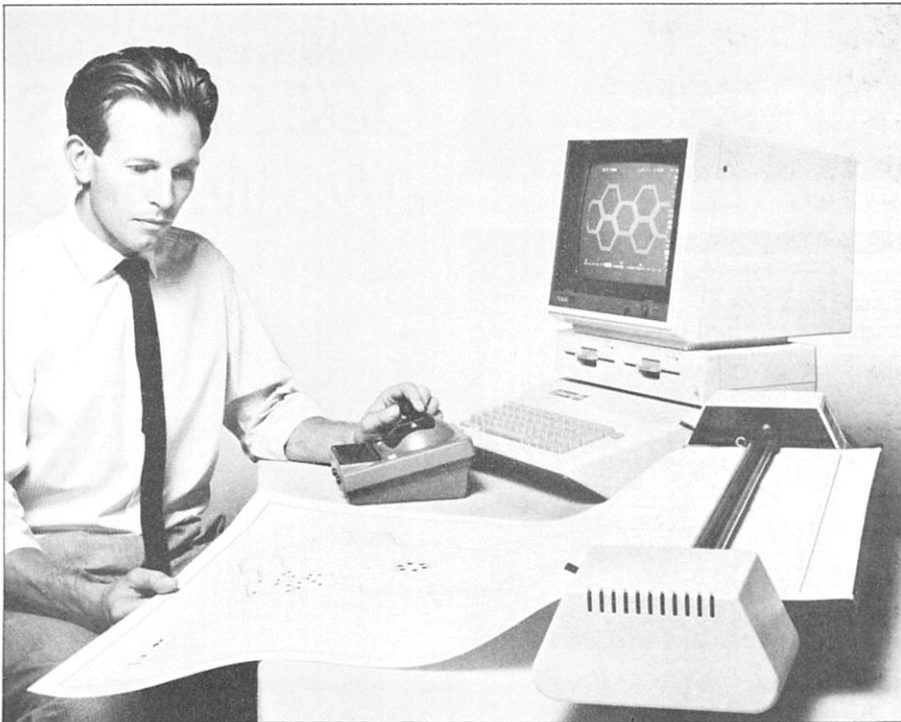


the drawing processor

DEADLINES TO MEET? MEET THE ROBOSYSTEM.

Drawings and deadlines are an integral part of the electronic and electrical industry. At present you probably produce all your diagrams and layouts by traditional methods — drawing largely by hand with the aid of templates, dry transfers, scraping and dye-line.

Now modern micro-computer technology and the advent of Computer Aided Drafting (CAD) have made it possible to achieve the same results faster, easier and more efficiently.



Meet the ROBOSYSTEM — the most powerful micro-based CAD system on the market. It's compact, doesn't cost a fortune and can do all the following and more.

- SCHEMATIC DIAGRAMS
- P.C.B. LAYOUTS
- ASSEMBLY DRAWINGS
- TEMPLATES
- FINISHED ARTWORK
- PRODUCT DATA SHEETS
- PRODUCTION DRAWINGS

The ROBOSYSTEM is easy and absorbing to use, with a multitude of proven benefits wherever there is a steady demand for drawings of a professional standard. The Project Manager of one of the many electrical companies using the ROBOSYSTEM tells us that his staff are now producing schematics **FOUR TIMES FASTER** than before, with time spent on amendments reduced a hundredfold.

Can you really afford to ignore that kind of efficiency? Let us introduce you to the ROBOSYSTEM ... read on for the answers to your questions.

HOW WILL IT BENEFIT MY COMPANY?

By helping to save the two most valuable resources of any business — TIME and MONEY.

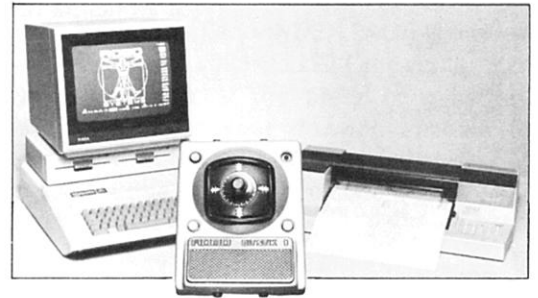
The ROBOSYSTEM has a place in every electrical or electronic company, large or small. The smaller or medium-sized operations find that the system's multitude of applications allow them to handle areas of design and production drawing which were previously uneconomical, so increasing the scope of jobs they can undertake. In larger companies, where several ROBOSYSTEMS may be employed for specific uses, both the quality and quantity of drawing output increase dramatically.

This fast turnaround on each project is what saves you TIME. MONEY is saved in several ways. The possibilities of costly errors occurring are greatly reduced with the ROBOSYSTEM. And because the system speeds up in-house production, less work has to be sent out to contract specialists. This is especially helpful in the early stages of a project, when ideally you don't want the job to leave your sight for a minute, let alone several weeks.

Many other benefits of the system will become apparent as you read on.

WHAT IS THE ROBOSYSTEM?

The ROBOSYSTEM is many things. Primarily, it's a sophisticated 2-D electronic drawing instrument, designed to produce high quality drawings quickly and accurately. It's also an extremely efficient filing system. In fact, the ROBO family of integrated products provides all the advanced technical drafting facilities you're ever likely to need.



The system is extremely versatile, with a number of applications in every area where drawings are produced — whether for

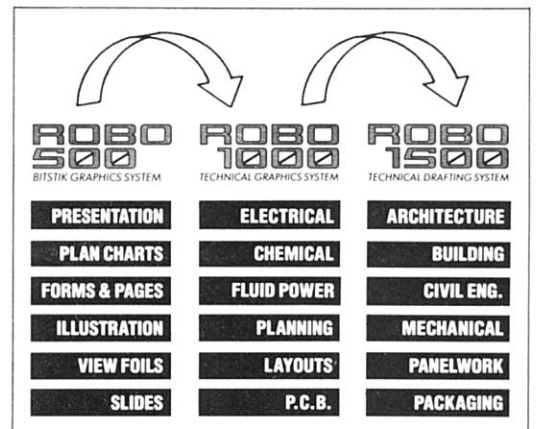
presentation purposes or as working plans. What's more, it's surprisingly easy to use and takes only a few hours to learn.

THE ROBOSYSTEM PLANNED UPGRADE PATH

When the ROBOSYSTEM was in the early stages of design, ROBOCOM learnt a valuable lesson from the shortcomings of other software packages. Too many are seemingly impressive in demonstration conditions but reveal severe limitations when set to work on an actual job.

This led to the development of the ROBOSYSTEM PLANNED UPGRADE PATH. Our system is presently available at three levels, each catering for specific applications. These come under the broad headings of Business Graphics (ROBO 500), Technical Graphics (ROBO 1000) and Technical Drafting (ROBO 1500). Each package can handle all the tasks performed by the one below it, and more besides.

LIBRARY disks produced on one system can be used with the higher systems — you can 'start small' and work up without having to re-draw.



For the purposes of this booklet we will refer mainly to the ROBO 1000. This package is highly competent at the majority of electronic and electrical applications. However, larger and more complex drawings will benefit from the extra memory and enhanced facilities incorporated in the ROBO 1500. More about these later.

CAN A MICRO-BASED SYSTEM DO THE JOB?

Until recently Computer Aided Drawing was the sole territory of mini and mainframe computers.

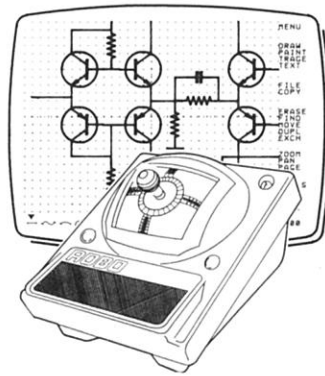
These tended to be expensive to purchase, complicated to operate and generally took up inordinate amounts of skill, time and money. Their benefits, especially in smaller companies, were often outweighed by their huge cost and sheer inconvenience.

However, the economy and ease of use associated with micro-computers has changed all that. A straightforward micro-based 2-D system is all most businesses and designers in the electrical industry need.

Because the ROBOSYSTEM provides a comprehensive range of 2-D CAD facilities inexpensively, based around the popular Apple II micro, it's the ideal system to choose. Most new users express amazement at how much it can do, and how little time it takes them to gain speed and confidence in operating it.

HOW DOES THE SYSTEM WORK?

It works hard.



Many man-years have gone into designing, refining and testing the ROBOSYSTEM so that it pulls its weight in the working environment.

Drawing is an activity which demands precise control over the image being constructed. Most other low-cost CAD systems are operated via the computer

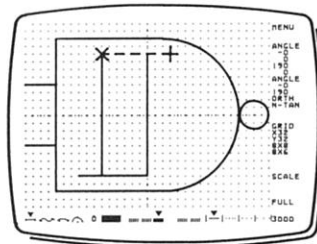
keyboard or a digitising tablet. Both these methods are time-consuming and distract the operator from the job in hand.

Ideally, you should never have to take your eyes off the screen, controlling the image with minimum, automatic hand movements. Drawing with a computer should emulate the same EYE-HAND-PENCIL-PAPER-EYE loop that you employ when drawing freehand.

This is just one major area where the ROBOSYSTEM proves its worth, due to the distinctive BITSTIK controller. This is a unique device which gives you finger-tip manipulation of your drawing elements, by means of a 3-axis control stick and three buttons. At the push of a button you have free and fluid control of a series of elastic 'rubber-banded' cursors on the screen display's 'workpage'.

FULL RANGE OF FUNCTIONS

The workpage incorporates two types of 'snap' GRIDS, and a selection of functions displayed as MENUS and PALLETTES, from which you select the desired drawing mode. You can draw LINES, CIRCLES, ARCS, etc., ZOOM in on any portion of your drawing to view or add detail, PAN around to refer to other areas and employ a full complement of PRECISION DRAWING AIDS.



As you draw you can break off at any time to access a LIBRARY of your drawings displayed as screen miniatures. Using your BITSTIK

control, you can FILE or COPY any detail or complete drawing to or from the LIBRARY, assembling and making amendments at will.

TEXT and DIMENSIONS can be entered, with positioning, size and orientation controlled by the BITSTIK.

Consult the ROBO 1000 General Information Sheet for a full list of the system's functions.

By acting as an extension of the human operator, rather than an adjunct, the system is exceptionally smooth to use. With frequent use, MENU selection and BITSTIK control become second nature.

In fact, the only time the system stops working hard is when you switch it off after a productive day's drawing.

HOW VERSATILE IS THE ROBO 1000?

Because the system is intended for use in a wide variety of industrial sectors, it has to be both extremely versatile and proficient — a master of all trades and jack of none.

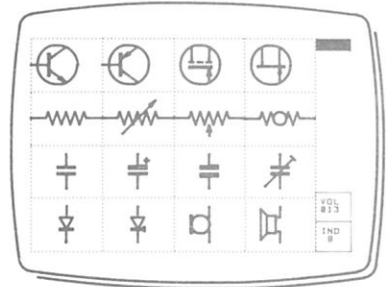
In the electrical industry it has already proved itself in most drawing areas. As you read this

booklet, companies throughout the UK, Europe and America are successfully using the ROBOSYSTEM for all types of electrical and electronic schematics, artwork for PCBs and panelwork, component cataloging and a wide range of assembly and instruction diagrams.

WHAT MAKES THE LIBRARY SPECIAL?

Along with the BITSTIK, the ROBOSYSTEM's unique 'Library Disk Concept' sets it head and shoulders above all other systems. Effectively unlimited drawing storage is provided by the use of 5.25" floppy disks. These are the cheapest and most flexible media available, as well as the most transportable and reliable. Each disk can hold up to 12 detailed A1 drawings or 192 smaller units. Therefore, thousands of drawings can be stored in a container no larger than a shoebox, yet quickly retrieved for reference, additions or amendments.

Drawings are held on disk in GRAPHIC INDEX PAGES. Each INDEX PAGE is divided into boxes into which you FILE the contents of your workpage at the press of a button. Within seconds your drawing appears in miniature within the box. If you wish, you can type in a title or reference code.

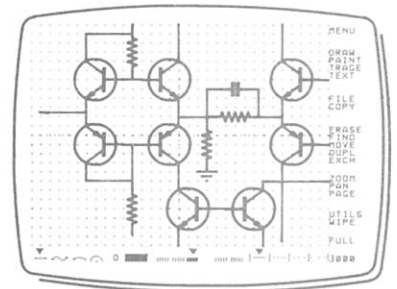
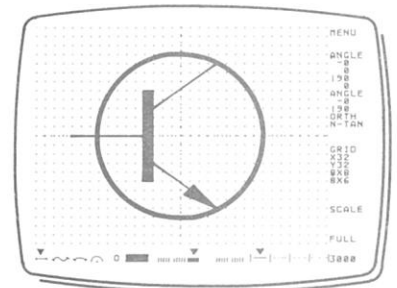


NO MORE REPETITION

The LIBRARY totally eliminates the repetitive drawing and re-drawing that eats up time. Any symbol or module you use frequently needs to be actually drawn only once. You then FILE it on a disk where it remains intact for future use. You can even use it as the basis for other similar modules, so enabling the rapid production of related component sets.

When you want to use them again you can select the relevant symbols at a glance and COPY them onto the workpage for assembly. The 'snap' GRID helps you to position them accurately, although you are free to MOVE them to new positions and DUPLICATE or EXCHANGE them as often as you need.

If you want to amend a LIBRARY unit you LOAD it so that it appears on screen exactly as it was when you originally drew it, make the necessary changes and FILE the revised version as new information.



ARE PRE-DRAWN LIBRARY DISKS AVAILABLE?

Yes. In response to the demand for a series of disks comprising commonly used standard symbols and components, ROBOCOM have compiled a number of pre-drawn ROBOLIBRARY disks. Among the electrical industry applications catered for are Schematics, Digital and Analogue Electronics and Printed Circuit Board. All these symbol sets are inter-compatible, facilitating the production of multi-discipline diagrams.

A range of general business graphics and a variety of popular typefaces are also available.

Of course, in your day-to-day use of the system you will steadily build up your own library of these electronic 'dry transfers'. You can also use the pre-drawn ROBOLIBRARY units as the basis for modifications.

SCHEMATIC DIAGRAMS

Schematics are no problem to the ROBO 1000. Indeed this is one area where the LIBRARY really comes into its own. Most schematics, from the very simple to the most complex, involve a considerable amount of repetitive work when drawn and amended by traditional methods.

But with the ROBOSYSTEM you lay-out your diagram on the screen. Then you draw each module in-situ or COPY the commonly used ones from your own (or ROBO LIBRARY) disks and place them on the layout at any size and orientation.

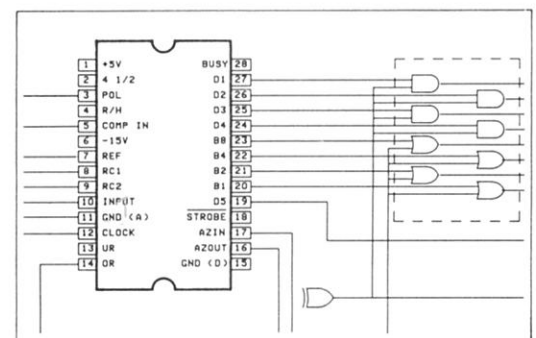
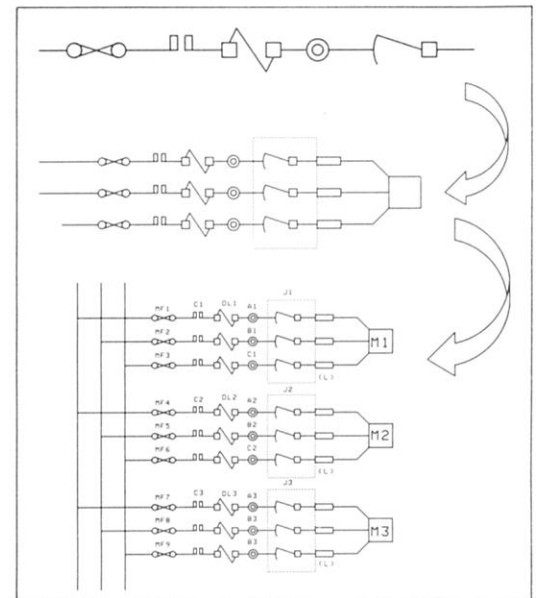
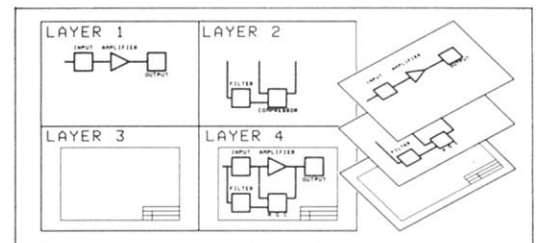
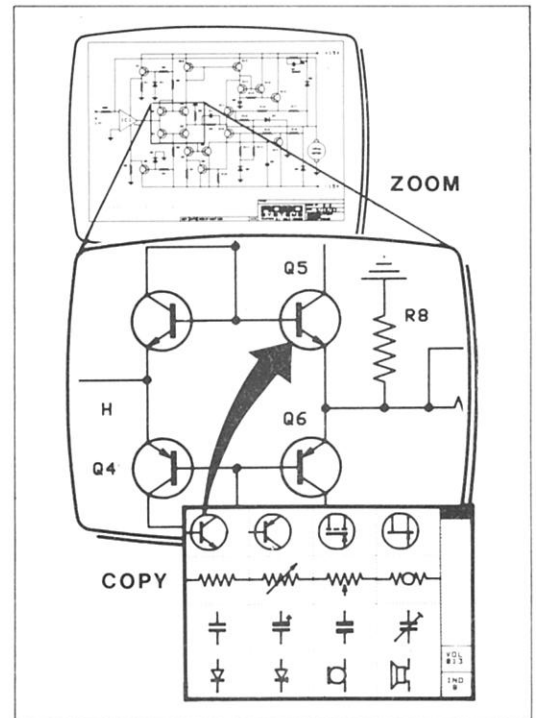
The powerful ZOOM allows you to magnify any area to work in detail, you can PAN in any direction and REVERSE ZOOM to widen the view area. The 'snap' GRIDS allow rapid and accurate positioning and connection giving neat, consistent diagrams. When plotting, up to four line types and five colours or line weights can be employed to achieve easy to read, high-quality diagrams every time.

Because the ROBOSYSTEM allows you to build up a drawing in layers, each stage in the progression towards the final diagram can be saved in its own right. Therefore development changes can be kept on hand for future reference.

TEXT can be added anywhere at consistent or variable size and complete title blocks can be COPIED from the LIBRARY. Written information can even be entered on your drawing as 'buried text' so that it appears as a 'microdot' until you ZOOM.

Amendments can be swiftly made at any time, either LOCALLY on an individual diagram or GLOBALLY within related diagrams (or on repeated details within a drawing). These changes can be emphasised by using a different colour or line-type.

Of course, you will eventually want pen and paper copies of your schematic. This is where ROBOPLOT software and a suitable plotter enter the picture. Once you're happy with your diagram or detail you can plot it at any scale on any size of paper, film or board (up to the size of your plotter). ROBOPLOT enables you to produce high quality output to the exact specifications required.



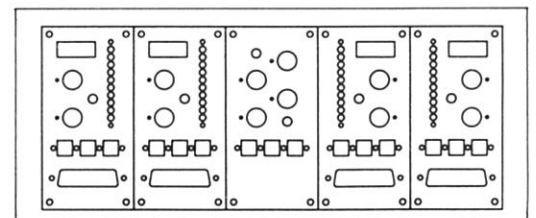
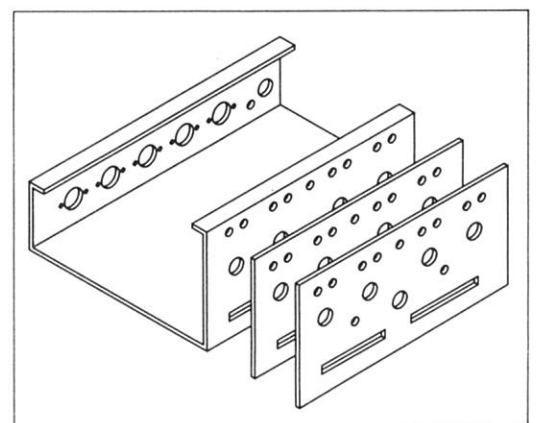
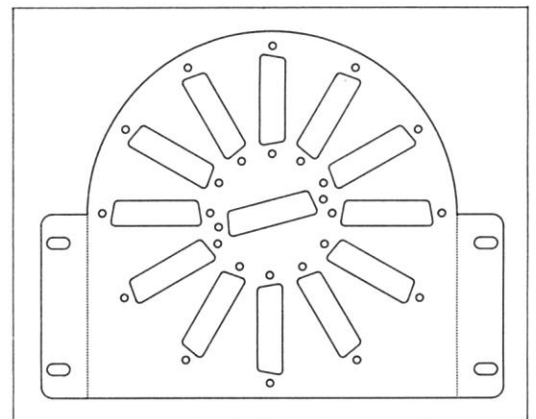
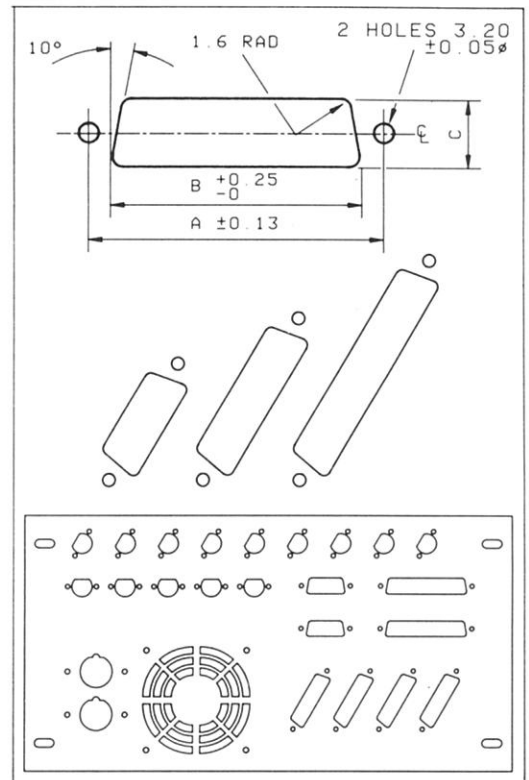
The ROBOSYSTEM can be used at every stage in panelwork design, from the original 'thumbnail' sketches through working drawings to a drilling template.

You can create standard blanks and cut-outs to work on, FILING them in the LIBRARY for use as often as required. Any shape can be drawn and complete sets of different sizes can be rapidly developed and stored on LIBRARY disks. Versions with and without mounting holes, dimensions, etc. can be saved, as can commonly used groups and configurations. If you've ever had to draw a panel full of 'D' type connectors by hand, even with a traditional template, you will immediately appreciate the power of the ROBOSYSTEM's COPY, MOVE and DUPLICATE functions. Trial layouts, modifications and variants can all be set up on screen and FILED in the LIBRARY to be plotted at any time.

As well as designing individual panels the system is equally efficient at assembling them into complete units. Entire racks, mixing desks, filter banks, etc. can be built up from LIBRARY elements exceptionally quickly.

Consequently it is now viable to produce high-quality drawings for customer quotations, presentations and specification meetings to speed up communication and minimise costly misunderstandings.

The ROBO 1000 utilizes a metric scale GRID to help you position and enter the drawing elements. This is suitable for most electronic panelwork, especially where most of the elements are standardised. However, where a lot of one-offs are required, or both inches and millimetres apply, the ROBO 1500, with its keyboard dimensioning and unit conversion function, will be found more suitable. Since LIBRARY elements generated with ROBO 1000 can be used with ROBO 1500 it is practical to start with the former and upgrade at a future time as required.



Clear but comprehensive diagrams are often required for assembly purposes, for use in documentation and instruction manuals or as working diagrams for operators. As well as various schematic, block and flow diagrams the ROBOSYSTEM is efficiently employed in the production of:

- Panel and chassis assembly diagrams
- Wire loom cutting and connection diagrams
- Board and power supply layouts
- Templates
- Installation and wiring diagrams

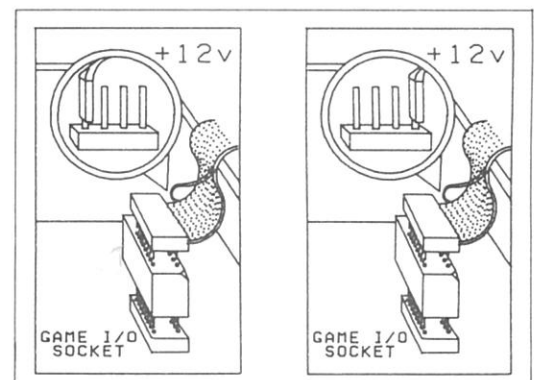
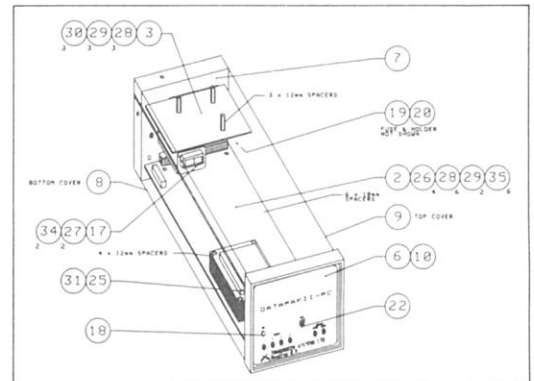
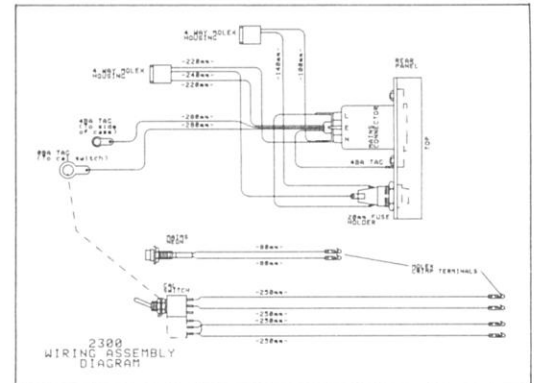
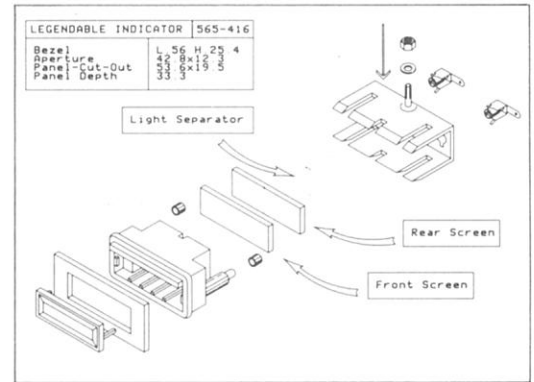
At present you probably use the original design work as the basis for these, but re-draw the relevant views from scratch in order to show the particular assembly details and instructions.

With the ROBOSYSTEM the re-drawing is kept to a minimum — the same LIBRARY elements used to create the original design can be COPIED from disk and incorporated into the finished assembly drawing. Arrows, labels and complete paragraphs can be added either directly or from the LIBRARY.

ISOMETRIC drawings can be easily and rapidly produced using the ROBO 1000's isometric 'snap' GRID and ANGLE LOCKS. Simplified 'exploded views' can also be created.

Complete pages can be composed on the screen, combining diagrams, illustrations and text at any size, rotation and compression. Once completed the pages themselves can be saved on LIBRARY for plotting or screen display and are always available for future reference and changes.

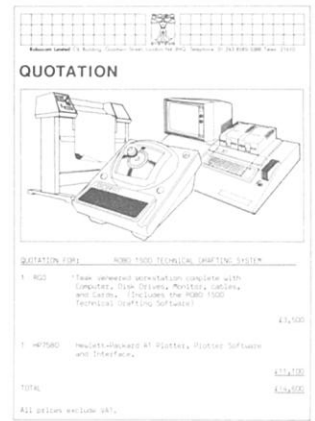
Alternatively you can combine LIBRARY units directly on the paper at plot time. The ROBOPLOT software includes many sophisticated features including the ZOOM function which allows you to pull out enlarged details of any area of the drawing and plot them separately at any size and position.



CAN THE ROBOSYSTEM HELP WITH QUOTATIONS?

Certainly. Several major problems often arise when potential clients seek quotations. No matter how much you've discussed a job in advance you may not be sure exactly what's required — particularly if the client's a little vague about what he or she wants. In extreme cases this can lead to the loss of a lucrative contract, simply due to poor communication. Drawings are the answer of course, but the time and expense required to prepare them often means that quotations go without.

Using pre-drawn units from the ROBOSYSTEM LIBRARY, you can quickly produce a rough 'mock-up' of the job in question. This gives you a clearer idea of what the project entails and allows more accurate costings to be achieved.



It also impresses the client that you've gone to the trouble of 'illustrating' your quotation and allows you both to assess at an early stage whether or not you're thinking along the same lines.

WHAT IF I WANT COMPONENT LISTINGS?

At present the ROBOSYSTEM does only what it was designed to do — produce remarkably accurate and professional drawings. However, new and exciting developments are in the pipeline. The first of these, ROBODATA, will be available in the near future.

ROBODATA is a database program which operates independently of the drawing software and BITSTIK controller. It has two main uses: firstly, ROBODATA allows you to identify individual LIBRARY units (transistors on a circuit board for example).

You can then build up a comprehensive data file for each unit under whatever headings you choose, such as Component No., Description, Supplier, Cost etc.

Once you've built the file you can search through a drawing which contains these components — and produce a printed report giving written details of all the units used in the drawing.

The form of both the input data and output report can easily be changed to suit different purposes. Totals of Quantity, Price, etc. can be automatically calculated.

ROBODATA is just one of many add-on utilities which ROBO have planned for future release. In the meantime don't forget that there are also a large number of programs available from other sources. These cover many aspects of specification and costing and work with the same basic equipment as the ROBOSYSTEM (with the addition of a dot matrix printer).

CAN I GET CALCULATION AND OTHER PROGRAMS?

Because the Apple II is the longest standing micro-computer on the market it has the widest range of attendant software packages. These cover just about every conceivable aspect of office procedure including calculation, word processing, accounts, stock control, mailing lists etc. Ask at your ROBO COMPUTER GRAPHICS CENTRE for details of program sources.

Like the ROBOSYSTEM, these programs go a long way towards improving office efficiency and work output. Because most programs designed for the Apple II are 'user friendly' (i.e. their use requires common sense rather than specialised computer knowledge) they are generally well received by staff. In fact, more often than not the introduction of the ROBOSYSTEM leads to greater enthusiasm in the office.

HAS THE ROBOSYSTEM ANY OTHER USES?

In addition to easing the main body of your drawing workload, the system can be used at some level by everyone in the office. It can be called on to lend a hand in all your day-to-day design jobs, from internal and external forms, photocopy masters and so forth, right through to detailed project planners.

The ROBOSYSTEM can also be used for impressive on-screen client presentations and training demonstrations. A few simple commands allow you to demonstrate various different approaches to a project before anything is committed to paper.

HOW MUCH EQUIPMENT IS REQUIRED?

The basic hardware needed to operate the ROBOSYSTEM is compact enough to fit on the average desktop, with room to spare. In fact it takes up less space than a drawing board.

In addition to the Apple II (+ or e) and the BITSTIK controller, you need two disk drives and a suitable monitor — the system can be used on a colour or monochrome screen, although the latter prohibits you from indicating line weights with different colours.

For professional use a 'TITAN' ACCELERATOR card (optional) is strongly recommended, making the system run 3.6 times faster. The ROBO 1500 package includes a 128K ROBORAM memory expansion card which greatly increases the power and scope of the system.

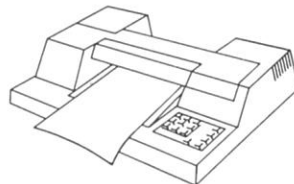
The addition of a compatible plotter, with ROBOPLOT software, makes your CAD workstation complete. Just insert the disk, switch on your micro — and in no time at all you'll be producing consistently high quality drawings and diagrams.

WHAT ABOUT PLOTTERS?

The size and type of plotter you buy depends very much on what you want it to do. There are a wide variety on the market, with prices ranging from £800 to £12,600. It's important, therefore, to carefully analyse your requirements before you make a choice.

Higher priced plotters, such as those manufactured by HEWLETT-PACKARD, are faster and, because they can use several pens sequentially, allow you greater freedom with line thickness and colour. These models are ideal where the plotter is in constant use.

In a situation where several staff members are using the ROBOSYSTEM it is feasible to have just one top grade model for plotting all finished drawings. One plotter to every four drawing stations is the typical ratio. For the purpose of easy proofing you can also fit cheaper plotters to individual drawing stations as required.



BIG OR SMALL

Plotters are available in a range of sheet sizes. The larger sizes are ideal for complete drawings, although the smaller sheets are usually adequate for displaying detailed extracts from your original. Remember too that Computer Aided Drawing gives much higher line definition than conventional hand drawing. This means that detailed plans, diagrams etc. can be clearly shown on a relatively small page area.

LOW-COST OR HIGH PERFORMANCE

In all plotter sizes you have at least two options. That is, the inexpensive or the expensive. The less costly machines tend to be slow, single pen models which generally lack the fine line quality of their upmarket counterparts. They are, however, suitable for most general applications.

THE COST?

Surprisingly, probably not as much as you think. Thanks to the inherently low cost of micro-computer systems you can install a basic electronic drawing system for as little as £2,500 (including A3 plotter). The ROBOSYSTEM has proved to be extremely cost effective — most users find that it pays for itself within six months.

STAGED APPROACH

Because the system is upgradable, you can start with the smallest package and acquire extra software and/or hardware modules as your needs expand.

APPLE II ADD-ON PACKS

Of course if you already use an Apple II in your business, your initial outlay for the ROBOSYSTEM is considerably reduced. There is a special APPLE ADD-ON PACK available which contains the software you'll require to start using your computer for electronic drawing purposes, as well as a BITSTIK, an interface module and a comprehensive instruction manual. The only other items you'll need are ROBOPLOT software and a plotter.

WHO USES THE ROBOSYSTEM?

Small, medium and large electrical companies and electrical departments of other organisations. Our customer list grows daily and includes:

Audio Engineering Ltd
Barclays Bank PLC
British Aerospace PLC
British Airports Authority
British Gas
British Telecom International
British Timken Ltd
Bryans Southern Instruments
Comdial Communication Systems
Courtaulds PLC
Cybermation Ltd
DMS Electronics
Eastern Gas
Fisons Scientific PLC
Ford Motor Company
GEC Measurements

GEC Traffic Automation
Geest Materials Handling
General Foods Ltd
Gillette UK
Hammond & Champness
Heavylift Cargo Airlines Ltd
Honeywell Control Systems
IBM UK Ltd
ICI Mond Division
Kango Wolf Power Tools Ltd
Link Television Ltd
London Transport
Mainwork Ltd
Marconi Instruments Ltd
May & Baker
Mercury Communications

Metal Box PLC
Ministry of Defence GCHQ
Morganite Special Carbons Ltd
National Coal Board
Open University
Otis Elevator Company Ltd
Ozalid (UK) Ltd
Paypoint Systems Ltd
Racal Security Ltd
Radio Telefis Eireann
Research Machines Ltd
Reuters Limited
Royal Dental Hospital
Satchwell Control Systems Ltd
Sauter Automation Ltd
Solid State Logic Ltd

Soundcraft Electronics
SSD Ltd
STC Telecommunications PLC
STC Wound Components Ltd
Sterdy Telephones Ltd
Stewart Transformers Ltd
Terry's of York
Thames Television Ltd
Thorn EMI Instruments Ltd
TI Flexible Tubes
Total Oil Marine Ltd
Transducer Systems Ltd
United Biscuits
Video Electronics Ltd
Welwyn Electronics Ltd
Westland Helicopters Ltd

SERVICE AND SUPPORT?

The ROBOSYSTEM has proven its superior reliability time and again. Should you require after sales service, there are over 30 ROBO COMPUTER GRAPHICS CENTRES throughout the UK, and a worldwide INTERNATIONAL DISTRIBUTOR NETWORK.

The ROBOSYSTEM is entirely produced in the UK and fully supported by our local centres and in-house software and technical teams. In addition to a FULL 12 MONTH GUARANTEE we maintain a free Software Revision Service for all registered customers — a service not many others have the confidence or the resources to provide.

When you purchase a complete turnkey system from us we install it for you and provide basic training. If you have any

queries about the system or its uses don't hesitate to ring us at ROBOCOM. During office hours there's always someone on hand to deal with your questions.

SOUNDS GOOD, HOW CAN I TRY IT?

We hoped you'd ask that. You can only fully appreciate the benefits of the ROBOSYSTEM by seeing it in action and trying it yourself. We hold regular seminars for anyone interested in knowing more, and any of our local centres will gladly arrange a demonstration of how the system can handle your particular requirements.

If you want to know more (and we're sure you do) call us anytime at 01-263 8585 or dial 100 and ask for FREEPHONE ROBO.

