



STARTING ELECTRONICS

THIRD EDITION

KEITH BRINDLEY



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Keith Brindley



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Preface

This book originated as a collection of feature articles, previously published as magazine articles. They were chosen for publication in book form not only because they were so popular with readers in their original magazine appearances but also because they are so relevant in the field of introductory electronics — a subject area in which it is evermore difficult to find information of a technical, knowledgeable, yet understandable nature. This book is exactly that. Since its original publication, I have added significant new material to make sure it is all still highly relevant and up-to-date.

I hope you will agree that the practical nature of the book lends itself to a self-learning experience that readers can follow in a logical, and easily manageable manner.

1 The very first steps

Most people look at an electronic circuit diagram, or a printed circuit board, and have no idea what they are. One component on the board, and one little squiggle on the diagram, looks much as another. For them, electronics is a black art, practised by weird techies, spouting untranslatable jargon and abbreviations which make absolutely no sense whatsoever to the rest of us in the real world.

But this needn't be! Electronics is not a black art — it's just a science. And like any other science — chemistry, physics or whatever — you only need to know the rules to know what's happening. What's more, if you know the rules you're set to gain an awful lot of enjoyment from it because, unlike many

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sciences, electronics is a practical one; more so than just about any other science. The scientific rules which electronics is built on are few and far between, and many of them don't even have to be considered when we deal in components and circuits. Most of the things you need to know about components and the ways they can be connected together are simply mechanical and don't involve complicated formulae or theories at all.

That's why electronics is a hobby which can be immensely rewarding. Knowing just a few things, you can set about building your own circuits. You can understand how many modern electronic appliances work, and you can even design your own. I'm not saying you'll be an electronics whizz-kid, of course — it really does take a lot of studying, probably a university degree, and at least several years' experience, to be that — but what I am saying is that there's lots you can do with just a little practical knowledge. That's what this book is all about — starting electronics. The rest is up to you.

What you need

Obviously, you'll need some basic tools and equipment. Just exactly what these are and how much they cost depends primarily on quality. But some of these tools, as you'll see in the next few pages, are pretty reasonably priced, and well worth having. Other expensive tools and equipment which the professionals often have can usually be substituted with tools or equipment costing only a fraction of the price. So, as you'll see, electronics is not an expensive hobby. Indeed, its

potential reward in terms of enjoyment and satisfaction can often be significantly greater than its cost.

In this first chapter I'll give you a rundown of all the important tools and equipment: the ones you really do need. There's also some rough guidelines to their cost, so you'll know what you'll have to pay. Tools and equipment we describe here, however, are the most useful ones you'll ever need and chances are you'll be using them as long as you're interested in electronics. For example, I'm still using the side-cutters I got over twenty years ago. That's got to be good value for money.

Tools of the trade

Talking of cutters, that's the first tool you need. There are many types of cutters but the most useful sorts are side-cutters. Generally speaking, buy a small pair — the larger



Photo 1.1 Side-cutters like these are essential tools — buy the best you can afford