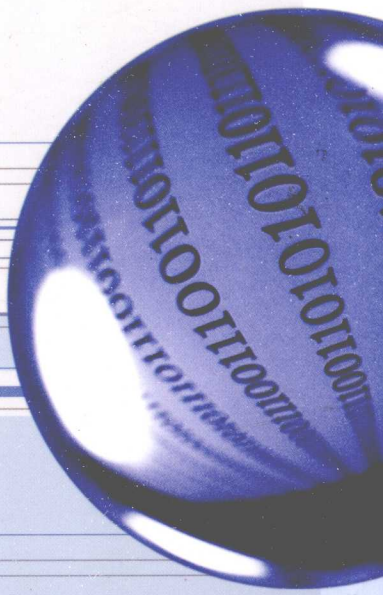
普通高等教育“十一五”国家级规划教材

新编21世纪高等职业教育电子信息类规划教材 · 应用电子技术专业

电子技术专业英语（第3版）

朱一纶 编著



電子工業出版社
PUBLISHING HOUSE OF ELECTRONICS INDUSTRY http://www.phei.com.cn

普通高等教育“十一五
新编21世纪高等职业

划教材·应用电子技术专业

电子技术专业英语
（第3版）

朱一纶 编著

電子工業出版社
Publishing House of Electronics Industry
北京·BEIJING

内 容 简 介

本书涉及电子元器件、集成电路、基本放大电路、数字电路等课程的基本知识，旨在逐步提高学生的阅读、理解和翻译电子技术专业书刊资料的能力，为学生今后能够以英语为工具，获取和交流专业技术信息打下良好的基础。

本书注重选用各种不同类型的资料，有教材、说明书、广告、科普资料，并附有较多的插图，以达到比较好的教学效果，同时可以拓宽学生的知识面。本书还简单介绍了翻译知识，并配有适量的练习与扩展阅读材料，可供教师在教学中选用和学生自学。

本书适合作为高等工业专科学校教育和高等职业教育的应用电子技术专业的教材，也可作为其他电类专业学生的参考书。

图书在版编目(CIP)数据

电子技术专业英语/朱一纶编著. —3 版. —北京：电子工业出版社，2009.4
新编 21 世纪高等职业教育电子信息类规划教材. 应用电子技术专业

ISBN 978-7-121-08508-6

Ⅰ. 电… Ⅱ. 朱… Ⅲ. 电子技术—英语—高等学校：技术学校—教材 Ⅳ. H31

中国版本图书馆 CIP 数据核字（2009）第 038407 号

策　　划：陈晓明
责任编辑：陈晓明　　特约编辑：王　芳
印　　刷：北京市海淀区四季青印刷厂
装　　订：涿州市桃园装订有限公司
出版发行：电子工业出版社
　　北京市海淀区万寿路 173 信箱　邮编 100036
开　　本：787×1 092　1/16　印张：17.75　字数：454 千字
印　　次：2009 年 4 月第 1 次印刷
印　　数：4 000 册　　定价：26.00 元

凡所购买电子工业出版社图书有缺损问题，请向购买书店调换。若书店售缺，请与本社发行部联系，联系及邮购电话：（010）88254888。

质量投诉请发邮件至 zlts@phei.com.cn，盗版侵权举报请发邮件至 dbqq@phei.com.cn。

服务热线：（010）88258888。

前　言

专业英语的教学目的是指导学生阅读与自己专业相关的英语书刊和文选，使学生能以英语为工具，获取与专业相关的信息，本书的教学对象是高等工业专科学校和高等职业院校应用电子技术专业的学生，也可作为其他电类专业学生的参考书。

本书自第1版（2003年）、第2版（2006年）出版以来，承蒙广大老师、学生等读者的厚爱，被许多学校选为电类专业英语的教材，共计印刷了15次之多。

在此期间，编者不断得到读者从不同角度提出的鼓励、希望和建议。随着集成电路、计算机技术等的迅速发展，电子技术产品在原理、性能及适用范围等很多方面都在不断地发生变化，编者在教学实践和科研工作中也有一些新的体会，为此我们在第2版的基础上对教材进行了修订，这次修订的内容主要有：

1．增加了关于英文简历写作、电子技术仿真等阅读资料，以便教师、学生可以根据学习能力和需要进行选用。

2．图文并茂，且尽可能选用美观真实的照片，并制作与教材配套的电子教案，电子教案中彩色的图片可以加深学生对实际的电气元件等的感性认识。

3．更新了内容。电子技术是发展迅速的领域，在编写第3版时，尽可能选用最新的电子技术内容，对第2版中有些已落后的内容进行更新。

4．涉及的知识面广，选用了很多介绍实际的电子技术应用的内容，使教材具有较好的可读性，不仅可供专业英语的学习，还可以了解到一些常用电子电气设备的工作原理。

5．配有有声读物，由发音纯正的英语系国家人士朗读教材中单元课文，更利于教师的教学和学生的自学，也使学生可以锻炼口语，增加学习趣味。此电子教案在电子工业出版社的华信教育资源网上可下载。

本书由南京金陵科技学院朱一纶编著，吴岱曦参加了资料的整理、文字录入及电子教案的制作工作，南京金陵科技学院的吴彪老师也帮助做了校对等工作。

限于编者的学识水平与实践经验，书中不足之处在所难免，恳请读者和同行们批评指正。

编者的电子邮箱：zhuyilun2002@yahoo.com.cn

编　者

2009年1月

目　录

Unit 1 A Brief Introduction of Electronic Technology

Pre-reading

Read the following passage, paying attention to the question.

1) Who invented the radio?

2) When was the real electronics started?

3) What courses should a student majoring in the electronics study?

4) What career will a student majoring in the electronic technology follow?

1.1 Text

1.1.1 History about Electronics

There can be no doubt that the 1900s is remembered as the electronic century. Of course there have been other great advances, in medicine, in transport, in science, in commerce, and many other fields, but where would they have been without the instruments and devices that electronics has provided? How would you see a 3D virtual reality image of your beating heart with no electronics? How would you get money out of the bank on a Sunday night without electronics? Would you go to a pop concert that had no amplifiers, large screens or lighting effects? Don't say you would rather watch TV – there would not be any.

Electronics in the early 20th century started thriving at a greater speed unlike the pre-20th century developments. The radio invented by the Italian genius Marconi and the work of Henry Hertz opened the road to further discoveries and inventions. In the first decade the new thing that was welcomed to the technical world was the vacuum tube. The vacuum tubes at that time worked as a miraculous component for the radio devices.

The invention of the television was a miraculous thing for the mankind. It was revolution in both communication technology and also for the world media. The distances between the continents did not seem to be far enough. The credit goes to the British engineer John Logic Baird who followed the footprints of Marconi and tried to send the images in the same way as the speech. After a long experiment he found that a series of static pictures if sent within a small interval of time in between them, seem to be moving.

The real electronics what it is called today was actually started after the discovery of the transistor effect. Transistor opened the road for the electronics and more importantly it opened the road for the computing world. Computers of various types started hitting the market and the research works got a boost.

Some other problems were also there like the assembling of the electronic components on a single mother board. Jack Kilby in Texas Instruments found a very nice solution. He suggested to

throw away all the wires and tried to connect the resistors, capacitors and transistors on the same piece of wafer internally. Surprisingly his ideas worked and gave birth to the integrated circuit industries.

1.1.2 Introduce to Some Courses

As a student majoring in the electronic technology, you will study many courses such as:

1. Direct Current Circuits & Alternating Current circuits

This course covers the fundamental theory of passive devices (resistor, capacitor and inductor) and electrical networks supplied by a DC source, and then an introduction to the effects of alternating voltage and current in passive electrical circuits is given. This module also covers DC machines, three phase machines and transformers.

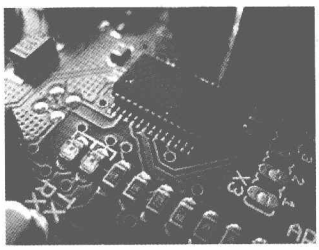


Fig 1.1 electronic circuit

2. Analog Electronics

This module introduces the characteristics of semiconductor devices in a range of linear applications and electronic circuits consisting of these devices (Fig 1.1). The following specific topics are covered. Semiconductor diodes: PN junction diodes, special purpose diodes; Transistors: field effect and bipolar transistors; Signal amplifiers: practical amplifiers, biasing circuits, operational amplifiers circuit; Other circuits: rectification, regulation and DC power supplies.

3. Digital Electronics

In this unit the following topics are covered: basic concepts about Logic circuits, number representations, combinatorial logic circuits, sequential logic circuits, introduction to CMOS digital circuits, logic operations theorems and Boolean algebra, number operations (binary, hex and integers), combinatorial logic analysis and synthesis, sequential logic analysis and synthesis, registers, counters, bus systems, CAD tools for logic design.

4. Microcontroller Systems

The use of computers and microcontrollers is now found in every field of the electronics industry. This use will continue to grow at a rapid pace as computers become more complex and powerful. The ability to program these devices will make a student an invaluable asset to the growing electronic industry. This module enables the student to program a simple microcontroller to perform typical industrial tasks. Assembler and C are used to program the MPU (Microprocessor Unit). The student will set up the internal devices such as RS232 port, timer, interrupts, counters, I/O ports, ADC etc. The program will then use these devices for control operations.

5. Computer Programming for Engineering Applications

It is a continuation of more advanced programming techniques. The language of C will be used for teaching purposes. Emphasis is towards the use of programming for engineering applications and problem solving.

The electronic technology will provide a sound educational foundation to enable graduates to

follow a career in: electrical engineering; power and control engineering; electronics; computer engineering; telecommunications engineering etc.

Technical Words and Phrases

amplifier	['æmplifai(ə)]	*n.* [电工]扩音器，放大器
analog	['ænəlɔg]	*n.* 类似物，相似体，（计算机）模拟
career	[kə'riə(r)]	*n.* 事业，生涯
characteristics	[kæriktə'ristik]	*adj.* 特有的 *n.* 特性，特征，特征值
circuit	['sə:kit]	*n.* 电路 *vt.* 接成电路（绕……环行）
image	['imidʒ]	*n.* 图像，肖像，映像 *vt.* 想象，作……的像
instrument	['instrumənt]	*n.* 工具，仪器，乐器
interrupt	[intə'rʌpt]	*vt.* 打断，中断 *vi.* 打断 *n.*（发给电脑的）中断信号，中断
medicine	['meds(ə)n]	*n.* 药，医学，内科学，内服药 *vt.* 给……用药
miraculous	[mi'rækjuləs]	*adj.* 奇迹的，不可思议的
module	['mɔdju:l]	*n.* 模数，模块，登月舱，指令舱，此处指课程模块
passive	['pæsiv]	*adj.* 被动的，此处指无源的
program	['prəugræm]	*n.* 节目，程序 *vi.* 安排节目，编程序
semiconductor	[semikən'dʌkt]	*n.* [物]半导体
static	['stætik]	*adj.* 静态的，静力的
technique	[tæk'ni:k]	*n.* 技术，技巧，方法，表演法，手法，工艺，技艺
thrive	['θraiv]	*v.* 兴旺，繁荣，茁壮成长，旺盛
transistor	[træn'sistə(r)]	*n.* [电子]晶体管；晶体管（半导体管，晶体管收音机）
virtual	['vɜ:tjuəl]	*adj.* 虚的，实质的，虚拟的，[物]有效的，事实上的

AC(alternating current)	交流电（流）
Applications	应用，应用软件
DC(direct current)	直流电（流）
electronic technology	电子技术
I/O port	输入/输出端口
major in	（在大学里）主修
pop concert	流行音乐会
power supplies	电源
the credit goes to…	归功于……