The Microcontroller Idea Book

Circuits, Programs & Applications featuring the 8052-BASIC Single-chip Computer



Find authenticated court documents without watermarks at docketalarm.com.

NOV 3 1992 N

The Microcontroller Idea Book

Circuits, Programs, & Applications featuring the 8052-BASIC Microcontroller

Jan Axelson

Lakeview Research 2209 Winnebago St. Madison, WI 53704

Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

FIRST EDITION FIRST PRINTING

1 J 223 P76A93 1994

copyright 1994 by Jan Axelson

All rights reserved. No part of this book may be reproduced or transmitted in any form, except for the owner's personal use, without written permission from the publisher.

Published by Lakeview Research

Trademarks

Macintosh is a registered trademark of Apple Computer. Procomm Plus and Datastorm are registered trademarks of Datastorm Technologies, Inc. VT100 is a registered trademark of Digital Equipment Corporation. IBM is a registered trademark of International Business Machines Corporation. MCS-BASIC-52 and Intel are registered trademarks of Intel Corporation. Microsoft, MS-DOS, GW-BASIC, and Microsoft Windows are registered trademarks of Microsoft Corporation. Philips is a registered trademark of Philips International BV.

The author and publisher have used their best efforts in preparing this book and the materials in it. The author built and tested the electronic circuits described, ran and tested the computer programs presented, and reviewed all materials for completeness and accuracy. The author and publisher make no warranty with regard to the circuit schematics, program listings, and other materials in this book. The author and publisher take no responsibility for any damages resulting from any use of the material in this book.

	Erasing NV Memory 55 Adding more NVRAM or EEPROM 56 Adding EPROM 56 EPROM-programming Circuits 57 Power Supplies for Programming 61 Storing Programs on Disk 63	•
Chapter 5	Programming Programming Basics 65 BASIC-52 Bugs and Things to Watch Out For 69 Finding Program Errors 70 BASIC-52 Keywords by Function 72 Quick Reference to BASIC-52 74	65
Chapter 6	Inputs and Outputs The Memory Map 87 Uses for I/O Ports 89 Adding Ports 89 The 8255 Programmable Peripheral Interface 98	87
Chapter 7	Switches and Keypads Simple Switches 109 Adding a Keypad 116	109
Chapter 8	Displays Using LEDs 125 7-segment Displays 129 Displaying Messages 138 Inside the Display Controller 140 Mounting Displays in an Enclosure 152	125
Chapter 9	Using Sensors to Detect and Measure Sensor Basics 153 Choosing Sensors 154 On/off Sensors 155 Analog Sensors 156 Sensor Examples 163 Level Translating 167 Choosing a Converter 169	153
Chapter 10	Clocks and Calendars BASIC-52's Real-time Clock 171 A Watchdog Timekeeper 174	171

Ğ

o

G

łżq

020

* 0. *

ि द्र

4 0

DOCKET A L A R M Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

Chapter 11	Control Circuits Switching Power to a Load 185 Controlling a Switch Matrix 187 Op Amp with Programmable Gain 189 Controlling a Stepper Motor 191 Speed Control of a Continuous DC Motor 195		185
Chapter 12	Wireless Links Infrared Links 199 Increasing the Distance 212 Radio Links 216		199
Chapter 13	Calling Assembly-language Routines Assembly-language Basics 218 What You Need 218 Loading a Routine 221 File Formats for Assembly-language Routines 222 Assembling a Program 224 Uploading a Program 225 Example: Creating a Sine Wave 227 Avoiding Program Crashes 231 Interrupts 232 Adding Custom Commands and Instructions 233 A General-purpose EPROM Programmer 237		217
Chapter 14	Running BASIC-52 from External Memory Reasons 239 Copying BASIC-52 240 System Requirements 241 Storing BASIC-52 Programs 243	•	239
Chapter 15	Related Products Enhanced BASIC-52 245 BASIC Compilers 246 Programming Environments 247 Pc Boards 248 BASIC-52 Source Code 250	·	245
Appendix A	Sources Books 251 BBS's 254 Product Vendors 255		251

DOCKET A L A R M Find authenticated court documents without watermarks at <u>docketalarm.com</u>.

DOCKET



Explore Litigation Insights

Docket Alarm provides insights to develop a more informed litigation strategy and the peace of mind of knowing you're on top of things.

Real-Time Litigation Alerts



Keep your litigation team up-to-date with **real-time** alerts and advanced team management tools built for the enterprise, all while greatly reducing PACER spend.

Our comprehensive service means we can handle Federal, State, and Administrative courts across the country.

Advanced Docket Research



With over 230 million records, Docket Alarm's cloud-native docket research platform finds what other services can't. Coverage includes Federal, State, plus PTAB, TTAB, ITC and NLRB decisions, all in one place.

Identify arguments that have been successful in the past with full text, pinpoint searching. Link to case law cited within any court document via Fastcase.

Analytics At Your Fingertips



Learn what happened the last time a particular judge, opposing counsel or company faced cases similar to yours.

Advanced out-of-the-box PTAB and TTAB analytics are always at your fingertips.

API

Docket Alarm offers a powerful API (application programming interface) to developers that want to integrate case filings into their apps.

LAW FIRMS

Build custom dashboards for your attorneys and clients with live data direct from the court.

Automate many repetitive legal tasks like conflict checks, document management, and marketing.

FINANCIAL INSTITUTIONS

Litigation and bankruptcy checks for companies and debtors.

E-DISCOVERY AND LEGAL VENDORS

Sync your system to PACER to automate legal marketing.

