AccessionIndex: TCD-SCSS-V.20160121.003 Accession Date: 21-Jan-2016 Accession By: Peter Canavan Object name: Microprocessor Interfacing Techniques Vintage: c.1977 Synopsis: Austin Lesea and Rodnay Zaks, second edition, ISBN 0-89588-003-2, Sybex Inc, 202 Milvia Street, Berkeley, California 94704.

Description:

Rodnay Zaks books (also see *Programming the Z80* elsewhere in this catalog) were popular guides for design engineers, students and enthusiasts in the late 1970s.

Microprocessor Interfacing Techniques was co-authored with Austin Lesea and covers early 8-bit CPUs (i8080/i8085, MC6800, Z80), basic and peripheral I/O, analog to digital conversion and vice versa, bus and I/O standards (S100, 6800, IEEE-488, RS-232C, RS-422, RS-423), plus a case study and guide to troubleshooting.

As such it is a good snapshot of the simplicity of mid-to-late 1970s microcomputer technology, just before the rise of complexity begun by the introduction of 16-bit and then 32-bit (and now 64-bit) microprocessors.

Many thanks to Peter Canavan, Network Manager, Broadcast Operations, Australian Broadcasting Commission (ABC), who donated this item from his personal collection.

The homepage for this catalog is at: <u>https://www.scss.tcd.ie/SCSSTreasuresCatalog/</u> Click '*Accession Index*' (1st column listed) for related folder, or '*About*' for further guidance. Some of the items below may be more properly part of other categories of this catalog, but are listed here for convenience.

Accession Index	Object with Identification
TCD-SCSS-V.20160121.003	Austin Lesea and Rodnay Zaks, Microprocessor Interfacing
	Techniques, second edition, ISBN 0-89588-003-2, Sybex Inc,
	202 Milvia Street, Berkeley, California 94704, c.1977.

MICROPROCESSOR INTERFACING TECHNIQUES

SECOND EDITION AUSTIN LESEA RODNAY ZAKS



Figure 1: Microprocessor Interfacing Techniques front cover



Figure 2: Microprocessor Interfacing Techniques rear cover

CANAVAN 2710320 MAY 80

MICROPROCESSOR INTERFACING TECHNIQUES

AUSTIN LESEA

RODNAY ZAKS



U.S.A. 2020 Milvia Street Berkeley, California 94704 Tel:(415) 848-8233 Telex: 336311

13.95

EUROPE 313 rue Lecourbe 75015 - Paris, France Tel: (1) 8282502 Telex: 200858

SECOND EDITION

Figure 3: Microprocessor Interfacing Techniques title page

ACKNOWLEDGEMENTS

The following persons or companies have supplied valuable information, photo. The following persons or companies nave supplied valuable information, photo. graphs, programs or schematics of their cooperation is gratefully acknowled. graphs, programs or schematics of their properties of projects: Although not all information supplied could be used, their cooperation is gratefully acknowledged.

information series (disks), Shugart (disks), Thomson-CSF (CRTC board), David Intel, Motorola, Persci (disks), Rockwell, Data I/O (programmer), Prolog (program Intel, Motorola, Persci (disks), Snugari (disks), Anonison Corr (CRTC board), David Reinagel (Music Synthesis), Rockwell, Data I/O (programmer), Prolog (programmer), Reinagel (Music Synthesis), Control Data (disks), North Star, Imsai Intel, Motors Synthesis), Rockwein, Data 1/0 (programmer), Froiog (programmer), Reinagel (Music Synthesis), Control Data (disks), North Star, Imsai, Altair Zilog, Hewlett-Packard (analyzers), Component Sales (keyboards), MOS atair Zilog, Hewlett-Packard (analyzers), control Data (class), Horth Star, Imsai, Altair Zilog, Hewlett-Packard (cassette interface), Component Sales (keyboards), MOS Tech. (S100 bus), Tarbell (cassette interface), Fairchild, NEC, Western Digital, Dynabyte (Dech-(S100 bus), Tarbell (cassette interface), Component Sales (Rey Boards), MOS Tech. (S100 bus), Advanced Micro Devices, Fairchild, NEC, Western Digital, Dynabyte (RAM), nology, Advanced Micro Devices, Lawrence Laboratory, University, nology, Advanced Micro Devices, Falloundy, Lawrence Laboratory, University of National Semiconductor, Analog Devices, Lawrence Laboratory, University of National Semiconductor, Analog Detroit, Supply), Fluke, Biomation (analyzer), California at Berkeley, Power-One (power supply), Fluke, Biomation (analyzer), Trendar(fault analysis)

FOREWORD

Every effort has been made to supply complete and accurate information. However, Sybex assumes no responsibility for its use; nor any infringements of patents or other rights of third parties which would result. No license is granted by the equipment manufacturers under any patent or patent rights. Manufacturers reserve the right to change circuitry at any time without notice.

In particular, technical characteristics and prices are subject to rapid change. Comparisons and evaluations are presented for their educational value and for guidance principles. The reader is referred to the manufacturer's data for exact specifications.

Copyright © 1977, 1978 SYBEX Inc. World Rights reserved. No part of this ication may be stored i publication may be stored in a retrieval system, copied, transmitted, or reproduced in any way, including but not in the system of the system in any way, including, but not limited to, photocopy, photography, magnetic or other recording, without the prior water recording, without the prior written permission of the publisher.

Library of Congress Card Number: 78-55237 ISBN Number: 0-89588-003-2 Printed in the United States of America Printing 10 9 8 7 6 5 4 3 2 1

Figure 4: Microprocessor Interfacing Techniques publishers page

CONTENTS

I.	INTRODUCTION
	Concepts, Techniques to be discussed, Bus Introduction, Bus Details
II.	ASSEMBLING THE CENTRAL PROCESSING UNIT 17
	Introduction, The 8080, The 6800, The Z-80: Dynamic Memory, The 8085
III.	BASIC INPUT-OUTPUT45
	Parallel, Serial LSI Interface Chips for 8080, 6800 Systems, Interrupts, DMA Controllers, Useful Circuits
IV.	INTERFACING THE PERIPHERALS
	Keyboard, LED, Teletypewriter, Paper Tape Reader, Stepper Motors, Credit Card Reader, CRT, Intelligent Inter- facing, Cassette Tape Recorder, Floppy-Disk, Dynamic Memories Revisited, Music Synthesizer
V.	ANALOG CIRCUITRY - A/D and D/A CONVERSION 247
	Introduction, Conceptual D/A, Practical D/A, Real Products, The A/D, Sampling Theorem, Successive Approximation, Integration, Direct Comparison Conversion, Real Products, Interfacing D/A's, Interfacing A/D's, A Data Collection

Figure 5: Microprocessor Interfacing Techniques table of contents page 1

TABLE OF CONTENTS

Parallel: S100, 6800, IEEE-488, An IEEE-488 Interface VI. Parallel: 5100, Serial: EIA-RS232C, RS422, RS423, Example, CAMAC. Serial: LIA-RS232C, RS422, RS423, Synchronous Formats, An S100 Interface Example CASE-STUDY: A 32-CHANNEL MULTIPLEXER. 323 VII. Introduction, Specifications, Architecture, Software, CPU Module, RAM Module, USART Module, Host Interface Module, Conclusion VIII. Introduction, What Goes Wrong: Components, Noise, Software; The Tools and Methods: VOM, DVM, Oscilloscope, Logic Probes, Signature Analysis, Emulation, Simulation, Logic State Analyzers, Case-Study Trouble History, The Perfect Bench IX. The New Chips: 1-Chip Systems, Plastic Software, The Universal Programmable Interface Manufacturers S100 Manufacturers Conversion Table Decimal, Binary, Hex, Octal RS232C Signals IEEE-488 Signals

Figure 6: Microprocessor Interfacing Techniques table of contents page 2