### BUSCON/87 UK

**Official Programme**

Penta Heathrow Hotel, UK

**Putting Together the Best in the Industry**

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#### A. Meeting Matrix

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IEEE MICRO
Official Program

BUSCON: The Bus/Board Users Show and Conference
12-14 October 1987
Heathrow Penta Hotel, London UK

☐ Conference Hours:
  Seminars
  Monday, 12 October 1000 - 1700
  Sessions
  Tuesday and Wednesday, 12 and 13 October 0900 - 1600

☐ Exhibit Hours:
  Tuesday, 13 October 1100 - 1830
  Wednesday, 14 October 0900 - 1700

☐ Conference Registration: The Conference/Exposition registration area, located in the Lobby of the Heathrow Penta Hotel, will be open at the following times:
  Monday, 13 October 0800 - 1700
  Tuesday, 14 October 0800 - 1700
  Wednesday, 15 October 0800 - 1400

☐ Door Prizes: Please submit your prize-winning questionnaire to qualify for your choice of any one of the famous Borland International software packages, including Reflex, Sidekick, Turbo-Lightning, and Turbo-Pascal. Ballot boxes are located in Hall C.

☐ Show Management Office: Located in Hall C.
☐ First Aid/Lost and Found: Located in the Show Office.
☐ Message Center: Bulletin boards for posting messages are located in the Registration Lobby.

TABLE OF CONTENTS
A. MATRIX OF MEETINGS
B. GENERAL INFORMATION
C. FLOOR PLAN
D. BUSCON "EXTRAS"
E. SEMINARS
F. TECHNICAL SESSIONS
G. EXHIBITOR/PRODUCT CROSS REFERENCE
H. EXHIBITOR DIRECTORY

☐ News Room: A quiet corner is reserved for the Press in the Faculty Lounge in the Hotel.
☐ Refreshments/Restaurant Facilities: Lunches are available in the hotel coffee shop. Coffee will be served in the Sessions, Seminars, and New Product Presentations. A Cash Bar is located in Passageway A.
☐ Unauthorized Solicitations: Solicitation of business on the premises of BUSCON by manufacturers or others who are not official exhibitors is prohibited. Employment recruiting is also forbidden.
☐ Shopping Bags: PROHIBITED.
☐ Conference Proceedings: Additional copies of the Conference Proceedings are available for sale in the Registration area.

SPONSORS:
Associations: IEEE Computer Society, VMEbus International Trade Association User Group, STE Manufacturers and Users Group, Advanced Multibus Systems Group, Futurebus Manufacturers and Users Group, STD Manufacturers Group

BUSCON/UK Advisory Council
Dr. Paul Borrell
Spectra-Tek UK Ltd.
(Futurebus)
Bob Squirrel
bob squirrel marketing (STDMG)
Zoltan Hunor
VITA Europe
Dr. Alfred Prommer
ASMG
Charles Palmer
STEMG
David Batchelor
STDMG
Dr. Peter Horn
ACT (PC Bus)
Steve Hitchcock
"Microprocessors and Microsystems"
Jim Farrell
"IEEE Micro"
Carl Warren
The Warren Group

Produced By: Conference Management Corporation (CMC) 200 Connecticut Avenue Norwalk, CT 06856 203/852-0500 FAX 203 838-3710
Local Coordinator: Roger Sherman London House 243-253 Lower Mortlake Road Richmond TW9 2 LL England 01-940-4625

Project Director: William C. Weber, Jr. BUSCON 17100 Norwalk Avenue Cerritos, CA 90701 213/402-1610 FAX 213 402-8814

October 1987
New Product Presentations
Tuesday and Wednesday, 14 and 15 October
Because BUSCON/87-UK will serve as a launching ground for a number of new board-level products, a selected number of manufacturers with new releases will be presenting them during the hours of 1200 until 1330 on both Tuesday and Wednesday, 13 and 14 October.

TUESDAY
1200 — Ironics: “IV 3272 The Full Speed Data Transporter”
1220 — Xycom: “XVME-682 VME Bus PD/At Processor Module”
1240 — PEP Modular Computers: “VMEbus Graphic Processor Module”

WEDNESDAY
1200 — Microsystem Services Ltd.: “Focus 32 Unix System 25”
1220 — Zendex: “ZX 386 EBO Expansion to 32-bits”

International Board Level Symposium
Tuesday, 14 October 1900 - 2100
Attendees will have the opportunity to hear, and to question, a panel of outstanding technical experts representing major bus architectures, as they face a battery of senior editors from leading industry publications. This will be a “no-holds-barred” session, with participants defending their positions against the penetrating inquiries of leading bus journalists, as well as the audience. Moderator is Bob Squirrel of bob squirrel marketing.

Shlomo Prital — VME Bus
Dave Gustavson — Fast Bus
Dr. Gary Nelson — B1396 (TDM Bus)
Dr. Paul Borrill — Future Bus
George White — Nu Bus
Simon Muchmore — Multibus
Charles Palmer — STE Bus

Industry Reception
Tuesday, 14 October 1700
The leading electronics trade publications invite you to be their guest at a special, first-day reception in the exhibit hall. This is a good chance to chat with your colleagues, and meet the editors of “IEEE Micro”, “Control Engineering”, “Computer Design”, “Microsystems and Microprocessors”, “Electronic Design”, “Electronics”, and “Microtechnology”.

Door Prizes
Each day, BUSCON attendees are eligible to win their choice of any one of the famous Borland International software packages, including Reflex, Sidekick, Turbo-Lighting, and Turbo-Pascal. Ballot boxes are located in Hall C.

Attention!
BUS USERS AND MANUFACTURERS
All the important bus user and manufacturer groups will be meeting during BUSCON/87-UK. Don’t miss these meetings:

Tuesday
STE Press Reception 0900
STEMUG Open Meeting 1115
VITA Press Reception 1330
VITA UK Open Meeting 1615

Wednesday
Futurebus Press Reception 0900
FMUG Open Meeting 1115
MMG Press Reception 1330
ASMG Open Meeting 1500

Check Meeting Matrix for Room Assignments.

See us at BUSCON

‘OVER 700 PRODUCTS FROM 30 SUPPLIERS!’

For more information visit the STE Manufacturers and Users Group stand at this show!

That’s the choice you get on the STE Bus. IEEE P1000. The only available 8-bit Bus Standard in Eurocard format likely to gain full International approval.

Features of the STE (IEEE P1000) Bus:
- Asynchronous, non-multiplexed data transfer
- Works with any 8-bit and many 16-bit processors
- Multi-master capability
- 8 Attention Request levels
- 1 MByte address field
- Burst transfer mode
- Read/Modify/Write cycle
- Bus Error signal
- 4K I/O space
- 8-bit data path
- Position-independent, non-daisy chained bus
- Processor/manufacturer independence
- Single or double Eurocard format
- Low implementation cost
- Rich in I/O capability

For a free copy of the STEbus Product Guide and details of how to join the STE Manufacturers and Users Group, return the coupon to STEMUG, PO Box 149, READING, RG4 3HB, England.

Name:
Company:
Dept:
Address:
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Seminars — Monday, 12 October

1000 - 1300
□ A: Introduction to OS/9
Paul Dayan, The Soft Centre, Luton, London, UK
The seminar will include a brief history of OS-9 and a look at its present market position. A detailed explanation will be given about the organization of the OS-9 system, its I/O structure, real-time facilities, system startup, memory organization and multitasking operation. Also covered will be the OS/9 development environment, programming tools and utilities.

Paul Dayan is the Technical Director of The Soft Centre, exclusive UK distributors for Microwave’s OS/9. After graduating from Cambridge University, Paul worked for a number of years as a contractor before joining The Soft Centre five years ago. He has extensive experience with many aspects of microprocessor systems including circuit design, real-time software development and operating systems, assembler and C programming, and of course, OS/9.

1000 - 1300
□ B: Introduction to the STE Bus
Charles Palmer, DSP Design, London, UK
STE Bus - your flexible friend and how it fits into the spectrum of buses. The STE Architecture and Mechanics will be covered in detail. Multiple Masters and Bus Arbitration will also be explored. Participants will look at the practical applications of STE systems and STE development system.

Charles Palmer is president of a British company specializing in the design of board level products. He has been designing STE products for 3 years and is a member of the STE Manufacturers and Users Group. Mr. Palmer was educated in New Zealand where he earned a bachelor of engineering degree from the University of Auckland. His professional interests include digital video; he currently recently designed the giant video display mounts for nighttime advertising on an airship.

1000 - 1300
□ C: The VSB - A Technical Overview
Shiomi Pri-Tal, Motorola Inc, Tempe, Arizona, USA
High performance 32-bit microprocessors and the demands placed on microcomputers by the user community have created a need for a multiprocessor system built from board level products. The increase in functions that such systems provided necessitated the introduction of the sophisticated bus. The VME subsystem bus (VSB) is designed to respond to these requirements. This seminar will cover the technical aspects of the bus including data transfer, defined cycles, and the various options available on the three schemes.

Mr. Pri-Tal is Manager, VME Technology Microcomputer Group, Motorola Inc., co-author of Rev C VME Spec, co-author of the VSB Spec, Chairman IEEE-P1014 VME Proposed Standard Working Group, Chairman VITA Technical Committee.

1000 - 1300
□ D: Shared Memory Architectures Using the IEEE 896 Futurebus
Paul Swazezey, National Semiconductor Corp., Santa Clara, California, USA
The Futurebus supports multiprocessor architectures that are simply impossible to implement on other industry standard buses. Robust support for cache coherence makes it possible for non-caching masters, write-thru caches, and a variety of copy-back caches to reliably share memory among themselves. This presentation will cover the fundamentals of how cache memories work, the methods by which cache memories keep consistent copies of shared data, and the specific details of Futurebus cache coherence. Methods for assuring high performance in real implementations will also be introduced.

Paul Swazezey is a graduate of the University of Portland, Oregon. He has spent 12 years at Tektronix, Inc. working on microprocessor-based computing systems before joining MIPS Computer Systems in 1986. Paul is now a system architect in the Processor Architecture Group at National Semiconductor Corporation and the Coordinator of the Task Group on Cache Coherence of the P696.2 Futurebus Working Group of the IEEE.

1400 - 1700
□ E: Succeeding in the Bus Business
Rick Main, Zebu Research Corp., Sunnyvale, California, USA
This seminar analyzes the unique technical, marketing, and business strategies used by successful board manufacturers—who succeeds and who fails, and why. Mr. Main teaches "Management of High-Technology Corporations," at San Jose State University. His presentation on William Davidow's "Marketing High Technology" makes frequent references to the board industry, microcomputer development systems, and microprocessors.

Mr. Main has been engineering manager at Signetics Microsystems. He was responsible for directing the VME Bus Manufacturers Group in 1983, the original publication of the VME Bus Compatible Products Directory, and the development of the VMX Bus. He was a founder of Bus/Board vendor Zendex Corp. He has a BBA (Marketing) and a BSCS (Software) from the University of the State of New York; an MS (Computer Engineering) and an MBA from San Jose State University. He is publisher of Zebu's "Board Level Market Study."

1400 - 1700
□ F: Physical Layer Design for High Speed Buses
R. V. Balakrishnan, National Semiconductor Corp., Santa Clara, California, USA
This in-depth seminar covers the electrical and timing design of high speed backplane buses. It begins with a review of transmission line physics as it applies to the backplane bus. Reflections, crosstalk, bus impedance vs. load, effect of stubs, etc., are some of the areas covered. This will be followed by a discussion on various interface technologies that are available to designers. Advantages and disadvantages of these technologies are presented. In particular, the limitations of the popular "TTL" technology is explained. New transceiver technology that overcomes these limitations is presented. An example of timing analysis proves the advantages of this new technology which is referred to as "BTL" (backplane transceiver logic). Finally, a comparison of the four popularly available 32-bit buses is made.

Mr. R. V. "Balu" Balakrishnan has been with National Semiconductor since 1978 and is currently Department Manager for Interface and Advanced Peripherals. His products include National's LAN chips, the industry's trapezoidal transceiver and other data communications chips. He is a member of the IEEE 802.3 Committee and Chairman of the Electrical Specifications Task Group of the IEEE P696 Futurebus Standards Committee. His accomplishments include 8 issued patents and 15 published papers and he is a ham radio buff. A native of India, Mr. Balakrishnan earned his BSEE in 1975 at the University College of Engineering, Bangalore University and his MSEE in 1976 at UCLA.

1400 - 1700
□ G: Introduction to FASTBUS
David B. Gustavson, Stanford Linear Accelerator Center, Stanford, California, USA
ANSI/IEEE Std. 960-1986, IEC document 45(Central Office)182, is a 32-bit asynchronous bus system with unlimited expansion capability. Originally designed to handle the enormous data acquisition and data processing problems of the international particle physics laboratories, it has proven more economical than the common industrial buses even for modest systems. Fastbus includes a transparent interconnection mechanism which allows many backplanes to operate independently, sharing one address space and automatically interconnecting whenever necessary. This permits the construction of highly parallel computer systems which can be coupled tightly or loosely as the application demands. Excellent power distribution and cooling are also specified in the Fastbus standard. The bus is also available in a flexible cable format, using differential current signalling to achieve high performance over distances of many meters. There is even a pipelined protocol for moving data
at ultimate speed without the penalty of handshake delays.  
Dr. Gustavson is a member of the Computation Research Group of the Stanford Linear Accelerator Center. He has taught several 
Fastbus courses, was on the design team which developed Fastbus, and is now chairman of the Fastbus Software Working Group, which 
develops supporting software standards. He has also worked extensively on other IEEE bus standards, beginning with IEEE 696 
(S-100) and most recently IEEE 896 (Futurebus).

**1400 - 1700**  
**H: Real-Time Operating Systems**  
Martin Timmerman, **Royal Military Academy, Brussels, Belgium**  
During this seminar different aspects of real time operating 
systems (RTOS) will be treated: definitions, possibilities, the way 
'system calls' can be made, performance aspects, modular 
designing with RTOS, debugging applications.  
Examples will be given of different commercially available OS 
with a comparison. The use of RTOS for small up to large 
systems, single or multiprocess systems will be covered.  
Martin Timmerman graduated in Telecommunications Engineering at the Royal Military Academy (RMA) Brussels. Doctor in Applied 
Science at the Gent State University in 1982, and assistant professor at RMA in the same year. He became the Director of the Systems 
Development Centre created in 1983 and converted himself to a 
Computer Science and Flight Mechanics. In 1986 he became the Vita 
User Group Benelux chairman.

**1400 - 1700**  
**I: RMX Real-Time Software**  
Simon Muchmore, **Intel, Swindon**  
System software optimized for real-time provides better 
performance and a competitive advantage over other solutions. Understanding the special features needed in real-time software is important. Also, since applications requiring real-time 
computing are diverse in scope and sophistication, picking the 
right real-time system software to match the level of 
functionality required is key to the success of the final solution. Real-time executives can now address the problems of 
multiprocessor applications as well. Real-time software ranges from these small, efficient kernels to sophisticated operating 
environments. This seminar focuses on how to choose the right solution for your application from the real-time offerings. 
Simon Muchmore is an applications engineer with INTEL 
CORPORATION. He holds a degree in engineering from the University 
of Cambridge. His experience before joining Intel includes Bit-Slice 
Microprocessor design and the design of a complex, real-time 
multiprocessor based system. Currently, Mr. Muchmore is 
responsible for Intel's real-time software and hardware products in the UK.

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**VITA User Group UK**  
This is your opportunity to participate in the  
"FUTURE OF VME"  
Join the VITA User Group UK  
Open to Corporate and Individual Members

**Membership includes:**
- Newsletters  
- Discount on VITA Publications  
- Discount on VITA Seminars  
- Feedback to the Technical Committee and VMEbus manufacturers  
- Liaison with other VME users worldwide

For details on how to join complete the form opposite:

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**VITA User Group UK**  
Please send me details of benefits and membership of VITA  
Name ..................................................  
Company ...............................................  
Address ................................................  
Telephone ..........................................  
Telex ................................................  

Return form to **VITA User Group UK**  
37 Hamlet Court Road, Westcliff-on-Sea, Essex SS0 7EY  
Tel: 0702 330830  
Fax: 0702 330736
0900 Tuesday

1: SYSTEM ARCHITECTURE
Chairman: Dr. Gary Nelson — National Semiconductor
A: Page Associative Caches on Futurebus
Speaker: Paul Dixon - Ferranti Computer Systems Limited
B: A Fast DMA Controller for the VME Bus
Speaker: Frits Van Der Wateren - Microproject Netherlands
C: Advanced System Architectures and Futurebus
Speaker: George Grey - Tadpole Technology
D: RISC System Considerations
Speakers: Ron Cates and Jim Farrell - VLSI Technology, Inc.
E: Multibus I goes CMOS
Speaker: Susan Miller - Intel Corp UK

0900 Tuesday

2: NETWORKS
Chairman: Aiden Paul — Robert Flemming & Co.
A: VMEbus Implementation for Manufacturing Automation Protocol
Speaker: Peter Crooks - Motorola (UK) Semiconductor Products Sector
B: P1996: A Hybrid Communications Bus & Package
Speaker: Gary A. Nelson - National Semiconductor Corporation
C: Ethernet: Optimized System Solutions
Speaker: Tom Thawley - Interphase Corporation
D: SCSi: Optimized System Solutions
Speakers: Tom Thawley and Ernest Godsey - Interphase Corporation
E: Linking IBM PC, VME & STE Bus-Based Microcomputers via the Bitbus-based Factory Information Datalink
Speakers: Neil D. McQuillan and Brian Worth - Trenan, Ltd.

1400 Tuesday

3: INTERFACES
A: The O.M.E. 3-Buses One System
Speaker: Andrew Tompkins - Siemens (UK)/Electronic Components Group
B: VME Bus Interfaces
Speaker: Hermann Strass - Consultant
C: Futurebus Arbitration System
Speaker: Dave Hawley - National Semiconductor
D: VICbus/VME Inter-Crate Bus
Speaker: C.F. Parkman - Data Handling Divn. CERN

1400 Tuesday

4: I/O APPLICATIONS/SUBSYSTEMS
Chairman: Barrie Nicholson — Wordsun Ltd.
A: Data Communication Subsystem: A Modular Approach
Speaker: Simon Hibbert - Siemens (UK) Electronic Components Group
B: Intelligent Configuration for Mass-I/O on the STE Bus
Speaker: Mark O'Brien - Spectra-Tek (UK) Ltd.
C: Intelligent Slaves and the STE Bus
Speaker: G.C.W. Inett - British Telecom Research Labs
D: VME Serial Bus as an Inter-Crate Link from VME to STE, PC & Other Buses
Speaker: Charles Palmer - DSP Design

0900 Wednesday

5: MULTIPROCESSING
Chairman: Dr. H.S. Field-Richards — Ministry of Defense RSRE
A: Evolution of Multiprocessing Techniques with VME Bus
Speaker: Steve Heath - Motorola (UK) Semiconductor Products Sector
B: Multiprocessing with Multibus II
Speaker: Steve Cooper - Intel Corp USA
C: SCSI Host Bus Adaptor Issues
Speaker: William Moren - Ciprico Corp.
D: Multiprocessing on the STE Bus
Speaker: G.C.W. Inett - British Telecom Research Labs
E: VME Bus Based Didactic Flight Simulator
Speaker: Dr. ir. Martin Timmerman - Royal Military Academy, System Development Centre

0900 Wednesday

6: INDUSTRIAL CONTROL
Chairman: Roger Edwards — Advance Systems Ltd.
A: STE Bus and the IBM PC
Speaker: A.J.B. Winter - Arcom Control
B: Two Low Cost Buses for Industrial Applications
Speaker: Richard Baker - Control Universal, Ltd.
C: Instrumentation and Control with the STE Bus
Speaker: Roger Kemp - Keleks Systems, Ltd.
D: Bitbus, The Distributed Control Standard
Speaker: Ted Cripps - Intel Corp (UK)
E: 32-Bit Microcomputer Systems in Single Height format open new possibilities in Industrial Automation
Speaker: Wolfgang Eisenbarth - PEP Modular Computers GmbH

1400 Wednesday

7: HIGH SPEED PROCESSING
Chairman: Dr. David B. Gustavson — Stanford Linear Accelerator Center
A: Modular Real-Time Image Processing on the VME Bus and Video Maxbus
Speaker: Kevin Parslow - Microsystem Services Ltd.
B: Digital Signal Processing & 4-Axis Control on the VME Bus
Speakers: Jean-Guy Bonneault and Georges Garcia - Thomson Semiconducteurs Microsystems
C: An Intelligent Robot Controller
Speaker: Philippe Gaydan - Thomson Semiconducteurs Microsystems
D: A High Performance VME Processor Card When 32-Bit Micros Can't Cut It
Speaker: Phil Burnley - Xycom
E: Reducing the Tower of Babel: The P1394 High Speed Serial Bus
Speaker: Michael Teener - National Semiconductor Corp.
F: Reviving Multibus I for 32-Bit Processors
Speaker: Jerry Underwood - Zendex

1400 Wednesday

8: SYSTEM SOFTWARE
Chairman: Simon Muchmore — Intel, UK
A: Distributed Relational Database Systems Using VME Bus and VERSADOS
Speaker: Dr. ir. Martin Timmerman - Royal Military Academy, System Development Centre
B: Compact MS-DOS Compatible Software puts PC Environment on any Bus Format
Speaker: Andy Butler - Hexatron, Ltd.
C: Real-Time Multiproprocessing on VME
Speaker: Daniel D. Fritch - Eyring Research
D: An Initialization and Diagnostics Executive for Multibus II
Speaker: Rory McLeod - Intel UK Ltd.
### Board Manufacturer

<table>
<thead>
<tr>
<th>Manufacturer</th>
<th>Products</th>
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### Systems Integrator

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### Board/ Sys. Marketing

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### Surface Mount Devices

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### PC Bus

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### Q-bus

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### VMEbus

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SEPTEMBER 20-22, 1988 — NEW YORK, NY
OCTOBER 1988 — EUROPE

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Siemens Limited
Xycom, Inc.

Versabus
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Publication
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Control Eng. Mag
Electronic Design
Electronics
IEEE Micro
Microprocessors & Microsystems
Microtechnology
STD Manufacturers and Users Group

Acorn/Cube Bus.
Control Universal, LTD
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Sunnyvale, CA 94086 USA
408 733-3656
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Leuchtenbergingen
8000 Munich 80 Germany
Represented by: Dr. Alfred Prommer

Arcom Control Systems, Ltd. 29-31
7 Horseshoe Park
Pangbourne, Berkshire, UK RGB 7JW

Augat 63
Sunrise Parkway-Linford Wood East
Milton Keynes, Bucks, UK MK14 6LF
0908 676655
FAX: 0908 676037 Telex: 826972
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Bicc-Vero Electronics Limited 3 & 4
Flanders Rd., Hedge End
Southampton, Hants SO3 3LG UK
0703 266300
FAX: 0703 264159 Telex: 477984
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British Telecom Microprocessor Systems 22-24
Martham Heath (R-21-1-3)
Ipswich, Suffolk, England IP5 7RE
0673 663101 Telex: 98376
Products: STD and STE Bus card products and development systems.

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1 Millfield House, Woodstock Meadow
Watford, Herts WD1 8YX UK
0923 339371
FAX: 0923 339979 Telex: 922481
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Impington, Cambridge CB4 4LU UK
0223 2161
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1602 Newton Drive

Champaign, IL 61821 USA
217 359-8010
FAX: 217 359-6904 Telex: 910 245-0787
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Centralp 57
Unit 22, Riverside Park
Farnham, Surrey, UK GU9 7UG

Compcontrol B.V. 11
P.O. Box 193
Stratumseidijk 31
Eindhoven, Holland 5600 AD
40-124655
FAX: 40 120296 Telex: 51603
Products: VME bus based systems modules and software.

Computer Overseas Corp. 15
111 West, Washington, Ste 1920
Chicago, IL 60602 USA
312 332-3272
FAX: 312 263-4879 Telex: 210070 Magex UR
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Concurrent Technologies, Ltd. 13
Fairfax House Causton Road
Colchester, Essex CO11RJ UK
FAX: 206 67333
Products: Concurrent Technologies designs and manufactures a wide range of single board computers for Multibus I and Multibus II. Products include High Performance CPUs and High Density Intelligent Digital, Analogue and Communication I/O Boards.

Concise Technology 72
10, The Business Centre
Molly Millars Lane,
Workingham, Berks RG11 2E4 UK

Control Engineering Magazine - Microcomputer Interface Group 1301 S. Grove Avenue
Barrington, Illinois 60010 USA
312 381-1840
FAX: 312-381-6692 Telex: 910-651-1924
Products: Magazine for designers and users of control and instrumentation equipment and systems world-wide and six directories of compatible microcomputer products containing current, complete vendor data, sales office locations and new products.

Control Universal, Ltd. 71
137 Ditton Walk
Cambridge, UK CB5-8QF
0223 24444 9
Products: The largest U.K. manufacturer and distributor of single-height Eurocards for instrumentation, industrial monitoring and control applications. The Celeste range of STE Eurocards and development systems have been designed to maximised the real time performance of the new generation of 16/32 bit microprocessors. A 68008 target CPU card with OS9/68K support, a 80188 target CPU card with IBM PC/MS DOS support are on show. The CUBE EuroBEE system, based on the 65C02 running Real-Time BASIC, offers a full range of modular Eurocard expansion for cost-effective industrial applications.

Creillon 72
3, The Business Centre
Molly Millars Lane,
Workingham, Berks RG11 2E4 UK
0734 776161 Ext. 240
Telex: 847571
Representing: Motorola, Concise Technology, Xixin, and GSI.

Creators 50
Littleton, MA 01446 USA
617-486-9501
FAX: 617 486-9397 Telex: 883436
Products: Crellion Microsystems will be exhibiting a range of VME boards and VME systems. Special attention will be given to systems integration and we will be showing VME bus diagnostic tools and in-circuit emulator equipment. A feature of our new VME systems group is the ability to tailor complete hardware solutions to customer requirements including VME racks, power supplies and enclosures. These will also be on show.

Dacatube Inc. 60
Lincoln Road, Cressex Industrial Estate
High Wycombe, Bucks HP12 3XJ UK

Data Design Techniques Ltd. 51
68-70 Teewin Road
Weylwin Garden City, Herts AL7 1BD UK
0703 334774
Telex: 291497
Representing: Parity Inc, MTI Inc, Microbar Corp, and Qualogy Inc.

Dawn VME Products 25
47073 Warm Springs Blvd.
Fremont, CA 94539 USA
415-657-4444
FAX: 415-657-3274

Dean Microsystems 29-31
7 Horseshoe Park
Pangbourne, Berkshire, UK RGB 7JW
07357 5155
FAX: 846599 Telex: 846599
Products: Representing: Plessey Microsystems, LTD and Arcom Control Systems, LTD. Products: STE and VME Board level distribution company. A number one source for all VME products in UK. Dean Microsystems also have facilities for system building based on STE and VME bus.

Densan 32-36
Unit 22, Riverside Park, Farnham
Surrey GU9 7UG UK
0291 216000
Telex: 946240 Ref. 19019110

Diamond Point International 32-36
Unit 22, Riverside Park, Farnham
Surrey GU9 7UG UK
0291 216000
Telex: 946240 Ref. 19019110
Representing: Ciprico, VMIC, Techsource, and Densan

Products: Diamond Point International will be exhibiting a wide range of Multibus I, Multibus II, and VMEbus board level products. Diamond Point specializes in the distribution and technical support of a wide range of board level products on an exclusive basis.

Digital

Newlands Drive Poyle Blough
Stough, Berkshire, UK SL3 4DX

DPS Systems Corp. 19
26-32 Rosemont Rd, Alperton
Wembley, Middx HAQ 4OQ UK

Dual Systems Corporation 9
3906 Trust Way
Hayward, CA 94545 USA
415 549-3564
FAX: 415 394-5256 Telex: 6200491

Products: Dual Systems Corporation has manufactured high-performance computer boards and systems since 1980. Dual exhibits – VME boards, including multiprocessor, ESDI, and SMD disk and 9-track tape controllers, and input/output processor. Our line of 32-bit VME bus systems based on the MC68020 and running DUALIX, our own implementation of UNIX V.2 with several 4.3 enhancements.

Effysysteme 2
32 High Street
High Wycombe Bucks, England HP11 2AZQ
0494 447296 ext 51
Telex: 837225

Products: Full range of Multibus I and II SBC’s, memories, communications and systems

Electronic Design 266 West Barnes Lane
New Malden, Surrey KT3 6LU England
01 949-0354
Telex: 295161

Products: Electronic Design serves the electronic original equipment market defined as those United States and Western European companies manufacturing electronically actuated or controlled devices, component parts or basic materials incorporated into electronic devices.

Eltec Elektronik GmbH 80
141 Uxbridge Rd
Hampton Hill, England TW12 1BL

Electronic Modular Systems 19
26-32 Rosemont Rd, Alperton
Wembley, Middx HAQ 4OQ UK

Electronics/McGraw-Hill, Inc. 1221 Avenue of the Americas
New York, NY 10020 USA
212 512-3468

Products: Electronics serves O.E.M. manufacturers of electronic systems including computers, data processing and peripheral equipment, office and business machines, communications, systems and equipment, military electronics, test and measurement equipment, consumer products, medical and industrial controls, independent research and development firms and semiconductor production equipment. Also served are other manufacturers using electronic equipment as part of their end product, and others allied to the field.

Equinox 40

Essex Electronics Centre 74
University of Essex - Wivenhoe Park Colchester CO4 3QO UK

0206 872904 FAX: 0206 869484 Telex: 98440
Represented by: Dean Microsystems

Products: Manufacturers of the "Trident" range of STE products and the "Essex System" range of proprietary bus devices. Also offered are system building services and microprocessor design consultancy.

Europel Systems (Electronics) LTD 69
5 Vo-Tec Centre, Hambridge Lane
Newbury, Berks RG14 STN UK
44 635 31074
FAX: 44 635-31070 Telex: 848507 HUJULP

Products: Opal range of graphics controllers, Opal-Genlock, Opal-Overlay, Opal-Overkey, Opal-Framegrab, Opal-Gem, COSMOS16, RAM card.

Eyring Research Institute, Inc. 39
1455 W. 820 North
Provo, UT 84601 USA
801 375-2434

Represented by: Quantron Electronics

Products: PDOS real-time operating system and supporting products for 680X0 hardware. Multi-user, multi-tasking and multi-processing, PDOS provides a complete development environment on the target hardware. High level language support is available for BASIC, Pascal, C and Fortran.

Force Computers GBMB 60
Lincoln Road, Cresses Industrial Estate
High Wycombe, Bucks HP12 3JU UK

Faraday 27(B)
Thame Park Road
Thame, Oxon OK9 3XD

Futurebus Manufacturers and Users Group C
9 Yoreham Close, Lower Early
Reading, Berkshire, RG6 3TB England
0734 667871

Represented by: Bob Squirrel Marketing

Products: Information on the Futurebus (IEEE 896).

GESPAC 19
26-32 Rosemont Road, Alperton
Wembley, Middx, England HAQ 4QY

GSM-Syntel 75
Victoria Works, Queens Mill Road
Huddersfield, HD13PG UK
0484 351012

Products: Electrical, Electronic and Microsystems.

GSI 3, The Business Centre
Molly Mills Lane
Workingham, Berks RG11 2E4 UK

Intel Corporation 5-8
Pipers Way
Swindon, Wiltshire, UK SN3-1RJ
011 44-793-69600

Products: Intel is the leading supplier of microcomputer and microcomputer based technology. This includes the development and marketing of MULTIBUS I and MULTIBUS II based boards, system level products and real-time system S/W.

Hawke Systems 22A
Newlands Drive Poyle Blough
Slough, Berkshire, UK SL3 4DX
0753 67667
FAX: 0753 669747 Telex: 84G444

Representing: Motorola, Eltec and Digital

Products: We manufacture high-performance disk and tape controllers for the Multibus, VMEbus, and PCbus.

Heurikon Corporation 33
3201 Latham Drive
Madison, WI 53713 US
608 271-8700
FAX: 608 271-8908 Telex: 469532

Represented by: Diamond Point

Products: Heurikon offers 16 and 32-bit Multibus I, VME and Multibus II microcomputer boards and systems for UNIX and Real-time applications.

High Technology Electronic Limited (HTEL) 21/23
303-305 Portwood Road
Southampton, UK SO2 1LD
0703 581555
FAX: 0703 671173 Telex: 477465 HTEL G

Products: On Stands 21 and 23 is High Technology Electronics’ range of high-performance OS9/VME products. A powerful 68020-based development system depicts the multitasking/multiuser OS9/VME combination in industrial process control applications. Also the HVME-RTSYS development system offers system designers a choice of 68020 or 68010-based processors and provides a versatile environment for development of high-performance real-time applications. It has a new optional 68010-based CPU with integral SCSI interface.

Hybricon Corporation 10
12 Willow Road
Ayer, MA 01432 USA
617 772-5422
FAX 617 772-2693


IEEE Micro 53
10662 Las Vegasers
Los Alamitos, CA 90720 USA
714 821-8830

Products: IEEE Micro is the only microprocessor/microcomputers magazine that focused on the interest and need of members of the technical staff (engineers and computer scientists) and managers of microcomputer hardware software, and systems activities, written and refereed by respected professionals in the microcomputer field. Our articles are detailed and thorough, carefully researched and reviewed. 98.7% of IEEE Micro’s readers find the articles understandable and easy to apply.

Intel Corporation 5-8
Pipers Way
Swindon, Wiltshire, UK SN3-1RJ
011 44-793-69600

Products: Intel is the leading supplier of microcomputer and microcomputer based technology. This includes the development and marketing of MULTIBUS I and MULTIBUS II based boards, system level products and real-time system S/W.

Intel Dist. 59
Pipers Way
Swindon, Wiltshire, UK SN3-1RJ
011 44-793-69600

Interphase Corporation 18
2925 Merrell Rd
Dallas, TX 75259 USA
214 350-9000
FAX: 214 350-1433

Products: We manufacture high-performance disk and tape controllers for the Multibus, VMEbus, and PCbus.

IEEE MICRO
Ironics Incorporated
798 Cascadilla Street
Ithaca, New York 14850 USA
607-277-4060

Products: Ironics specializes in Real-Time Multiprocessing Systems on VMEbus and offers a full line of VMEbus boards and UNIX V Systems for the OEM, Systems Integrator, and Industrial End-User. Products include 16 and 32 bit CPU boards, Memory boards, Graphics and CRT boards, I/O Systems Workstations. New Real Time Multiprocessing Systems, Multiprocessing Engines and a Full Speed Data Transfer Board (40 Mbytes/sec.) will be demonstrated.

Marconi Radar Systems LTD
Lincoln Road, Cresssex Industrial Estate
High Wycombe, Bucks HP12 3XJ UK

Matrix Corporation
Wordworth House
P.O. Box 18
Westheran Kent TINIG IEY, England

MCP Electronics Corporation
26-32 Rosemont Road, Alperton
Wembley, Middx, England HA0 4QY
01 902-1191
FAX: 01 902-5944
Telex: 32345 MCPE 9

Representing: Electronic Modular Systems, DSP Systems Corp., Primagraphics and GESPEC.


Microbar Corp.
51-70 Tewin Road
Welwyn Garden City, Herts AL7 1BD UK

Microlink Corporation
14
Wordsworth House
P.O. Box 18
Westheran Kent TINIG IEY, England

Micro Memory
111 West, Washington, Ste. 1920
Chicago, IL 60602 USA

Microprocessors and Microsystems
P.O. Box 63 Westbury House, Bury Street
Guildford, Surrey GU2 5BH, UK
0483 31261
FAX: 0483 506254
Telex: 859556 SCITEC G

Products: Microprocessors and Microsystems is the complete journal for users of microprocessors.

Microproject BV
Claus Sluterweg 125 V
Haarlem, Holland 2012WS
31 23 292084

Microsystem Services Limited
Lincoln Road, Cresssex Industrial Estate
High Wycombe, Bucks HP12 3XJ UK
0494 41611
FAX: 0494 41669
Telex: 837187


Products: MSS supplies an advanced range of design and development tools for the electronics industry. A major area of expertise is VMEbus products, ranging from general processing and peripheral boards from Force computers, to specialist digital signal and image processing products from Marconi, Burr-Brown and Datacube. An image processing system from Datacube and a high speed development system from Force will be on display.

Micro Technology
80 Highgate Road
London NW51PB UK
01 267-9521
Tele: 266998

Product: This journal is circulated free of charge within the UK to management and executive personnel with the authority either to specify or purchase manufactured products and services in the field of microcomputers and microprocessor-based hardware and systems, peripherals, related components, media and software.

Mini Computer Technology
696 E. Trimble Road
San Jose, CA 95131 USA
408 435-1616

Represented by: Vermont Research LTD

Products: VMEbus controllers for high performance disk and tape drives. Standard double height cards, intelligent design, parameter table driven, with drivers for UNIX System V, PDOS, and Versados. Ruggedized Winchest disk drive systems up to 760 MB.

Mizar, Inc. - Ltd.
48 Whitehall Rd.
Glencorfe Fife, Scotland KY6 2RP
0590 775539

Products: VME and STD bus board and system level products.

Motorola
2900 S. Diablo
Tempe, AZ 85282 USA
602 952-3606

Products: VME bus boards and system products.

MITI Inc.
68-70 Tewin Road
Welwyn Garden City, Herts AL7 1BD UK

Mupac Corporation
10 Mupac Drive
Brockton, MA 02401 USA
617 588-2610

Products: Manufacturers of bus backplanes for Multibus, Multibus II and VME bus. Manufacturers of enclosures Sub-Racks, and accessories for the above buses including wire wrap boards for prototyping and pre-production.

Omnibyte
711 West, Washington, Ste. 1920
Chicago, IL 60602 USA

Pacific Microcomputers, Inc.
6730 Mesa Ridge Rd.
San Diego, CA 92121 USA
619 453-8649
FAX: 619 453-9573

Products: MB 68020 and VME, Multibus and VME systems. Backplanes (UNIX).

Parity Inc.
68-70 Tewin Road
Welwyn Garden City, Herts AL7 1BD UK

Pep Modular Computers GmbH
Am Klosterwalde 4
Kaufbeuren, Germany 8950
08341 81001
FAX: 08341744022
Telex: 541 233

Products: VMEbus products and 8 bit I/O (Eurobus) in single height Eurocard format. Complete range of CPU, memory, industrial I/O and controller modules as well as complete systems and realtime, multiusers, multitasking operating systems.

Performance Technologies
111 W. Washington, Suite 1920
Chicago, IL 60602 USA

Plessey Microsystems
Water Lane
Towcester, Northants NN17 2JN UK
0327 503512
FAX: 914 735-9527 Toll Free: 800-368-2738

Products: Manufacturer of VMEbus board level computer products for commercial industrial and military markets. Featuring the industries most complete range of 16 and 32 bit processors I/O and controller boards, memory boards and development systems with software.

Primographics
26-32 Rosemont Rd, Alperton
Wembley, Middx HA0 4QY

Qualogy Inc.
68-70 Tewin Road
Welwyn Garden City, Herts AL7 1BD UK

R.C.S. Microsystems Limited-Eletec
141 Uxbridge Road, Hampton Hill
Middlesex, TW16 6HN UK
01 979-2204
Telex: 8951470
Represented by: Eletec Elektronik GmbH

Products: VME Boards and Systems, including Eurocom-5, a 68020 based 16/25MHz SBC capable of running UNIX 5.3, OS9-68K, etc., SL20 68020 based graphics slave processor. Other by-products include Ethernet with TCP/IP, Image processing with GKS.

Schoeff
Maylands Avenue
Hemel, Hemptead, England HP2 4SG
02 40471
FAX: 3508 Telex: 825658

Products: Schoeff Inc., is a manufacturer of 16" electronic packaging systems with a special emphasis on VME and Multibus II related products.

Scientific Microsystems
339 N. Bernardo Ave.
Mountain View, CA 94043 USA
415 964-7070
FAX: 415 969-4861
Telex: 184160

Products: Scientific Micro Systems (SMS) is displaying a range of high performance multi-function controllers for Multibus, Q-bus, VMEbus, IBM-PC XT, AT and SCSI interfaces. The company is also featuring its new UNIX and OS-9 drivers which support the SMS 6009 controller for VMEbus.

Siemens LTD
60-61 Siemenshouse, Windmill Road
Surbiton-Thames, Middx TW17 9DL England
0932 752632
FAX: 0932 752665 Telex: 8951091 SIELON G

Products: Major manufacturer of Multibus II products.

Spectra-Tek UK LTD
42
Swinton Grange, Malton
North Yorkshire, England
0653 699551
FAX: 0653 69706 Telex: 57850 SPCTEK G

Products: Electronic systems manufacturer exhibiting single board computer, software development system and peripheral boards. Smartrack development system based on STB IEEE P1000 bus. Comes complete with 16 MHz 68000 single board computer, 14 slot back plane and OS9/ 68K multi-user software.
STDMG
Techtron House
Redfields Park, Crooksham
Aldershot Hampshire GU13 0RD UK
FAX 252851038

STE Manufacturers and Users Group
B
P.O. Box 149, Reading
RG6 3HB, England
0734 667871
Represented by: Bob Squirrel Marketing

Summit
58

Tadpole Technology
55/56
Titan House
Castle Park, Cambridge, UK CB3 OAY
0223 461000
FAX: 0223 467277 Telex: 818152
Products: Tadpole Technology is a hardware design house specializing in development of 32-bit processing board level products for the OEM marketplace. We offer a custom-design service for clients with special requirements.

Techsource
32-361
Unit 22, Riverside Park, Farnham
Surrey GU9 7UQ UK

Thame Microsystems Limited
27(B)
Thame Park Road
Thame, Oxford OX9 3XD
084 421-7272
FAX: 084 431-7185 Telex: 837508
Representing: Motorola, Scientific Microsystems, Faraday, Heurikon
Products: System and Board Based Solutions from a variety of overseas vendors.

Toptronics
29/30
5443 E. La Palma Ave.
Anaheim, CA 92807 USA
714 777-1631
FAX: 714 777-1415 Telex: 271165
Products: Complete design logic packaging manufacturer, including logic board backplanes, extender boards, sub-racks, VME, Multibus II, IEEE 896 products. Custom manufacturing also.

VITA-Europe
A
P.O. Box 180
Zaltbommel, AD, NL-5300
The Netherlands
4180 14661
FAX: 31 20 640617 Telex: 11802
Represented by Zoltan Honor

VME Specialists
14
Wordsworth House
P.O. Box 18
Westonham Kent TN17 IEY, England

VMETRO AS
1
Sognsveien 75
Oslo 8, Norway 0855
472 39490
FAX: 472 193938

VMIC
32-361
Unit 22, Riverside Park, Farnham
Surrey GU9 7UQ UK

Winsystems
14
Wordsworth House

P.O. Box 18
Westonham Kent TN17 IEY, England

Wordsworth Technology LTD
14
Wordsworth House
P.O. Box 18
Westonham Kent TN17 IEY, England
0959 632806
FAX: 0959 64426
Representing: VME Specialists, Microlink Corporation, Matrix Corporation and Winsystems
Products: Low cost VME boards and systems.

Xixin
72
3, The Business Centre
Molly Millars Lane,
Workingham, Berks RG11 2E4 UK

Xycom, Inc.
20
Unit 5, Nendex House, Ross Road
Northampton, England NN5 5AX
44 604-587498
FAX: 44 604-587498 Telex: 265871 MONREF G
Products: Xycom manufacturers a full line of VMEbus Products, as well as Industrial Terminals containing, PCbus and VMEbus backplanes.

Xylogics International LTD
67
2A Cotteridge Close, Stoney Stratford
Milton Keynes, England, MK11 1BY
0908 568444
FAX: 0908 560097 Telex: 825279
Products: Xylogics Multibus and VMEbus disk, tape and communications controllers.

Zendex Corporation
16
6700 Sierra Lane
Dublin, CA 94568 USA
415 828-3000
FAX: 415 828-1574 Telex: 910-389-4009
Products: Zendex manufacturers CPU's, I/O, Memory, SBX Modules, and design aids for Multibus I. Systems and software for Multibus I. Enclosures for Multibus I, Multibus II and VME.

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The FUTUREBUS provides a 'significant step forward' in the performance and facilities available to the designer of future microprocessor systems:

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- **ARCHITECTURAL INDEPENDENCE**
- **Support for Shared Memory Systems (Cache coherency protocol)**
- **True Multithreading**
- **No central elements.**
- **FAULT TOLERANCE**
- **Dual bus support.**
- **Live insertion/withdrawal.**
- **ELECTRICAL INTEGRITY**
- **Solves the "Bus Driving Problem."**
- **DESIGN LONGEVALITY**
- **Technology Independence.**
- **Extending Silicon Support.**

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