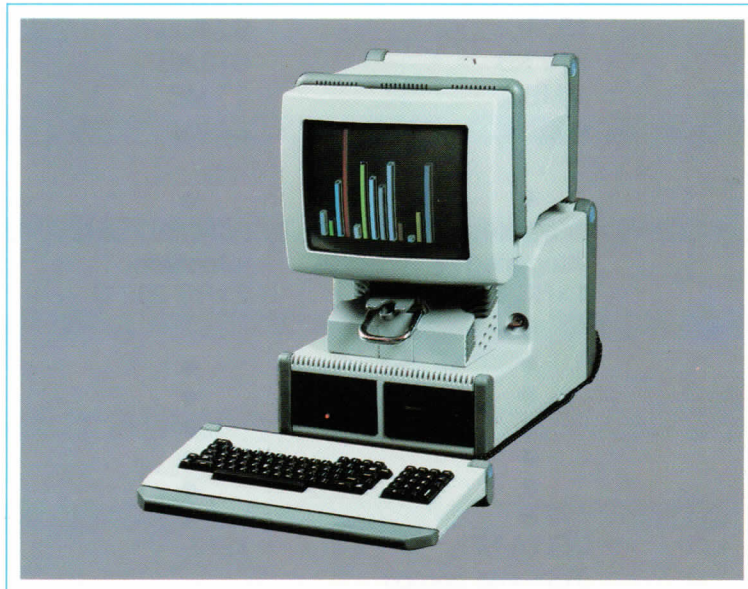


Trident



Trident is a family of minicomputers with an extremely high flexibility. The Trident concept is based on the worldwide standardized VMEbus with its 16/32 bit architecture.

Trident offers choices between the three most important 16 bit high performance microprocessors and several operating systems. That makes Trident compatible to IBM and DEC environments as well as to the UNIX™ world giving the user access to an enormous base of existing applications and development tools. This again preserves investments in existing software and reduces the risk and development time of new software products. By simply changing the CPU and the related operating system an engineer is able to configure an IBM, DEC or Motorola compatible system.

The Trident family also offers a lot of other boards which grant the system even more flexibility. If necessary hundreds of VMEbus boards offered on the market can be implemented as well.

Thereby the use of a

TRIDENT

Trident computer is nearly unlimited. For instance applications are in software development, science, commercial business, laboratories, industrial control, CAD/CAM and communication networks.

The modular concept allows the start with a standalone system which can be upgraded by hardware. Step for step the first system can be configured to a high performance multiuser minicomputer as part of a complete network without changing the basic software.

Features

- High flexibility gained by the modular concept based on VMEbus
- Open architecture avoids limitations for future expansions
- Access to the IBM, DEC and UNIX™ world
- High reliability because of quality control for each board and the complete system
- Choice between the three most important 16 bit microprocessors Intel 80286, DEC J11, Motorola 68010
- Large range of boards: interfaces, memories, communication, mass storage, graphic and dedicated controllers
- Housings for commercial, laboratory and industrial applications
- All necessary peripherals
- Three different multiuser and real time operating systems each
- Compilers for BASIC, C, COBOL, FORTRAN, PASCAL
- Software tools
 - data bases: VITRAGE™, FORMATIX™, PHACT™
 - program generators
 - office automation
- Communication tools
 - LAN, TOKEN RING, HDLC, SDLC, X.25 a.o.
 - on serial and parallel I/O
- OEM components
 - racks, power supply, backplane, housings, bus adapter, mounting kits, connectors and cables, boards and parts needed to assemble a running computer

BASIC CONFIGURATIONS

	TRIDENT J11	TRIDENT 286	TRIDENT 681
Commercial Housing	●	●	●
CPU-board			
Microprocessor	DC J11-AC	iAPX 80286	MC 68010
Clock Frequency	15 MHz	8 MHz	10 MHz (12.5op)
On Board Memory	512 KB	512 KB	1 MB
Max. Supported Memory	4 MB	16 MB	16 MB
EPROM Capacity	4 KB	64 KB	128 KB
RTC with battery back-up	●	●	●
FPP/NCP	integrated	optional	optional
MMU	integrated	integrated	●
Serial Interface	1 x RS 232 C	2 x RS 232 C	2 x RS 232 C
Parallel Interface	●		●
Power Supply	●	●	●
WD/FD Controller	●	●	●
40 MB Winchester Disk	●	●	●
1.2 MB Floppy Disk	●	●	●
b/w Monitor	●	●	●
Keyboard	●	●	●
Operating System	DELTA/M™ (RSX-11M comp.)	XENIX V™	UNIPLUS +™
SW/HW Documentation	●	●	●
OPTIONS			
Laboratory Housing	●	●	●
ICC (6 x RS 232)	●	●	●
Graphic Board	●	●	●
14" Color Monitor	●	●	●
80 MB Winchester Disk	●	●	●
20 MB Streamer Tape	●	●	●
40 MB Streamer Tape	●	●	●
Graphic Tablet	●	●	●
Mouse	●	●	●
Real Time Operating System	DELTA/M™	iRMX™	OS 9™

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PHACT is Trademark of PHACT Ass. Ltd.

iRMX is Trademark of Intel Corp.

XENIX is Trademark of Microsoft

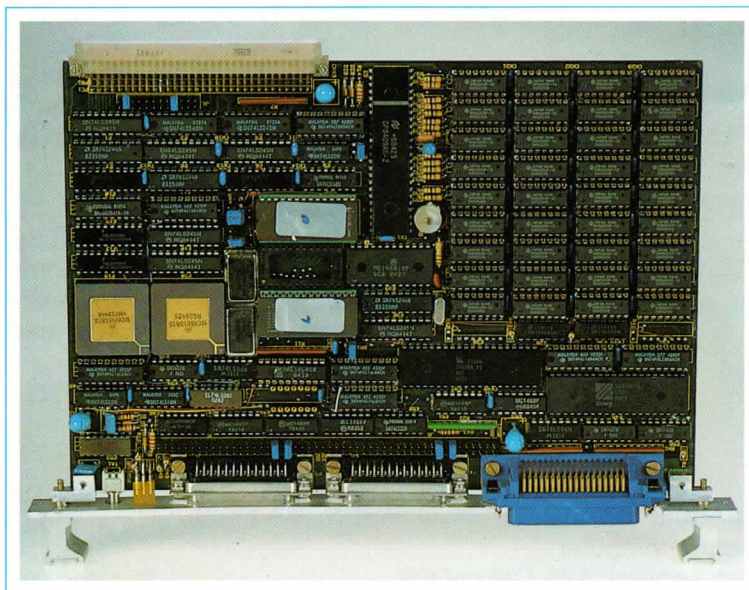
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VMEx 681



The VMEx 681 offers a powerful combination of the latest, high performance technology with industry standard components and configurations, featuring the richness and portability of UNIPLUS (UNIX) and the 16/32 bit VMEbus.

Multi-vendor support ensures the availability of a wide variety of related products.

The VMEx 681 is a 16-bit, high performance CPU for use with VMEbus systems. It is based on the powerful MC68010 microprocessor and MC68451 Memory Management Unit. The 68010 pipelined architecture and 10 MHz frequency offer performance that is comparable to many high-end minicomputers. Large virtual address space of the MC68451 and data protection make it especially well suited for demanding multitasking applications. NS32081 Floating Point Unit provides excellent

number-crunching capabilities. The VMEbus is formally standardized for worldwide use by both the IEEE and IEC. Over 120 manufacturers offer more than 600 hardware and software products for the bus. The MC68010 takes full

advantage of these supporting products to provide practical, economical solutions for data processing requirements. The VMEx 681 ability to run the UNIPLUS, CP/M 68K and UCSD-P operating systems opens up a large base of existing software. By combining these software resources with the leading 16/32 bit standard bus, the VMEx 681 creates a unique »open architecture« – an architecture that provides performance and reliability for extensive future expansions, while preserving the investment in existing software, and reducing product development time.

Features

- 10 MHz MOTOROLA 68010 Microprocessor Chip
- 6 MHz NS32081 Numerical Coprocessor with Single and Double Precision, IEEE P 754 Compatible
- 10 MHz MOTOROLA 68451 Memory Management Unit, 32 segments of variable size, write protection, separate Supervisor/User, Instruction/Data Space (S)
- VMEbus Compatibility:
 - DTB master option; A24, D16 or D08
 - DTB slave option; A24, D16 or D08
 - BTO (Bus Time Out) option
 - ONE level arbiter option
 - ROR requester option
 - Interrupt handler for seven IRQ lines
- On board Memory:
 - 1 MB or 512 KB dynamic RAM with no wait states
- Real Time Clock:
 - Seconds, minutes, hours, days, months, years, alarm, periodic interrupt, possibility of battery backup, 50 bytes of CMOS RAM
- Two Bootstrap EPROM Sockets for up to 128 KB
- Two RS232C Serial Communication Ports, synchronous or asynchronous
- Centronics Parallel Interface
- Logic Supports Multi-Processor Configuration

Available Software

ROMable Software: SYSTEM MONITOR

This 64 KB software package includes Monitor, System Confidence Test and Boot/Autoboot. It is written in assembler and provides a very reliable software base for quick and easy detection of hardware conflicts or errors. Down-loading, (self-)testing and debugging capabilities provide a good start for the user.

Operating Systems and Real Time Kernels

- a) Operating Systems: UNIPPLUS, CP/M68K, UCSD-P
- b) Real Time Kernels: OS-9

Drivers are provided for ID-Computers and FORCE controllers. For most systems, we offer a number of programs for reformatting data from various diskette formats. Operating systems, and data communication programs are available.

Specifications

General

Description: Motorola 68010 VMEbus single board computer

Configuration: DTB master option; A24, D16 or D08 DTB slave option; A24, D16 or D08

VMEbus arbiter: Option ONE, Single level

Interrupt handler: seven IRQ lines (IRQ1 – IRQ7)

VMEbus requester: BRx Option ROR ($x = 0, 1, 2$ or 3)

Power: + 5VDC, 3 Amps (typ)
+ 12VDC, 0.04 Amps (RS232C only)
– 12VDC, 0.02 Amps (RS232C only)

Size: 160 x 234 mm (double Eurocard),
6.3" x 9.2"

Construction: 6 layer printed circuit

Temperature: 0 to 55° C operating

Humidity: 0-90% non-condensing (max)

Microprocessor:

Device: MC68010 (optional MC68000,
4-12.5 MHz without MMU)

Clock Frequency: 10 MHz (possible also
4, 6, 8, 12.5 MHz versions)

Data Width: 16 bits

Addressing: protected and virtual capability

Memory Management Unit

Device: MC68451 virtual MMU

Clock Frequency: 10 MHz

Data Width: 16 bits

Floating Point Unit

Device: NS32081 FPU

Clock Frequency: 6 (10) MHz

Data Width: 16 bits

Precision: single (32 bits),
double (64 bits),
IEEE task P 754

Serial I/O

Device: Z8530 SCC

Number: two ports

Type: synchronous or asynchronous

Speed: programmable 300 to 1M baud

Signal

Compatibility: RS232C

Parallel I/O

Device: Z8536 CIO

Type: Centronics

Memory

Array: thirty-six 16 pin sockets for DRAM
with byte parity:
two 28 pin sockets for EPROM

Capabilities: DRAM; 0.5 MB or 256 K IC's
EPROM; 128 KB (max) 27512 IC's

Real Time Clock

Device: MC146818

Technology: CMOS

Capability: seconds, minutes, hours, days,
months, years alarm,
periodic interrupt,
50 bytes of CMOS RAM.

Configurations

VMEx 681 CPU board with 0.5 MB memory

VMEx 681-FP CPU board with 0.5 MB memory and FPU

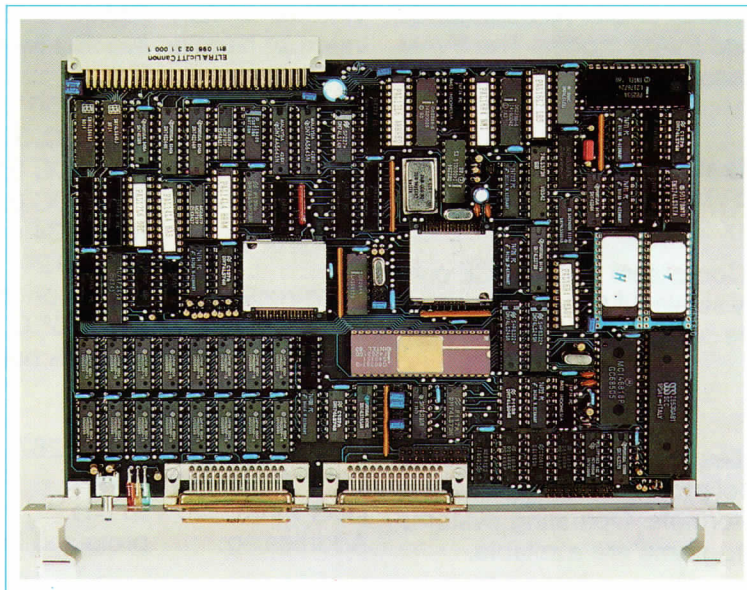
VMEx 681-1 CPU board with 1 MB memory

VMEx 681-1FP CPU board with 1 MB memory and FPU

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VMEx 286



The VMEx 286 offers a powerful combination of the latest high performance technology with industry standard components and configurations, featuring the richness and portability of XENIX and the 16/32

bit VMEbus. Multivendor support ensures the availability of a wide variety of related products.

The VMEx 286 is a 16-bit, high performance CPU for use with VMEbus systems. It is based on the powerful INTEL 80286 microprocessor and 80287 numerical coprocessor. The 80286's pipelined architecture and 8 MHz frequency offer performance that is comparable to many high-end minicomputers. Its large virtual address space and 286 hardware enforced data protection make it especially well suited for demanding multitasking applications.

INTEL 80286-based CPU for VMEbus

The VMEbus is formally standardized for world-wide use by both the IEEE and IEC. Over 120 manufacturers offer more than 600 hardware and software products for the bus. The VMEx 286 takes full

advantage of these supporting products to provide practical, economical solutions for data processing requirements.

The VMEx 286's ability to run the XENIX operating system opens up a huge base of existing software. By combining these software resources with the leading 16/32 bit standard bus, the VMEx 286 creates a unique »open architecture« – an architecture that provides performance and reliability for extensive future expansions, while preserving the investment in existing software, and reducing product development time.

Features

- 8 MHz INTEL 80286 Microprocessor Chip
- 5 (8) MHz INTEL 80287 Numerical Coprocessor, 80 Bit, IEEE P 754 Compatible
- On-chip Memory Management:
 - Four level protection
 - 1 GB virtual address space
 - 16 MB physical address space
 - Separate instruction and data space
- VMEbus Compatibility:
 - DTB master option; A24, D16
 - DTB slave option; A24, D16
 - BTO (Bus Time Out) option
- ONE level arbiter option
- ROR requester option
- Interrupt handler for five IRQ lines
- On-board Memory:
 - 512 KB dynamic RAM with no wait states
- Real Time Clock:
 - Seconds, minutes, hours, days, months, years, alarm, periodic interrupt
- Two Bootstrap EPROM Sockets for up to 64 KB
- Two RS232C Serial Communication Ports, synchronous or asynchronous
- Bus Lock Support for Multiprocessor Configuration

Available Software

ROMable Software: MON286

This 16 KB software package includes System Monitor, System Confidence Test and Boot/Autoboot. It is written in assembler and executes without using RAM. MON286 provides a very reliable software base for quick and easy detection of hardware conflicts or errors. All commands operate in both the REAL and PVAM modes. The PVAM mode is essential for addressing and testing memory up to 16 M bytes.

Operating Systems and Real Time Kernels

- a) REAL mode: MS-DOS, CP/M 86
- b) PVAM mode: XENIX, iRMX 286

Drivers are provided for ID-Computers and FORCE controllers. For most functionally similar VME boards, drivers can be easily modified by the customer or obtained from ID Computers.

Utilities

In addition to standard utilities provided with operating systems, we offer a number of programs for reformatting data from various diskette formats. Operating systems and data communication programs are available.

Specifications

General

Description:	Intel 80286/287 VMEbus single board computer
Configuration:	DTB master option; A24, D16 DTB slave option; A24, D16
VMEbus arbiter:	Option ONE, Single level
Interrupt handler:	five IRQ lines (IRQ1 - IRQ5)
VMEbus requester:	R(3), ROR
Power:	+ 5 VDC, 3 Amps (typ) + 12 VDC 0.04 Amps (RS232C only) - 12 VDC 0.06 Amps (RS232C only)
Size:	160 x 234 mm (double Eurocard), 6.3" x 9.2"
Construction:	6 layer printed circuit
Temperature:	0° to 55° C operating
Humidity:	0 - 90% non-condensing (max)

Microprocessor

Device:	80286/287
Clock frequency:	8 MHz
Data width:	16 bits
Addressing:	protected and virtual capability

Serial I/O

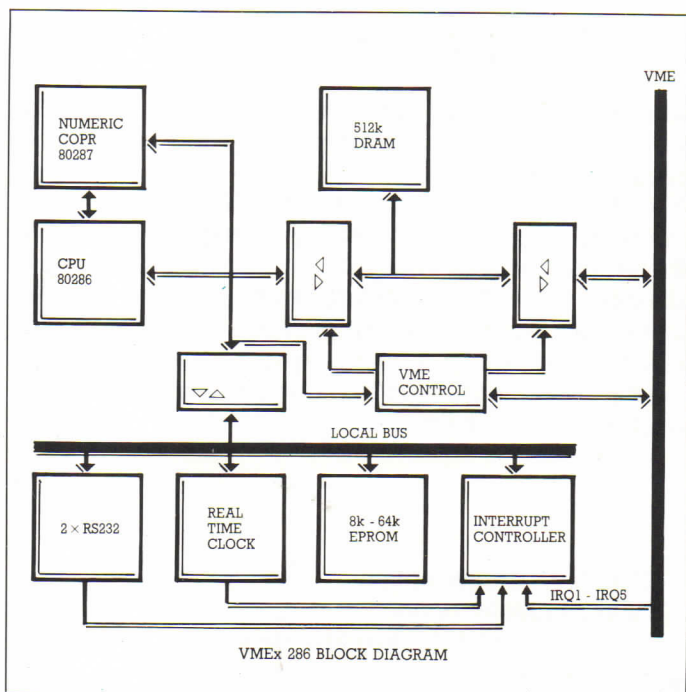
Device:	one Z8530SCC
Number:	two ports
Type:	synchronous or asynchronous
Speed:	programmable 300 to 1 M baud
Signal compatibility:	RS232C

Memory

Array:	sixteen 16 pin sockets for DRAM, two 28 pin sockets for EPROM
Capability:	DRAM; 512 KB, 256 K IC's EPROM; 16 KB (max.), 2764 IC's

Real Time clock

Device:	MC146818
Technology:	CMOS
Capability:	seconds, minutes, hours, days, months, years, alarm, periodic interrupt

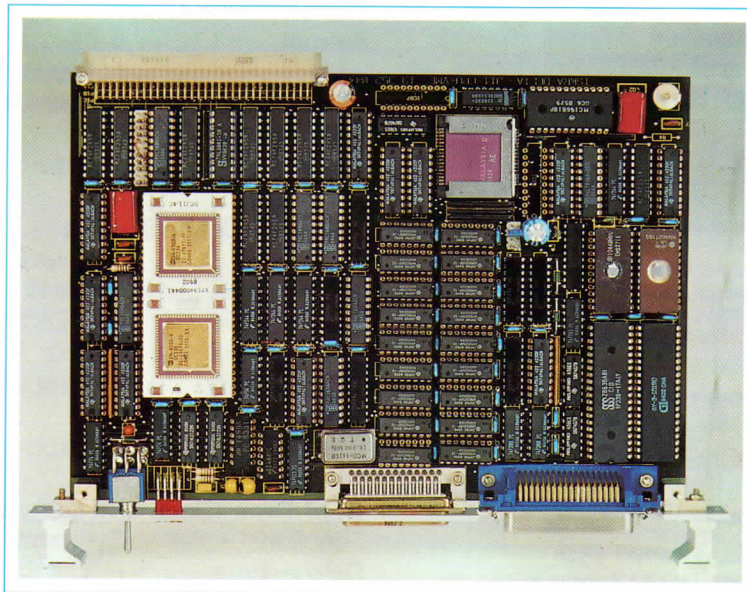


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VMEx J11



DEC J11-based CPU for VMEbus

The VMEx J11 offers a powerful combination of the latest high performance technology, proven computer architecture, large software base, and standard bus. Multi-vendor support ensures the availability of a wide range of related products. The VMEx J11 is a 16-bit high performance CPU for use with VMEbus systems. It is based on the Digital Equipment Corporation's DCJ11 CMOS microprocessor which provides full software compatibility with the entire range of PDP 11 computers. The J11's 32-bit internal data path, pipelined architecture and 15 MHz clock frequency offer performance comparable to that of many high-end minicomputers, but at a microprocessor price.

The VMEbus is formally standardized for world-wide use by both the IEEE and IEC, and over 120 manufacturers offer more than 600 VMEbus-based hardware and software products. The VMEx J11 combines:

- high performance and reliability,
- an enormous base of existing application software, operating systems and development tools, and
- the leading 16/32 bit standard bus

into a powerful economical package. It has the capability for extensive future expansion, while preserving the investment in existing software and reducing the risk and development time of new software products.

Features

- 15 MHz DCJ11 Microprocessor
- DEC Software Compatibility:
 - Extended PDP-11 instruction set
 - Floating point instruction set
 - Multiprocessor support instructions
- Powerful 16/32 Bit Architecture
- Memory Management Unit:
 - Three levels of memory protection
 - Separate instruction and data space
 - Direct addressing of up to 128 KB
 - 4 Megabyte physical addressing
- VMEbus Compatibility:
 - DTB master option; A24, D16
 - DTB slave option; A24, D16
 - BTO (Bus Time Out) option
 - PRI (Priority) four level arbiter option or
 - ONE level arbiter option
 - ROR (Release On Request) requester option or
 - RWD (Release When Done) requester option
 - Interrupt handler for four IRQ lines
- Console Octal Debugging Technique
- On-board Local Memory:
 - 512 KB dynamic RAM with Parity
- Serial I/O RS232 Port (DL):
 - Serves as the console interface
- Parallel Centronics Port
 - Serves as the printer interface
- Three Programmable Timers
- Real Time Clock:
 - Seconds, minutes, hours, days, months, years, alarm;
 - supports battery backup from bus
- 64 Bytes of Data Memory:
 - Supports battery backup from bus
- Two Possible Configurations:
 - Uniprocessor configuration
 - Dual processor configuration
- Bus Lock Support for Multiprocessor Configuration
- Two Bootstrap EPROMs

Available Software

DELTA/M, an extended RSX-11M operating system is available for the VMEx J11. It will run most applications developed for the RSX-11M operating system without modification (In some cases relinking might be required). The standard DEC RSX-11 operating system V4.2 can be ported to the VMEx J11 upon request. Documentation for necessary patches is available.

Drivers for ID Computers and FORCE controllers are available, and other drivers can be ordered from ID Computers.

Specifications

General

Description: DEC DCJ11 VMEbus single board computer

Configuration: DTB master option; A24, D16
DTB slave option; A24, D16

VMEbus arbiter: Option PRI or
Option ONE (Stat)

Interrupt handler: Option IH (1-3) or IH (4-7) (Stat)

VMEbus requester: R (3); RWD, ROR (Stat)

Power: + 5 VDC, 3 Amps (typ)
+ 12 VDC, 0,020 Amps (typ)
- 12 VDC, 0,020 Amps (typ)

Size: 160 x 234 mm (double Eurocard),
6.3" x 9.2"

Construction: 8 Layer printed circuit

Temperature: 0° - 55° C operating

Humidity: 0 - 80% (non-condensing)

Microprocessor

Device Type: DEC DCJ11-AC

Clock Frequency: 15 MHz

Data Width: 16 bits (internal 16/32 bit data path)

Memory

Array: eighteen 16 pin sockets for DRAM with byte parity
two 28 pin sockets for EPROM

Capability: DRAM; 512 KB, 256 K IC's
EPROM; 4 KB, 2716 IC's

Serial I/O

Function: Asynchronous Full Duplex
Serial Line

Device Type: UART AY-3-1015D

Architecture

Compatibility: DEC »DL« Compatible

Transmission Rate: 9600 Bits per Second (fixed)

Transmission Format: 8 Bits per Character,
1 Stop Bit, No Parity (fixed)

Electrical Interface: RS232 Data Lines (RXD, TXD)

Mechanical Interface: Standard EIA Connector (DTE)

Parallel I/O and Timers

Function: Parallel 8 Bit Output Port,
Three 16 Bit General Purpose Timers

Device Type: CIO Z8536

Clock Frequency: 4 MHz

Compatibility: Centronics Compatible Parallel Port

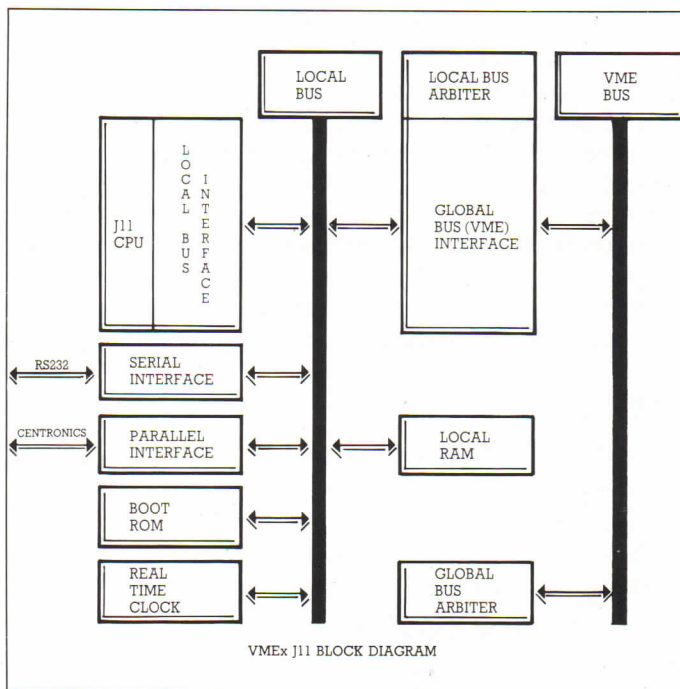
Mechanical Interface: Centronics 36 Pin Connector

Real Time Clock and Data Memory

Function: System Clock, Data, Alarm

Device Type: RTC MC146818

Capability: 50 bytes of CMOS RAM

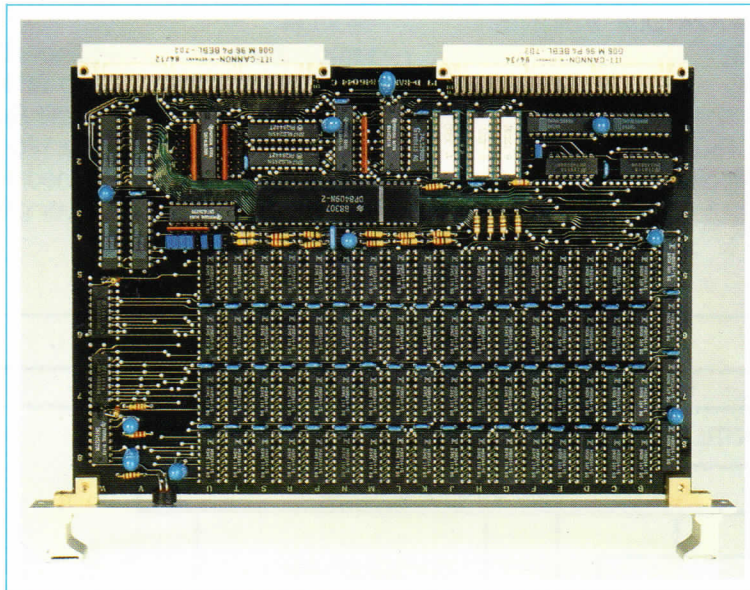


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vme - mem 2



2 MB Memory-Board for VMEbus-Systems

The VMEbus MEM2 is a dynamic memory board used to provide a global memory for VMEbus based systems. The board contains 2Mbytes of RAM capacity and it is able to transfer 8, 16, 24 or 32 bits of data in the 16Mbyte address space.

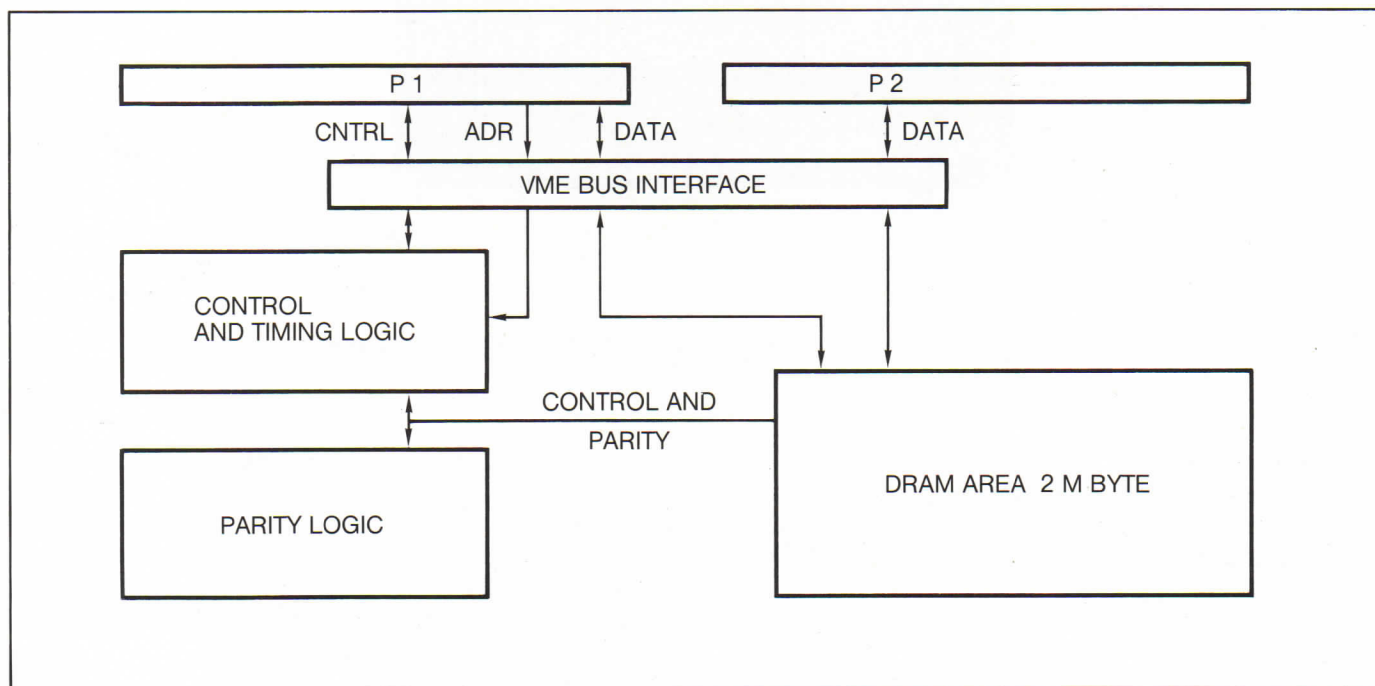
The VMEbus MEM2 board contains the VMEbus interface, the timing and control logic with the DP 8409-2, 2Mbytes of RAM storage array with 72 of the 256*1RAM devices and parity logic. A bus error is generated if a parity error is detected and is displayed by a LED on the front panel. Address selection in 512 Kbyte increments is provided by easy accessible jumper fields.

Features

- 2Mbytes dynamic RAM
- VMEbus revision C compatibility
- Base address selectable over 16Mbyte address range in 512Kbyte increments
- Supports 8, 16, 24 and 32 bits wide data transfer
- Full address modifier decoding
- On board refresh circuitry
- Byte parity generation and checking
- Bus error generation on parity error
- Front panel LED indicator for parity error
- Double Height Eurocard form

Specifications

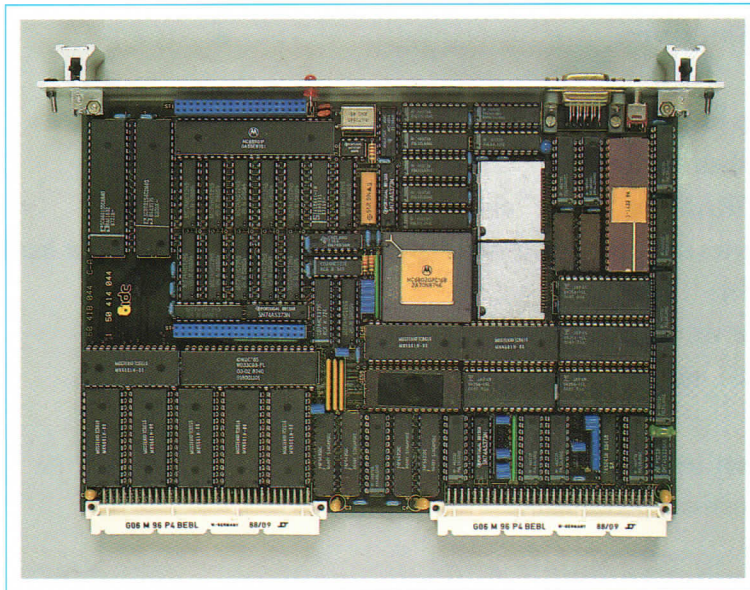
Description:	DRAM 2M dynamic memory board	Decoding:	Jumper selectable Access Address in 512 K bytes increments
Capacity:	2M byte of RAM storage with byte parity		Jumper selectable Address Modifier
Array:	64x256 K IC's (= 2MB) 8x256 K IC's (for parity)	Power requirements:	+5V $\pm$ 5%, 2,5A (typ)
Configuration:	DTB slave Options A24:D08, A24:D16, A24:D32	Operating temperature:	0 to +70 °C
Bus error generation:	on parity error	Storage temperature:	-55 to +85 °C
Access times:	Read: 320 ns (typ) Write: 180 ns (typ) Read-Modify-Write 530 ns (typ)	Relative humidity:	10 to 90%
Refresh:	Every 12,5 μ s	Module size:	Double Eurocard 233x160 mm (9.2"x6.3")
		Connection:	Connector P1 and P2 (for D32 only)
		Construction:	4 layer printed circuit



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VME - SCSI



VME/SCSI INTELLIGENT HOST BUS ADAPTER

Iskra Delta Computers SCSI Intelligent Host Bus Adapter (IDC-SCSI) provides an intelligent interface between VMEbus and the Small Computer Systems Interface (SCSI). A wide range of SCSI bus compatible devices may be attached without sacrificing VMEbus performance.

SCSI Interface

SCSI port can support up to seven devices of mixed types and data rates. Both the single-ended and optional differential SCSI bus transceivers options are available. IDC-SCSI supports the Common Command Set (CCS) and in transparent mode also vendor unique commands. Overlapped SCSI commands are supported. When devices disconnect from SCSI bus, commands queued for other SCSI devices will be issued. In addition, adapter can operate as a target device, for special host-to-host applications.

VME Interface

Compatible with Revision C.1 of the VMEbus specification. Data transfer widths with DMA are 16 or 32 bits and 8, 16, 32 bits or unaligned transfers with processor. Board support continuous 32 bit address mode and has seven level dynamic interrupter. Address modifiers are software selectable on a per command basis. For maximal speed and performance IDC-SCSI has 512 longword FIFO buffer, two independent DMA controllers for VMEbus and local data transfers. System memory data transfers can be performed using a scatter gather transfer technique.

SW Interface HOST Adapter

Communication with the host CPU (or more CPUs) is performed via a multi-ported RAM and is based on Buffered Pipe Protocol principles. The host constructs a high-level command parameter block in VMEbus global memory or directly on IDC-SCSI multi-port RAM. It then places a pointer to the command block into IDC-SCSI input command queue and from this point the host is relieved of all further action until the operation is complete or terminated. Commands are inserted in the queue asynchronously and without timing restrictions. The SCSI commands are extracted from the parameter blocks and passed through to the SCSI bus, so all standard, optional and vendor unique SCSI commands are supported.

Firmware on IDC-SCSI

Special sophisticated real time firmware running on local 68020 is responsible for optimal use of all resources: maximal SCSI bus loading, optimal use of data buffers in multi-port RAM ("cache"), simultaneous data transfers between SCSI, VME and multi-port RAM. Firmware include also precaching algorithm for preparing data in advance. For service support an RS 232 terminal connection is available on IDC-SCSI.

Features

- Single slot, standard double height Euro-Card VME board
- High speed SCSI port, full compatible with ANSI X3T9.2 SCSI spec.
- SCSI Disconnect/Reconnect facility
- Two independent high speed DMAs
- Simultaneous VME/SCSI transfers
- Scatter/Gather feature
- VMEbus transfer rate up to 16M bytes/sec
- Full 32 bits address and data support
- 2M bytes multi-ported DRAM for "cache" operations
- 68020 CPU with 128K bytes static RAM (no wait state) and 64K bytes EPROM for local management and control
- 512 longword FIFO buffer
- Optional Floppy interface via daughter card
- Optional Differential SCSI interface via daughter card
- Multiprocessor support
- High-level interface to host software
- Intelligent firmware for optimal performance
- UNIX Software support

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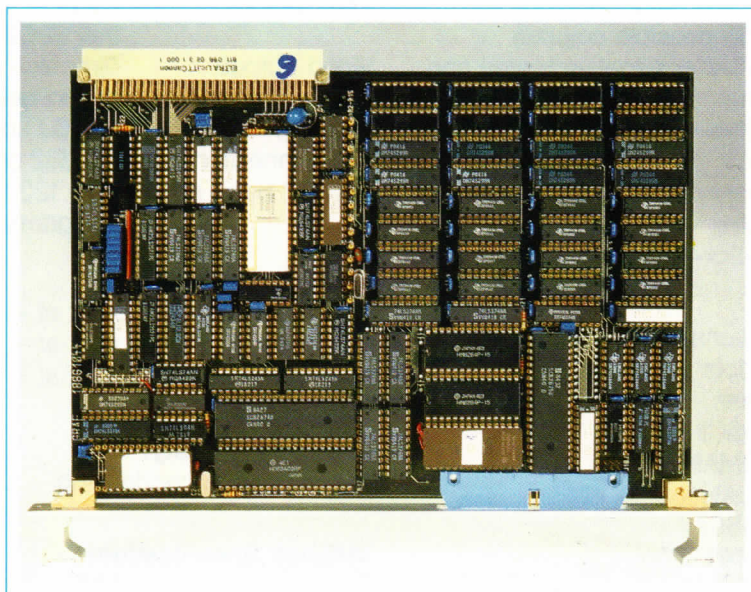
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A-9020 KLAGENFURT
8.-MAI-STRASSE 19
TELEFON: 0 46 3/51 41 80
TELEX: 42 2396 ISKRA A
TELEFAX: 0463/51418085

MARKETING

A-9081 REIFNITZ AM WÖRTHERSEE
SEKIRN 10
TELEFON: 0 42 73/22 27
TELEX: 42 2087
TELEFAX: 04273/222785

vme-graph



Graph-Controller for VMEbus-Systems

The VMEbus GRAPH is a VMEbus compatible graphics controller for medium resolution raster scan monitors. It allows any VMEbus based computer to display mixed graphics and alphanumerics on a standard TTL (RGB) colour monitor. The GRAPH board is built around four processors:

NEC 7220, SCN 2674, SCB 2675 and HC 6303.

The NEC 7220 processor provides programmable control over resolution. Video RAM allows maximum display matrix of 1024x1024.

The processor's hardware includes vector plotting, points, circles, horizontal and vertical scrolling, rectangles and fill rectangles, windowing and zoom.

NEC 7220 provides set, reset and read-modify-write, when writing in video RAM.

The SCN 2674 and SCB 2675 processors together with HD 6303 provide VT 100 alphanumeric compatibility.

A RS232C serial port is furnished to allow the connection of a digitizer or mouse. A serial port for keyboard connection is also included.

The VMEbus GRAPH board supports the following video signals: 3 for red, 3 for blue and 2 for green, vertical sync, horizontal sync and composite sync.

The raster colour graphics system is implemented on two boards: MODULE GRAPH and INTERFACE GRAPH. The INTERFACE GRAPH is usually mounted in the monitor housing. The boards are connected with a 40 core flat cable. The signal levels for the tablet and keyboard can be selected on the INTERFACE GRAPH board.

The VMEbus GRAPH supports TEK 4107 and RAMTEK 6221 terminal emulation together with CGL-graphic language. Plot 10 and GKS graphic systems are implemented.

Features

- NEC 7220 Graphic controller with hardware vector plotting, circles, rectangles and fill rectangles, horizontal and vertical scrolling, windowing and zoom.
- Alphanumeric part with SCN 2674 advanced video display controller and SCB 2675 colour attribute controller
- HD 6303 CPU for keyboard and serial channel connection (tablet or mouse)
- 4 Mbit of image memory separated into four planes
- 16 colours from a palette of 256
- VT100 compatible alphanumeric controller with 16K Bytes of character memory.
- 8 colours for foreground, 8 colours for background
- 8 KB EPROM for firmware with selftest
- Fully VMEbus compatible with programmable bus request and interrupt vector and level
- TEK 4107 and RAMTEK 6221 terminal emulation
- PLOT 10 and GKS graphic systems are implemented

Specifications

Graphics:

Graphic processor: NEC 7220
 Drawing field: 1024 * 1024 pixels
 Display window: 640 * 480 (medium resolution)
 Pixel size: 4 (sixteen colours)
 Video output:
 – TTL: 3/R, 2/G, 3/B
 (=256 possible colours)
 – Positive or negative Hsync and Vsync
 – Positive or negative Composite sync
 Video monitor: Panasonic TX-1425H or equivalent
 Video bandwidth: 25.2 MHz
 Memory: 16* (64kx4) DRAM'S = 0,5 MB

Alphanumerics:

Display window: 80x30 characters
 Character field: 8x16 dots
 Character size: 5x9 dots
 Character fonts:
 – UKASCII
 – GERMAN
 – ITALIAN
 – USASCII
 – NORWEGIAN
 – SPANISH
 – YUGOSLAVIAN
 – FRENCH
 – SEMIGRAPHICS

Pixel size: 3 for background and 3 for foreground (first 8 colours from a palette of 256)
 Refresh memory: One page
 Intelligence: Local HD 6303 processor performs the VT 52 or the VT 100 emulation
 Video output: Graphics and alphanumerics are mixed before look up table
 Module: VT 100 keyboard
 Interconnection: RS 232 channel for tablet or mouse
 RS 232 baud rate: 300, 1200, 9600, 76.800 baud (programmable)

Power Requirements:

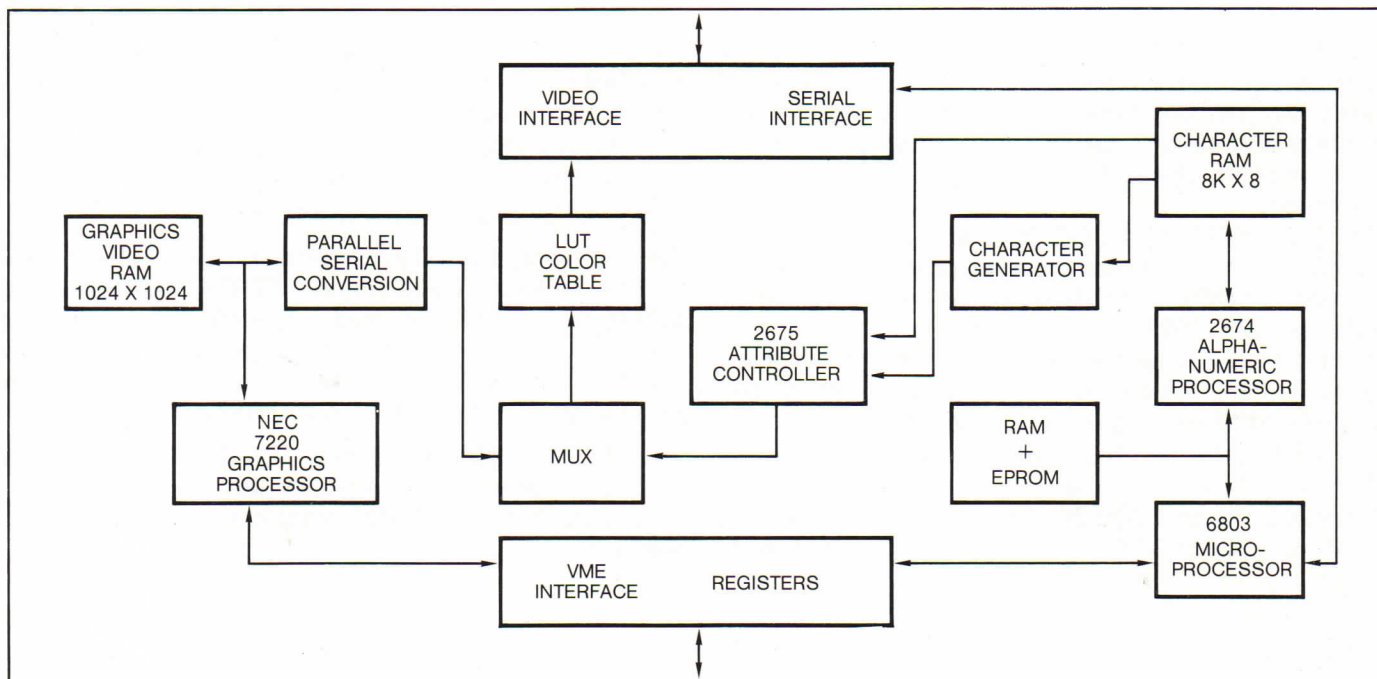
3,8A	max at + 5 VDC
100mA	max at +12 VDC
100mA	max at -12 VDC

Relative Humidity:

0 – 90 % Non condensing

VMEbus Specification:

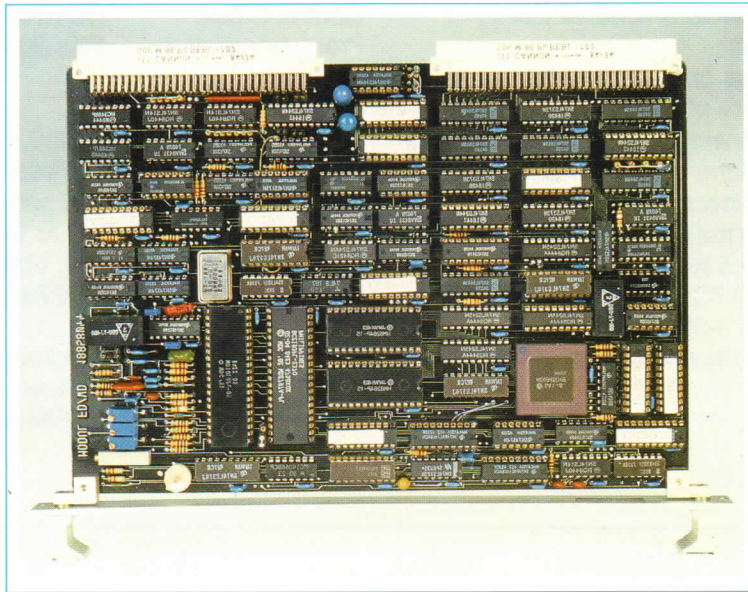
Size: VMEbus double-Eurocard
 Interrupt level: I(1) to I(7) selectable. Interrupt Vector software programmable
 DTB option: A24, (only 16 lines used) D8, D16



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vme - wd / fd



Winchester-/Floppy-/Streamer-Controller for VMEbus-Systems

The VMEbus Winchester and floppy disk controller module provides a high performance data channel between multiple disk drives, floppies or tape-streamers and the VMEbus system's main memory.

The controller uses Direct Memory Access (DMA) and controls:

- up to 2 Winchester disk drives 5.25 or 8 inch, (ST 506, ST 412 or SA 1000 interface) and
- up to 4 floppy disk drives, 5.25 or 8 inch or tape-streamers single or double density, single or double sided (SA 450 or SA 850 interface)

The capability of transferring whole tracks with fast DMA transfers, the capability of operating the winchester and floppy disk at the same time and a pretty large buffer memory speeds up the system's operation to a high degree.

Serial data rates up to 5M bit/sec are supported. Transfer on VMEbus can occur in word (16 bit) or byte (8 bit) mode and is buffered in a 16K byte on-board memory. Basic elements of the WD/FD module, both disk controllers and the DMA controller are very efficient LSI integrated circuits. After initializa-

tion and receiving the command, the circuits are able to execute all operations of data transfer between the main memory and the disk independently. The circuits recognize errors in their own transfer, so it is not possible to execute a wrong transfer without it being known in the operating system.

The module is an extremely reliable, industrial grade product. It incorporates multi-layer printed circuit techniques with internal power and ground planes to minimize noise.

Features

- Supported standards for Winchester disks are ST506, ST412 or SA1000. Serial data transfer rate between disk and controller is 5 Mbit/sec.
- The controller can support up to two winchester drives with a maximum of 16 heads and 1024 cylinders.
- Supported standards for floppy disks are SA450 or SA850. Serial data transfer rate between floppy disk and controller is 250 or 500 Kbits/sec.
- The controller can support up to four floppy or magnetic tape drives with different floppy disk standards.
The floppy disk can be double sided and can have a maximum of 256 cylinders. Tape drives can use more than one active select signals.
- Dualported static RAM buffer for 16K bytes on board.
- DMA transfer between the module and VMEbus with the on board DMA controller. Buffer data are transferred in the burst mode, 16 bits in one cycle, simultaneously addressing the main and buffer memory.
- Transfer of a complete track in one revolution to/from the VMEbus.
- Programmable sector sizes of 128, 256, 512 and 1K bytes; programmable block sizes in buffer memory of 128, 256, ... 8K, 16K bytes.
- CRC generation and verify for error detection.
- Fully VMEbus compatible
- Interrupt level and vector programmable. VMEbus Requestor-level programmable.

General

General

WD-Interface

WD-Interface

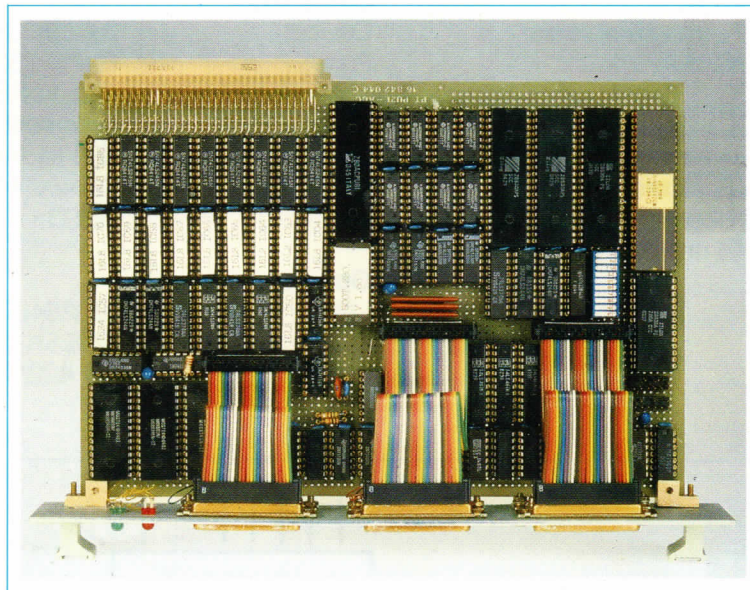
FD-Interface

FD-Interface



General

VME - ICC



Intelligent Communication Controller for VMEbus-Systems

The VMEbus ICC is an intelligent communication controller for VMEbus systems with six serial ports, which allows the connection of terminals to any VMEbus system. Optional either a Token Ring LAN or a X.25 port can be used. Intelligent serial I/O is essential when implementing an efficient multi-user operating system. The VMEbus ICC with its Z80A microprocessor and local memory releases the main CPU from unnecessary interrupts and administrative tasks (e.g. transmission protocols, queue handling).

Communication between the VMEbus ICC and other VMEbus boards is accomplished via FIFO buffer memory. The module has 512 words (16 bit) memory for read and 512 words (16 bit) memory for write.

All six channels are independently configurable as either asynchronous or synchronous ports. In asynchronous mode, the VMEbus ICC can be configured with baud rates up to 19.2 K baud. With synchronous ports, the VMEbus ICC supports both character-oriented protocols

(DDCMP or BSC) and bit-oriented protocols (SDLC and HDLC). Local Area Networks (LANs), Wide Area Networks (WANs), and Global Area Networks (GANs) are also supported with either an optional Token Ring LAN controller (WD2840) or a X.25 port (WD2511) with third level protocol support.

With downloadable software, users of the VMEbus ICC have extreme flexibility in choosing communication protocols for their applications. Users have the option to apply his own custom communication protocols or using IDC communication programs.

The VMEbus ICC Hardware and firmware are designed for easy integration into an existing VMEbus system.

The device driver requires only three registers (VME Data Register for read and write and the VME Status Register) which enables the user to concentrate on protocols instead of programming registers.

The control program (protocol) is downloaded from global memory upon the initialization of the system.

Features

- Z 80A Microprocessor
- 64 KB DRAM buffer memory on board
- 2 KB Boot ROM
- 2 KB FIFO RAM and counters
- 6 serial channels (asynchronous and synchronous with modem support)
 - either 6 x RS 232C or
 - 5 x RS 232C and
 - 1 x RS 422 interface
- Selectable parity, bits/character and stop bits
- OPTIONAL LAN controller
- OPTIONAL X.25 port
- Polled, interrupt and / or DMA access
- Selftest and debug capabilities
- Multi-operating system support and drivers
- Fully VMEbus compatible with programmable interrupt level and vector
- Remote download facilities

Specifications

General:

Description: Intelligent Communication Controller
 Configuration: DTB master option: A24, D16
 DTB slave option: A16, D16 or D8
 Requestor Options: RWD, R(0) to R(3) (programmable)
 Interrupt Options: TOUT: 20 μ s
 I(1) to I(7) (programmable)
 Power: + 5 VDC, 3 A
 +12 VDC, 150 mA
 -12 VDC, 150 mA
 Size: 160x234 mm (6.3"x9.2")
 Double Eurocard
 Temperature: 0 to 55 degrees C operating
 Humidity: 0 - 90% non-condensing (max)

Microprocessor:

Device: Z80A

Memory:

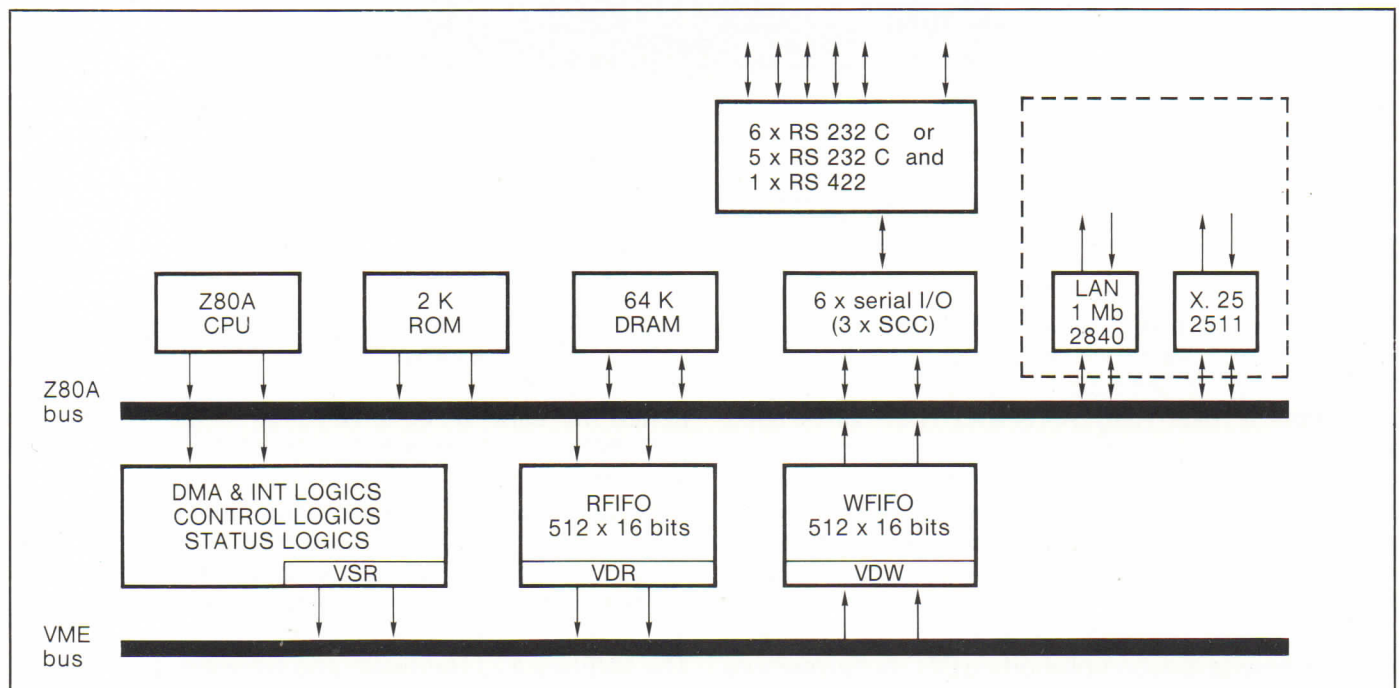
Size: 64 KB DRAM
 2 KB ROM
 2 KB FIFO RAM

Serial I/O:

Device: 3xZ8530SCC
 Ports: 6xRS 232C ports or 5xRS 232C and 1xRS 422 (Option)
 synchronous or asynchronous
 Type: 300 to 1M baud
 Speed: XON/XOFF, DDCMP, BSC, SDLC, HDLC
 Protocols:

Options:

LAN: WD2840 token bus chip
 X.25: WD2511 chip
 I/O: RS 422/423



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