Micro Concepts

MICROBOX 3

68000
Single Board Computer

Microbox 3
is a versatile double eurocard format single board computer designed around Motorola's powerful 68000 microprocessor and RMS graphics chip set.

Microbox 3
offers memory mapped colour graphics, 512K bytes of user memory, floppy disc and Winchester disc interfaces, keyboard and printer ports, parallel and serial i/o, stereo sound and battery backed clock-calendar.

Microbox 3
is available as a board level product or as a compact fully configured system. Systems are available with dual floppy disc drives or with 20M byte Winchester and single floppy disc drive.

Microbox 3
is supported by a choice of powerful disc operating systems, giving the user access to a wide range of languages and application software.

OS-9/68000
TRIPOS 3
CP/M-68K
STARDOS

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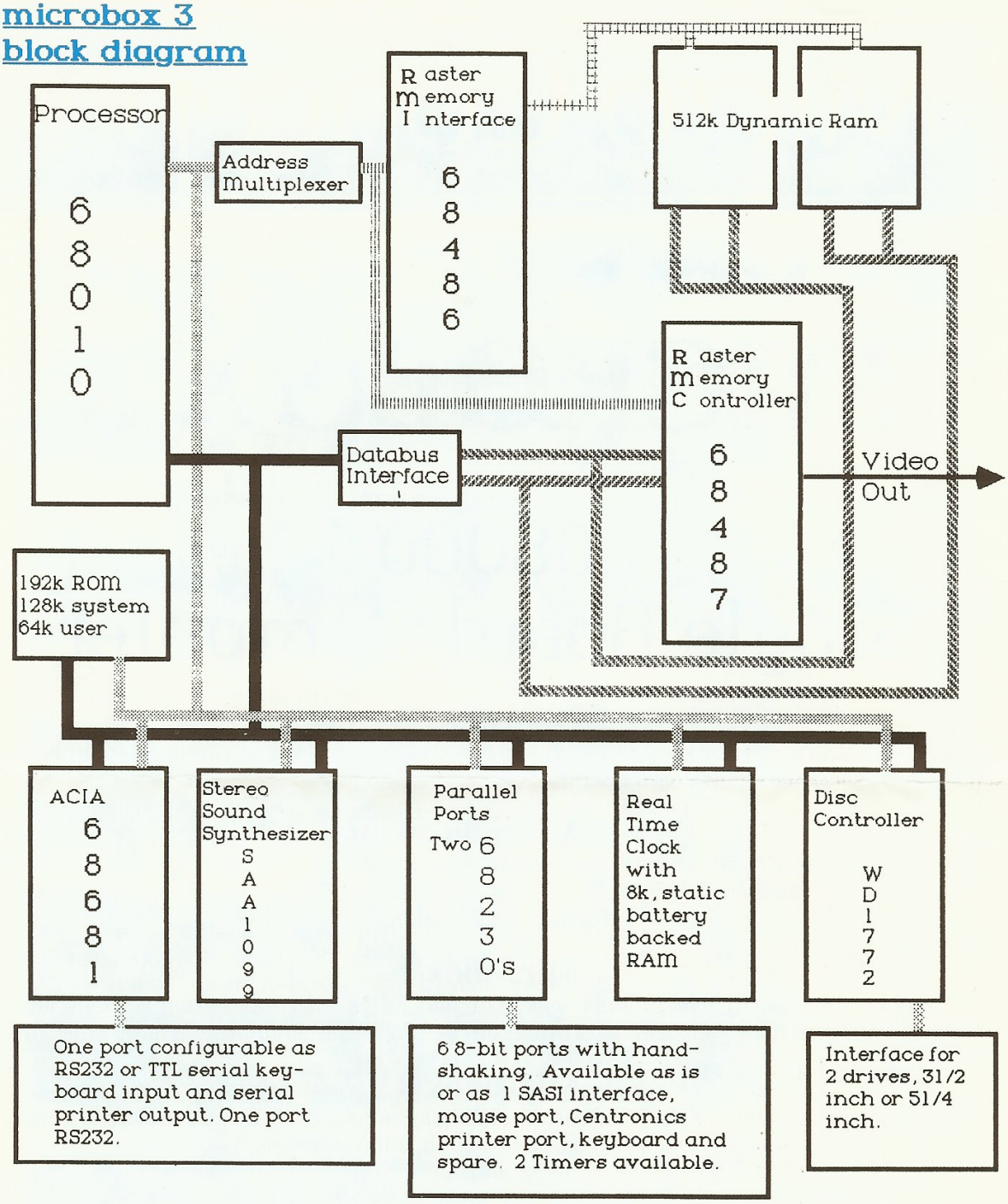
microbox 3
block diagram



LEGEND

Address bus

Data bus

RMS Address bus

RMS data bus

Xbus

System Support Firmware

Microbox 3 is supplied with powerful firmware containing system services, diagnostic and utility commands.

Monitor commands:

HD a	Display memory contents in hex from address.
AD a	Display memory contents in ascii from address.
ME a	Memory examine/alter from address.
PM a d	Poke data into address without verification.
TM a1 a2	Test memory between address1 and address2.
FM a1 a2 d	Fill memory between address1 and address2 with d.
SM a1 a2 a3	Shift memory contents between a1 and a2 to a3.
FI a1 a2 s	Search between address1 and address2 for string.
DR	Display register values.
SD r d	Set data register Dr to data.
SA r d	Set address register Ar to data.
SS d	Set status register to data.
JU a	Jump to program at address.
RP	Run program after loading registers.
TR a	Trace program from address.
DB b a	Set breakpoint Bb to address.
BR	Display breakpoint values.
CP	Continue after breakpoint.
JC	Jump to warm start location.
TD n	Test drive Dn by random sector reads.
TS n	Test drive Dn by stepping in and out.
DF n	Format floppy disc Dn.
WD	Format Winchester disc drive.
RS n t s a	Read track/sector on drive n to address a.
WS n t s a	Write from address a to track/sector on drive n.
SI p	Set active input to port.
SO p	Set active output port.
SB p b	Set baudrate of port p.
DC	Display time and date from real time clock.
MC	Modify real time clock contents.
DP a	Display peripheral data.
CO	Communicate. Microbox 3 becomes a dumb terminal.
LK a	Load data into memory at address from input port.
SO	Load Motorola S records into memory from input port.

System service calls:

Mcold	Do cold start.	Mwarm	Do warm start.
Status	Get input status.	Inchne	Input char — no echo.
Inch	Input char and echo.	Outch	Output character.
Pdata	Print string.	Pcrlf	Print CR/LF.
Pstrng	Print CR/LF and string.	Outs	Print a space.
Outns	Print 'n' spaces.	Inhex	Input hex number.
Prompt	Print string then Inhex.	Outh	Print hex nibble.
Out2h	Print hex byte.	Out4h	Print hex word.
Out8h	Print hex long word.	Delay	Wait 'n' mSecs.
Beep	Beep for 'n' mSecs.	Random	Return random number.
Getrtc	Read data from RTC.	Putrtc	Write data to RTC.
In	Write to security ram.	Out	Read security ram.
Select	Select drive 'n'.	Restore	Restore to track 0.
Seek	Seek to track/sector.	Read	Read sector.
Write	Write sector.	Flush	Flush track buffer.

Microbox 3 Specification

Central processor	MC68000 operating at 8Mhz.
Interrupts	6 levels — redefinable by on board links.
Memory	512K bytes dynamic ram.
	128K system eprom.
	8K bytes high security battery backed ram.
	64K bytes user eprom or battery backed ram.
Video	MC68486/MC68487 Raster Management System
	640 × 480 pixels graphic resolution. 4 colours.
	320 × 480 16 colours.
	80 × 24 characters alphanumeric display.
	Output — 1 volt/75 ohm RGB with sync in green.
	Standard — PAL.
Floppy disc	WD1772 floppy disc controller.
	Supports dual 3.5 or 5.25 inch disc drives.
	Capacity — 800K bytes each drive.
Winchester disc	SCSI subset supports Rodime 20M byte hard disc.
Clock Calendar	DS1216 Smartwatch.
	Battery backed real time clock calendar.
	Accepts 8K byte CMOS static ram.
	Access protection ensures data integrity.
	Data retention — 10 years.
Sound	SAA1099 stereo sound generator.
	6 frequency generators. 2 noise generators.
	12 amp controllers. 2 envelope controllers.
	2 6-channel mixers.
	Output — 200mV into 10K ohms.
Serial i/o	MC68681 DUART.
	Dual serial RS232 or TTL ports — link selected.
	Baudrates — 50 to 38.4K baud programmable.
	Independent rates for transmit and receive.
	Programmable word length and parity.
Parallel i/o	Dual MC68230 parallel interface/timer.
	Each PIA provides 20 lines of parallel i/o.
	Each PIA provides a 24 bit programmable timer.
	Note: Centronics printer and hard disc use parts of these PIA's.
Printer	Supports serial and parallel printers.
Keyboard	Serial RS232 or TTL.
Expansion	Reduced buffered expansion bus for additional user i/o.
Physical	Board format — extended double eurocard.
	Dimensions — 235mm × 320mm.
	Connectors — dual 64 way DIN indirect carries all i/o except floppy disc port which is via 34 way header.
Power	5 volt at 1.5A, 12 volt at 100mA.

Prices: (exclusive of VAT & delivery)

Microbox 3	built and tested board	**£650**
Microbox 3	system with dual 3.5″ floppy drives	**£1195**
Microbox 3	system with 20M byte hard disc and single floppy	**£1895**

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