



# 4C60 MANUAL

Rev 1.0



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# GENERAL

## DESCRIPTION

The 4C60 is a high performance, high integration 5X86 based PC/104-PLUS CPU card.

The 4C60 has built-in SVGA video that shares system memory (UMA) for low cost and high performance. The built-in SVGA video supports resolutions up to 1024x768 by 24 bits and video memory sizes from 512K to 4096K. The built-in SVGA video can be disabled if desired

.System memory can be 8M or 32M bytes. depending on 4C60 model. System memory is 64 bits wide for high performance.A 8M or 16M byte IDE flash drive is built into the 4C60. Since the built-in flash drive is IDE compatible, no special drivers are needed, regardless of operating system. An external IDE interface is also provided. IDE interfaces are PCI based or high performance.

Standard I/O include two 16C550 compatible RS-232 serial ports. One of the ports can be configured for RS-485 type interface. A bi-directional EPP/ECP/IEEE1284 compliant parallel port is provided, as are a standard keyboard interface and PS/2 type mouse interface.

The 4C60's watchdog timer and EEPROM BIOS setup storage make the 4C60 well suited to embedded applications. T

he 4C60 is a PC/104-PLUS card, meaning that in addition to the standard PC/104 connector, a stackable PCI bus connector is provided. This allows interfacing to high performance PC/104-PLUS peripherals. The 4C60 supports 3 bus mastering PC/104-PLUS cards or 4 slave PC/104-PLUS cards in addition to standard PC/104 peripheral cards. The 4C60 can supply 3.3V power to PC/104-PLUS peripheral cards.

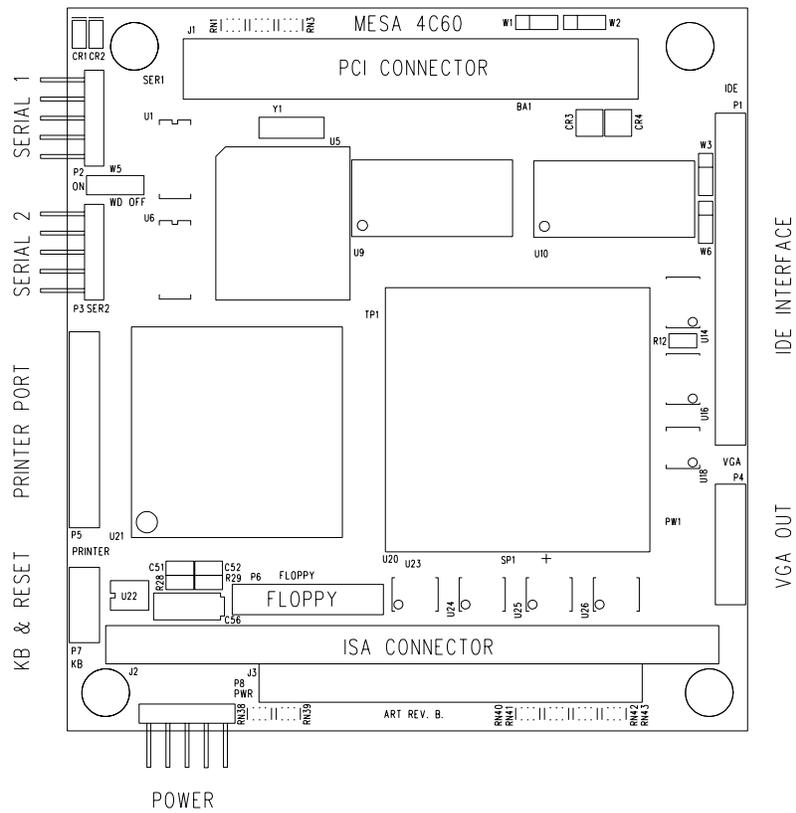
# HARDWARE CONFIGURATION

## WATCHDOG

There is only one jumper selectable option on the 4C60 card, The watchdog enable. The watchdog is a hardware timer in the reset circuitry of the 4C60 that will reset the 4C60 if not periodically serviced. This is normally serviced by the BIOS in DOS mode. It will probably have to be disabled for other operating systems unless provision is made for servicing it. Three pin jumper W5 enables or disables the watchdog. When W5 is on the left hand position, the watchdog is enabled. When W5 is in the right hand position, the watchdog is disabled.

# CONNECTORS

## CONNECTOR LOCATIONS



## **POWER CONNECTOR**

The power connector P8 supplies 5V, +- 12V and optionally +3.3V power to the 4C60. 3.3V power is normally generated on the 4C60 card and the 3.3V connections should be left unconnected. +12V and -12V power are not used by the 4C60 card but are routed to the ISA and PCI bus connectors. P8 is a 10 pin .1" header. The power connector pinout is as follows:

<b>PIN</b>	<b>FUNCTION</b>
1	+5V
2	+5V
3	GND
4	GND
5	-12V
6	+12V
7	GND
8	GND
9	3.3V
10	3.3V

## **KB & RESET CONNECTOR**

P7 is the keyboard, mouse, speaker and CPU reset connector. P7 is a 10 pin 2mm header. A keyboard adapter is available from MESA - the KBADPT. P7 pinout is as follows:

<b>PIN</b>	<b>FUNCTION</b>
1	SPEAKER OUT
2	SPEAKER COMMON (VCC)
3	RESET IN
4	RESET COMMON (GND)
5	MOUSE CLOCK
6	KB CLOCK
7	KB DATA
8	MOUSE DATA
9	KB COMMON (GND)
10	KB POWER (VCC)

## SERIAL CONNECTORS

P2 and P3 are standard COM1 and COM2 type serial ports. P2 is normally COM1 and P3 COM2. P2 and P3 are 10 pin .1" headers that match standard AT type DB9 pin serial ports when terminated to IDC type 9 pin connectors. In this case pin 10 is not used. Pin 10 is connected to +5V to support RS232-RS422 adapters etc. P2 and P3 pinout is as follows:

HEADER PIN	DB9 PIN	FUNCTION	DIR
1	1	DCD	IN
2	6	DSR	IN
3	2	RXD	IN
4	7	RTS	OUT
5	3	TXD	OUT
6	8	CTS	IN
7	4	DTR	OUT
8	9	RI	IN
9	5	GND	
10	XX		

## PRINTER CONNECTOR

P5 is a standard bi-directional printer port. P5 is a 26 pin 2mm header. An adapter is available from MESA to convert this to a standard DB25F connector or a .1" 26 pin header. P5 connector pinout is as follows:

PIN	FUNCTION	PIN	FUNCTION
1	/PSTB	13	PD5
2	/PAFD	14	GND
3	PD0	15	PD6
4	/PERROR	16	GND
5	PD1	17	PD7
6	/PINIT	18	GND
7	PD2	19	/PACK
8	/PSLIN	20	GND
9	PD3	21	PBUSY
10	GND	22	GND
11	PD4	23	PPE
12	GND	24	GND
		25	PSLCT

## VGA CONNECTOR

P4 is the VGA out connector. This is a 16 pin 2mm connector. An adaptor is supplied with the 4C60 to convert this to a standard 15 pin high density D connector. P4 pinout is as follows:

HEADER PIN	DH15 PIN	FUNCTION
1	1	RED
2	10	GND
3	2	GREEN
4	5	GND
5	3	BLUE
6	6	GND
7	7	GND
8	12	DDC0
9	8	GND
10	13	HSYNC
11		GND
12	14	VSYNC
13		GND
14	15	DDC1
15		GND
16	9	VCC

## IDE CONNECTOR

P1 is a standard 44 pin laptop type IDE connector. This connector will work with laptop type drives, or the Mesa CFADPT adapter directly. An adapter is available from MESA (the IDEADPT) from convert the 44 pin 2mm to standard 40 pin .1" header for larger drives.

## FLOPPY CONNECTOR

P6 is the floppy connector. It is a 20 pin 2mm connector. An adapter is available from MESA (the FLOPADPT) to convert the 20 pin 2mm connector to 34 pin .1" header for standard 3.5" floppy drives.

# CPU OPERATION

## SETUP STORAGE

All 4C60 setup options are stored in EEPROM so that CPU operation does not depend on the clock/calendar battery. The supplied utility SET4C60 allows the setup options to be changed. Setup options are changed by editing the 4C60.CF file from the distribution disk. 4C60.CF is a plain ASCII text file with the setup options. Once the desired changes are made in the 4C60.CF file, you run the utility SET4C60 with 4C60.CF as a command line argument:

```
SET4C60 4C60.CF
```

This will write the setup options specified in the 4C60.CF file to the permanent EEPROM storage on the 4C60 card.

## PCI BUS OPERATION

The 4C60 is a PC104 plus card which means that it supports PC104-PLUS PCI based I/O cards. The 4C60 can support up to 4 add-on cards, but only three of the cards can be bus master cards. PC104-PLUS I/O cards have a slot number that is assigned with jumpers or switches on the I/O card. This slot number is 0,1,2, or 3. The 4C60 can only support bus master type cards in slots 0,1,or 2.

## PCI INTERRUPTS

4C60 PCI interrupt mapping is fixed with slot 0 being mapped to IRQ5, slot 1 to IRQ10, SLOT 2 to IRQ11, and SLOT 3 to IRQ12.

## VGA OPERATION

The 4C60 has built in VGA that supports resolutions from standard VGA up to 1024X768 by 24 bits. VGA memory can be selected from 256K up to 4M bytes. VGA shares system memory so you will lose the programmed amount of video RAM from system memory. Higher resolution displays will also slow the 4C60 down slightly as the video accesses steal memory bandwidth from the CPU.

## ON CARD IDE DRIVE

The 4C60 has a built-in IDE flash drive. This flash drive can be 8 or 16M bytes (rev. B cards) and 8 to 64M bytes (rev. C cards). This drive can be configured via the EEPROM setup to be the primary or secondary drive. Since the on card drive is a true IDE flash drive, no special drivers are needed for any operating system.