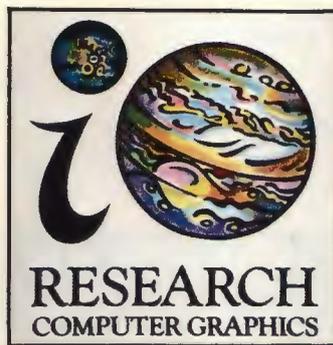




# Designers of the Future use Pluto II.



**PLUTO**

# THE PLUTO II COLOUR GRAPHICS CARD

## TECHNICAL SPECIFICATION

Pluto II is a compact single board intelligent graphics controller. It is a second generation Pluto condensing onto a 12 x 8" board: an 8088 based graphics processor; up to 1 MByte of frame buffer memory; a real-time video digitising input, a 256 colour from a choice of 16.7 million colour palette and a RS232 interface.

This incredible compactness is only possible using the latest technology and innovative design. The single board solution makes it simple to install and gives a very high degree of reliability with no inter-board connections.

The 512 KByte of memory as standard gives a very high 768H x 576V resolution image with spare memory to store symbols for use as workspace. An optional 1 MByte version allows the storage of two images of 768 x 576 and increases the spare memory available for workspace.

Advanced features of Pluto II includes hardware Pan and Zoom. Zoom allows the screen picture to be magnified by 2 times, 3 times, . . . up to 16 times the original size instantly without modifying the original image. This allows small detail to be easily examined. The point at which to zoom into is easily specified using Pluto II's new commands.

Once magnified, the hardware Pan facility may be used to move the image around the screen horizontally or vertically to reveal hidden parts. This also allows smooth vertical scrolling of images or text in single line increments.

The optional real-time frame grabber allows the capture of an image from a video camera in 128 grey levels at 768 x 576 resolution in 1/25th of a second. Once captured the image can be manipulated using Pluto II's other powerful facilities to add pseudo-colouring, enhance contrast, analyse the image or add graphics to it.

Pluto II is fully software compatible with Pluto but has extra commands as standard. This gives a range of over 100 functions.

Multiple Pluto II's can be synchronised together to handle special configurations. Three Pluto II's can be used to make a 24 bit system allowing a free choice of colours from the 16.7 million colour palette and facilitating a full colour real-time frame grab.

(We reserve the right to change these details without notice)

### GENERAL

Screen resolution:  
768H x 288V non-interlaced  
768H x 576V interlaced  
640H available to special order  
Virtual screen size:  
768H x 576V (512KByte memory)  
768H x 1152V (1MByte memory)  
Colours:  
256 from a palette of over 16.7 million  
Board size:  
12 x 8"  
Video output:  
Separate R.G.B. at 1 volt into 75 ohms  
Separate negative composite sync at 2 volts  
Selectable composite sync on green  
Video input (frame grabber):  
1 volt into 75 ohms  
Video source must be synchronised to Pluto II

### STANDARD HARDWARE

Processor:  
8MHz 8088 plus 7220 graphics controller  
Memory:  
512KBytes of DRAM dual-ported frame buffer  
Zoom:  
16 integer levels by pixel replication  
Pan:  
Horizontally in 8 pixel increments  
Vertically in 1 pixel increments  
Video output stage:  
3 very high speed 8 bit ECL DAC's for RGB  
TTL drive for separate sync output  
Selectable composite sync on green  
Setup level adjustable  
Computer interface:  
8 bit parallel data bus  
1 address line required to select 2 ports  
Read and write strobes  
80-Bus compatible

### OPTIONAL HARDWARE

(All options are factory configured)

Memory:  
512KByte expansion (1MByte total)  
Serial port:  
RS232 compatible (pre-configured speed)  
Frame grabber:  
Video input to 7 bit flash converter

### FACILITIES

On-board firmware provides high level commands:

Point set and inquire  
Vector draw with user definable dot-dash pattern  
Rectangle fill  
Complex polygon flood fill and boundary fill  
Complex polygon patterned fill  
Geometric polygon solid fill and smooth shading  
Raster operations with combine functions and 90 degree rotate  
In-built character font  
User definable shapes and symbols storable on board  
Image and symbol read and load  
Individual bit plane write protection  
Arcs and circles with user definable dot-dash pattern  
Fast zoom, scroll and pan  
Real-time video frame grab with camera preview  
Fast lookup table colour manipulation  
Two lookup table pages

### PERFORMANCE

Vectors:  
150,000 points/second continuous  
Image read/load:  
Half a million pixels/second  
Raster copy:  
2 microseconds/pixel  
Screen clear:  
1 microsecond/pixel  
Frame grab:  
Captures a 768 x 288 frame in 1/50th second  
Captures a 768 x 576 frame in 1/25th second  
Zoom and Pan:  
Zoom or pan by any amount occurs in the next available vertical blanking period

