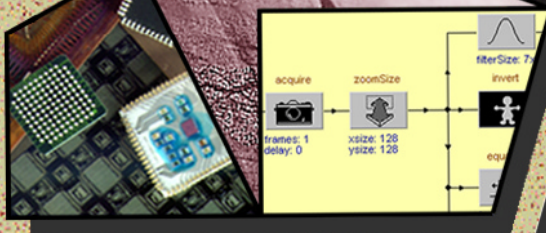
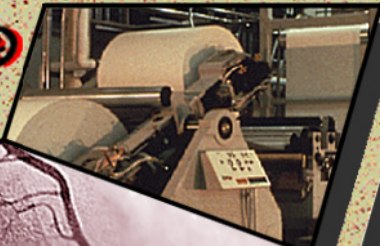


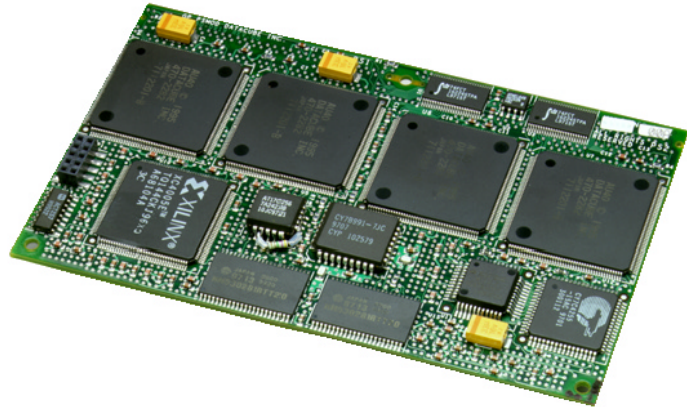


**Vision By  
MaxPCI®**



- Includes four AU devices that provide extra processing power for advanced arithmetic and computationally intense algorithms
- Includes 2 16x16 LUTs and large delay lines
- Supports two-dimensional grayscale and binary morphology operations (min, max, median)
- Cost effective way to add significant image processing power

# General Purpose PSMOD



The General Purpose (GP) PSMOD (processing and storage module) expands the image processing capabilities of the board on which it is installed by adding a significant number of powerful 40 MHz pipeline processing elements.

Built around a 30x25 crosspoint switch, the GP PSMOD includes four Datacube arithmetic units (AUs) for major arithmetic, logical, and statistical processing; two 16x16 LUTs with all the same features as the LUTs on the motherboard; a 3x3 Rank Value Filter and grayscale morphology unit; and additional delay lines (three at 300 K each and four at 8 K each).

Using the GP PSMOD's onboard crosspoint, application programmers can create both multiple parallel pipes and complex multi-function pipes. Internal pipe recirculation is also supported.

The GP PSMOD can be installed on the motherboard using any available PSMOD connector. The PSMOD connections provide power as well as four input, four output, and four bidirectional connections to the motherboard's crosspoint switch, allowing the GP PSMOD to be easily integrated into even the most complex image processing pipelines.

## Features

- Two pair of cascaded AUs (for a total of four AUs) for use with the delays to provide a wide array of neighborhood operations and traditional arithmetic unit operations
- Each hardwired pair of AUs and delays supports

the following operations:

- 8-point horizontal linear filter with 8-bit data and 10-bit coefficient
- 8-point vertical linear filter with 8-bit data and 10-bit coefficients (uses 2 extra delay lines)
- 8-point horizontal minimum or maximum of 8-bit data
- 8-point vertical minimum or maximum of 8-bit data (uses two extra delay lines)
- 4Hx2V linear, minimum or maximum filter on 8-bit data
- Sobel filter using one extra LUT
- Binary image routing to and from all elements with such capability
- Crosspoint data routing with small sections of hardwired interconnect
- Full use of all grayscale PSMOD pipeline input, bidirectional, and output ports
- Independent timing busses for all gateways except the eight unpackers in the AUs—the two unpackers in each AU share the same timing bus

## Specifications

### General Specifications

- All elements operate at 40 MHz
- Supports 4K active pixels wide throughout
- Independently programmable delay lines
  - Four 16-bit wide x 8K long
  - Three 8-bit wide x 300K long
- Two 64K x 16-bit LUTs, four operating modes:
  - Look-up table in pipeline
  - Image memory with RCV gateway (fast load)
  - Image memory with XMT gateway (per pixel gain and offset correction)
  - CPU Read and Write from memory
- One median-filter chip which operates in the following modes:
  - 3x3 min, max, or median filtering
  - 3x1 or 1x3 median filtering
- Interrupts for all AU, LUT, and IXP events

## Physical Specifications

Height: 0.31 inches (8 mm)  
Length: 4.50 inches (114 mm)  
Width: 2.69 inches (68 mm)  
Weight: 2.24 ounces (63.4 g)

## Power Requirements (all voltages $\pm 5\%$ )

+3.3 Volts 1.25A (typical)  
+5.0 Volts 750 mA (typical)  
7.88 Watts total (typical)

## Environmental Specifications

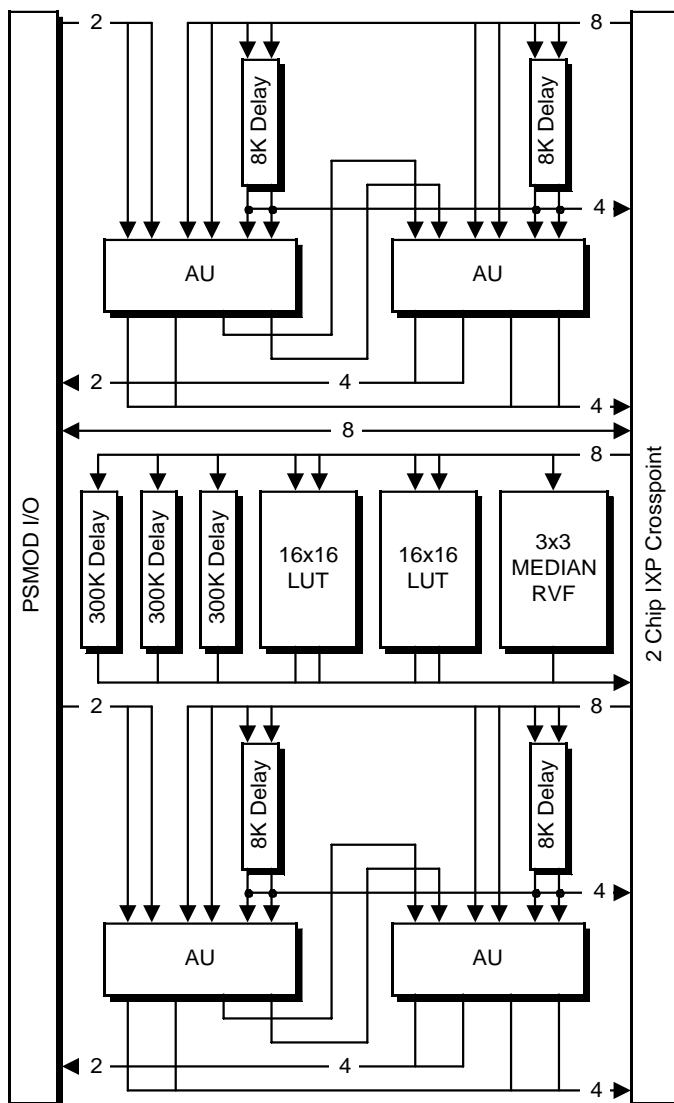
Storage Temp:  $-40^{\circ}$  to  $100^{\circ}$  C  
( $-40^{\circ}$  to  $212^{\circ}$  F)  
Maximum Chip Case Temp:  $85^{\circ}$  C  
( $185^{\circ}$  F)  
Relative Humidity: 10% to 90%  
(non-condensing)  
Air Flow Requirement: 50 LFPM  
(min)

## Additional Information

For related product information, refer to the following Datacube literature:

**MaxPCI Data Sheet**  
**DQWiT Data Sheet**  
**PC ImageFlow Data Sheet**

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General Purpose PSMOD  
Block Diagram

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