# OCTEC
## IMAGE PROCESSING

# IMP16

### PMC Image processing module

- **Rugged PMC Real-Time Image Processing Module**
- **High performance and flexibility**
- **Two analog video inputs and two analog video outputs**
- **Two channel video digitisation**
- **NTSC/RS170 and PAL/CCIR (60/50Hz) auto operation**
- **FPGA based, commercial off-the-shelf (COTS) product**
- **Real time, full frame additive, multi-resolution, color channel and adaptive image fusion**
- **Projective Warp and radial distortion correction for Image Registration**
- **Image pre-processing including noise reduction and contrast enhancement**
- **Picture-In-Picture, Freeze Frame, Electronic Zoom**
- **Video format conversion**
- **Conduction or convection cooled configurations**
- **Full resolution image capture across PCI bus**

The IMP16 is the latest addition to the Octec image processing range. Building on the success of the IMP15, the IMP16 is an advanced PMC real-time, dual-channel image capture and processing module for computationally intensive image processing tasks such as image fusion.

Primarily FPGA based, the unit is capable of a wide range of image processing operations. Flexible image pre-processors provide noise reduction and contrast enhancement for a range of sensor types including CCD cameras, image intensifiers and thermal imagers. The image alignment module compensates for time and space misalignment of sensors using a full projective warp and can also deal with common radial lens distortions. The module can be hosted on Octec's automatic video trackers to provide an extremely powerful detection, tracking and image processing system.

The IMP16 can also be hosted on standard single board computers for systems where tracking is not required.

## Applied Image Processing Technology

# IMP16 SPECIFICATIONS

## Functionality/Modes

- 2 channel video capture
- Synchronization of two input video streams
- Independent warping of both channels (projective and radial)
- Image Fusion (additive, multi-resolution, color channel and adaptive)
- Picture in picture
- Freeze frame
- Electronic zoom
- 2 independent video outputs
- Color graphics overlay for each channel
- Image transfer over PCI to a base board
- Temporal filtering
- Contrast enhancement, histogram equalization
- Noise reduction by spatial filtering
- Video format conversion
- Color space conversions
- Image arithmetic
- Morphological operators

## Electrical Interface

### Video Inputs
- Analog Inputs (2)
  - Composite Video or Y/C, 1.0Vp-p, 625/525 Line, CCIR, PAL, RS170, NTSC, Color Y/C

### Video Outputs
- Analog Outputs (2)
  - Composite video or Y/C, 1.0 V p-p into 75 Ohm

### Control Interfaces
- PCI bus Interface
  - Specification PCI Rev 2.3
  - 32 Bit Master/Slave
  - 3.3V signalling

### Power Requirements
- +5 V, <2A
- +12V, <50mA
- -12V, <50mA

Power requirement is function dependent

## Mechanical

### Board size
- Single PCI mezzanine card with dimensions as defined in IEEE 1386
- Card supports centre stiffening rib as defined in ANSI-VITA-20

### Connectors
- Analog Video: 8 x MMCX
- PMC 4x 64 Way EIA E700 AAAB

## Environmental

### Rugged Convection
- Temperature
  - Operating: -40°C to +70°C (with 300 ft/min airflow)
  - Storage: -55°C to +85°C
- RH: Up to 95% non condensing
- Vibration
  - Sine: 10g from 15 to 2000Hz
  - Random: $0.04g^2$/Hz from 15 to 2000Hz
- Shock: >30g 11msec. Sawtooth

### Rugged Conduction
- Temperature
  - Operating: -40°C to +70°C
  - Storage: -55°C to +85°C
- RH: Up to 95% non condensing
- Vibration
  - Sine: 10g from 15 to 2000Hz
  - Random: $0.1g^2$/Hz from 15 to 2000Hz
- Shock: >40g 11msec. Sawtooth

Octec has over 300 man years of experience in applied image processing and is one of the leading independent suppliers of 'commercial-off-the-shelf' video tracking and image processing systems to the global aerospace market. Part of Radstone Technology's Embedded Computing business, virtually every major European and US aerospace prime contractors is an Octec customer.

Octec's engineering expertise encompasses not only the hardware and software design of video trackers and image processing elements, but how they are applied to provide new or improved system capabilities. Octec also possesses great expertise in a wide range of complimentary technologies. These include system management processing, digital and analog interfacing and signal distribution as well as electro-optical sensor and overall systems integration for applications in the airborne, land and marine environments.

OCTEC
IMAGE PROCESSING

**Octec Limited**
The Western Centre
Western Road
Bracknell RG12 1RW
England

Tel: +44 1344 465 200
Fax: +44 1344 465 201
Email: sales@octec.co.uk

**Octec US West office**
14275 Parkside Court
Chino Hills, CA 91709
USA

Tel: 909 627 4816
Fax: 626 608 3511
Email: sales@octec.com

**www.octec.com**