OCTEC
IMAGE PROCESSING

VIDEO TRACKERS

ADEPT104

PC104+ format automatic video tracker/image processor

The ADEPT104 is the smallest and lowest power, full-featured variant in the Octec range of automatic video trackers and image processors. Despite its size, it maintains software compatibility with the entire line and has the powerful processing capability of all our latest designs.

The unit is primarily software based, and like all ADEPT series trackers the unit is capable of a large number of tracking modes, providing multiple modes of operation. Pre-processors using advanced image processing algorithms are followed by tracking algorithms which include centroid, correlation, edge, multiple target track, phase correlation, combined and SceneLock™.

Designed to operate within the PC104/104+ environment, ADEPT104's modes and functions can be controlled via the PCI/ISA bus or by the on-board RS232/422 serial links.

The ADEPT tracker family has been developed to provide the highest performance solutions in the smallest, fully environmentally proved hardware packages. The majority of customer requirements can be met by the application of standard 'off the shelf' products that have been designed to satisfy the majority of interface and performance requirements without the need for modification.

ADEPT104 underside showing interface capabilities

- **Software based, commercial off the-shelf (COTS) product**
- **Fully PC104/PC104+ compatible**
- **Multiple analog video inputs and outputs**
- **Digital video support over expansion interface including:**
  - **LVDS parallel digital video**
  - **CameraLink digital video**
- **PC104+ PCI and RS 232/422 interfaces built in**
- **High clutter rejection using Statistical Target Enhancement Pre-processors**
- **Multiple algorithm capability including multiple target detection and multiple object track**
- **Symbology overlay of track window, boresight marker, status etc.**
- **Intelligent Breaklock and Re-acquisition algorithms**
- **Programmable two axis platform drive (PID) fi lters**
- **NTSC/RS170 and PAL/CCIR (60/50Hz) operation**
- **Menu-Driven PC software allows easy set-up and development**

ADEPT104 SPECIFICATIONS

Functionality/Modes

Detection

- Multiple and single target detection modes available
- Detection Window
  - Position
    Movable to any FoV position
  - Size
    Variable from 4% to 90% of the FoV with manual or adaptive modes (dependent upon selected algorithm)
- Number of Targets: 5 (optionally 10) with selectable discriminants and priority options.

Target Tracking

- Track algorithm selectable from:
  - Centroid
  - Correlation
  - Edge (top, bottom, left, right)
  - Multiple Target Track
  - Phase Correlation
  - Combined
  - SceneLock™
- Track Window
  - Position
    Automatically controlled to follow target to any FoV position
  - Size
    Variable from 4% to 90% of the FoV with manual or adaptive modes (dependent upon selected algorithm)
  - Selectable track pre-processor providing statistical target enhancement with automatic, bipolar, positive and negative threshold options.
- Scene Tracking
  - SceneLock™ algorithm is run in parallel with Target Track and Detection modes. Provides "true scene" relative moving target detection and track modes.

Platform Filters

- Configurable 2-axis PID filters with rate demand or position demand output

Boresight

- Reference for the determination of the track errors. Movable for offset tracking.

Breaklock/Coast

- Automatic two stage track-loss detection and re-acquisition

Electrical Interface

Video Inputs

- Analog Inputs (2)
  - Composite Video 1.0Vp-p, 625/525 Line, CCIR, PAL or RS170, NTSC, differential
- Digital Input (1) (Requires additional Octec proprietary mezzanine expansion board)
- Digital Interface includes:
  - Base CameraLink digital video
  - LVDS parallel digital video

Video Outputs

- Analog Outputs (2)
  - Composite Video 1.0Vp-p into 75 Ohm, single ended
- Output 1
  - Input video with symbology overlay and selectable enhanced video within detection/tracking window
- Output 2
  - Input video with no symbology overlay

Control Interfaces

- Serial Interfaces
  - 4 off RS232 or 2 off RS323 and 2 off RS422, asynchronous, up to 115,200 baud, providing access to all configuration and status data
- PC104+ Interface
  - Specification PCI Rev 2.1
  - 32 Bit Target (Slave)
- PC104 Interface
  - Specification ISA
  - 8 Bit Slave interface

Power Requirements

- +5 V, 1A

Mechanical

Board size

- PC104+ (95.9 mm x 98.2 mm)

Connectors

- PC104+/PC104 standard bus connectors
- Analog Video 4 x MMCX jack
- Serial : 2 x 2mm pitch 2 row x 5 pin header
- Connector for Octec proprietary mezzanine expansion board

Environmental

Rugged Convection

- Temperature
  - Operating: -40°C to +70°C
  - Storage: -55°C to +90°C
- RH: Up to 95% non condensing
- Vibration
  - Sine: 10g peak from 15 to 2000Hz
  - Random: 0.04g²/Hz from 15 to 2000Hz
- Shock: >30g 11msec. Sawtooth

Environmental specification subject to mounting

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 Technologies' 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.

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