

### Systems Development SDD-Automatic Acquisition Video Tracker

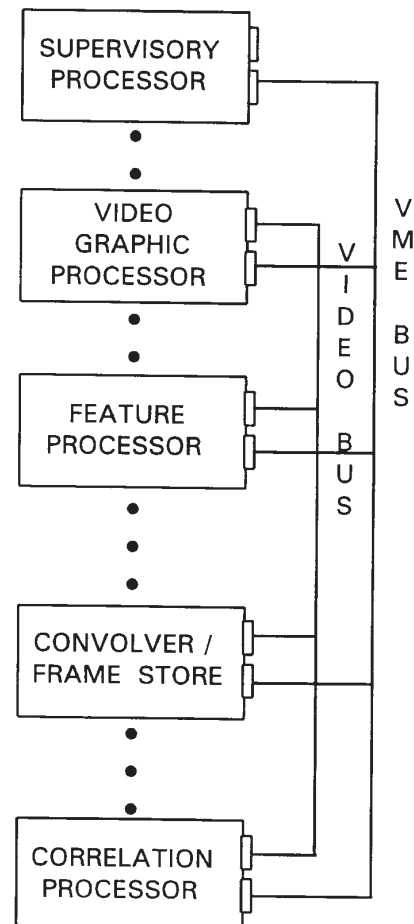
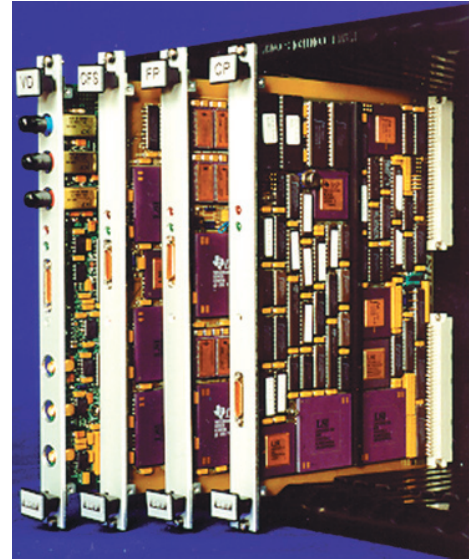
#### Features

- Track Modes Centroid Correlation
- Multiple Target Cueing
- Multiple Target Tracking
- Adaptive Gates
- Intelligent Coast Mode
- Two Video Outputs with Separate Graphic Memories, each of Which Can Provide Symbology and Text Outputs
- Serial Host Computer Interface
- Built-In-Test
- Advanced Servo Systems
- Field Configurable for Various Scenarios
- Visible or Infrared Imagery
- VMEbus Interface Compatible

#### Description and Operation

The Systems Development Department (SDD) has developed the SDD-AAVT as a state-of-the-art suite of high-performance hardware and application specific software product tailored for automatic acquisition and tracking of multiple targets. The SDD-AAVT incorporates 32-bit CMOS DSPs, and high speed FPGAs with flash memory, the system architecture provides flexibility so that the SDD-AAVT can be configured for different applications.

In a typical application, the Convolver/Frame Store preprocesses the input video going to the Feature Processor. The Feature Processor then detects, clusters, and prioritizes possible targets, in effect performs a "cued-track" on each one that is classified as a valid target. One of the valid targets may be tracked by a centroid algorithm running on the Feature Processor. The Feature Processor will continue to track one target, "cue-track" other valid targets, while continuing the process of cueing. In the event a target grows to a significant portion of the field-of-view, it may be passed (automatically, or with manual command) to the Correlation Processor for continued tracking. The Correlation Processor is able to track on internal target detail, so that tracking can continue even for large targets.



## Specifications

### VIDEO INPUT AND OUTPUT

#### Video Input

RS-170A or CCIR B/W or color video with 1.1V to 1.4V pk-pk signals.

#### Video Output

Two outputs of RS-170A or CCIR video with scene overlay of unique symbology and text. A third output has buffered input video.

#### Video Digitization

The input video is digitized to 8-Bits per pixel resolution at 10 MHz rate giving 512 pixel x 240 line resolution per RS-170 video field.

### INTERFACE CAPABILITIES

#### VMEbus Interface

All SDD-AAVT modules comply with VMEbus specification ANSI/IEE STD 1014-1987 and are configured as A:16, D:16 DTB Slave modules. The form factor is 6U x160mm.

#### Serial I/O

Two serial ports on the supervisory processor may be configured to RS232 or RS422 standards and operate in a synchronous or asynchronous mode at standard baud rates up to 38.4Kb/s.

### PERFORMANCE CHARACTERISTICS

#### Tracking Algorithm

The SDD-AAVT supports centroid and correlation tracking algorithms. The mathematical resolution of the error signal is 1/64 of a pixel. The error signal is updated at a rate of 60 Hz.

#### Target Segmentation

A target segmentation algorithm is provided that supports bright or dark targets. Target segmentation signal-to-noise ratio is 2:1.

#### Tracking Gate Size

The tracking gate size is automatically adjusted from 2% to 50% of the field-of-view (FOV) to adapt to a target that is less than 1% of the FOV.

#### Tracking Gate Position

In SCAN mode, the track gate can be manually positioned anywhere within the FOV. In TRACK mode, the track gate automatically follows the target anywhere within the FOV.

#### Intelligent Coast Mode

The SDD-AAVT evaluates target parameters each video field. If the target becomes obscured, the coast mode will track the predicted target path based on stored target data.

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#### Tracking Offset

The azimuth and elevation null point can be located within  $\pm 50\%$  from the center of the FOV.

#### Display Symbology

The SDD-AAVT has capabilities of graphic overlay on both channels. The graphics include various crosshairs and alphanumeric characters. The displays can be customized to the customer's specifications.

#### Diagnostics

The SDD-AAVT performs power-on BIT tests that provides fault isolation reporting to the sub-module level. Additional diagnostics are available with a software monitor which can be accessed via a RS232 diagnostic port.

#### Power

24-30 VDC at 4.5 Amperes, or 120VAC  $\pm 10\%$ , 50-60Hz at 2 Amperes.

### TEMPERATURE RANGE

- Operating
  - Commercial: 0°C to 55°C
  - Ruggedized: -30°C to 70°C
- Non-Operating
  - Commercial: -50°C to 100°C

### OPTIONAL INTELLIGENT I/O BOARD

#### Serial I/O

An 85C30 provides two serial ports which may be configured to RS485, RS422, RS232, RS423 standards and operate in a synchronous or asynchronous mode at 1 M Bit/sec max.

#### Parallel I/O

An 82C55A Programmable Peripheral Interface(PPI) can be configured for Mode 1 operation to provide a high speed parallel interface to a host computer or the 82C55A can provide 24 digital I/O lines.

#### Analog I/O

Four 12-Bit A/D Channels with an input range of  $\pm 10V$  FS & Four 12-Bit D/A Channels with an output range of  $\pm 10V$  FS

### OTHER OPTIONS

- Custom software for special tracking algorithms, special gate formats, custom video output symbology
- Servo Platform Interface with Analog I/O
- Remote Control Panel
- System Integration
- Ruggedized Hardware
- MIL-SPEC Hardware
- Custom Packaging

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