

Systems Development Advanced Compact Tracker

Features

- Multiple target tracking
- Automatic/Manual target acquisition
- User-selectable track and coast tracking algorithms
- Real-time onscreen display of boresight and status parameters
- RS170 video input
- VMEbus, RS232, and RS422 data interfaces
- Daughterboard expansion support
- Multi-channel analog outputs

Description and Operation

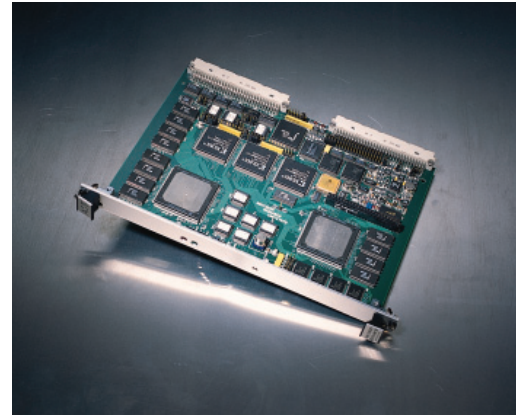
The Advanced Compact Tracker (ACT) is a high performance single-board, automatic video tracker. It incorporates many of the features of multi-card video tracking solutions in a package that is ideal for space and cost-sensitive applications.

The ACT accepts RS170 composite video signals through any of its three selectable video inputs. Target analysis is performed on incoming video which is then overlaid with onscreen boresight and track status information before being sent to one of the two selectable video outputs. The analog composite video output of the ACT is available on the VME backplane for further processing by other VME cards or for direct connection to a video monitor.

The ACT allows both automatic and manual acquisition of targets in its adjustable field of view. Automatic target acquisition is performed based upon user-specified target polarity, type, and environment. Once acquired, a target may be automatically tracked using centroid or correlation tracking. An intelligent decoy evading coast mode enables the ACT to predict and reacquire the position and attributes of targets in high noise scenarios.

Control commands are sent to the ACT over its 16-bit VME data bus or any of four selectable 38.4 kilobaud RS232/RS422 serial interfaces.

The ACT employs four analog output channels that are configurable for interfacing with external peripherals. These analog channels are capable of driving +/-10 volt peak-to-peak levels and are well suited for producing platform servo drive signals. An optional joystick may be connected to the ACT's serial interface for use in boresight positioning and target selection. In addition, a daughterboard interface capable of accepting 1/4, 1/2, and full-size expansion cards has been incorporated in the ACT for future expansion.



Specifications:

VIDEO

Video Input

Video Input Types: *Composite RS-170*
Number of Inputs: *3, software selectable*
Video Level: *1.0V p-p*
Impedance: *75Ω or Hi-Z*

Video Output

Video Output Types: *Composite RS-170*
Number of Inputs: *2*
Video Level: *1.0V p-p*
Impedance: *75 Ω*

TRACKING

Tracking Parameters

Operating Modes: *Scan, Coast, Track*
Tracking Algorithms: *Centroid and Correlation*
Tracking Scan Rate: *60 Hz*
Target Quality Assessment: *Automatic with user-adjustable weights*
Offset Tracking: *User-selectable*
Decoy Evasion: *Automatic/Manual Coast Mode with user-adjustable reacquisition weights and target position/attribute prediction*

Target Parameters

No. of Simultaneously Tracked Targets: *Up to 4*
Min Target Size: *3 pixels x 2 lines*
Max Target Size: *50% of vertical FOV*
Target Polarity: *Dark, Bright*
Target Type: *User-selectable*

Track Window Parameters

Max Track Window Size: *75% Horizontal, 50% Vertical FOV*
Acquisition Window Size: *User-adjustable up to 95% FOV*
Field of View Size: *User-adjustable*
Image Preprocessing: *User-selectable*

EXTERNAL INTERFACING

VMEbus Interface

VME Board Style: *VME 6U, 160mm*
Address Bus Width: *A16 (16-bit)*
Data Bus Width: *D16 (16-bit)*
VME Mode: *DTB Slave*
Base Address Selection: *Jumper selectable*
VME DMA Support: *2 Kilobyte Dual-Port RAM*
VME Interrupt Support: *IRQ (1-7) RORA*

Serial Data Interface

No. of Simultaneously Usable Serial Ports: *4*

Configurable Serial Port Types: *4-RS232
4-RS422*

Maximum Baud Rate: *38.4 kilobaud*

Analog Output Interface

Number of Outputs: *4*
Voltage Drive Levels: *+/- 10V, into 2K Ω load*

ELECTRICAL CHARACTERISTICS

Power Requirements

Voltage/Current Levels: *+5V, 3A
+12V, 0.5A
-12V, 0.5A*

ENVIRONMENTAL

Physical

Commercial Version Cooling: *IEEE Forced-Air Cooled Standard IEEE 1014-1987*
Native Size: *6.3" x 9.2" x 0.8"*
Slots: *1*
Connectors: *2-96 pin DIN41612*

Operating Environment-Commercial Build

Temperature (Operating): *0 to +55 °C*
Temperature (Storage): *-50 to +100 °C*
Relative Humidity: *To 95% non-condensing*
Vibration: *(sine) 5 to 100 Hz with .5g acceleration*
Shock: *5g 11 msec. Half sine*

FAULT TOLERANCE

Built-In Test

On-Line Monitoring: *Automatic*
Power On Self Test: *Automatic RAM, ROM, Processor, FPGA, and VME interface testing*
Fault Isolation: *User-selectable*

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