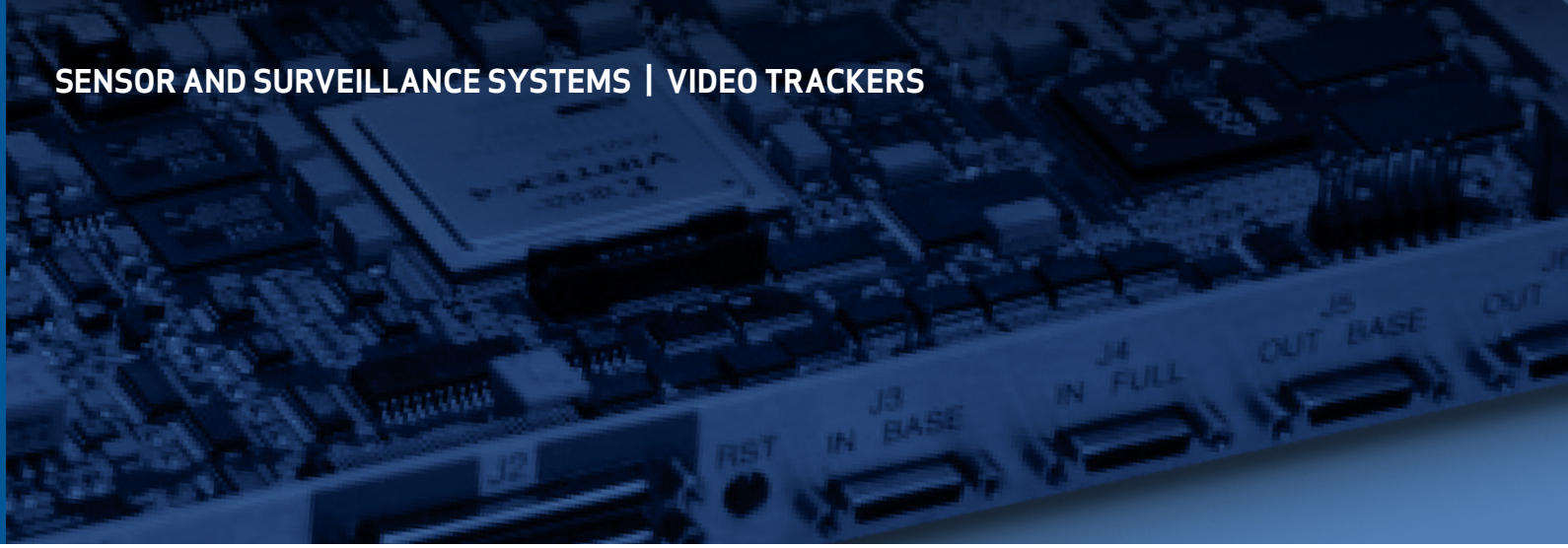
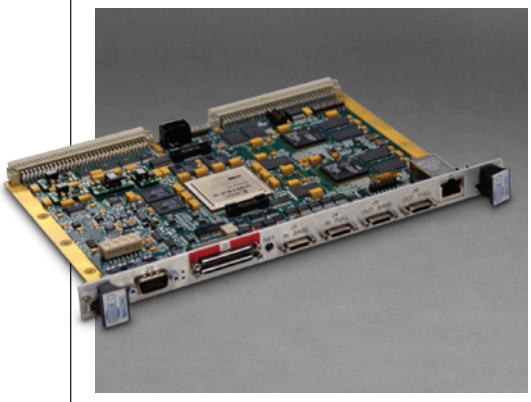



# MODEL 7005-CL (CAMERA LINK)

## VMEbus AUTOMATIC VIDEO TRACKER



The Model 7005-CL VMEbus Automatic Video Tracker (AVT) belongs to the latest tracker product family in Moog E-O Imaging's continued commitment to product innovation and improvement. This single board tracker provides the user a system easily adapted to a wide range of target and tracking environments through the incorporation of the latest in digital signal processing (DSP) and field programmable gate array (FPGA) technology (providing a flexible architecture for customization). The Model 7005 interfaces with both analog and digital video sources, providing ease in interfacing with a wide variety of sensor systems. The analog video interface provides full 12-bit, 4096 gray level capability supporting an array size up to 1024 x 1024, while the Camera Link digital video interface supports array sizes up to 2048 x 2048 with 16-bit resolution. The tracker design incorporates a multiple DSP implementation allowing concurrent operation of algorithms in realtime. The system is structured with an open architecture allowing easy incorporation of specialized features and algorithms. The Model 7005's standard features and options permit easy adaptation to even the most complex and demanding test range, tactical, surveillance and industrial applications.

***The Model 7006-CL tracker provides the same performance with a dual target capability.***

MOOG

# MODEL 7005-CL (CAMERA LINK)
# VMEbus AUTOMATIC VIDEO TRACKER

## STANDARD FEATURES

- Selectable Edge, Mass/Intensity Centroid, Vector* and Correlation Algorithms
- Multi-Target Detection
- Sophisticated Intrusion Detection and Recovery Algorithms
- Auto Acquisition and Target Detection
- Automatic/Manual/Gate Size and Position
- Adaptive and Manual Threshold Functions
- Robust Coast and Target Reacquisition Algorithms
- Advanced PID Servo Compensation Filter
- Embedded Motion Control Interface for Various Pedestals
- Embedded Smart Lens Controller Interface
- Embedded Laser Rangefinder Interface
- RS-232/422 Serial Communication Ports (8)
- VMEbus Slave Interface
- Zoom Scaling/Correction
- Interlaced and Progressive Video Format Capability
- 2048 x 2048 Sensor Array Capability
- Pixel Clock Rates up to 206 MHz
- Frame Rates up to 250 Hz
- Standalone Configuration (without VMEbus backplane)
  - VMEbus P2 and front panel I/O connections
- Integrated Target Simulator
- User Text Annotation and Graphics
- Multiple Frame and Overlay Buffers
- Analog Video
  - RS-170 / RS-170A / NTSC / PAL / CCIR / RS-343
  - Outputs (3), 2 with Symbology and 1 without
  - Analog Inputs (8), 16-bit Resolution
  - Differential / Single-ended Video Analog Inputs (4), 12-bit Resolution
  - Analog Error Outputs (2), 16-bit Resolution
- Camera Link Full Interface, (1) input, (1) output with Symbology
- Dual Graphic Overlay Planes with Multiple Sprites

## TYPICAL APPLICATIONS

- Weapon System Director
- Real Time Missile and Aircraft Tracking
- Surveillance
- Weapon System Evaluation
- Simulator Systems
- Trajectory Analysis
- Bomb and Weapons Scoring
- Image Matching
- Automated Calibration of Tracking Systems
- Laser System Alignment
- ECM Evaluation
- Spatial Measurement of Objects
- Re-entry Vehicle and Satellite Tracking
- Biomedical Analysis

## AVAILABLE OPTIONS

- Remote Control Unit (Models 702 and 704)
- Environmentally-Controlled Video Camera (Models 901 and 902)
- Nonstandard Video Formats
- Custom Packaging
- Custom Symbology and Annotation
- Trajectory Simulation Capability
- Operator Training Capability
- Image Stabilization
- Image Processor
  - Target Enhancement/Detection
  - User-Definable Filter Characteristics
- Simultaneous Multi-Target Tracking

## VIDEO INTERFACE

- Composite Analog Video Inputs (4)
  - Compatible with TV or FLIR 525/625
  - Video Std's RS-170 / RS-170A / NTSC / PAL / CCIR / RS-343
  - Single-Ended or Differential, Switch Selectable
- Composite Video Outputs (3)
  - Two (2) mixed with symbology
  - One (1) with no symbology
- Camera Link Interface
  - One (1) base/medium/full channel input
  - One (1) base/medium/full channel output with symbology

## SYSTEM CONTROL INTERFACE

- Analog Errors (2)
  - Azimuth and Elevation Errors (+/- 10 or 5V)
- Tracker Status Discretes (3)
  - On-Target Discrete: indicates that target data is present
  - Coast Discrete: indicates target has been lost and reacquisition sequence is in process
  - Track/Acquire: indicates track state
- Digital Input/Output
  - 16-bit bi-directional interface
- Analog Input (8)
  - Analog input ports +/- 10V max, 16-bit Resolution
- Serial Interfaces (8)
  - 115.2 kbps maximum (default)
  - Selectable RS-232/422
- VME Slave Interface (A24/D16)
  - Base Address Selection: Switch Selectable (Upper 8 bits)
  - Supervisory or Non-Privileged
- Gigabit Ethernet Interface
  - Auto-negotiating 10/100/1000 Ethernet interface

## FUNCTIONALITY

- Tracking Algorithms
  - Mass Centroid
  - Intensity Centroid
  - Selectable Edge (top, bottom, left, right)
  - Correlation (Exhaustive Search)
  - Vector (Leading Edge) Track*
- Tracking Gate Auto/Manual Size
  - Manual: adjustable from 1% to 90% of the field-of-view area in Edge and Centroid Modes
  - Adaptive: automatically adjusts to variations in target size
  - Correlation Mode: Reference area size from 8 x 8 up to 64 x 64 elements,independent horizontal and vertical size controls. Search area is 128 x 128 pixels/line.
- Threshold (automatic/manual)
  - Allows identification of White and/or Black contrast targets or target gray levels
  - Automatic multi-gray level detection
- Automatic Coast Mode
  - Statistical Process determines the validity of the target
  - Optimal recovery from intrusions and disruption of track
- Reticle
  - Defines the AZ/EL null point of the system
  - User selectable reticle formats
- Display Symbology
  - Tracking Gate Outline (Window/Corners)
  - Reticle (Crosshair)
  - Track Point Indicator (Flag/Crosshair)
  - Offset Track Point
  - Threshold Enhancements (Highlighted Target Data)
  - Characters for displaying system status and mode information
  - Alphanumeric generator for user-defined messages
- Graphical User Interface
  - PC-based program for configuration setup and testing through the RS-232/422, VME or Ethernet interface
- Built-In-Test
  - Performs end-to-end testing
  - Verifies all track modes
- Field Downloadable Software Updates (DSP/FPGA)
- Sophisticated PID Filter
- Configuration Save Capability
  - Stores up to 10 user-defined configurations in FLASH
  - Allows user to define Tracker boot-up configuration
- Embedded Motion Control Processor

## PHYSICAL SPECIFICATIONS

- Board Dimension
  - Double Euro (6U) VMEbus Format, 160mm
  - Conformal Coated per MIL-I-46058
- Temperature Range
  - Operating: -40° to +85°C
  - Storage: -40° to +85°C
- Cooling
  - Conduction Cooling per IEEE Standard 1101.2-1992
- Relative Humidity
  - 0 to 95% non-condensating

* Vector Track mode is only available with mount position feedback

# EQUIPPING THOSE WHO DEFEND FREEDOM

MOOG

+1 321.435.8722 | www.moogS3.com | videotracking@moog.com

Moog Space and Defense @MoogSDG @MoogSDG @MoogSDG @MoogInc



Form 500-1221 08242020