KODAK *EktaPro* CR Imager, Model 2000

The KODAK EKTAPRO CR Imager, Model 2000 combines high frame rates and excellent resolution digital imaging within a small, portable, self-contained package. The CR Imager offers record rates up to 2000 frames per second, continuous recording with variable pre/post trigger, and both live and playback video as color or monochrome RS-170 output. Playback can be performed instantly at a variety of speeds. A hand-held keypad provides easy, intuitive access to most system features.

SELF-CONTAINED, COMPACT DESIGN

Designed as a small, lightweight, self-contained camera, the CR Imager does not require an accompanying processor. Digital images may be stored during download in a compact (Bayer) or industry standard 24-bit Color TIFF format onto a PCMCIA hard drive or solid state memory card for future detailed analysis using a notebook or desktop computer. The CR Imager's one-button record and auto exposure features reduce the imaging process to a single TTL or contact closure. Sophisticated color balancing provides superior image quality in a wide range of lighting conditions. The adjustable X/Y coordinate display, in addition to record, playback, and download functions, make basic analysis and permanent storage of images a simple task. By attaching a video recorder to the rear of the camera, an operator can capture and store images to S-VHS tape.

NETWORKING AND COMMUNICATIONS

100 Mbps Ethernet communication is a standard feature, providing remote control and fast digital image transfer for the CR Imager from a personal computer. PC-based control software supports both 100BASE-T Ethernet and RS-485 communication networks for simultaneous management of multiple imagers. A Dynamic Link Library is available for sophisticated users who intend to develop their own control software. And finally, an RS-232 interface allows the CR Imager to be computer controlled through an extensive built-in ASCII command set that permits easy terminal control, and development of basic software routines to automate the imaging process.

- **High-Resolution Color Recording**
  Kodak's state-of-the-art sensor technology provides resolution of 512 x 384 pixels in 24-bit color. Also available is a model with a monochrome sensor which provides even greater resolving power and light sensitivity.

- **Large Square Pixels**
  Pixels are 16μm x 16μm, making the camera ideal for computer image analysis applications.

- **Unique Anti-Blooming Control**
  The camera can look directly into flood lamps and still capture the surrounding scene. This is unique for high-speed sensors.

- **Built-in Electronic Shutter**
  The camera's reliable electronic shutter provides sharp images and is essential in eliminating motion blur.

- **Variable Exposure**
  From 23 through 983 microseconds at 1,000 full frames per second, in 5 microseconds increments.

- **Hand-held Keypad**
  The keypad provides comprehensive, easy-to-use access to system functions.

The EKTAPRO CR Imager, Model 2000 with hand-held keypad.

![Kodak logo] **MOTION ANALYSIS SYSTEMS DIVISION**

KODAK EKTAPRO CR Imager, Model 2000
SPECIFICATIONS

Resolution:	512 (H) x 384 (V) photo-sensitive pixels
Image:	24-bit color or 8-bit monochrome images
Blooming Protection:	Greater than 100x at 1 millisecond exp. 1000 frames per second (fps)
Exposure Rates:	Electronic shutter variable from 23 through 983µ at 1,000 full fps, in 5µ increments
Dynamic Range:	48 dB at 25°C ambient temperature
Record Rate:	NTSC = 2000, 1000, 500, 250, 125, 60 and 30 fps PAL = 2000, 1000, 500, 250, 125, 50, 25 fps and external
Trigger Modes:	Variable from start to maximum available image capacity
Playback Rates:	NTSC = 1, 2, 3, 7, 15 and 30 fps PAL = 1, 2, 3, 6, 12 and 25 fps
Recording Times:	2 seconds storage at 1000 full fps; 2.73 seconds storage at 2000 fps; Longer record times at slower frame rates
Rear Panel Controls:	Download, Live-normal/Play forward, Live-low light/Play reverse, Frame Rate (up/down), Exposure Time (up/down), Ready, Record, Delete Recording and RS-485 Termination On/Off switch
X-Y Reticle:	Built in electronic crosshair for data reduction and calibrated measurements
Triggers:	TTL, closed contact; software driven one button record mode
Border Data:	Date, ID number, IP address, exposure rate, frame number, trigger status, temperature, reticle position, system status
LED Indicators:	Standby, Ready, Data Secure, Fault
Hand-held Keypad:	For control of system operation. Windows™ CE compliant. Cable length is 6 feet.
Hardwired Controls:	**Ready** - (input) changes imager mode from Standby to Ready to be Triggered **Trigger** - (input) changes the imager mode from Ready to Record **Ready Status** - (output) indicates the imager is in the Ready to record mode, waiting for Trigger **Fault** - (output) indicates trigger fault, PCMCIA fault, overtemp
Computer Interfaces:	**RS-485** - used for control and configuration of one or more imagers over serial line **RS-232** - used for control and configuration of single imager over serial line **Dedicated Ethernet** - 100 Base-T physical link using UDP/IP protocol. Used for CR Imager control and configuration, and for downloading images from one or more CR Imagers. It is recommended that only CR Imagers, HG Imagers, and RO Imagers, be connected to the dedicated ethernet network.
Image Capacity:	**Standard:** 2048 full frames at 1000 fps, 5461 frames at 2000 fps Memory module - PCMCIA type III interface for archiving digital images onto removable storage media
Imager Connectors:	**Main Interface:** Single Mil-C-38999 connector provides a conduit for all supported communication lines and power **RS-232:** DB9 provides serial communications for control via ASCII commands **BNC:** Allows NTSC or PAL, RS170 video output
Distribution Box Connectors:	**RS-485:** DB9 supports multiple imager control on a single communication line **RS-232:** DB9 provides serial communications for control via built-in ASCII commands **BNC Connection:** Ready, Exposure out, Sync In, Fault Status, NTSC or PAL Video, Trigger, and Ready Status **RJ45:** PC - Supports direct connection from an Imager to an Ethernet HUB **Power:** +22 to 42 VDC Input **Imager:** Single Mil-C-38999 connector provides a conduit for all supported communication lines and power **Output:** Single Mil-C-38999 connector provides a conduit for all supported communication lines and for distribution to J-Box **IRIG:** Optional PC based IRIG time capture for annotation of image tag data with IRIG time
Lens Mount:	C-mount
Size:	4.4"(W) x 6.2"(H) x 12.0"(L) excluding handle; 112mm (W) x 157mm (H) x 305mm (L) excluding handle
Weight:	12.8 lbs. (5.8kg) excluding handle
Base Mounting:	Five 1/4" - 20 bolt mounts on the bottom
Power:	+22 to 42 VDC at 50W
Operating Case Temp:	-10°C to +50°C
Storage Case Temp:	-25°C to +65°C
Emission Standards:	Meets all applicable international standards
Safety Standards:	Meets all applicable international standards
Software:	Control panel software for remote control of one or more imagers via Ethernet or RS-485; for use with personal computer using Windows NT 4.0™

ISO 9001
REGISTERED

CE
UL