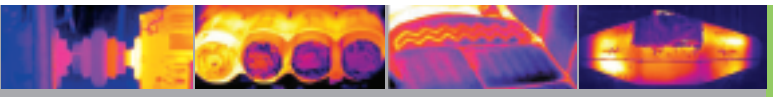
FLIR SYSTEMS™

The Global Leader in Infrared Cameras

ThermoVision™ A40M

INDUSTRIAL AUTOMATION



The ThermoVision A40 Series of infrared cameras are affordable, accurate and intelligent solutions for industrial product and process monitoring, product verification and security applications. Featuring high-resolution, real-time imaging and built-in logic, the A40M is a complete machine vision and remote monitoring solution that immediately identifies thermal problems that are otherwise undetectable.

- Precise Thermal Measurement
- Real-time Digital Video Output
- Multiple Target Spots and Alarms
- FireWire or Ethernet Connection Options
- Affordable, Fully-integrated Thermal Measurement Solution
- Maintenence-free, Uncooled, Microbolometer Detector
- LabView and C++ / Visual Basic Support
- Multiple Users can Access Data from Multiple Cameras

Quickly Find Faults

Subtle temperature variations, undetectable by any other means, stand out clearly in a thermal image. Finding and resolving problems early can improve product quality and cut down on scrap or warranty expense – saving thousands of dollars.

Instant Non-contact Temperature Measurement

The A40M was designed from the beginning — at the detector level— to deliver accurate radiometric imaging and repeatable temperature measurement. Each thermal image is built from 76,800 individual picture elements that are sampled 60 times per second by the camera's on-board electronics and software to measure temperature. The data can then be used by the operator to monitor or control a production process, or can be processed by the camera's on-board intelligence to autonomously generate multiple independent digital alarms or even control process equipment.

Outstanding Imaging and High Thermal Sensitivity

The A40M features an advanced, uncooled microbolometer FPA detector technology that delivers crisp, longwave images in a multitude of palettes that allow you to see temperature variations as small as 0.08° C. Real-time image acquisition at standard video rates (60 Hz) can reveal rapid, thermally transient events and generate clear images of moving objects.

Extensive Connectivity Options

The A40M is available in FireWire (IEEE 1394a) or RJ-45 Ethernet models that are ideal for individual or networked multiple camera installations. Each A40M can be equipped with its own IP address allowing it to be addressed independently via its network connection. This provides instant access to A40M thermal images by any authorized user via the LAN, WAN, or the Internet using a Web browser. The camera can be configured via the network, or with its on-board soft button interface.

Plug-and-play Setup

The A40M features plug-and-play setup. You can simply connect the camera to a standard monitor and immediately produce high quality, real-time radiometric thermal images that accurately show heat patterns and thermal anomalies.

Easy to Configure and Operate

The user-intuitive A40M is extremely easy to operate. Its onboard logic and menu-driven configuration controls enables you to select and control multiple target spots, temperature range, image color palettes, multiple alarms and more, quickly and easily.

Ultra-compact, Rugged and Lightweight

Built to operate unattended for long periods in harsh industrial environments, the A40M has an IP40 rating. Its compact design and light weight (less than 3 lbs.) allow it to be mounted in remote locations that may be optimal for data collection. Fully configurable I/O functionality allows the A40M to be integrated quickly and easily into your control systems.

Multiple Programming Options

The A40M can be easily leveraged to control a process with LabVIEW and FLIR's LabVIEW Developers Toolkit. This SDK allows programmers to access numerous measurement functions that can then be used to turn the A40M into a powerful machine vision tool with a minimal investment in machine vision software development.

Or, work in your own programming environment with the ThermoVision System Developers Kit (SDK) based on ActiveX and Visual Basic C++. The SDK provides full access to camera measurements and includes source code examples that will dramatically reduce the time it takes to program a custom solution.

ThermoVision™ A40M Technical Specifications

Imaging Performance	
Field of view/min focus distance	24° x 18° / 0.3 m
Detector type	Focal plane array (FPA) uncooled microbolometer
Spectral range	7.5 to 13 µm
Spatial resolution (IFOV)	1.3 mrad
Thermal sensitivity @ 50/60Hz	0.08° C at 30° C
Focusing	Built-in focus motor
Image Presentation	
FireWire/Ethernet output	8/16-bit monochrome and 8-bit color
Video output	RS170 EIA/NTSC or CCIR/PAL composite video
Measurement	
Temperature ranges	Range 1: -40°C to +120°C (-40 to +248°F) Range 2: 0°C to +500°C (+32 to +932°F) Optional: Up to +1500°C (+2732°F) Optional: Up to +2000°C (+3632°F)
Accuracy (% of reading)	± 2°C or ± 2%
Measurement modes	Spot, Area, Difference
Automatic emissivity correction	Variable from 0.1 to 1.0
Individual emissivity settings	Individually settable
Measurement corrections	Reflected ambient, distance, relative humidity, external optics. Automatic, based on user input
Supplementary Lenses*	
Field of view/min. focus distance	7° Telescope (7° x 5.3°/4m) 12° Telescope (12° x 9°/1.2m) 45° Wide angle (45° x 34°/0.1m) 80° Wide angle (80° x 60°/ 0.1m) Close-up: 64/150 mm (FOV=64 x 48 mm at 150 mm); 34/80 mm (FOV=34 x 25 mm at 80 mm) Macro: 50 micron (14.3 to 18.7 mm focus; FOV=14.3 x 10.8 mm at 14.3 mm; FOV=15.1 x 11.2 mm at 18.7 mm; IFOV=45 µm at 14.3 mm; 47 µm at 18.7 mm)
Lens recognition	Automatic lens recognition and measurement corrections

Power Source	
AC operation	AC adapter 110/220 VAC, 50/60Hz (included)
DC operation	8-30V nominal, <6W
Environmental	
Operating temperature range	-15°C to +50°C (5°F to 122°F)
Storage temperature range	-40°C to +70°C (-40°F to 158°F)
Humidity	Operating and storage 10% to 95%, non-condensing
Encapsulation	IP 40 (Determined by connector type)
Shock	Operational: 25G, IEC 68-2-29
Vibration	Operational: 2G, IEC 68-2-6
Physical Characteristics	
Weight	1.4 kg (3.0 lbs)
Size	207mm x 92mm x 109mm (8.1" x 3.6" x 4.3")
Tripod mounting	1/4"– 20

User Configuration Table

TYPE	FUNCTION	REMARK
Digital Input	TTL level • Shutter disable • Store image • Batch enable	Isolation and relay function in external module
Digital Output	TTL level • Spot/Area threshold ALARM • Internal temperature sensor ALARM • V-sync	Isolation and relay function in external module
Analog Output	• Spot/Area out: 0-5V • Internal temperature sensor out: 0-5V	Scaled to T_{low} - T_{high} Isolation in external module
Analog Input	• External temperature sensor out: 0-5V	Scaled to T_{low} - T_{high} Isolation in external module

CAMERA INTERFACES

Digital I/O ports—jackable screw terminal
3 output/1 input, 1 input/output selectable; function is user configurable**

Analog I/O ports—jackable screw terminal
2 output/1 input; function is user configurable**

RS-232 (DB-9)—connection to PC
Camera control

DC power in—2-pin jackable screw terminal
8-30V nominal

*All attach to standard built-in 24º lens
**See Configuration Table above

8-button keyboard

Ethernet jack (RJ45) or FireWire jack (IEEE-1394)

BNC—C-Video (NTSC/PAL)

2.5 mm DC power in
8-30V Nominal; camera needs only one power source

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