

# ThermoVision™ A40-M

Compact infrared camera with temperature measurement capabilities for industrial automation

*Infrared vision systems are used worldwide in a variety of industries to monitor continuous processes. Infrared can easily detect thermal information on product quality and/or production efficiency that is difficult or impossible to capture using conventional means such as thermocouples or visible light cameras.*

*The ThermoVision A40-M is an affordable and accurate temperature measurement system. It is the ideal choice for industrial and automation applications requiring accurate non-contact temperature measurement.*



- **AFFORDABLE, FULLY INTEGRATED THERMAL MEASUREMENT SOLUTION**
- **PRECISION NON-CONTACT TEMPERATURE MEASUREMENT**
- **HIGH-QUALITY THERMAL IMAGES (320 X 240 PIXELS)**
- **MAINTENANCE-FREE UNCOOLED MICROBOLOMETER DETECTOR**
- **RUGGED AND COMPACT**
- **BUILT-IN FOCUS MOTOR/AUTOFOCUS**
- **AVAILABLE VERSIONS:**
  - **FIREWIRE (IEEE-1394): 16-BIT IMAGE OUTPUT AND CONTROL**
  - **ETHERNET: 8-BIT IMAGE OUTPUT (RTP) AND CONTROL (TCP/IP)**



## PRECISION NON-CONTACT TEMPERATURE MEASUREMENT AND EXCELLENT IMAGE QUALITY

The ThermoVision A40-M allows you to see temperature differences as small as 0.08°C in a range from -40°C up to +500°C (up to 2,000°C optional). It produces crisp high-resolution images (320 x 240 pixels) offering more than 76,800 individual measurement points per image at a refresh rate of 50/60 Hz.

## EXTENSIVE CONNECTIVITY OPTIONS: FIREWIRE OR ETHERNET

The A40-M features a choice of connectivity options. For real-time image and fast data transfer of fully radiometric 16-bit images, you can choose for an IEEE-1394 FireWire digital output.

For network and/or multiple camera installations, Ethernet connectivity is available. Each A40-M can be equipped with its own unique URL allowing it to be addressed independently via its Ethernet connection. It allows controlling all menu systems of the camera and provides instant access to A40-M thermal images for any authorized user with a web browser. Images are streamed in semi real-time.

## INPUT / OUTPUT FUNCTIONALITY

Fully configured I/O functionality allows the A40-M either to be integrated quickly and easily in your control systems or to be set up as a stand-alone system. The operator can set and modify up to 4 areas in the camera's field of view. If, for example, the temperature within one of these areas rises above or falls below a predefined value, an alarm will go off.

## ULTRA COMPACT, RUGGED AND LIGHTWEIGHT

Its compact and ultra-light design allows the A40-M to be mounted in hard-to-get-at locations in your production line.

## EASY OPERATION: PLUG AND PLAY

Simply connect the camera to a PC or a monitor and produce high-quality real-time radiometric images. The camera can be fully controlled either from the PC or with the integrated keyboard.

## INTEGRATED KEYBOARD

For those applications where the infrared camera and the PC are a distance away from each other, the ThermoVision A40-M has an integrated keyboard. With a few buttons, conveniently placed at the top of the camera, you can control all features.

## MULTIPLE PROGRAMMING OPTIONS

The A40-M calibrated measurement output can be easily used to control a process. No need for months of programming. For application developers FLIR Systems offers two software components. A ThermoVision SDK-kit for Visual Basic / C++ programmers and a ThermoVision LabView™ Toolkit for those familiar with National Instruments LabView. Both software kits are based on ActiveX technology.



## TECHNICAL SPECIFICATIONS

### ThermoVision™ A40-M includes:

- IR CAMERA
- POWER SUPPLY INCLUDING CABLE
- FIREWIRE CABLE (FIREWIRE VERSION ONLY)
- CONFIGURATION CD
- LENS CAP
- MANUAL

#### FLIR SYSTEMS AB

World Wide Thermography Center  
Rinkebysvägen 19 - PO Box 3  
SE-182 11 Danderyd  
Sweden  
Tel.: +46 (0)8 753 25 00  
Fax: +46 (0)8 753 23 64  
e-mail: sales@flir.se  
www.flir.com

#### FLIR SYSTEMS LTD.

United Kingdom  
Tel.: +44 (0)1732 220 011  
e-mail: sales@flir.uk.com

#### FLIR SYSTEMS Co. LTD.

Hong Kong  
Tel.: +852 27 92 89 55  
e-mail: flir@flir.com.hk

#### FLIR SYSTEMS GMBH

Germany  
Tel.: +49 (0)69 95 00 900  
e-mail: info@flir.de

#### FLIR SYSTEMS SARL

France  
Tel.: +33 (0)1 41 33 97 97  
e-mail: info@flir.fr

#### FLIR SYSTEMS S.R.L.

Italy  
Tel.: +39 02 99 45 10 01  
e-mail: info@flir.it

#### FLIR SYSTEMS AB

Belgium  
Tel.: +32 (0)3 287 87 10  
e-mail: info@flir.be

WWW.FLIR.COM



SPECIFICATIONS ARE SUBJECT TO CHANGE WITHOUT NOTICE  
© Copyright 2004, FLIR Systems, Inc.  
All other brand and product names are trademarks of their respective owners

#### IMAGING PERFORMANCE

Field of view / min focus distance	24°x18° / 0.3 m (with 35 mm lens)
Spatial resolution (IFOV)	1.3 mrad
Thermal sensitivity	0.08°C at 30°C
Focusing	Built-in focus motor. Manual or automatic focus
Detector type	Focal Plane Array (FPA), uncooled microbolometer (320 x 240 pixels)
Spectral range	7.5 to 13 μm
Image frequency	50/60 Hz

#### IMAGE PRESENTATION

Image output	RS170 EIA/NTSC or CCIR/PAL analog composite video and FireWire (IEEE-1394) 8-/16-bit digital image output or Ethernet 8-bit digital output (RTP)
--------------	--------------------------------------------------------------------------------------------------------------------------------------------------

#### MEASUREMENT

Temperature ranges	-40°C to +500°C (-40°F to +932°F) in 2 ranges Optional: Up to +1,500°C (2,732°F) or +2,000°C (3,632°F)
Accuracy	± 2°C, ± 2% of reading
Measurement modes	Spot (up to 6), area (4), isotherm, Delta T, iso-coverage
Emissivity corrections	Variable from 0.1 to 1.0
Reflected ambient temperature correction	Automatic, based on input of reflected temperature
External optics / window correction	Automatic, based on input of optics/window transmission and temperature

#### LENSES (OPTIONAL)

Field of view / min. focus distance	7° x 5.3°/4 m (with 122 mm lens) 12° x 9°/1.2 m (with 71 mm lens) 45° x 34°/0.1 m (with 18 mm lens) 80° x 60°/0.1 m (with 9 mm lens) 200 μm close-up (64 mm x 48 mm/150 mm) 100 μm close-up (34 mm x 25 mm/80 mm) 50 μm close-up (15 mm x 11 mm/19 mm) 18 μm close-up (6 mm x 4 mm/7 mm)
Lens identification	Automatic

#### POWER SOURCE

AC operation	AC adapter 110/220 V AC, 50/60 Hz
Voltage	10/30 V nominal, < 6 W

#### ENVIRONMENTAL SPECIFICATIONS

Operating temperature range	-15°C to +55°C (+5°F to +131°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 (3.1 lbs)
Size	207 mm x 92 mm x 109 mm (8.2" x 3.6" x 4.3")
Tripod Mounting	1/4" - 20

#### INTERFACES

Digital image output and camera control	6-pin FireWire (IEEE-1394) connector handling iso-chronous 16-bit digital image data and asynchronous control data or standard RJ-45 Ethernet connector handling image data (RTP) and control data (TCP/IP)
BNC	Composite video (NTSC/PAL)
6-pin screw terminal (upper)	Digital I/O: 3 Output - 1 Input 1 Input/Output selectable. User configurable*
6-pin screw terminal (lower)	Analog I/O: 2 Output - 1 Input, User configurable* - see user configuration table

#### USER CONFIGURABLE 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 - 5 V, Internal temperature sensor out 0 - 5 V	Scaled to Tlow - Thigh Isolation in external module
Analog input	External temperature sensor in 0 - 10 V	Scaled to Tlow - Thigh Isolation in external module