

# ThermoVision® A20M

INDUSTRIAL AUTOMATION



**The ThermoVision® A20M offers an affordable and accurate temperature measurement solution for industrial process monitoring and product verification applications.**

**Featuring an ultra-compact, rugged IR imaging camera complete with multiple connectivity interfaces, this fully-integrated system provides a visual understanding of thermal performance and immediately identifies thermal problems otherwise undetectable.**



- Affordable, fully-integrated thermal measurement solution
- Maintenance-free, uncooled microbolometer detector
- Precision non-contact temperature measurement
- Rugged and compact
- Choose either:  
FireWire (IEEE 1394) high speed radiometric image and data transfer, or Standard RJ-45 Ethernet connection
- Longwave imaging performance
- Real-time (60Hz) 14-bit digital output
- LabVIEW Toolkit and C++ Visual Basic support

## QUICKLY FIND FAULTS

Infrared images can quickly highlight problems with a product or a process that simply cannot be detected by any other sensor technology. Subtle temperature, moisture or material variations that can signal a process problem stand out clearly in a thermal image. Finding these problems early and determining their severity can improve product quality and save thousands of dollars in scrap or warranty expenses.

## INSTANT NON-CONTACT TEMPERATURE MEASUREMENT

The A20M was designed from the beginning — at the detector level — to deliver accurate, repeatable temperature measurements. Each thermal image includes 19,000 picture elements that can be accessed independently to measure temperature. These calibrated measurements can then be used as criterion to monitor or control a production process.

## OUTSTANDING IMAGING AND HIGH THERMAL SENSITIVITY

Advanced, uncooled microbolometer FPA detector technology delivers crisp, high-resolution longwave images that allow you to see variances as small as 0.12° C. Real-time image acquisition at standard video rates (60Hz) allows you to see rapid, thermally transient events.

## PLUG AND PLAY

Simply connect the camera to a standard TV and produce high quality, real-time radiometric thermal images that accurately show heat patterns and thermal anomalies.

Each A20M can be equipped with its own unique URL allowing it to be addressed independently via its Ethernet connection. This provides instant access to A20M thermal images by any authorized user with a web browser.

Extremely easy-to-operate, the user-intuitive A20M helps you clearly understand the thermal characteristics of products and processes so you can make the decisions necessary to improve both.

## ULTRA-COMPACT, RUGGED AND LIGHTWEIGHT

Built to operate for long periods in harsh industrial environments, the A20M has an IP40 rating. Its compact, lightweight (< 1.7 lbs.) design allows it to be mounted on your production line in hard-to-get-at locations that may be optimal for data collection. Fully configured I/O functionality allows the A20M to be integrated quickly and easily your control systems. Multiple programming options.

## EXTENSIVE CONNECTIVITY OPTIONS

Extensive input/output functionality for both stand-alone and integrated configurations. Ideal for product testing and process monitoring, the A20M features FireWire (IEEE 1394) digital output for fast image and data transfer of real-time, fully radiometric 14-bit images to a PC. Ethernet connectivity is available for network and/or multiple camera installations.

## MULTIPLE PROGRAMMING OPTIONS

The A20M calibrated measurement output can be easily leveraged to control a process when coupled with LabVIEW and FLIR's LabVIEW Developers toolkit; this kit allows programmers to easily access numerous measurement functions that can then be used to turn the A20M 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 Active X 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.



## IMAGING PERFORMANCE

<b>Field of view/min focus distance</b>	25° x 19° / 0.3 m
<b>Spatial resolution (IFOV)</b>	2.7 mrad
<b>Thermal sensitivity @ 50/60Hz</b>	0.12°C at 30 °C
<b>Focusing</b>	Manual, external motor focus optional
<b>Detector type</b>	Focal Plane Array (FPA), Uncooled microbolometer
<b>Spectral range</b>	7.5 to 13 µm

## IMAGE PRESENTATION

<b>FireWire output</b>	IEEE-1394 8/16-bit monochrome and 8-bit color
<b>Video output</b>	RS170 EIA/NTSC or CCIR/PAL composite video

## MEASUREMENT

<b>Temperature ranges</b>	-20°C to +250°C (-4°F to +482°F) Range 1 +120°C to +900°C (+248°F to +1652°F) Range 2 Up to +1200 °C (+2192°F), optional ± 2°C or ± 2%
<b>Accuracy (% of reading)</b>	± 2°C or ± 2%
<b>Measurement modes</b>	Spot, Line, Area, Isotherm, Difference
<b>Automatic emissivity correction</b>	Variable from 0.1 to 1.0
<b>Individual emissivity settings</b>	Select for individual measurement functions
<b>Measurement corrections</b>	Reflected ambient, distance, relative humidity, external optics. Automatic, based on user input
<b>Lens recognition and measurement corrections</b>	Automatic

## LENSES (OPTIONAL)

<b>Field of view/minimum focus distance</b>	12° Telescope (12° X 9"/1.2m) 45° Wide angle (45° x 34"/ 0.1m)
---	---

## POWER SOURCE

<b>AC operation Voltage</b>	AC adapter 110/220 VAC, 50/60Hz 12/24 V nominal, <6W
-----------------------------	---

## ENVIRONMENTAL

<b>Operating temperature range</b>	-15°C to +50°C (5°F to 122°F)
<b>Storage temperature range</b>	-40°C to +70°C (-40°F to 158°F)
<b>Humidity</b>	Operating and storage 10% to 95%, non-condensing
<b>Encapsulation</b>	IP 40 (Determined by connector type)
<b>Shock</b>	Operational: 25G, IEC 68-2-29
<b>Vibration</b>	Operational: 2G, IEC 68-2-6

## PHYSICAL CHARACTERISTICS

<b>Weight</b>	0.8 kg (1.7 lbs)
<b>Size</b>	157mm x 75mm x 80mm (6.2" x 2.9" x 3.1")
<b>Tripod mounting</b>	1/4"– 20

## INTERFACES

<b>RS-232 (DB-9)</b>	Camera Control
<b>BNC</b>	C-Video (NTSC/PAL)
<b>2.5mm DC Power Jack</b>	12/24V nominal
<b>2-Pin Screw Terminal</b>	12/24V nominal
<b>6-Pin Screw Terminal (Upper)</b>	Digital I/O, 3 Output/1 Input, 1 Input/Output selectable. Function is user-configurable.*
<b>6-Pin Screw Terminal (Lower)</b>	Analog I/O, 2 Output /1 Input Function is user configurable.*
<b>6-Pin IEEE-1394 (FireWire)</b>	Digital image output (8 and 16 bit), Camera Control, power input (12/24V, <6W)

\*See Configuration Table below.

## USER CONFIGURATION TABLE

Type	Function	Remark
<b>Digital Input</b>	TTL level • Shutter disable • Store image • Batch enable	Isolation and relay function in external module
<b>Digital Output</b>	TTL level • Spot/Line/Area threshold ALARM • Internal temperature sensor ALARM • V-sync	Isolation and relay function in external module
<b>Analog Output</b>	• Spot/Line/Area out 0-5V • Internal temperature sensor out 0-5V	Scaled to Tlow – Thigh Isolation in external module
<b>Analog Input</b>	• External temperature sensor in 0-5V	Scaled to Tlow – Thigh Isolation in external module

## THERMOVISION® A20M INDUSTRIAL AUTOMATION SYSTEM INCLUDES

- IR camera
- Carrying case
- Lens cap
- Manual
- Power supply including cable
- FireWire cable
- Configuration CD



The Global Leader in Infrared Cameras