



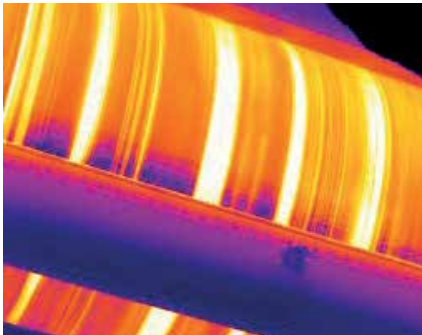
# FLIR A35/A65™

## Thermal Imaging Temperature Sensors

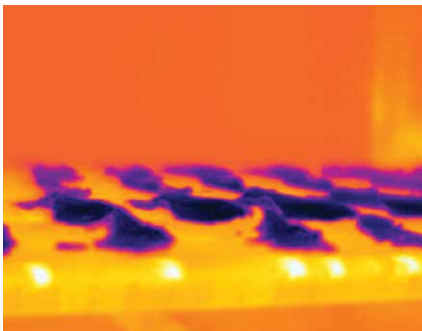
The FLIR Ax5-Series of thermal imaging temperature sensors offers comprehensive visual temperature monitoring for process control/quality assurance applications as well as condition monitoring and fire prevention. The A35 and A65 integrate seamlessly into existing systems and are the only thermal imaging temperature sensors on the market to provide temperature linear output through GenICam™ compliant software.



Detecting liquid levels in visually opaque bottles.



Monitoring drying stage in paper production.



Providing quality control on a food production line.

### TEMPERATURE SENSORS THAT VISUALIZE HEAT

The A35 and A65 are accurate non-contact temperature sensors enhanced with the rich detail of thermal imaging. They're sensitive enough to make temperature differences as small as 50 mK clearly visible. The series offers ten field of view options for greater control over the measurement area, and can operate in temperatures up to 140°F (60°C).

### THE LEADER IN DIGITAL COMMUNICATION STANDARDS

The A35 and A65 are at the forefront of digital communications, with GigE Vision™ compatibility and GenICam™ protocol support for seamless integration with Cognex, National Instruments, and other top machine vision systems. These cameras stream 320 x 256 or 640 x 512 thermal images at up to 60 Hz directly to your system, for instant data analysis. The Ax5-Series supports easy synchronization between cameras for stereoscopic applications.

### DESIGNED TO FIT YOUR APPLICATIONS

The Ax5-Series cameras are compact for easy installation into electrical cabinets and other small spaces. They offer a GigE Vision lockable connector as well as the convenience and flexibility of Power over Ethernet (PoE). With a robust design meant to withstand harsh conditions, these cameras are ideal tools for any automation of machine vision environment.

## Technical Specifications

Model	A35	A65
<b>Image and Optical Data</b>		
IR Resolution	320 x 256	640 x 512
Thermal Sensitivity/NETD	<0.05°C @ 30°C (86°F) / 50 mK	
Field of View <sup>1</sup>	63° × 50° with 7.5 mm lens 48° × 39° with 9 mm lens 24° × 19.2° with 19 mm lens 13° × 10.8° with 35 mm lens 7.6° × 6.08° with 60 mm lens	90° × 69° with 7.5 mm lens 45° × 37° with 13 mm lens 25° × 20° with 25 mm lens 12.4° × 9.92° with 50 mm lens 6.2° × 4.96° with 100 mm lens
Image Frequency	60 Hz	30 Hz
Focus	Fixed	
<b>Detector Data</b>		
Detector Type	Uncooled VOx microbolometer	
Spectral Range	7.5 – 13 μm	
Detector Pitch	25 μm	17 μm
Detector Time Constant	12 ms (typical)	
<b>Measurement</b>		
Object Temperature Range	-25°C to 135°C (-13°F to 275°F) -40°C to 550°C (-40°F to 1022°F)	
Accuracy	± 5°C (± 9°F) or 5% of reading	
<b>Ethernet</b>		
Ethernet Type	Gigabit Ethernet, control and image	
Ethernet Standard, Connector	IEEE 802.3, RJ-45	
Ethernet Communication	GigE Vision ver. 1.2, Client API GenICam compliant	
Ethernet Image Streaming	8-bit monochrome @ 60 Hz, Signal linear/DDE, Automatic/Manual, Flip H&V	
Bit Rate	14-bit 320 x 256 @ 60 Hz Signal linear/DDE, Temperature linear, GigE Vision & GenICam compatible	14-bit 640 x 512 pixels @ 30 Hz Signal linear/DDE, Temperature linear, GigE Vision & GenICam compatible
Ethernet Power	Power over Ethernet, PoE IEEE 802.3af class 0 power	
Ethernet Protocols	TCP, UDP, ICMP, IGMP, DHCP, GigEVision	
<b>Digital Input/Output</b>		
Digital Input	1x opto-isolated, "0" < 1.2 VDC, "1" = 2–25 VDC	
Digital Output	1x opto-isolated, 2–40 VDC, max. 185 mA	
Digital I/O, Isolation Voltage	500 VRMS	
Digital I/O, Supply Voltage	2 – 40 VDC, max 200 mA	
Digital I/O, Connector Type	12-pole M12 connector (shared with digital synchronization and external power)	
Synchronization In	Frame Synch In to control camera 1x, non-isolated	
Synchronization In Type	LVC Buffer @ 3.3 V, "0" < 0.8 V, "1" > 2.0 V	
Synchronization Out	Frame Synch Out to control another FLIR Ax5 unit 1x, non-isolated	
Synchronization Out Type	LVC Buffer @ 3.3 V, "0" = 24 MA max, "1" = –24 mA max	
Digital Synchronization Connector Type	12-pole M12 connector (shared with Digital I/O and External power)	
<b>Power System</b>		
External Power Operation	12/24 VDC, < 3.5 W nominal < 6.0 W absolute max	
External Power Connector Type	12-pole M12 connector (shared with Digital I/O and Digital Synchronization)	
Voltage	Allowed range 10 – 30 VDC	
<b>Environmental Data</b>		
Operating Temperature Range	–15°C to 60°C (5°F to 140°F)	
Storage Temperature Range	–40°C to 70°C (–40°F to 158°F)	
Humidity (Operating and Storage)	IEC 60068-2-30/24 h 95% relative humidity 25°C to 40°C (77°F to 104°F)	
EMC	EN 61000-6-2 (Immunity), EN 61000-6-3 (Emission), FCC 47 CFR Part 15 Class B (Emission)	
Encapsulation / Bump / Vibration	IP 40 (IEC 60529), 25 g (IEC 60068-2-27), 2 g (IEC60068-2-6), MIL-STD810G	
<b>Physical Data</b>		
Camera Size (L x W x H)	104.1 × 49.6 × 46.6 mm (4.1 × 1.9 × 1.8 in) 116.8 × 49.6 × 46.6 mm (4.6 × 1.9 × 1.8 in) 141.2 × 61.4 × 61.4 mm (5.6 × 2.4 × 2.4 in)	104.1 × 49.6 × 46.6 mm (4.1 × 1.9 × 1.8 in) 107.8 × 49.6 × 46.6 mm (4.2 × 1.9 × 1.8 in) 144.1 × 58.4 × 58.4 mm (5.7 × 2.3 × 2.3 in) 196.4 × 82.0 × 82.0 mm (7.7 × 3.2 × 3.2 in)
Tripod Mounting	UNC ¼"–20 (three sides)	
Base Mounting	4 × M3 thread mounting holes (bottom)	
Housing Material	Magnesium and aluminum	
<b>Packaging</b>		
Contents	Thermal imaging camera with lens, base support, printed documentation (some models include focus adjustment tool)	

<sup>1</sup>Lenses are not interchangeable and must be specified at time of order.  
For the most up-to-date specs, visit [www.support.flir.com](http://www.support.flir.com)

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