

## P/N: 89995-0201

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### Website

<http://www.flir.com>

### Customer support

<http://support.flir.com>

### Disclaimer

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Imaging and optical data	
Infrared resolution	640 × 480 pixels
Thermal sensitivity (NETD)	<60 mK
Field of view (FOV)	95° × 74°
Minimum focus distance	0.1 m (0.33 ft)
Focal length	4.1 mm (0.16 in)
Spatial resolution (IFOV)	2.9 mrad/pixel
f-number	1.4
Image frequency	30 Hz
Focus	Fixed
Detector data	
Focal plane array/spectral range	Uncooled microbolometer/7.5–14 μm
Detector pitch	12 μm
Measurement	
Camera temperature range	<ul style="list-style-type: none"> <li>–20 to 175°C (–4 to 347°F)</li> <li>–20 to 250°C (–4 to 482°F)</li> <li>175 to 1000°C (347 to 1832°F)</li> </ul>
Object temperature range and accuracy (for ambient temperature 15–35°C (59–95°F))	<ul style="list-style-type: none"> <li>Range –20 to 175°C (–4 to 347°F): <ul style="list-style-type: none"> <li>–20 to 100°C (–4 to 212°F), accuracy ±2°C (±3.6°F)</li> <li>100 to 175°C (212 to 347°F), accuracy ±2%</li> </ul> </li> <li>Range –20 to 250°C (–4 to 482°F): <ul style="list-style-type: none"> <li>–20 to 100°C (–4 to 212°F), accuracy ±2°C (±3.6°F)</li> <li>100 to 250°C (212 to 482°F), accuracy ±2%</li> </ul> </li> <li>Range 175 to 1000°C (347 to 1832°F): accuracy ±2%</li> </ul>

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<b>Video/Radiometric streaming RTSP</b>	
Protocol	RTSP
Unicast	Yes
Multicast	Yes
Multiple image streams	Yes
<b>Video streaming</b>	
Image quality	Bit rate set through Camera web
<b>Video streaming, Image source 0:</b>	
Resolution (source 0)	640 × 480 pixels
Contrast enhancement	FSX / Histogram equalization (IR only)
Overlay (source 0)	With / Without
Image source (source 0)	Visual / IR / MSX
Pixel format (source 0)	YUV411
Encoding (source 0)	H.264 / MPEG4 / MJPEG
<b>Video streaming, Image source 1:</b>	
Resolution (source 1)	1280 × 960 pixels
Overlay (source 1)	No
Image source (source 1)	Visual
Pixel format (source 1)	YUV411
Encoding (source 1)	H.264 / MPEG4 / MJPEG
<b>Radiometric streaming</b>	
Resolution (radiometric)	640 × 480 pixels
Source	IR
Pixel format (radiometric)	MONO 16
Encoding (radiometric)	<ul style="list-style-type: none"> <li>Compressed JPEG-LS</li> <li>FLIR Radiometric</li> </ul>
<b>Video/Radiometric streaming GVSP (GigE Vision)</b>	
Protocol	GVSP
Unicast	Yes
Multicast	Yes
Multiple image streams	No, 1 stream only
<b>Video streaming</b>	
<b>Video streaming, Image source 0:</b>	
Resolution (source 0)	640 × 480 pixels
Contrast enhancement	FSX / Histogram equalization (IR only)
Overlay (source 0)	With / Without
Image source (source 0)	Visual / IR / MSX
Pixel format (source 0)	YUV422 or MONO 8
Encoding (source 0)	Un-compressed
<b>Radiometric streaming</b>	

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<b>Video/Radiometric streaming GVSP (GigE Vision)</b>	
Resolution (radiometric)	640 × 480 pixels
Source	IR
Pixel format (radiometric)	MONO 16
Encoding (radiometric)	<ul style="list-style-type: none"> <li>• Temperature linear</li> <li>• FLIR Radiometric</li> <li>• Compressed JPEG-LS</li> </ul>
<b>Ethernet</b>	
Interface	<ul style="list-style-type: none"> <li>• Wired</li> <li>• Wi-Fi</li> </ul>
Connector type	<ul style="list-style-type: none"> <li>• M12 8-pin X-coded, Female</li> <li>• RP-SMA, Female</li> </ul>
Ethernet, purpose	Control, result, image, and power
Ethernet, type	1000 Mbps
Ethernet, standard	IEEE 802.3
Ethernet, communication	<ul style="list-style-type: none"> <li>• GigE Vision ver. 1.2</li> <li>• Client API GenICam compliant</li> <li>• TCP/IP socket-based FLIR proprietary</li> </ul>
Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 3
Ethernet, protocols	<ul style="list-style-type: none"> <li>• IEEE 1588</li> <li>• SNMP</li> <li>• TCP, UDP, SNTP, RTSP, RTP, HTTP, ICMP, IGMP, sftp (server), FTP (client), SMTP, DHCP, MDNS (Bonjour), uPnP</li> </ul>
<b>Digital Input/output</b>	
Connector type	M12 12-pin A-coded, Male (shared with external power)
Digital input	2x opto-isolated Vin(low)= 0–1.5 V, Vin(high)= 3–25 V
Digital input, purpose	<ul style="list-style-type: none"> <li>• NUC</li> <li>• NUC disable</li> <li>• Image TAG (Start, Stop, General)</li> <li>• Image flow control (acc. SFNC 2.4)</li> </ul>
Digital output	<ul style="list-style-type: none"> <li>• 3x opto-isolated, 0–30 V DC, max. 300 mA (derated to 200 mA at 60C)</li> <li>• Solid state opto relay</li> <li>• 1x dedicated as Fault output (NC)</li> </ul>
Digital output, purpose	<ul style="list-style-type: none"> <li>• Programmatically set</li> <li>• Fault (NC)</li> </ul>
Digital I/O, isolation voltage	500 VRMS

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<b>Power system</b>	
External power	18 VDC – 56 VDC, Max 8 W
Power over Ethernet (PoE)	44 VDC – 56 VDC, Max 8.1 W
Connector type	External power: <ul style="list-style-type: none"> <li>M12 12-pin A-coded, Max 450 mA (shared with Digital I/O)</li> </ul> PoE: <ul style="list-style-type: none"> <li>M12 8-pin X-coded, Max 350 mA</li> </ul>
<b>RS-232/485 serial interface</b>	
Connector type	M8 A-coded, Male
Prerequisite for use	ONVIF must be initiated.
Serial communication, purpose	Pan & Tilt control
Serial communication, standard	Pelco D
Serial communication, HW interface	RS232 and RS485 exclusively
Scanlist support	Yes
<b>Wi-Fi</b>	
Connector type	RP-SMA, Female
Standard	IEEE802.11a/b/g/n
Antenna	Dipole antenna 2.4/5 GHz (gain: maximum 2 dBi)
Connection type	Peer to peer (ad hoc) or infrastructure (network)
<b>Environmental data</b>	
Operating temperature range	–20 to 50°C (–4 to 122°F), internal temperature should be kept below 70°C (158°F), all included cooling plates are recommended to be kept mounted.
Storage temperature range	IEC 68-2-1 and IEC 68-2-2, –40 to 70°C (–40 to 158°F) for 16 hours
Humidity (operating and storage)	IEC 60068-2-30/24 hours, 95% relative humidity, 25–40°C (77–104°F)/2 cycles EN60068-2-38
EMC	<ul style="list-style-type: none"> <li>ETSI EN 301 489-1 (radio)</li> <li>ETSI EN 301 489-17 (radio)</li> <li>EN 61000-4-8 (magnetic field)</li> <li>FCC 47 CFR Part 15 Class B (emission US)</li> <li>ISO 13766-1 (EMC - Earth-moving and building construction machinery)</li> <li>EN ISO 14982 (EMC - Agricultural and forestry machinery)</li> </ul>
Radio spectrum	<ul style="list-style-type: none"> <li>FCC 47 CFR Part 15 Class C (2.4 GHz band US)</li> <li>FCC 47 CFR Part 15 Class E (5 GHz band US)</li> <li>RSS-247 (2.4 GHz and 5 GHz band Canada)</li> <li>ETSI EN 300 328 V2.1.1 (2.4 GHz band EU)</li> <li>ETSI EN 301 893 V2.1.1 (5 GHz band EU)</li> </ul>
Encapsulation	IEC 60529, IP66
Shock	IEC 60068-2-27, 25 g

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Environmental data	
Vibration	<ul style="list-style-type: none"> <li>IEC 60068-2-6, 0.15 mm at 10–58 Hz and 2 g at 58–500 Hz, sinusoidal</li> <li>IEC 61373 Cat 1 (Railway)</li> </ul>
Safety	IEC 62368-1 (IT equipment audio-visual products)
Corrosion	<ul style="list-style-type: none"> <li>ISO 12944 C4 G or H</li> <li>EN60068-2-11</li> </ul>
Shipping information	
Packaging, type	Hard case
Packaging, contents	<ul style="list-style-type: none"> <li>Camera with Image Streaming configuration and 95° lens</li> <li>Hard case</li> <li>Ethernet cable M12 to RJ45, 2 m</li> <li>Ethernet cable M12 to RJ45F, 0.3 m</li> <li>Ethernet cable CAT6, 2 m/6.6 ft</li> <li>Cable M12 to pigtail, 2 m</li> <li>Gigabit PoE injector 16 W, with multi-plugs</li> <li>Antenna WLAN 2.4/5 GHz + Wi-Fi</li> <li>Cooling plate</li> <li>Focus adjustment tool</li> <li>Visual camera including MSX</li> <li>Research Studio - 1 Year Subscription (Online Activation)</li> <li>Printed documentation including the username and password for log in to the web interface of the camera</li> </ul>
Packaging, weight	2.83 kg (6.24 lb)
Packaging, size	370 × 290 × 149 mm (14.6 × 11.4 × 5.87 in)
EAN-13	7332558028100
UPC-12	845188024369

## Supplies & accessories:

- T951004ACC; Ethernet cable CAT6, 2 m/6.6 ft.
- T300202; Connector cap kit
- T300268ACC; A-series connection board
- T911850ACC; Antenna for WLAN 2.4/5 GHz
- T911852ACC; Cable M12 to pigtail, 2 m
- T911853ACC; Cable M12 to pigtail, 10 m
- T911854ACC; Ethernet cable M12 to RJ45, 2 m
- T911855ACC; Ethernet cable M12 to RJ45, 10 m
- T911869ACC; Ethernet cable M12 to RJ45F, 0.3 m
- T911183; Gigabit PoE injector 16 W, with multi-plugs
- T911997; Tripod
- T199507; Gigabit PoE injector 15 W
- T199870; Extended Calibration Certificate for A7xx
- T300292; Advanced Image Streaming configuration
- T300293; Advanced Smart Sensor configuration
- T911850; Antenna WLAN 2.4/5 GHz + Wi-Fi
- INST-EW-0185; Extended Warranty 1 Year for A7xx
- INST-EWGM-0160; Premium Service Package for A7xx
- INST-GM-0135; General Maintenance Package for A7xx
- T199865; Standard Smart Sensor to Standard Image Streamer



## FLIR A70 95° Research & Development Kit

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- T199866; WiFi Option, excluding Antenna