

FLIR A70 29° Research & Development Kit



Imaging and optical data	
Infrared resolution	640 × 480 pixels
Thermal sensitivity (NETD)	35 mK
Field of view (FOV)	29° × 22°
Minimum focus distance	0.25 m (0.82 ft)
Focal length	14.3 mm (0.56 in)
Spatial resolution (IFOV)	0.84 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"> • -20 to 175°C (-4 to 347°F) • -20 to 250°C (-4 to 482°F) • 175 to 1000°C (347 to 1832°F)
Object temperature range and accuracy (for ambient temperature 15–35°C (59–95°F))	<ul style="list-style-type: none"> • Range -20 to 175°C (-4 to 347°F): <ul style="list-style-type: none"> ◦ -20 to 100°C (-4 to 212°F), accuracy ±2°C (±3.6°F) ◦ 100 to 175°C (212 to 347°F), accuracy ±2% • Range -20 to 250°C (-4 to 482°F): <ul style="list-style-type: none"> ◦ -20 to 100°C (-4 to 212°F), accuracy ±2°C (±3.6°F) ◦ 100 to 250°C (212 to 482°F), accuracy ±2% • Range 175 to 1000°C (347 to 1832°F): accuracy ±2%
Measurement analysis	
Standard functions	N/A
Automatic hot/cold detection	N/A

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Measurement analysis	
Schedule response	N/A
Measurement presets	N/A
Atmospheric transmission correction	Based on inputs of distance, atmospheric temperature, and relative humidity
Lens transmission correction	Automatic, based on signals from internal sensors
Emissivity correction	Variable from 0.01 to 1.0
Reflected apparent temperature correction	Based on input of reflected temperature
External optics/windows correction	Based on input of optics/window transmission and temperature
Measurement corrections	Global object parameters
Measurement frequency	N/A
Measurement result read-out	N/A
Configuration of camera	
Web interface	Yes
Video/Radiometric streaming RTSP	
Protocol	RTSP
Unicast	Yes
Multicast	Yes
Multiple image streams	Yes
Video streaming	
Image quality	Bit rate set through Camera web
Video streaming, Image source 0:	
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
Video streaming, Image source 1:	
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
Radiometric streaming	
Resolution (radiometric)	640 × 480 pixels
Source	IR
Pixel format (radiometric)	MONO 16
Encoding (radiometric)	<ul style="list-style-type: none"> • Compressed JPEG-LS • FLIR Radiometric

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Video/Radiometric streaming GVSP (GigE Vision)	
Protocol	GVSP
Unicast	Yes
Multicast	Yes
Multiple image streams	No, 1 stream only
Video streaming	
Video streaming, Image source 0:	
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
Radiometric streaming	
Resolution (radiometric)	640 × 480 pixels
Source	IR
Pixel format (radiometric)	MONO 16
Encoding (radiometric)	<ul style="list-style-type: none"> • Temperature linear • FLIR Radiometric • Compressed JPEG-LS
Ethernet	
Interface	<ul style="list-style-type: none"> • Wired • Wi-Fi
Connector type	<ul style="list-style-type: none"> • M12 8-pin X-coded, Female • RP-SMA, Female
Ethernet, purpose	Control, result, image, and power
Ethernet, type	1000 Mbps
Ethernet, standard	IEEE 802.3
Ethernet, communication	<ul style="list-style-type: none"> • GigE Vision ver. 1.2 • Client API GenICam compliant • TCP/IP socket-based FLIR proprietary
Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 3
Ethernet, protocols	<ul style="list-style-type: none"> • IEEE 1588 • SNMP • TCP, UDP, SNTP, RTSP, RTP, HTTP, ICMP, IGMP, sftp (server), FTP (client), SMTP, DHCP, MDNS (Bonjour), uPnP
Digital Input/output	
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"> • NUC • NUC disable • Image TAG (Start, Stop, General) • Image flow control (acc. SFNC 2.4)

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Digital Input/output	
Digital output	<ul style="list-style-type: none"> • 3x opto-isolated, 0–30 V DC, max. 300 mA (derated to 200 mA at 60C) • Solid state opto relay • 1x dedicated as Fault output (NC)
Digital output, purpose	<ul style="list-style-type: none"> • Programmatically set • Fault (NC)
Digital I/O, isolation voltage	500 VRMS
Power system	
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"> • M12 12-pin A-coded, Max 450 mA (shared with Digital I/O) PoE: <ul style="list-style-type: none"> • M12 8-pin X-coded, Max 350 mA
RS-232/485 serial interface	
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
Wi-Fi	
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)
Environmental data	
Operating temperature range	<ul style="list-style-type: none"> • With cooling plates on at least three sides: –20 to 50°C (–4 to 122°F) • No cooling plates: –20 to 35°C (–4 to 95°F)
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"> • ETSI EN 301 489-1 (radio) • ETSI EN 301 489-17 (radio) • EN 61000-4-8 (magnetic field) • FCC 47 CFR Part 15 Class B (emission US) • ISO 13766-1 (EMC - Earth-moving and building construction machinery) • EN ISO 14982 (EMC - Agricultural and forestry machinery)

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Environmental data	
Radio spectrum	<ul style="list-style-type: none"> FCC 47 CFR Part 15 Class C (2.4 GHz band US) FCC 47 CFR Part 15 Class E (5 GHz band US) RSS-247 (2.4 GHz and 5 GHz band Canada) ETSI EN 300 328 V2.1.1 (2.4 GHz band EU) ETSI EN 301 893 V2.1.1 (5 GHz band EU)
Encapsulation	IEC 60529, IP66
Shock	IEC 60068-2-27, 25 g
Vibration	<ul style="list-style-type: none"> IEC 60068-2-6, 0.15 mm at 10–58 Hz and 2 g at 58–500 Hz, sinusoidal IEC 61373 Cat 1 (Railway)
Safety	IEC 62368-1 (IT equipment audio-visual products)
Corrosion	<ul style="list-style-type: none"> ISO 12944 C4 G or H EN60068-2-11
Shipping information	
Packaging, type	Hard case
Packaging, contents	<ul style="list-style-type: none"> Camera with Advanced Image Streaming configuration and 29° lens Hard case Ethernet cable M12 to RJ45, 2 m Ethernet cable M12 to RJ45F, 0.3 m Ethernet cable CAT6, 2 m/6.6 ft Cable M12 to pigtail, 2 m Gigabit PoE injector 16 W, with multi-plugs Antenna WLAN 2.4/5 GHz + Wi-Fi Cooling plate Focus adjustment tool Visual camera including MSX Research Studio, Standard Edition - 1 Year Subscription (Online Activation) Printed documentation including the username and password for log in to the web interface of the camera
Packaging, weight	2.83 kg (6.24 lb)
Packaging, size	370 × 290 × 149 mm (14.6 × 11.4 × 5.87 in)
EAN-13	7332558028087
UPC-12	845188024345

Supplies & accessories:

- T951004ACC; Ethernet cable CAT6, 2 m/6.6 ft.
- T300202; Connector cap kit
- T300268ACC; A-series connection board
- 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

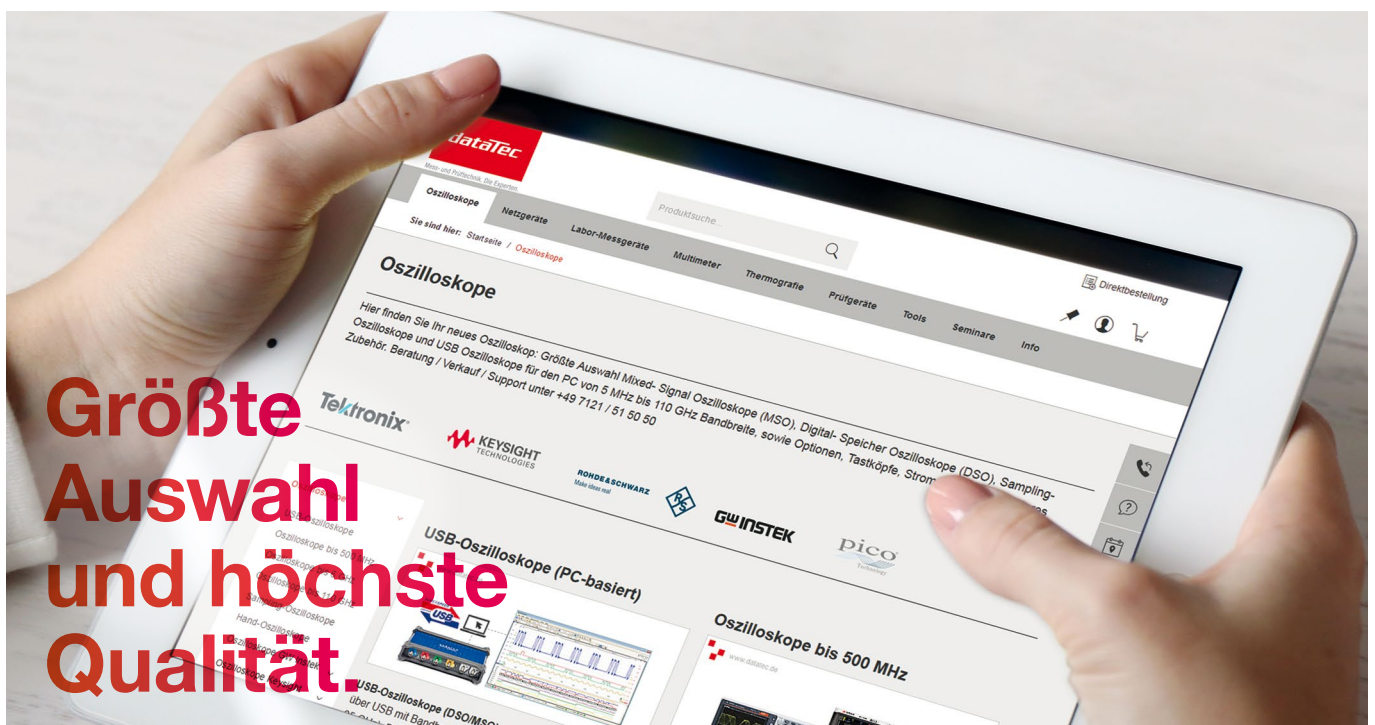
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Experten für:

- > Oszilloskope
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- > Thermografie / Temperatur
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