

P/N: 75013-0101

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Document identity

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Website

<http://www.flir.com>

Customer support

<http://support.flir.com>

Disclaimer

Specifications subject to change without further notice. Camera models and accessories subject to regional market considerations. License procedures may apply. Products described herein may be subject to US Export Regulations. Please refer to exportquestions@flir.com with any questions.



General description

The FLIR A65 has features and functions that make it the natural choice for anyone who uses PC software to solve problems and for whom 640 × 512 pixel resolution is sufficient.

Among its main features are GigE Vision and GenICam compliance, which makes it plug-and-play when used with software packages such as IMAQ Vision and Halcon.

Key features:

- Very affordable.
- Compact
- GigE Vision and GenICam compliant.
- GigE Vision lockable connector.
- PoE (power over Ethernet).
- 8-bit 640 × 512 pixel images streamed at 30 Hz, signal linear
- 14-bit 640 × 512 pixel images streamed at 30 Hz, signal and temperature linear
- Synchronization between cameras possible.
- 1x+1x GPIO.
- Compliant with any software that supports GenICam, including National Instruments IMAQ Vision, Stemmers Common Vision Blox, and COGNEX Vision Pro.

Typical applications:

- Automation and thermal machine vision.
- Entry level "high-speed" R&D.

Imaging and optical data

IR resolution	640 × 512 pixels
Thermal sensitivity/NETD	< 0.05°C @ +30°C (+86°F) / 50 mK
Field of view (FOV)	45° × 37°
Focal length	13 mm (0.5 in.)
Spatial resolution (IFOV)	1.31 mrad
F-number	1.25
Image frequency	30 Hz
Focus	Fixed

Detector data

Detector type	Focal plane array (FPA), uncooled VOX microbolometer
Spectral range	7.5–13 μm

P/N: 75013-0101

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Detector data	
Detector pitch	17 μ m
Detector time constant	Typical 12 ms
Measurement	
Object temperature range	<ul style="list-style-type: none"> -25 to +135°C (-13 to 275°F) -40 to +550°C (-40 to +1022°F)
Accuracy	\pm 5°C (\pm 9°F) or \pm 5% of reading
Measurement analysis	
Atmospheric transmission correction	Automatic, based on inputs for distance, atmospheric temperature and relative humidity
Optics transmission correction	Automatic, based on signals from internal sensors
Emissivity correction	Variable from 0.5 to 1.0
Reflected apparent temperature correction	Automatic, based on input of reflected temperature
External optics/windows correction	Automatic, based on input of optics/window transmission and temperature
Measurement corrections	Global object parameters
Ethernet	
Ethernet	Control and image
Ethernet, type	Gigabit Ethernet
Ethernet, standard	IEEE 802.3
Ethernet, connector type	RJ-45
Ethernet, communication	GigE Vision ver. 1.2 Client API GenICam compliant
Ethernet, image streaming	8-bit monochrome @ 30 Hz <ul style="list-style-type: none"> Signal linear/ DDE Automatic/ Manual Flip H&V 14-bit 640 x 512 pixels @ 30 Hz <ul style="list-style-type: none"> Signal linear/ DDE Temperature linear GigE Vision and GenICam compatible
Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 0 Power
Ethernet, protocols	TCP, UDP, ICMP, IGMP, DHCP, GigEVision
Digital input/output	
Digital input, purpose	General purpose
Digital input	1x opto-isolated, "0" <1.2 VDC, "1" = 2-25 VDC.
Digital output, purpose	General purpose output to ext. device (programmatically set)
Digital output	1x opto-isolated, 2-40 VDC, max. 185 mA
Digital I/O, isolation voltage	500 VRMS

P/N: 75013-0101

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Digital input/output	
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, purpose	Frame synchronization in to control camera
Synchronization in	1×, non-isolated
Synchronization in, type	LVC Buffer @3.3V, "0" <0.8 V, "1">2.0 V.
Synchronization out, purpose	Frame synchronization out to control another FLIR Ax5 camera
Synchronization out	1×, non-isolated
Synchronization out, type	LVC Buffer @ 3.3V, "0"=24 MA max, "1"= -24 mA max.
Digital synchronization, connector type	12-pole M12 connector (shared with Digital I/O and External power)
Power system	
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
Environmental data	
Operating temperature range	-15°C to +60°C (+5°F to +140°F)
	<div style="border: 1px solid black; padding: 5px;"> <p> NOTE</p> <p>The operating temperature range assumes that the camera is mounted on the base support (included in the package) or a similar type of heatsink.</p> </div>
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	<ul style="list-style-type: none"> • EN 61000-6-2 (Immunity) • EN 61000-6-3 (Emission) • FCC 47 CFR Part 15 Class B (Emission)
Encapsulation	IP 40 (IEC 60529) with base support mounted
Shock	25 g (IEC 60068-2-27)
Vibration	2 g (IEC60068-2-6) and MIL-STD810G
Physical data	
Camera size (L × W × H)	104.1 × 49.6 × 46.6 mm (4.1 × 1.9 × 1.8 in.)
Tripod mounting	UNC ¼"-20 (on three sides)
Base mounting	4 × M3 thread mounting holes (bottom)
Housing material	Magnesium and aluminum



FLIR A65 FOV 45 (30 Hz, ver. 2016)

P/N: 75013-0101

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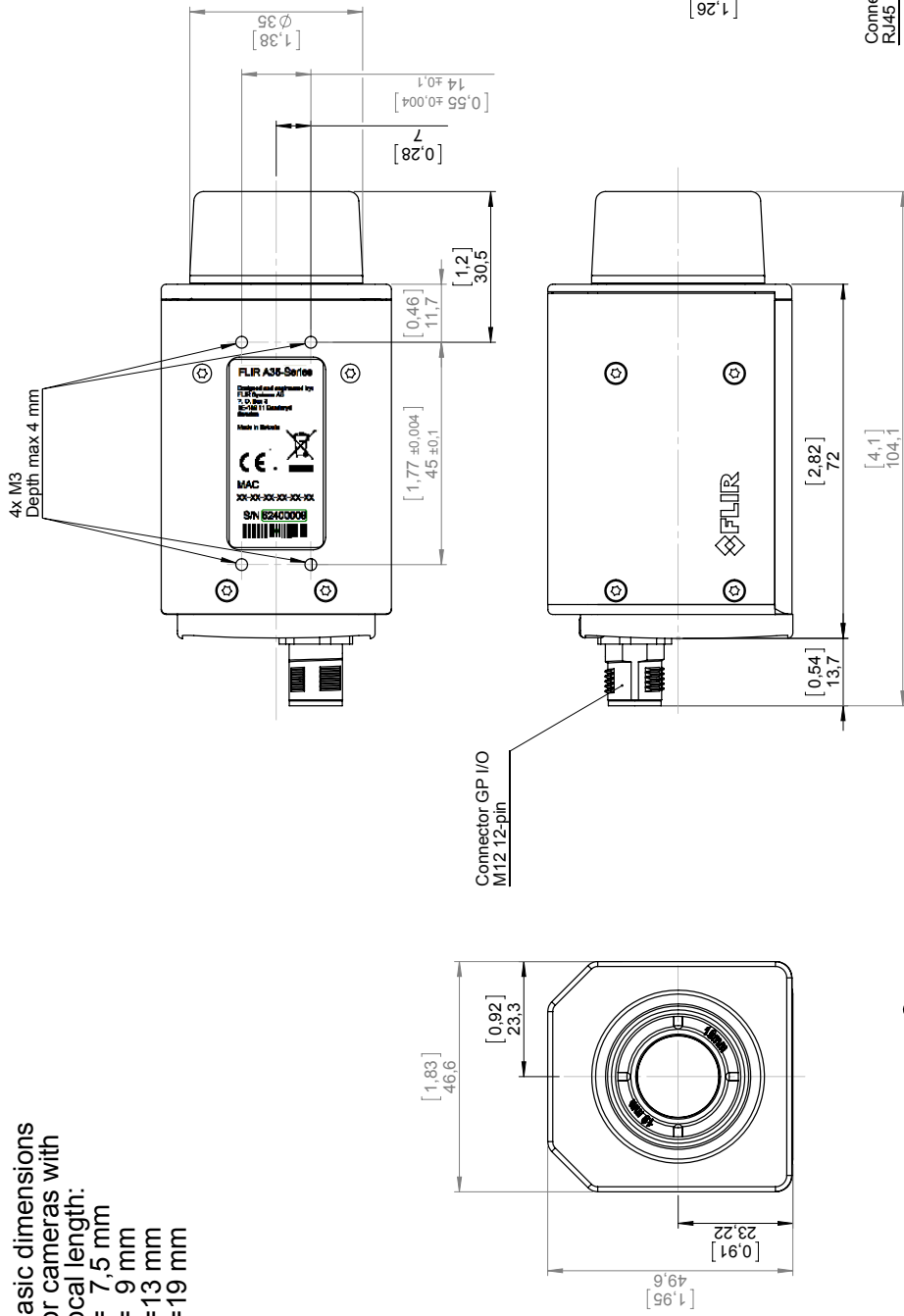
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Shipping information	
Packaging, type	Cardboard box
List of contents	<ul style="list-style-type: none">• Infrared camera with lens• Base support• Focus adjustment tool• Printed documentation
EAN-13	7332558011102
UPC-12	845188011970
Country of origin	Sweden

Supplies & accessories:

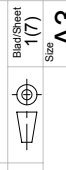
- T951004ACC; Ethernet cable CAT6, 2 m/6.6 ft.
- T198349; Base support
- T198348; Cable kit Mains (UK,EU,US)
- T198392; Table stand kit
- T911183; Gigabit PoE injector 16 W, with multi-plugs
- T127605ACC; Cable M12 Pigtail
- T127606ACC; Cable M12 Sync
- T198342ACC; Focus adjustment tool
- T198594ACC; Transport case Ax5
- T199356; FLIR Ax5 accessory starter kit
- T198584; FLIR Tools
- T198583; FLIR Tools+ (download card incl. license key)
- DSW-10000; FLIR IR Camera Player
- T199233; FLIR Atlas SDK for .NET
- T199234; FLIR Atlas SDK for MATLAB

Basic dimensions
for cameras with
focal length:
f= 7,5 mm
f= 9 mm
f=13 mm
f=19 mm



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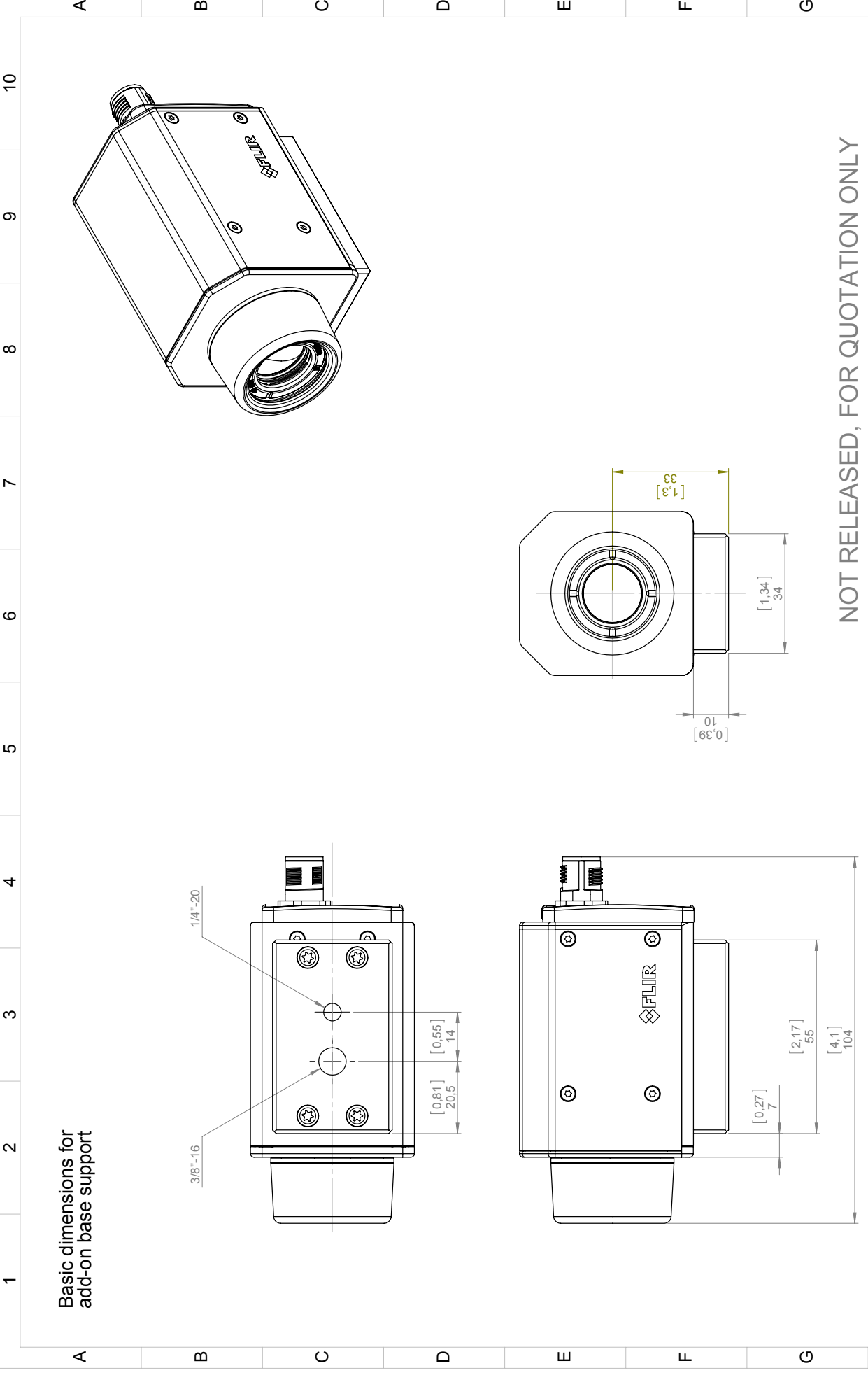
Konstr/Drawing	P. MARCUS	Kontroll/Check	Materiell	
Datum/Date	2015-12-14	Ytämne/Modified	Ytbehandling/Surface treatment	
Ändrad av/Modified by	P. MARCUS	Ra	µm	
Benämning/Denomination				
Basic dimensions Ax5 w. flag shutter				
f=7,5 mm to f=100 mm				
Dir: ej ämnet ändras/Unless otherwise stated		Genet ISO 2768-mK		
Ultrag: ut/Excerpt from ISO 2768-m		0,5-6		
		±0,1		
		Hållkålsradier		
		±0,2		
		Fillet radii		
		±0,3		
		Kantströmma		
		±0,5		
		(120)-400		
		±0,8		
		(400)-1000		
		±0,8		
		Edges broken		
FLIR SYSTEMS AB		Blatt/Sheet		
		1(7)		
		Styck/Scale		
		1:1		
		ArtNo.		
		T1129297		
		Rev		
		-002		



Rev
-002

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Basic dimensions for add-on base support

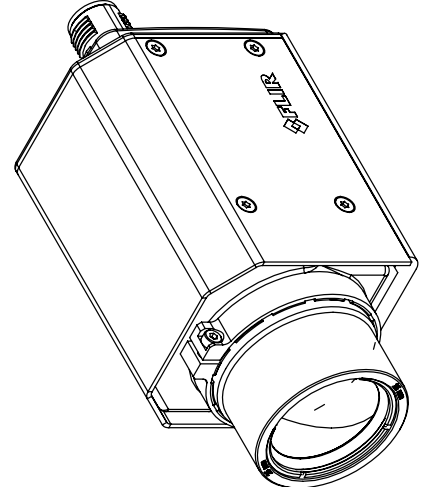
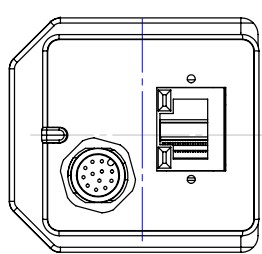
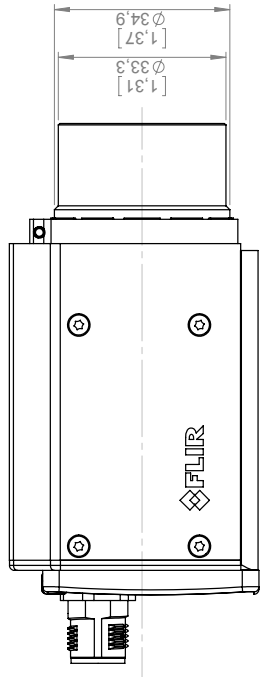
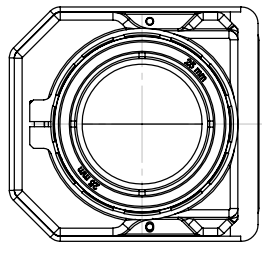
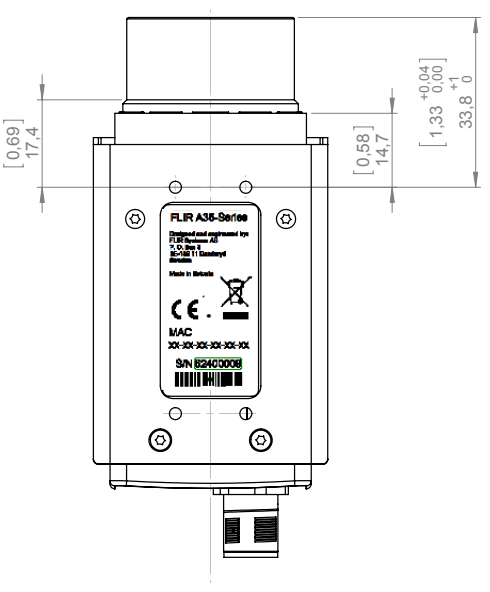
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Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2015-12-18	Ytämne/Roughness Ra	µm		Benämning/Denomination Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm		
Där ej annat anges/Unless otherwise stated Genför ISO 2768-mK Utdrag ur/Excerpt from ISO 2768-m 0,50 40,1 Hålltolerans (30)-120 ±0,3 Flöktolerans (20)-400 ±0,5 Kanter/burra (40)-1600 ±0,6 Edges/burden							

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Basic dimensions:
 Camera with focal length
 f=25 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



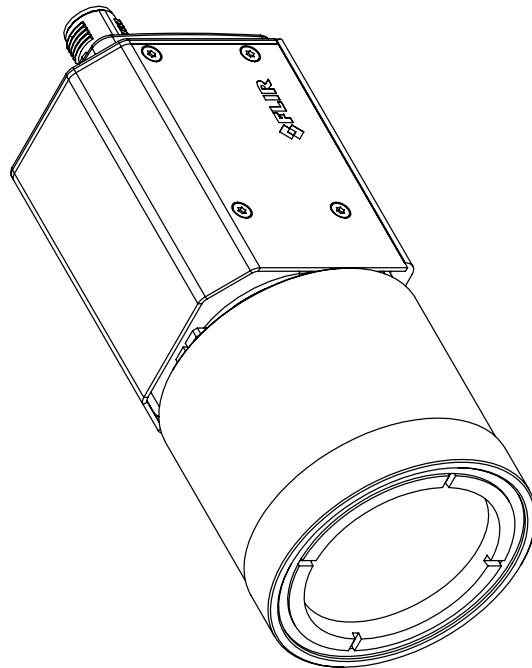
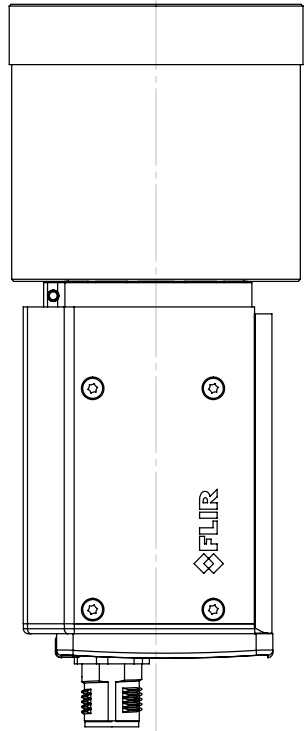
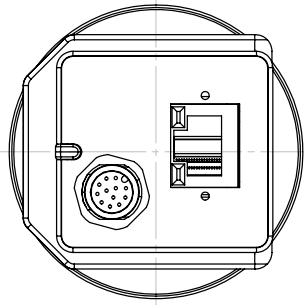
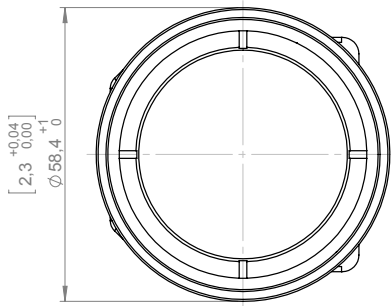
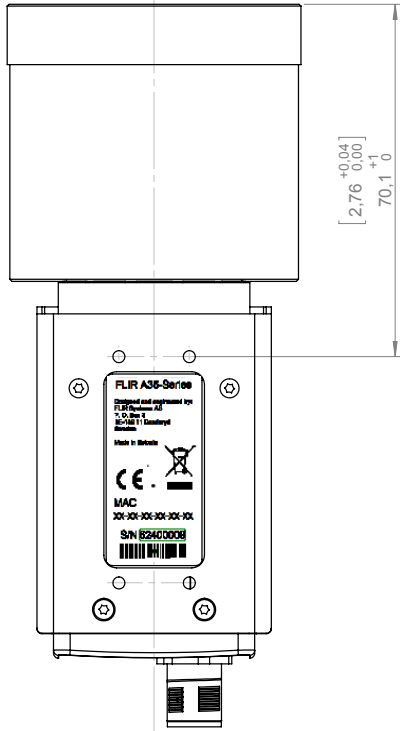
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FLIR	Blad/Sheet 3(7)	Size A3	Rev -002
Kontroll/Drawing No. T129297	Material -	Y-behandling/Surface treatment -	Rev -
Kontroll/Check -	Datum/Date 2015-12-14	Yttermått/Roughness Ra	Benämning/Denomination -
Konstruktör/Drawing P. MARCUS	Ändrad av/Modified by P. MARCUS	Skala/Scale 1:1	Aritm. -
Ditt ej annat angavs/Unless otherwise stated Genom ISO 2768-mK Utvaga ut/Except from ISO 2768-m			
0,25 0,30 0,40	40,1 40,2 40,3	Hålslagsgårder Fläkt, radi	Kantlar brutna 20,0 20,5 21,0
Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm			

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Basic dimensions:
 Camera with focal length
 f=50 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



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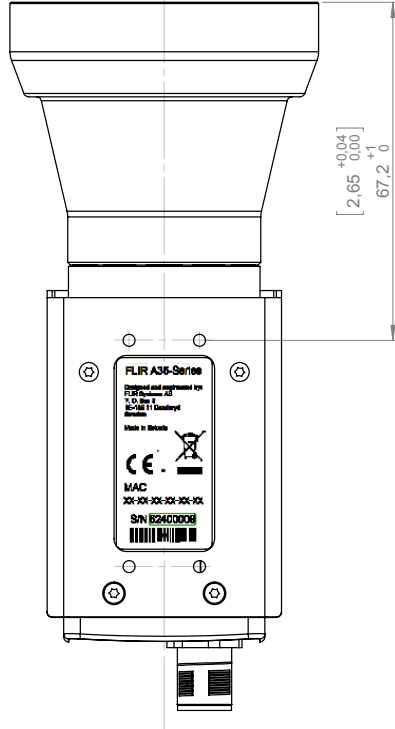
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Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2015-12-18	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment
Dir. ej annat angavs/Unless otherwise stated Gen. tol. ISO 2768-mK		Benämning/Denomination	
URTRAG ur/Excerpt from ISO 2768-m		Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm	
0,50 0,63 (30)-120 (120)-400 (400)-1600	40,1 49,3 49,3 49,3	Bladd/Sheet Size 5(7)	
Hållfasthetsgräns FLIR: cast Kontak brutna Edges broken		Skala/Scale 1:1	Rev T129297
		Artno.	-002



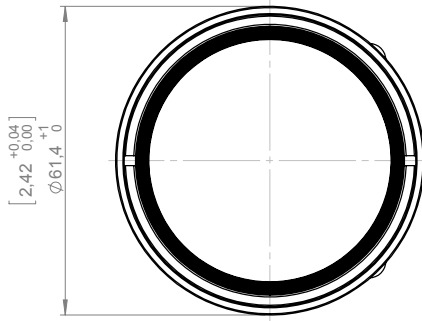
Rev
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-002

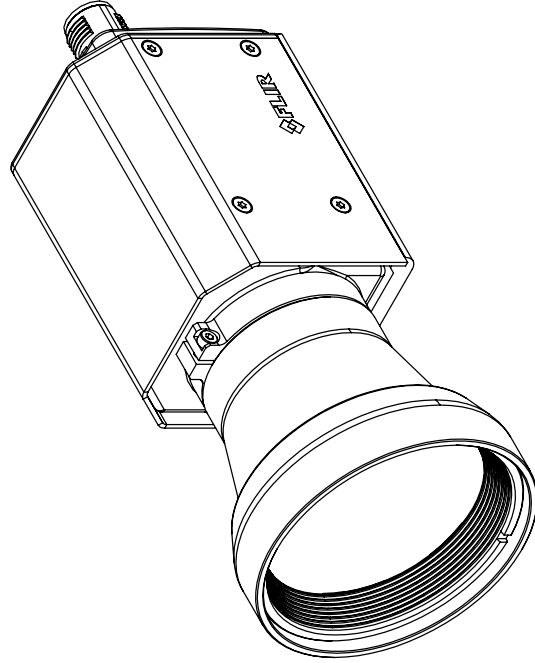
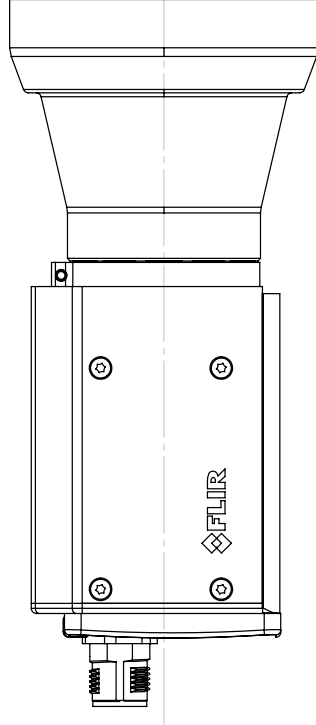
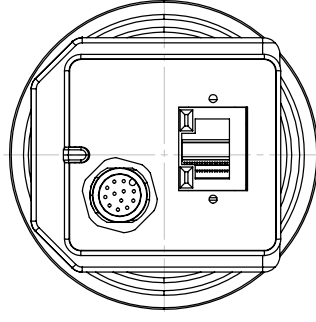
Basic dimensions:
 Camera with focal length
 f=60 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



[2,65^{+0,04} 0,00]
 67,2 0⁺¹



[2,42^{+0,04} 0,00]
 Ø61,4 0⁺¹



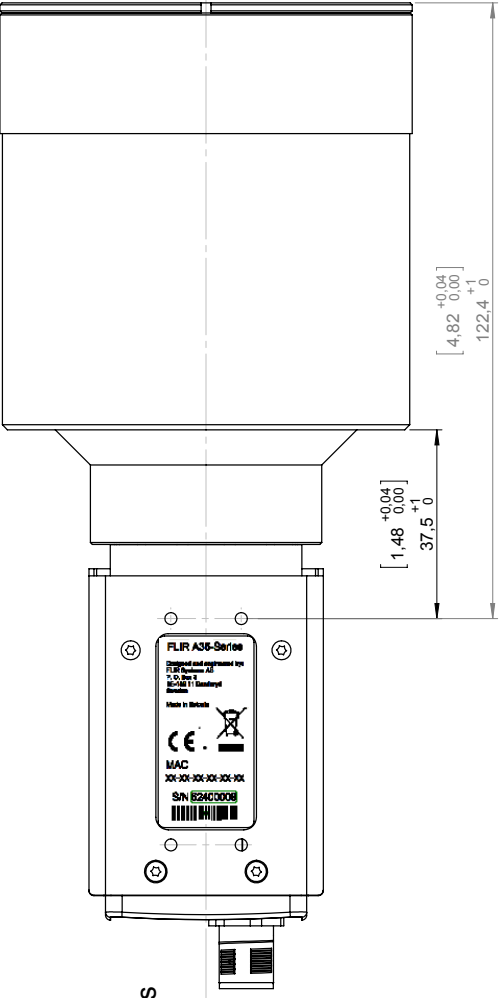
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Konstr/Drawn	Datum/Date		Kontroll/Check	Material	
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Ändrad av/Modified by	Ändrad/Modified		Ytbehandling/Roughness	Ytbehandling/Surface treatment	
P. MARCUS	2015-12-18		Ra	µm	
Ditt ej annat angavs/Unless otherwise stated			Benämning/Denomination		
Genlöst ISO 2768-mK			Basic dimensions Ax5 w. flag shutter		
Utmått ur/Exempt from ISO 2768-m			f=7,5 mm to f=100 mm		
0,50	40,1	Hållfärdighet	Blad/Sheet		
(30)-120	40,3	Fläkt/Leaf	Size		
(40)-400	40,5	Kantlar brutna	6(7)		
(60)-1000	40,6	Edges broken	A3		
			Stapel/Scale		
			1:1		
			Atno.		
			Ritn nr/Drawing No		
			T129297		
			Rev		
			-002		

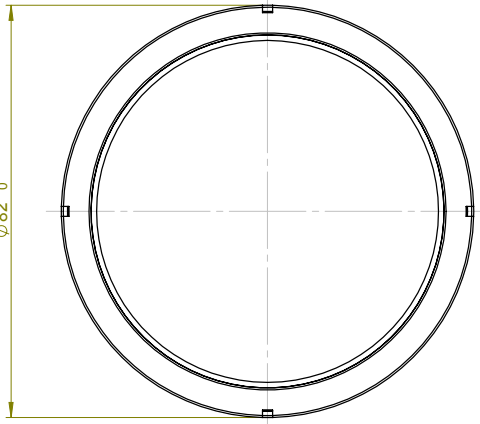


Rev
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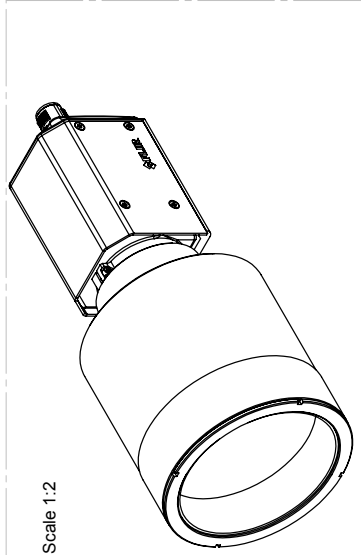
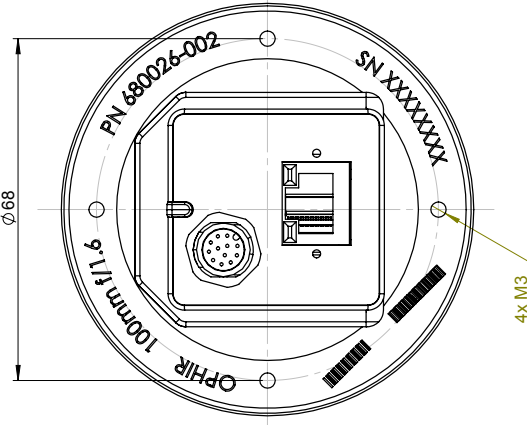
Basic dimensions:
 Camera with focal length
 f=100 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



[3,23 0,00]
 +0,04
 -0,00
 +1
 Ø 82,0



[2,68]
 -0,00
 Ø 68



Scale 1:2

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Konstruktör/Drawn P. MARCUS	Datum/Date 2015-12-14	Kontroll/Check -	Material -
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2015-12-18	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment -
Titel Där ej annat anges/Unless otherwise stated Control ISO 2768-mK UTdrag ur/Excerpt from ISO 2768-m	Benämning/Denomination 0,5-0,2 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment -
UTdrag ur/Excerpt from ISO 2768-m 0,5-0,2 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1	Skala/Scale 1:1	Bladd/Sheet 7(7)	Bladd/Sheet 7(7)
Översikt över/Overview 0,5-0,2 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1	Ärtnr. T129297	Skala/Scale 1:1	Bladd/Sheet 7(7)
Översikt över/Overview 0,5-0,2 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1	Revisjon -002	Ärtnr. T129297	Bladd/Sheet 7(7)
Översikt över/Overview 0,5-0,2 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1 0,5-0,1	Revisjon -002	Ärtnr. T129297	Bladd/Sheet 7(7)

Basic dimensions Ax5 w. flag shutter
 f=7,5 mm to f=100 mm



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July 2, 2013

AQ320030

CE Declaration of Conformity

This is to certify that the System listed below have been designed and manufactured to meet the requirements, as applicable, of the following EU-Directives and corresponding harmonising standards. The systems consequently meet the requirements for the CE-mark.

Directives:

Directive 2004/108/EC; **Electromagnetic Compatibility**
Directive 2006/95/EC; **"Low voltage Directive" (Power Supply)**
Directive 2002/96/EC **Waste electrical and electronic equipment; WEEE**
 (As applicable)

Standards:


Emission: **EN 61000-6-3; Electromagnetic Compatibility**
 Generic standards - Emission

Immunity: **EN 61000-6-2; Electromagnetic Compatibility;**
 Generic standards - Immunity

Safety (Power Supply): **EN 60950; (or other) Safety of information technology**
 equipment

System: **FLIR AXX series**

FLIR Systems AB
Quality Assurance



Björn Svensson
Director