

## P/N: 73513-0102

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### Document identity

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### Website

<http://www.flir.com>

### Customer support

<http://support.flir.com>

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General description	
<p>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.</p> <p>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.</p>	
Key features:	
<ul style="list-style-type: none"> <li>• Very affordable.</li> <li>• Compact (40 mm × 43 mm × 106 mm).</li> <li>• GigE Vision and GenICam compliant.</li> <li>• GigE Vision lockable connector.</li> <li>• PoE (power over Ethernet).</li> <li>• 8-bit 640 × 512 pixel images streamed at 7.5 Hz, signal linear</li> <li>• 14-bit 640 × 512 pixel images streamed at 7.5 Hz, signal and temperature linear</li> <li>• Synchronization between cameras possible.</li> <li>• 1x+1x GPIO.</li> <li>• Compliant with any software that supports GenICam, including National Instruments IMAQ Vision, Stemmers Common Vision Blox, and COGNEX Vision Pro.</li> </ul>	
Typical applications:	
<ul style="list-style-type: none"> <li>• Automation and thermal machine vision.</li> <li>• Entry level "high-speed" R&amp;D.</li> </ul>	
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	7.5 Hz
Focus	Fixed
Detector data	
Detector type	Focal plane array (FPA), uncooled VOX microbolometer
Spectral range	7.5–13 μm
Detector pitch	17 μm
Detector time constant	Typical 12 ms



# FLIR A65 f=13 mm with SC kit (7.5 Hz)

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Measurement	
Object temperature range	<ul style="list-style-type: none"> <li>-25 to +135°C (-13 to 275°F)</li> <li>-40 to +550°C (-40 to +1022°F)</li> </ul>
Accuracy	±5°C (±9°F) or ±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 @ 7.5 Hz <ul style="list-style-type: none"> <li>Signal linear/ DDE</li> <li>Automatic/ Manual</li> <li>Flip H&amp;V</li> </ul> 14-bit 640 × 512 pixels @ 7.5 Hz <ul style="list-style-type: none"> <li>Signal linear/ DDE</li> <li>Temperature linear</li> </ul> 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	1× opto-isolated, "0" <1.2 VDC, "1" = 2–25 VDC.
Digital output, purpose	General purpose output to ext. device (programmatically set)
Digital output	1× 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, 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

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<b>Digital input/output</b>	
Synchronization out	1x, 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)
<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 +50°C (+5°F to +122°F)
	<div style="border: 1px solid black; padding: 5px;"> <p> <b>NOTE</b></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"> <li>• EN 61000-6-2 (Immunity)</li> <li>• EN 61000-6-3 (Emission)</li> <li>• FCC 47 CFR Part 15 Class B (Emission)</li> </ul>
Encapsulation	IP 40 (IEC 60529) with base support mounted
Shock	25 g (IEC 60068-2-27)
Vibration	2 g (IEC 60068-2-6)
<b>Physical data</b>	
Weight	0.200 kg (0.44 lb.)
Camera size (L x W x H)	106 x 40 x 43 mm (4.2 x 1.6 x 1.7 in.)
Tripod mounting	1 x UNC 1/4"-20 (with Base support accessory, included in the delivery box)
Base mounting	4 x M3 thread mounting holes (bottom)
Housing material	Magnesium and aluminum
<b>Shipping information</b>	
Packaging, type	Cardboard box
List of contents	<ul style="list-style-type: none"> <li>• Hard transport case</li> <li>• Infrared camera with lens</li> <li>• Base support</li> <li>• Cable tie (2 ea.)</li> <li>• Ethernet cable CAT-6, 2m/6.6 ft (2 ea.)</li> <li>• FLIR ResearchIR Standard 4</li> <li>• Focus adjustment tool</li> <li>• Gooseneck</li> <li>• Mains cable kit (UK,EU,US)</li> <li>• PoE Injector (power over Ethernet)</li> <li>• Printed documentation</li> <li>• Table stand</li> </ul>
Packaging, weight	5.3 kg (11.7 lb.)



## FLIR A65 f=13 mm with SC kit (7.5 Hz)

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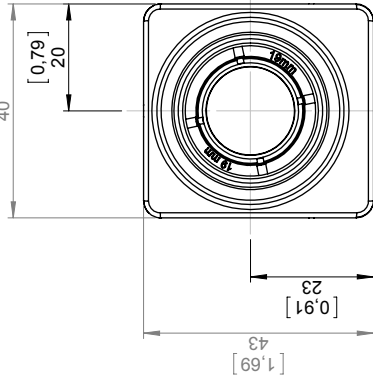
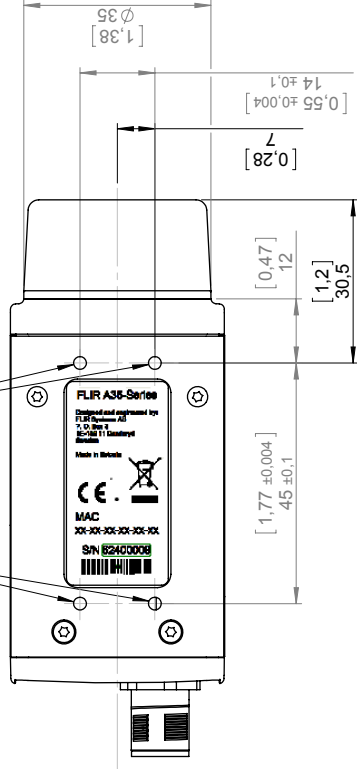
Shipping information	
Packaging, size	370 × 180 × 320 mm (14.6 × 7.1 × 12.6 in.)
EAN-13	7332558010624
UPC-12	845188011291
Country of origin	Sweden

### Supplies & accessories:

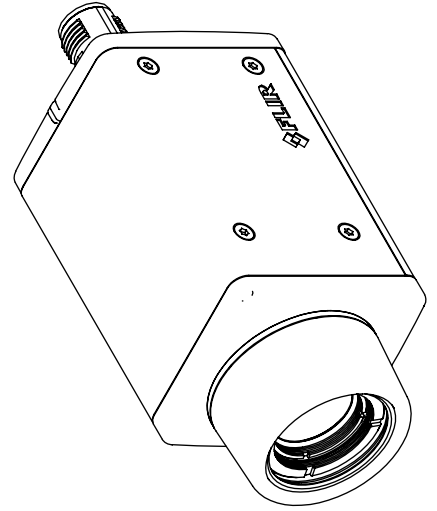
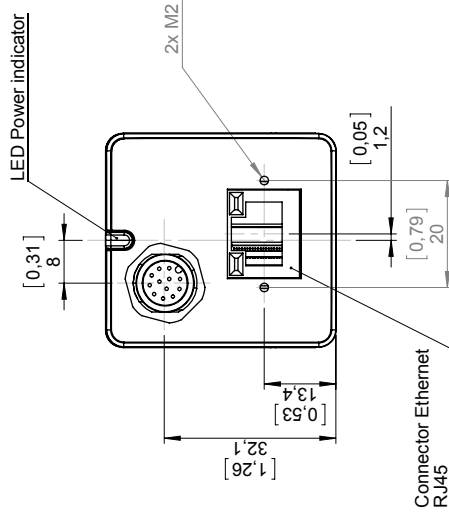
- T951004ACC; Ethernet cable CAT6, 2 m/6.6 ft.
- T198349; Base support
- T198348; Cable kit Mains (UK,EU,US)
- T198392; Table stand kit
- T911183; Gigabit PoE injector 16 W, with multi-plugs
- T127605ACC; Cable M12 Pigtail
- T127606ACC; Cable M12 Sync
- T198594ACC; Transport case Ax5
- T199356; FLIR 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

4x M3  
Depth max 4 mm



Connector GP I/O  
M12 12-pin



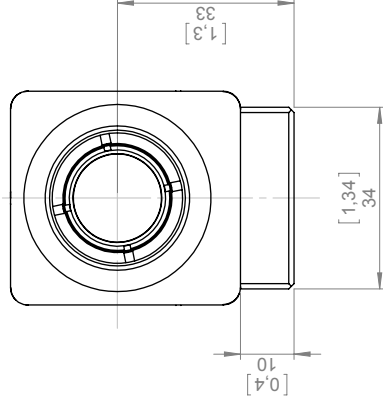
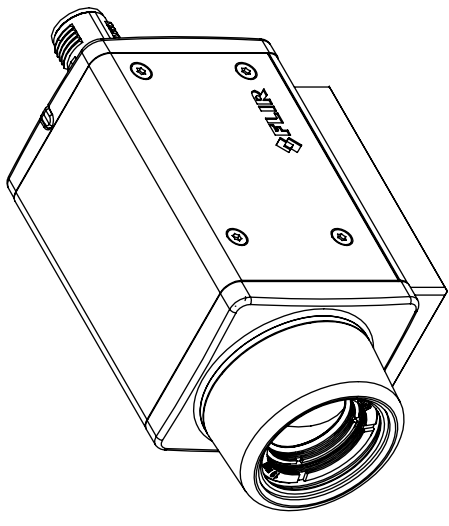
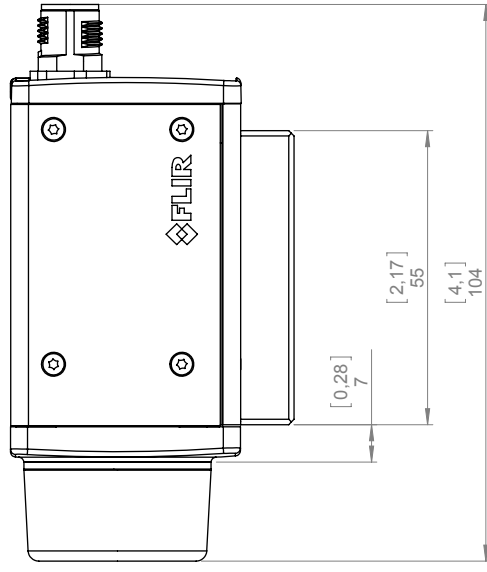
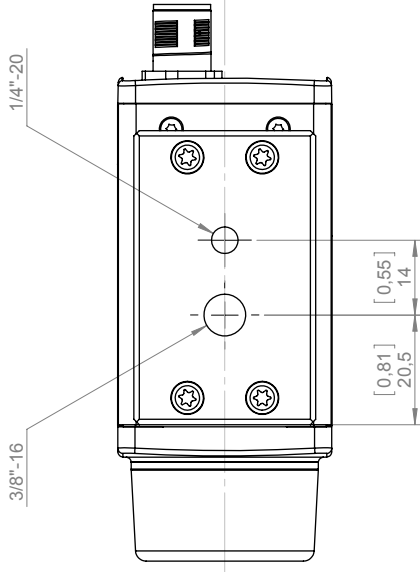
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Konstr/Drawn <b>P. MARCUS</b>		-	
Datum/Date 2014-01-29		Kontr/Check MABR	
Ändrad av/Modified by P. MARCUS		Ytbehandling/Roughness Ra	
Gen tol ISO 2768-mK		Benämning/Denomination µm	
Utdrag ur/except from ISO 2768-m		Ytbehandling/Surface treatment	
0.5-6 ±0.1 Hållarsradier		Ra	
(6)-30 ±0.2 Fillet radii		Ra	
(120)-400 ±0.5 Kanter brutna		Ra	
(400)-1000 ±0.8 Edges broken		Ra	
Skala/Scale 1:1		Blad/Sheet 1(7)	
Aritm.		Size A3	
Ritn nr/Drawing No T128116		Rev A	

Basic dimensions Ax5  
f=7.5 mm to f=100 mm

1 2 3 4 5 6 7 8 9 10  
A B C D E F G

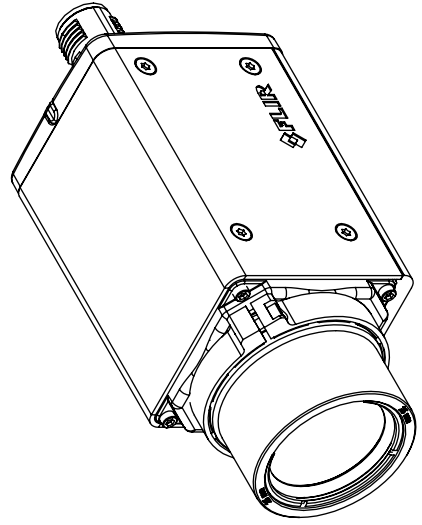
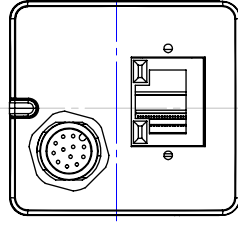
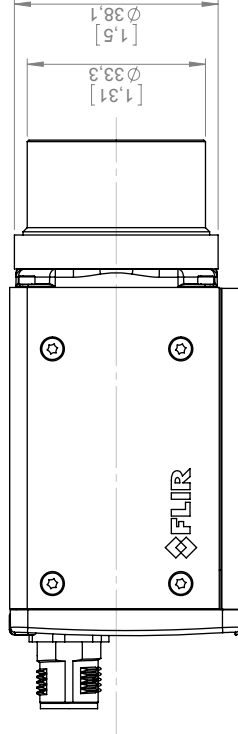
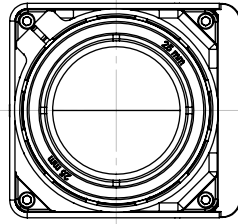
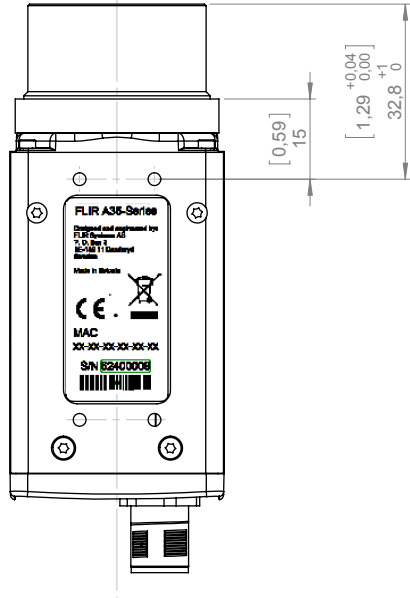
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Basic dimensions for  
add-on base support



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Ändrad av/Modified by <b>P. MARCUS</b>		Ändrad/Modified <b>2014-02-11</b>	Ytjämnhet/Roughness <b>Ra</b>	Ytbehandling/Surface treatment <b>µm</b>
Där ej annat anges/Unless otherwise stated Utdrag ur/Excerpt from ISO 2768-m		Benämning/Denomination <b>Basic dimensions Ax5 f=7,5 mm to f=100 mm</b>		
0,5-6 60-30 120-400 400-1000		Hökläsrädier Filer radii Kanter brutna Edges broken		
0,1 0,2 0,5 1		Skala/Scale <b>1:1</b>		
2(7)		Blad/Sheet <b>A3</b>		
SIS		Rev <b>A</b>		
Rin nr/Drawing No. <b>T128116</b>		Artno. <b>T128116</b>		

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.

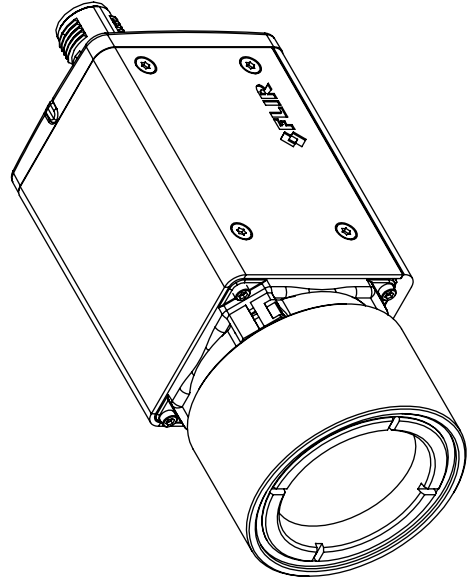
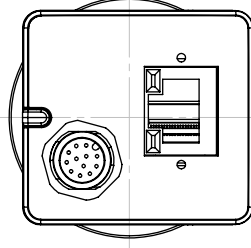
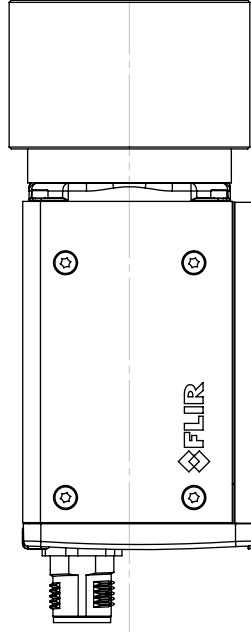
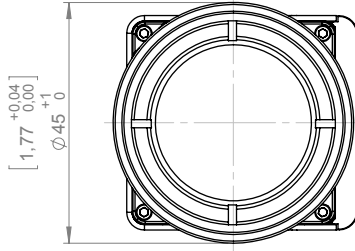
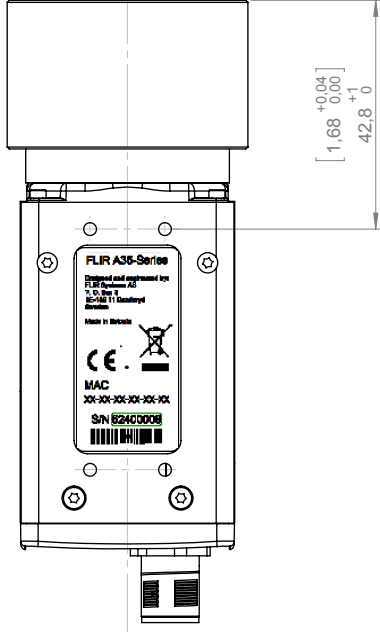


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Ändrad av/Modified by <b>P. MARCUS</b>		Ändrad/Modified <b>2014-02-11</b>	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm
Gen tel ISO 2768-mK 0.5-6 ±0.1 Hållarsradier (0.5-30 ±0.2 Filter radii (120-400 ±0.5 Kanter brutna (400)-1000 ±0.8 Edges broken		Benämning/Denomination <b>Basic dimensions Ax5 f=7.5 mm to f=100 mm</b>		
FLIR SYSTEMS AB		Skala/Scale 1:1	Blad/Sheet 3(7)	Rev A3
FLIR SYSTEMS AB		ÄRNO.	Ritning/Drawing No. T128116	A



Basic dimensions:  
 Camera with focal length  
 f=35 mm IR lens.  
 Only dimensions valid for  
 this IR lens.  
 For all other dimensions see pages  
 1 and 2.



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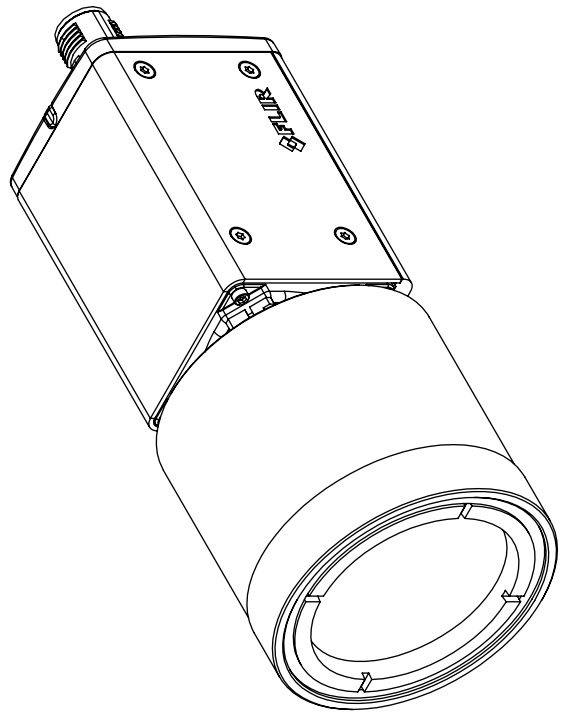
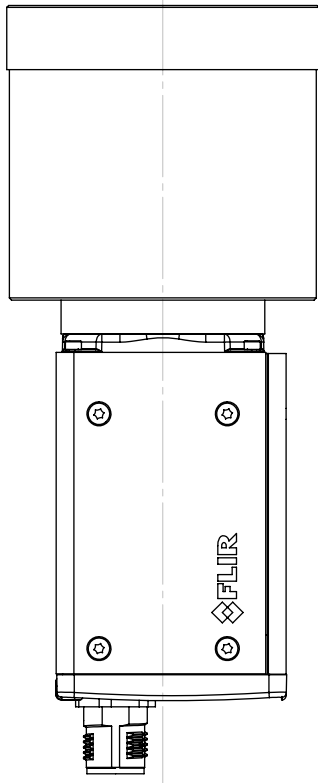
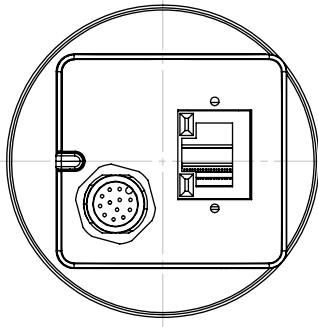
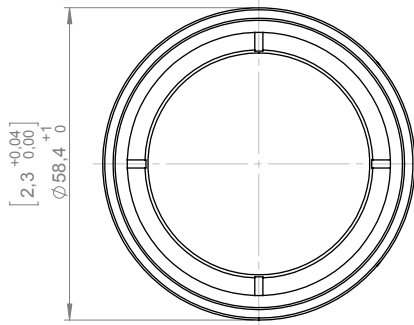
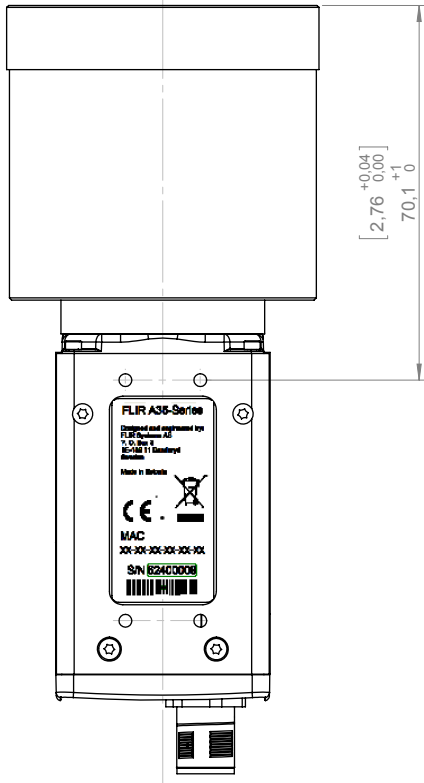
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Konstr/Drawn <b>P. MARCUS</b>		Datum/Date <b>2014-01-29</b>		Kontr/Check <b>MABR</b>		Material <b>-</b>	
Ändrad av/Modified by <b>P. MARCUS</b>		Ändrad/Modified <b>2014-02-11</b>		Ytjämnhet/Roughness <b>Ra</b>		Ytbehandling/Surface treatment <b>µm</b>	
Övrigt utöver ISO 2768-mK 0.5-6 ±0.1 Hållradier (6)-30 ±0.2 Fillet radii (120)-400 ±0.5 Kanter brutna (400)-1000 ±0.8 Edgese broken		Benämning/Denomination <b>Basic dimensions Ax5 f=7.5 mm to f=100 mm</b>		Skala/Scale <b>1:1</b>		Blad/Sheet <b>4(7)</b>	
		Artno. <b>T128116</b>		Rev <b>A3</b>		Ritning/Sheet No. <b>A</b>	



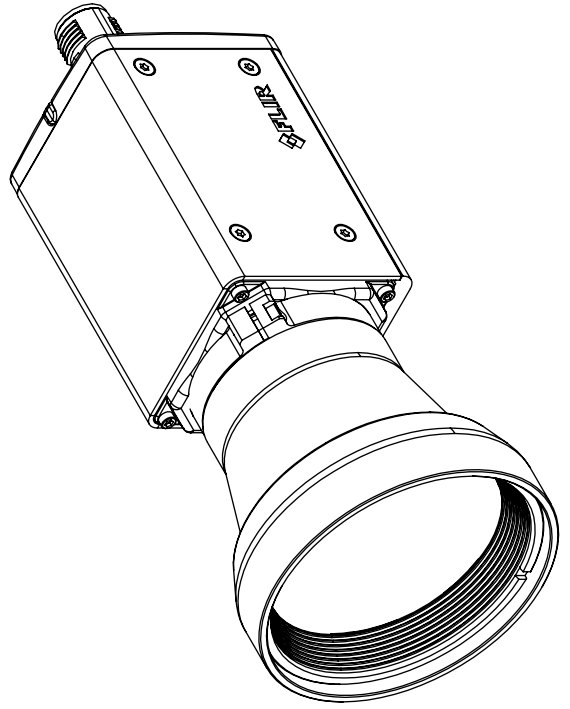
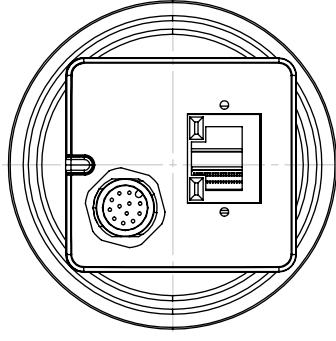
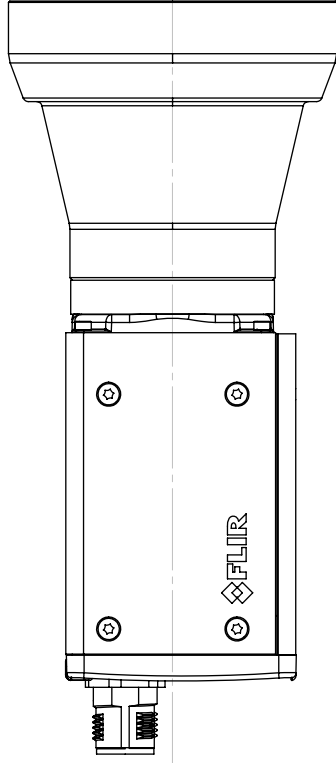
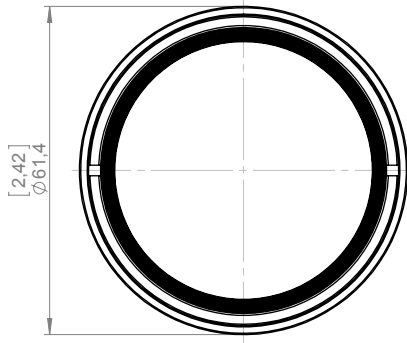
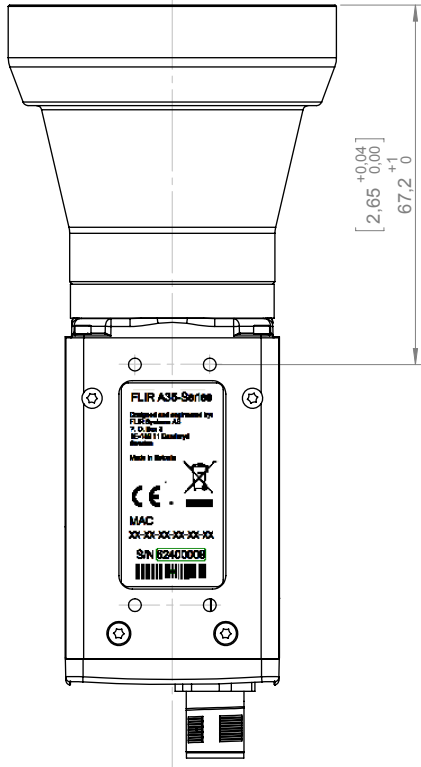
Basic dimensions:  
 Camera with focal length  
 $f=50$  mm IR lens.  
 Only dimensions valid for  
 this IR lens.  
 For all other dimensions see pages  
 1 and 2.



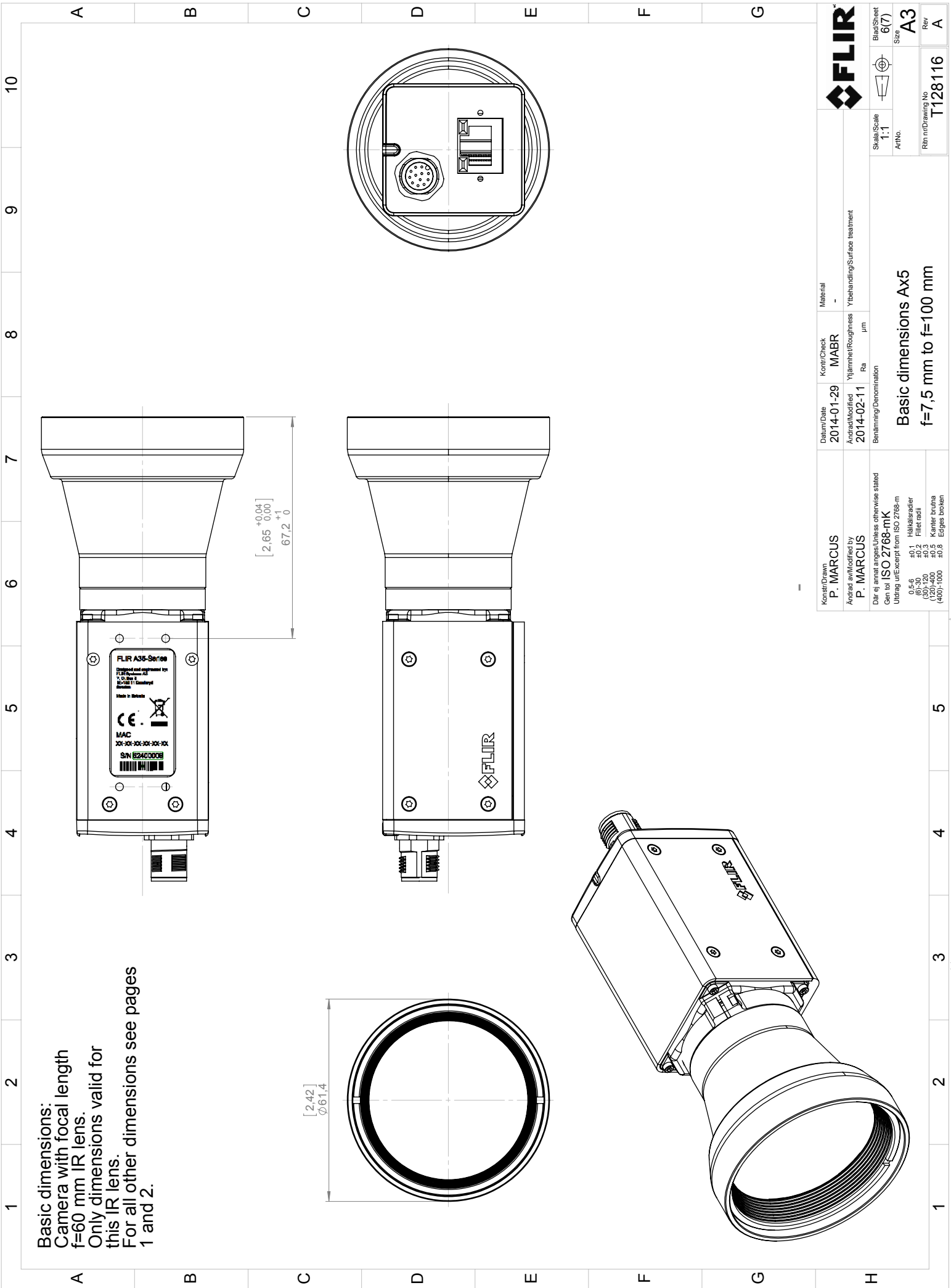
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Ändrad av/Modified by <b>P. MARCUS</b>	Ändrad/Modified <b>2014-02-11</b>	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm
Övrigt utt. except from ISO 2768-m 0,5-6 0,7-3 0,2 120-400 40,5 400-1000	Där ej annat anges/Unless otherwise stated		
Benämning/Denomination <b>Basic dimensions Ax5</b>			
Skala/Scale <b>1:1</b>			
Blad/Sheet <b>5(7)</b>			
Ariti. <b>A3</b>			
Ritning/Drawing No. <b>T128116</b>			
Rev <b>A</b>			

Basic dimensions Ax5  
 $f=7,5$  mm to  $f=100$  mm

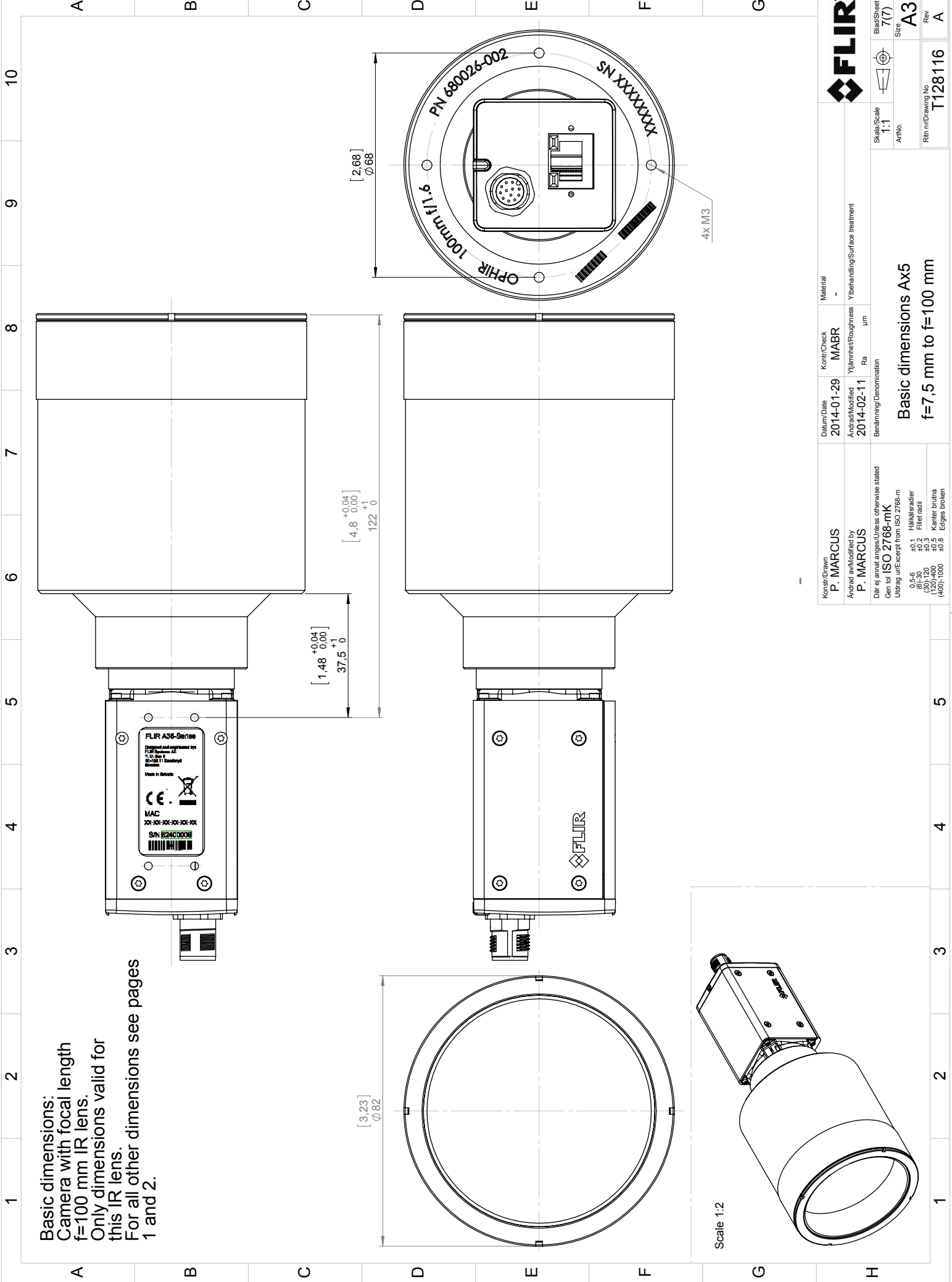
Basic dimensions:  
 Camera with focal length  
 f=60 mm IR lens.  
 Only dimensions valid for  
 this IR lens.  
 For all other dimensions see pages  
 1 and 2.



Konstr/Drawn <b>P. MARCUS</b>		Datum/Date <b>2014-01-29</b>	Kontr/Check <b>MABR</b>	Material -
Ändrad av/Modified by <b>P. MARCUS</b>		Ändrad/Modified <b>2014-02-11</b>	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment
Där ej annat anges/Unless otherwise stated		Utdrag ur/Excerpt from ISO 2768-m		
0.5-6		±0.1 Hållradier		
(0.7-3)		±0.2 Fillet radii		
(120-400)		±0.5 Kanter brutna		
(400-1000)		±0.8 Edges broken		
Stapel/Scale 1:1		Blad/Sheet 6(7)		Rev <b>A3</b>
Artno.		Ritning/Drawing No. <b>T128116</b>		A
<b>Basic dimensions Ax5 f=7.5 mm to f=100 mm</b>				



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.



<b>FLIR</b>		Blad/Sheet 7(7)		Siz A3		Rev A	
Scale/Scale 1:1		ArNo.		Rin nr/Drawing No. T128116			
Konstr/Drawn P. MARCUS	Datum/Date 2014-01-29	Kontr/Check MABR	Material -	Basic dimensions Ax5 f=7.5 mm to f=100 mm			
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2014-02-11	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm				
Där ej annat anges/Unless otherwise stated Utdrag ur/Excerpt from ISO 2768-m							
0.5-6		+0.1		Höjlsradier			
(0.5-6)		+0.2		Fileradii			
(120-400)		±0.5		Kantler brutna			
(400-1000)		±0.8		Edgar brutna			

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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:

<b>Directive 2004/108/EC;</b>	<b>Electromagnetic Compatibility</b>
<b>Directive 2006/95/EC;</b>	<b>“Low voltage Directive” (Power Supply)</b>
<b>Directive 2002/96/EC</b>	<b>Waste electrical and electronic equipment; WEEE (As applicable)</b>

Standards:

<b>Emission:</b>	<b>EN 61000-6-3; Electromagnetic Compatibility Generic standards - Emission</b>
<b>Immunity:</b>	<b>EN 61000-6-2; Electromagnetic Compatibility; Generic standards - Immunity</b>
<b>Safety (Power Supply):</b>	<b>EN 60950; (or other) Safety of information technology equipment</b>

System: **FLIR AXX series**

FLIR Systems AB  
Quality Assurance



Björn Svensson  
Director