

P/N: 75013-0101

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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>	
<p>Key features:</p> <ul style="list-style-type: none"> • 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. 	
<p>Typical applications:</p> <ul style="list-style-type: none"> • 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°
Minimum focus distance	7.6 cm (3.0 in.)
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
Detector pitch	17 μm
Detector time constant	Typical 12 ms

P/N: 75013-0101

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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	±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 @ 30 Hz <ul style="list-style-type: none"> Signal linear/ DDE Automatic/ Manual Flip H&V 14-bit 640 × 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	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

P/N: 75013-0101

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Digital input/output	
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)

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)				
	<table border="1"> <thead> <tr> <th colspan="2">NOTE</th> </tr> </thead> <tbody> <tr> <td colspan="2">The operating temperature range assumes that the camera is mounted on the base support (included in the package) or a similar type of heatsink.</td> </tr> </tbody> </table>	NOTE		The operating temperature range assumes that the camera is mounted on the base support (included in the package) or a similar type of heatsink.	
NOTE					
The operating temperature range assumes that the camera is mounted on the base support (included in the package) or a similar type of heatsink.					
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 x W x H)	104.1 x 49.6 x 46.6 mm (4.1 x 1.9 x 1.8 in.)
Tripod mounting	1 x UNC ¼"-20 (with Base support accessory, included in the delivery box)
Base mounting	4 x M3 thread mounting holes (bottom)
Housing material	Magnesium and aluminum

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)



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

P/N: 75013-0101

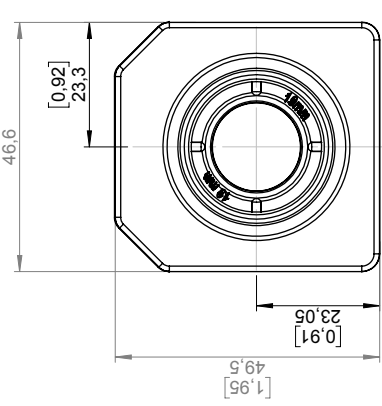
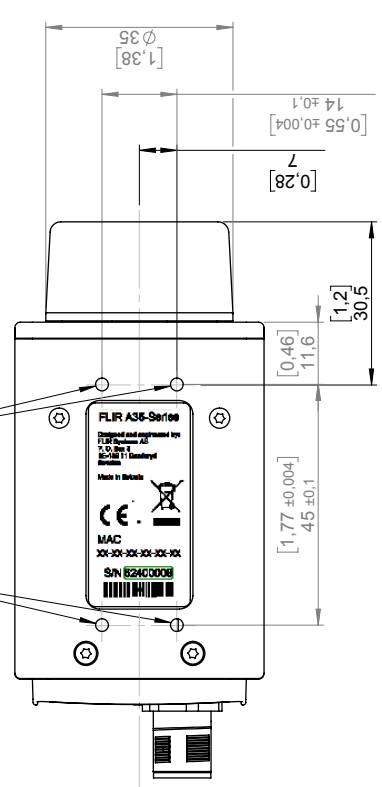
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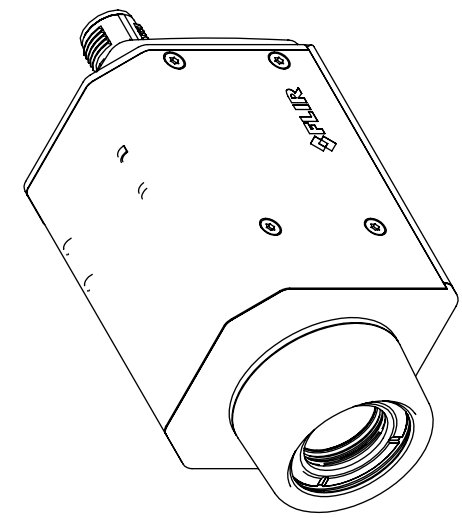
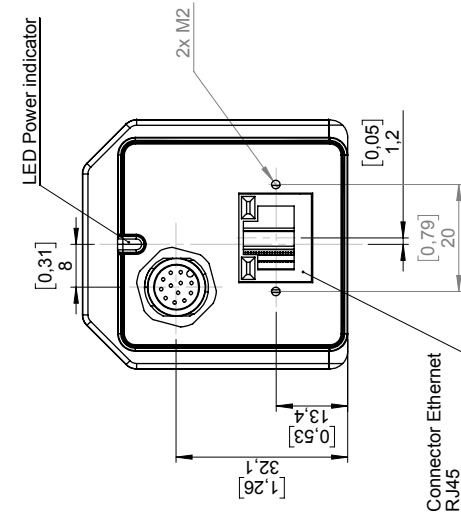
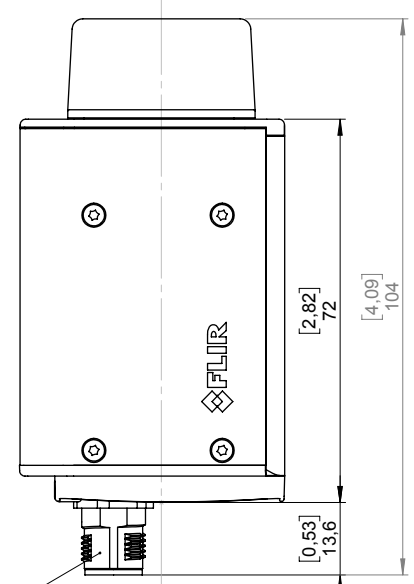
- T127605ACC; Cable M12 Pigtail
- T127606ACC; Cable M12 Sync
- T199698; Environmental housing for Ax5
- T199356; FLIR Ax5 accessory starter kit
- T198342ACC; Focus adjustment tool
- T911183; Gigabit PoE injector 16 W, with multi-plugs
- T198392; Table stand kit
- T198594ACC; Transport case Ax5
- T198584; FLIR Tools
- T198583; FLIR Tools+ (download card incl. license key)
- T199233; FLIR Atlas SDK for .NET
- T199234; FLIR Atlas SDK for MATLAB
- INST-EW-0135; Extended Warranty 1 Year for A35, A65
- INST-EWGM-0135; Extended Premier Warranty 1 Year for A35, A65, E50, E60, E63, E53, E75, E85, E95
- INST-GM-0125; Calibration incl General Maintenance for A35, A65, E30, E33, E40, E50, E60, E63, E53, E75, E85, E95, Kxx

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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Sheet/Scale 1:1
BladSkala 1:1
Size A3
Rev -002

Part No. T129297

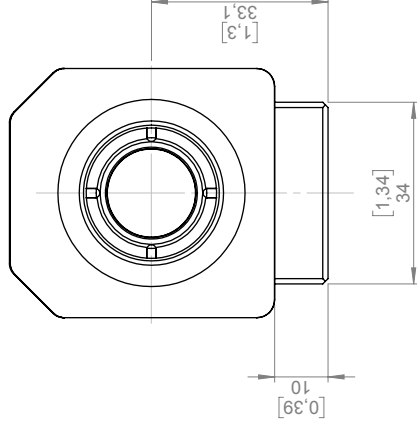
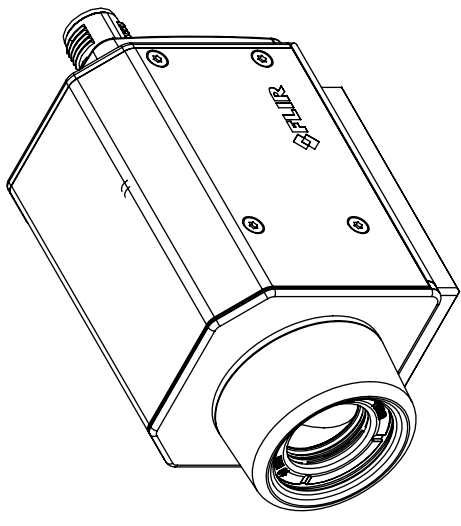
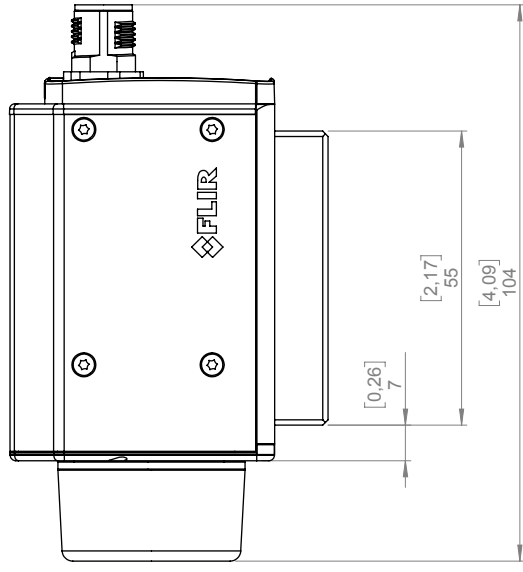
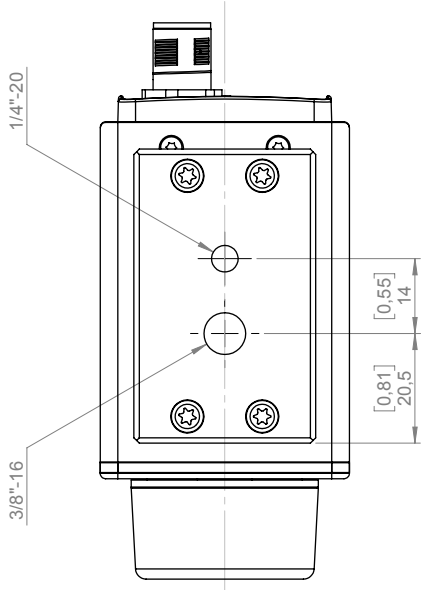
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Material	Ytbehandling/Surface treatment
Material	µm
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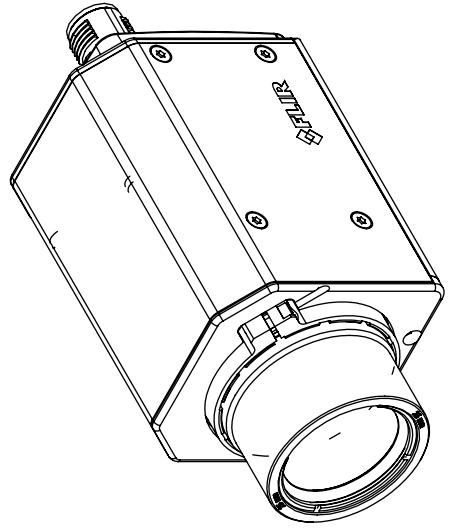
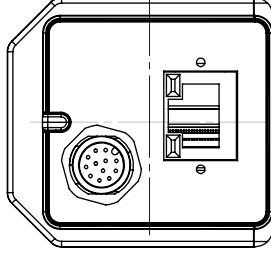
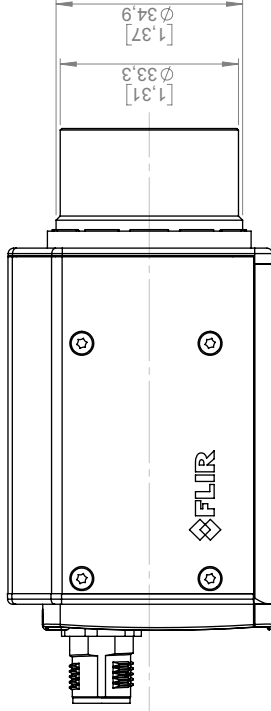
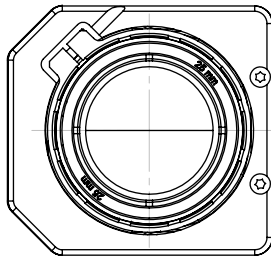
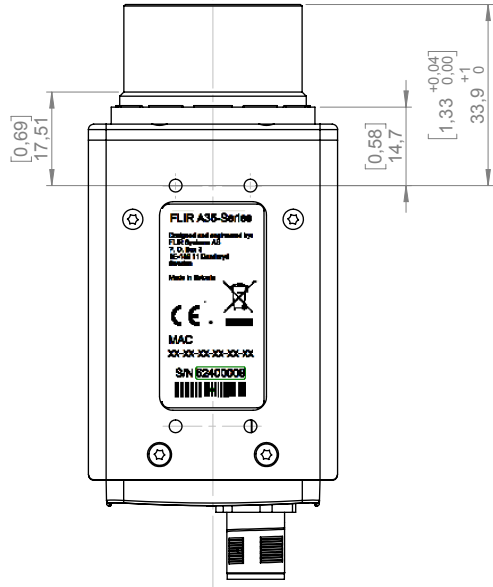
Basic dimensions Ax5 w. flag shutter
f=7.5 mm to f=100 mm

Basic dimensions for
add-on base support



Konstr/Drawn P. MARCUS		Datum/Date 2015-12-14	Kontr/Check -	Material -
Ändrad av/Modified by P. MARCUS		Ändrad/Modified 2016-10-18	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm
Där ej annat anges/Unless otherwise stated Utdrag ur/Excerpt from ISO 2768-m		Benämning/Denomination Basic dimensions Ax5 w. flag shutter f=7.5 mm to f=100 mm		
0.5-6 ±0.1 Hållarsradier (6)-30 ±0.2 Fillet radii (120)-400 ±0.5 Kanter brutna (400)-1000 ±0.8 Edgcs broken		Skala/Scale 1:1		
FLIR SYSTEMS AB		Blad/Sheet 2(7)		
FLIR SYSTEMS AB		SIS A3		
FLIR SYSTEMS AB		Rev -		
FLIR SYSTEMS AB		Ritning/Drawing No. T129297		
FLIR SYSTEMS AB		Part No. -002		

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.



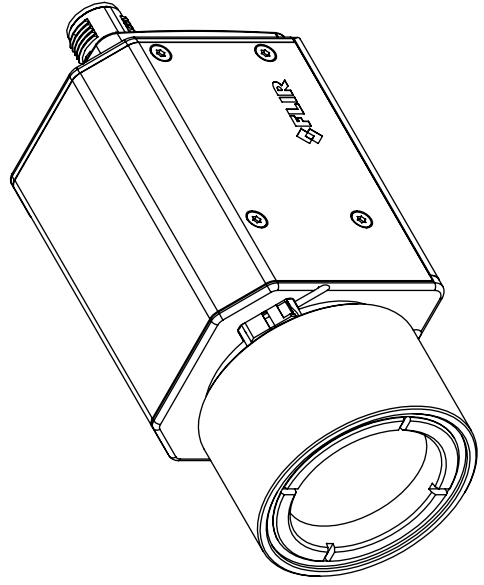
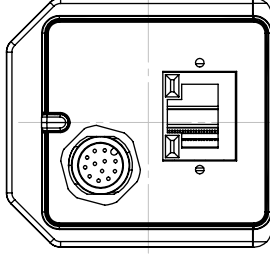
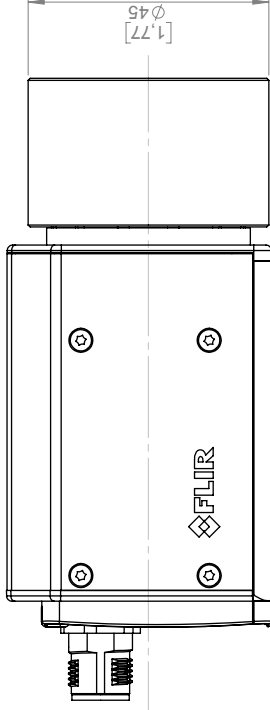
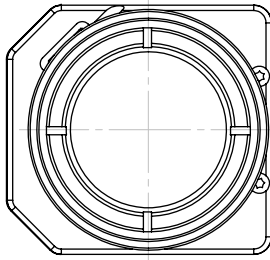
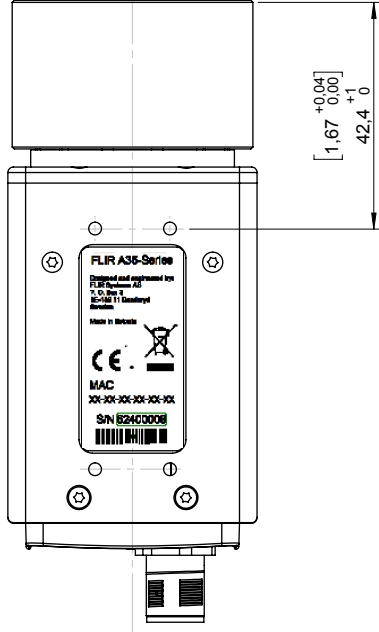
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Ändrad av/Modified by P. MARCUS		Ändrad/Modified 2016-10-18	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm
Gen töl ISO 2768-mK Utöver utt. enligt ISO 2768-m		Benämning/Denomination Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm		
0,5-6 6,3-30 120-400 400-1000		Hål/sår/radi Hål/sår/radi Kantler brutna Kantler brutna		
±0,1 ±0,2 ±0,5 ±0,8		Skala/Scale 1:1		
Blad/Sheet 3(7)		Rev A3		
Ritning/Drawing No. T129297		Artno. -002		



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.

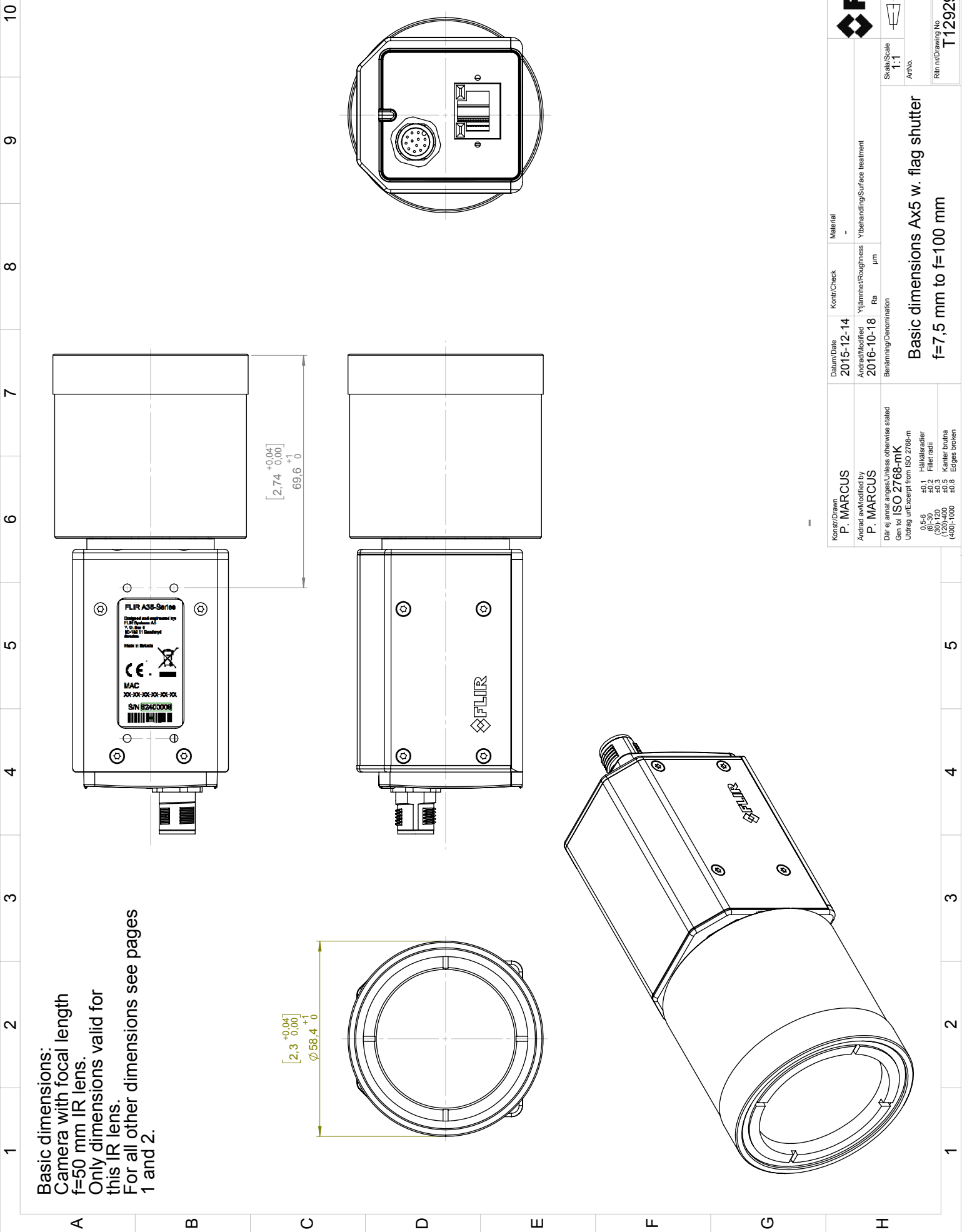


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Utdrag ur/Excerpt from	ISO 2768-mK	Benämning/Denomination		Ra			
Där ej annat anges/Unless otherwise stated							
0,5-6 ±0,1 Hållradier (0,1-30 ±0,2 Filtradii (120-400 ±0,5 Kanter brutna (400-1000 ±0,8 Edgcs broken							

Scale/Scale	1:1
Blad/Sheet	4(7)
Size	A3
Rev	Rev
Ritning/Drawing No	T129297
Part No.	-002

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

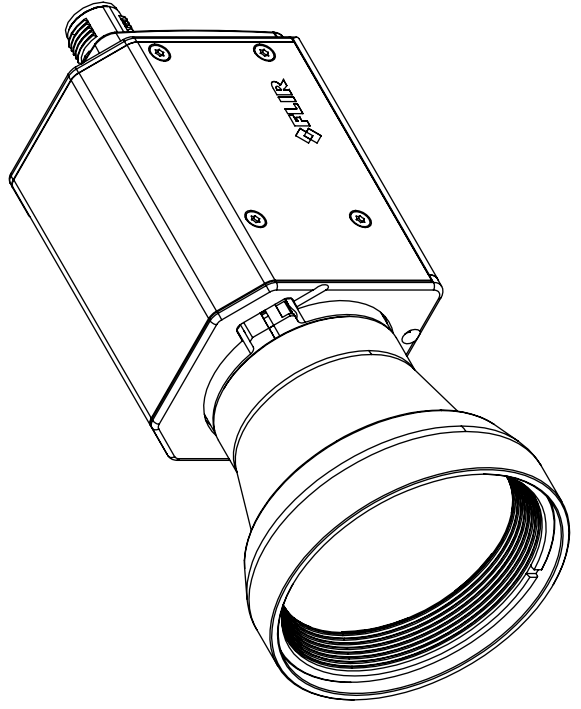
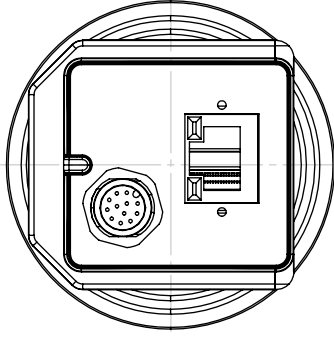
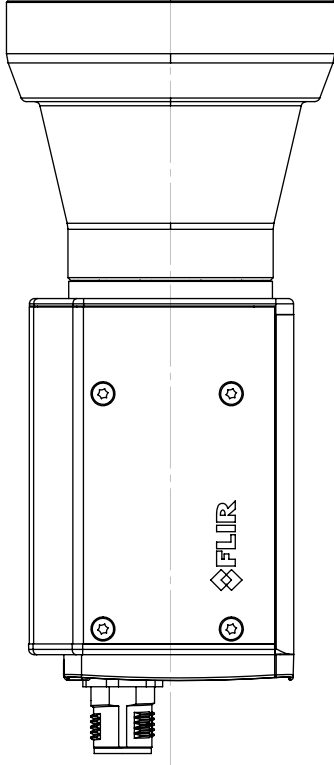
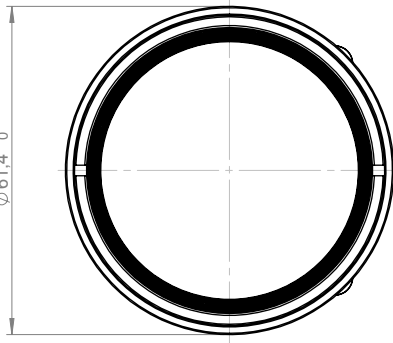
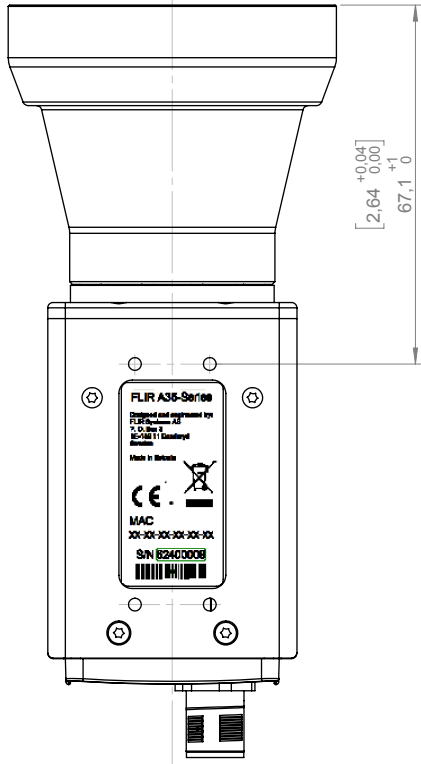
Basic dimensions:
 Camera with focal length
 $f=50$ mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
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Där ej annat anges/Unless otherwise stated		Benämning/Denomination		
Utdrag ur/Excerpt from ISO 2768-m		Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm		
0,5-6 (0,3-3) (120-400)		±0,1 Hökläsrädier ±0,2 Filter radii ±0,5 Kantler brutna (400)-1000 ±0,8 Edges broken		
Scale/Scale 1:1	Blad/Sheet 5(7)	Artno. -	Ritning/Drawing No. T129297	Rev. A3
FLIR		-002		

Basic dimensions:
 Camera with focal length
 f=60 mm IR lens.
 Only dimensions valid for
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 For all other dimensions see pages
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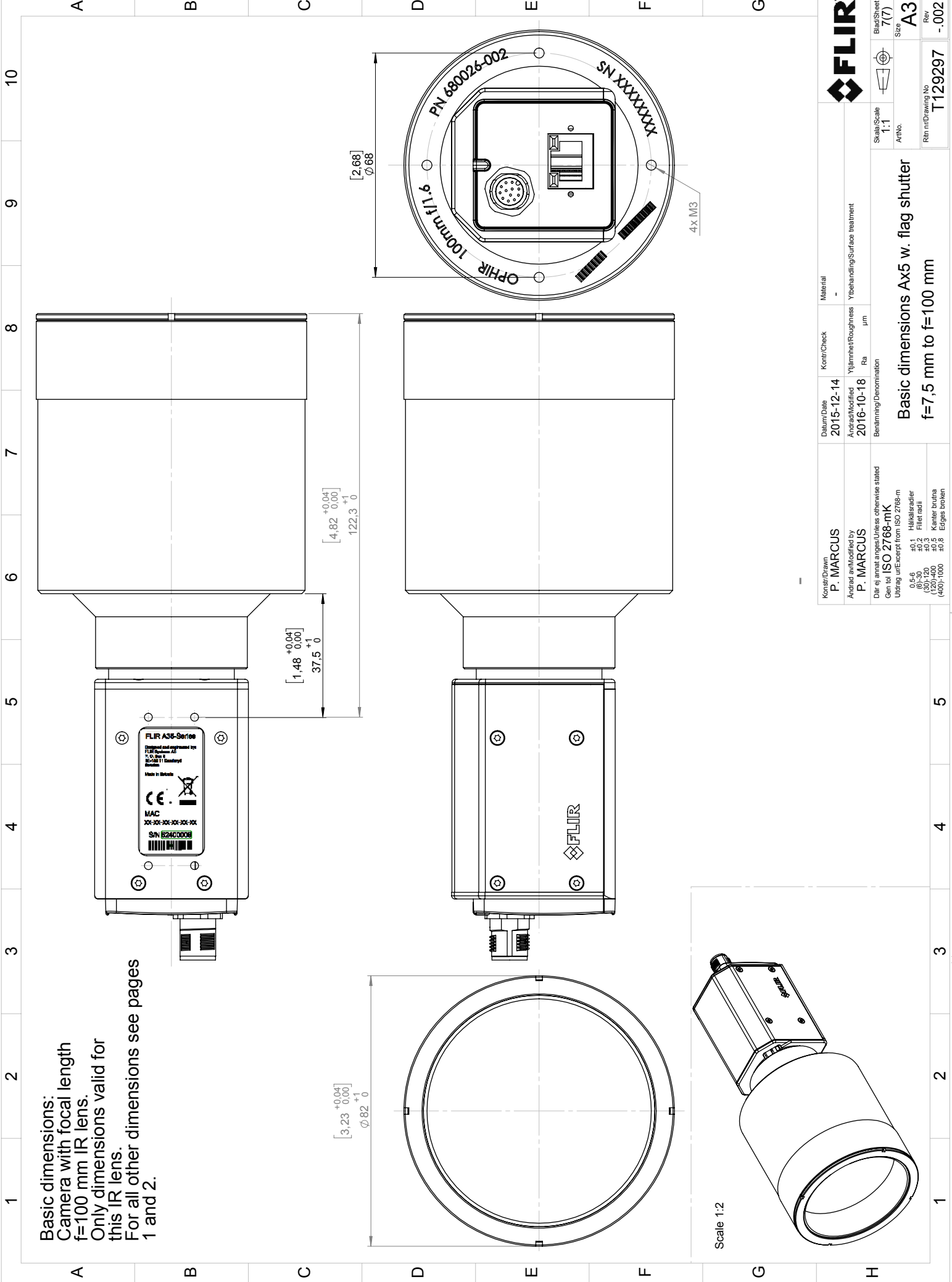
Konstr/Drawn P. MARCUS	Datum/Date 2015-12-14	Kontr/Check -	Material -
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2016-10-18	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm
Där ej annat anges/Unless otherwise stated Utdrag ur/except from ISO 2768-m	0,5-6 ±0,1 Hållradier (0,75-2) ±0,2 Filter radii (120-400) ±0,5 Kanter brutna (400-1000) ±0,8 Edgcs broken		
Scale/Scale 1:1		Blad/Sheet 6(7)	
Artno. T129297		Rev A3	
Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm			
Rinn nr/Drawing No. T129297		-002	



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Basic dimensions:
 Camera with focal length
 f=100 mm IR lens.
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Konstr/Drawn P. MARCUS	Datum/Date 2015-12-14	Kontr/Check -	Material -	Basic dimensions Ax5 w. flag shutter f=7,5 mm to f=100 mm			
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2016-10-18	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm				
Där ej annat anges/Unless otherwise stated Utdrag ur/Excerpt from ISO 2768-m							
0,5-6							
6,3-30							
120-400							
400-1000							
±0,1							
±0,2							
±0,5							
±0,8							
Höjlsradier							
Filer radii							
Kantler brutna							
Edges broken							

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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