

P/N: 73513-0102

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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"> • Very affordable. • Compact (40 mm × 43 mm × 106 mm). • GigE Vision and GenICam compliant. • GigE Vision lockable connector. • PoE (power over Ethernet). • 8-bit 640 × 512 pixel images streamed at 7.5 Hz, signal linear • 14-bit 640 × 512 pixel images streamed at 7.5 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:	
<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	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

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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 @ 7.5 Hz <ul style="list-style-type: none"> Signal linear/ DDE Automatic/ Manual Flip H&V 14-bit 640 × 512 pixels @ 7.5 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



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


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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 +50°C (+5°F to +122°F) <div style="border: 1px solid black; padding: 5px; margin-top: 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 (IEC 60068-2-6)
Declaration of conformity	See: https://support.flir.com/resources/DoC

Physical data	
Weight	0.200 kg (0.44 lb.)
Camera size (L × W × H)	106 × 40 × 43 mm (4.2 × 1.6 × 1.7 in.)
Tripod mounting	1 × UNC ¼"-20 (with Base support accessory, included in the delivery box)
Base mounting	4 × M3 thread mounting holes (bottom)
Housing material	Magnesium and aluminum



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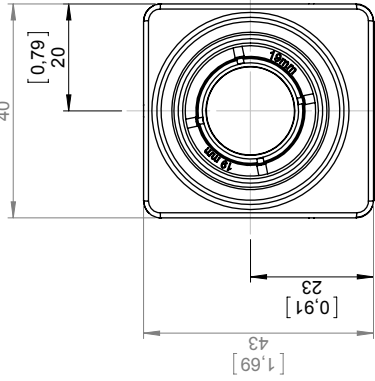
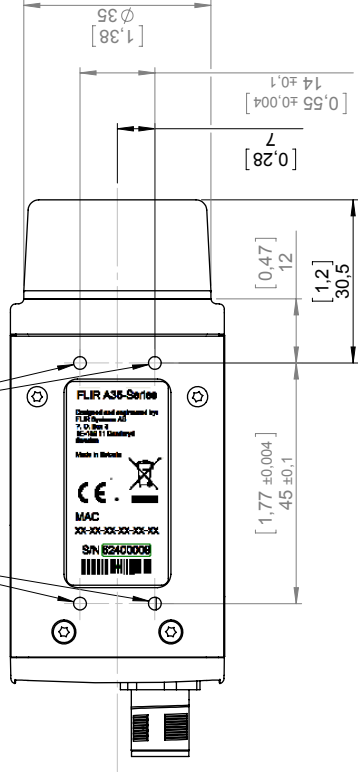
Shipping information	
Packaging, type	Cardboard box
List of contents	<ul style="list-style-type: none">• Hard transport case• Infrared camera with lens• Base support• Cable tie (2 ea.)• Ethernet cable CAT-6, 2m/6.6 ft (2 ea.)• FLIR Research Studio 1-Year Subscription (license only)• Focus adjustment tool• Gooseneck• Mains cable kit (UK,EU,US)• PoE Injector (power over Ethernet)• Printed documentation• Table stand
Packaging, weight	5.3 kg (11.7 lb.)
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:

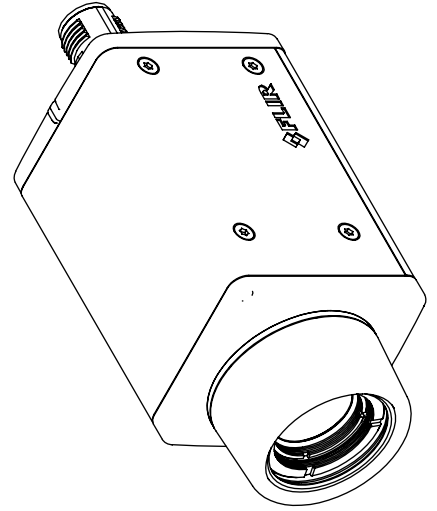
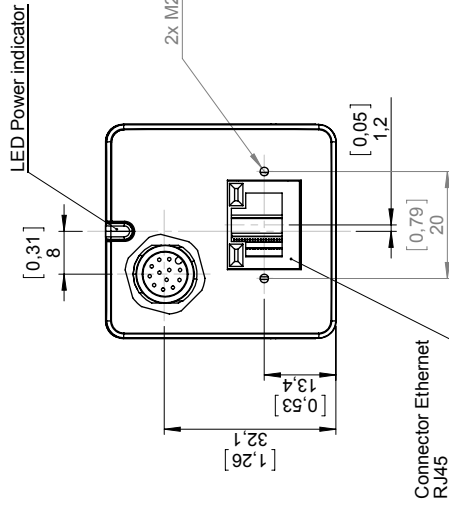
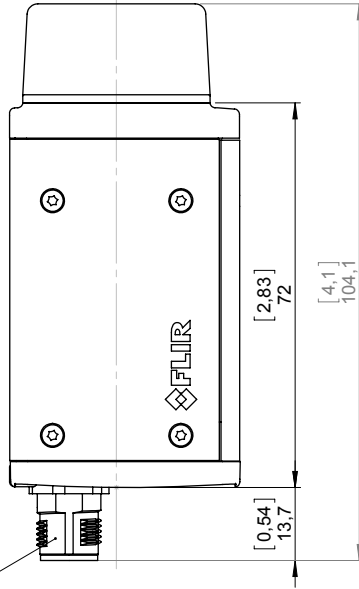
- T951004ACC; Ethernet cable CAT6, 2 m/6.6 ft.
- T198349; Base support
- T198348; Cable kit Mains (UK,EU,US)
- T127605ACC; Cable M12 Pigtail
- T127606ACC; Cable M12 Sync
- T199698; Environmental housing for Ax5
- T199356; FLIR Ax5 accessory starter kit
- T911183; Gigabit PoE injector 16 W, with multi-plugs
- T198392; Table stand kit
- T198594ACC; Transport case Ax5
- T300243; FLIR Thermal Studio Pro, 1 Year Subscription
- T300083; FLIR Thermal Studio Pro, Perpetual license
- T300341; FLIR Thermal Studio Standard, 1 Year Subscription
- T300258; FLIR Thermal Studio Standard, Perpetual license
- T198584; FLIR Tools
- T199233; FLIR Atlas SDK for .NET
- 4232535; FLIR Research Studio, Professional Edition - 1 Year Subscription (online activation)
- 4232556; FLIR Research Studio, Professional Edition - Perpetual License (online activation)
- 4232590; FLIR Research Studio, Professional Edition - Perpetual License (USB dongle)
- 4220499; FLIR Research Studio, Standard Edition - 1 Year Subscription (online activation)
- 4220500; FLIR Research Studio, Standard Edition - Perpetual License (online activation)
- 4220646; FLIR Research Studio, Standard Edition - Perpetual License (USB dongle)
- 4232591; FLIR ResearchIR to Research Studio, Professional Edition - 1 Year License Upgrade

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

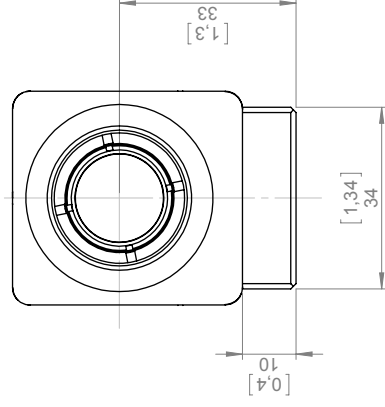
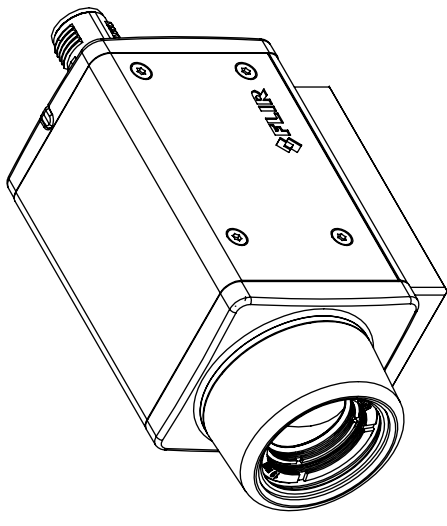
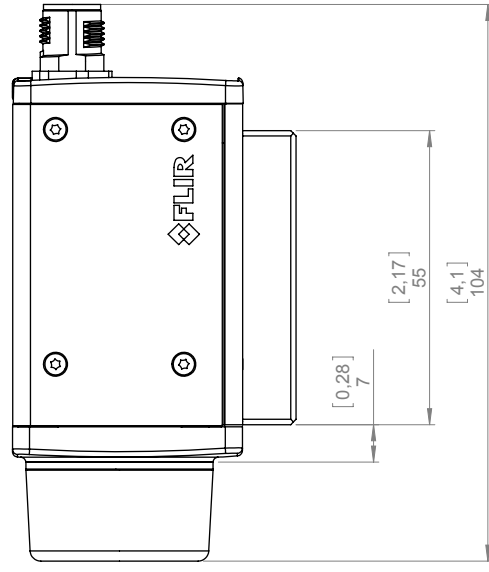
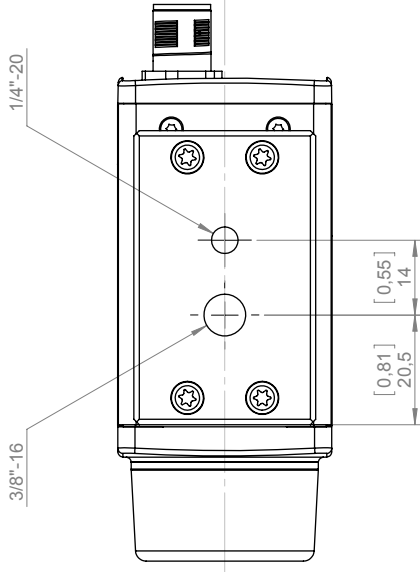


Connector GP I/O
M12 12-pin

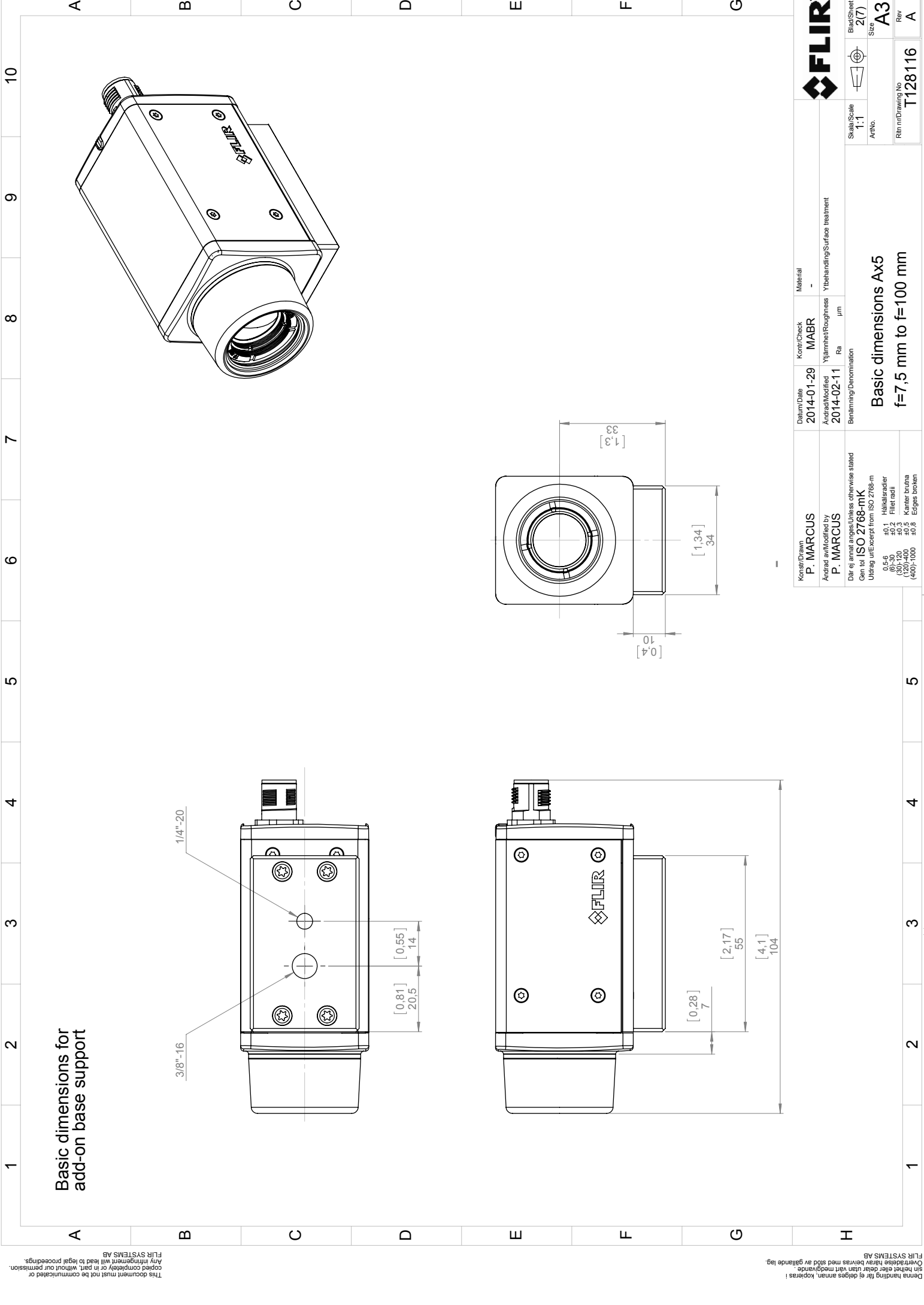


FLIR		Material	
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Datum/Date 2014-01-29		Kontr/Check MABR	
Ändrad av/Modified by P. MARCUS		Ytbehandling/Roughness Ra μm	
Benämning/Denomination Gen tol ISO 2768-mK		Ytbehandling/Surface treatment	
Där ej annat anges/Unless otherwise stated		Benämning/Denomination	
Gen tol ISO 2768-mK		Basic dimensions Ax5	
0.5-6 ±0.1 Hållisradier		f=7.5 mm to f=100 mm	
(6)-30 ±0.2 Fillet radii			
(120)-400 ±0.5 Kanter brutna			
(-400)-1000 ±0.8 Edges broken			
Skala/Scale 1:1		Blad/Sheet 1(7)	
Aritm.		Size A3	
Rit nr/Drawing No T128116		Rev A	

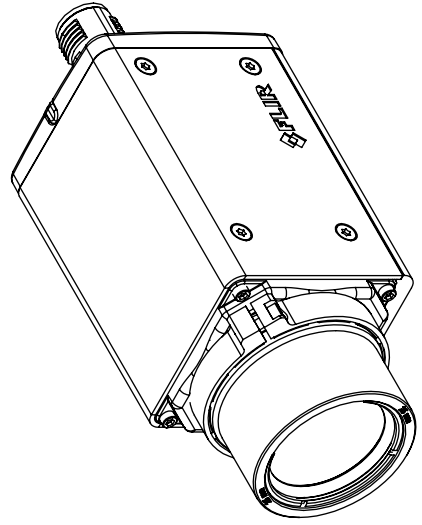
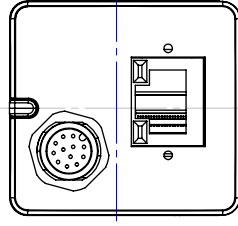
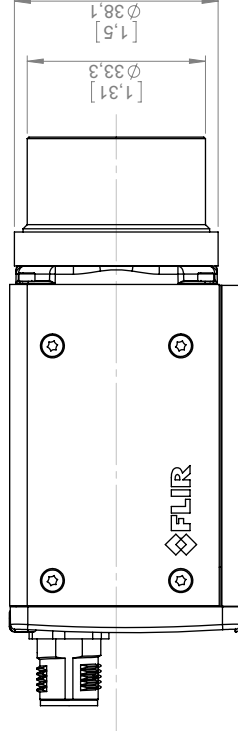
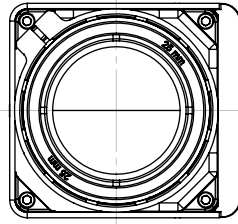
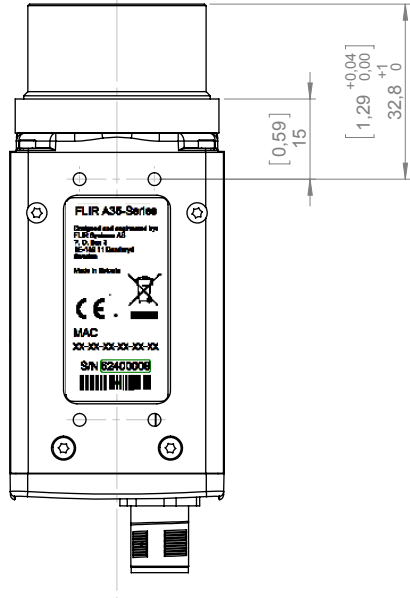
Basic dimensions for
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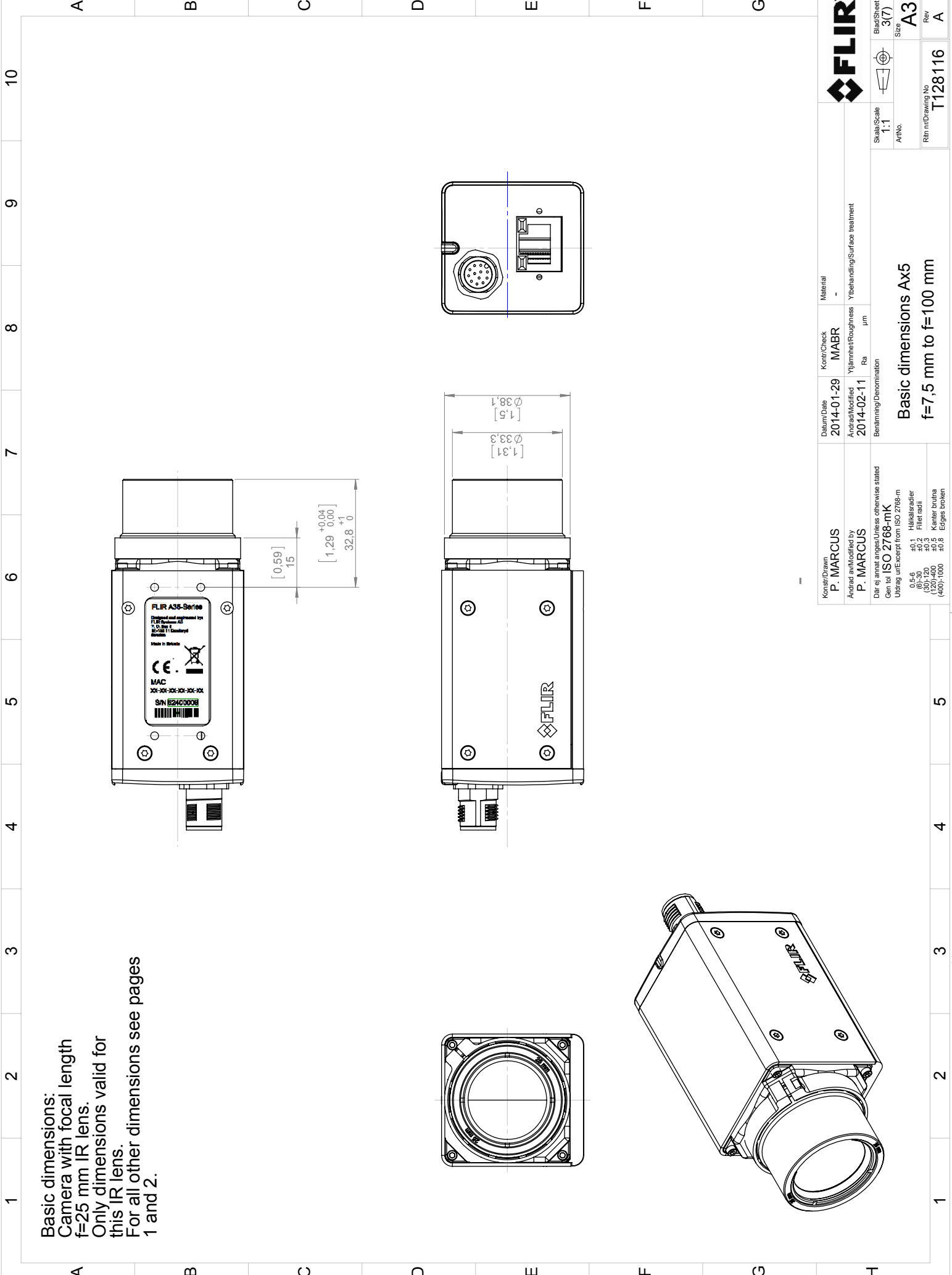
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Ändrad av/Modified by P. MARCUS		Ändrad/Modified 2014-02-11		Ytjämnhet/Roughness Ra		Ytbehandling/Surface treatment µm	
Där ej annat anges/Unless otherwise stated Utdrag ur/Excerpt from ISO 2768-m		Skala/Scale 1:1		Blad/Sheet 2(7)		SIS A3	
0,5-6 ±0,1 Hållisradier (0,25-1,25) ±0,2 Fillet radii (120-400) ±0,5 Kanter brutna (400)-1000 ±0,8 Edges broken		Artno. T128116		Ritning/Drawing No. T128116		Rev A	
Basic dimensions Ax5 f=7,5 mm to f=100 mm							



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.



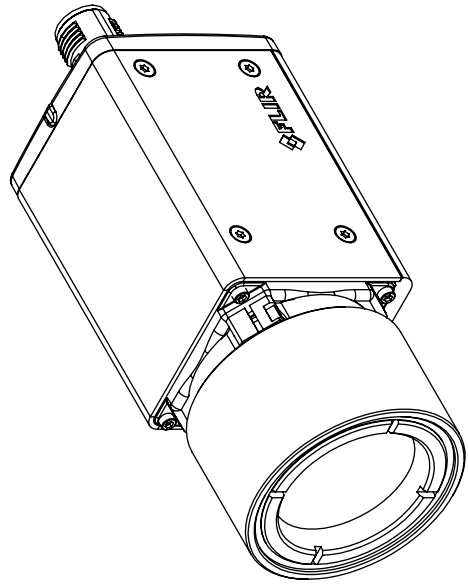
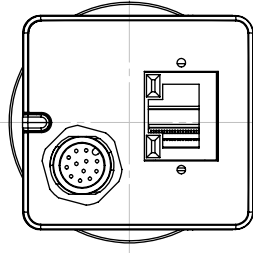
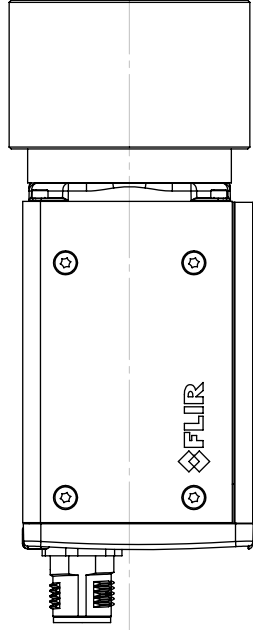
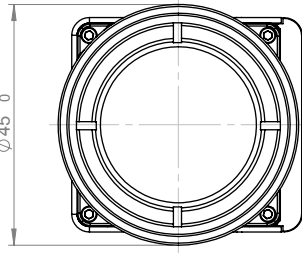
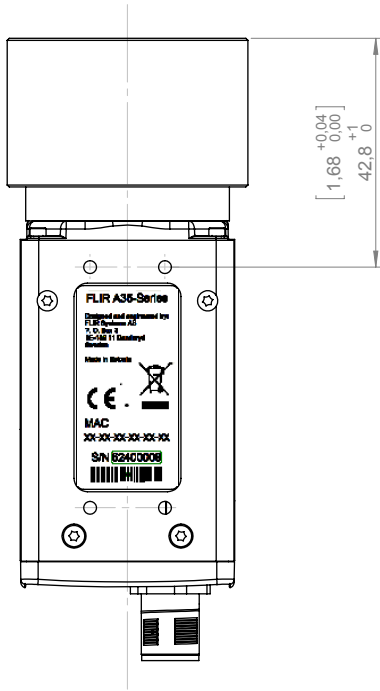
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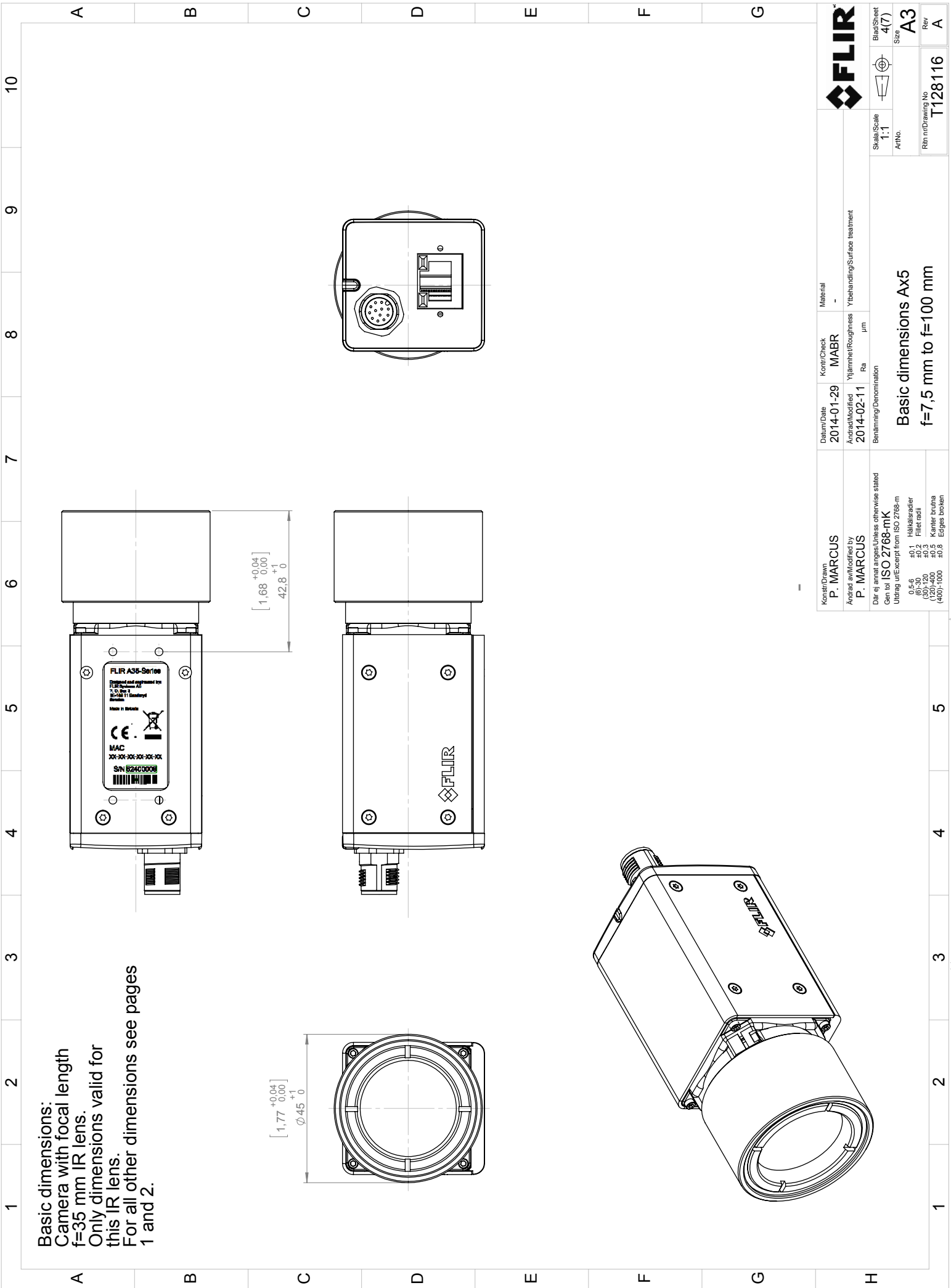
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Andrad av/Modified by P. MARCUS		Andrad/Modified 2014-02-11		Ytjämnhet/Roughness Ra		Ytbehandling/Surface treatment µm		Skala/Scale 1:1	
Övrigt utifrån/except from ISO 2768-m 0.5-6 ±0.1 Hållräddradier (0.7-30 ±0.2 Fillet radii (120-400 ±0.5 Kanter brutna (400)-1000 ±0.8 Edges broken		Där ej annat anges/Unless otherwise stated		Benämning/Denomination Basic dimensions Ax5 f=7.5 mm to f=100 mm		Ritning/Drawing No. T128116		Blad/Sheet 3(7)	
								Rev A3	
								A	

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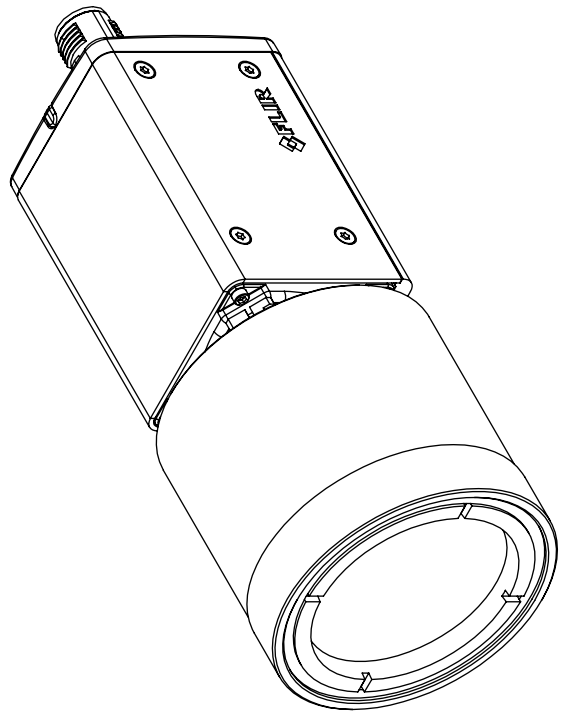
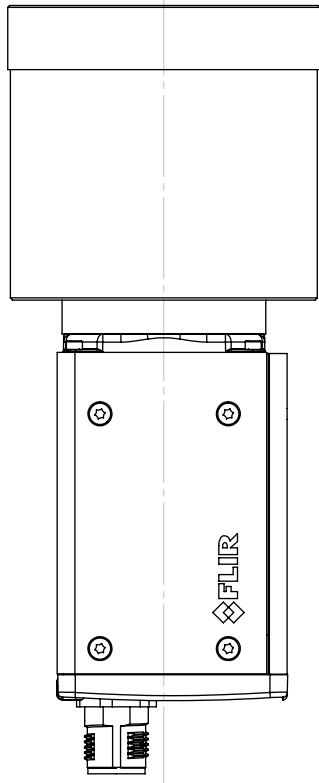
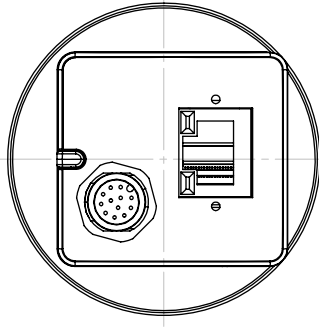
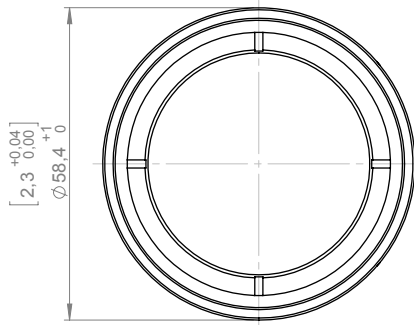
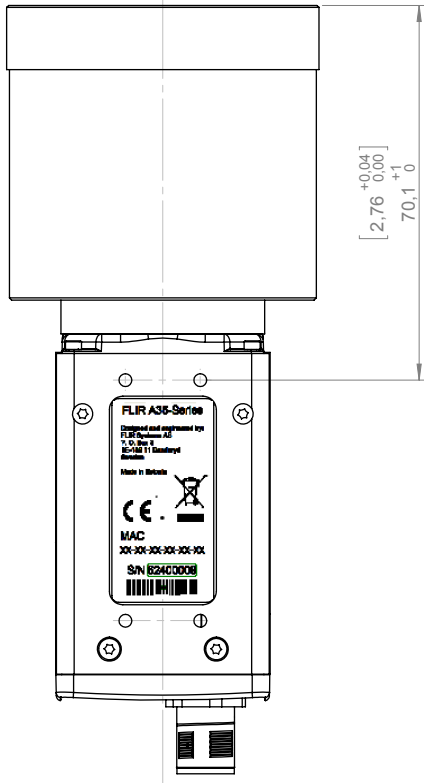
Basic dimensions:
 Camera with focal length
 f=35 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



Konstr/Drawn P. MARCUS		Datum/Date 2014-01-29		Kontr/Check MABR		Material -	
Ändrad av/Modified by P. MARCUS		Ändrad/Modified 2014-02-11		Ytjämnhet/Roughness Ra		Ytbehandling/Surface treatment µm	
Gen till ISO 2768-mK Utdrag ur/except from ISO 2768-m		Där ej annat anges/Unless otherwise stated		Benämning/Denomination		Skala/Scale 1:1	
0.5-6 0.1-30 0.02-0.2 120-400 400-1000		Hål/sår/radii Hål/sår/radii Kantfil Kantfil		Blad/Sheet 4(7)		SIS A3	
±0.1 ±0.2 ±0.5 ±0.8		Håll/sår/radii Hål/sår/radii Kantfil Kantfil		Ritning/Drawing No. T128116		Rev A	
Basic dimensions Ax5 f=7.5 mm to f=100 mm							



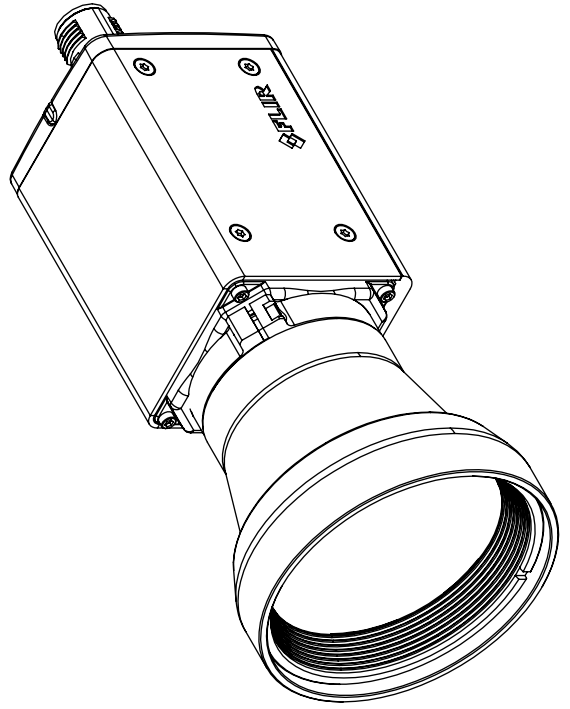
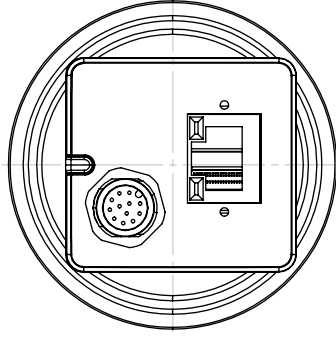
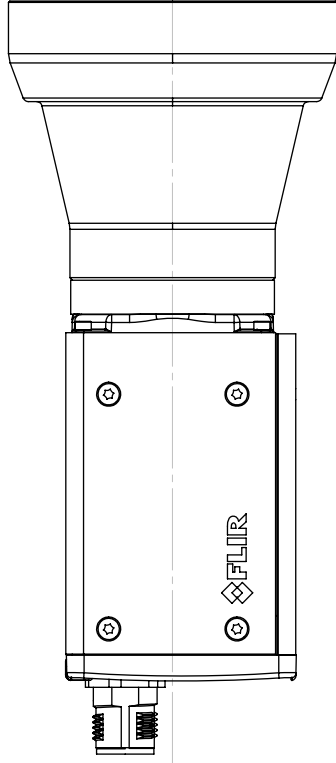
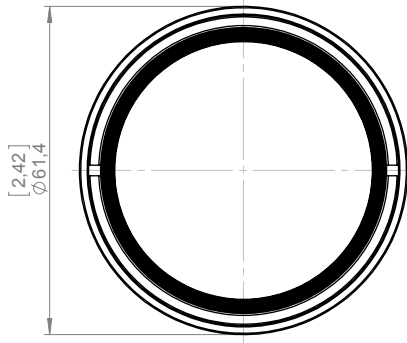
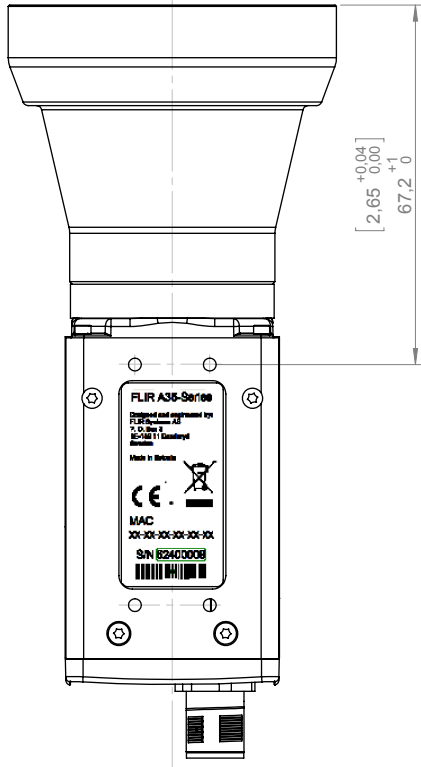
Basic dimensions:
 Camera with focal length
 $f=50$ mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



Konstr/Drawn	P. MARCUS	Datum/Date	2014-01-29	Kontr/Check	MABR	Material	-
Ändrad av/Modified by	P. MARCUS	Ändrad/Modified	2014-02-11	Ytjämnhet/Roughness	µm	Ytbehandling/Surface treatment	
Övrigt utöver ISO 2768-m	0,5-6 6,3-30 120-400 400-1000	Benämning/Denomination		Skala/Scale	1:1	Blad/Sheet	5(7)
Centrerat Centered	±0,1 ±0,2 ±0,5 ±0,8			ÄrNo.		Rev	A3
Utdrag utöver ISO 2768-m	Höjlsradier Fileradii			Ritning/Drawing No.	T128116		A

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

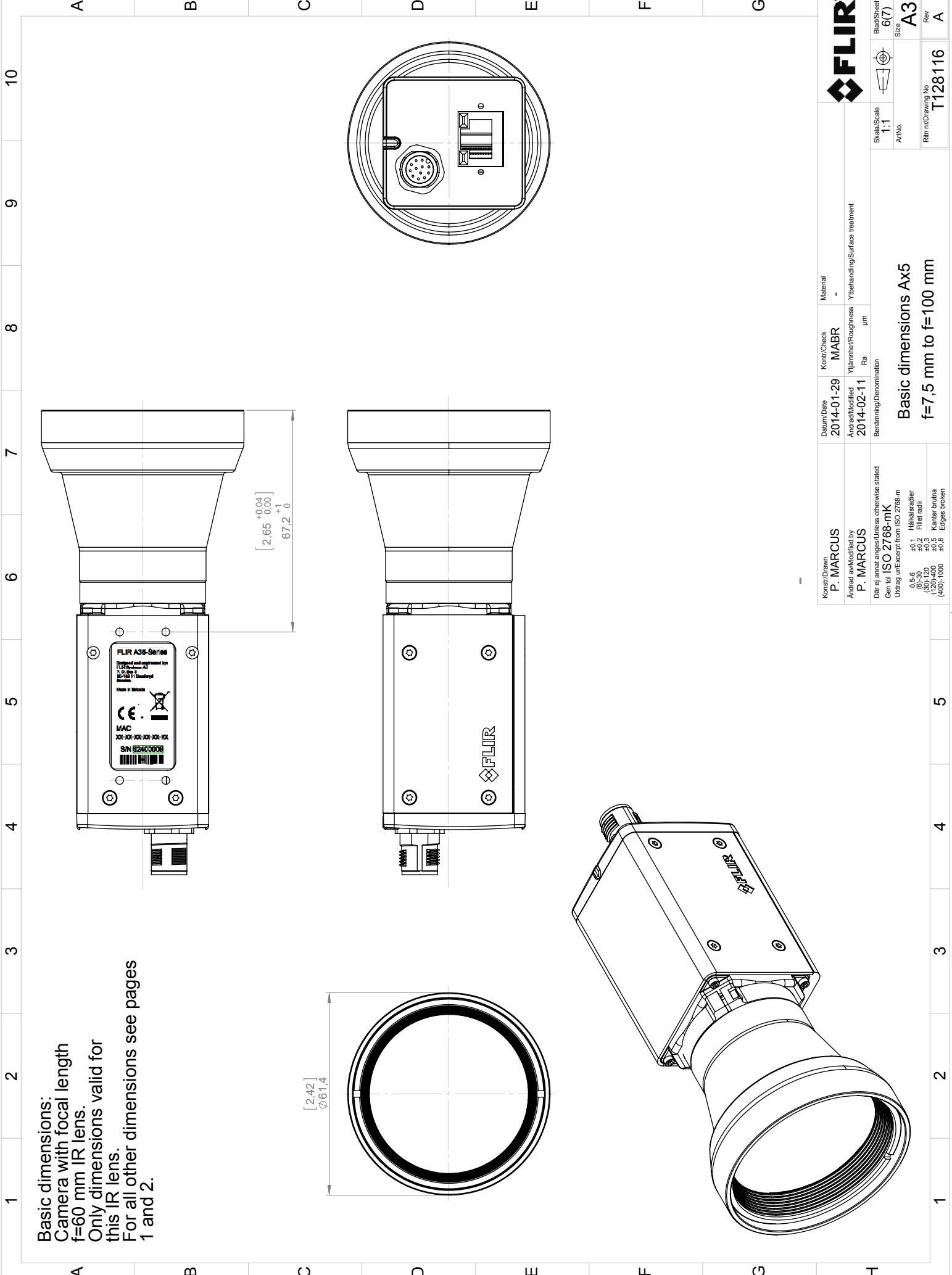
Basic dimensions:
 Camera with focal length
 f=60 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



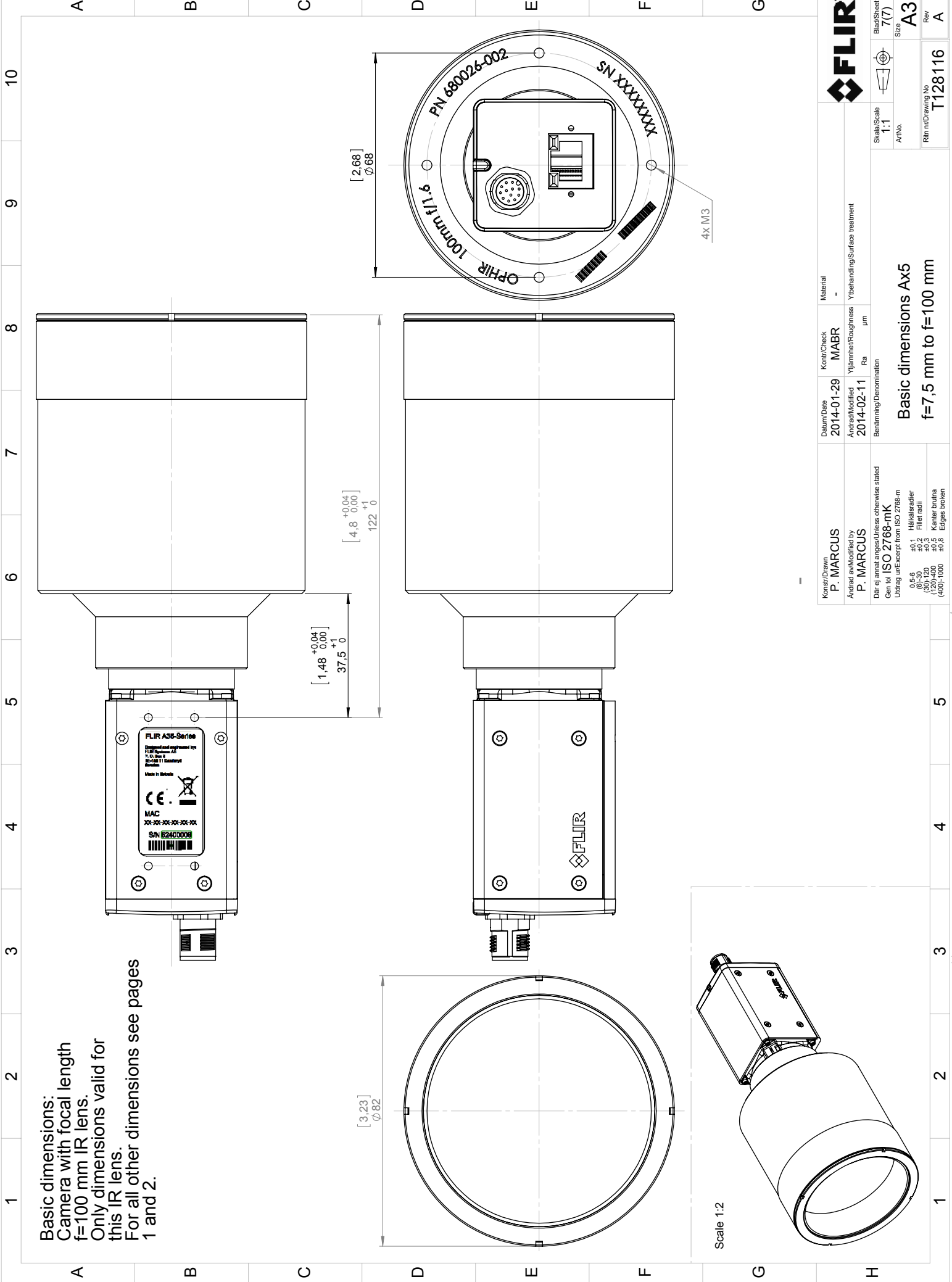
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Konstr/Drawn P. MARCUS		Datum/Date 2014-01-29	Kontr/Check MABR	Material -
Ändrad av/Modified by P. MARCUS		Ändrad/Modified 2014-02-11	Ytjämnhet/Roughness Ra	Ytbehandling/Surface treatment µm
Där ej annat anges/Unless otherwise stated Utdrag ur/except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



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.



FLIR		Blad/Sheet 7(7)		Siz A3	
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		Höjlsradier +0.1			
(0.1-2)		Fileradii +0.2			
(120-400)		Kantler brutna ±0.5			
(400-1000)		Kantler brutna ±0.8			