

P/N: 73525-0101

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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 (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. | |
| <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) | 25° × 20° |
| Focal length | 25 mm (0.98 in.) |
| Spatial resolution (IFOV) | 0.68 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 |


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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;"> <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) |

| Physical data | |
|-------------------------|--|
| 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 | UNC ¼"-20 (on three sides) |
| 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 • Printed documentation |
| Packaging, weight | |
| Packaging, size | 295 x 200 x 105 mm (11.6 x 7.9 x 4.1 in.) |
| EAN-13 | 7332558010631 |
| UPC-12 | 845188011307 |
| Country of origin | Sweden |

Supplies & accessories:

- T951004ACC; Ethernet cable CAT6, 2 m/6.6 ft.



FLIR A65 f=25 mm (7.5 Hz)

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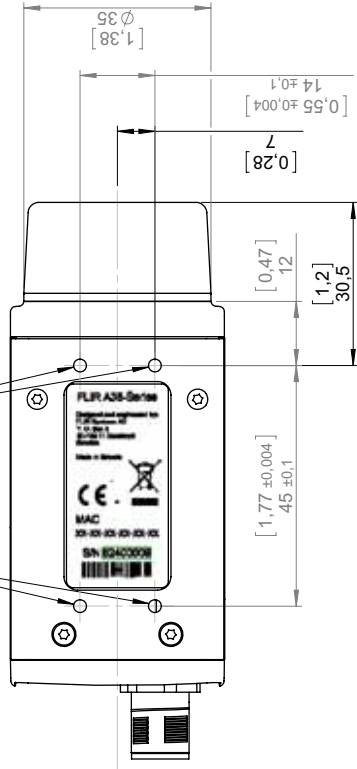
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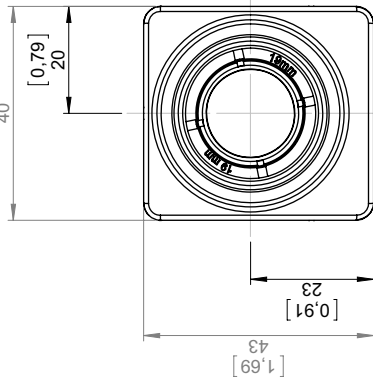
- T198349; Base support
- T198348; Cable kit Mains (UK,EU,US)
- T198392; Table stand kit
- T911183; Gigabit PoE injector 16 W, with multi-plugs
- T127605ACC; Cable M12 Pigtail
- T127606ACC; Cable M12 Sync
- T198594ACC; Transport case Ax5
- T198584; FLIR Tools
- T198583; FLIR Tools+ (download card incl. 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

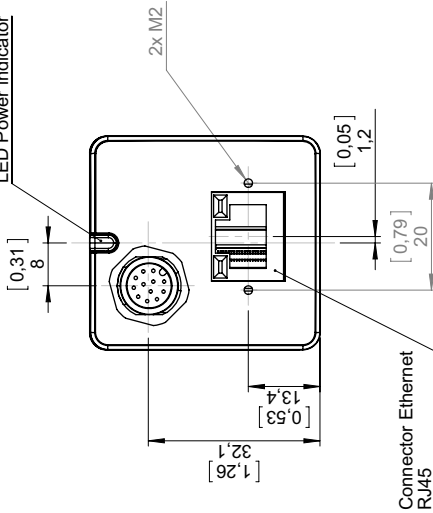
4x M3
Depth max 4 mm



Connector GP I/O
M12 12-pin

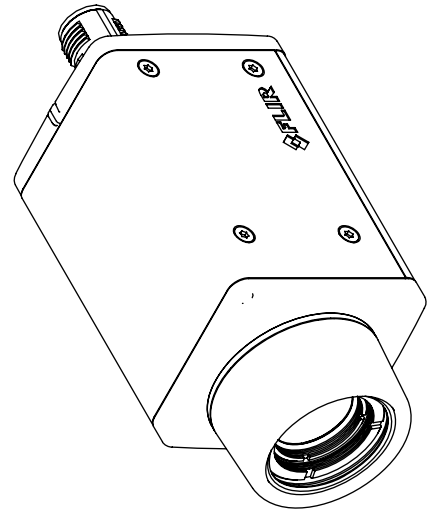


LED Power indicator



Connector Ethernet
RJ45

2x M2



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Där ej annat anges sålunda övrigt som står i Gen. tol. ISO 2768-mK
Utdrag av/Excerpt from ISO 2768-m
0,6-6 ±0,1 Hållkärnsradier
(6)-30 ±0,2 Filler radii
(120)-400 ±0,5 Kanter brutna
(400)-1000 ±0,8 Edges broken

Datum/Date 2014-01-29
Ändrad/Modified 2014-02-11
Benämning/Denomination
Material -
Ytbehandling/Surface treatment
Yttextur/Roughness Ra
Ytfinish/Finish µm

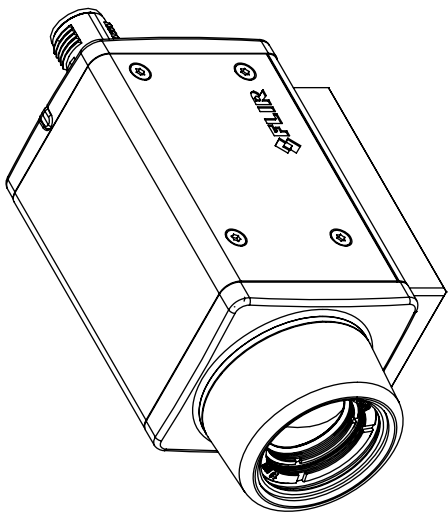
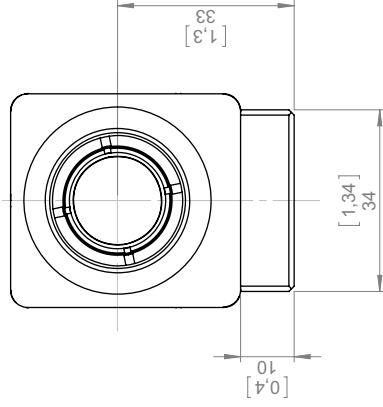
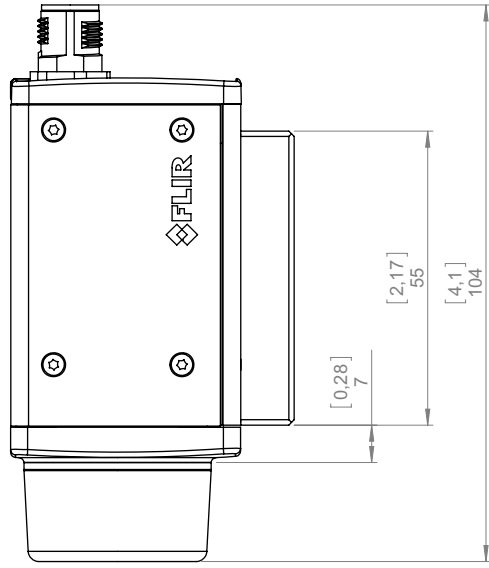
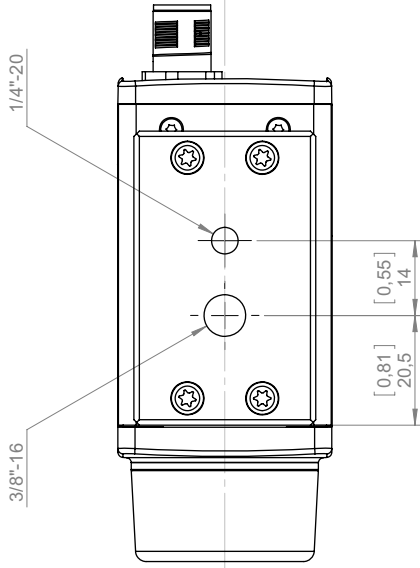


Skala/Scale 1:1
Aritm. 1(7)
Blad/Sheet A3
Storlek/Size

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

Ritn nr/Drawing No. T128116
Rev A

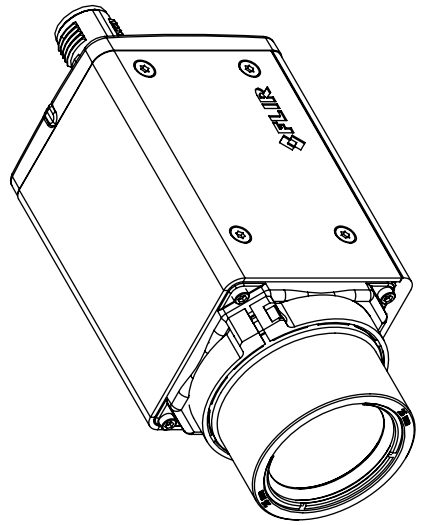
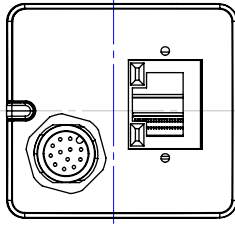
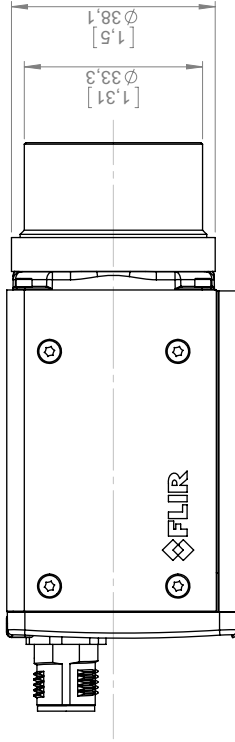
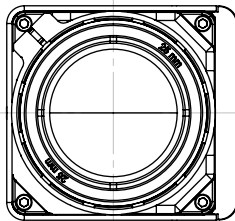
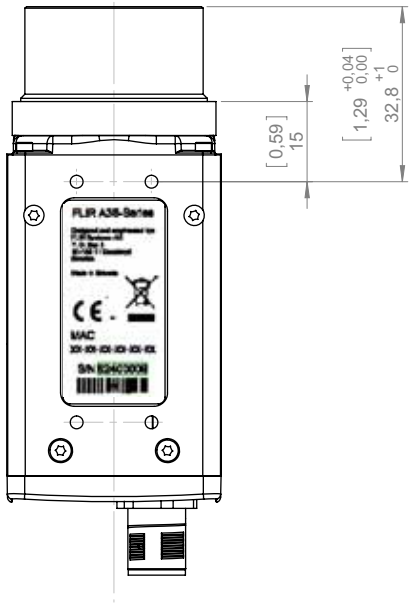
Basic dimensions for
add-on base support



| | | | |
|---|--|---------------------------------------|--------------------------------|
| Konstr/Drawn P. MARCUS | | Kontroll/Check MABR | Material - |
| Ändrad av/Modified by P. MARCUS | | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment |
| Datum/Date 2014-01-29 | | Skala/Scale 1:1 | Blad/Sheet 2(7) |
| Ändrad/Modified 2014-02-11 | | ÄRNO. | Stor A3 |
| Benämning/Denomination Basic dimensions Ax5 f=7,5 mm to f=100 mm | | Revidering/Revision T128116 | Rev A |
| Gen. tol. ISO 2768-mK Utdrag ut/Excerpt from ISO 2768-m 0,5-68 ±0,1 Hållkåradier (63)-30 ±0,2 Filler radii (120)-400 ±0,5 Kanter brutna (400)-1000 ±0,8 Edges broken | | | |



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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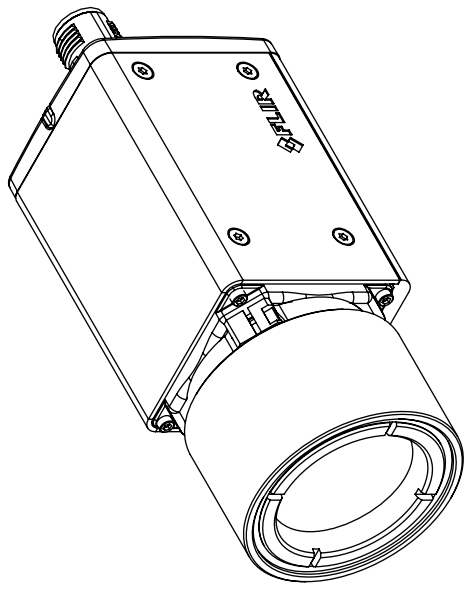
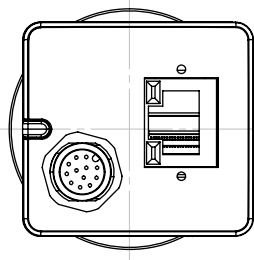
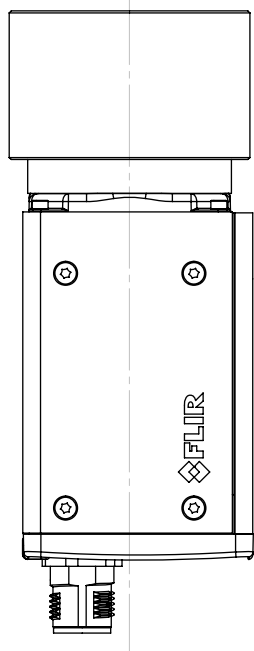
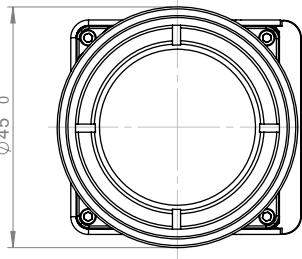
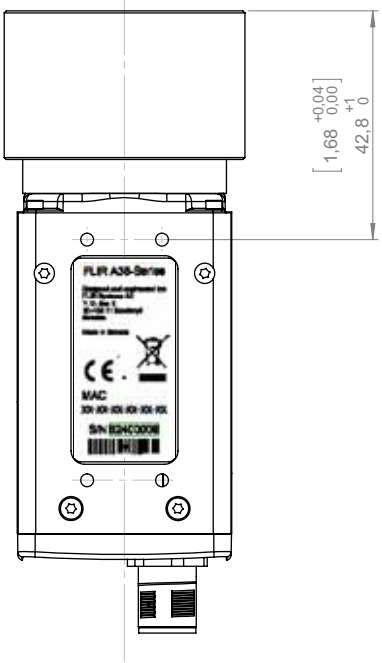
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| | | | | |
|--|--|--|---------------------------|-------------------------------------|
| Konstr/Drawn P. MARCUS | | Datum/Date 2014-01-29 | Kontroll/Check MABR | Material - |
| Ändrad av/Modified by P. MARCUS | | Ändrad/Modified 2014-02-11 | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment - |
| Gen. tol. ISO 2768-mK Utödrag ut/Excerpt from ISO 2768-m | | Benämning/Denomination Basic dimensions Ax5 f=7,5 mm to f=100 mm | | |
| Där ej annat anges/Unless otherwise stated | | Stapel/Scale 1:1 | | |
| 0.5-6 0.1 Hållradier (0.1-30) Filler radii (120-400) 30.5 Kanter brutna (400)-1000 30.8 Edges broken | | År/No. T128116 | | |
| 0.5-6 0.1 Hållradier (0.1-30) Filler radii (120-400) 30.5 Kanter brutna (400)-1000 30.8 Edges broken | | Blad/Sheet 3(7) | | |
| | | Sida A3 | | |
| | | Rev A | | |



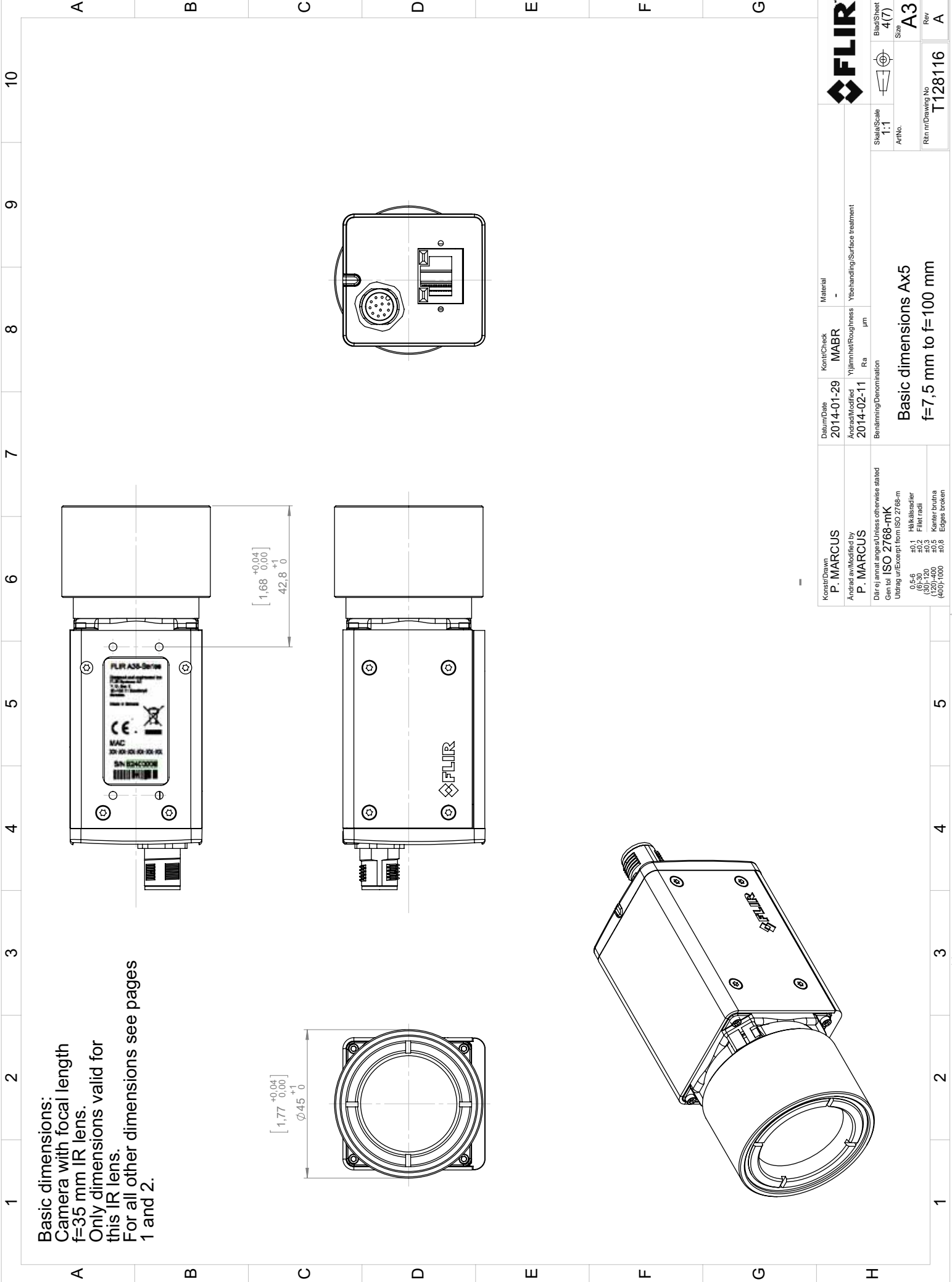
Rev
A

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.

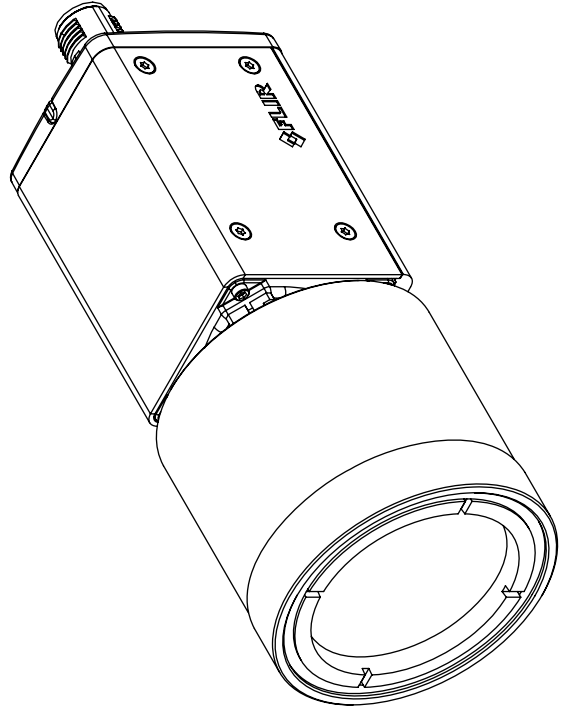
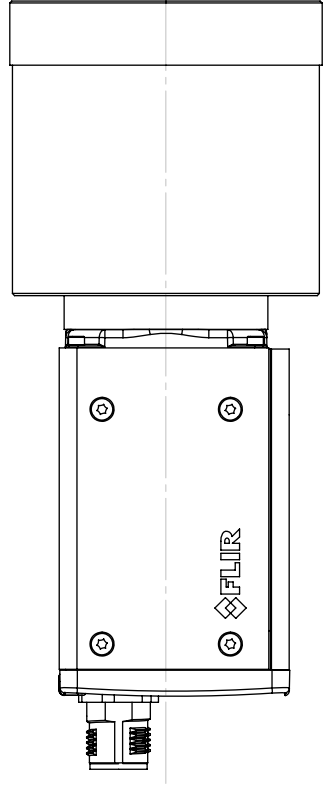
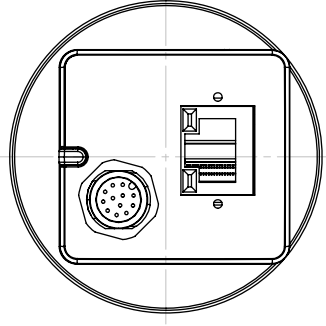
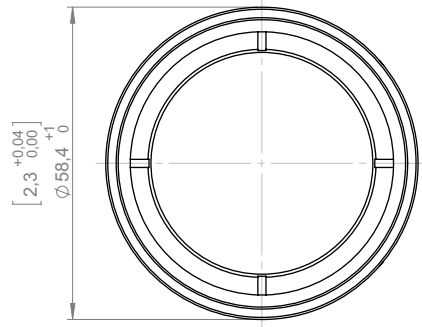
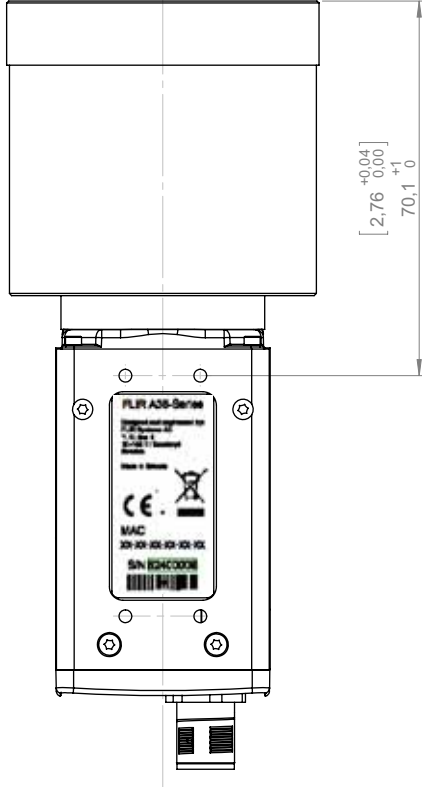


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| | | |
|---|-------------------------------|--------------------------------|
| Konstr/Drawn P. MARCUS | Kontroll/Check MABR | Material - |
| Ändrad av/Modified by P. MARCUS | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment |
| Dat/Date 2014-01-29 | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment |
| Ändrad av/Modified by 2014-02-11 | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment |
| Där ej annat anges/Unless otherwise stated Gen. tol. ISO 2768-mK | Benämning/Denomination | |
| Utdrag ut/Excerpt from ISO 2768-m 0,6-68 ±0,1 Hållradier (6)-30 ±0,2 Filler radii (120)-400 ±0,5 Kanter brutna (400)-1000 ±0,8 Edges broken | | |
| <p style="text-align: center;">Basic dimensions Ax5 f=7,5 mm to f=100 mm</p> | | |
| <p style="text-align: right;">Stapel/Scale 1:1</p> | | |
| <p style="text-align: right;">Blad/Sheet 4(7)</p> | | |
| <p style="text-align: right;">Sida A3</p> | | |
| <p style="text-align: right;">Rit nr/Drawing No T128116</p> | | |
| <p style="text-align: right;">Rev A</p> | | |



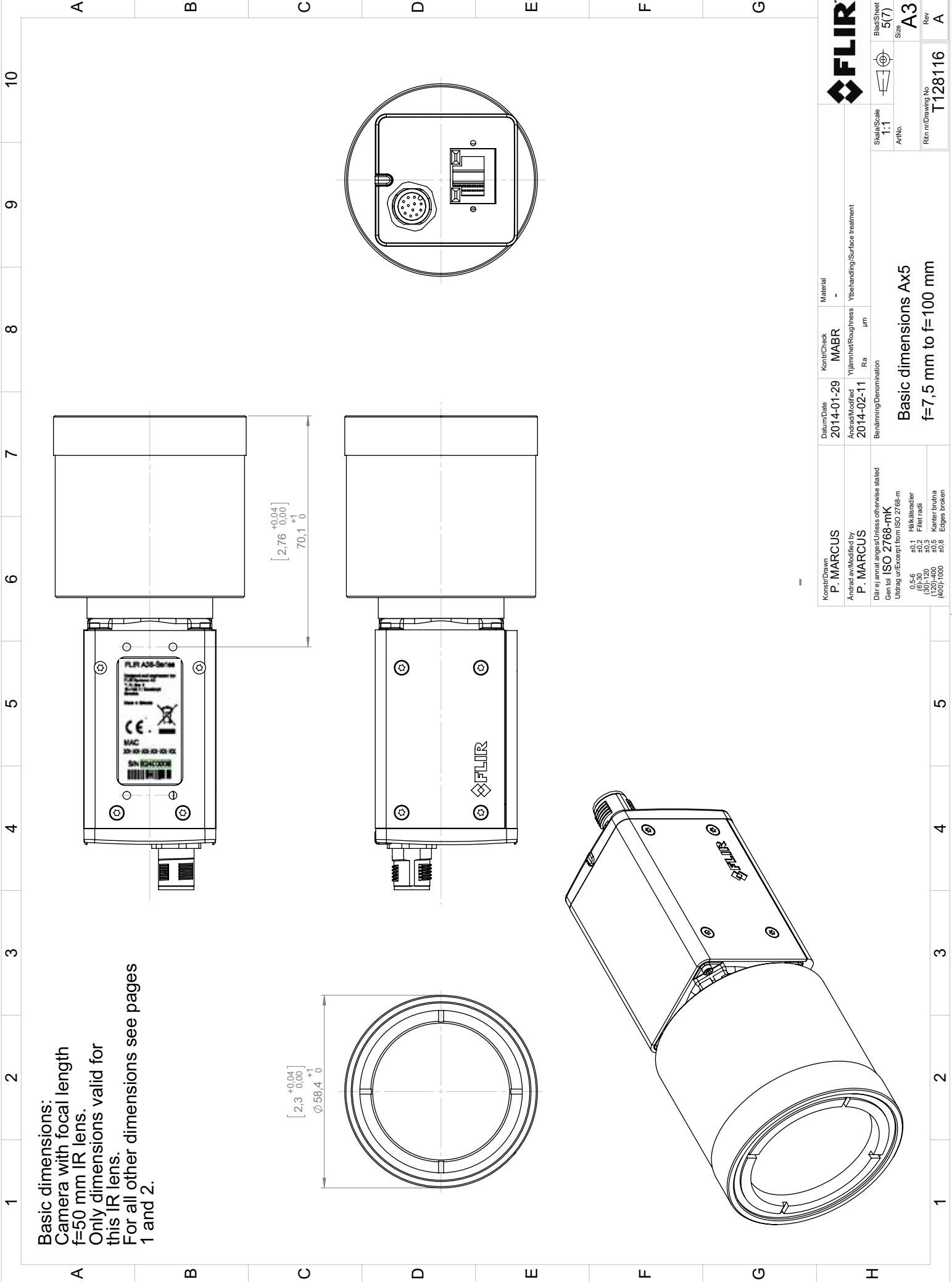
Basic dimensions:
 Camera with focal length
 f=50 mm IR lens.
 Only dimensions valid for
 this IR lens.
 For all other dimensions see pages
 1 and 2.



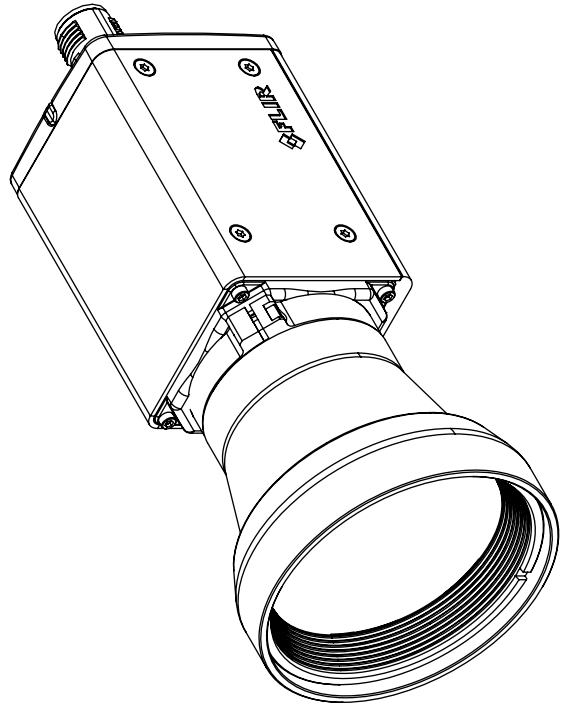
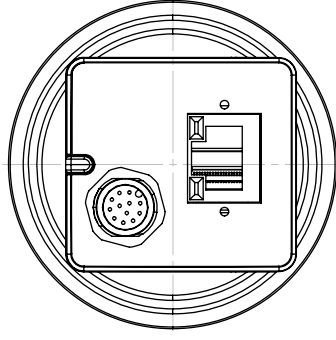
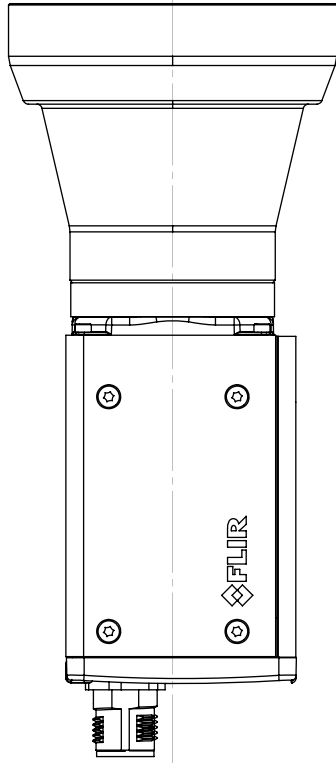
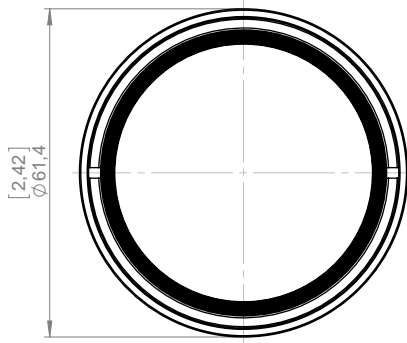
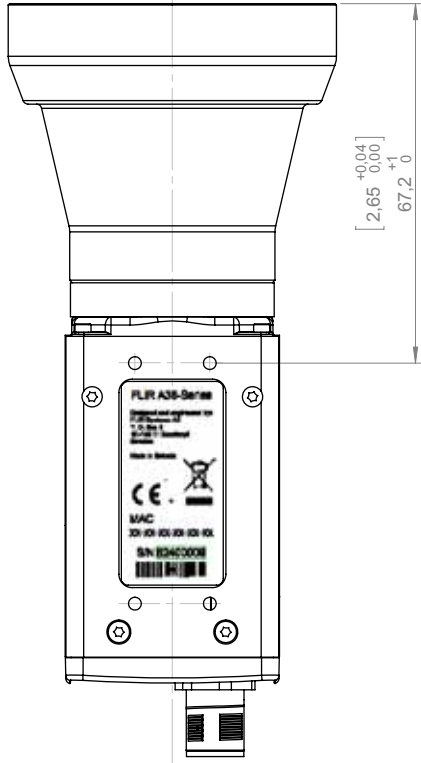
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| | | | | |
|---|--|--|----------------------------------|---|
| Konstruktör P. MARCUS | | Datum/Date 2014-01-29 | Kontroll/Check MABR | Material - |
| Ändrad av/Modified by P. MARCUS | | Ändrad/Modified 2014-02-11 | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment µm |
| Gen. tol. ISO 2768-mk Utdrag ut/Excerpt from ISO 2768-m | | Benämning/Denomination Basic dimensions Ax5 f=7,5 mm to f=100 mm | | |
| Där ej annat anges/Unless otherwise stated | | Skala/Scale 1:1 | | |
| 0,5-6 0,5-30 0,5-120 120-400 400-1000 | | ÅRNO. 5(7) | | |
| ±0,1 Hållradier ±0,2 Filler radii ±0,5 Kanter brutna ±0,8 Edges broken | | Rit nr/Drawing No. T128116 | | |
| | | Rev A | | |



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.



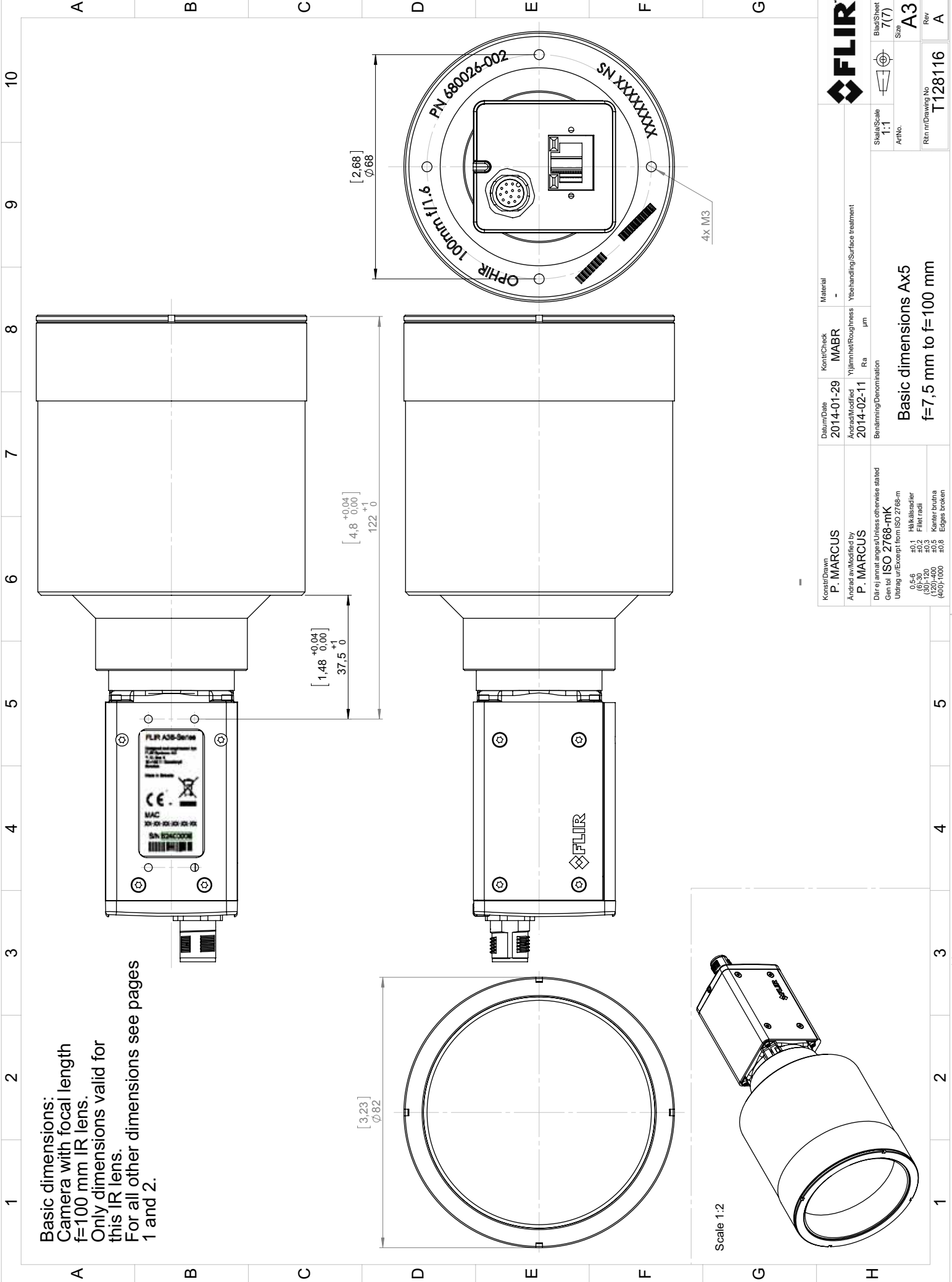
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| | | | | |
|---|--|--------------------------------------|-------------------------------|--------------------------------------|
| Konstr/Drawn P. MARCUS | | Datum/Date 2014-01-29 | Kontroll/Check MABR | Material - |
| Ändrad av/Modified by P. MARCUS | | Ändrad/Modified 2014-02-11 | Ytjämnhet/Roughness Ra | Ytbehandling/Surface treatment µm |
| Gen tol. ISO 2768-mK Ultragång ut/Exempt from ISO 2768-m | | Benämning/Denomination | | |
| Där ej annat anges/Unless otherwise stated | | Stapel/Scale 1:1 | | |
| 0,5-68 0,61-30 0,75-10 1,20-400 40,5 400)-1000 | | År/No. 6(7) | | |
| ±0,1 Hållkåradier ±0,2 Filler radii ±0,5 Kanter brutna ±0,8 Edges broken | | Rit nr/Drawing No. T128116 | | |
| Basic dimensions Ax5 f=7,5 mm to f=100 mm | | Blad/Sheet A3 | | |
| | | 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) | | Sida A3 | | Rev A | |
| Stapel/Scale 1:1 | | År/No. A/INO. | | Ritning/Drawing No. T128116 | | | |
| Konstr/Drawn P. MARCUS | | Kontroll/Check MABR | | Material - | | | |
| Datum/Date 2014-01-29 | | Ändrad/Modified 2014-02-11 | | Ytbehandling/Surface treatment Ybhandling/Surface treatment | | | |
| Ändrad av/Modified by P. MARCUS | | Ytjämnhet/Roughness Ra | | µm | | | |
| Där ej annat anges/Unless otherwise stated | | Gen. tol. ISO 2768-mK | | Ultragång/Exempt from ISO 2768-m | | | |
| 0.5-8 | | ±0.1 | | Hållkåradier | | | |
| 0.5-30 | | ±0.2 | | Fyller radii | | | |
| 120-400 | | ±0.5 | | Kanter brutna | | | |
| 400-1000 | | ±0.8 | | Edges broken | | | |
| Basic dimensions Ax5 | | | | f=7,5 mm to f=100 mm | | | |

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



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