FLIR AX8 9 Hz

P/N: 71201-0101

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Website

http://www.flir.com

Customer support

http://support.flir.com

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General description
The FLIR AX8 camera/sensor provides an affordable and accurate temperature measurement solution for anyone who needs to solve problems that need built in “smartness” such as analysis, alarm functionality, and autonomous communication using standard protocols. The FLIR AX8 also has all the necessary features and functions to build distributed single- or multi-camera solutions utilizing standard Ethernet hardware and software protocols.
The FLIR AX8 also has built-in support to connect to industrial control equipment such as PLCs, and allows the sharing of analysis and alarm results and simple control using the Ethernet/IP and Modbus TCP field bus protocols.
Key features:
• Support for the EthernetIP field bus protocol (analyze, alarm, and simple camera control). • Support for the Modbus TCP field bus protocol (analyze, alarm, and simple camera control). • Built-in analysis functionality. • Alarm functionality, as a function of analysis and more. • Built-in web server for control and set up. • MJPEG, MPEG-4, or H.264 image streaming. • PoE (Power over Ethernet). • General-purpose output. • 100 Mbps Ethernet (100 m cable). • On alarm: file sending (FTP) or e-mail (SMTP) of analysis results or images.
Typical applications:
• Electrical and mechanical condition-monitoring applications where temperature or temperature trends can be an indication of a potential risk of failure. • Simple process control applications.

Imaging and optical data	
IR resolution	80 × 60 pixels
Thermal sensitivity/NETD	< 0.10°C @ +30°C (+86°F) / 100 mK
Field of view (FOV)	48° × 37°
Depth of field	0.1 m (0.33 ft.), infinity
Focal length	1.54 mm (0.061 in.)

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Imaging and optical data	
Spatial resolution (IFOV)	11.1 mrad
F-number	1.1
Image frequency	9 Hz
Focus	Fixed

Detector data	
Detector type	Focal plane array (FPA), uncooled microbolometer
Spectral range	7.5–13 µm
Detector pitch	17 µm
Detector time constant	Typical 12 ms

Visual camera	
Built-in digital camera	640 × 480
Digital camera, FOV	Adapts to the IR lens
Sensitivity	Minimum 10 lux without illuminator

Measurement	
Object temperature range	–10 to +150°C (14 to +302°F)
Accuracy	±2°C (±3.6°F) or ±2% of reading (+10 to +100°C @ +10 to +35°C ambient)

Measurement analysis	
Spotmeter	6
Area	6 boxes with max./min./average
Automatic hot/cold detection	Max./min. temperature value and position shown within box
Measurement presets	Yes
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 0.01 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

Alarm	
Alarm functions	Automatic alarms on any selected measurement function. A maximum of 5 alarms can be set.
Alarm output	Digital out, store image, file sending (FTP), email (SMTP), notification

Set-up	
Color palettes	Color palettes (BW, BW inv, Iron, Rain)
Set-up commands	Date/time, Temperature (°C/°F)
Web interface	Yes

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Storage of images	
Storage media	Built-in memory for image storage
Image storage mode	IR, visual, MSX
File formats	JPEG + FFF

Image streaming	
Image streaming formats	• Motion JPEG stream MJPEG Baseline Process Encoder Baseline ISO/IEC 10918-1 JPEG compliance • MPEG stream Stream format MPEG-4 ISO/IEC 14496-2 Simple Profile level 2 • H.264 stream Stream format H.264 Baseline Profile level 2.0
Image streaming resolution	640 × 480
Image modes	• Thermal • Visual • MSX
Automatic image adjustment	Continuous
Multi Spectral Dynamic Imaging (MSX)	IR image with enhanced detail presentation

Ethernet	
Ethernet	Control, result and image
Ethernet, type	100 Mbps
Ethernet, standard	IEEE 802.3
Ethernet, connector type	M12 8-pin X-coded
Ethernet, communication	TCP/IP socket-based FLIR proprietary
Ethernet, video streaming	Yes
Ethernet, power	Power over Ethernet, PoE IEEE 802.3af class 2.
Ethernet, protocols	Ethernet/IP, Modbus TCP, TCP, UDP, SNTP, RTSP, RTP, HTTP, ICMP, IGMP, sftp, SMTP, DHCP, MDNS (Bonjour)

Digital input/output	
Digital input, purpose	NUC, NUC disable, Alarm
Digital input	1 opto-isolated, 10–25 VDC
Digital output, purpose	As function of alarm, output to ext. device (programmatically set)
Digital output	1 opto-isolated, 10–25 VDC, max. 100 mA
Digital I/O, isolation voltage	500 VRMS
Digital I/O, supply voltage	10-25 VDC, max. 200 mA
Digital I/O, connector type	M12 8-pin A-coded (shared with ext. power)

Power system	
External power operation	12/24 VDC, 2 W continuously/ 4.7 W absolute max
External power, connector type	M12 8-pin A-coded (Shared with digital I/O)
Voltage	Allowed range 10.8–30 VDC
Power supply rating	Class 2 / LPS

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Environmental data	
Operating temperature range	–0°C to +50°C (+32°F to +122°F)
Storage temperature range	–40°C to +70°C (–40°F to +158°F) according to IEC 68-2-1 and IEC 68-2-2
Humidity (operating and storage)	IEC 60068-2-30/24 h 95% relative humidity +25° C to +40°C (+77°F to +104°F)/ 2 cycles
EMC	• EN 61000-6-2:2001 (Immunity) • EN 61000-6-3:2001 (Emission) • FCC 47 CFR Part 15 Class B (Emission)
Encapsulation	IP 67 (IEC 60529)
Bump	25 g (IEC 60068-2-29)
Vibration	2 g (IEC 60068-2-6)

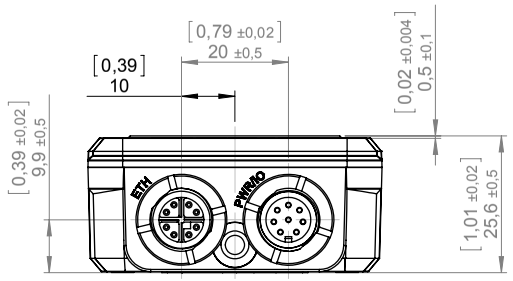
Physical data	
Weight	0.125 kg (0.28 lb.)
Camera size (L × W × H)	• 54 × 25 × 79 mm (2.1 × 1 × 3.1 in.) without connectors • 54 × 25 × 95 mm (2.1 × 1 × 3.7 in.) with connectors
Base mounting	4× mounting hole depth max 4.8 mm for screw type Delta PT 22 (ø2.2 mm)
Housing material	PA6 with 30% GF (glass fiber reinforced)

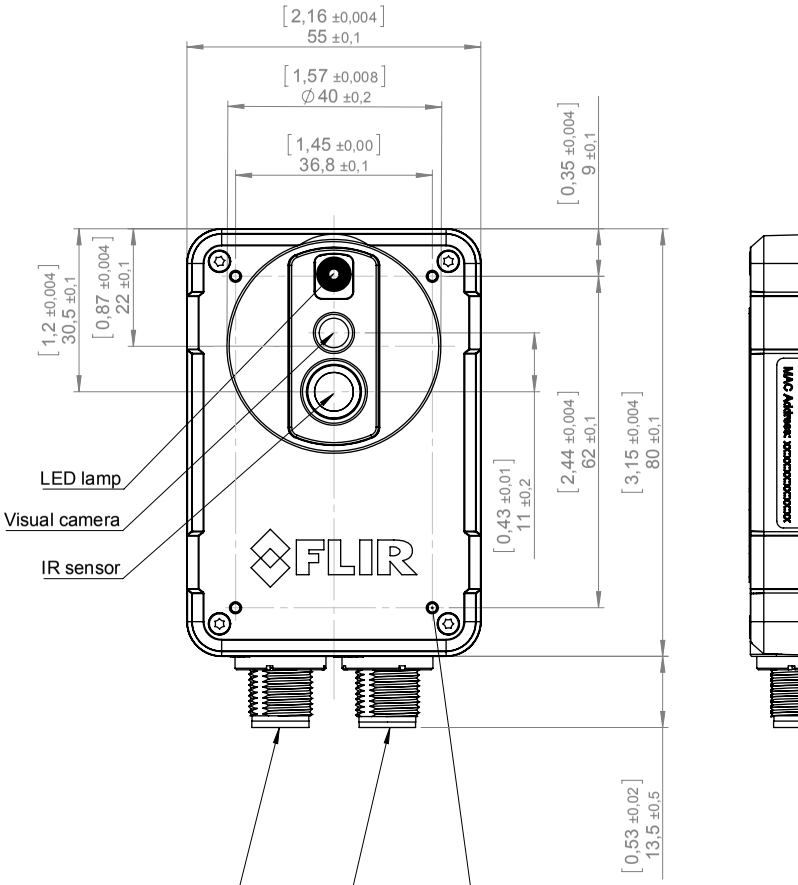
Shipping information	
Packaging, type	Cardboard box
List of contents	• Infrared camera with lens • Cardboard box • Printed documentation
Packaging, weight	0.48 kg (1.06 lb.)
Packaging, size	210 × 142 × 70 mm (8.27 × 5.59 × 2.76 in.)
EAN-13	4743254001725
UPC-12	845188009373
Country of origin	Estonia

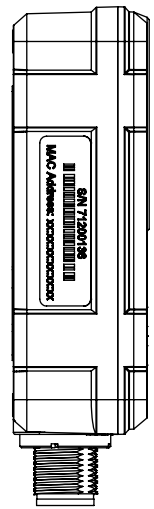
Supplies & accessories:

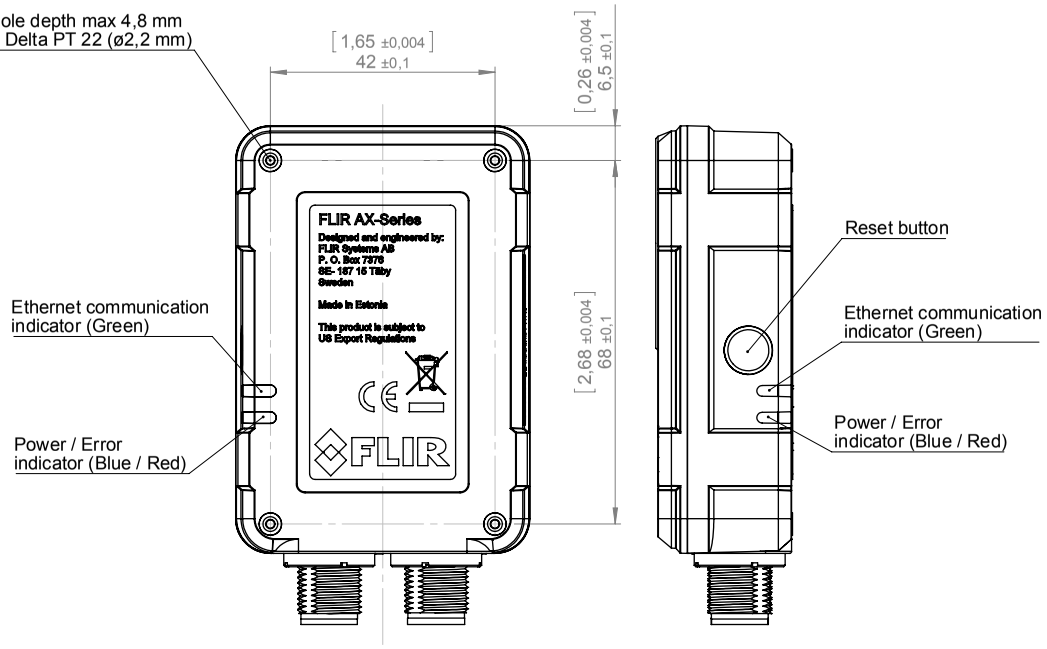
- T130169; Thermovision CM, max. 4 cameras
- T130170; Thermovision CM, max. 9 cameras
- T129259ACC; Cable M12 to pigtail, 10 m
- T129258ACC; Cable M12 to pigtail, 5 m
- T129886ACC; Cable M12, FLIR X-Coded to standard X-Coded
- T128391ACC; Cable, M12 to pigtail
- T198821; Cooling bracket
- T129257ACC; Ethernet cable M12 to RJ45, 10 m
- T128390ACC; Ethernet cable M12 to RJ45, 2 m
- T129256ACC; Ethernet cable M12 to RJ45, 5 m
- 71200-0002; FLIR AX8 accessory starter kit
- T199163; Front mounting plate kit (incl. cooling bracket)
- T130086; I/O module MIO-AX8-1
- T130087; I/O module MIO-AX8-7
- T199342; One-ball joint mounting bracket kit
- T199343; PoE injector, 12/24 V
- T199019; PoE injector, incl. cables
- T128775ACC; Rear mounting plate kit
- T199341; Two-ball joint mounting bracket kit

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Ethernet connector
M12/8/X

Power/IO connector
M12/8/A
For pin out see manual

4x Mounting hole depth max 4,8 mm
for screw type Delta PT 22 (ø2,2 mm)

Konstr/Drawn: P. MARCUS	Datum/Date: 2014-08-27	Kontr/Check: MABR	Material: -
Ändrad av/Modified by: P. MARCUS	Ändrad/Modified: 2014-10-22	Ytjämnhet/Roughness: Ra µm	Ytbehandling/Surface treatment

Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

Benämning/Denomination

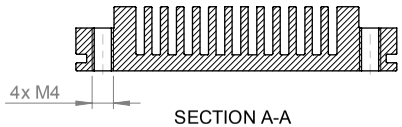
Basic dimensions AX-series

Skala/Scale 1:1			Blad/Sheet 1(1)
ArtNo.			Size A3
Ritn nr/Drawing No T128360			Rev C

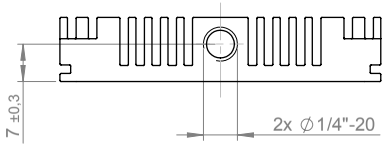
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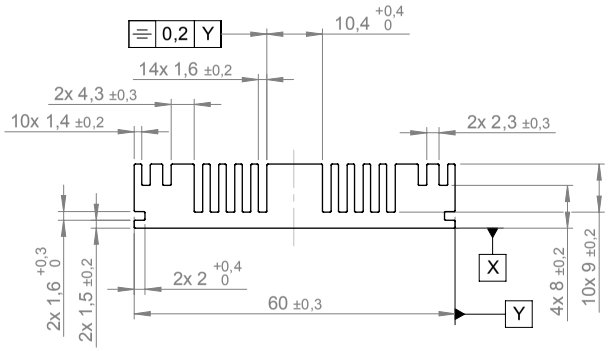
Machined from extruded or machined profile

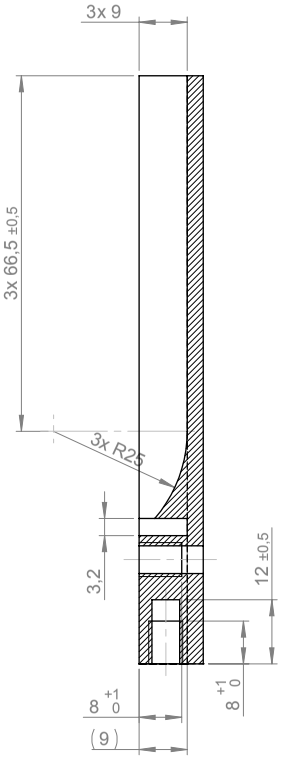


SECTION A-A

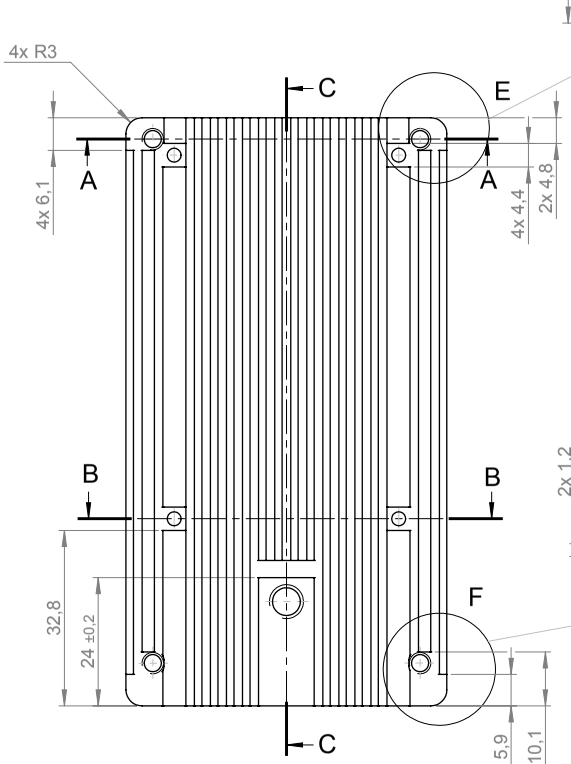


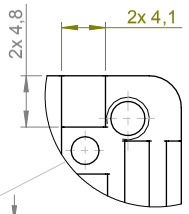
Profile Extruded or machined



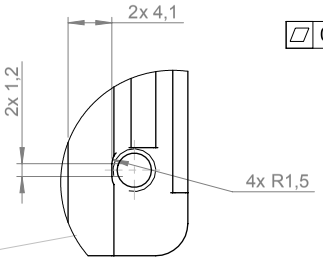


SECTION C-C





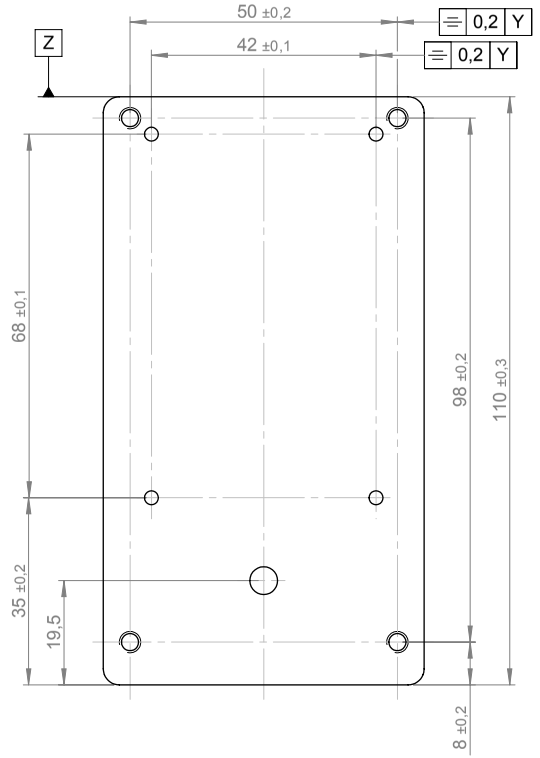
DETAIL E
SCALE 2 : 1

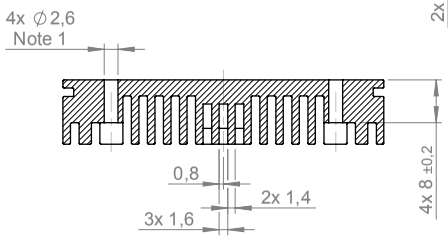


DETAIL F
SCALE 2 : 1









SECTION B-B

Note 1
4x ø2,6 used to hold the part during surface treatment.

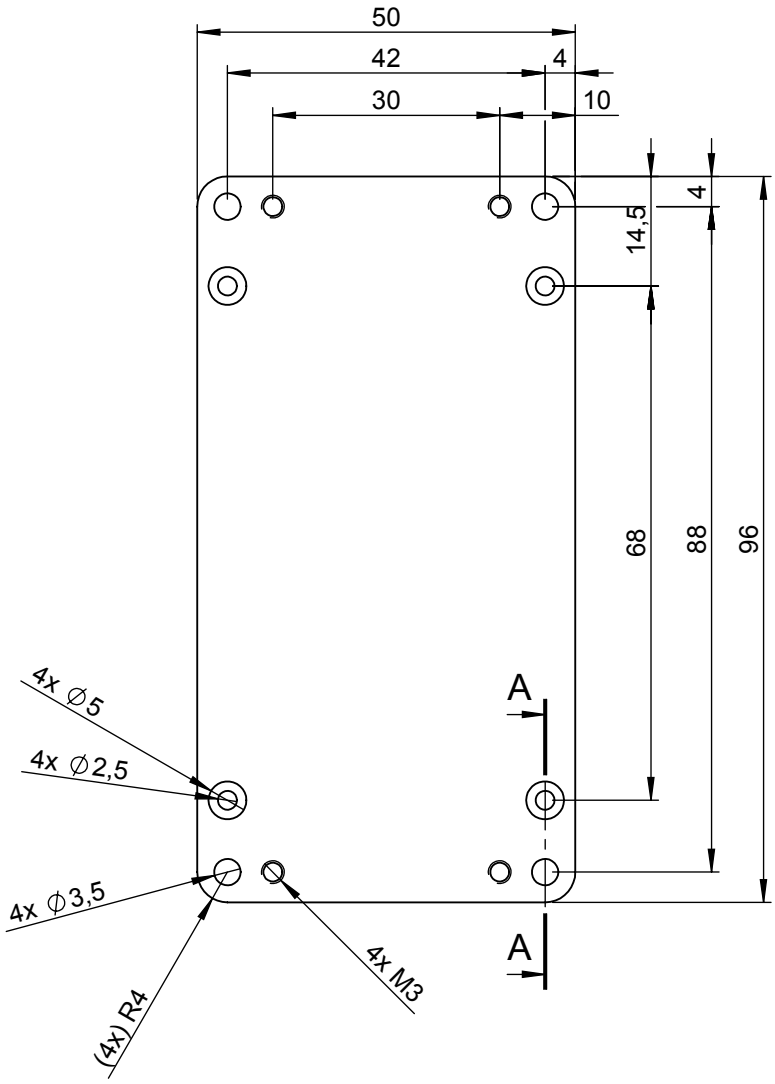
Note 2
Appearance according to FLIR Appearance standard 403093-B Class C, grade 2.

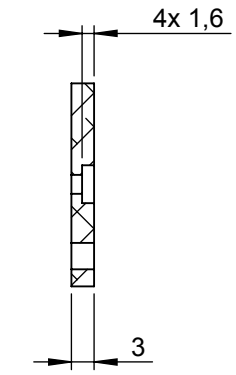
Additional geometry is taken from 3D-file: T128394 A

Konstr/Drawn: P. MARCUS	Datum/Date: 2014-09-18	Kontr/Check: JAMA	Material: EN AW-6262 R	FLIR
Ändrad av/Modified by: P. MARCUS	Ändrad/Modified: 2015-03-10	Ytjämnhet/Roughness: Ra 3.2 µm	Ytbehandling/Surface treatment: Anodized colorless matt	
Där ej annat anges/Unless otherwise stated Gen tol ISO 2768-mK Utdrag ur/Excerpt from ISO 2768-m 0,5-6 ±0,1 Hålkälsradier (6)-30 ±0,2 Fillet radii 0.1-0.3 (30)-120 ±0,3 (120)-400 ±0,5 Kanter brutna (400)-1000 ±0,8 Edges broken 0.1-0.3	Benämning/Denomination: Bracket cooling		Skala/Scale 1:1	Blad/Sheet 1(1)
			ArtNo.	Size A3
			Ritn nr/Drawing No T128394	Rev A

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SECTION A-A

-

Konstr/Drawn J. MÄKINEN	Datum/Date 2015-03-06	Kontr/Check HAOS	Material EN AW-5052 or EN AW-5754	FLIR
Ändrad av/Modified by J. MÄKINEN	Ändrad/Modified 2015-05-21	Ytjämnhet/Roughness Ra µm	Ytbehandling/Surface treatment	

Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

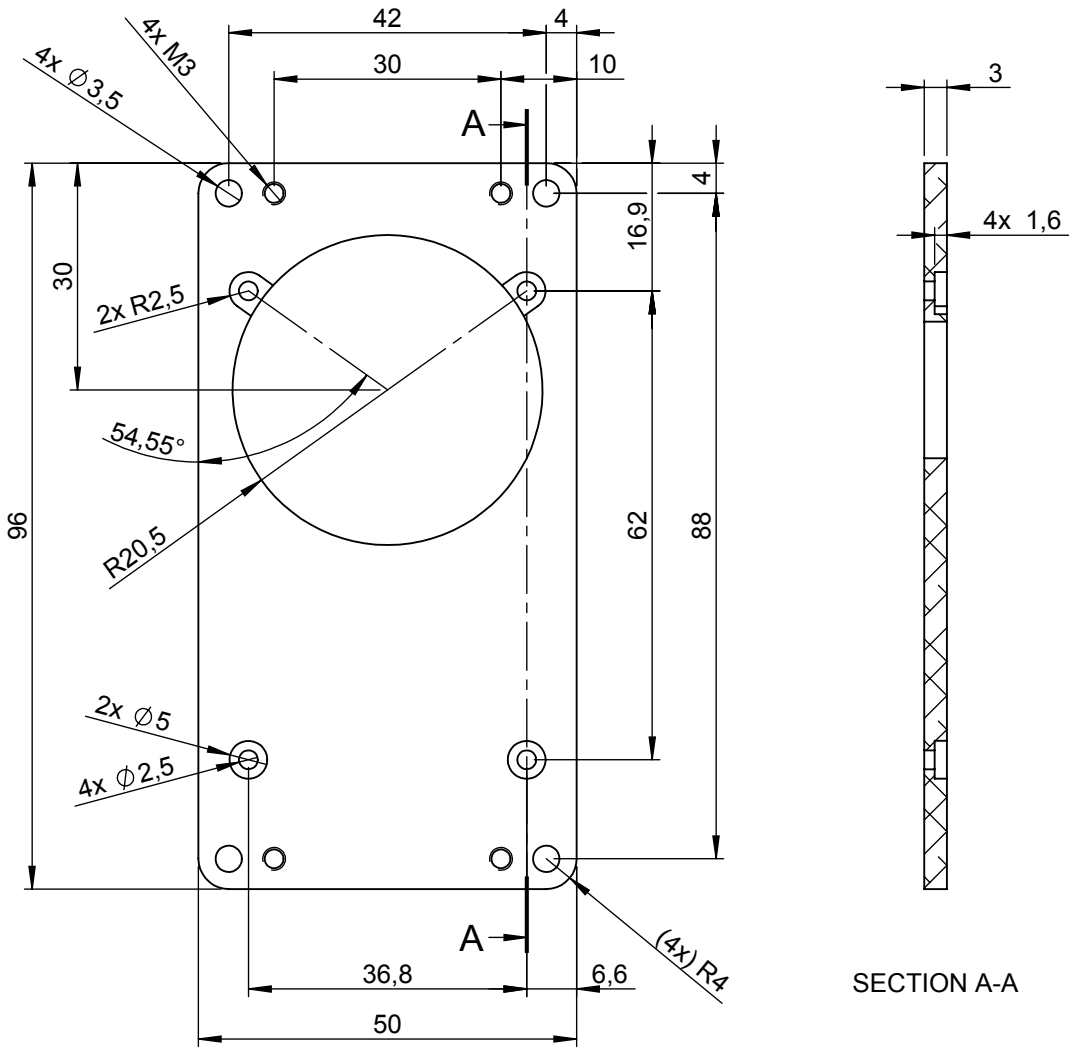
Benämning/Denomination

Plate mounting rear

Skala/Scale 1:1		Blad/Sheet 1(1)
Art.No.		Size A4
Ritn nr/Drawing No T128775		Rev A

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Konstr/Drawn J. MÄKINEN	Datum/Date 2015-03-06	Kontr/Check HAOS	Material EN AW-5052 or EN AW-5754	FLIR
Ändrad av/Modified by J. MÄKINEN	Ändrad/Modified 2015-05-21	Ytjämnhet/Roughness Ra µm	Ytbehandling/Surface treatment	

Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

Benämning/Denomination

Plate mounting front

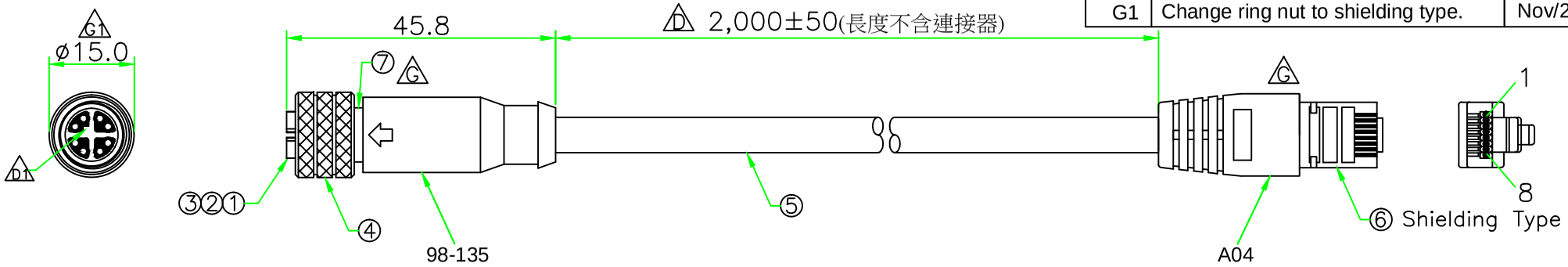
Skala/Scale 1:1		Blad/Sheet 1(1)
Art.No.		Size A4
Ritn nr/Drawing No T128774		Rev A

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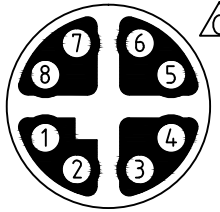
RoHS Ⓔ

IP67

REV.	DESCRIPTION	DATE
A	ISSUE	Dec/23/2013
B	Modify the wire diagram.	Dec/25/2013
C	Modify M12 Pin Assignment.	Dec/25/2013
D	Modify cable length.	Dec/25/2013
D1	Correct key direction.	Jan/22/2014
E	Add note.	Mar/30/2014
F	Modify P/N.	Sep/25/2014
G	Modify connector to shielding type.	Nov/12/2014
G1	Change ring nut to shielding type.	Nov/25/2014



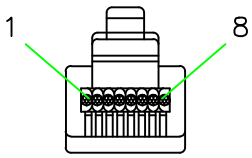
Ⓒ



Pin Assignment
Front View
(前視圖)

Ⓑ Wiring Diagram

M12		RJ45
1	Orange/White (橙/白)	1
2	Orange (橙)	2
3	Green/White (綠/白)	3
4	Green (綠)	6
5	Blue (藍)	7
6	Blue/White (藍/白)	8
7	Brown/White (棕/白)	5
8	Brown (棕)	4
SHILED	DRAIN WIRE	SHIELD



Pin Assignment
Front View
(前視圖)

No.	PART NAME	DESCRIPTION	COLOR	Q'TY	REMARKS
7	SHIELD	Brass, Nickel Plated.		1	
6	RJ45 PLUG	RJ45 8P8C PLUG (shielding type).		1	
5	CABLE	CAT5E FTP 24AWG x 4 PAIR + AL/MY + Drain wire.	BLACK	1	WAC2B0026
4	RING NUT	Brass, Nickel Plated.		1	M12S-RN-D985
3	O-RING	Viton.	BLACK	1	M12-O-VK
2	CONTACT	Brass , Female pin ,6 u" Gold plated .		8	AASPF-1008-0.8
1	CONNECTOR	M12 X-coding Female connector insert. Nylon+GF.	BLACK	1	M12X-08F

Customer: FLIR

UNIT: mm

SCALE 1:1

UNLESS OTHERWISE SPECIPED TOLERANCES:
x ± 0.25 xx ± 0.1
xxx ± 0.05 ANGLE ± 1ø

TITLE: M12 X-Coding Female Molded Cable Ass'y

P/N: K129351004

DR. Stanley

CH. ERIC

AP.

REV. G1

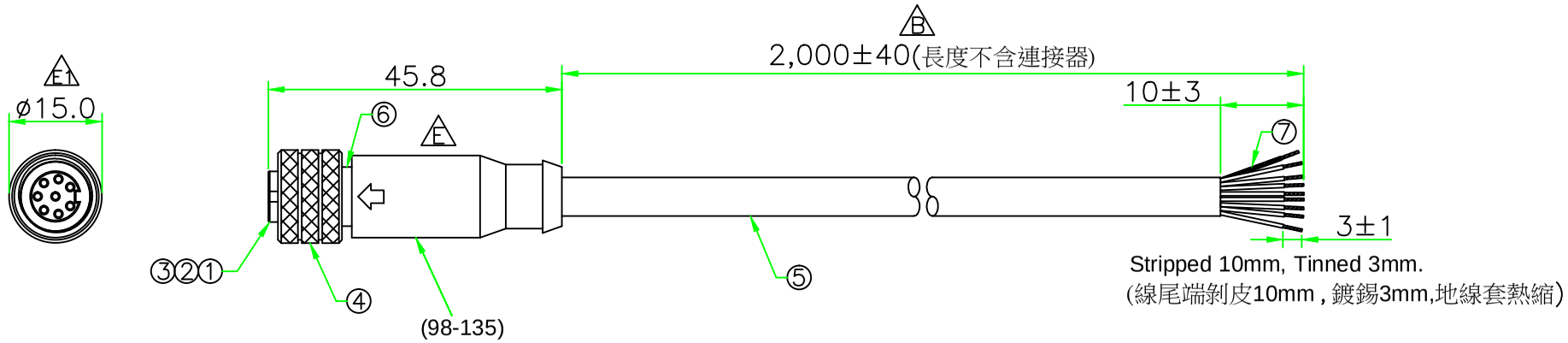
SHEET 1/1

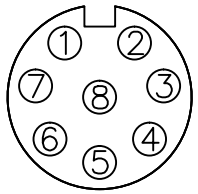
DWG.NO: T128390 Ⓕ

RoHS Ⓒ

IP67

REV.	DESCRIPTION	DATE
A	ISSUE	Dec/23/2013
B	Modify cable length.	Dec/25/2013
C	Add note.	Mar/20/2014
D	Modify P/N.	Sep/25/2014
E	Modify connector to shielding type.	Nov/12/2014
E1	Change ring nut to shielding type.	Nov/25/2014





Pin Assignment
Front View
(前視圖)

Wiring Diagram

1	Orange/White	(橙/白)
2	Orange	(橙)
3	Green/White	(綠/白)
4	Green	(綠)
5	Blue	(藍)
6	Blue/White	(藍/白)
7	Brown/White	(棕/白)
8	Brown	(棕)

Shield—drain wire—Shield 地線

No.	PART NAME	DESCRIPTION	COLOR	Q'TY	REMARKS
7	TUBE	Heat shrink tube.	BLACK	1	
6	SHIELD	Brass, Nickel Plated. Ⓔ		1	
5	CABLE	CAT5E FTP 24AWG x 4 PAIR + AL/MY + Drain wire.	BLACK	1	WAC2B0026
4	RING NUT	Brass, Nickel Plated.		1	M12S-RN-D985
3	O-RING	Viton.	BLACK	1	M12-O-VK
2	CONTACT	Brass , Female pin ,6 u" Gold plated .		8	AASPF-1008-0.8
1	CONNECTOR	M12 A-coding Female connector insert. Nylon+GF.	BLACK	1	M12A-08F

Customer: FLIR

UNIT: mm

SCALE 1:1

UNLESS OTHERWISE SPECIPED TOLERANCES:
x ± 0.25 xx ± 0.1
xxx ± 0.05 ANGLE ± 1°

REV. E1 SHEET 1/1

TITLE: M12 A-Coding 8P Female Molded Cable Ass'y

P/N: K129351003

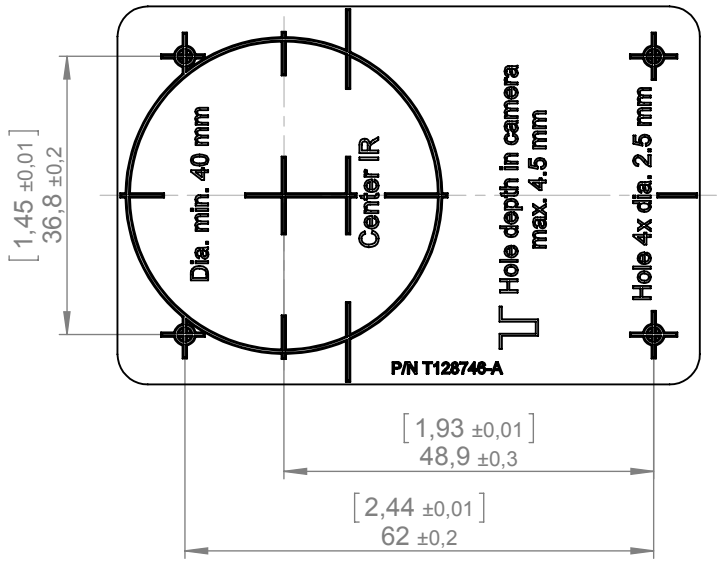
DWG.NO: T128391 Ⓓ

DR. Stanley

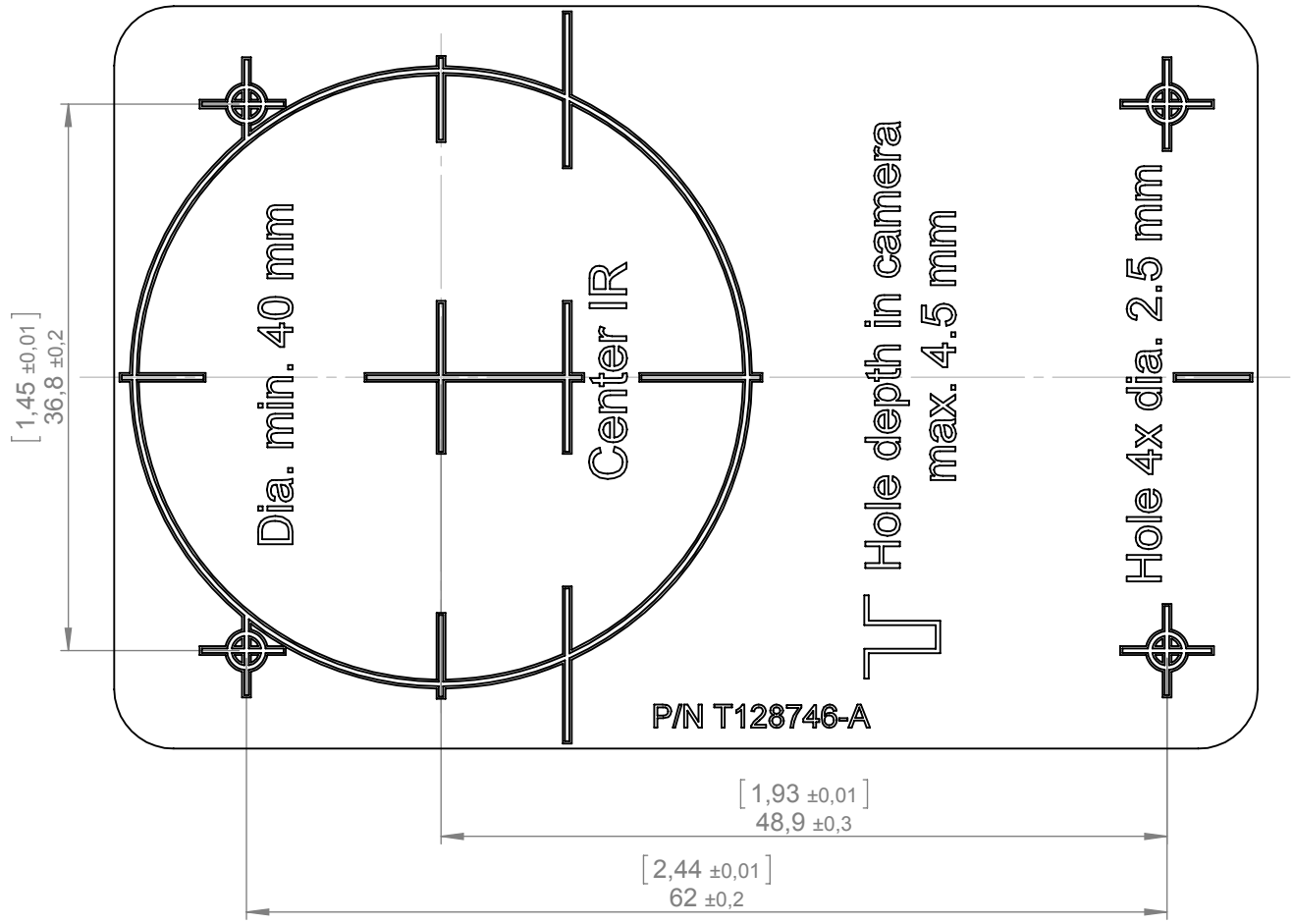
CH. ERIC

AP.

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Scale 1:1



Scale 2:1

Konstr/Drawn P. MARCUS	Datum/Date 2014-10-06	Kontr/Check JAMA	Material Note 1	FLIR
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2015-03-04	Ytjämnhet/Roughness Ra µm	Ytbehandling/Surface treatment	

Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

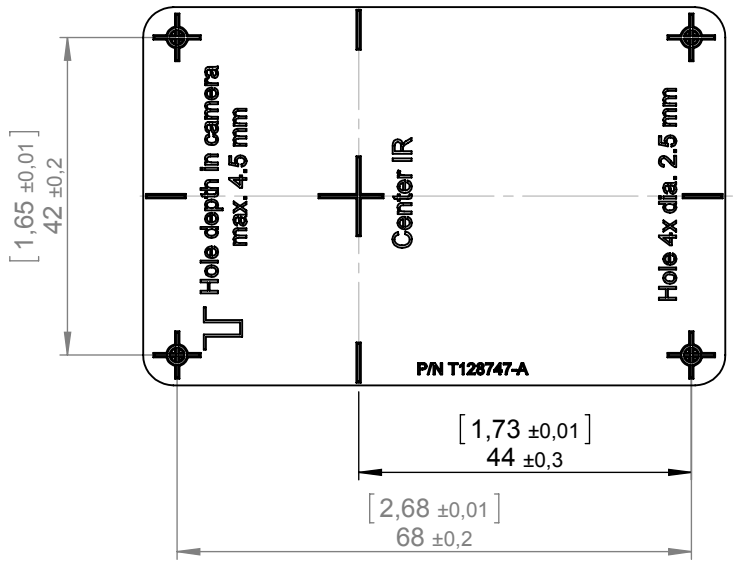
Benämning/Denomination

Drilling template front

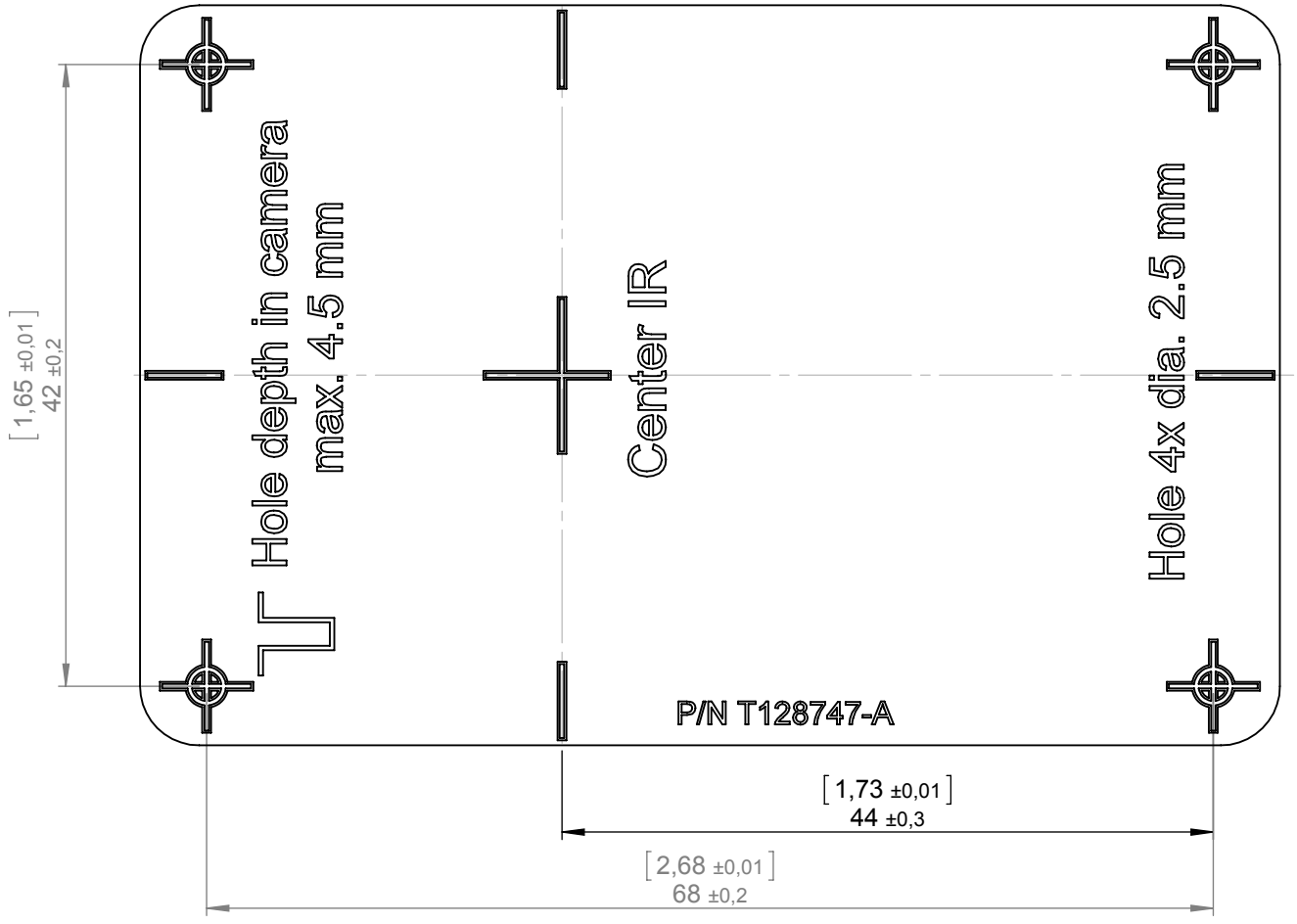
Skala/Scale 2:1		Blad/Sheet 2(2)
Art.No.		Size A4
Ritn nr/Drawing No T128746		Rev A

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Scale 1:1



Scale 2:1

Konstr/Drawn P. MARCUS	Datum/Date 2014-10-06	Kontr/Check JAMA	Material Note 1	FLIR
Ändrad av/Modified by P. MARCUS	Ändrad/Modified 2015-03-04	Ytjämnhet/Roughness Ra µm	Ytbehandling/Surface treatment	

Där ej annat anges/Unless otherwise stated
Gen tol ISO 2768-mK
Utdrag ur/Excerpt from ISO 2768-m

0,5-6	±0,1	Hålkälsradier
(6)-30	±0,2	Fillet radii
(30)-120	±0,3	
(120)-400	±0,5	Kanter brutna
(400)-1000	±0,8	Edges broken

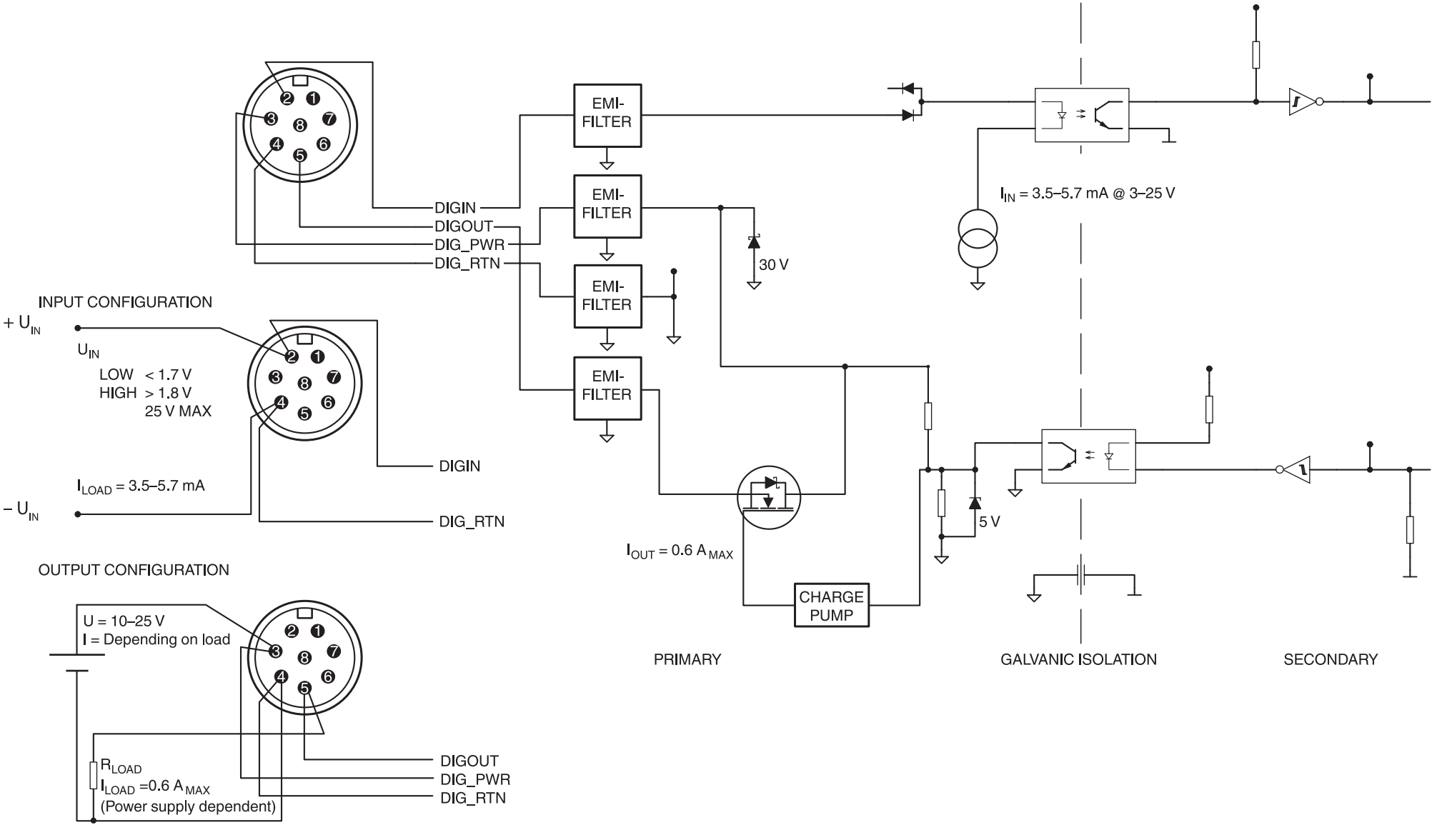
Benämning/Denomination

Drilling template rear

Skala/Scale 2:1		Blad/Sheet 2(2)
Art.No.		Size A4
Ritn nr/Drawing No T128747		Rev A

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Digital I/O connection diagrams FLIR AX8



January 13, 2015 AQ320110

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

Standards:

Information technology:	**EN 55022**	**Radio disturbance characteristics- (AC:2011)**
Information technology:	**EN 55024**	**Immunity characteristics- (CISPR 24:2010)**

Additional standards:

Emission:	**EN 61000-6-3;**	**Electro magnetic Compatibility Generic standards - Emission**
Immunity:	**EN 61000-6-2;**	**Electro magnetic Compatibility; Generic standards - Immunity**

System: **FLIR Ax8-series**

FLIR Systems AB
Quality Assurance

Björn Svensson
Director

FLIR | The World's Sixth Sense™

September 29, 2017 Täby, Sweden AQ320259

CE Declaration of Conformity – EU Declaration of Conformity

Product: FLIR AX8 -series
Name and address of the manufacturer:
FLIR Systems AB
PO Box 7376
SE-187 15 Täby, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.
The object of the declaration: FLIR Ax8 -series.
The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Directives:

Directive	2014/30/EU	Electromagnetic Compability
Directive	2012/19/EU	Waste electrical and electric equipment
Directive	2011/65/EU	RoHS

Standards:

Emission:	EN 61000-6-3:2007+A1:2011	EMC – Generic standards Emission
	EN 55022:2010/AC:2011	Radio disturbance characteristics - Limits
Immunity:	EN 61000-6-2:2011	Electromagnetic Compability Generic
	EN 55024:2010	Immunity characteristics - Limits
RoHS	EN 50581:2012	Technical documentation

FLIR Systems AB
Quality Assurance

Lea Dabiri
Quality Manager

October 11, 2017 Täby, Sweden AQ320260

CE Declaration of Conformity – EU Declaration of Conformity

Product: I/O module MIO -boards
Name and address of the manufacturer:
FLIR Systems AB
PO Box 7376
SE-187 15 Täby, Sweden

This declaration of conformity is issued under the sole responsibility of the manufacturer.
The object of the declaration:

I/O module MIO -boards:
T130087 I/O module MIO-AX8-7
T130089 I/O module MIO-FCR-7
T130091 I/O module MIO-A310-7
T130086 I/O module MIO-AX8-1
T130088 I/O module MIO-FCR-1
T130090 I/O module MIO-A310-1

The object of the declaration described above is in conformity with the relevant Union harmonisation legislation:

Directives:

Directive	2014/30/EU	Electromagnetic Compability
Directive	2011/65/EU	RoHS and 2015/863/EU

Standards:

EMC:	EN 55022:2010	Information technology equipment – radio disturbance
	EN 55024:2010	Information technology equipment - immunity
RoHS	EN 50581:2012	Technical documentation

FLIR Systems AB
Quality Assurance

Lea Dabiri
Quality Manager