

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	$\pm 2^\circ\text{C}$ ($\pm 3.6^\circ\text{F}$) or $\pm 2\%$ 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

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Set-up	
Color palettes	<ul style="list-style-type: none"> • Arctic • Gray • Iron • Lava • Rainbow • Rainbow HC
Set-up commands	Date/time, Temperature (°C/°F)
Web interface	Yes
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	<ul style="list-style-type: none"> • 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	<ul style="list-style-type: none"> • 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)



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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
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	<ul style="list-style-type: none">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)
Declaration of conformity	See: https://support.flir.com/resources/DoC
Physical data	
Weight	0.125 kg (0.28 lb.)
Camera size (L x W x H)	<ul style="list-style-type: none">54 x 25 x 79 mm (2.1 x 1 x 3.1 in.) without connectors54 x 25 x 95 mm (2.1 x 1 x 3.7 in.) with connectors
Base mounting	4x 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	<ul style="list-style-type: none">Infrared camera with lensCardboard boxPrinted documentation
Packaging, weight	0.48 kg (1.06 lb.)
Packaging, size	210 x 142 x 70 mm (8.27 x 5.59 x 2.76 in.)
EAN-13	4743254001725
UPC-12	845188009373
Country of origin	Estonia

Supplies & accessories:

- T131367; FLIR Bridge
- T131369; FLIR Bridge Pro
- T130086; I/O module MIO-AX8-1
- T130087; I/O module MIO-AX8-7
- T199713; ThermoVision CM Panel, max. 4 cameras
- T199712; ThermoVision CM Panel, max. 9 cameras
- T130169; Thermovision CM, max. 4 cameras
- T130170; Thermovision CM, max. 9 cameras
- T129259ACC; Cable M12 to pigtail, 10 m



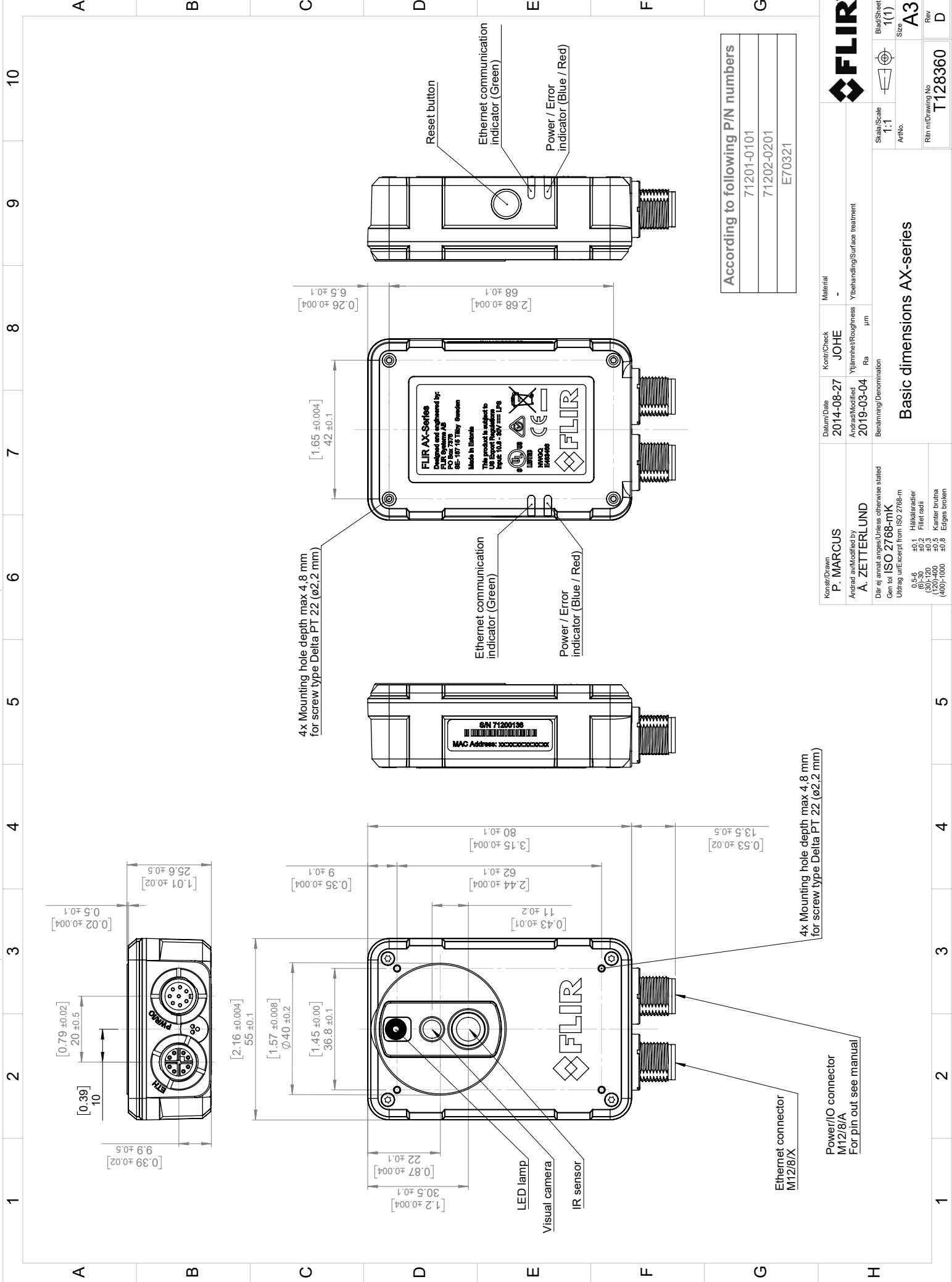
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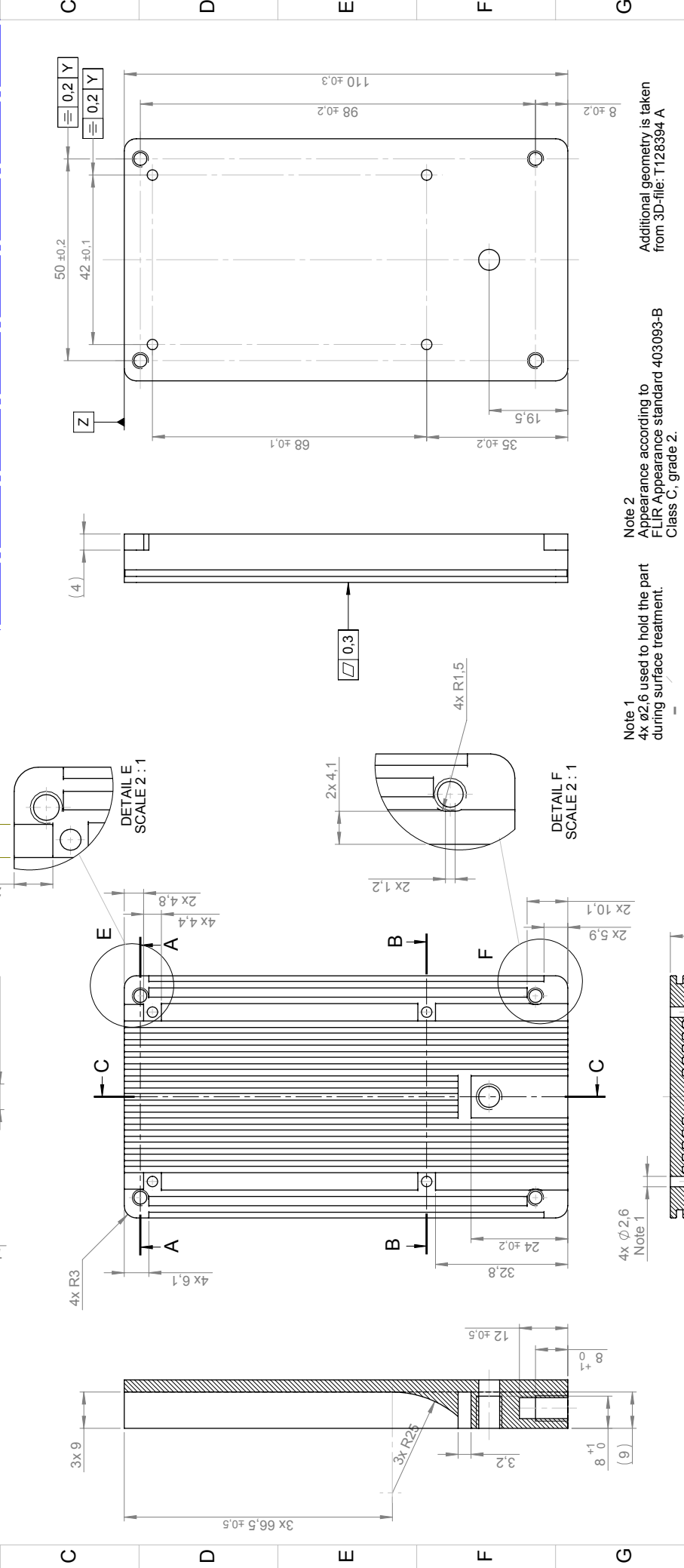
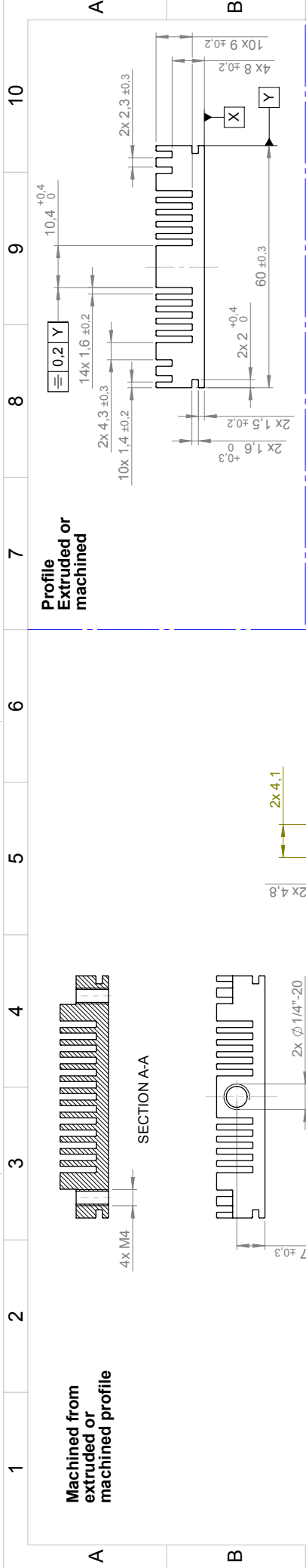
- T129258ACC; Cable M12 to pigtail, 5 m
- T129886ACC; Cable M12, FLIR X-Coded to standard X-Coded
- T128391ACC; Cable, M12 to pigtail
- T198821; Cooling bracket
- T129257ACC; Ethernet cable M12 to RJ45, 10 m
- T128390ACC; Ethernet cable M12 to RJ45, 2 m
- T129256ACC; Ethernet cable M12 to RJ45, 5 m
- 71200-0002; FLIR AX8 accessory starter kit
- T199163; Front mounting plate kit (incl. cooling bracket)
- T199342; One-ball joint mounting bracket kit
- T199343; PoE injector, 12/24 V
- T128775ACC; Rear mounting plate kit
- T199341; Two-ball joint mounting bracket kit



According to following P/N numbers

71201-0101
71202-0201
E70321

FLIR		Material		-	
Konst/Drawn	P. MARCUS	Datum/Date	2014-08-27	Kontr/Check	JOHE
Ändrad av/Modified by	A. ZETTERLUND	Ändrad/Modified	2019-03-04	Ytillämning/Roughness	µm
Dir ej ansvar utöver/Unless otherwise stated		Benämning/Denomination		Ra	
Gen tol ISO 2768-mK		Utdrag ut/except from ISO 2768-m		µm	
0.5-6		+0.1		Hållkårsradier	
(6)-30		±0.2		Fillet radii	
(120)-100		±0.5		Kantströmmar	
(400)-1000		±0.8		Edges broken	
Basic dimensions AX-series					
Sheet/Scale	1(1)	Material			
Art.Nr.		Ytillämning/Roughness			
Ritn nr/Drawing No.	T128360	Benämning/Denomination			
Size	A3				
Rev	D				

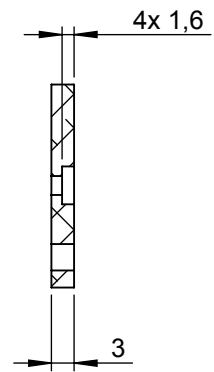
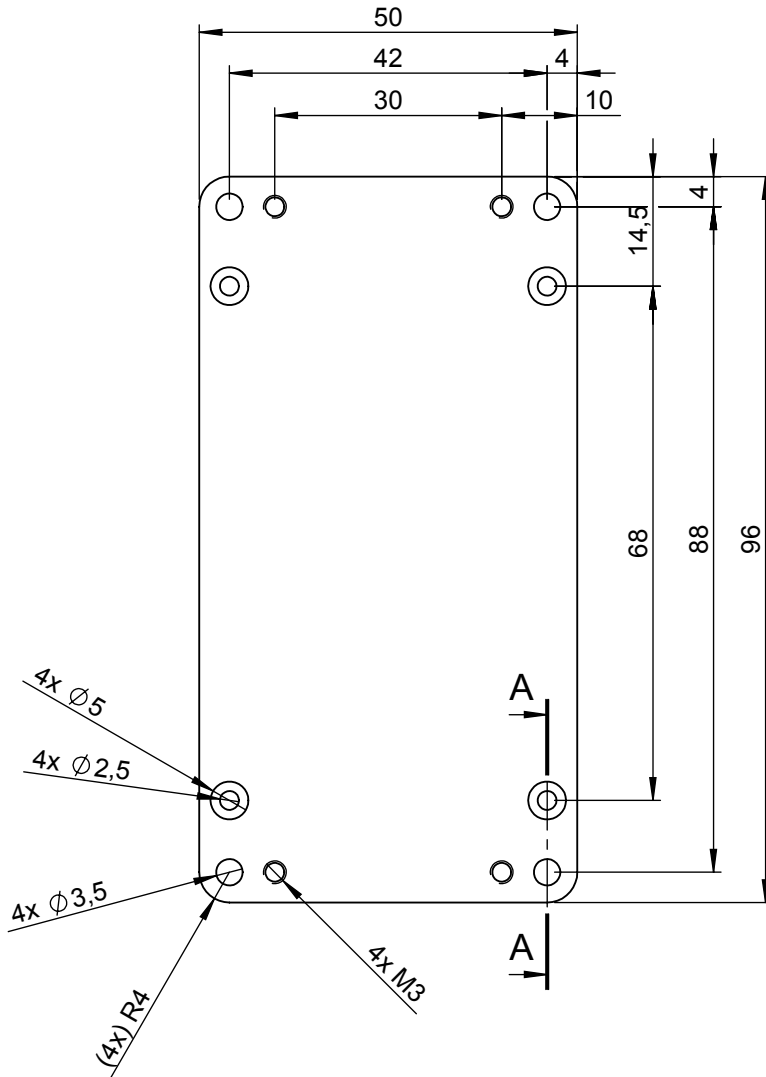


<p>FLIR SYSTEMS AB</p> <p>Överträdelse härav bekrävas med skild av gällande lag.</p> <p>Sist behållt eller åter utlämnat vart medgivande.</p> <p>Denna handling får ej delges annan, kopieras!</p>		<p>FLIR SYSTEMS AB</p> <p>Överträdelse härav bekrävas med skild av gällande lag.</p> <p>Sist behållt eller åter utlämnat vart medgivande.</p> <p>Denna handling får ej delges annan, kopieras!</p>	
<p>This document must not be communicated or copied completely or in part, without our permission.</p> <p>FLIR SYSTEMS AB</p>		<p>This document must not be communicated or copied completely or in part, without our permission.</p> <p>FLIR SYSTEMS AB</p>	
<p>Material: EN AW-6262 R</p> <p>Ytbehandling/Surface treatment: Anodized colorless matt</p>		<p>Material: EN AW-6262 R</p> <p>Ytbehandling/Surface treatment: Anodized colorless matt</p>	
<p>Ytjämnhet/Roughness: Ra 3.2 µm</p>		<p>Ytjämnhet/Roughness: Ra 3.2 µm</p>	
<p>Benämning/Denomination: Bracket cooling</p>		<p>Benämning/Denomination: Bracket cooling</p>	
<p>Skala/Scale: 1:1</p>		<p>Skala/Scale: 1:1</p>	
<p>Bladsheet Size: A3</p>		<p>Bladsheet Size: A3</p>	
<p>Rev: A</p>		<p>Rev: A</p>	
<p>Ritning/Drawing No: T128394</p>		<p>Ritning/Drawing No: T128394</p>	

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

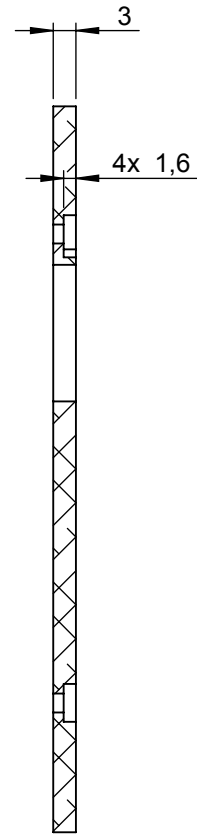
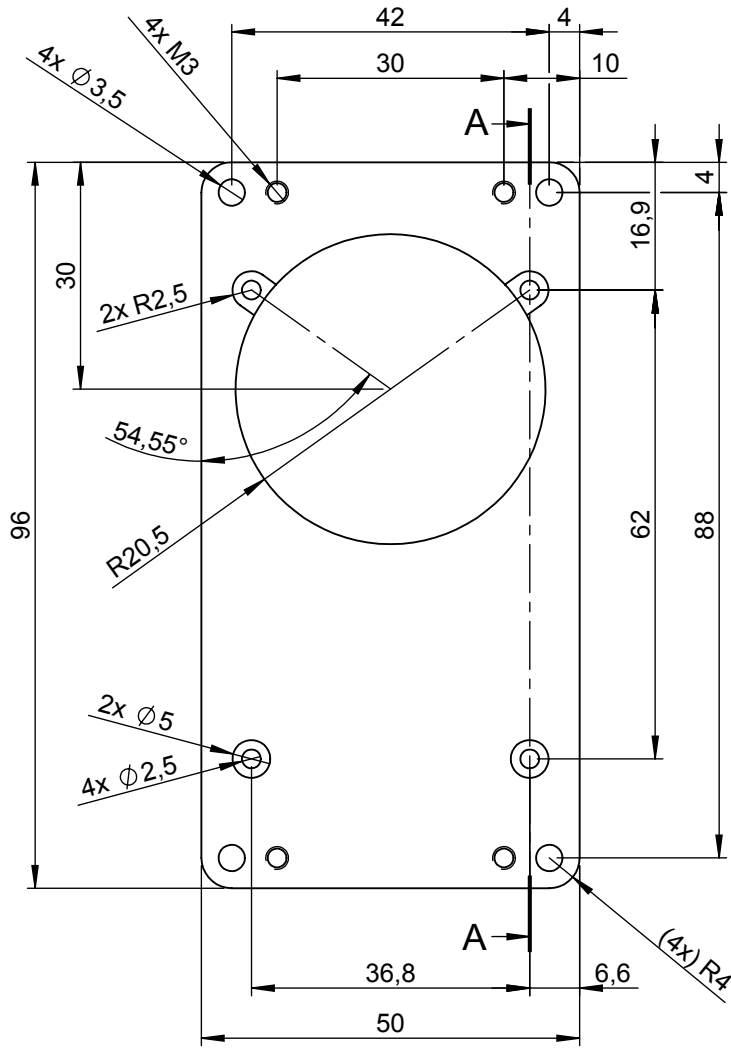
Note 2
Appearance according to FLIR Appearance standard 403093-B Class C, grade 2.

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



SECTION A-A

Konstr/Drawn J. MÄKINEN	Datum/Date 2015-03-06	Kontr/Check HAOS	Material EN AW-5052 or EN AW-5754	
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	Benämning/Denomination Plate mounting rear		Skala/Scale 1:1	Blad/Sheet 1(1)
0,5-6 ±0,1 Hålkålsradier (6)-30 ±0,2 Fillet radii (30)-120 ±0,3 (120)-400 ±0,5 Kanter brutna (400)-1000 ±0,8 Edges broken			Art.No.	Size A4
			Ritn nr/Drawing No T128775	Rev A



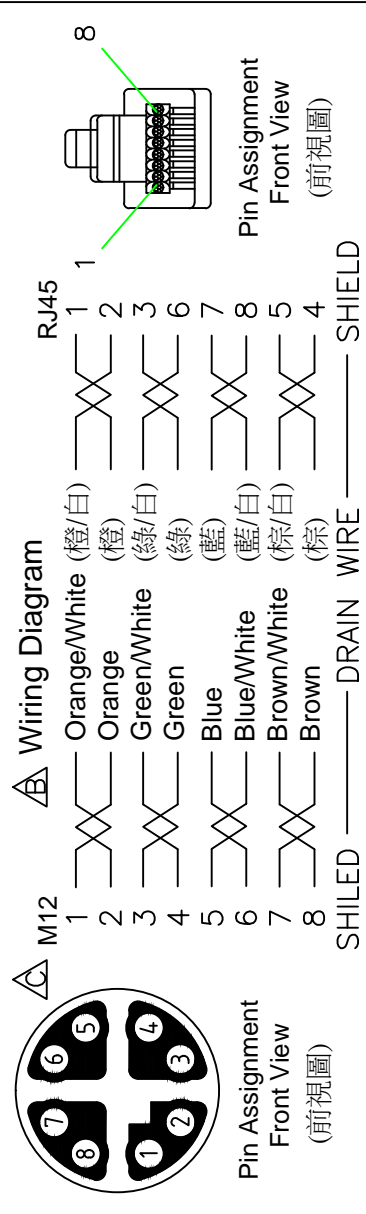
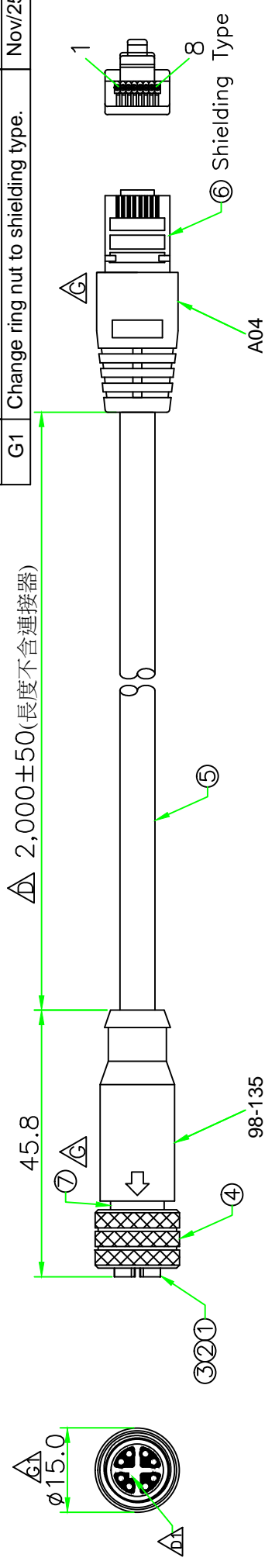
SECTION A-A

Konstr/Drawn J. MÄKINEN	Datum/Date 2015-03-06	Kontr/Check HAOS	Material EN AW-5052 or EN AW-5754	
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	Benämning/Denomination Plate mounting front		Skala/Scale 1:1	Blad/Sheet 1(1)
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			Art.No.	Size A4
			Ritn nr/Drawing No T128774	Rev A

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



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.	1	WAC2B0026	
4	RING NUT	Brass, Nickel Plated.	1	M12S-RN-D985	
3	O-RING	Viton.	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.	1	M12X-08F	
No.	PART NAME	DESCRIPTION	Q'TY	REMARKS	COLOR
					BLACK
					BLACK
					BLACK

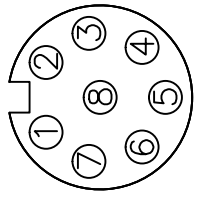
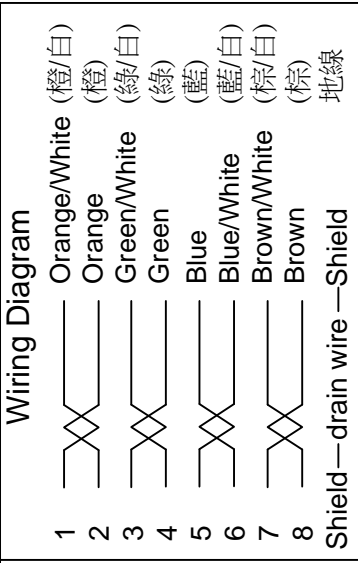
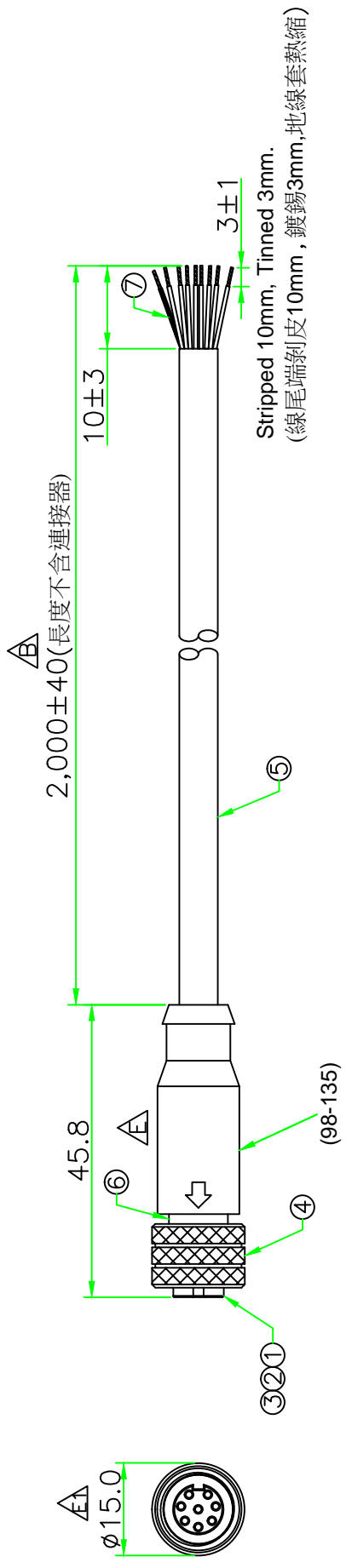
UNIT: mm	1:1	TITLE	M12 X-Coding Female Molded Cable Assy
SCALE	1:1	P/N:	K129351004
UNLESS OTHERWISE SPECIFIED TOLERANCES:		DWG.NO.:	T128390
X ± 0.25	XX ± 0.1	DR.	Stanley
XXX ± 0.05	ANGLE ± 1°	CH.	ERIC
REV.	SHEET	AP.	
G1	1/1		

Customer: FLIR

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

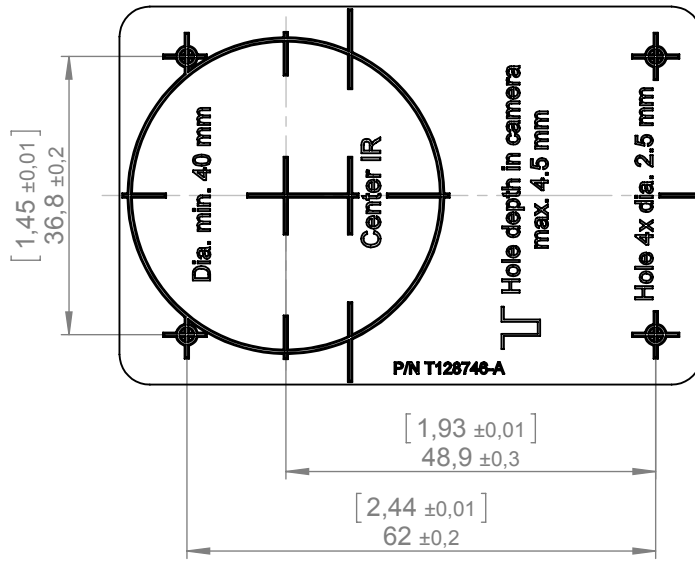


Pin Assignment
Front View
(前視圖)

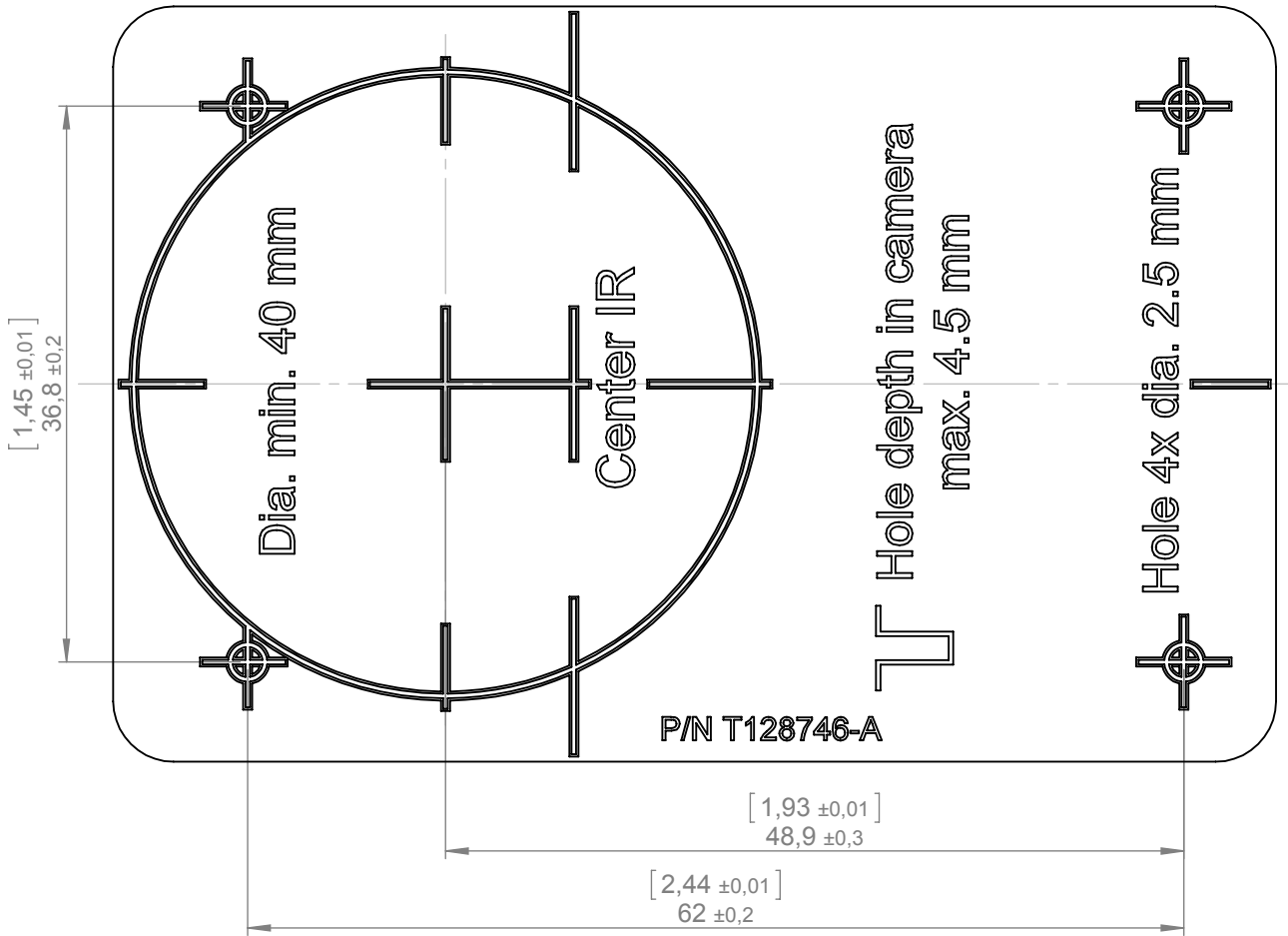
7	TUBE	Heat shrink tube.	BLACK	1		
6	SHIELD	Brass, Nickel Plated. Δ		1		
5	CABLE	CAT5E FTP 24AWG x 4 PAIR + AL/MY + Drain wire.	BLACK	1	WAC2B0026	
4	RING NUT	Brass, Nickel Plated.		1	M12S-RN-D985	
3	O-RING	Viton.	BLACK	1	M12-O-VK	
2	CONTACT	Brass, Female pin, 6 u" Gold plated.		8	AASPF-1008-0.8	
1	CONNECTOR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

Customer: FLIR

UNIT: mm	SCALE	TITLE
1:1	1:1	M12 A-Coding 8P Female Molded Cable Assy
UNLESS OTHERWISE SPECIFIED TOLERANCES:		P/N: K129351003
X ± 0.25	XX ± 0.1	DR. Stanley
XXX ± 0.05	ANGLE ± 1°X	CH. ERJC
REV.	SHEET	DWG. NO: T128391 Δ
E1	1/1	

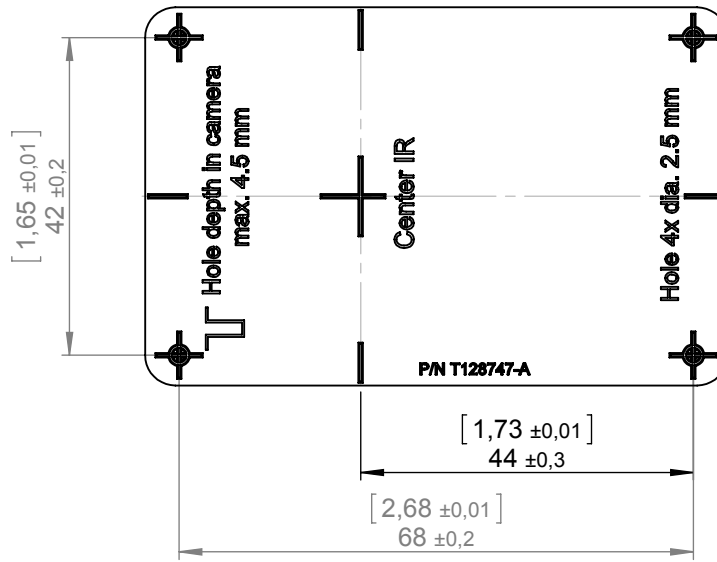


Scale 1:1

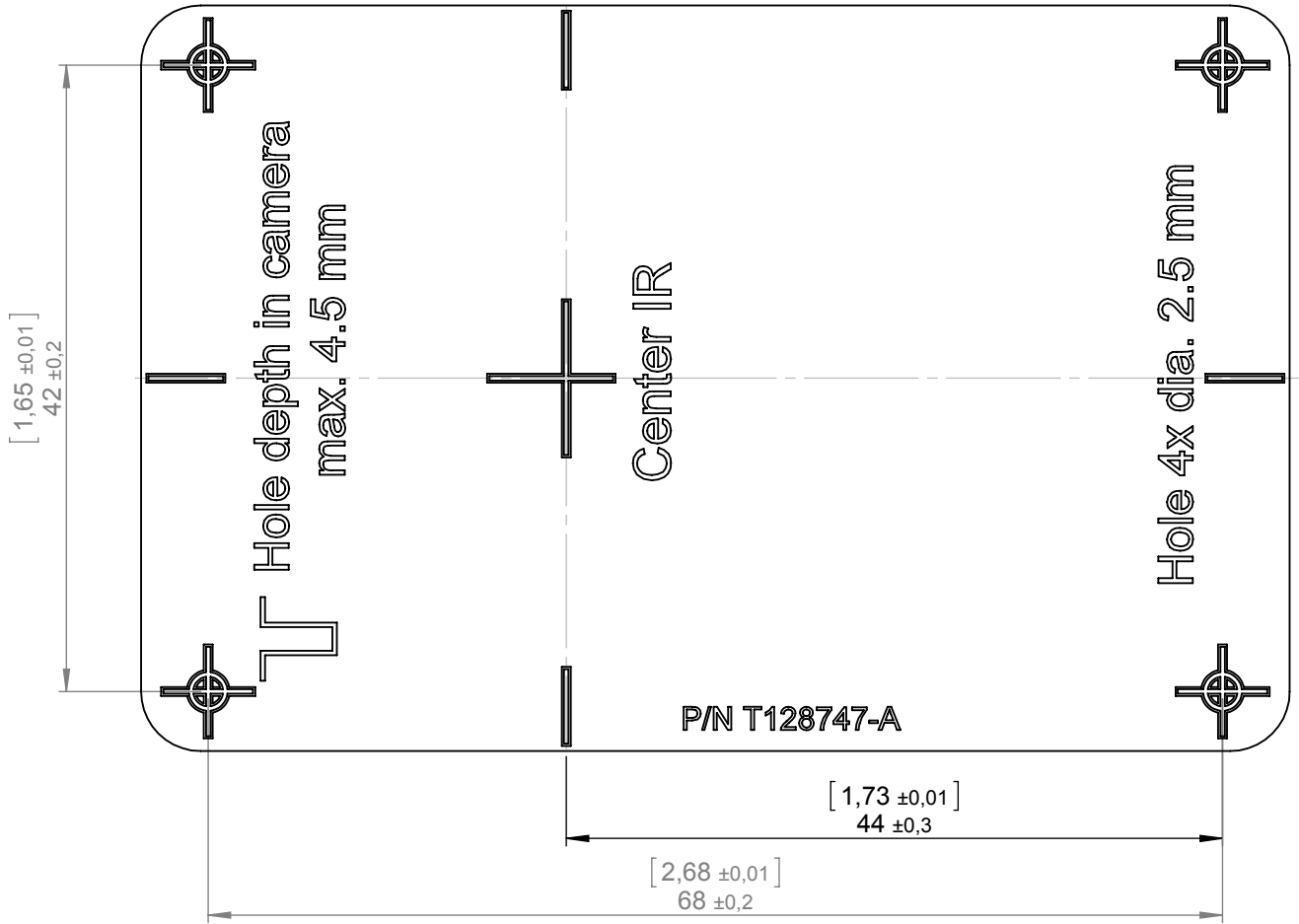


Scale 2:1

Konstr/Drawn P. MARCUS	Datum/Date 2014-10-06	Kontr/Check JAMA	Material Note 1		
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	Benämning/Denomination Drilling template front			Skala/Scale 2:1	Blad/Sheet 2(2)
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				Art.No.	Size A4
				Ritn nr/Drawing No T128746	Rev A



Scale 1:1



Scale 2:1

Konstr/Drawn P. MARCUS	Datum/Date 2014-10-06	Kontr/Check JAMA	Material Note 1		
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	Benämning/Denomination Drilling template rear			Skala/Scale 2:1	Blad/Sheet 2(2)
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				Art.No.	Size A4
				Ritn nr/Drawing No T128747	Rev A

Digital I/O connection diagrams FLIR AX8

