

# Thermal imaging cameras for security and surveillance







# FLIR FC-Series S

## Extremely affordable, network-ready fixed mount cameras

FC-Series S thermal security cameras let you see intruders and other threats to your facility clearly in total darkness and in bad weather. Fully enabled for control and operation over digital and analog networks, FC-Series S thermal imaging cameras are available in high-resolution  $640 \times 480$ , and  $320 \times 240$  formats.



### PoE (Power over Ethernet)

one cable. • Standard PoE - IEEE 802.3af PSE – provides full operation with anti-icing

Communication and power supplied with only

• PoE+ – IEEE 802.3at PSE supports de-icing for extreme cold and/or icy areas where 100% uptime is critical.



### IP control

The FC-Series S can be integrated in any existing TCP/IP network and controlled and viewed by a wide range of networked devices, including a PC, NVR, smart phone or tablet using FLIR or thirdparty products.. No additional cables are required. Using this configuration, you can monitor all activity over the network, even when you are thousands of kilometers away. An intuitive web interface allows for easy controlling and adjusting of the camera.



#### **Video Streaming**

Multiple channels of streaming digital video are available in H.264, MPEG-4, or M-JPEG formats. Simultaneous digital and composite video output is possible.



Allows for protection against solar energy and precipitation.



**Designed for use in harsh environments** The FC-Series S is rated IP66.



### FLIR Sensors Manager

Each FC-Series S camera comes with a single sensor copy of FLIR Sensors Manager. This intuitive software allows users to manage and control an FC-Series S camera in a TCP/IP network.





After product registration on www.flir.com



## Different lens options available

The following table gives an overview of the available FC-Series S versions

	Available lens options
320 x 240 pixels*	FC-363 S : 7.5 mm lens – FOV : 63° (H) x 50° (V)
	FC-348 S : 9 mm lens – FOV : 48° (H) x 39° (V)
	FC-334 S : 13 mm lens – FOV : 34° (H) x 28° (V)
	FC-324 S : 19 mm lens – FOV : 24° (H) x 19° (V)
	FC-313 S : 35 mm lens – FOV : 13° (H) x 10° (V)
	FC-309 S : 35 mm lens – FOV : 9° (H) x 7° (V)
640 x 480 pixels	FC-690 S : 7.5 mm lens – FOV : 90° (H) x 69° (V)
	FC-669 S : 9 mm lens – FOV : 69° (H) x 56° (V)
	FC-645 S : 13 mm lens – FOV : 45° (H) x 37° (V)
	FC-632 S : 19 mm lens – FOV : 32° (H) x 26° (V)
	FC-618 S : 35 mm lens – FOV : 18° (H) x 14° (V)

\* All 320 x 240 pixels FC-Series S thermal imaging cameras are equipped with an uncooled microbolometer detector with 25 $\mu$ m pixel pitch except for the FC-309 S which is equipped with an uncooled microbolometer detector with a 17 $\mu$ m pitch.









Different installation options exist for the FC-Series S. This optional pedestal mount is Ideal for installation on ledges, walls and from overhead locations such as eaves, tunnel ceilings and bridge decks.

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The FC-Series S is available with an optional concealed cable mounting arm bracket. This flexible mount supports simple installation in every environment. When this bracket is used for installation the camera is rated IP66.

# Range Performances

Range performances for FC-S, SR-, F-, PT-, and D-Series with 320 x 240 pixels detector

Image: Control of the construction of Human Target9 mm lensDetection approx 30 m Precomption approx 33 m13 mm lensDetection approx 30 m Precomption approx 40 m Detection approx 25 m19 mm lensDetection approx 20 m Detection approx 100 m Detection approx 100 m35 mm lensDetection approx 20 m Detection approx 100 m Detection approx 20 m Detection approx 20 m36 mm lensDetection approx 20 m Detection approx 100		
13 mm lens       Recognition approx 57 m         13 mm lens       Detection approx 30 m         13 mm lens       Detection approx 40 m         19 mm lens       Detection approx 40 m         35 mm lens       Detection approx 20 m         10 mm lens       Detection approx 20 m         35 mm lens       Detection approx 12 m         10 mm lens       Detection approx 20 m         11 mm lens       Detection approx 20 m         12 mm lens       Detection approx 30 m         13 mm lens       Detection approx 30 m         14 mm lens       Detection approx 30 m         15 mm lens       Detection approx 30 m         16 mm lens       Detection approx 12 m         10 mm lens       Detection approx 10 m         11 dentification approx 30 m       Detection approx 100 m         12 mm lens       Detection approx 30 m         13 mm lens       Detection approx 100 m         14 mm lens       Detection approx 100 m         15 mm lens       Detection approx 100 m         14 mm lens       Detection approx 100 m         15 mm lens       Detection approx 100 m         16 mm lens       Detection approx 100 m         17 mm lens       Detection approx 100 m         18 mm lens	mer 🕈 tui	Detection, Recognition, Identification of Human Target
19 mm lens       Recognition approx. 80 m         19 mm lens       Recognition approx. 80 m         25 mm lens       Recognition approx. 12 m         35 mm lens with       Recognition approx. 22 m         36 mm lens with       Recognition approx. 20 m         37 mm lens       Recognition approx. 20 m         36 mm lens with       Recognition approx. 20 m         36 mm lens       Recognition approx. 40 m         36 mm lens       Recognition approx. 50 m         37 mm lens       Recognition approx. 40 m         38 mm lens       Recognition approx. 50 m         39 mm lens       Recognition approx. 70 m         30 mm lens       Recognition approx. 70 m         10 mm lens       Recognition approx.	9 mm lens	Recognition approx.57 m
B: Cognition approx. 124 mi         B: S mm lens       Detection approx. 880 mi         B: S mm lens       Detection approx. 100 mi         17 um pixel pixth       Detection approx. 100 mi         17 um pixel pixth       Detection approx. 128 mi         18 mm lens       Detection approx. 120 mi         19 mm lens       Detection approx. 120 mi         10 mm lens       Detection approx. 120 mi         10 mm lens       Detection approx. 100 mi         10 mm lens       Detection approx. 100 mi         10 mm lens       Detection approx. 100 mi         11 mm lens       Detection approx. 100 mi         12 mm lens       Detection approx. 100 mi         13 mm lens       Detection approx. 100 mi         14 emtification approx. 20 mi       Detection approx. 100 mi         15 mm lens       Detection approx. 100 mi         16 entification approx. 20 mi       Recognition approx. 20 mi         17 mm lens       Detection approx. 100 mi         18 mm lens       Detection approx. 100 mi         19 mm lens       Recognition approx. 20 mi         16 entification approx. 20 mi       Detection approx. 20 mi         17 mp ixel pixth       Detection approx. 20 mi         18 mm lens       Recognition approx. 20 mi         1	13 mm lens	Recognition approx. 82 m
a Peccopilion approx.22 m         35 mm lens with       Recognition approx.12 m         0 mm lens       Identification approx.120 m         65 mm lens       Recognition approx.20 m         1 dentification approx.10 m       Detection approx.1,280 m         65 mm lens       Recognition approx.20 m         1 dentification approx.10 m       Detection approx.1,680 m         1 dentification approx.20 m       Recognition approx.40 m         1 dentification approx.20 m       Detection approx.2400 m         1 dentification approx.20 m       Recognition approx.20 m         1 dentification approx.20 m       Detection approx.2400 m         1 dentification approx.20 m       Recognition approx.200 m         1 dentification approx.20 m       Recognition approx.20 m	19 mm lens	Recognition approx. 124 m
15 mm lens with       Image: Construction approx 1,080 m         17µm pixel pitch       Indentification approx 300 m         50 mm lens       Indentification approx 300 m         65 mm lens       Indentification approx 300 m         65 mm lens       Indentification approx 300 m         100 mm lens       Indentification approx 400 m         100 mm lens       Indentification approx 400 m         Indentification approx 300 m       Detection approx 2,400 m         Indentification approx 300 m       Indentification approx 300 m         Indentification approx 400 m       Indentification approx 300 m         Indentification approx 700 m       Indentification approx 700 m         Indentification approx 250 m       Indentification approx 250 m         Indentification approx 250 m       Indentification approx 700 m         Indentification approx 250 m       Indentification approx 250 m      <	35 mm lens	Recognition approx. 225 m
65 mm lens              • Recognition approx. 10 m             • dentification approx. 20 m             • dentification approx. 30 m             • dentification approx. 1/5 m             • dentification ap		Detection approx. 1,080 m Recognition approx. 320 m
100 nm lensRecognition approx. 205 m100 nm lensRecognition approx. 205 m9 nm lensDetection, Recognition approx. 300 m9 nm lensDetection, Recognition, Identification of Vehicle with 2.3 m critical dimension9 nm lensDetection approx. 700 m13 nm lensRecognition approx. 700 m14 dentification approx. 700 m15 nm lensRecognition approx. 700 m16 dentification approx. 700 m17 nm lensRecognition approx. 700 m18 nm lensRecognition approx. 150 m19 nm lensRecognition approx. 150 m19 nm lensRecognition approx. 450 m10 nm lensRecognition approx. 490 m16 entification approx. 500 m16 entification approx. 490 m16 entification approx. 490 m16 entification approx. 490 m16 entification approx. 490 m16 entification approx. 500 m16 entification approx. 500 m16 entification approx. 490 m16 entification approx. 490 m16 entification approx. 490 m16 entification approx. 500 m16 entification approx. 500 m16 entification approx. 500 m16 entification approx. 500 m16 entification approx. 1,200 m <td>50 mm lens</td> <td>Recognition approx. 320 m</td>	50 mm lens	Recognition approx. 320 m
100 mm lens       Recognition approx 500 m         9 mm lens       Detection, Recognition, Identification of Vehicle with 2.3 m critical dimension         9 mm lens       Detection, Recognition of Vehicle with 2.3 m critical dimension         13 mm lens       Detection approx 700 m         14 entification approx 700 m       Recognition approx 700 m         13 mm lens       Detection approx 1000 m         13 mm lens       Detection approx 1000 m         14 entification approx 125 m       Detection approx 125 m         19 mm lens       Detection approx 1500 m         16 entification approx 125 m       Detection approx 2700 m         18 mm lens       Recognition approx 250 m         19 mm lens       Recognition approx 250 m         16 entification approx 190 m       Detection approx 2,700 m         35 mm lens       Recognition approx 490 m         16 entification approx 490 m       Detection approx 3,250 m         17 µm pixel pitch       Recognition approx 495 m         50 mm lens       Recognition approx 495 m         65 mm lens       Recognition approx 1,250 m         Identification approx 490 m       Detection approx 490 m         65 mm lens       Recognition approx 1,250 m         Identification approx 600 m       Identification approx 490 m         100 mm le	65 mm lens	Recognition approx. 410 m
9 mm lensDetection, Recognition, Identification of Vehicle with 2.3 m critical dimension9 mm lensDetection approx. 700 m Becognition approx. 175 m Identification approx. 150 m Detection approx. 250 m 	100 mm lens	Detection approx. 2,400 m Recognition approx. 600 m
Recognition approx. 175 m         Identification approx. 88 m         I3 mm lens         Recognition approx. 250 m         Identification approx. 155 m         I9 mm lens         Recognition approx. 150 m         Identification approx. 150 m         Identification approx. 150 m         Recognition approx. 375 m         Identification approx. 100 m         Recognition approx. 375 m         Identification approx. 375 m         Identification approx. 370 m         Identification approx. 300 m         Identification approx. 400 m         Identification approx. 1,250 m         Identification approx. 1,260 m		Detection, Recognition, Identification of Vehicle with 2.3 m critical dimension
Peccognition approx. 250 m         Identification approx. 125 m         19 mm lens         Recognition approx. 150 m         Identification approx. 100 m         Recognition approx. 375 m         Identification approx. 100 m         Identification approx. 100 m         Identification approx. 100 m         Identification approx. 300 m         Identification approx. 300 m         Identification approx. 950 m         Identification approx. 900 m         Identification approx. 900 m         Identification approx. 1,250 m         Identification approx. 630 m         Identification approx.	9 mm lens	Recognition approx. 175 m
19 mm lens	13 mm lens	Recognition approx. 250 m
35 mm lens <ul> <li>Recognition approx. 680 m</li> <li>Identification approx. 340 m</li> </ul> <ul> <li>Identification approx. 340 m</li> <li>Identification approx. 340 m</li> <li>Identification approx. 950 m</li> <li>Identification approx. 950 m</li> <li>Identification approx. 495 m</li> </ul> 50 mm lens <ul> <li>Recognition approx. 970 m</li> <li>Identification approx. 495 m</li> <li>Identification approx. 970 m</li> <li>Identification approx. 490 m</li> </ul> 65 mm lens <ul> <li>Recognition approx. 1,250 m</li> <li>Identification approx. 630 m</li> <li>Identification approx. 1,250 m</li> <li>Identification approx. 1,250 m</li> <li>Identification approx. 1,260 m</li> </ul>	19 mm lens	Recognition approx. 3/5 m
35 mm lens with 17µm pixel pitch     Recognition approx. 950 m       50 mm lens     Identification approx. 970 m       65 mm lens     Recognition approx. 970 m       100 mm lens     Recognition approx. 1,250 m	35 mm lens	Detection approx. 2,700 m
50 mm lens     Detection approx. 3,800 m       65 mm lens     Identification approx. 490 m       100 mm lens     Recognition approx. 1,250 m       100 mm lens     Recognition approx. 1,840 m		Detection approx. 3,250 m Recognition approx. 950 m
65 mm lens Detection approx. 4,900 m Recognition approx. 1,250 m Identification approx. 630 m Detection approx. 7,100 m Recognition approx. 1,840 m	50 mm lens	Detection approx. 3,800 m
100 mm lens Detection approx. 7,100 m	65 mm lens	Detection approx. 4,900 m Recognition approx. 1,250 m
	100 mm lens	Detection approx. 7,100 m Recognition approx. 1,840 m

### Range performances for FC-S, SR-, F-, PT- and D-Series with 640 x 480 pixels detector

and the second states	Detection, Recognition, Identification of Human Target
13 mm lens	Detection approx. 440 m Recognition approx. 112 m Identification approx. 56 m
19 mm lens	Detection approx. 640 m  Recognition approx. 160 m  Identification approx. 80 m
25 mm lens	Petection approx. 930 m Recognition approx. 230 m ldentification approx. 116 m
FC-Series S 35 mm lens	Detection approx. 1,080 m Recognition approx. 272 m Identification approx. 136 m
35 mm lens other models	Detection approx. 1,280 m Recognition approx. 320 m Identification approx. 160 m
50 mm lens	Detection approx. 1,700 m Recognition approx. 430 m Identification approx. 215 m
65 mm lens	Recognition approx. 550 m Identification approx. 550 m
100 mm lens	Detection approx. 2,950 m
	Recognition approx. 750 m Identification approx. 380 m Detection, Recognition, Identification of Vehicle with 2.3 m critical dimension
13 mm lens	Detection approx. 1,340 m Recognition approx. 340 m Identification approx. 170 m
19 mm lens	Recognition approx. 1,950 m lettification approx. 500 m
25 mm lens	Recognition approx. 2,800 m
FC-Series S 35 mm lens	Recognition approx. 835 m
35 mm lens other models	Recognition approx. 950 m
50 mm lens	Detection approx. 5,100 m      dentification approx. 1,320 m      Identification approx. 60 m
65 mm lens	Detection approx. 6,500 m Recognition approx. 1,650 m Identification approx. 840 m
100 mm lens	Detection approx. 8,800 m  Recognition approx. 2,300 m  Identification approx. 1,160 m

# FC-SERIES S

# Technical specifications

### FC-Series S: general specifications

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Imaging performance		
Detector type	Focal Plane Array (FPA), uncooled Vanadium Oxide (Vox) microbolometer	
Spectral range	7.5 to 13.5μm	
Thermal sensitivity	<50 mK f/1.0	
Image frequency	NTSC: 30Hz or 7.5Hz	
	PAL: 25Hz or 8.33Hz	
Focus	Focus free, athermal lens	
Image processing	Automatic Gain Control (AGC),	
	Digital Detail Enhancement (DDE)	
System features		
Automatic heater	Clears ice from windows	
	Automatic deicing, tested according to MIL-	
	STD-810F Method 521.1	
Image presentation		
Video output	PAL or NTSC, hybrid IP and analog	
Video over Ethernet	Two independent channels of streaming	
	MPEG-4, H.264, or M-JPEG	
Streaming Resolutions	D1: 720x576, 4CIF: 704x576, Native:	
	640x512, Q-Native: 320x256, CIF: 352x288,	
	QCIF: 176x144	
Thermal AGC Modes	Auto AGC, Manual AGC, Plateau Equaliza-	
	tion AGC, Linear AGC, Auto Dynamic Detail	
Thermal ACC Device of laterat	Enhancement (DDE), Max Gain Setting	
Thermal AGC Region of Interest (ROI)	Default, Presets and User definable to insure optimal image quality on subjects	
(noi)	of interest	
Image Uniformity Optimization	Automatic Flat Field Correction (FFC) - Ther-	
5 , 1	mal and Temporal Triggers	
Power*		
Requirements	Power over Ethernet	
nequirements	PoE IEEE 802.3af-2003 or	
	PoE+ (IEEE 802.3at-2009 standard)	
	12-38 VAC	
	11-56 VDC	
Consumption	5 W nominal at 24 VDC	
	8 VA nominal at 24 VAC	
	21 W peak at 24VDC, with heaters	
	29VA peak at 24VAC, with heaters	

Environmental specification	ons	
Operating temperature range	-50°C to +70°C (Cold start: -40°C to +70°C)	
Storage temperature range	-55°C to +85°C	
Encapsulation	IP66 (IEC 60529)	
Shock	Mil-Std-810F	
Vibration	IEC 60068-2-27	
Physical characteristics		
Camera Weight	1.8 kg without sunshield 2.2 kg with sun shield	
Camera Size (L x W x H)	259 mm x 114 mm x 106 mm without sunshield 282 mm x 129 mm x 115 mm with sun shield	
Shipping weight (camera + packaging)	2.8 kg	
Shipping size (camera + packaging) (L x W x H)	366 mm x 188 mm x 178 mm	
Interfaces		
TCP/IP	Yes	
Network		
Supported Protocols	IPV4, HTTP, Bonjour, UPnP, DNS, NTP, RTSP, RTCP, RTP, TCP, UDP, ICMP, IGMP, DHCP, ARP, SCP	
Network Application Programming Interfaces (APIs)	Nexus SDK for comprehensive system control and integration Nexus CGI for http command interfaces ONVIF 2.0 Profile S	

### Approvals

EN55022:2010, Class A EN 61000-3-3: 2008 EN 61000-3-2: 2006+A1: 2009 & A2 2009 EN55024:2010 EN51030-4: 2011 FCC Part 15, Subpart B, Class A IP 66 (IEC 60529) IEC 60068-2-27

#### Standard package

Thermal imaging camera, sun shield, operator manual, FLIR Sensors Manager single sensor CD

\* Please consult product installation and operation guides for details of system power requirements

### FC-Series S: version specific specifications

Sensor resolution	320 x 240**	640 x 480
Name/Focal length/ Field of view	<u>FC-363 S:</u>	<u>FC-690 S:</u>
	7.5 mm lens – FOV : 63° (H) x 50° (V)	7.5 mm lens – FOV : 90° (H) x 69° (V)
	<u>FC-348 S:</u>	<u>FC-669 S:</u>
	9 mm lens – FOV : 48° (H) x 39° (V)	9 mm lens – FOV : 69° (H) x 56° (V)
	<u>FC-334 S:</u>	<u>FC-645 S:</u>
	13 mm lens – FOV : 34° (H) x 28° (V)	13 mm lens – FOV : 45° (H) x 37° (V)
	<u>FC-324 S:</u>	<u>FC-632 S:</u>
	19 mm lens – FOV : 24° (H) x 19° (V)	19 mm lens – FOV : 32° (H) x 26° (V)
	FC-313 S:	<u>FC-618 S:</u>
	35 mm lens – FOV : 13° (H) x 10° (V)	35 mm lens – FOV : 18° (H) x 14° (V)
	FC-309 S:	
	35 mm lens – FOV : 9° (H) x 7° (V)	
Electronic zoom	up to 4x continuous	up to 4x continuous

\*\* All 320 x 240 pixels FC-Series S thermal imaging cameras are equipped with an uncooled microbolometer detector with 25µm pixel pitch except for the FC-309 S which is equipped with an uncooled microbolometer detector with a 17µm pitch.

# Accessories

# FC-Series S





### **Concealed Cable Mounting Arm**

The concealed cable mount allows installation of all cabling to be routed inside of the mounting arm. Seals on the camera body insure IP66 protection. The arm can also be used with cables routed to the enclosure through the rear gland.

### Pole Mount adapter

Pole mount adapter for use with FC-Series concealed arm mount. Suitable for use with 4"-8" diameter poles.



## PoE+ Power Supply

Provides power for maximum de-icing in the most severe conditions.



### 24VAC Exterior Power Supply

Suitable for single or multiple camera installations. Supports full de-icing. Designed for installation outdoors.



# 24VDC Power Supply

Suitable for short distance cable runs where the power supply will be protected from the elements. Supports full de-icing.



### **Pedestal Mount**

Ideal for installation on ledges, walls and from overhead locations such as eaves, tunnel ceilings and bridge decks.

## **SR-Series**



Power supply to power an SR-Series thermal imaging camera.



### Hard transport case for SR-Series thermal imaging camera

Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.

## F-Series

### **F-Series pedestal mount**

Mount to install an F-Series network-ready fixed mount thermal imaging camera. Typically used on a flat horizontal surface such as a wall or the top of a pole.



### F-Series wall mount

Mount to install an F-Series network-ready fixed mount thermal imaging camera against a wall.



### F-Series pole mount adapter

Can be used to mount an F-Series network-ready thermal imaging camera against a new or existing pole.



## F-Series power supply

Power supply to power an F-Series network-ready thermal imaging camera.



## Hard transport case for F-Series thermal imaging camera

Rugged, watertight plastic shipping case. Holds all items securely. The case can be locked with padlocks and features a breather valve to prevent pressure build-up in airplane cargo holds.