

Sarix[®] TM Series Thermography IP Cameras

IP THERMAL CAMERA WITH FIXED ENCLOSURE OR INTEGRATED PAN/TILT SYSTEM

Product Features

- Fixed or Pan/Tilt (PT) Options
- Built-in Thermography Analytics and Alarms
- Temperature Monitoring Event and Metadata Streaming
- Minimum/Maximum/Average Temperature Algorithms
- Auto Environmental Compensation and Correction
- Up to 16 User-Defined Alarm Zones for Each Profile
- Integration with Major Video Management Systems
- Uncooled, Sun-Safe, Amorphous Silicon Microbolometer
- Long Wave Infrared (LWIR)
- 384 x 288 Resolution
- 25 µm Pixel Size
- Multiple Lens Options
- Complete with Sun Shroud and Heater/Defroster
- Meets NEMA Type 4X and IP66 Standards



The **Sarix[®] TM Series** thermography IP camera is an advanced thermal imaging camera designed for easy integration into any new or existing video security application. The camera provides predictive maintenance and process monitoring capabilities by detecting temperature fluctuations in user-defined areas. Every **Sarix TM Series** camera features IP outputs and an integrated, environmentally protected IP66-rated enclosure (with optional pan/tilt positioner). Additionally, when used in an IP system, the **Sarix TM Series** thermography camera features a full suite of thermographic analytics.

At the core of the **Sarix TM Series** thermography IP camera is an uncooled, sun-safe microbolometer, long-wavelength infrared (LWIR) camera that delivers 384 x 288 resolution thermal video. The camera features an amorphous silicon detector, which has lower fixed pattern noise and a more uniform response than vanadium oxide detectors, while still maintaining high resolution and sensitivity. Because the amorphous silicon detector is sun-safe, the camera can be exposed directly to the sun without degrading performance or long-term reliability.

The **Sarix TM Series** provides outstanding sensitivity below 50 mK at f/1.0. It is capable of multiple display formats, including white hot, black hot, and color signatures.

The **Sarix TM Series** is available in fixed or PT options. The fixed camera has an input voltage of 24 VAC or 24 VDC. The PT camera has an input voltage of 24 VAC or a selectable power source of 120/230 VAC.

The **Sarix TM Series** can support two simultaneous video and temperature event streams. The two streams can be compressed in MJPEG and H.264 formats across several resolution configurations. The streams can be configured to a variety of frame rates, bit rates, and group of pictures (GOP) structures for additional bandwidth administration.

The powder-coated aluminum enclosure makes the **Sarix TM Series** ideal for either indoor or outdoor applications. The system has a sustained operating temperature range of -40° to 50°C (-40° to 122°F). A built-in heater/defroster and sun shroud are standard features on the **Sarix TM Series**.



by Schneider Electric

International Standards
Organization Registered Firm;
ISO 9001 Quality System



C1317SP / REVISED 5-12-15

PELCO ANALYTICS

Pelco Analytics enhance the flexibility and performance of the **Sarix TM Series**. Pelco Analytics are easily configured and enabled for alarm notification using a standard Web browser, and Pelco behavior alarms are compatible with Pelco or third-party systems that support Pelco's Analytics API system.

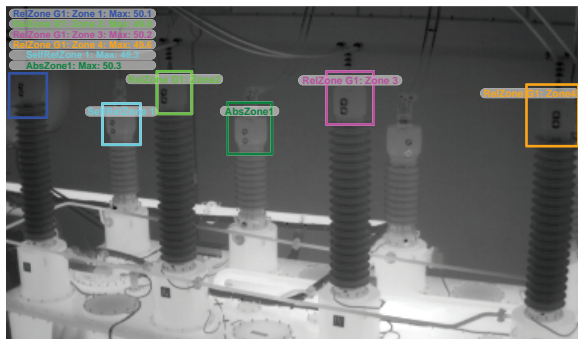
The **Sarix TM Series** thermography IP camera includes three user-configurable thermographic behaviors and camera sabotage detection. The camera is capable of running all four behaviors simultaneously.

Note: For each behavior, you can create several custom profiles that contain different camera settings. With these profiles, you can set up different temperature scenarios for the behavior, which will automatically trigger alarms when the specified thermography activity is detected.

For thermography behaviors, up to 16 user-defined alarm areas are available. Each alarm area overlay contains text information about temperature in both live view and playback.

Each **Sarix TM Series** thermography IP camera includes the following behaviors:

- **Camera Sabotage:** Detects contrast changes in the field of view. An alarm is triggered if the lens is obstructed with spray paint, a cloth, or covered with a lens cap. Any unauthorized repositioning of the camera also triggers an alarm.
- **Thermography - Absolute Threshold:** Detects temperature changes to objects or areas within a defined zone. Exceeding the threshold temperature triggers an alarm.
- **Thermography - Relative Threshold:** Detects temperature differences between objects in a group. Exceeding the allowable temperature range threshold between two or more objects triggers an alarm.
- **Thermography - Self Reference Threshold:** Detects temperature changes from an initial temperature defined in the zone when the box is drawn. Exceeding the temperature range threshold for temperature change from the initial temperature triggers an alarm.



Weather Station Controller

Global settings for thermography behaviors can be configured manually or with the optional Xytronix® X-320M™ weather station controller. The camera queries the X-320M for updated weather conditions and gives a level of accuracy that is unavailable with manual updates. The camera uses weather condition reports from the controller to adjust automatically to changes in weather, such as light snow and fog, that affect ambient temperature and humidity. The camera also uses the controller's rain sensor capabilities to modify alarm behavior if rain is detected.

POSITIONING SYSTEM

The **Sarix TM Series** positioning system is a completely integrated system offering responsive, high-speed positioning capabilities, outstanding weather protection, IP-based controls, and easy installation. Designed for minimal maintenance with no gears to adjust, the positioning system is available in pedestal and wall mount models and offers variable pan and tilt speeds and preset position precision even in high winds.

Each **Sarix TM Series** positioning system includes the following features:

- Esprit® Pan/Tilt
- Operational in 145 km/h (90 mph) Winds, Can Withstand Wind Velocities Up to 209 km/h (130 mph)
- Preset Positioning, Patterns, and Multiple Scan Modes
- Preset Position Accuracy to 1°
- Pan Preset Speed of 100°/Sec in 80 km/h (50 mph) Winds and 50°/Sec in 145 km/h (90 mph) Winds
- Tilt Preset Speed of 30°/Sec
- Manual Pan Speed, 0.1° to 40°/Sec
- Manual Tilt Speed, 0.1° to 20°/Sec
- Variable Speed Pan, 0.1° to 100°/Sec with Proportional Pan
- Variable Scan Speeds (1 to 40°/Sec)
- 360° Continuous Pan Rotation
- Tilt Range of +33° to -83° from Horizontal

WEB INTERFACE

The **Sarix TM Series** uses a standard Web browser for powerful setup and administration.

TECHNICAL SPECIFICATIONS

THERMOGRAPHY CAMERA/OPTICS

Detector	Uncooled, sun-safe, amorphous silicon microbolometer
Array Format	384 x 288
Target Range Distance	2 to 140 m
Atmospheric Correction	Up to 4267 m (14,000 ft) altitude
Spatial Resolution (IFOV)	1.75 to 0.5 mRad
Temperature Measurement	
Range	-20° to 120°C
Reading Accuracy*	±2°C or ±2% of reading (whichever is larger)
Sensitivity	0.05°C
Pixel Size	25 µm
Shuttering	1 min. periodic recalibration
Effective Resolution	384 x 288 (110,592 pixels)
Spectral Response	8 to 12 µm, LWIR
Normalization Source	Internal shutter (offset only), 0.3 second video freeze during shutter
Temporal NETD	50 mK at f/1.0
Front Window	Germanium with Diamond-Like Coating (DLC) with resistance to abrasion, salts, acids, alkalis, and oil
Display Formats	White hot, black hot, and rainbow

*Specifications for reading accuracy are based on stable rather than extreme weather conditions.

LENS AND RANGE PERFORMANCE†

384 x 288			
Lens (mm)	F-Number (f)	Field of View (H x V x D)	Measurement Range (m)
14.25	1.2	39° x 29° x 48°	2–40
35	1.4	16° x 12° x 19°	40–90
50	1.2	11° x 8° x 14°	90–140

†Based on 0.25m x 0.25m feature size representing 4 x 4 pixel zone

INTEGRATION

Pelco System Integration	Endura® 2.0 (or later)
Open API	Pelco API

MINIMUM SYSTEM REQUIREMENTS

Network Interface Card	100 megabits (or greater)
Monitor	Minimum of 1024 x 768 resolution, 16- or 32-bit pixel color resolution
Web Browser	Internet Explorer® 8.0 (or later) or Mozilla® Firefox® 3.5 (or later); Internet Explorer 8.0 (or later) is recommended for configuring analytics
Media Player	Pelco Media Player or QuickTime® 7.6.5 for Windows 7, XP, or Vista; or QuickTime 7.6.4 for Mac OS X 10.4 (or later)

Notes:

- Pelco Media Player is recommended for control, smoothness, and reduced latency as compared to QuickTime.
- This product is not compatible with QuickTime version 7.6.4 for Windows XP or Windows Vista. If you have this version installed on your PC, you will need to upgrade to QuickTime version 7.6.5.
- Network and processor bandwidth limitations might cause the video stream to pause or appear pixelated when additional Web-interface users connect to the camera. Decrease the images per second (ips), resolution, compression, or bit rate settings of the Web interface video streams to compensate for network or processor limitations.

VIDEO

IP/NETWORK

Video Encoding	H.264 High, Main, or Base profiles; MJPEG, and JPEG
Video Streams	Up to 2 simultaneous video and temperature streams, including a separate, low bandwidth, metadata stream; the second stream is variable based on the setup of the primary stream
Frame Rate	Up to 30, 25, 24, 15, 12.5, 12, 10, 8, 7.5, 6, 5, 4, 3, 2.5, 2, 1 (dependent upon video or temperature stream configuration)

Available Resolutions

Resolution			JPEG		H.264 High Profile	
Width	Height	Aspect Ratio	Maximum IPS*	Recommended Bit Rate (Mbps)	Maximum IPS*	Recommended Bit Rate (Mbps)
384 x 288 Resolution						
384	288	4:3	30	1.71	30	0.63
320	240	4:3	30	1.17	30	0.49
320	176	16:9	30	0.88	30	0.34

*Models with a "-X1" suffix part number have a maximum ips of 8.3.

Supported Protocols	TCP/IP, UDP/IP (Unicast, Multicast IGMP), UPnP, DNS, DHCP, RTP, RTSP, NTP, IPv4, IPv6, SNMP, QoS, HTTP, HTTPS, LDAP (client), SSH, SSL, SMTP, FTP, and 802.1x (EAP)
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Note: Supports mixed IPv4 and IPv6 environments, but not IPv6-only deployments.

Users

Unicast	Up to 20 simultaneous users depending on resolution settings (2 guaranteed streams)
Multicast	Unlimited users H.264
Security Access	Password protected
Software Interface	Web browser view and setup
Video Port	75 ohms, unbalanced

Note: The video port is for image viewing only. Thermography functionality is not enabled through the video port.

Video Modes	NTSC or PAL
Video Level	1 Vp-p

TECHNICAL SPECIFICATIONS

ELECTRICAL

Ethernet Port	Inline RJ-45 for 100Base-TX, auto MDI/MDI-X
Ethernet Cabling Required	Cat5 or better for 100Base-TX
Input Power Range	+15%/–20%
Local Memory Storage	Micro SD (max. 2 gb)
Alarm Inputs	N.O. switch, N.C. switch, or 1 kohm; supervised

FIXED

Input Power	24 VAC or 24 VDC	
Power Consumption	<u>Lens</u>	<u>Power</u>
24 VAC	14.25, 35, 50 mm	1.51 A, 39.90 VA (35 W)
24 VDC	14.25, 35, 50 mm	1.26 A, (35 W)
Current Consumption	<750 mA nominal; <1.2 A maximum	
Audio Output	0 to 32 VDC maximum, 100 mA maximum	
Audio Input	Bidirectional, half duplex; line level/external microphone input; 600 Ohm differential; 1 Vp-p maximum signal level	
Compression	G.711 PCM, 64 kbps	

PAN/TILT

Input Power	24/120/230 VAC, 50/60 Hz, switch selectable for 120/230 VAC		
Power Consumption	<u>Lens</u>	<u>Power</u>	
24 VAC	14.25, 35, 50 mm	3.87 A, 102.2 VA (100 W)	
115 VAC	14.25, 35, 50 mm	0.83 A, 109.4 VA (105 W)	
230 VAC	14.25, 35, 50 mm	0.41 A, 109.4 VA (105 W)	
24 VAC Fuse	8.0 A, slow-blow		
120/230 VAC Fuse	2 A, slow-blow		
Heater	Thermostat controlled		
Mechanical Relay Output [§]	<u>Voltage</u>	<u>Current</u>	<u>Power</u>
	60 VDC, 125 VAC	1 A	62.5 VA, 30 W
Solid-State Relay Output [§]	32 V	100 mA	(N/A)
Audio			
Input	UTP 600 ohm mono, 12 VDC power source, line level/external microphone input, 1 Vp-p maximum signal level		
Compression	G.711 PCM, 64 kbps		
Serial Control Port	4-wire, RS-422/RS-485		
Serial Control Cabling Type	UTP		

[§]Assumes maximum operating capacity.

MECHANICAL

Latching	2 captive Torx™ screws
FIXED	
Cable Entry	2 adjustable 0.5-inch NPT liquid-tight glands


PAN/TILT

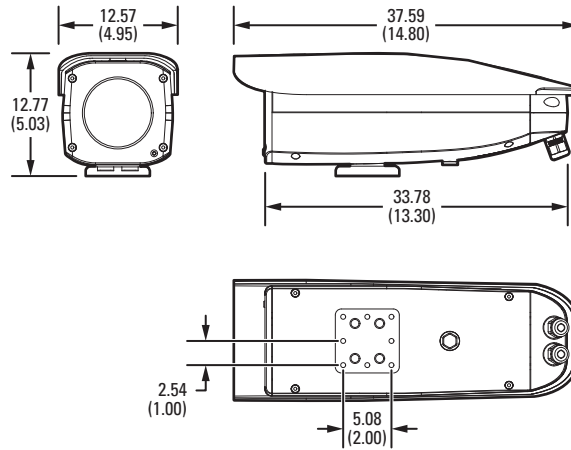
Pan Movement	360° continuous pan rotation
Vertical Tilt	33° to –79° unobstructed from horizontal
Variable Pan/Tilt Speed	<u>IP Control</u>
Pan	0.1° to 100°/sec
Tilt	0.1° to 30°/sec
Preset Speeds	
Pan	100° per second
Tilt	30° per second

GENERAL

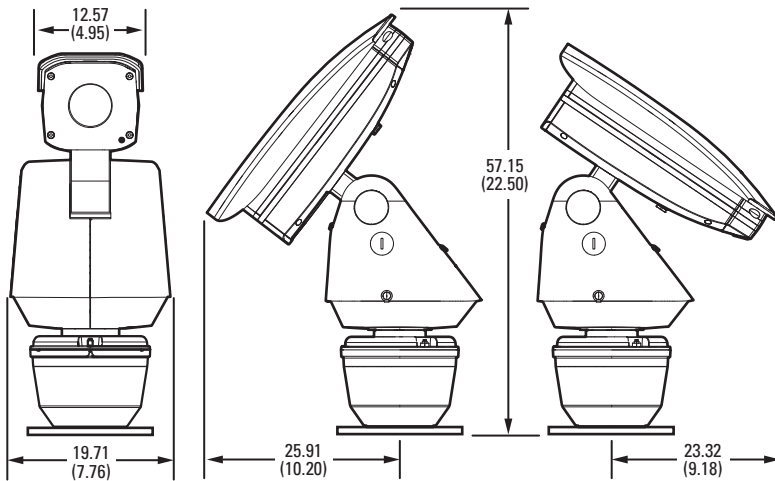
Construction	Aluminum	
Finish	Gray polyester powder coat	
Environment	Indoor/outdoor	
Operating Temperature	–40° to 50°C (–40° to 122°F)	
Storage Temperature	–40° to 60°C (–40° to 140°F)	
Cold Start	–40° to 50°C (–40° to 122°F)	
Weight	<u>Unit</u>	<u>Shipping</u>
SP-TM314	3.1 kg (6.9 lb)	4 kg (9 lb)
SP-TM335	3.2 kg (7.2 lb)	4 kg (9 lb)
SP-TM350	3.3 kg (7.3 lb)	4 kg (9 lb)
SP-ESTM314-2N/5N	11.2 kg (24.6 lb)	15 kg (33 lb)
SP-ESTM314-2W/5W	11.8 kg (26.1 lb)	16 kg (34 lb)
SP-ESTM335-2N/5N	11.3 kg (24.9 lb)	15 kg (33 lb)
SP-ESTM335-2W/5W	12.0 kg (26.4 lb)	16 kg (35 lb)
SP-ESTM350-2N/5N	11.3 kg (25.0 lb)	15 kg (33 lb)
SP-ESTM350-2W/5W	12.0 kg (26.5 lb)	16 kg (35 lb)

TECHNICAL SPECIFICATIONS

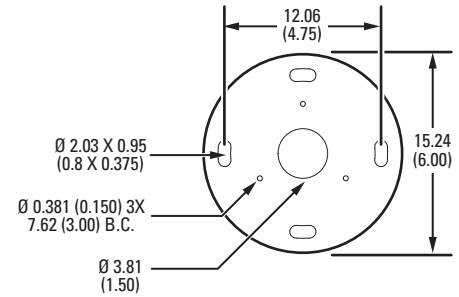
 NOTE: VALUES IN PARENTHESES ARE INCHES; ALL OTHERS ARE CENTIMETERS.



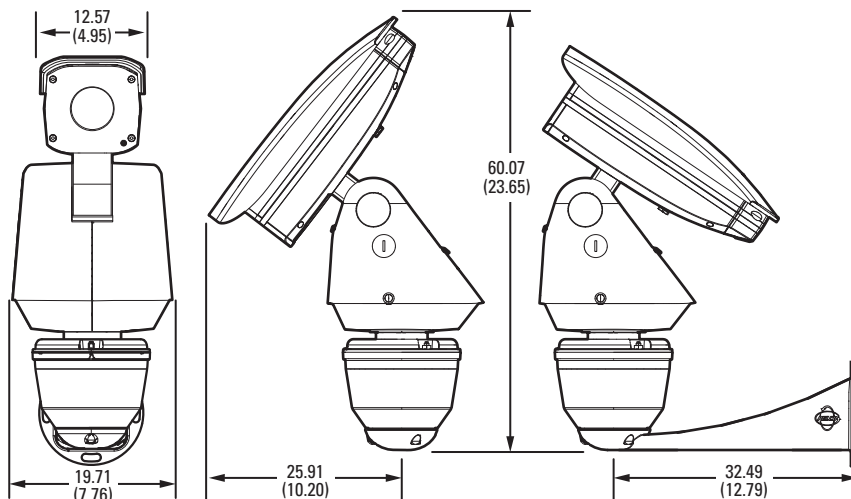
PEDESTAL MOUNT MODELS



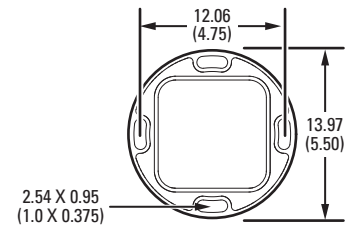
PEDESTAL MOUNTING PATTERN



WALL MOUNT MODELS



WALL MOUNTING PATTERN



TECHNICAL SPECIFICATIONS

MODELS*§

Lens	Frame Rate	Pan/Tilt Pedestal Mount†		Pan/Tilt Wall Mount‡		Fixed Camera
		24 VAC	120/230 VAC	24 VAC	120/230 VAC	384 x 288
14.25 mm	30 ips	SP-ESTM314-2N	SP-ESTM314-5N	SP-ESTM314-2W	SP-ESTM314-5W	SP-TM314
	8.33 ips	SP-ESTM314-2NX1	SP-ESTM314-5NX1	SP-ESTM314-2WX1	SP-ESTM314-5WX1	SP-TM314-X1
35 mm	30 ips	SP-ESTM335-2N	SP-ESTM335-5N	SP-ESTM335-2W	SP-ESTM335-5W	SP-TM335
	8.33 ips	SP-ESTM335-2NX1	SP-ESTM335-5NX1	SP-ESTM335-2WX1	SP-ESTM335-5WX1	SP-TM335-X1
50 mm	30 ips	SP-ESTM350-2N	SP-ESTM350-5N	SP-ESTM350-2W	SP-ESTM350-5W	SP-TM350
	8.33 ips	SP-ESTM350-2NX1	SP-ESTM350-5NX1	SP-ESTM350-2WX1	SP-ESTM350-5WX1	SP-TM350-X1

*Some models might be subject to US government export control regulations.

† Pedestal mount models include Esprit EPP pedestal adapter plate. Use with PM2000/PM2010 mount (not supplied) for pedestal application.

‡ Wall mount models include Esprit EWM wall mount. Optional mounting adapters for corner, pole, and parapet applications are available.

CERTIFICATIONS/RATINGS/PATENTS

- CE, Class A
- FCC, Class A
- UL/cUL Listed
- C-Tick
- Meets NEMA Type 4X and IP66 standards
- Shock and Vibration, Meets NEMA TS 2; IEC613736-8, -9, -10
- Cisco® Medianet (MSP) Compatible

RECOMMENDED MOUNTS FOR FIXED CAMERAS

CEILING/PEDESTAL

EM1009U, EM1015U Medium duty ceiling/pedestal mount

WALL

EM1450 Light duty wall mount

EM1900U Medium duty wall mount

PIPE/POLE

EM1109 Medium duty pedestal mount for horizontal or vertical pipe/pole applications

EM2000 Medium duty mount for vertical applications

RECOMMENDED MOUNTS AND ADAPTERS FOR PAN/TILT CAMERAS

ECM100	Corner mount adapter; for use with EWM wall mount
EPM	Pole mount adapter; for use with EWM wall mount
EA4348	Parapet mount adapter; for use with EWM wall mount
PM2000/PM2010	Pedestal mount with cable feedthrough; for use with Esprit systems with EPP pedestal adapter plate
PP4348	Rooftop parapet mount; use with EA4348 adapter

RECOMMENDED POWER SUPPLIES

MCS Series	Multiple 24 VAC camera power supply, indoor
WCS Series	Single/multiple 24 VAC camera power supply, outdoor

RECOMMENDED WEATHER STATION

1-27PCDJ [§]	Includes a web-enabled meteorological station controller by Xytronix. Sensors by RM Young® are available for automatic atmospheric correction.
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OPTIONAL ACCESSORIES

SECURE-SLA License	Enables Information Assurance compliant mode of operation
1-2DIKG7 [§]	Milestone® plugin

[§] Browse special manufacturing request (SMR) cameras and options using the SMR catalog: <http://specialmodifications.pelco.com>.

Pelco by Schneider Electric

3500 Pelco Way, Clovis, California 93612-5699 United States

USA & Canada Tel (800) 289-9100 Fax (800) 289-9150

International Tel +1 (559) 292-1981 Fax +1 (559) 348-1120

www.pelco.com www.pelco.com/community

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