



WATCHMASTER® IP THERMAL SURVEILLANCE SYSTEMS

Furnishing Systems Integrators with a competitive edge by providing 24/7 affordable thermal solutions that outperform conventional surveillance technologies, the WatchMaster®IP Family is the clear choice for all of your low light, no light and challenging environments. Available in two-resolutions and fixed-mount or pan-and-tilt configurations, WatchMaster®IP offers an industry leading low power consumption of less than 12.95 watts, signature light-weight and compact packaging, exceptional image clarity and affordable pricing.

For greater versatility, the WatchMaster®IP line is equipped with multiple lens options, both IP and Analog connectivity and all-new Image Contrast Enhancement (ICE™) capabilities for additional local area processing and edge enhancement.

- IP and Analog video formats
- Fixed and Pan-and-Tilt configurations
- Resolutions of 320 x 240 or 640 x 480
- NEW: Image Contrast Enhancement (ICE™) features
- ONVIF™ Profile S conformant
- 802.3af Power over Ethernet (PoE)
- 30 frames per second (fps) or 9 fps versions for global commercial applications

THE CHOICE IS CLEAR.

THERMAL IMAGING: THERE IS NO COMPARISON

The diagram below depicts images from the same scene captured with various imaging equipment common in today's surveillance market. Conventional video surveillance options such as CCTV with Infrared Illuminators, Active Visible (Day TV) and Image Intensifiers (I²) cannot adequately define the scene with clarity, as thermal cameras can.

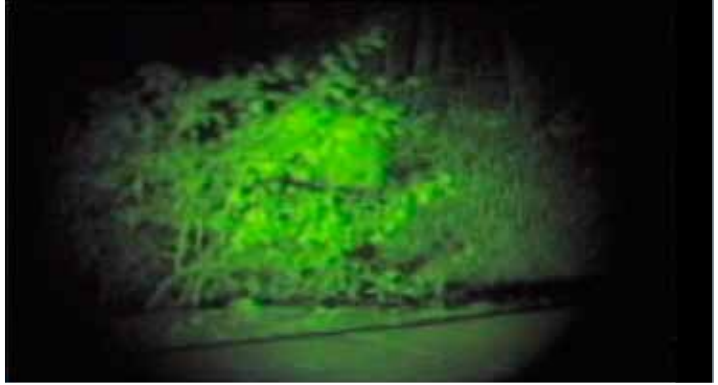
Several types of imaging technologies are available for security applications, but thermal cameras offer particular advantages that can extend the surveillance and monitoring capabilities of security systems and personnel. All competing technologies - visible-light camera, night vision and near-infrared - have limited viewing capacity.

These low-light devices amplify the available ambient light to produce an image of the scene. Consequently, image intensifiers need a source of illumination to operate effectively and cannot perform well in total darkness. Their effectiveness also is hampered by their limited range. Image intensifiers are subject to a "blooming" effect that results from brightly lit objects in the scene. These light sources appear as intense glows that may hide nearby detail and, if sufficiently strong, may blind the camera by flooding the scene with light.

WatchMaster[®] Thermal Infrared



Image Intensifier (I²)



CCTV with Infrared Illuminator



Active visible Lighting (Day TV)



For security operations, closed circuit TV systems are often coupled with infrared illuminators, such as diodes, infrared lamps and lasers. With these illuminators, CCTV offers an improvement in imaging compared with day TV devices, but it still requires enhanced illumination when detecting images in semi-darkness and other low-light conditions. Additionally, CCTV's capabilities often are limited by range and weather conditions.

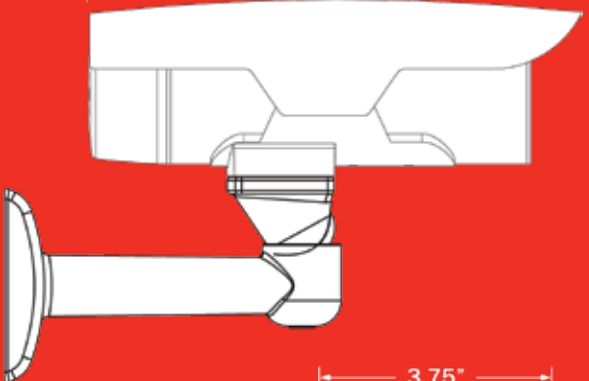
Day cameras, employing active visible lighting, detect the portion of the electromagnetic spectrum that is visible to the human eye, a segment ranging from 350 nm to 750 nm in wavelength. Using conventional video cameras, these systems splash light on the targeted area to identify intrusions. The light source, however, draws attention to the device, and intruders may breach security simply by evading the light. Moreover, as with any illuminated source, visible-lighting systems are hindered by limited reliability and duration for both the camera and the lighting source.

CAMERA DIMENSIONS

(Mounting brackets sold separately)

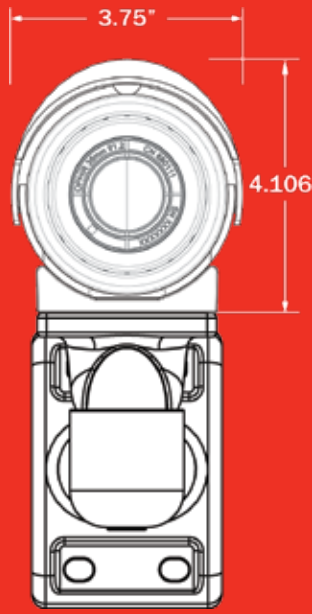
WATCHMASTER® IP ELITE

11.530"

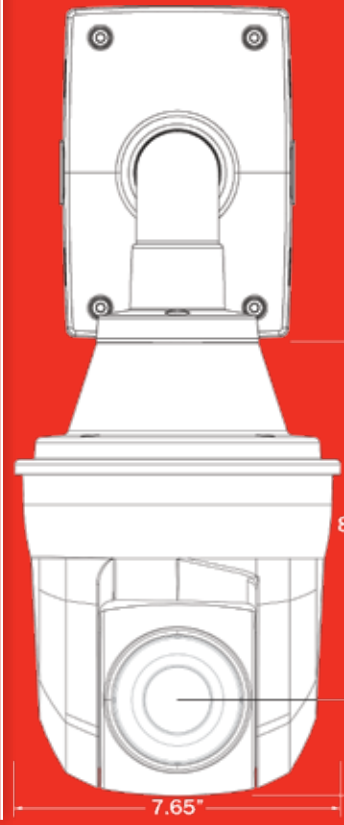


3.75"

4.106"



WATCHMASTER® IP ULTRA



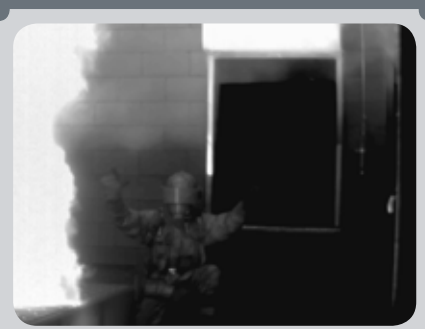
7.65"

8.393"

10.644"

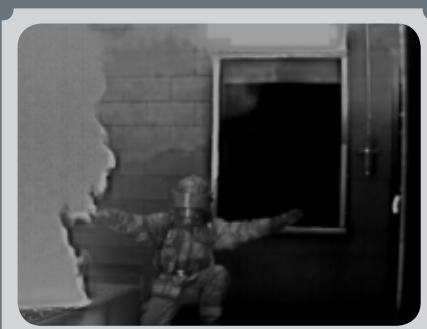


IMAGE CONTRAST ENHANCEMENT (ICE™) SELECTIONS



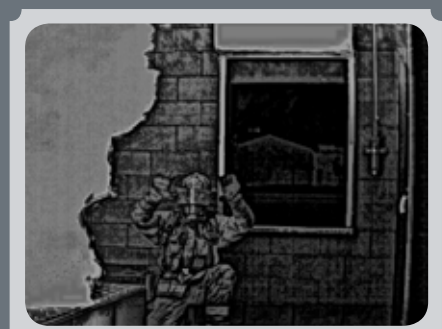
AGC

Firefighter is visible with minimal contrast. Background of scene is washed out and nothing is visible through the window.



ICE™ Low

Firefighter and background are clearly visible with added contrast and edge enhancement. No visibility through the window.



ICE™ High

Maximum edge enhancement brings out details of firefighter and reveals elements in the distant background through the window.

AGC Automatic Gain Control adjusts the image gain to the optimal range.

ICE™ Low Provides moderate levels of contrast and edge enhancement.

ICE™ High Additional local area contrast and edge enhancement to enrich background and foreground content.

WATCHMASTER® IP ELITE 3000 AND 6000 SERIES



SYSTEM FEATURES

FOCAL PLANE ARRAY

Array Size	320 x 240 (3000 Series)	640 x 480 (6000 Series)
Detector Type	Uncooled VOx Microbolometer	
Detector Pitch	17 µm	
Spectral Response	8 – 14 µm (LWIR)	
Sensitivity	< 50 mK at f/1.0	

VIDEO

Frame Rate	Configurable for up to 30 Frames Per Second (fps) or Fixed at 9 fps	
Format	Analog: NTSC / PAL IP: H264 / MJPEG	
Gain/Level Control	Automatic	
Image Display	White Hot/Black Hot, Color, Invert/Revert	
Symbology	On screen display with date, time and user defined text	
Zoom	4x Digital Zoom with ePan / eTilt	
Image Processing	Image Contrast Enhancement (ICE™)	

COMMUNICATION INTERFACE

Protocols	Internet Protocol (IP)	ONVIF™ Conformant (v 2.0 / Profile S) RTP, RTSP, TCP, UDP, DHCP, FTP, HTTP and NTP
	Analog	PELCO-D
Interfaces	Internet Protocol (IP)	Ethernet (10/100 BaseT), RJ-45
	Analog	RS-485
Security	802.1X Network Access Control and HTTPS	

ELECTRICAL

Voltage	12 - 24 V DC; 24 V AC; 802.3af Power over Ethernet (PoE)
Power	< 12.95 W

ENVIRONMENTAL

Operating Temperature	-40°C to +60°C (-40°F to +140°F)
Storage Temperature	-50°C to +75°C (-58°F to +167°F)

MECHANICAL

Dimensions (L x H x W)	29.2 x 10.4 x 9.5 cm
Weight	< 1500 grams
Enclosure	IP66, Tamper Resistant

SOFTWARE

DRS Web Interface	Administrator and User with Password Protection
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HARDWARE

Embedded Memory	2 GB for Video Storage and Image Capture
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Specifications subject to change without notice.

WATCHMASTER® IP ULTRA 3000 AND 6000 SERIES



SYSTEM FEATURES

FOCAL PLANE ARRAY

Array Size	320 x 240 (3000 Series)	640 x 480 (6000 Series)
Detector Type	Uncooled VOx Microbolometer	
Detector Pitch	17 µm	
Spectral Response	8 – 14 µm (LWIR)	
Sensitivity	< 50 mK at f/1.0	

VIDEO

Frame Rate	Configurable for up to 30 Frames Per Second (fps) or Fixed at 9 fps
Format	Analog: NTSC / PAL IP: H264 / MJPEG
Gain/Level Control	Automatic
Image Polarity	White Hot/Black Hot, Invert/Revert
Symbology	On screen display with date, time and user defined text
Zoom	4x Digital Zoom with ePan / eTilt
Image Processing	Image Contrast Enhancement (ICE™)

COMMUNICATION INTERFACE

Protocols	Internet Protocol (IP) ONVIF™ Conformant (v 2.0 / Profile S) RTP, RTSP, TCP, UDP, DHCP, FTP, HTTP and NTP Analog PELCO-D
Interfaces	Internet Protocol (IP) Ethernet (10/100 BaseT), RJ-45 Analog RS-485
Security	802.1X Network Access Control and HTTPS

ELECTRICAL

Voltage	12 - 24 V DC; 24 V AC; 802.3af Power over Ethernet (PoE)
Power	< 12.95 W

ENVIRONMENTAL

Operating Temperature	-20° C to +60° C (-4° F to 140° F)
Storage Temperature	-50° C to +75° C (-58° F to +167° F)

MECHANICAL

Dimensions (Diameter x Height)	20 cm x 27 cm
Volume	8000 cm ³
Weight	< 3 kilograms
Enclosure	IP66 (Ball-down Configuration), Tamper Resistant
Motion Mechanics	Pan Range (Azimuth): Continuous 360° Tilt Range (Elevation): ± 120° Pan-and-Tilt Speed: 30° per second Pan-and-Tilt Accuracy: ± 2.5°

SOFTWARE

DRS Web Interface	Administrator and User with Password Protection
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HARDWARE

Embedded Memory	2 GB for Video Storage and Image Capture
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Specifications subject to change without notice.

LENS OPTIONS

3000 SERIES (320 X 240)



40° Image



16° Image



9° Image

Available Lens Options

Lens	Horizontal x Vertical FOV	Effective Focal Length	f/#
40°	40.0° x 30.0°	7.5 mm	1.2
24°	24.1° x 18.1°	13 mm	1.0
16°	16.0° x 12.0°	19 mm	1.1
9°	9.0° x 6.7°	35 mm	1.2
6°	6.2° x 4.7°	50 mm	1.2

6000 SERIES (640 X 480)



37.5° Image



24.8° Image



12.4° Image

Available Lens Options

Lens	Horizontal x Vertical FOV	Effective Focal Length	f/#
44°	44.0° x 33.0°	14.25 mm	1.2
37.5°	37.5° x 28.0°	16.7 mm	1.2
24.8°	24.8° x 18.6°	25 mm	1.2
17.6°	17.6° x 13.2°	35 mm	1.2
12.4°	12.4° x 9.3°	50 mm	1.2

ENVIRONMENTAL TESTING DATA

All tests listed below were conducted on the WatchMaster® IP Elite 3000 and 6000 cameras and the WatchMaster® IP Ultra 3000 and 6000 cameras. The cameras passed all tests.

Test	Conditions
Altitude	Operational 500 to 9,000 feet
Operational Temperature	IP Elite: -40°C to 60°C (-40°F to 140°F) IP Ultra: -20°C to 60°C (-4°F to 140°F)
Storage Temperature	IP Elite: -50°C to 75°C (-58°F to 167°F) IP Ultra: -50°C to 75°C (-58°F to 167°F)
Temperature Shock	IP Elite: -40°C to 60°C (-40°F to 140°F) and 60°C to -40°C (140°F to -40°F) IP Ultra: -20°C to 60°C (-4°F to 140°F) and 60°C to -20°C (140°F to -4°F)
Icing, Fogging, Frosting	IP Elite: -40°C to 40°C (-40°F to 104°F), 2 Hrs at 2°C per minute IP Ultra: -20°C to 40°C (-4°F to 104°F), 2 Hrs at 2°C per minute
Solar Radiation	60°C (inherent in high temp extreme)
Humidity	95% humidity 7 days
Salt Fog	5% solution for 48 hours
Protection for Water and Dust	IEC 60529 IP66
Functional Vibration	20Hz to 600Hz
Handling Shock	1 meter drop; 3 sides (in shipping container)
EMI Testing	FCC Part 15 Subpart B Class A, CISPR22 Class B, EN55022 Class A
Safety	UL 60065 7th Edition 2007-12-11, CAN/CSA-C22.2 No.60065-03, 1st Edition, 2006-04+A1:2006
RoHS Compliance	European RoHS directive, 2011/65/EU
CE Mark Certification	IEC 60065 (Edition 7), IEC 60065 (Edition 7) Am 1

Testing is indicative only and test conditions may vary depending on the model.



WATCHMASTER® IP 3000 SERIES (320 X 240 RESOLUTION) PART NUMBERS

WatchMaster® IP Elite 3000 Series

Model	Part Number	fps	FOV	Standard
3340-N	1015428-104-SP	30	40°	NTSC
3324-N	1015428-166-SP	30	24°	NTSC
3316-N	1015428-105-SP	30	16°	NTSC
3309-N	1015428-106-SP	30	9°	NTSC
3306-N	1015428-126-SP	30	6°	NTSC
3940-N	1015428-110-SP	9	40°	NTSC
3924-N	1015428-168-SP	9	24°	NTSC
3916-N	1015428-111-SP	9	16°	NTSC
3909-N	1015428-112-SP	9	9°	NTSC
3906-N	1015428-128-SP	9	6°	NTSC
3340-P	1015428-116-SP	30	40°	PAL
3324-P	1015428-170-SP	30	24°	PAL
3316-P	1015428-117-SP	30	16°	PAL
3309-P	1015428-118-SP	30	9°	PAL
3306-P	1015428-130-SP	30	6°	PAL
3940-P	1015428-122-SP	9	40°	PAL
3924-P	1015428-172-SP	9	24°	PAL
3916-P	1015428-123-SP	9	16°	PAL
3909-P	1015428-124-SP	9	9°	PAL
3906-P	1015428-132-SP	9	6°	PAL

WatchMaster® IP Ultra 3000 Series

Model	Part Number	fps	FOV	Standard
3340-N	1011101-108-SP	30	40°	NTSC
3316-N	1011101-109-SP	30	16°	NTSC
3309-N	1011101-110-SP	30	9°	NTSC
3940-N	1011101-122-SP	9	40°	NTSC
3916-N	1011101-123-SP	9	16°	NTSC
3909-N	1011101-124-SP	9	9°	NTSC
3340-P	1011101-136-SP	30	40°	PAL
3316-P	1011101-137-SP	30	16°	PAL
3309-P	1011101-138-SP	30	9°	PAL
3940-P	1011101-150-SP	9	40°	PAL
3916-P	1011101-151-SP	9	16°	PAL
3909-P	1011101-152-SP	9	9°	PAL

WATCHMASTER® IP 6000 SERIES (640 X 480 RESOLUTION) PART NUMBERS

WatchMaster® IP Elite 6000 Series

Model	Part Number	fps	FOV	Standard
6344-N	1017301-106	30	44°	NTSC
6337-N	1017301-107	30	37.5°	NTSC
6325-N	1017301-108	30	24.8°	NTSC
6318-N	1017301-109	30	17.6°	NTSC
6312-N	1017301-110	30	12.4°	NTSC
6944-N	1017301-116	9	44°	NTSC
6937-N	1017301-117	9	37.5°	NTSC
6925-N	1017301-118	9	24.8°	NTSC
6918-N	1017301-119	9	17.6°	NTSC
6912-N	1017301-120	9	12.4°	NTSC
6344-P	1017301-126	30	44°	PAL
6337-P	1017301-127	30	37.5°	PAL
6325-P	1017301-128	30	24.8°	PAL
6318-P	1017301-129	30	17.6°	PAL
6312-P	1017301-130	30	12.4°	PAL
6944-P	1017301-136	9	44°	PAL
6937-P	1017301-137	9	37.5°	PAL
6925-P	1017301-138	9	24.8°	PAL
6918-P	1017301-139	9	17.6°	PAL
6912-P	1017301-140	9	12.4°	PAL

WatchMaster® IP Ultra 6000 Series

Model	Part Number	fps	FOV	Standard
6344-N	1011101-111	30	44°	NTSC
6337-N	1011101-112	30	37.5°	NTSC
6325-N	1011101-113	30	24.8°	NTSC
6318-N	1011101-114	30	17.6°	NTSC
6944-N	1011101-125	9	44°	NTSC
6937-N	1011101-126	9	37.5°	NTSC
6925-N	1011101-127	9	24.8°	NTSC
6918-N	1011101-128	9	17.6°	NTSC
6344-P	1011101-139	30	44°	PAL
6337-P	1011101-140	30	37.5°	PAL
6325-P	1011101-141	30	24.8°	PAL
6318-P	1011101-142	30	17.6°	PAL
6944-P	1011101-153	9	44°	PAL
6937-P	1011101-154	9	37.5°	PAL
6925-P	1011101-155	9	24.8°	PAL
6918-P	1011101-156	9	17.6°	PAL

9 Hz models are export controlled by the U. S. Department of Commerce under ECCN 6A993.

30 Hz models are export controlled by the U. S. Department of Commerce under ECCN 6A003.b.4.b.

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Network and Imaging Systems

100 N Babcock St, Melbourne, FL 32935 | Tel 855.230.2372 | www.drsinfrared.com | sales@drsinfrared.com

 **DRS Technologies**
A Finmeccanica Company