

Handheld thermal imaging cameras for security and law enforcement









FLIR HS-Series







FLIR Systems: the world leader in thermal imaging cameras

FLIR Systems is the world leader in the design, manufacturing and marketing of thermal imaging systems for a wide variety of commercial, industrial and government applications.

FLIR Systems' thermal imaging systems use state-of-the-art infrared imaging technology that detects infrared radiation - or heat - enabling the user to see in total darkness, in practically all weather conditions. We design and manufacture all of the critical technologies inside our products, including detectors, electronics, and special lenses ourselves.



FLIR Systems, Stockholm



FLIR Systems, Portland



FLIR Systems, Boston



FLIR Systems, Santa Barbara

Rapidly emerging markets and organization

Interest for thermal imaging has grown considerably over the last few years in a large variety of markets. To face this increased demand FLIR Systems expanded its organization drastically. Today we employ more than 2,700 people. Together, these infrared specialists realize a consolidated annual turnover of more than 1 billion US dollars. This makes FLIR Systems the largest manufacturer of commercial thermal imaging cameras in the world.

Manufacturing capabilities

FLIR Systems currently operates 6 manufacturing plants: three in the USA (Portland, Boston and Santa Barbara, California) one in Stockholm, Sweden, Tallin, Estonia and one in Paris, France.

Thermal imaging: more than building a camera

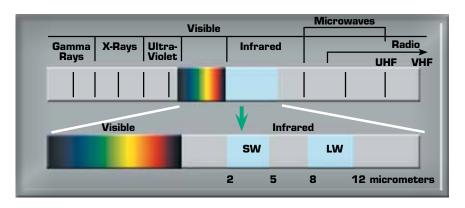
There is more to the world of thermal imaging than building a camera. FLIR Systems is not only committed to providing you with the best camera, we are also able to offer you the best software, service and training to suit your thermal imaging needs.

INFRARED: more than meets the eye

Infrared - part of the electromagnetic spectrum

Our eyes are detectors that are designed to detect visible light (or visible radiation). There are other forms of light (or radiation) that we cannot see. The human eye can only see a very small part of the electromagnetic spectrum. At one end of the spectrum we cannot see ultraviolet light, while at the other end our eyes cannot see infrared. Infrared radiation lies between the visible and microwave portions of the electromagnetic spectrum. The primary source of infrared radiation is heat or thermal radiation.

Any object that has a temperature above absolute zero (-273.15 degrees Celsius or O Kelvin) emits radiation in the infrared region. Even objects that we think of as being very cold, such as ice cubes, emit infrared radiation. We experience infrared radiation every day. The heat that we feel from sunlight, a fire or a radiator is all infrared. Although our eyes cannot see it, the nerves in our skin can feel it as heat. The warmer the object, the more infrared radiation it emits.





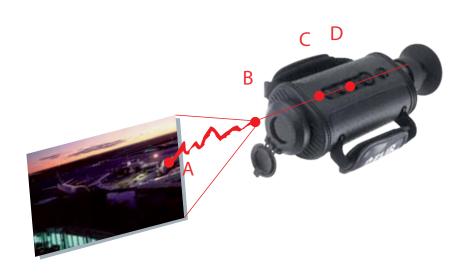


Thermal security cameras see heat

Thermal security cameras make pictures from heat energy that is invisible to the naked eye. Everything in the color image above is giving off heat – even the ice cubes she is holding in her left hand, and the circle she traced on the wall with her right hand.

The thermal imaging camera

Infrared energy (A) coming from an object is focused by the optics (B) onto an infrared detector (C). The detector sends the information to sensor electronics (D) for image processing. The electronics translate the data coming from the detector into an image (E) that can be viewed in the viewfinder or on a standard video monitor or LCD screen.



THERMAL IMAGING CAMERAS:

perfect tools for security and law enforcement applications

Thermal imaging cameras produce a crisp image in the darkest of nights. Contrary to other technologies, thermal imaging cameras need no light whatsoever to produce a crisp image. They can see through light fog and smoke, in practically all weather conditions. This makes them the perfect tools for security and law enforcement applications.

Law enforcement missions require officers to respond in a moment's notice. FLIR's line of thermal camera systems for law enforcement operations give officers the tactical advantage they need to respond effectively and safely, whenever they're called.

FLIR Systems thermal imaging cameras are being used worldwide by police and customs departments and by private security companies that are sending walking patrols out to secure an area.

Thermal imaging cameras do not only produce a clear image in total darkness, they are also extremely useful during daylight. Thermal contrast is extremely difficult to mask. Someone trying to hide in shadows or bushes

and people that are trying to camouflage themselves, will become clearly visible on a thermal image. Thermal imaging cameras are also not blinded by glare from the sun. They produce a crisp image in practically all weather conditions.

FLIR Systems thermal imagers are powerful tools in the fight against crime. They allow to see suspects in total darkness, through smoke, and light foliage. A FLIR handheld thermal imaging camera allows you to see the suspect, without revealing your own location.

THERMAL IMAGING VERSUS IMAGE INTENSIFICATION (I2)

Image intensification, also referred to as I² technology, amplifies small amounts of visible light thousands of times so that objects can be seen at night. Image intensification does require a certain level of ambient light, but even starlight can produce an image on a cloudless night.

Because the system requires at least a minimum level of ambient light, conditions such as heavy overcast can limit its effectiveness. Similarly, too much light may overwhelm the system and reduce its effectiveness.

Thermal imaging cameras offer substantial benefits over image intensification. They are not affected by the amount of light so that you will not be blinded when looking at a light source.

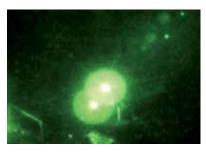


Image intensification: image is saturated by looking directly to a light source.



Image intensification: suspect hiding in bushes is practically invisible.



Thermal imaging: is not affected by the light and produces a clear image.



Thermal imaging: suspect hiding in bushes is clearly visible since thermal contrast is practically impossible to mask.

APPLICATIONS

Law Enforcement see without being seen



Law enforcement officers need to see suspects that are hiding in the dark, in bushes and alleys without being seen themselves. A FLIR thermal imaging camera is the perfect tool to see what is happening without giving away their position



Border patrols



If a threat is detected, border patrols are sent to the scene to further evaluate the situation. Seeing clearly in total darkness is a considerable advantage.



Applications that require more information than the naked eye can see



Thermal imaging can provide information about a scene that isn't always visible to the naked eye, like open windows, or recently parked vehicles. Enhancing your situational awareness in this way can prove vital to ensuring your facility's security.



Search & Rescue



Finding missing people in total darkness or in severe weather conditions can be a challenge for law enforcement and search & rescue agencies. A thermal imaging camera can help them to do their task and to find the missing person before it is too late.



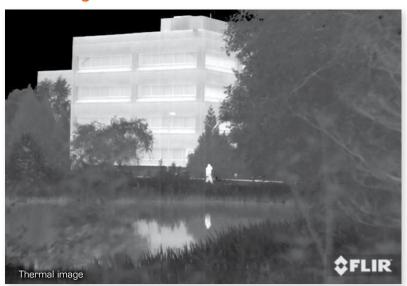
See more during the day



Conventional TV cameras rely on color contrast to provide enough information for the viewer to detect a threat. Even at moderate ranges, weak contrast can render these cameras useless. Thermal imaging cameras do not have this limitation.



See through obscurants



Thermal energy passes through many obscurants including smoke, dust, modest foliage and light fog. The thermal camera can see this person clearly through the fog, but the standard visible light color camera cannot.



FLIR BHS-SERIES: see without being seen

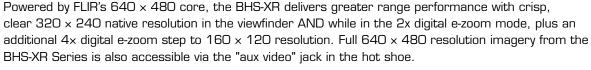
BHS-Series are shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights. With the BHS-Series security professionals and law enforcement officers can see suspects in total darkness, through smoke, and light foliage.

The BHS-Series are bi-oculars. This means that it is less tiring to use for the eyes than a monocular. By using a bi-ocular the ability to detect faint objects is enhanced. This means that you have more chance to detect small objects against the background. It is also easier to hold bi-oculars steady when looking at an object. An advantage if you are looking at small things which are far away.



Extended Range Options

The BHS-X is equipped with an uncooled vanadium oxide detector. This provides excellent long range viewing with sharp 320×240 native resolution in the viewfinder and a $2 \times$ digital e-zoom step to 160×120 resolution.





Choice of lenses

The BHS-Series can be ordered with different lenses. Longer lenses have a narrower field of view and allow you to see targets farther away. Lenses are interchangeable. The specific lens(es) you require for your application need to be specified at time of order.

The following lenses are available:

	BHS-X: 320 x 240 pixels		BHS-XR	: 640 x 480 ¡	oixels	
LENS OPTIONS	35 mm	65 mm	100 mm	35 mm	65 mm	100 mm
FOV	13° × 10°	$7^{\circ} \times 5^{\circ}$	5° × 3°	18° × 13°	10° × 8°	6° × 4°
Detect man-sized target at:	780 m	1.5 km	2.1 km	1.14 km	1.9 km	2.45 km



Digital zoom

The BHS-X comes with a 2x digital zoom. The BHS-XR has both a 2x and a 4x digital zoom. This allows you to have a closer look at the situation when necessary.



Portable and rugged

Weighing just under 1000 grams, batteries included, the FLIR BHS-Series are compact and extremely light systems. They are IP67 rated and operate between -20°C and +60°C.



Easy-to-operate

Ergonomic and easy-to-use, the BHS-Series are fully controlled with just 5 buttons on top of the unit.



Ideal for covert operations

In operation, the BHS-Series are totally silent units. Eyebrow style light shield eye-pieces allows the operator to remain fully covert, in total darkness.



One touch video recording

Just press a button and start recording thermal video on a removable SD card.



Image storage

Both versions of the BHS-Series allow to store thermal images in JPEG format on a removable SD card. Images can be used as evidence.









Long battery life

The battery compartment hides 4 rechargeable AA NiMH batteries. Good for 4 hours continuous operation. The BHS-Series can also run on standard commercial off the shelf non-rechargeable Alkaline or Lithium Ion AA-batteries.



Hot shoe

The BHS-Series come standard with a "hot shoe" which can easily be attached to the camera. It allows to charge the camera and connect the camera to an external video monitor while the camera is mounted on a tripod.



Different versions available

	BHS-X	BHS-XR
See without being seen	✓	✓
See through dust, smog, smoke and light precipitation	✓	✓
Image and video storage	✓	✓
Image quality	320 x 240 pixels	640 x 480 pixels
Digital zoom	2x	2x, 4x





BHS-Series: also in broad daylight

The BHS-Series are not only excellent tools for spotting intruders in total darkness.
Thermal contrast is extremely difficult to mask so people trying to camouflage themselves or trying to hide in bushes or shadows, will become immediately visible on a thermal image.

FLIR HS-SERIES:

the power of thermal imaging in the palm of your hand

The HS-Series are portable shock-resistant thermal imaging cameras. They produce a crisp image in the darkest of nights. Thanks to the HS-Series, security professionals and law enforcement officers can see suspects in total darkness, through smoke, and light foliage.

The H-Series are excellent tools for walking patrols that need to secure industrial sites or borders, customs and law enforcement officers and all others that need to see what is happening in total darkness, in all weather conditions, without being seen themselves.

Being a monocular the HS-Series are extremely compact and lightweight. They can easily be stored in a pouch or hung on a belt. Another advantage of a monocular is that you always have one hand free.



Crisp thermal images

The HS-Series produce thermal images of 320 x 240 pixels on which the smallest of details can be seen. Advanced internal camera software delivers a crisp image without the need for user adjustments.



Extremely affordable

The HS-Series are extremely affordable units. From now on, everyone can afford thermal night vision. Price is no longer an issue. There is no need anymore to use less effective night vision technologies.



Choice of lenses

The HS-Series are equipped with a 19 mm or 65 mm lens. A 2x extender is available for the 19mm lens

	HS-324	HS-324 with 2x extender	HS-307
Lens	19 mm	19 mm	65 mm
Field of view	24°	12°	7°
Detect man-sized target at:	450 m	790 m	1.5 km



Digital zoom

A 2x digital zoom allows you to have an even closer look at the situation when necessary.



Extremely portable and rugged

Weighing 660 grams, batteries included, the FLIR HS-Series are extremely compact and extremely light systems. They are ideal for go-anywhere operations, in all circumstances. They are IP67 rated and operate between -20°C and +60°C.



Easy-to- operate

Ergonomic and easy-to-use, the HS-Series are fully controlled with just 5 buttons on top of the unit.



Ideal for covert operations

In operation, the HS-Series are totally silent units. A shuttered eye-piece allows the operator to remain fully covert, in total darkness.



Hot shoe

The HS-Series comes standard with a "hot shoe" which can easily be mounted on the camera. The "hot shoe" has a power-in and video-out connection. This means that the HS-Series can be fully operational on a tripod while charging the batteries.



Long battery life

The HS-Series have an operating time of over 5 hours on a single charge. They work on 4 rechargeable AA NiMH batteries. The HS-Series can also run on standard commercial off the shelf non-rechargeable Alkaline or Lithium Ion AA-batteries.











Shuttered eye-piece

The HS-Series have a bellows eye cup. It prevents light from coming out of the viewfinder, helping the operator to stay covert.





Lens protection

A lens cap, able to open 180°, assures that the lens is protected when the HS-Series are out in the field but not in use. It does not hinder the operator when the HS-Series are in operation.



Power button

Image Capture/Video Record Button

Zoom button

Polarity button

Brightness Button



SD-card slot

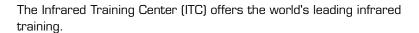
Different versions available

	Standard	Pro
See without being seen	✓	✓
See through dust, smog, smoke and light precipitation.	✓	✓
Image storage for evidence gathering		JPEG on SD card
Video storage		AVI on SD card
USB2 connection		Transfer images to PC
Real-time clock		1



ITC

FLIR Infrared Training Center







Although all our cameras are designed for easy installation and operation, there is a lot more to thermal imaging than just knowing how to handle the camera. As the leading company for thermal imaging technology, we like to share our knowledge with our customers and other interested parties.

We therefore organize regular courses and seminars. We also organize in-company training on request, so that you, or your staff, can gain familiarity with thermal imaging and its applications.

The ITC not only welcomes FLIR Systems customers but also users of other brands of cameras. In fact, anyone who wants to learn more about thermal imaging for any applications, before deciding to purchase a camera, is also invited.

The mission of the ITC is to make our customers and partners successful by enhancing their knowledge of IR technology, thermal imaging products, and relevant security and surveillance applications. The ITC offers a portfolio of courses that presents the right mix of theoretical and practical content to help professionals quickly apply thermal imaging technology to real life applications.

All courses are a perfect mix between theoretical fundamentals and practical excercises. For our customers, this means that attending one of the ITC's courses will give you a real hands-on learning experience.

Follow one of our courses and become a thermal imaging expert.



Each ITC course is a pefect combination of theoretical fundamentals and practical excercises. It guarantees participants a real hands-on learning experience.

AFTER SALES

FLIR After Sales

At FLIR Systems, building a relationship with a customer takes more than just selling a thermal imaging camera. After the camera has been delivered, FLIR Systems is there to help meet your needs.



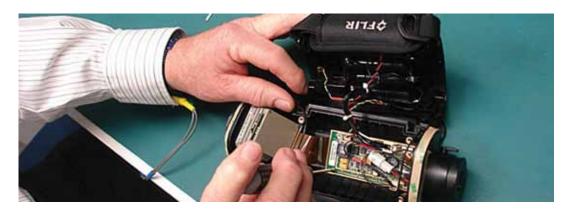
Once purchased, thermal imaging camera are vital pieces of equipment. The safety and security of assets and people depends on it. To keep them running at all times, we operate a worldwide service network. In EMEA we have subsidiaries in France, Germany, Italy, the Netherlands, Sweden and the United Kingdom.

If there should be a problem with one of our camera systems, these local service centers have all the know-how and equipment to solve it within the shortest possible time. Local camera service gives you the assurance that your system will be ready for use again within an extremely short timeframe.

Buying a thermal imaging camera is a longterm investment. You need a reliable supplier who can provide you with support over a long period of time. Our service personnel regularly follows training programs at our production facilities in Sweden or the USA. Not only to learn about the technical aspects of the products, but also to familiarize themselves with your individual customer requirements and the latest applications.

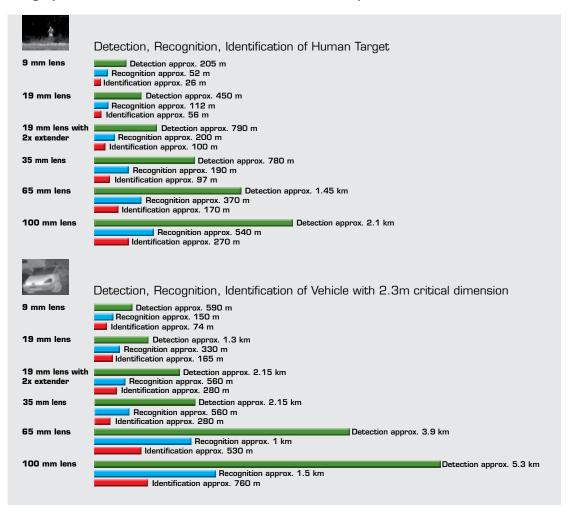
Different types of maintenance contracts can be offered to make sure that, whatever happens, your thermal imaging camera is always available for use.

CUSTOMER CARE is not just a slogan. We write it in capital letters at FLIR.

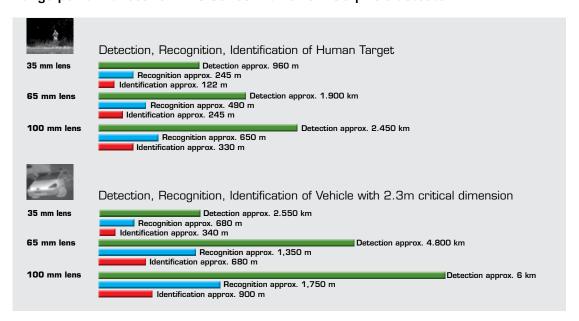


RANGE PERFORMANCES

Range performances for HS and BHS with 320x240 pixels detector



Range performances for BHS-Series with 640x480 pixels detector



Actual range may vary depending on camera set-up, environmental conditions, user experience and type of monitor or display used.

Assumptions:

50 % probability of achieving objective at specified distance given 2°C temperature difference and 0.85 / km atmospheric attenuation factor.

BHS-SERIES

Technical specifications

Camera specific

	BHS-X	BHS-XR
IMAGING PERFORMANCE		
Detector Size	320 × 240	640 × 480
E-Zoom	2×	2×, 4×
FILE STORAGE/DATA TRANSFER		
Still Image Format	JPEG; 320 × 240 resolution	JPEG; 640 × 480 resolution
Video Format	320 × 240 AVI	640 × 480 AVI

General

IMAGING PERFORMANCE		
Detector Type	Uncooled Microbolometer	
Spectral range	7.5 - 13.5 μm	
Thermal Sensitivity	<50 mK @ f/1.0	
Start up from stand-by	< 1.5 seconds	
Image Processing	FLIR Proprietary Digital Detail Enhancement	
SD Card Slot	Supports up to 16 Gb SDHC Card	
Focus	Manual	
IMAGE PRESENTATION		
Built-In Display	Color VGA LCD Display	
Video Output	NTSC or PAL composite video; RCA jack	
FILE STORAGE/DATA TRANSFER		
Still Image Storage	SD or SDHC Card	
Video Storage	AVI Format; Approx. 8 seconds/Mb on SD Card	
Real-Time Clock	Yes	
USB2 Port	Yes	
POWER		
Battery Type	4 AA Batteries; NiMH, Li-lon, or Alkaline	
Battery Life (Operating)	4-6 Hours On NiMH batteries	
Battery Life (Stand-By)	120 hours on NiMH batteries	
ENVIRONMENTAL		
Rating	IP-67, Submersible	
Operating Temp.	-4°F – 140°F (-20°C – 60°C)	
Storage Temp.	-40°F – 167°F (-40°C – 75°C)	
Drop	1 m drop	
PHYSICAL CHARACTERISTICS		
Weight (w/o lens)	998 gramms	
Size (L \times W \times H)	280 mm x 165 mm x 67 mm	
Camera Package Includes:	Either the BHS-X or BHS-XR Series Handheld Thermal Camera (without lens - lens must be chosen/purchased separately for desired performance) with Hot Shoe Charging & Video Output Attachment, 4 Rechargeable AA NiMH Batteries, AC Power Adapter/Charger, Neck Lanyard, USB Cable, Video Output Cable, Hard Carrying Case, Product CD with Ops Manual, FLIR Video Player and End User Graphical User Interface (GUI)	
Lens Package Includes:	Either the 35 mm, 65 mm or 100 mm Lens (as selected at purchase), Lens Cap, Lens Cover, Lens Cloth	

		BHS-X: 320 x 240 pi	kels		BHS-XR: 640 x 480 p	ixels
LENS OPTIONS	35 mm	65 mm	100 mm	35 mm	65 mm	100 mm
Size	Ht 65 mm,	Ht 84 mm,	Ht 117 mm,	Ht 65 mm,	Ht 84 mm,	Ht 117 mm,
	Dia - 79 mm Ø	Dia - 79 mm Ø	Dia - 79 mm Ø	Dia - 79 mm Ø	Dia - 79 mm Ø	Dia - 79 mm Ø
FOV	13° × 10°	7° × 5°	5° × 3°	18° × 13°	10° × 8°	6° × 4°
FOV with Digital e-Zoom: 2:	6.5° × 5°	3.5° × 2.5°	2.5° × 1.5°	9° × 6.5°	5° × 4°	3° × 2°
4:	k NA	NA	NA	4.25° × 3.25°	2.5° × 2°	1.5° × 1°

HS-SERIES

Technical specifications

Camera specific

	HS-324	HS-307
IMAGING PERFORMANCE		
Field of view	24° (H) x 18°(V) with 19 mm lens	7° (H) x 5°(V) with 65 mm lens
Field of view with 2X extender	12.0° (H) x 9°(V) with 19 mm lens	NA
Focus	HS-324: Fixed - HS-324 with 2X extender	Manual
PHYSICAL CHARACTERISTICS	HS-324	HS-324 WITH EXTENDER
Camera weight incl. Lens and batteries	660 grams	970 grams
Camera size (L x W x H)	240 mm x 85 mm x 60 mm	265 mm x 85 mm x 75 mm
Shipping weight (camera + packaging)	2 kg	2 kg
Shipping size (camera + packaging) (L x W x H)	420 mm x 155 mm x 250 mm	420 mm x 155 mm x 250 mm
Shipping weight (2X extender + packaging)	The 2X extender is being shipped in a separate box of approx. 1 kg	-

General

IMAGING PERFORMANCE	
Detector type	Focal plane array, uncooled Vanadium Oxide (VOx) Microbolometer: 320 x 240 pixels
Spectral range	7.5 to 13.5 µm
Thermal sensitivity	<50 mK at f/1.0 at +25°C
Image frequency	8.3 Hz Pal / 7.5 Hz NTSC
Electronic zoom	2X
Image processing	Digital Detail Enhancement (DDE)
IMAGE PRESENTATION	
Viewfinder	Built-in display - Color QVGA LCD
Video output	NTSC or PAL composite video; RCA jack
Image Polarity	White hot / black hot; selectable
POWER	
Requirements	4 AA Batteries; rechargeable NiMH, non rechargeable Li-Ion or Alkaline
Battery life	> 5 hours on NiMH batteries - 120 hours in stand-by with NiMH batteries
ENVIRONMENTAL SPECIFICATIONS	
Operating temperature range	-20°C to +60°C
Storage temperature range	-40°C to +75°C
Humidity non condensing	5% to 95%
Encapsulation	IP67
Drop	Operational after 1 meter drop onto concrete

Pro version only

IMAGE STORAGE	Chandend IDEC 4 CD CD cond
Format	Standard JPEG - 1 GB SD-card
Storage functions	Single image
VIDEO STORAGE	
Format	MPEG4 - 1 GB SD-card
Storage functions	9Hz, full frame up to limit of SD-card, approx. 8 seconds / MB
INTERFACES	
SD-card	1 slot
USB2	Image transfer to PC
Standard Package:	HS-307 or HS-324 handheld thermal imaging camera, 4 rechargeable batteries, hot shoe charging and video output attachment, Video output cable, AC charger, lanyard, manual Extra for Pro Version: 1 GB SD-card, USB cable, carrying bag
Optionally available:	2X extender ring (for HS-324 only), pelican case upgrade

Specifications are subject to change without notice. Sizes and weights are indicative.

ACCESSORIES

BHS-Series / HS-Series



Carrying bag

Robust carrying bag that protects the H-Series when out in the field comes standard with the Pro versions.



Extender lens

The HS-324 / HS-324 can be equipped with a 2X extender lens. It offers a 12 $^{\circ}$ field of view for longer range performance.



Memory card micro-SD with adaptors

Capture images on the go with your camera. These small cards are easy to use and can hold a great amount of data.



USB cable

USB cable to connect the camera.

NOTES





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