# **MWIR Short Range 18x Zoom Thermal Camera**

#### The Short Range Continuous Zoom

Thermal Camera is the system of choice for all-weather security and surveillance. With outstanding target detection and recognition capabilities, the Short Range combines high-end performance with reliability and ease of use.

The Short Range delivers in day or night an extraordinarily clear thermal video with the convenience of a G5 designed and built continuous zoom infrared lens. Its horizontal field of view zooms smoothly from

32° to 1.8°. It enables man-sized target detection at ranges in excess

of 10km in good conditions. The Short Range integrates advanced cooled detector technology that has a 640 x 512 focal plane array which operates in the 3-5µm MWIR spectral region the best choice for marine and high humidity environments. An environmentally sealed dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions. The Short Range camera is remotely controllable via serial interface and Graphical User Interface.

Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security







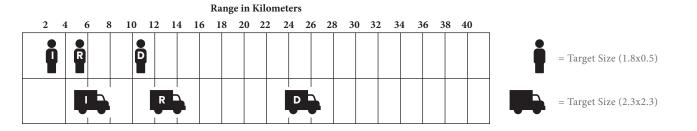
#### **Short Range Thermal Imaging Camera**

- 18X Continuous Optical Zoom
- Auto Focus
- f/4 High Sensitivity Zoom Lens
- Cooled 3–5µm MWIR Detector
- 640 x 512 pixels Focal Plane Array
- **Multiple Command Protocols**
- 2 Year Warrantv
- Environmentally Sealed IP67
- **G5 Image Processing**
- Edge Enhancement

#### \*Range Performance

D = Detection	50% Probability D / R / I
R = Recognition	Target 2-degree delta T vs background

Clear atmosphere / very low turbulence I = Identification Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc.



# **MWIR Short Range 18x Thermal Camera**

Part	200128
Video	PAL/NTSC/Digital Video Optional
Control	Control and command available via an RS-232/422 serial interface and PC Graphical User Interface
Power	6-32 VDC/ 20 Watts typical @ 25°C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67 Front Element Defroster Operating Temperature Range: -32° C to +65° C Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	11.8 lbs (5.35 kg)
Length	15.3 in (39.05 cm)

## **Cooled Sensor**

640 x 512
3-5µm
2 Years

#### Zoom Lens

Spectral Range	3-5µm
Lens Type	f/4 18x Continuous Zoom
Lens Featurs	Motorized Remote Operation
	Auto and Manual Focus Adjust
Field of View	NFOV- 1.8° x 1.4° / WFOV- 32° x 24

# MWIR Mid-Range 18X Zoom Thermal Camera

#### The 18X Zoom Thermal Camera

is the system of choice for long range all-weather security and surveillance. With outstanding very long range target detection and recognition capabilities, the Mid Range combines high-end performance with G5IR reliability and ease of use.

The Mid Range delivers extraordinarily clear long range thermal video images with the convenience of continuous zoom in all conditions, day or night, or bad weather. Its horizontal field of view zooms smoothly from 18° to 1.0°. It enables man-sized target detection at ranges in excess of 18km in good conditions. The Mid-Range integrates advanced cooled photodotector technology that has a 600 x 512 food.

integrates advanced cooled photodetector technology that has a 640 x 512 focal plane array which operates in the 3–5 $\mu$ m MWIR spectral region — the best choice for marine and high humidity environments.

The G5IR's environmentally sealed, dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions. The Mid Range imager is remotely controllable via serial interface and intuitive Graphical User Interface.

Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security

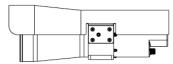
#### \*Range Performance

D = Detection	50% Probability D / R / I

**R** = **Recognition** Target 2 degree delta T vs background

I = Identification Clear atmosphere / very low turbulence Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc.



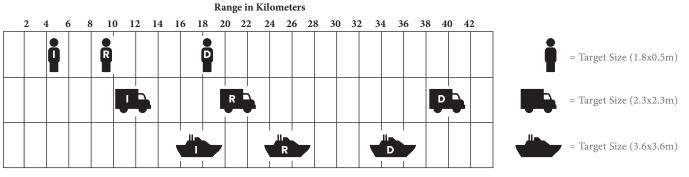






## Mid- Range Thermal Imaging Camera

- 18x Continuous Optical Zoom
- Auto Focus
- f/4 High Sensitivity Zoom Lens
- Cooled 3-5µ MWIR Detector
- 640 x 512 pixels Focal Plane Array
- Multiple Command Protocols
- 2 Year Warranty
- Environmentally Sealed IP67
- G5 Image Processing
- Edge Enhancement
- SD SDI Digital Video Output



# MWIR Mid-Range 18x Thermal Camera

Part	200102
Video	PAL/NTSC/Digital Video Optional
Control	Control and command available via an RS-232/422
	Serial Interface and PC Graphical User Interface
Power	6-32 VDC/ 20 Watts typical @ 25°C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67
	Front Element Defroster
	Operating Temperature Range: -32° C to +65° C
	Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	13.5 lbs (6.12 kg)
Length	18.8 in (47.94 cm)

## **Cooled Sensor**

Detector	640 x 512
Spectral Band	3-5µm
Warranty	2 Years

### Zoom Lens

Spectral Range	3-5µm
Lens Type	f/4 18x Continuous Zoom
Lens Featurs	Motorized Remote Operation
	Auto and Manual Focus Adjust
Field of View	NFOV- 1.0° x 0.75° / WFOV- 18.0° x 13.7°

# **MWIR Mid-Range HD 10X Zoom Thermal Camera**

#### The 10X Zoom HD Thermal Camera

is the system of choice for long range all-weather security and surveillance. With outstanding long range target detection and recognition capabilities, the Mid Range combines high-end performance with G5IR reliability and ease of use.

The Mid Range delivers extraordinarily clear long range thermal video images with the convenience of continuous zoom in all conditions day or night, or bad weather. Its horizontal field of view zooms smoothly from 13.3° to 1.3°. It enables man-sized target detection at ranges in excess of 18km in good conditions. The Mid-Range integrates advanced cooled photodetector technology that has a 1240 x 1024 focal plane array which operates in the  $3-5\mu m$  MWIR spectral region — the best choice for marine and high humidity environments.

The G5IR's environmentally sealed dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions.

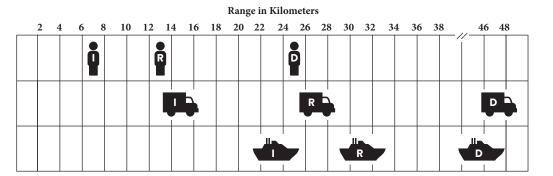
Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security

### \*Range Performance

50% Probability D / R / I D = Detection

- Target 8 degree delta T vs background R = Recognition
- Clear atmosphere / very low turbulence I = Identification

Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc.



# **MWIR Mid-Range 10x Thermal Camera**

Part	200132
Video	PAL/NTSC/Digital Video Optional
Control	Control and command available via an RS-232/422
	Serial Interface and PC Graphical User Interface
Power	6-32 VDC/ 20 Watts typical @ 25°C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67
	Front Element Defroster
	Operating Temperature Range: -32° C to +65° C
	Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	13.5 lbs (6.12 kg)
Length	18.8 in (47.94 cm)

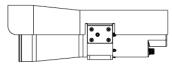
### **Cooled Sensor**

Detector	1280 x 1024, 10u pixels
Spectral Band	3-5µm
Warranty	2 Years

### Zoom Lens

Spectral Range	3-5µm
Lens Type	f/4 10x Continuous Zoom
Lens Featurs	Motorized Remote Operation
	Auto and Manual Focus Adjust
Field of View	HNFOV- 1.3° / HWFOV-13.3°
	EFL NFOV 550mm

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### Mid-Range HD **Thermal Imaging Camera**

- 10x Continuous Optical Zoom
- **Auto Focus**
- f/4 High Sensitivity Zoom Lens
- Cooled 3-5µ MWIR Detector
- 1280 x 1024 10µ Pixel Focal Plane Arrav
- Multiple Command Protocols
- 2 Year Warranty
- **Environmentally Sealed IP67**
- **G5 Image Processing**
- **Edge Enhancement**

HD SDI Digital Video Output



# MWIR Long Range - SD 18X Zoom Thermal Camera

#### The LR- SD Continuous Zoom

**Thermal Camera** is the system of choice for long range all-weather security and surveillance. With outstanding target detection and recognition capabilities, the LR-SD combines high end performance with reliability and ease of use. The LR-SD delivers in day or night an extraordinarily clear thermal video with the convenience of a continuous zoom.

Its horizontal field of view zooms smoothly from 12.5°

to 0.7°. It enables man-sized target detection at ranges in excess of 25km in good conditions. The LR- D integrates advanced cooled photodetector technology that has a 640 x 512 which operates in the 3–5 $\mu$ m MWIR spectral region — the best choice for marine and high humidity environments. Environmentally sealed dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions. The LR-SD imager is remotely controllable via serial interface and Graphical User Interface.

Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security

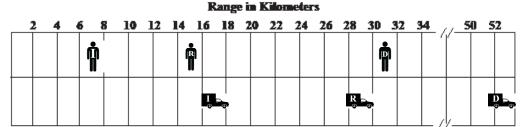
# \*Range Performance

- **D** = **Detection** 50% Probability D / R / I
- **R** = **Recognition** Target 2 degree delta T vs background

I = Identification

on Clear atmosphere / very low turbulence

Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc.



# MWIR Long Range 18x SD Thermal Camera

200107
PAL/NTSC/SD-SDI, IP (optional)
Control and command available via RS-232/422
serial interface, IP (optional)
6-32 VDC/ 20 Watts typical @ 25°C
Unit sealed and dry nitrogen backfilled, rated IP67
Front Element Defroster
Operating Temperature Range: -32°C to +65°C
Meets MIL STD 810F
1/4-20 or 3/8-16 Tripod Interface
29.7 lbs (13.5 kg)
25.4 in (64.5 cm)





Rear View

# Long Range SD Thermal Imaging Camera

Featuring:

- 18x Continuous Optical Zoom
- Auto Focus
- *f*/4 High Sensitivity Zoom Lens
- Cooled 3–5µm MWIR Detector
- 640 x 512 pixels Focal Plane Array
- Multiple Command Protocols
- 2 Year warranty
- Environmentally Sealed IP67
- G5 Image Proccessing
- Edge Enhancement
- Optional Local Area Contrast Enhancement
- SD SDI Digital Video Output
- Adaptive temporal noise reduction
- Digital Zoom up to 8x
- Optional Turbulence Mitigation
- Optional IP video and control (H.264)
- Optional Electronic Image Stablization



# **Cooled Sensor**

Detector Spectral Band Warranty

#### Zoom Lens

Spectral Range Lens Type Lens Features

Field of View

3-5μm f/4 18x Continuous Zoom Motorized remote operation Auto and manual focus adjust 18x Continuous Optical Zoom NFOV - 0.7° x .5° WFOV -12.5° x 9.5°

640 x 512

3-5µm

2 -Years



# MWIR Long Range Plus HD 12X Zoom Thermal Camera

#### The LR+HD Continuous Zoom

**Thermal Camera** is the system of choice for long range all-weather security and surveillance. With outstanding target detection and recognition capabilities, the LR+HD combines high-end performance with reliability and ease of use.

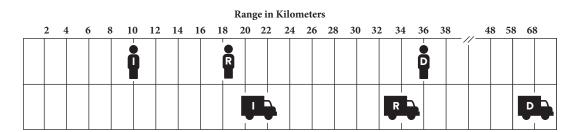
The LR+HD delivers in day or night an extraordinarily clear thermal video with the convenience of continuous zoom from 9.8° to 0.8°. It enables man-sized target detection at ranges in excess of 25km in good conditions. The LR+HD integrates advanced cooled photodetector technology that has a 1280 x 1024 focal plane array which operates in the 3–5µm MWIR spectral region — the best choice for marine and high humidity environments. Environmentally sealed dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions. The LR+HD imager is remotely controllable via serial interface and Graphical User Interface.

Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security

## \*Range Performance

D = Detection	50% Probability D / R / I
R = Recognition	Target 2-degree delta T vs background
I = Identification	Clear atmosphere / very low turbulence

tion Clear atmosphere / very low turbulence Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc.



# MWIR Long Range+ 12x HD Thermal Camera

Part	200196
Video	HD-SDI, IP (optional)
Control	Control and communication available via RS 232/422
Power	6-32 VDC /20 Watts typical @25C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67
	Front Element Defroster
	Operating Temperature Range: -32° C to +65° C
	Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	35.2 lbs (13.5kg)
Length	24.5 in (62.2 cm)

# **Cooled Sensor**

1280x1024
3-5µm
2 Years

# Zoom Lens

Spectral Range	3-5µm	
Lens Type	f/4 12x Continuous Zoom	
Lens Featurs	Motorized Remote Operation	
	Auto and Manual Focus Adjust	
	NFOV efl 900mm	
Field of View	NFOV 0.8° x 0.65° / WFOV 9.8° x 7.9°	

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Side View

#### MWIR Long Range 12X HD Thermal Imaging Camera

- 12x Continuous Optical Zoom
- Auto Focus
- f/4 High Sensitivity Zoom Lens
- Cooled 3-5µ MWIR Detector
- 1280 x 1024 10µ pixel Focal Plane Array
- Multiple Command Protocols
- 2 Year Warranty
- Environmentally Sealed IP67
- G5 Image Processing
- Edge Enhancement
- HD SDI Digital Video Output
- Adaptive Temporal Noise Reduction
- Digital Zoom up to 8x
- Optional Turbulence Mitigation Software, Image Stabilization, and Super Resolution



# **MWIR Long Range-HD 18X Zoom Thermal Camera**

#### The LR-HD Continuous Zoom

Thermal Camera is the system of choice for long range all-weather security and surveillance. With outstanding target detection and recognition capabilities, the LR-HD combines high-end performance with reliability and ease of use.

The LR-HD delivers in day or night an extraordinarily clear thermal video with the convenience of continuous zoom from 16.6° to 0.9°. It enables man-sized target detection

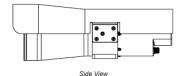
at ranges in excess of 25km in good conditions. The LR-HD integrates advanced cooled photodetector technology that has a 1280 x 1024 focal plane array which operates in the  $3-5\mu m$  MWIR spectral region — the best choice for marine and high humidity environments. Environmentally sealed dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions. The LR-HD imager is remotely controllable via serial interface and Graphical User Interface.

Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security



## \*Range Performance

- 50% Probability D / R / I D = Detection
- R = Recognition
- I = Identification

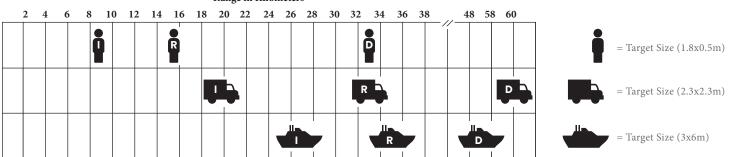




Rear Viev

#### **MWIR Long Range 18X HD Thermal Imaging Camera**

- 18x Continuous Optical Zoom
- Auto Focus
- f/4 High Sensitivity Zoom Lens
- Cooled 3-5µ MWIR Detector
- 1280 x 1024 10µ pixel Focal Plane Array
- Multiple Command Protocols
- 2 Year Warranty
- Environmentally Sealed IP67
- G5 Image Processing
- Edge Enhancement
- HD SDI Digital Video Output
- Adaptive Temporal Noise Reduction
- Digital Zoom up to 8x
- Optional Turbulence Mitigation Software, Image Stabilization, and Super Resolution



# **MWIR Long Range 18x HD Thermal Camera**

Part	200124
Video	HD-SDI, IP (optional)
Control	Control and communication available via RS 232/422
Power	6-32 VDC /20 Watts typical @25C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67
	Front Element Defroster
	Operating Temperature Range: -32° C to +65° C
	Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	29.7 lbs (13.5kg)
Length	25.4 in (64.5 cm)

# **Cooled Sensor**

Detector	1280x1024
Spectral Band	3-5µm
Warranty	2 Years

## Zoom Lens

Spectral Range	3-5µm	
Lens Type	f/4 18x Continuous Zoom	
Lens Featurs	Motorized Remote Operation	
	Auto and Manual Focus Adjust	
	18x Continuous Optical Zoom	
Field of View	NFOV 0.9° x 0.7° / WFOV 16.6° x 13.3°	

Target 2-degree delta T vs background, 6-degree delta for boat target Clear atmosphere / very low turbulence Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc. **Range in Kilometers** 

# **MWIR XTRA Long Range-HD 15X Zoom Thermal Camera**

#### The XLR-HD Continuous Zoom

Thermal Camera is the system of choice for long range all-weather security and surveillance. With outstanding target detection and recognition capabilities, the XLR-HD combines high-end performance with reliability and ease of use.

The XLR-HD delivers in day or night an extraordinarily clear thermal video with the convenience of continuous zoom from 10.5° to 0.7°. It enables man-sized target detection at ranges in excess 35km in good conditions. The XLR-HD integrates advanced cooled photodetector technology, has a 1280 x 1024 focal plane array, and operates in the 3-5 µm MWIR spectral region - the best choice for marine and high humidity environments.

The environmentally sealed enclosure insures operability and stability over variable temperatures and diverse weather conditions. The XLR-HD imager is remotely controllable via serial interface and Graphical User Interface.

Actual range performance will vary based on a number of conditions, including user

experience, display size/quality, weather/atmospheric conditions, etc.

Applications: Vessel Surveillance, Border Protection, Infrastructure Protection, Airport and Port Security

Clear atmosphere / very low turbulence

## \*Range Performance

I = Identification

D = Detection 50% Probability D / R / I

Target 2-degree delta T vs background R = Recognition

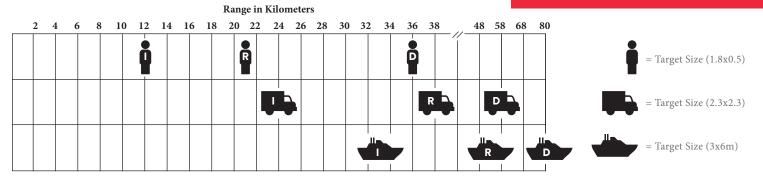


Side Viev



#### XLR HD Thermal **Imaging Camera**

- 15x Continuous Optical Zoom
- Auto Focus
- f/4 High Sensitivity Zoom Lens
- Cooled 3-5µ MWIR Detector
- 1280 x 1024 10µ Pixel Focal Plane Array
- Multiple Command Protocols
- 2 Year Warranty
- Environmentally Sealed IP67
- G5 Image Processing
- Edge Enhancement
- Local Area Contrast Enhancement
- HD SDI Digital Video Output
- Adaptive Temporal Noise Reduction
- Digital Zoom up to 8x
- Optional Turbulence Mitigation Software, Image Stabilization, and Super Resolution



# **MWIR XLR 18X HD Thermal Camera**

Part	200227
Video	HD-SDI, IP (optional)
Control	Control and communication available via RS 232/422
Power	6-32 VDC /20 Watts typical @25C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67
	Front Element Defroster
	Operating Temperature Range: -32° C to +65° C
	Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	<34lbs. (15.5kg)
Length	<29in. L x <12.5in D max

#### **Cooled Sensor** D

Detector	1280 x 1024
Spectral Band	3-5µm
Warranty	2 Years

### Zoom Lens

Spectral Range	3-5µm
Lens Type	f/4 15x Continuous Zoom
Lens Featurs	Motorized Remote Operation
	Auto and Manual Focus Adjust
	15x Continuous Optical Zoom
Field of View	NFOV 0.7° x 0.6° / WFOV 10.5° x 9°
	EFL 1000mm / 66.7mm

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### sales@g5ir.com | +1.603.204.5722 | G5 Infrared LLC | 12 Executive Drive, Hudson, NH 03051, USA | G5IR.com

# MWIR Long Range-HD 15X Zoom Thermal Camera

**CUAS Version** This version of our LR HD Camera system has been modified to withstand the continous zoom and focus operation required by the CUAS mission profile. The zoom and focus mechanisms have been modified to withstand 100% duty cycles while maintaining superior performance.

The LR-HD delivers in day or night an extraordinarily clear thermal video in good conditions. It enables man-sized target detection at ranges in excess of 25km

in good conditions. The LR-HD integrates advanced cooled photodetector technology that has a 1280 x 1024 focal plane array which operates in the 3-5um MWIR spectral region — the best choice for marine and high humidity environments. Environmentally sealed dry nitrogen backfilled enclosure ensures operability and stability over variable temperatures and diverse weather conditions. The LR-HD imager is remotely controllable via serial interface and Graphical User Interface.

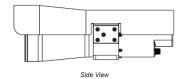
Applications: Vessel Traffic Surveillance, Border Protection, Critical Infrastructure Protection, Airport and Port Security Drone dectection and tracking



# \*Range Performance

- **D = Detection** 50% Probability D / R / I
- **R** = **Recognition** Target 2-degree delta T vs background, 6-degree delta for boat target
- I = Identification Clear atmosphere / very low turbulence

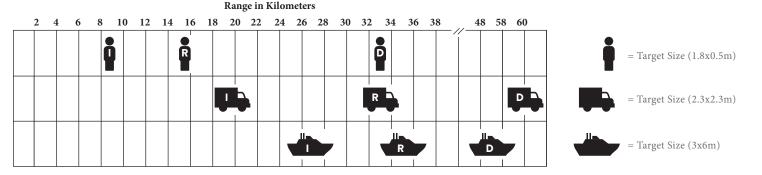
Actual range performance will vary based on a number of conditions, including user experience, display size/quality, weather/atmospheric conditions, etc.





#### MWIR Long Range 15X HD Thermal Imaging Camera

- 15x Continuous Optical Zoom
- Auto Focus
- *f*/4 High Sensitivity Zoom Lens
- Cooled 3-5µ MWIR Detector
- 1280 x 1024 10µ pixel Focal Plane Array
- Multiple Command Protocols
- 2 Year Warranty
- Environmentally Sealed IP67
- G5 Image Processing
- Edge Enhancement
- HD SDI Digital Video Output
- Adaptive Temporal Noise Reduction
- Digital Zoom up to 8x
- Optional Turbulence Mitigation Software, Image Stabilization, and Super Resolution



# MWIR Long Range 15x HD Thermal Camera

Part	20224
Video	HD-SDI, IP (optional)
Control	Control and communication available via RS 232/422
Power	6-32 VDC /20 Watts typical @25C
Environmental	Unit sealed and dry nitrogen backfilled, rated IP67
	Front Element Defroster
	Operating Temperature Range: -32° C to +65° C
	Meets MIL STD 810F
Mount	1/4-20 or 3/8-16 Tripod Interface
Weight	29.7 lbs (13.5kg)
Length	25.4 in (64.5 cm)

# **Cooled Sensor**

Detector	1280x1024
Spectral Band	3-5µm
Warranty	2 Years / 10,000 hrs of camera operation on zoom mechanism

### Zoom Lens

Spectral Range	3-5µm
Lens Type	f/4 15x Continuous Zoom
Lens Featurs	Motorized Remote Operation
	Auto Focus
Field of View	NFOV .9° x .7° / WFOV 14° x 11