

High performance infrared camera for demanding real-time imaging applications

## MC320 Series Mid-wave Thermal Imagers



- High performance, cost-effective complete monitoring solution
- Advanced maintenance-free electronics and industrial protective packaging
- Serves unique range of process monitoring applications that are better monitored using mid-wave infrared (MWIR)
- Superior images and temperature measurement for mid-wave applications
- Supports low and high temperature applications
- Optional industrial grade rugged enclosure for harsh environments
- Gigabit Ethernet communication
- Support for IO module, OPC, and Modbus through LumaSpec RT Control software



LumaSense Technologies, Inc., has been an innovative leader in the field of infrared non-contact temperature measurement instruments. LumaSense specializes in turnkey solutions consisting of complete engineering, design, and installation services to meet the most severe and challenging thermal imaging system requirements.

The MIKRON MC320 represents another milestone in innovative infrared thermometry. Designed with advanced maintenance-free electronics and Industrial Protective packaging, the MC320 offers unparalleled accuracy for demanding industrial and manufacturing applications.

The MC320 is a cost-effective, high performance non-contact infrared imager that serves a broad range of process monitoring applications. The unique design produces superior images and temperature measurement accuracy ( $\pm 2$  °C) for mid-wave applications.

The MC320 can be configured with flame-filtering capability for furnace/kiln monitoring. With an unmatched array of protective accessories, the MC320 demonstrates LumaSense's commitment to long-term trouble-free process monitoring.

### Typical Applications:

- Vessels and furnaces
- Rolling processes
- Rotary kilns
- Quality monitoring in glass production
- Through-flame imaging in furnaces and boilers
- Measurement of targets or objects with low emissivity



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## MC320 Variations

Model	Filter	Range 1 (°F)	Range 2 (°F)	Range 1 (°C)	Range 2 (°C)
MC320M	3 - 5 $\mu\text{m}$	302 °F to 932 °F	392 °F to 1472 °F	150 °C to 500 °C	200 °C to 800 °C
MC320MHT	3 - 5 $\mu\text{m}$	752 °F to 2912 °F		400 °C to 1600 °C	
MC320F	3.9 $\mu\text{m}$	392 °F to 1472 °F		200 °C to 800 °C	
MC320FHT	3.9 $\mu\text{m}$	752 °F to 2912 °F		400 °C to 1600 °C	
MC320G	4.8 - 5.2 $\mu\text{m}$	392 °F to 1472 °F		200 °C to 800 °C	
MC320GHT	4.8 - 5.2 $\mu\text{m}$	752 °F to 2912 °F		400 °C to 1600 °C	

## Technical Data

### Performance

Measurement Accuracy:	$\pm 2$ °C or 2% of reading
Image Update Rate:	60 Hz (Standard); 9 Hz (E series)
A/D Resolution:	16 bit
Detector:	320 x 240 Uncooled Focal Plane Array
Emissivity Correction:	0.1 to 1.0
Transmittance:	0.1 to 1.0
Sensitivity/NETD:	0.108 °F @ 86 °F (0.06 °C @ 30 °C)

### Optical Specifications

Focus Range:	30 cm to infinity
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### Interface

Analog:	TV Output (NTSC or PAL)
Digital:	Gigabit Ethernet
Connections:	4-Pin Power (LEMO-0K), RJ45 Ethernet, 3-pin Trigger (M8), Coaxial (BNC)

### Environmental Specifications

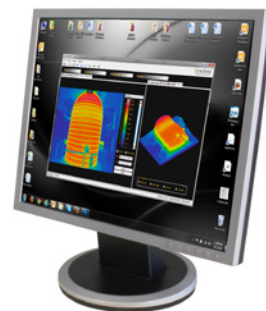
Protection Class:	IP54 / NEMA 4
Operating Temperature:	32 to 122 °F (0 °C to 50 °C) (at housing)
Storage Temperature:	-4 to 158 °F (-20 °C to 70 °C)
Relative Humidity:	Non condensing conditions
Weight:	2.55 lbs. (1 kg) (excludes any protective housing or optional lenses)
Operating Position:	Any operating position
Housing:	6063 T5 Aluminum Alloy. Finish is alodine, clear, MIL-DTL-5541F, RoHS Compliant
Dimensions:	3.26 in x 3.20 in x 7.01 in (83 mm x 81.49 mm x 178.28 mm)

### Electrical

Power Supply:	12 - 30V or Power over Ethernet standards
Power Consumption:	7W Typical, 13W Max
Load (analog output):	75 $\Omega$
Isolation:	Power supply, communication, and IOs are isolated from each other

## Salient Features for MC320 camera with LumaSpec RT Control Software

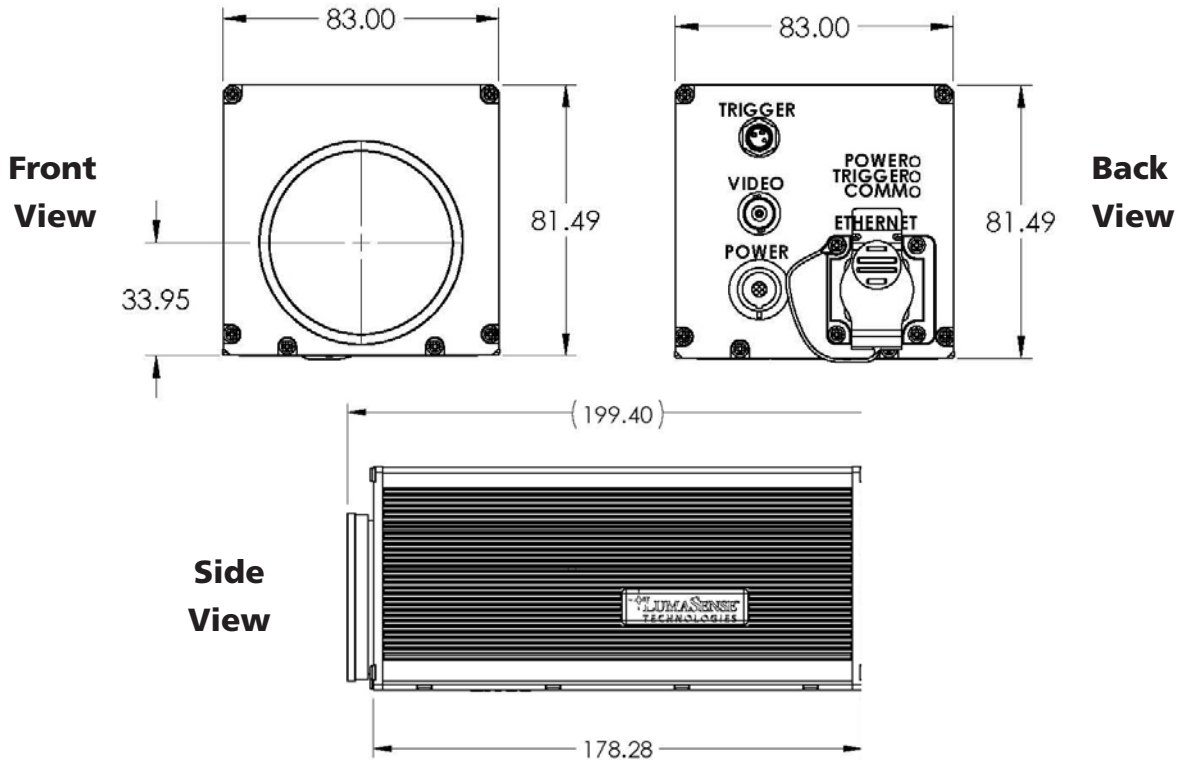
- Support for non-uniformity correction (manual & auto)
- Remote focus lens control for standard, wide angle, and telephoto lens
- Adjustable emissivity, background, and transmission settings
- Real-time display of thermal images with frame capture and sequence capture
- Includes 19 different color palates
- Auto-Gain available for entire image or ROI
- Multiple types of ROI including point, line, and area with temperature display
- Includes analysis tools like histogram, 3D profile, line profile, and temperature trend
- Alarm generation for entire or ROI image based on minimum, maximum, or average temperature
- Support for OPC (OPC DA 2.0) with user-defined scan rate
- Analog and digital output module
- Web server functionality
- Triggered capture based on alarm conditions
- Password controlled user access
- Digital zoom up to 8X
- Data export to text or Microsoft Excel (includes thermal image, ROI table summary/data, image data) or to text
- Modbus TCP/IP available
- Multi-camera configuration with camera auto start feature
- Image subtraction available
- Analyze previously recorded images
- Export captured sequences to AVI
- Image format compatible with LumaSpec Offline Analyzer software for advanced analysis and report writing
- Optional SDK



# Optics

Lens	Field of View
Standard	21° (H) x 16° (V)
Wide	53° (H) x 40° (V)

# Dimensions

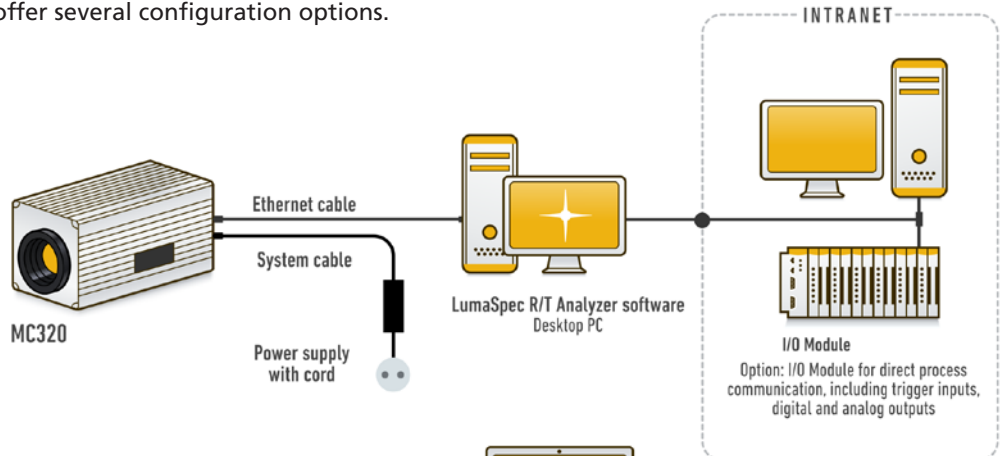


# System Configuration

LumaSense's thermal imagers offer several configuration options.

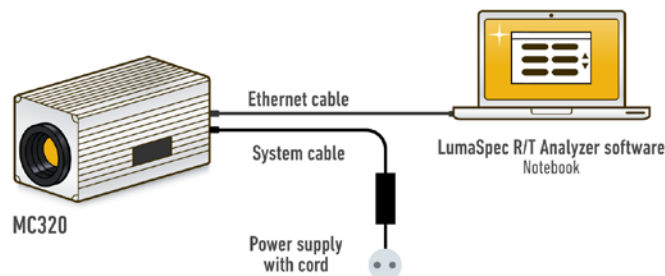
## MC320 over network

The system can be set up by connecting the camera to a network device (switch) or by connecting the camera directly to a dedicated computer using a cross-over Ethernet cable.



## MC320 mobile setup

Additionally, the camera can be used with a desktop PC or with a notebook PC for a mobile measuring system.



## Reference Numbers

### MC320M (3-5 $\mu\text{m}$ , 150-500 $^{\circ}\text{C}$ , 200-800 $^{\circ}\text{C}$ )

321M8608	Standard Lens, Remote Focus
321M8610	53° Wide Lens, Remote Focus

### MC320MHT (3-5 $\mu\text{m}$ , 400-1600 $^{\circ}\text{C}$ )

321M3608	Standard Lens, Remote Focus
321M3610	53° Wide Lens, Remote Focus

### MC320F (3.9 $\mu\text{m}$ , 200-800 $^{\circ}\text{C}$ )

321F5608	Standard Lens, Remote Focus
321F5610	53° Wide Lens, Remote Focus

### MC320FHT (3.9 $\mu\text{m}$ , 400-1600 $^{\circ}\text{C}$ )

321F3608	Standard Lens, Remote Focus
321F3610	53° Wide Lens, Remote Focus

### MC320G (4.8-5.2 $\mu\text{m}$ , 200-800 $^{\circ}\text{C}$ )

321G5608	Standard Lens, Remote Focus
321G5610	53° Wide Lens, Remote Focus

### MC320GHT (4.8-5.2 $\mu\text{m}$ , 400-1600 $^{\circ}\text{C}$ )

321G3610	53° Wide Lens, Remote Focus
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**Scope of delivery:** 2 m Ethernet cable, 2 m power supply cable, power supply unit (100 to 240 VAC, 47 to 63 Hz), lens cap, manual (on CD), quick start guide, carrying case, and LumaSpec RT Viewer software.

## Accessories

19840-1	Lab power supply (12 V for MC320)	812 0029 06	Software LumaSpec RT Analyzer - Multi 6
20791-1	DIN rail mounted power supply	912 0042 01	LumaSpec RT Tower Controller
832 0005 02	Connecting cable (4 pin LEMO) 2 m	57 0013	LumaSpec RT Industrial Grade Laptop
832 0005 05	Connecting cable (4 pin LEMO) 10 m	912 0014 01	Remote I/O Blocks (8 analog outputs)
832 0005 10	Connecting cable (4 pin LEMO) 15 m	912 0015 01	Remote I/O Blocks (Alarm Kit, 8 Channels, Relay)
832 0005 25	Connecting cable (4 pin LEMO) 25 m	912 0016 01	Remote I/O Blocks (Remote trigger kit)
3 829 850	CAT 6 Ethernet cable, 7.5 m	912 0017 01	Remote I/O Blocks (8 analog, 8 alarm outputs)
3 829 860	CAT 6 Ethernet cable, 15 m	912 0018 01	Remote I/O Blocks (32 analog, 32 alarm outputs)
3 829 870	CAT 6 Ethernet cable, 25 m	912 0019 01	Remote I/O Blocks (8 analog inputs)
20313-1	Lens adapter for MC320 (spare part)		
3 830 420	ID enclosure for MC320 (23° standard lens)		
3 835 470	ID enclosure for MC320 (11° standard lens)		
3 829 870	ID enclosure for MC320 (53° resp. 75° wide angle lens)		
3 834 410	Adjustable mounting support (3 hole)		
19931-AP-1	Air purge for MC320		
812 0008 01	Software LumaSpec RT Viewer		
812 0009 01	Software LumaSpec RT Basic		
812 0029 01	Software LumaSpec RT Analyzer		

**NOTE:** The MC320 camera is designed to operate on a 32 or 64-bit Windows™ based computer with the following (minimum) components: Dual Core 1.5 GHz or faster processor, 4 GB RAM (running at 1600 MHz), Dedicated Video Card with 1 GB of 900 MHz DDR3 dedicated RAM, 7200 RPM Hard Drive with a 16 MB buffer and using a 3.0 GB/sec SATA bus, Gigabit Ethernet card that supports Jumbo Packets up to 4088 bytes.

## LumaSense Technologies

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