

Compact, short wavelength thermal imaging process camera for non-contact temperature measurement of metallic surfaces, graphite or ceramics

MIKRON MCS640



- 640 x 480 pixel detector for high quality images of even the smallest objects
- Accurate to within +/- 0.5% of reading for superior temperature measurement
- Image acquisition of 60 frames per second for dynamic temperature processes
- Gigabit Ethernet Interface for real-time data transfer and remote monitoring over local area network
- Rugged IP65 (NEMA 4) enclosure for protection in harsh industrial environments
- Compact design for easy installation, even in confined spaces



The MIKRON MCS640 from LumaSense Technologies, Inc., is a short wavelength infrared (SWIR) thermal imager with internal digital signal processing. This imager is designed to accurately measure temperatures between 600 and 3000°C, with minimal interference from temperature reflections on the object. This makes it suitable for applications such as measurements on metallic surfaces, graphite and ceramics, etc.

The compact design of the MCS640 enables the integration of the camera into compact production machines, while the solid and robust housing guarantees reliability even in harshest industrial environments.

LumaSense offers a wide variety of compatible optics for the MCS640, allowing each instrument to be configured exactly to the measurement needs of the desired scene. Microscopic lenses are also available,

allowing accurate measurement of small objects, such as filament temperatures.

The 640 x 460 resolution pixel detector is designed to allow precise targeting of small objects in a wider field of view.

The built-in Gigabit Ethernet interface (GigE) allows the camera to be connected to the network for long data transmission or to LumaSense's application software for further analysis.

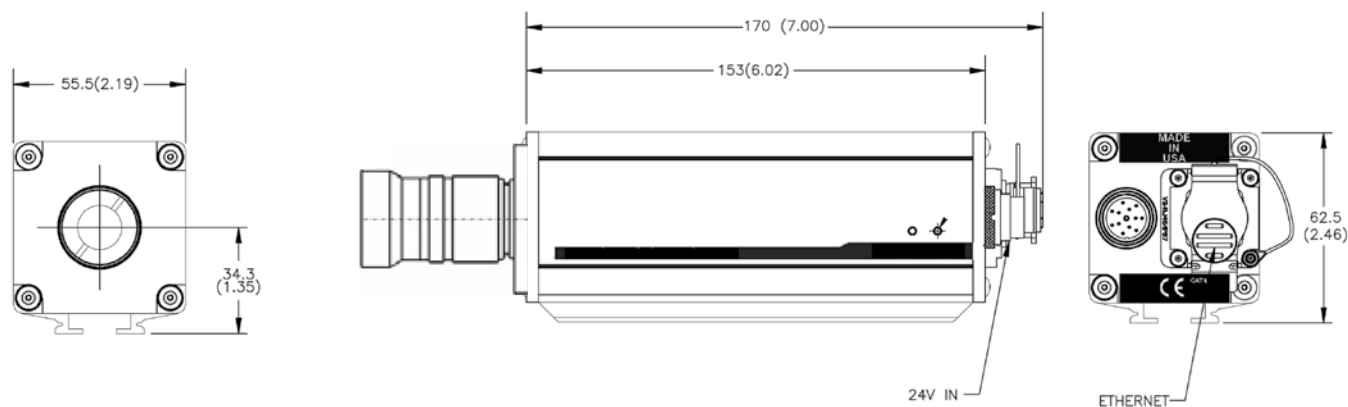
Typical Applications:

- Preheating
- Annealing
- Tempering
- Welding
- Forging
- Hardening
- Sintering
- Melting
- Soldering
- Brazing
- Rolling
- Tempering

Technical Data

	MCS640/I1 Filter, (clean gas flame furnaces)	MCS640/I5 Filter
Temperature Ranges	600 to 1600°C (MB16) or 800 to 3000°C (MB30) in up to 4 sub-ranges	600 to 1600°C (MB16) or 800 to 3000°C (MB30) in up to 4 sub-ranges
Sub Ranges	MB16: 600 to 850, 700 to 1000, 850 to 1250, 1100 to 1600 MB30: 800 to 1150, 1000 to 1500, 1350 to 2050, 1900 to 3000	
Sensitivity / NETD	1° at 600°C	1° at 600°C
Spectral Range	850 nm (I1 filter)	780 to 1080 nm (I5 filter)
IR Detector	640 x 480 pixel; Silicon	
Image Update Rate	60 Hz (fps; frames per second)	
Emissivity	10.0 to 100.0% adjustable via interface in steps of 0.1% (for full camera picture)	
Transmittance	10 to 100 % (in application software)	
Uncertainty (Accuracy)	+/- 0.5% of reading in °K	
Repeatability	0.1% of measured value in °K + 1°K	
Protection Class	IP65 (IEC 60529); NEMA 4	
Shock Resilience	30G (IEC60068-2-29/JIS C 0042)	
Vibration Resilience	3G (IEC60068-2-6/JIS C 0040)	
Power Supply/Consumption	24V DC, 1A	
Power Consumption	10W Typical, 13W Max	
Analog Output	None	
Digital Interface	Gigabit Ethernet (1000 MBit/s)	
Connector	12 pin power connector; RJ45 Ethernet connector	
Isolation	Power supply and digital interface are galvanically isolated from each other	
Weight	0.7 kg (1.5 lbs)	
Ambient Temperature	0 to 50°C	
Storage Temperature	-40 to 70°C	
Relative Humidity	None condensing conditions	
Housing	Aluminium extrusion	
CE-label	According to EU directives about electromagnetic immunity	

Dimensions



Lens Length vs. HFOV	Lens Diameter	3.5°	5.4°	10.8°	22.5°	33.3°	41.0°
Filter code I5 (without filter adaptor)	44 mm	65.5 mm	38.5 mm	25.5 mm	27.0 mm	27.0 mm	31.5 mm
Filter code I1, I2, I3, I4, I8 and V (including filter adaptor)	44 mm	90.5 mm	63.5 mm	50.5 mm	52.0 mm	52.0 mm	56.5 mm

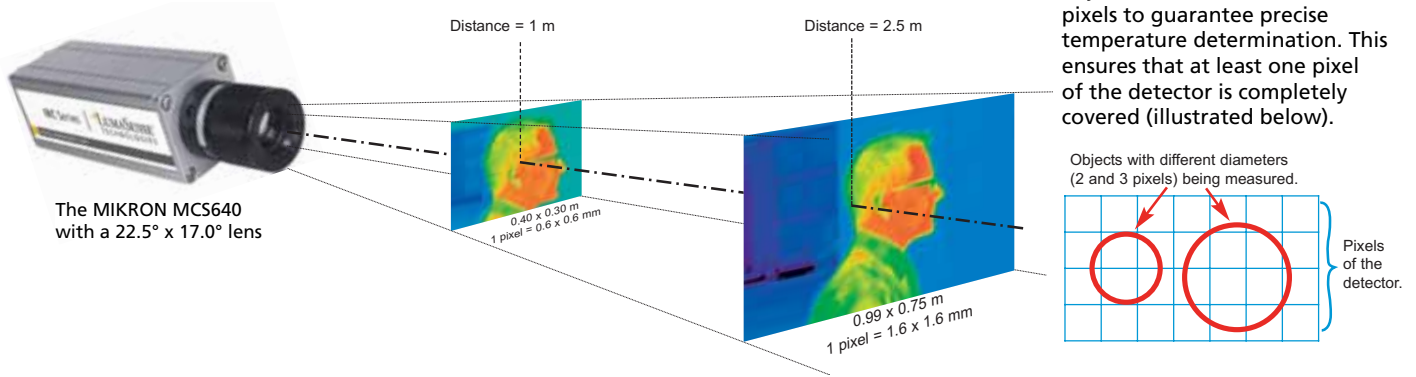
Optics

A wide range of alternative lenses are available for the MCS640, making the thermal imager suitable for most applications.

The table (right) and picture (below) show the correlation between the measurement distance, different optics, and the size of the measurement fields.

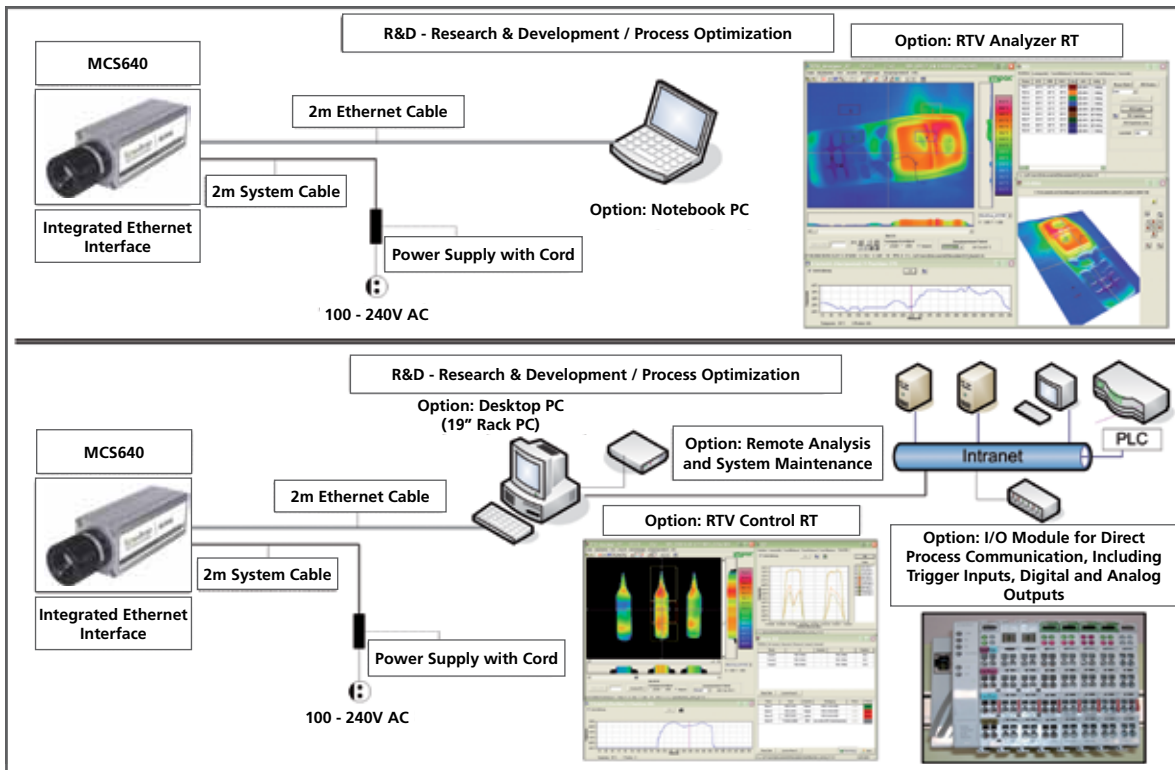
Distance of object [m]	Measurement field W x H [m]				
	3.5° x 2.6°	5.4° x 4.0°	10.8° x 8.1°	22.5° x 17.0°	33.3° x 25.3°
0.30	-	-	-	-	-
0.60	-	-	-	-	-
1.00	0.06 x 0.05	0.09 x 0.07	0.19 x 0.14	0.40 x 0.30	0.60 x 0.45
1.50	0.09 x 0.07	0.14 x 0.10	0.28 x 0.21	0.60 x 0.45	0.90 x 0.67
2.50	0.15 x 0.11	0.24 x 0.17	0.47 x 0.35	0.99 x 0.75	1.50 x 1.12
10.00	0.61 x 0.45	0.94 x 0.70	1.91 x 1.43	3.98 x 2.99	5.98 x 4.49

Note: Distances in the table may not apply to some high-temperature situations. Be sure to consult the Applications Department to determine the proper distance for your application.



System Configuration

LumaSense's thermal imagers offer several configuration options. 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. Additionally, the camera can be used with a desktop PC or with a notebook PC for a mobile measuring system.



Reference Numbers

MCS640/I1, (850 nm), (clean gas flame furnaces)

461J6612	standard lens(10.8° x 8.1°), 60 Hz
461J6614	wide angle lens (33.3° x 25.3°), 60 Hz
461J6615	wide angle lens (22.5° x 17°), 60 Hz
461J6617	telephoto lens (5.4° x 4.0°), 60 Hz
461J6618	telephoto lens (3.5° x 2.6°), 60 Hz

MCS640, 650 nm (metal tip)

461M6625	356mm WD, Microscope, 60Hz
461M6626	113mm WD, Microscope, 60Hz

MCS640/I5, (780...1080 nm)

461H6612	MIKRON MCS640 standard lens (10.8° x 8.1°), 60 Hz
461H6614	wide angle lens (33.3° x 25.3°), 60 Hz
461H6615	wide angle lens (22.5° x 17°), 60 Hz
461H6617	telephoto lens (5.4° x 4.0°), 60 Hz
461H6618	telephoto lens (3.5° x 2.6°), 60 Hz

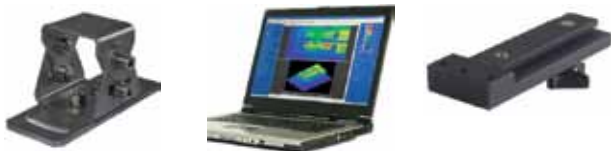
Scope of delivery: 2 m Ethernet cable, 2 m power supply cable, power supply unit (100 to 240 VAC, 47 to 63 Hz), mounting adapter, PCI/Gigabit Ethernet card (depending on computer), lens cap, quickstart, manual (on CD), carrying case. *Software not included.*

Accessories

3 832 950	Lab power supply (24 V DC, 1.25 A)	20736-RT	MikroSpec RT for MCS640 (English) incl. MikroSpec 4.0 (211125-1)
3 832 970	DIN rail mounted power supply (24 V DC, 2.5 A)	912-0014-01	Remote I/O Blocks (8 analog outputs)
3 821 360	Connecting cable, 5m	912-0015-01	Remote I/O Blocks (8 digital relay outputs)
3 821 370	Connecting cable, 10m	912-0017-01	Remote I/O Blocks (8 analog outputs & 8 digital relay outputs)
3 821 380	Connecting cable, 15m	21125-1	Software MikroSpec 4.0 (Offline)
3 821 390	Connecting cable, 25m	21125-2	Software MikroSpec 4.0 Professional (Offline)
3 829 850	CAT 6 Ethernet cable, 7.5 m	5RT-DESKTOP-PC	MikroSpec RT Desktop Controller
3 829 860	CAT 6 Ethernet cable, 15 m	5RT-RACK-PC	MikroSpec RT 19" Rack Controller
3 829 870	CAT 6 Ethernet cable, 25 m	5RT-NOTEBOOK-PC	MikroSpec RT Notebook Controller
3 830 460	ID enclosure for MCS640 (standard, non-HD)	5RT-CONFIG-PC	MikroSpec RT Configuration of Customer-PC (4 hours)
3 835 490	Adaptor for mounting rail to tripod		
3 834 410	Adjustable mounting support (3 hole)		

Accessory Overview

Mechanical Overview



3 834 410 Adjustable mounting support	LumaSpec R/T software packages	3 835 490 Adaptor for mounting rail to tripod
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Electrical Overview



3 829 850/860/870 CAT 6 Ethernet cable, 7.5 / 15 / 25m	3 832 950 Lab power supply	3 832 970 DIN rail mounted power supply
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