

MCS640

Fixed-Installation Thermal Imaging Camera for Industrial and Scientific Applications

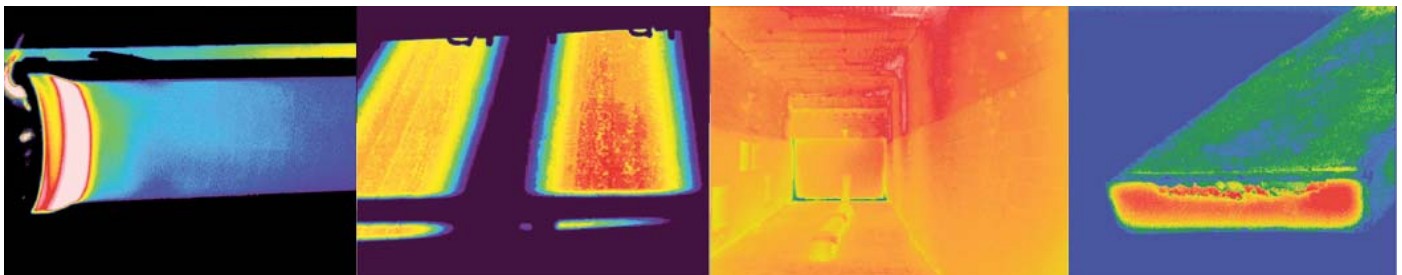
High Performance, Near-Infrared Camera with Digital Image Transfer and Remote Monitoring Capabilities for Demanding Real-Time Imaging Applications



Key Features

- Real Time digital image transfer via Gigabit Ethernet
- Measures over 300,000 temperature points 60 times a second
- Short wavelength detector is minimally affected by reflection
- High accuracy $\pm 0.5\%$ of reading
- Sees through glass or quartz viewports
- Shutter-less operation
- Remote monitoring via Local Area Network
- Temperature measurement between 600°C and 3000°C
- Ambient temperatures to 100°C (212°F) with optional cooling
- Versatile image processing software
- NEMA-4 housing
- Affordable price

MCS640 Sample Images:



Induction heating of large diameter shaft

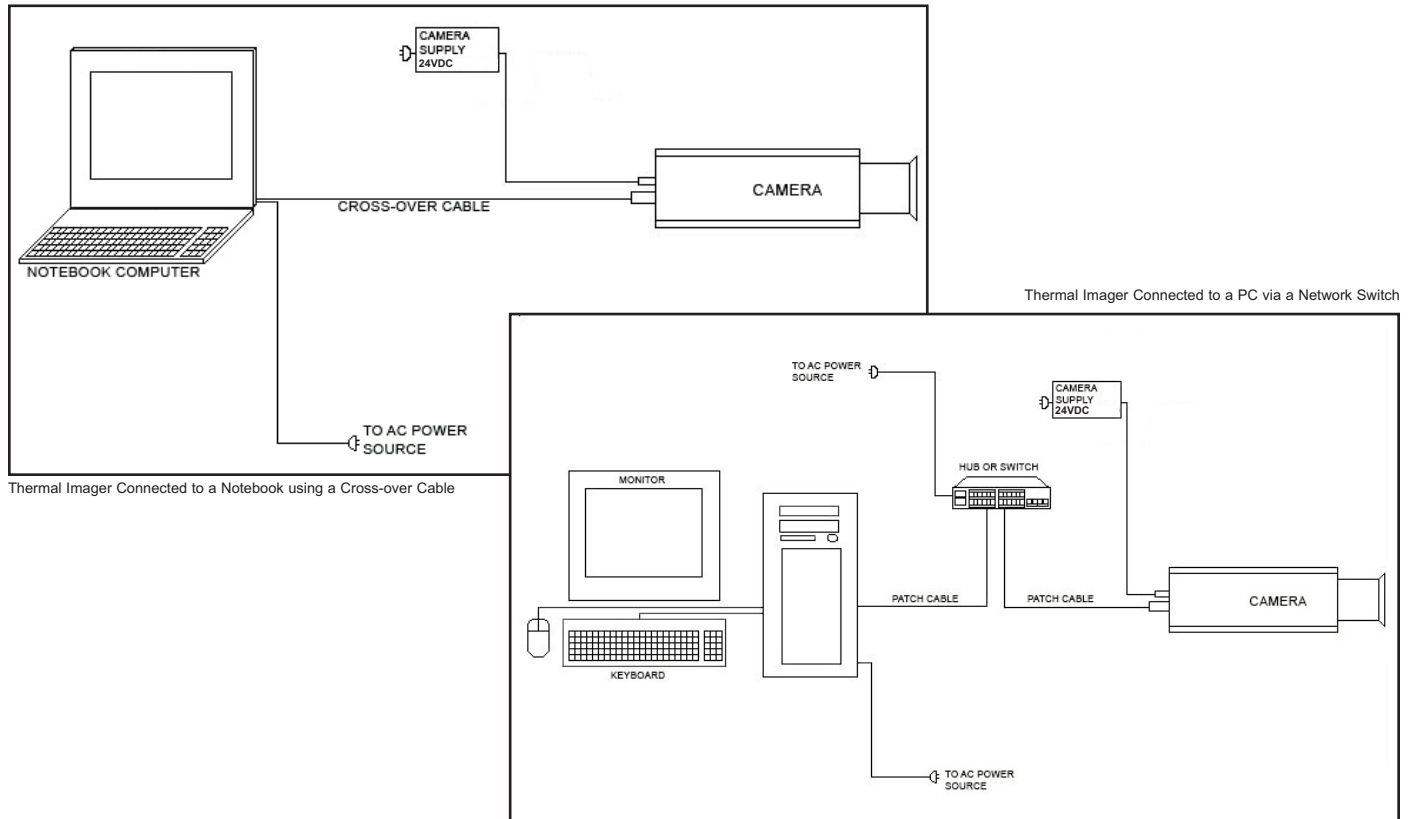
Rolling Mill applications

Interior of reheat furnace for uniformity check

Steel slab exiting reheat furnace

System Configuration

Mikron's thermal imagers offer several configuration options. The system is set up by either 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.



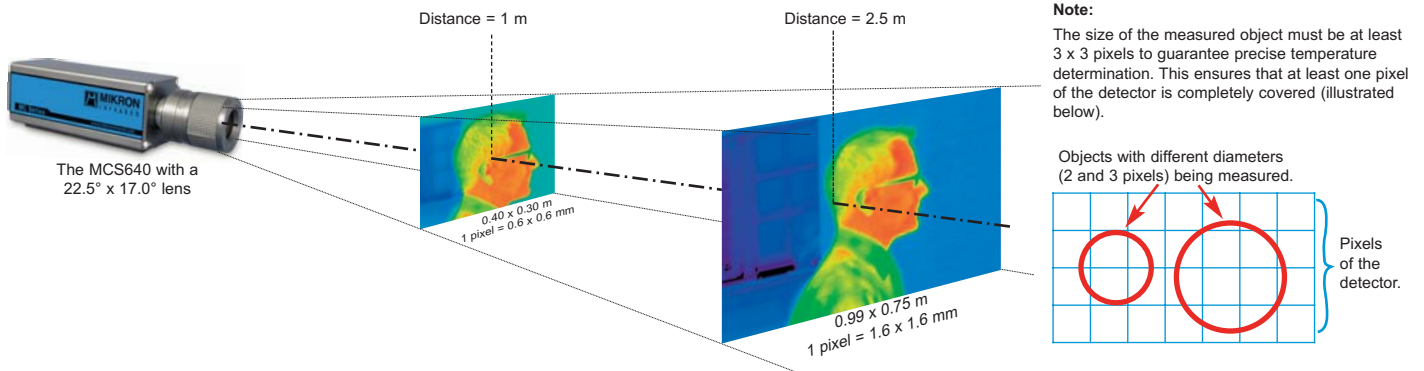
Measurement Field and Pixel Resolution

For MCS640 a wide range of alternative lenses is available. Thus, the thermal imager is 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.



Technical Data

MCS640 Detector Unit	Temperature Configurations Spectral Configurations Measurement Accuracy Field of View Focus Range Instantaneous FOV Detector Image Update Rate Sensitivity/NETD A/D Resolution Ambient Correction Interface Mounting	600°C to 1600°C in up to 4 customer-specific ranges or 800°C to 3000°C in up to 4 customer-specific ranges 650-1080 nanometers (depending on application) ±0.5% of reading 3.5° to 33° HFOV (standard) 30 cm to infinity with 25 mm lens Depends on Lens 640 x 480 Uncooled Focal Plane Array 60 Frames/sec 1K bei 600°C 12 bit Provided Gigabit Ethernet Precision mounting rail
Environmental	Operating Temperature Storage Temperature Shock Resilience Vibration Resilience	0°C to 50°C -40°C to 70°C 30G (IEC60068-2-29/JIS C 0042) 3G (IEC60068-2-6/JIS C 0040)
Electrical and Physical Characteristics	Power Supply Power Consumption Dimensions Weight	24V DC 12W (Nominal) 10W (Typical) 2.2" x 2.4" x 6.3" (56mm x 62mm x 161mm) without lens 1.5 lbs. (excludes any protective housing)
Functionality Available Through On-Line Thermal Image Processing Software	Remote Camera Control Functionality Real-time Image Acquisition Object Data (Regions of Interest) Alarms Display Color Isotherm Overlay Image Averaging and Subtraction Running Image Averaging	Allows selection of the camera, range and temperature scale. It also allows adjustments to be made for emissivity, ambient compensation, and percentage of transmission loss. Allows large amounts of data to be captured at a user-adjustable capture rate of up to 60 frames per second. Live images can be captured with full temperature data and stored to a sequence file. The maximum number of frames is dependent upon the hard drive space available in the computer. Individual snap shot images can also be stored to files with full temperature data for later analysis. Multiple Regions of Interest (ROIs) allow for processing and computing of the Minimum, Maximum and Average temperatures. ROIs can be resized and moved on the live image display. Possible ROI shapes include Point, Line, Broken Line, Free Line, Circle, Annulus, Rectangle, Rotated Rectangle, Polygon, and Region. A custom formula ROI type is also available which allows temperatures to be computed using typical Microsoft Excel [®] formulas. ROI alarms can be configured with a minimum and maximum alarm set point that can be generate software and output alarms. These alarms can be recorded to a Text or Comma Separated log file for later review. Multiple Color Palettes offer flexibility for optimal infrared detail. Provides a visual representation of the temperature breakdown on the image. Isotherm channels allow temperature ranges to be set to display specific colors on the image. Allows comparisons to be made of the current input image to that of a snapped or loaded reference image. Allows up to 16-fold averaging of images for noise reduction.

Standard Accessories:

- 1 Year Warranty (Extended Warranty Available)
- Shippable Carrying Case
- Power Supply
- AC Power Cable/DC Interface Cable
- Ethernet Cable
- Ethernet Card
- Lens Cap
- Software
- Quickstart Guide
- Manual (on CD)

Reference Numbers

Standard Accessories:

2m Ethernet cable, 2m power supply cable, power supply unit (100-240 V AC, 47-63 Hz), mounting adapter, PCI/Gigabit Ethernet card (depending on computer), lens cap, quickstart, manual (on CD), carrying case.

MCS640 Camera Configurations:

Part number	Specification
Consult Factory	MCS640 (60 Hz, 10.8° x 8.1° FOV)
Consult Factory	MCS640 (60 Hz, 40.4° x 30.9° FOV)
Consult Factory	MCS640 (60 Hz, 33.3° x 25.3° FOV)
Consult Factory	MCS640 (60 Hz, 22.5° x 17° FOV)
Consult Factory	MCS640 (60 Hz, 7.7° x 5.8° FOV)
Consult Factory	MCS640 (60 Hz, 5.4° x 4.0° FOV)
Consult Factory	MCS640 (60 Hz, 3.5° x 2.6° FOV)

Please consult factory to get part numbers for different temperature ranges.

Enclosure Configurations:

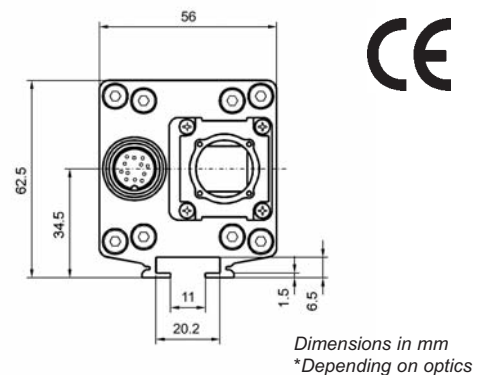
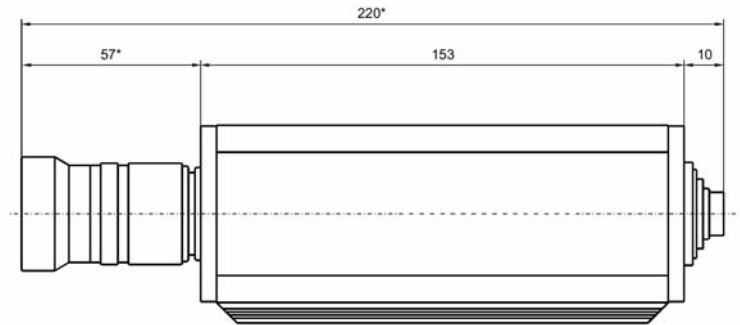
Consult Factory	LD-Series - IP40 enclosure with integrated air purge
Consult Factory	HD-Series - IP65 enclosure with integrated air purge, IR Window, water cooling, no heater
Consult Factory	TS-X - IP65 enclosure with IR window, air purge, and heater, optional vortex cooler
Consult Factory	EX-X - IP65, Zone 2 groups B, C & D and/or Class I Div II with integrated air purge, IR window, vortex cooled, optional heater

Software Packages:

21301-RT	Online software MikroSpec RT
3 831 670	Online software RTV Basic RT
3 831 680	Online software RTV Analyzer RT
3 831 740	Online software RTV Control RT

Accessories:

Consult Factory	Power supply
21142-025	Ethernet-cable CAT6 (cross link), 7.5 m
21245-050-GY	Ethernet-cable CAT6 (cross link), 15 m
21025-2-30	Ethernet-cable CAT6 (cross link), 25 m
3 821 360	Connecting cable for power supply, 5 m
3 821 370	Connecting cable for power supply, 10 m
3 821 380	Connecting cable for power supply, 15 m
3 821 390	Connecting cable for power supply, 25 m
21557	Desktop-PC for thermal imagers
21559	19" Rack-PC for thermal imagers
21558	Notebook-PC for thermal imagers
21141-2	Gigabit Ethernet Express Card (Notebook)
21141-3	Gigabit Ethernet PCI-Card (Desktop)
21141-4	Gigabit Ethernet PCI Express Card (Desktop)
3 834 270	Ball & socket mounting device for slide mount
3 834 280	Adjustable mounting angle for slide mount
3 835 490	Adaptor for slide mount to camera tripod
10354	Robust tripod with removable mounting plate



I/O Modules:

3 831 770	Module for RTV Control RT (4DI/4DO/4AO)
3 831 780	Module for RTV Control RT (4DI/8DO/8AO)
3 831 790	Module for RTV Control RT (4DI/16DO/16AO)
3 832 140	Module for RTV Control RT (12 DI/6 DO)

Service

Consult Factory	1 day on-site feasibility study
Consult Factory	1 day initial startup and training
Consult Factory	Configuration of a customer PC (4 hours)
Consult Factory	Configuration of a customer specific system
3 830 940	Camera inspection
3 830 950	Camera inspection and adjustment
Consult Factory	Remote diagnosis and system maintenance
3 832 900	Extension of warranty time

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