

High Performance Infrared Cameras, Cores & Engines

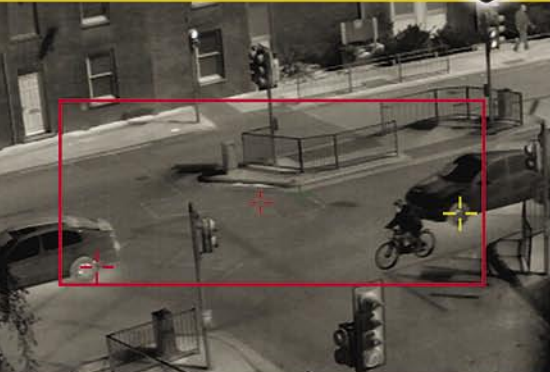
MIRICLE 110K

Powered by Thermoteknix

384 x 288



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MIRICLE 110K Infrared Cameras, Cores & Engines

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The MIRICLE infrared camera range, created by Thermoteknix, sets a new level of power, performance and flexibility for the full range of infrared applications. Resulting from more than 20 years' experience in thermography, MIRICLE cameras and cores deliver *more than just an image.*

Built in the smallest footprint, MIRICLE cores and engines offer a range of microbolometer detectors in common electronic packages incorporating the very latest micro-electronics and power efficient management.

Thermoteknix MIRICLE 110K infrared cores and engines provide the OEM builder with high performance thermal imaging in highly compact, lightweight, low power, rugged, modular designs. Powerful embedded software, a choice of analog video and digital video and accessories put MIRICLE 110K camera engines ahead of the field. Available in "sandwich" or "flexi" formats as cores (electronics and detector package) or engines (electronics, detector, shutter, lens), MIRICLE OEM cameras provide the camera developer with flexible configurations to tailor mechanical and electronic integration on a single platform.

MIRICLE 110K Imaging

Based on a state-of-the-art 384 x 288, uncooled alpha Silicon 7-14 μm micro-bolometer detector producing 110,592 effective pixels, the MIRICLE 110K achieves superbly detailed real-time imagery.

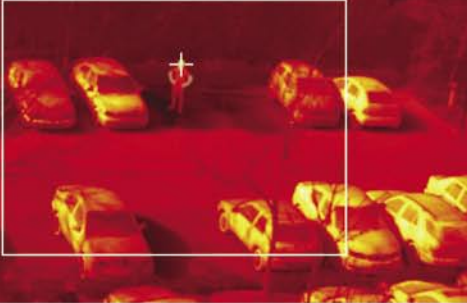
With 44% more pixels than 320 x 240 detectors and < 50mK sensitivity, MIRICLE 110K cores and engines establish a new level of performance, free of US Government export authorization, for delivery to global markets.

From surveillance to online process inspection, MIRICLE cores and engines fit outstanding features and power into the smallest and most flexible packages. For optimum imaging in varying intensity scenes and targets, MIRICLE electronics have manual and dual area of intensity auto gain to maximize target and featured background content. Multiple color palettes, smooth multi-level interpolated zoom directly into the core and auto hot/cold peak tracking throughout the whole image or user defined area of interest. For scientific and R & D imaging, multiple cameras can be gen locked for simultaneous frame mode. Standard frame rates (50/60 Hz) and high speed frame rates (100/120 Hz) address fast processes and dynamic image analysis with windowing modes up to 500 Hz. Programmable bias voltage enables custom ranging and optimum scene composition.

- Surveillance
- Border security
- Aerospace
- Military
- UAV
- R & D
- Scientific
- On-line process control

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PERFORMANCE MIRICLE 110K

FPA Detector	Alpha Silicon uncooled micro-bolometer
Array size	384 x 288 (110,592 effective pixels)
Spectral band	7 - 14 µm
Pixel pitch	35 µm
Optical Fill	> 80 %
NEDT	≤ 50 mK @ 30 °C (f/1.0, 60Hz)
IFOV (Instantaneous Field of View)	1.09 mrad with standard 32mm f/1.0 lens
Standard Frame Rate	50/60 Hz
Video Output Format	Monochrome RS170/NTSC or CCIR/PAL
Custom Frame Rate	Up to 120 Hz available
Dynamic Range	14 bit
Gain/Level Control	Auto
Time to image	< 1 second
Shutter	Micro-compact. Auto NUC
Power Input	3.3 – 5 V
Power Consumption - Nominal	< 2.5 W (USB2/LVDS output) < 3.2 W (Analogue video) < 2.0 W
Power saving mode	
Environmental Properties	
Impact	25G IEC 68-2-29
Vibration	2G IEC 68-2-6
Operating ambient temperature	-20 - +50°C
Humidity (Operating/Storage)	5 - 95% non condensing (KS model 100%)
Size (dimensions mm/inch)	42 x 40 x 40 mm 1.6 x 1.6 x 1.6 inches
Weight (inc. detector)	(86 g) 3.0 oz
Connector	Lemo/Miniature USB2/Ribbon cable depending on model

Optional Extras
 USB2 Digital / LVDS Digital / External motor drive (focus) / Custom frame rates (up to 120 Hz)

MIRICLE 110K camera systems are available in a choice of configuration and housings:



MIRICLE 110KB
 The MIRICLE 110 KB Camera features a bayonet lens front mount which provides rapid interchangeability between lenses



MIRICLE 110KS
 Ascrew flange front mount allows lens interchange whilst offering a choice of environmental sealing and ruggedisation options including IP67 (NEMA 4), hermetic and space compliance



MIRICLE 110KC
 MIRICLE cameras are available in custom configurations to suit integrator and third party development. Choice of shutter assemblies, mounts, casings, outputs and features

STANDARD SOFTWARE AND OPTIONAL PACKAGES

MIRICLE Control Software (RS232 PC) is included with all units
 Functions: Freeze frame/live, Store digital frame (BMP), Black hot/White hot, Flip video: Left/Right, Up/Down

OPTIONAL COLOUR VIDEO PACKAGE	
Video Output Format	Black & White / Colour RS170/NTSC or CCIR/PAL
Communication	RS232
Software Control	Black hot/White hot Flip video: Left/Right, Up/Down Manual or Auto configurable NUC Zoom x2 x4 x8 around centre or offset
Gain Modes	Multiple Autogain modes with 1 or 2 configurable zones: Peak, Histogram, Standard Deviation, Span or Gamma Compression
Colour Palettes	10

- MIRICLE ENGINEERING DEVELOPMENT TOOLKIT**
- Engineering development technical support
 - Miricle diagnostic and debugging development software
 - User configuration profiles to download personality settings
 - Reticule overlay – standard and configurable
 - Text overlays with choice of fonts, fore and background colours
 - Area of interest measurement:
Spots (8), Rectangles (4) with Auto Max/Min tracking, Line values (2), Profiles (2)
Choice of tool colour
 - Real time image filtering:
Edge detection/smoothing, Feature extraction, 3 x 3 discrete convolution filtering
5 x 5 discrete convolution filtering
Median Filter
 - Bad Pixel Replacement Tools

OPTIONAL ACCESSORIES
 ThermoGRAM USB Digital Image Processing Software
 ThermoGRAM PRO USB Real Time Digital Image Capture & Analysis Software

LENSES
 Choice of multi-element Germanium lenses with electronic focus, shutter and mount options including AutoID sensing:

Focal Length	Aperture	IFOV	HFoV	VFoV	Diag
18mm	f/1.0	1.94 mrad	40.9°	31.3°	50.0°
32mm	f/1.0	1.09 mrad	23.7°	17.9°	29.4°
50mm	f/1.0	0.70 mrad	15.3°	11.5°	19.1°
75mm	f/1.0	0.47 mrad	10.2°	7.7°	12.8°
60/180mm Lens:					
60mm setting -	f/1.4	0.58 mrad	12.8°	9.6°	15.9°
180mm setting -	f/1.4	0.19 mrad	4.3°	3.2°	5.3°



A range of spectral transmission filters are available
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Not all features present on all models. Specifications subject to change. MIRICLE is a registered trademark of Thermoteknix Systems Ltd.
 Printed on environmentally friendly 100% chlorine free pulp

