



**MIRICLE**  
Powered by Thermoteknix

 **Thermoteknix**  
Systems Ltd

**MIRICLE®**  
Ultra High Performance Thermal Imaging

## Why MIRICLE...?



MIRICLE Cameras, cores and engines are a range of uncooled long-wave thermal imagers suitable for a wide variety of applications. MIRICLE Cameras operate in TEC-less mode, so use less power, have a wider operating temperature range and faster time to image.

MIRICLE cameras are available either as self-contained camera units or as OEM cores for integration into end-user products. With low weight and low power consumption MIRICLE is ideal for applications such as UAV, man-portable surveillance, driver aids and enhanced vision systems for aircraft. There is also a range of PC software options for configuration and control of MIRICLE.

### Outputs include:

- Composite video
- USB or LVDS digital interfaces
- 8-bit palletised or full-span 14-bit format
- A range of PC software options for configuration and control of MIRICLE



LVDS

### Formats:

110K – 384x288 detector resolution: 110,592 pixels, with 35µm or 25µm pitch  
307K – 640x480 detector resolution: 307,200 pixels and 25µm pitch



### KS Cameras (Sealed)

KS models are ready-to-use cameras supplied in a completely sealed ruggedised housing (IP67). The cameras use a watertight "Lemo" connector and short break-out cable with power, RS232 and composite video signals.



## XTi Technology® - Shutterless Option



Thermoteknix patent pending XTi Technology® cameras operate without the use of a mechanical shutter or TEC. They have no moving parts, are smaller, lighter, silent and more robust. XTi enabled cameras are never blind and deliver continuous live video without the interruptions inherent with shuttered cameras. XTi technology can be packaged into the conventional KS waterproof or ultra light-weight XTi housings.

### MIRICLE Camera Optics:

A wide range of lenses is available for MIRICLE (See reverse of brochure for details). There are three Lens categories:



#### 1. Manual Focus Lenses

Available in focal lengths from 25mm to 50mm, most have waterproof optical coatings and IP67 housings. User Interchangeable.

#### 2. Athermalised Lenses

Thermal Imaging lenses normally suffer from a loss of focus with variations in environmental temperature. Thermoteknix passively Athermalised lenses retain focus over a wide range of temperatures and are available from 14.25mm to 35mm focal length. User Interchangeable.



#### 3. Motorised Focus Lenses

Motorised lenses use a different mechanical structure and are normally larger and heavier - they can however be remotely controlled Via RS232 instructions. Not User Interchangeable.



### KC Cameras (Cores)



KC models are OEM core modules for system integrators designing their own systems. Camera connections are via lightweight ribbon or discrete cable connectors.

"MIRICLEDeveloper" documentation, software and support package provides detailed information on connectivity and serial link command messages. Software SDK options are available for rapid prototyping of the USB video interface.

### Custom Solutions

Thermoteknix can develop custom packages and or lens solutions optimised to client specifications. MIRICLE cameras can also be supplied with radiometric calibration.

Please contact Thermoteknix for more information.



	110K		307K
<b>MODEL</b>	110K-35	110K-25	307K-25
Detector material	A Si	A Si	A Si
Array size	384x288	384x288	640x480
TEC-Less operation	YES	YES	YES
Pixel count	110,592	110,592	307,200
Spectral response	8µm-12µm	8µm-12µm	8µm-12µm
Pixel Pitch	35µm	25µm	25µm
Response time	7mS	7mS	7mS
Sensitivity (Excluding optics)	≤70mK	≤50mK	≤50mK
Frame rate	50/60 FPS	50/60 FPS	50/60/240 <sup>1</sup> FPS
Outputs composite, USB, LVDS	YES,YES,YES	YES,YES,YES	YES,YES,YES
Video Format	NTSC / PAL	NTSC / PAL	NTSC / PAL
Power consumption	2.5 Watts	2.5 Watts	3.7 Watts
Time to image	≤2 Seconds	≤2 Seconds	≤2 Seconds
Std. Operating temp range	-20 to + 50°C	-20 to + 50°C	-20 to + 50°C
Text overlay	YES	YES	NO
Digital Zoom	x2 x4 x8	x2 x4 x8	x2 x4 x8 x16
4 bit digital inputs	YES	YES	YES
Radiometric operation	NO	Optional	Optional
XTI Shutter-Less operation	Optional	Optional	Optional
Remote command interface	RS232	RS232	RS232

<b>CONFIGURATION</b>	KS	KC	KC XTI	KS	KC	KC XTI	KS	KC
Weight (Excluding optics)	166g	105g	68g	166g	105g	68g	166g	105g
Length (mm)	57.6	46.6	39.1	57.6	46.6	39.1	57.6	46.6
Width (mm)	45	45	40	45	45	40	45	45
Height (mm)	52.5	52.5	44	52.5	52.5	44	52.5	52.5

<b>LENSES<sup>2</sup></b>	Weight	FOV	FOV	FOV
14.95mm f/1.3 Atherm	32g	48.4° x 37.3°	35.6 x 27.1	56.3° x 43.7°
14.25mm f/1.3 Atherm	70g	50.5 x 39.0	37.2 x 28.4	58.6 x 45.7
25mm f/1.0 Manual	250g	30.1 x 22.8	21.7 x 16.4	35.5 x 27.0
32mm f/1.0 Manual	204g	23.7 x 17.9	17.1 x 12.8	28.1 x 21.2
35mm f/1.4 Atherm	96g	21.7 x 16.4	15.6 x 11.7	25.8 x 19.5
50mm f/1.0 Manual	372g	15.3 x 11.5	11.0 x 8.2	18.2 x 13.7
50mm f/1.0 Motorised	850g	15.3 x 11.5	11.0 x 8.2	18.2 x 13.7
75mm f/1.0 Motorised	1,300g	10.2 x 7.7	7.3 x 5.5	12.2 x 9.1
75mm f1.0 Light* Mot.	395g	10.2 x 7.7	7.3 x 5.5	12.2 x 9.1
150mm f/1.0 motorised	4,400g	5.1 x 3.8	3.7 x 2.7	6.1 x 4.6
210mm f/1.4 motorised	4,400g	3.7 x 2.7	2.6 x 2.0	4.4 x 3.3
60/180mm motorised Dual FOV	6,600g	(60) 12.8 x 9.6 (180) 4.3 x 3.2	(60) 9.1 x 6.9 (180) 3.1 x 2.3	(60) 15.2 x 11.4 (180) 5.1 x 3.8

#### NOTES

KS = Waterproof ruggedised unit for use in hostile environments. Supplied with Lemo connector and break-out cable.

KC = Bare core, no protective housing, uses OEM interface connectivity.

XTI = Shutterless technology for low weight, high shock environments (NTSC or PAL to be specified at time of ordering).

Manual and Atherm lenses can be swapped, Motorised focus units can only be swapped with other motorised focus lenses.

\* Lightweight lens weight includes unique core incorporating focus drive mechanism.

<sup>1</sup> 240 FPS output as 640 x 120 window.

<sup>2</sup> Other lenses are available - please enquire for information on the complete range.

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