Cores and components
for thermal imaging applications

µCore-275Z

The "µCore-275Z" has been especially designed for Original Equipment Manufacturers (OEM). It can easily be integrated into systems that require a small, compact and lightweight thermal imaging core with a cooled detector. The "µCore-275Z" can be easily integrated in small airborne gimbals or in any other application.

Thermal imaging core
Thermal imaging camera cores are subsystems that provide similar features and functions to those found in some of FLIR Systems' standard camera products. However, cores are designed to allow integration into other systems. Camera cores can be used in whole or subsystem form by an OEM in many applications.

FLIR Systems provides different components and cores for a large number of advanced thermal imaging platforms. With FLIR's strength in focal plane array manufacturing, vacuum packaging, video processing electronics and system integration, along with high commercial product manufacturing rates, FLIR Systems is a powerful partner to many OEM customers.

Cooled MCT detector
The "µCore-275Z" is equipped with a cooled Mercury Cadmium Telluride (MCT) detector. This offers excellent range performance.

The MCT detector produces crisp thermal images of 640 x 512 pixels on which the smallest of details can be seen. It operates in the mid-wave infrared band (3 – 5 µm).

Continuous optical zoom lens
The "µCore-275Z" is available with a zoom lens. It continuously zooms between a 2° narrow field of view and a 25° wide field of view. For users that want to see even further a version with a 1.5x extender ring is available it zooms between a 1.3° narrow field of view and a 16.5° wide field of view.

The advantage of continuously zooming compared to other systems that are using a rotating lens system is that there is no switch or swapping between the different images. You can gradually zoom in while keeping your focus all the time.

The system allows you to experience better situational awareness in the wide field of view, while maintaining detailed recognition capabilities in the narrow field of view.

Extremely compact - Easy to integrate
All modules are extremely compact and lightweight. They provide a turnkey thermal imager with advanced image processing features built-in and ready for system integration. They incorporate easily with common power and video interfaces found in existing and new systems.

Advanced image processing
The "µCore-275Z" contains powerful image processing algorithms which are embedded in the module's hardware and software. Automatic Gain Control (AGC), histogram equalization and other functions are guaranteeing high quality thermal imaging in any night or daytime environmental conditions.

Digital Detail Enhancement (DDE)
FLIR Systems has developed a powerful, FLIR Systems patented, algorithm that helps to overcome the problem of finding low contrast targets in high dynamic range scenes: Digital Detail Enhancement (DDE). It assures clear, properly contrasted thermal images and delivers a high contrast image even in extremely dynamic thermal scenes.

µCore-275Z

Technical specifications

IMAGING PERFORMANCE

Detector type	Cooled Mercury Cadmium Telluride 640 x 512 pixels
Spectral range	3 – 5 µm
NETD without lens	< 30 mk typical
Image processing	AGC, Manual Gain & Control, Tunable Digital Detail Enhancement (DDE), Non-Uniformity Correction, Tunable frame rate (1 Hz step) up to 60 Hz
Digital zoom	Centered and continuous

LENSES

Field of View:

Continuous optical zoom	µCore-275Z: 2.0° (H) x 1.6 (V) to 25° (H) x 20°(V) with 275 to 22 mm lens µCore-275Z with 1.5x extender: 1.3° (H) x 1.1 (V) to 16.5° (H) x 13.3°(V) with 410 x 37.5 mm lens
Spatial resolution (IFOV)	µCore-275Z: 0.054 mrad for 275 mm zoom lens – 0.68 mrad for 22 mm zoom lens µCore-275Z with 1.5x extender: 0.036 mrad for 410 mm zoom lens – 0.45 mrad for 37.5 mm zoom lens

INTERFACES

Digital Video Output	Option for GigE or CamLink (additional separate miniboard)
Analogue Video Output	CCIR/RS170 configurable bay on-line command
Communication	RS232/422 or optional GigE or CamLink + spare RS232 for external device control

POWER

Requirements	18 VDC up to 32 VDC
Consumption	< 16 W nominal at 20°C and 24 VDC
Ext Sync In	LVTTL

ENVIRONMENTAL

Operating temperature range	-32°C to +65°C
Storage temperature range	-40°C to +70°C
Random vibration	MIL-STD 810F Method 516.5 Procédure1, 3 axis, 30 min/axis, 2.1g rms 10-500 Hz
Shock	MIL-STD 810F Method 514.5, 30g, 11ms, 1/2 sinus, 2 shocks per axis

PHYSICAL CHARACTERISTICS

	µCore-275Z	µCore-275Z with 1.5x extender
	Core only	Core only
Size (in mm)	193 L x 103.1 W x 95.5 H	295 L x 117 W x 117 H
Weight	1.5 kg	2.3 kg
Shipping size	305 mm x270 mm x 194 mm	616 mm x 493 mm x 220 mm
Shipping weight	<3.8 kg	< 9.3 kg

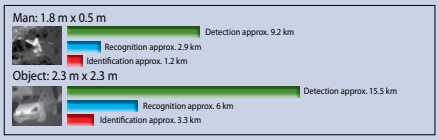
Electronic horizontal and vertical flip

The µCore-275Z has electronic flip functions that flip an image upside down and left side to right. In an airborne application for example, if a tracked object moves beneath the camera, the image can be inverted to maintain the correct display. This function realizes higher mechanical reliability as compared to a mechanical flip function.

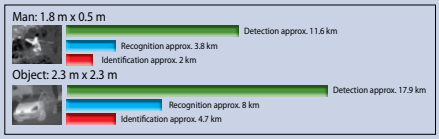
Normal view | Vertical flip | Horizontal flip | Vertical and horizontal flip

Continuous optical zoom on the thermal image

µCore-275Z: range performance 2° FOV lens



µCore-275Z with 1.5x extender: range performance 1.3° FOV lens



Actual object detection range performance may vary depending on camera set-up, environmental conditions, user experience, and type of display use. All specifications are subject to change without notice. Visit www.flir.com for the most up-to-date specifications.

The µCore-275Z can be easily integrated for a wide variety of mid- to long range applications

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