

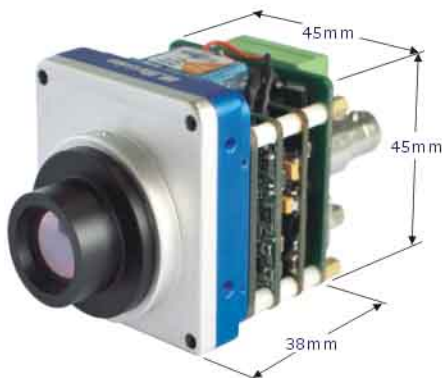
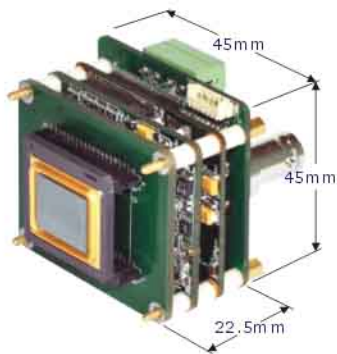
*Thermal Imaging Core*  
**TC160 & TC384**



# Thermal Imaging Core TC160 & TC384

ULIRvision thermal imaging core is a compact, lightweight, all-in-one thermal imager with outstanding sensitivity and excellent image quality. With advanced thermal image processing, TC160 & TC384 provide crisp thermal image video which can be displayed on any monitor that accepts composite outstanding image quality and sensitivity.

TC160 & TC384 core can be easily integrated into products or systems of (customer's) design with the multi-interface on the backside. A TC core may support the digital video output (LVDS), composite video output (BNC), remote control on PC (RS232) after connected directly with your existing device/network.



The TC160 and TC384 made a same performance except the IR resolution is different, meanwhile, we provide 4 different sales package for the user's option: Lens-less packing, Optional-lens packing, Cover-less packing and Naked-chipset packing (without lens & shell).

TC160 & TC384 are convenient to be fixed into an existing CCTV system with M2.5 & 1/4"-20 mounts, also they can be integrated into various of applications including night vision systems, fire fighting instruments, medical equipments, handheld thermal cameras, thermal sights, security & surveillance products, and more.



## Features

- Compact, lightweight package for easy integration
- 50Hz frame rate for real time, crisp thermal image video
- High sensitivity detector: 25  $\mu$  m pixel pitch, NETD<65mk
- Auto/Manual brightness/contrast adjustment
- Video output in black-and-white or colorful display
- Analog video output in switchable PAL/NTSC formats
- Digital video output in serial LVDS data stream/BT.656 parallel data stream
- Multi-interface for easily embedded application
- 2x digital zoom enables users to see objects' details
- RS232 interface offers access to remote control on PC
- Download newest software and remote updates with RS232
- Advanced image processing function brings excellent thermal image video
- Professional control software enables customers to create their own applications
- Available 5 athermalized lenses, 5 manual lenses, and customized lenses

## Visible & Thermal Images Comparison



## Applications



Compact package, lens options, TC160/TC384 provide crisp images day and night.

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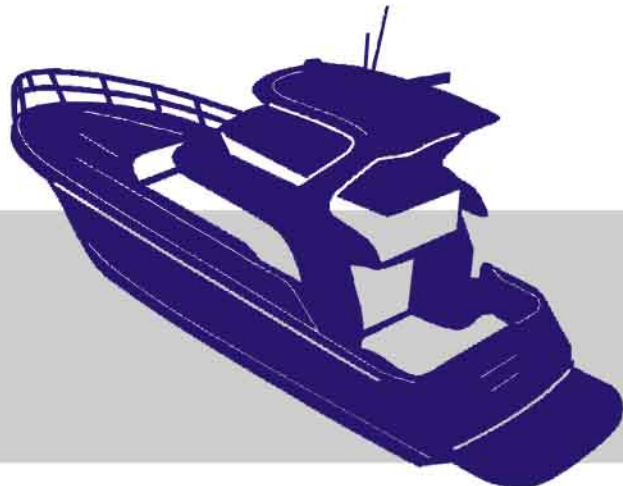
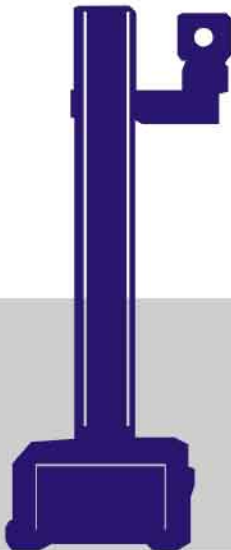
Compact, and easy to integrate, TC160/TC384 are ideal for firefighting thermal instruments.

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Small size, light weight, easy to integrate, TC160/TC384 are suitable for unmanned vehicles and handheld cameras.

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**Athermalized Lens Data**



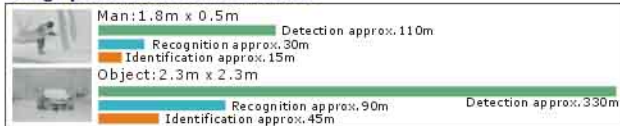
	4.7mm	11mm	15mm	27mm	40mm	75mm
Field of View						
TC160	50° x 37°	21° x 16°	16° x 11.5°	8° x 6°	6° x 4°	N/A
TC384	N/A	45° x 36°	32° x 26°	20° x 15°	14° x 10°	7° x 5.5°
Spatial resolution(IFOV)	5.32mrad	2.27mrad	1.68mrad	0.93mrad	0.63mrad	0.33mrad
Mini focus distance	0.13m	0.13m	0.3m	0.7m	1.8m	4.5m
f/ number	1	1	1	1	1	1
Weight	48g	48g	33g	66g	103g	380g
Length(lens only)	13.5mm	25mm	12mm	28mm	34mm	96mm
Diameter(maximum)	38mm	38mm	38mm	38mm	48mm	85mm
Lens coating type	High Efficiency					

**Manual Lens Data**

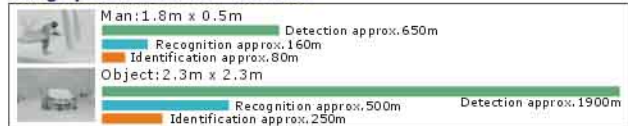


	11mm	15mm	25mm	54mm	75mm
Field of View					
TC160	21° x 16°	15° x 11.5°	9° x 7°	4° x 3°	N/A
TC384	N/A	36° x 27°	22° x 16°	10° x 7.5°	7° x 5.5°
Spatial resolution(IFOV)	2.27mrad	1.68mrad	1mrad	0.46mrad	0.33mrad
Mini focus distance	0.15m	0.15m	0.3m	0.8m	1.5m
f/ number	1	1	1	1	1
Weight	53g	54g	68g	201g	403g
Length(lens only)	21mm	19mm	22mm	57mm	96mm
Diameter(maximum)	38mm	38mm	38mm	68mm	87mm
Lens coating type	High Efficiency			DLC	

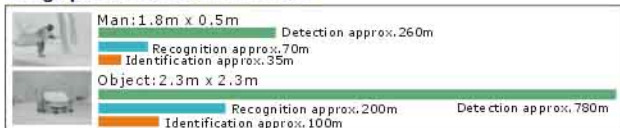
**Range performance 4.7 mm lens**



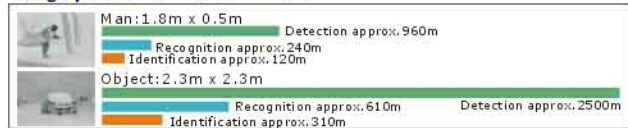
**Range performance 27 mm lens**



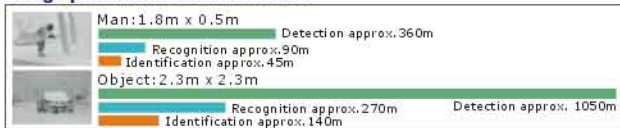
**Range performance 11 mm lens**



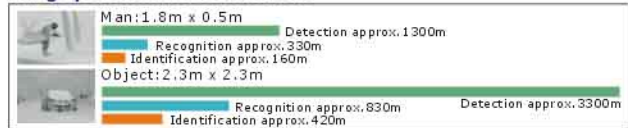
**Range performance 40 mm lens**



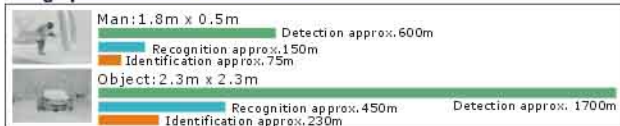
**Range performance 15 mm lens**



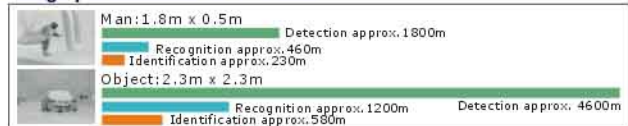
**Range performance 54 mm lens**



**Range performance 25 mm lens**



**Range performance 75 mm lens**



# Technical Specifications

Item	TC160	TC384
<b>● Detector Data</b>		
– Detector Type	Focal plane array (FPA), uncooled microbolometer	Focal plane array (FPA), uncooled microbolometer
– IR resolution	160 × 120 pixels	384 × 288 pixels
– Pixel pitch	25 μm	25 μm
– Spectral range	8~14 μm	8~14 μm
– Thermal sensitivity(NETD)	<65mk	<65mk
<b>● Image Presentation</b>		
– Focus	Factory-set at infinity focus, lens thread mount allows focus adjustment	Factory-set at infinity focus, lens thread mount allows focus adjustment
– Frequency	50/60Hz	50/60Hz
– FFC Interval	<0.5 sec	<0.5 sec
– Electronic zoom	2x	2x
– Polarity/LUT	Black hot / White hot	Black hot / White hot
– Image processing	Advanced image improvement	Advanced image improvement
– Brightness/Contrast	Auto/Manual	Auto/Manual
– Invert/Revert	Yes	Yes
– Video color	Color palette or black & white	Color palette or black & white
– Analog video output	BNC interface NTSC or PAL composite video	BNC interface NTSC or PAL composite video
– Digital video output	16-bit LVDS serial data stream 16-bit BT.656 parallel data stream	16-bit LVDS serial data stream 16-bit BT.656 parallel data stream
– Video output resolution	NTSC: 640 × 480 pixels PAL: 640 × 480 pixels	NTSC: 640 × 480 pixels PAL: 680 × 576 pixels
<b>● Power System</b>		
– Voltage	8~24V	8~24V
– Consumption	<2.2W steady state	<2.2W steady state
<b>● Environment Data</b>		
– Operating temperature	-30°C~60°C	-30°C~60°C
– Storage temperature	-40°C~70°C	-40°C~70°C
– Humidity	Non-condensing, 5% to 95%	Non-condensing, 5% to 95%
– Shock	70g shock pulse with a 11ms half-sine profile	70g shock pulse with a 11ms half-sine profile
– Vibration	4.3g rms random vibration for 8hours (three axes)	4.3g rms random vibration for 8hours (three axes)
– Certificate	CE ROHS	CE ROHS
<b>● Physical Data</b>		
– Weight (w/o lens)	<142g( with cover)	<142g( with cover)
– Size (w/o lens)	48.5 × 49 × 51mm	48.5 × 49 × 51mm
<b>● Interfaces</b>		
– External DC input	Yes	Yes
– Analog video output	PAL/NTSC (switchable)	PAL/NTSC (switchable)
– Digital video output	LVDS (BT.656 option)	LVDS (BT.656 option)
– Serial ports	RS232 (RS485/RS422 option)	RS232 (RS485/RS422 option)
– Mounting	M2.5, 1/4"-20	M2.5, 1/4"-20
<b>● Packing Includes</b>		
– Standard	Thermal imaging core, serial interface cable, video cable, adapter, software CD, manual, warranty card	Thermal imaging core, serial interface cable, video cable, adapter, software CD, manual, warranty card
– Option	IR lens, SDK	IR lens, SDK

## Multifunctional Software



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