Thermal Imaging Cores
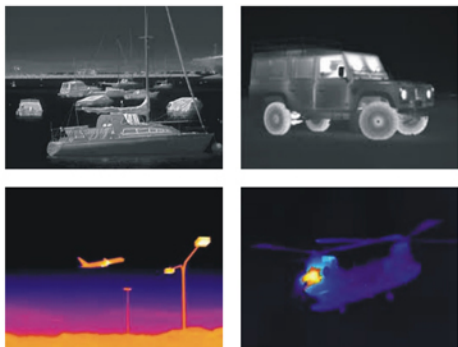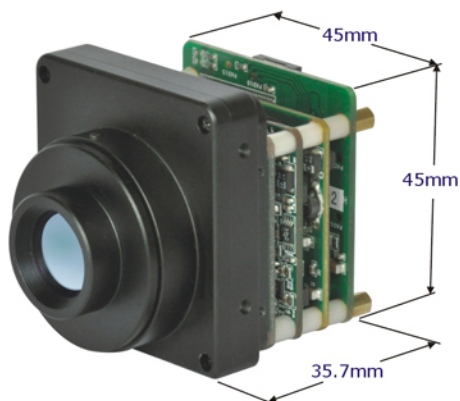# TC640 & TC384 & TC160

TC640 & TC384 & TC160

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, TC640 & TC384 & TC160 provide crisp thermal image video which can be displayed on any monitor that accepts composite outstanding image quality and sensitivity.
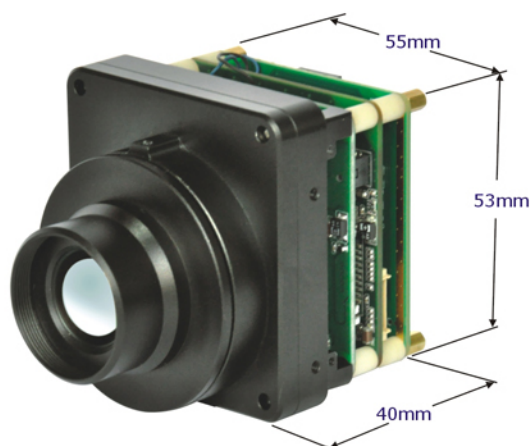
TC640 & TC384 & TC160 cores can be easily integrated into products or systems of (customer's) design with multi-interface on the backside. A TC core may support the digital video output, composite video output, remote control on PC after connecting directly with your existing device/network.

The TC640, TC384 and TC160 made similar 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, Optional-lens packing, Cover-less packing and Naked-chipset packing(without lens & shell).

TC640 & TC384 & TC160 are convenient to be fixed into an existing CCTV system with M2.5 & 1/4" -20 mounts, also they can be integrated into various applications including night vision systems, driving vision enhancement, firefighting equipments, medical equipment, thermal sights, security & surveillance products, and more.

TC384 & TC160

TC640

Lens Data

		4.7mm	11mm	15mm	20mm	25mm	27mm	35mm	40mm	50mm	54mm	75mm(TC384)	75mm(TC640)	100mm
F/no.		1	1	1	1	1	1	1	1	1	1	1		1
Lens type		Athermal	Athermal/Manual	Athermal/Manual	Athermal/Manual	Athermal/Manual	Athermal	Athermal/Manual	Athermal	Athermal/Manual	Manual	Athermal/Manual		Athermal/Manual
FOV (h x v)	TC640 (640 x 480)	/	/	/	44° x 34°	35.5° x 27°	/	26° x 20°	/	18° x 14°	/		12° x 9°	9° x 7°
	TC384 (384 x 288)	/	47° x 36°	35.5° x 27°	/	22° x 16°	20° x 15°	/	14° x 10°	/	10° x 7.5°	7° x 5.5°	/	/
	TC160 (160 x 120)	46° x 35.5°	21° x 16°	15° x 11.5°	/	9.1° x 6.8°	8° x 6°	/	6° x 4°	/	4° x 3°	/	/	/
iFOV(mrad)		5.32	2.27	1.67	1.25	1	0.93	0.72	0.625	0.5	0.46	0.33		0.25
Minimum Focus Distance	Athermal	0.13m	0.13m	0.3m	0.5m	0.5m	0.7m	0.8m	1.8m	2m	/	4.5m	3m	5m
	Manual	/	0.15m	0.15m	0.5m	0.3m	/	0.8m	/	2m	0.8m	1.5m	3m	5m
Length	Athermal	13.5mm	25.3mm	9.5mm	20mm	38mm	28mm	34mm	34mm	52mm	/	96mm	120mm	130mm
Diameter	Athermal	38mm	38mm	38mm	51mm	43mm	38mm	51	48mm	61mm	/	85mm	86mm	110mm
Weight(only lens)	Athermal	48g	48g	33g	101g	90g	66g	144g	103g	258g	/	380g	552g	995g
Length	Manual	/	21mm	18.4mm	23mm	22mm	/	30.5mm	/	57mm	57mm	96mm	92mm	125mm
Diameter	Manual	/	38mm	38mm	51mm	38mm	/	51mm	/	62mm	68mm	87mm	86mm	110mm
Weight(only lens)	Manual	/	53g	54g	110g	68g	/	230g	/	400g	201g	403g	620g	1.1kg
Range Performanc Human (1.8 x 0.5m) Vehicle (2.3 x 2.3m) Detection (D) Recognition (R) Identification (I)	For human — D	110m	260m	360m	480m	600m	650m	840m	960m	1200m	1300m	1800m	1800m	2400m
	R	30m	70m	90m	120m	150m	160m	210m	240m	300m	330m	460m	460m	600m
	I	15m	35m	45m	60m	75m	80m	105m	120m	150m	160m	230m	230m	300m
	For Vehicle — D	330m	780m	1050m	1200m	1700m	1900m	2100m	2500m	3000m	3300m	4600m	4600m	6000m
	R	90m	200m	270m	300m	450m	500m	530m	610m	760m	830m	1200m	1200m	1500m
	I	45m	100m	140m	150m	230m	250m	270m	310m	380m	420m	580m	580m	750m

1. FOV is calculated by digital output.

2. Thread for TC160 & TC384 is M34 x 0.75. Thread for TC640 is M46 x 0.75.

3. Length is measured from the front flat surface of the lens holder to the end of the lens.

4. DRI values shown are nominal values and only for estimates.

5. Customized lenses available, special focus length lens, motorized lens, Dual-view lens, continous zoom lens.

ULIRvision cores applications:

- Thermal night visions
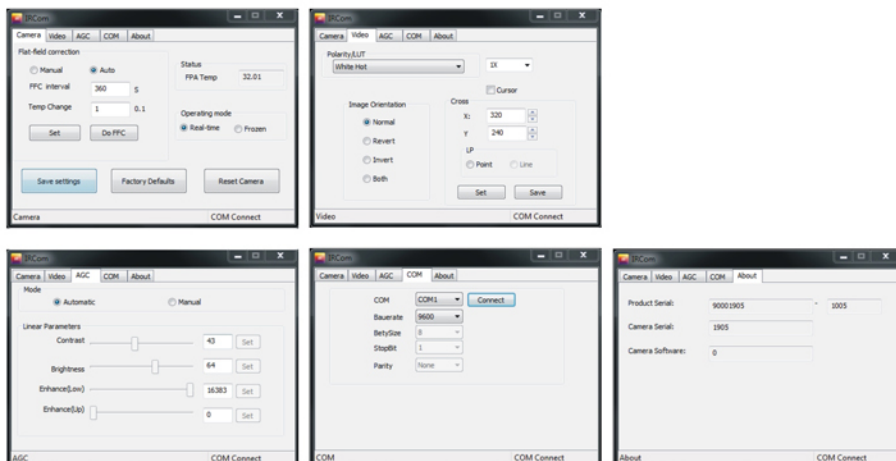- Thermal sights
- Thermal security & surveillance

Features

- Small size, light weight for easy integration.
- High sensitivity: 25 micron pixel size, <65mk.
- 50Hz | 60Hz frame rate for crisp thermal image video.
- PAL | NTSC switchable analog video output.
- LVDS | CMOS | BT.656 digital video options.
- Auto | Manual brightness | Contrast adjustment.
- Video output in black-and- white or colorful display.
- 2x, 4x, 8x digital zoom to see objects' details.
- Advanced image enhancement are embedded.
- Friendly interfacing for camera control and configuration.
- IP67 sealed for the first front of lens.
- Support for movable cursor.
- Start-up splash screens can be loaded by customers.
- Upgradable software | firmware available.
- Available for athermal, manual, motorized lenses and customized lenses.

Multifunctional Control Software

Technical Specifications

Item	TC160	TC384	TC640
● Detector Data			
▬ Detector type	Uncooled FPA, 160 x 120 pixels	Uncooled FPA, 384 x 288 pixels	Uncooled FPA, 640 x 480 pixels
▬ Pixel pitch	25um	25um	25um
▬ Thermal sensitivity(NETD)	<80mk at f/1.0	<80mk at f/1.0	<65mk at f/1.0
▬ Frequency	50Hz	50Hz	50Hz
▬ Spectral band	8 - 14um	8 - 14um	8 - 14um
● Image Presentation			
▬ Time to image	<3.5 sec	<3.5 sec	<3.5 sec
▬ Advanced image improvement	Yes	Yes	Yes
▬ Electronic zoom	N/A	2x	2x, 4x, 8x
▬ Polarity/LUT	Black hot / White hot	Black hot / White hot	Black hot/White hot
▬ Brightness/Contrast	Auto/Manual	Auto/Manual	Auto/Manual
▬ Invert/Revert	Yes	Yes	Yes
▬ Image frozen	Yes	Yes	Yes
▬ Pseudo-color enhancement	5 color pallete	5 color pallete	5 color pallete
▬ Image correction	Auto/Manual	Auto/Manual	Auto/Manual
▬ Cross cursor	N/A	Moveable	Moveable
▬ External synchronization	Yes	Yes	Yes
▬ Analog video output	PAL, 320×240 pixels (NTSC optional)	PAL, 720×576 pixels (NTSC optional)	PAL, 640×480 pixels (NTSC optional)
▬ Digital video output	BT656(8Bit)/CMOS(14Bit)/LVDS	BT656(8Bit)/CMOS(14Bit)/LVDS	BT656(8Bit)/CMOS(14Bit)/LVDS
● Interfacing			
▬ Primary Electrical Connector	40-pin Hirose	40-pin Hirose	40-pin Hirose
▬ External power interface	9-24 VDC	9-24 VDC	9-24 VDC
▬ Power consumption	<2W (steady state)	<2W (steady state)	<2W (steady state)
▬ Reverse polarity protection	Yes	Yes	Yes
▬ Over-voltage protection	Yes	Yes	Yes
▬ Control port	RS232 (RS485 optional)	RS232 (RS485 optional)	RS232 (RS485/RS422 optional)
▬ Analog video output	BNC/PAL/Composite video	BNC/PAL/Composite video	BNC/PAL/Composite video
▬ Digital video output	40PIN, BT656(8Bit)/CMOS(14Bit)/LVDS	40PIN, BT656(8Bit)/CMOS(14Bit)/LVDS	40PIN, BT656(8Bit)/CMOS(14Bit)/LVDS
▬ Mounting	M2, 1/4"-20	M2, 1/4"-20	M2, 1/4"-20
▬ Additional function	N/A	Heater control function	Heater control function
● Environment Data			
▬ Operating temperature range	-20℃~60℃	-30℃~60℃	-40℃~60℃
▬ Storage temperature range	-50℃~70℃	-50℃~70℃	-50℃~70℃
▬ Vibration	4.3g 3axes, 8hours each	4.3g 3axes, 8hours each	4.3g 3axes, 8hours each
▬ Shock	70g;11msec shock pulse（all axes）	70g;11msec shock pulse（all axes）	100g;11msec shock pulse（all axes）
▬ Humidity	Non-condensing between 5% and 95%	Non-condensing between 5% and 95%	Non-condensing between 5% and 95%
▬ Temperature-shock	5℃/min(-30℃~+60℃)	5℃/min(-30℃~+60℃)	5℃/min(-40℃~+60℃)
▬ Other Standards	CE, ROHS	CE, ROHS	CE, ROHS
● Physical Data			
▬ Size (w/cover, w/o lens)	40 x 49 x 51mm	40 x 49 x 51mm	47.5 x 58 x 57mm
▬ Weight (w/o lens & rear cover)	≤96g	≤96g	≤145g
● Packing			
▬ Standard Packing	Thermal imaging core, 40-PIN connecting cable, CDROM(software and user manual), Warranty card	Thermal imaging core, 40-PIN connecting cable, CDROM(software and user manual), Warranty card	Thermal imaging core, 40-PIN connecting cable, CDROM(software and user manual), Warranty card
▬ Optional Packing	Thermal imaging core, 40-PIN connecting cable, Adapter, 40-PIN cable with video port & power port & RS232 port, Video cable, RS232 control cable, CDROM(software and user manual), Warranty card	Thermal imaging core, 40-PIN connecting cable, Adapter, 40-PIN cable with video port & power port & RS232 port, Video cable, RS232 control cable, CDROM(software and user manual), Warranty card	Thermal imaging core, 40-PIN connecting cable, Adapter, 40-PIN cable with video port & power port & RS232 port, Video cable, RS232 control cable, CDROM(software and user manual), Warranty card
▬ Option accessories	Infrared lens	Infrared lens	Infrared lens