

TC320MW|TC640MW

Mid-wave Cooled Thermal Imaging Cores

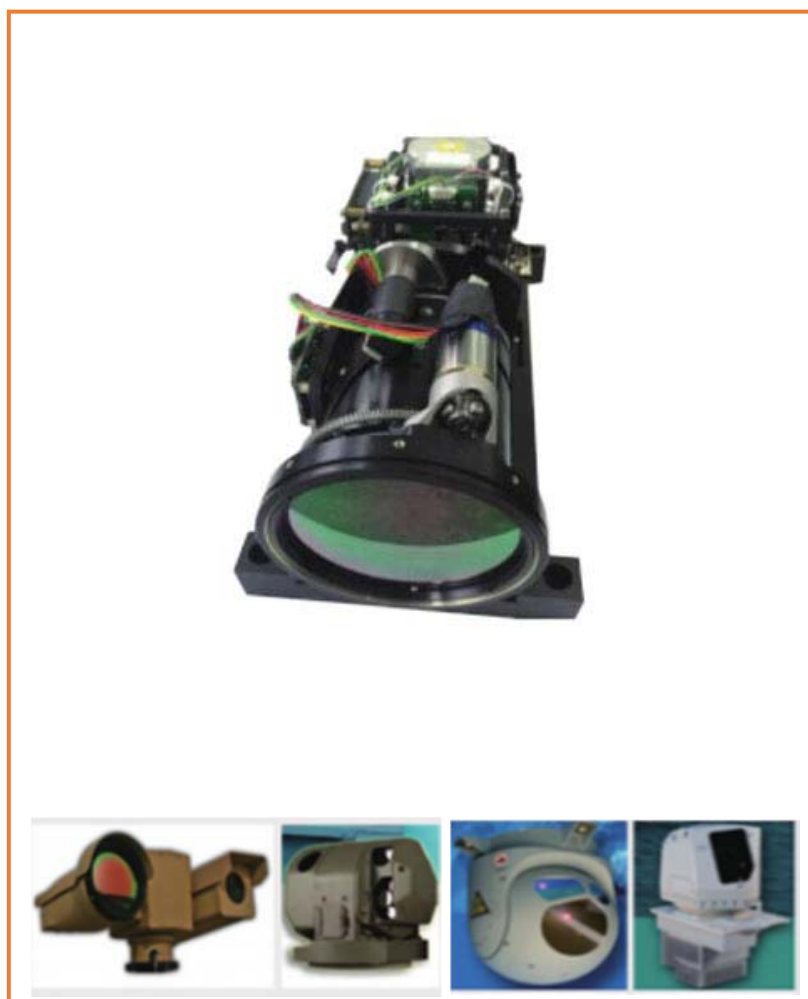
TC320MW|TC640MW are mid-wave cooled thermal imaging cores with SOFRADIR detectors which can be easily integrated into infrared systems that require extremely long distance detection and adaption to any harsh environment.

Features

Cooled HgCdTe detector
Continuous optical zooming, triple view, multiple lenses are optional
Formidable image processing ability
Multiple interfaces, easy integration
Compact design, high level of integration

Applications

Border and coastal surveillance
Fire control system of armed vehicles
Airborne infrared warning system
Airborne electro-optical pod
Shipborne electro-optical pod



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TC320MW|TC640MW

Mid-wave Cooled Thermal Imaging Cores

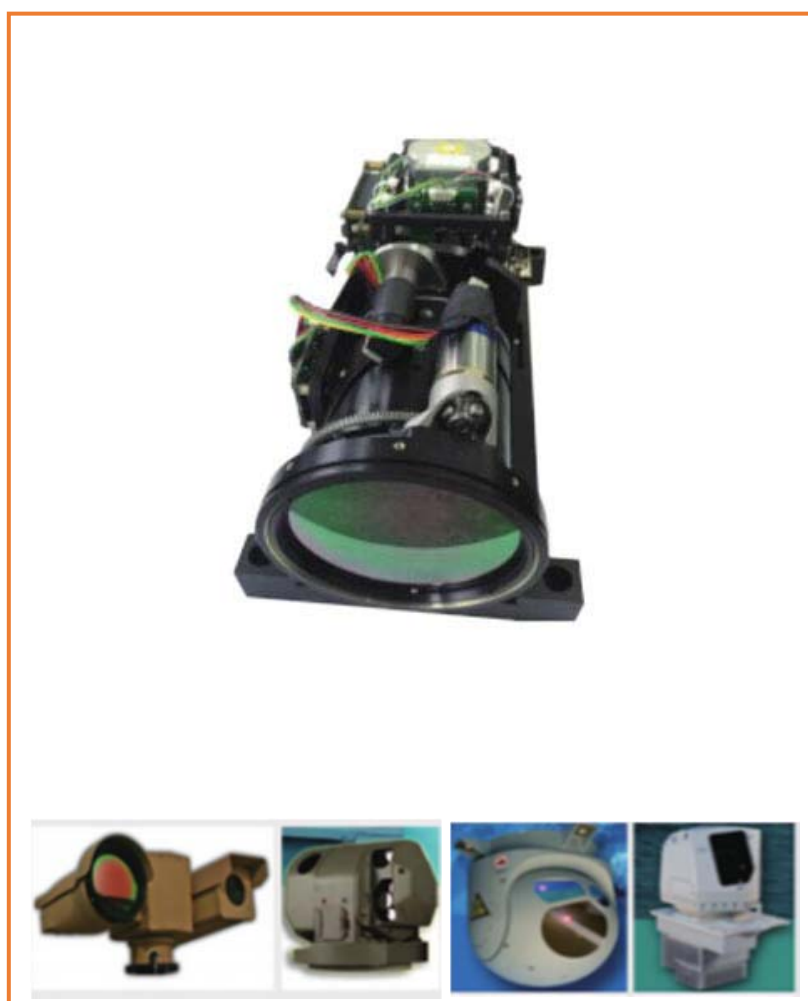
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Technical Specifications

Item	TC320MW	TC640MW
Cooler	Stirling	
Detector Data		
Type	MCT	
IR resolution	320×256	640×512
Pixel pitch	30μm	15μm
Spectral range	3~5μm	
NETD/Sensitivity	20mK	
Lens Data		
FOV	1.7°×1.4°~36.5°×29.2°	
Focal distance	15mm~330mm continuous zoom lens	
F/#	2/4	
Lens(Optional)	50/250mm duel FOV lens, 15mm~250mm continuous zoom lens, 21mm~420mm continuous zoom lens, 30mm~660mm continuous zoom lens	
Image Performance		
Correcting	Manual correction, background correction	
Image enhancement	Auto image Filtering, DDE	
Image mirroring	Vertical, horizontal	
Frequency	Max200Hz	Max100Hz
Zoom	2x	2x、 4x
Polarity/LUT mode	Black hot/White hot	
Cross display	Yes	
Interface		
Control port	RS232/RS422	
Analog video output	PAL	
Digital video output	CameraLink	
Power System		
Working voltage	DC: +24V~+32V	
Power consumption	<12W@25°C(standard)	
	<24W@25°C(max)	
Cooling time	≤8min	
Environmental Parameters		
Operating temperature range	-40 °C~+60°C	
Storage temperature range	-40 °C~+70°C	
Humidity	5%~95% (non-condense)	
Shock	1/2 Sine, 40g/18ms, 3 shocks per axis	
Vibration	5Hz~10Hz, peak 5mm, 10Hz~500Hz, 2.5g	
Physical Data		
Size	270mm×120mm×113mm（with 15-330 continuous zoom lens）	
Weight	≤2.47kg（with 15-330 continuous zoom lens）	

TC320MW|TC640MW

Mid-wave Cooled Thermal Imaging Cores

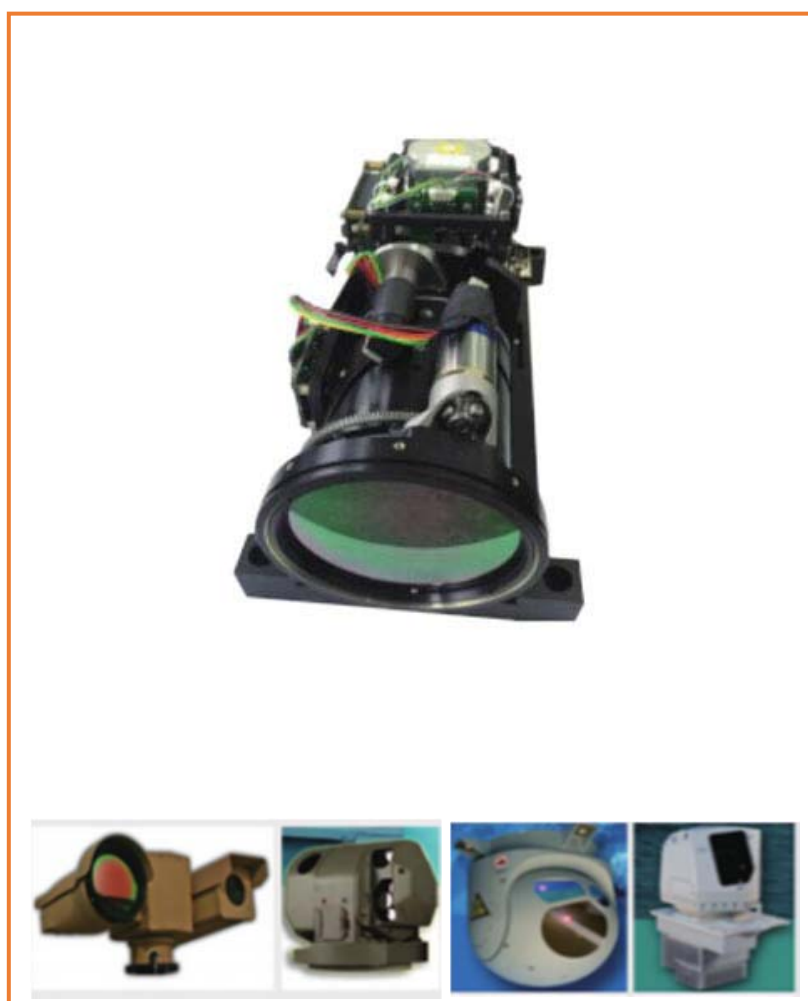
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Type	MCT	
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Pixel pitch	30μm	15μm
Spectral range	3~5μm	
NETD/Sensitivity	20mK	
Lens Data		
FOV	25.7°(H) ×20.7° (V) ~1.3°(H) ×1° (V)	
Focal distance	21~420mm continuous zoom lens	
F/#	2/4	
Lens(Optional)	50/250mm duel FOV lens, 15mm~250mm continuous zoom lens, 21mm~420mm continuous zoom lens, 30mm~660mm continuous zoom lens	
Image Performance		
Correcting	Manual correction, background correction	
Image enhancement	Auto image Filtering, DDE	
Image mirroring	Vertical, horizontal	
Frequency	Max200Hz	Max100Hz
Zoom	2x	2x、 4x
Polarity/LUT mode	Black hot/White hot	
Cross display	Yes	
Interface		
Control port	RS232/RS422	
Analog video output	PAL	
Digital video output	CameraLink	
Power System		
Working voltage	DC: +24V~+32V	
Power consumption	<12W@25°C(standard)	
	<24W@25°C(max)	
Cooling time	≤8min	
Environmental Parameters		
Operating temperature range	-40 °C~+60°C	
Storage temperature range	-40 °C~+70°C	
Humidity	5%~95% (non-condense)	
Shock	1/2 Sine, 40g/18ms, 3 shocks per axis	
Vibration	5Hz~10Hz, peak 5mm, 10Hz~500Hz, 2.5g	
Physical Data		
Size	345mm×150mm×133mm (with 21-420 continuous zoom lens)	
Weight	≤3.2kg (with 21-420 continuous zoom lens)	

TC320MW|TC640MW

Mid-wave Cooled Thermal Imaging Cores

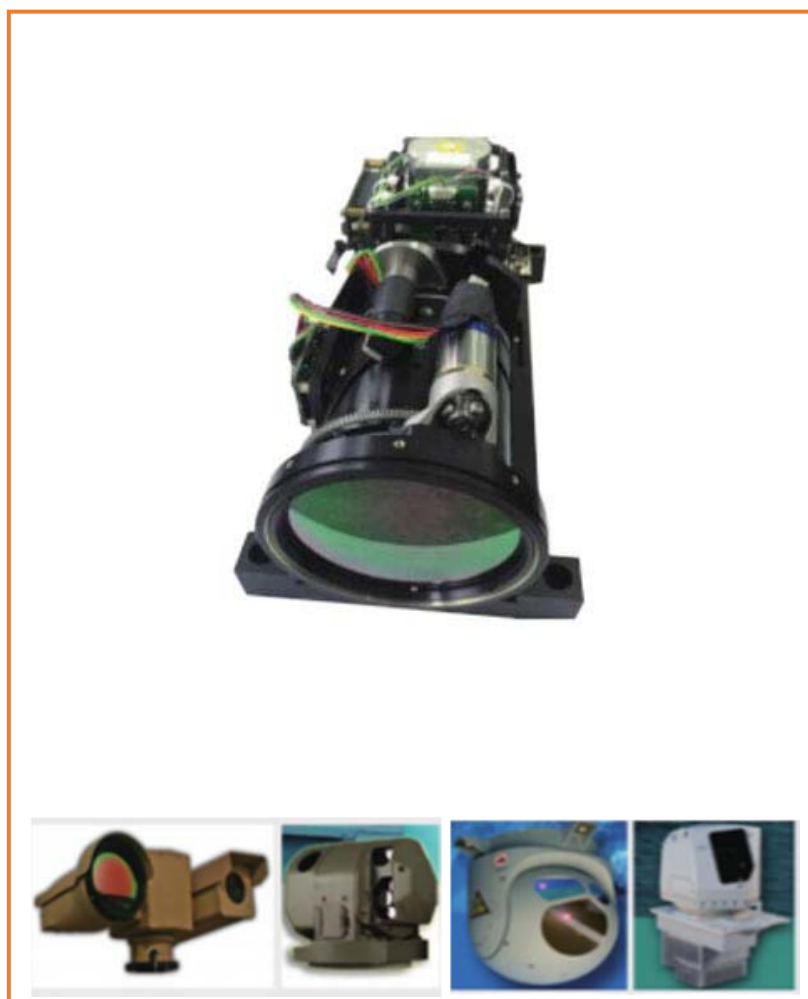
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ULIRVISION

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Item	TC320MW	TC640MW
Cooler	Stirling	
Detector Data		
Type	MCT	
IR resolution	320×256	640×512
Pixel pitch	30μm	15μm
Spectral range	3~5μm	
NETD/Sensitivity	20mK	
Lens Data		
FOV	9.2°(H) ×7.3° (V) ~2.3°(H) ×1.8° (V)	
Focal distance	60/240 Dual-view lens	
F/#	4	
Lens(Optional)	50/250mm duel FOV lens, 15mm~250mm continuous zoom lens, 21mm~420mm continuous zoom lens, 30mm~660mm continuous zoom lens	
Image Performance		
Correcting	Manual correction, background correction	
Image enhancement	Auto image Filtering, DDE	
Image mirroring	Vertical, horizontal	
Frequency	Max200Hz	Max100Hz
Zoom	2x	2x、 4x
Polarity/LUT mode	Black hot/White hot	
Cross display	Yes	
Interface		
Control port	RS232/RS422	
Analog video output	PAL	
Digital video output	CameraLink	
Power System		
Working voltage	DC: +24V~+32V	
Power consumption	<12W@25°C(standard)	
	<24W@25°C(max)	
Cooling time	≤8min	
Environmental Parameters		
Operating temperature range	-40 °C~+60°C	
Storage temperature range	-40 °C~+70°C	
Humidity	5%~95% (non-condense)	
Shock	1/2 Sine, 40g/18ms, 3 shocks per axis	
Vibration	5Hz~10Hz, peak 5mm, 10Hz~500Hz, 2.5g	
Physical Data		
Size	298mm×112mm×112mm（with 60/240 Dual-view Lens）	
Weight	≤2.5kg（with 60/240 Dual-view lens）	

TC640SMW

Small Mid-wave Cooled Thermal Imaging Core

TC640SMW is a small sized mid-wave cooled thermal imaging core with SOFRADIR detectors which can be easily integrated into infrared systems that require extremely long distance detection and adaption to any harsh environment.

Features

HgCdTe detector

Continuous optical zooming, triple views, multiple lenses are optional

Formidable image processing ability

Multiple interfaces, easy integration

Compact design, low power consumption

Applications

Border and coastal surveillance

Fire control system of armed vehicles

Airborne infrared warning system

Airborne electro-optical pod

Shipborne electro-optical pod





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TC390 | TC690

Thermal Imaging Cores



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TC390 | TC690

Thermal Imaging Cores



TC390 | TC690 are a high level shutterless thermal imaging camera cores which can be used for various applications such as UAV&Robot integration,defense&surveillance system integration ,thermal night vision and so on.

FEATURES

Shutterless and IVE Technologies

NETD<60mK 17μm 50Hz

Compact design, 38x38mm size, just 50g

Energy-saving design, lowest power consumption (less than 0.8w/1w)

Digital zoom up to 4X

APPLICATION CASE

- Thermal imaging integration(telescope, thermal weapon sight, etc)
- Surveillance systems
- Electro-optical system for UAV & aircraft
- Driver's Vision Enhancement system



STANDARD PACKAGE

standard package	
Thermal Imaging Core×1	Interface Cable×1
Warranty Card×1	Lens
Software CD×1	40-pin Keyboard×1



TECHNICAL SPECIFICATIONS

Item	TC390	TC690
Detector Data		
Detector type	aSi	
IR resolution	384x 288pixels	640x512 pixels
Pixel pitch	17μm	
Spectral range	8~14μm	
Thermal sensitivity(NETD)	<60mK@f/1.0	
Frequency	50Hz	

Image Presentation	
Nonuniformity calibration	Shutterless
Time to image	<3s
Digital zoom	2X, 4X
Polarity/LUT	Black hot / White hot
Image enhancement	IVE
Gain	Auto/Manual
Cross cursor	Movable

Interface	
Primary electrical connector	40-pin output
Control port	RS232
Keyboard	5-button keyboard (optional)
Analog video output	BNC(75Ω); Support dual RS170 CCIR/PAL composite video
Digital video output	16-bit raw infrared data output(50Hz)
	8-bit BT656(customized)

Item	TC390	TC690
Power System		
Working voltage range	DC: +2.5V ~ 5.5V	
Typical working voltage	DC: +3.7V	
Consumption	<0.7W	<1.0W
	BT656 version <1.0W	BT656 version <1.3W
Reverse polarity protection	Yes	
Over voltage protection	Yes	

Environmental Data	
Operating temperature	-40 C~60 C
Storage temperature	-50 C~70 C
Humidity	5% ~ 95% non-condensing
Shock	GJB150-18 Test7 100g; 6msec shock pulse(all axes)
Vibration	GJB150-16 2.3.1 4.3g 3axes, 8hours each
Encapsulation	IP67 (for lens)

Physical Data	
Weight (w/o lens)	<55g(w/o cover)
Size (w/o lens)	38 x 38 x22.2mm
Mounting	M2 X 0.4
Packing	
Standard	Thermal imaging core, serial Interface cable, manual CD, warranty card
Option	IR lens, keyboard

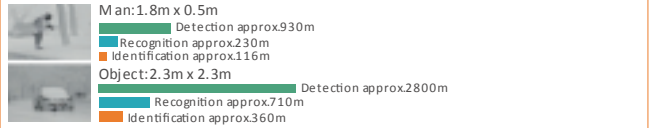
Lens Data

Focal length		9mm	13mm	19mm	25mm	35mm	50mm	75mm	100mm
F/no.		1	1	1	1	1	1	1	1
Lens type		Athermal	Athermal	Athermal	Athermal	Manual Athermal	Manual Athermal	Manual Athermal	Manual Athermal
FOV (h x v)	TC390	42.5°×35.2°	28°×21.3°	19.4°×14.7°	15°×11°	10.6°×8°	7.5°×5.5°	5°×3.75°	3.75°×2.75°
	TC690	69.2°×51.6°	46.4°×35.2°	31°×24°	25°×18°	17.6°×13.2°	12.5°×9.1°	8.3°×6.5°	6.2°×4°

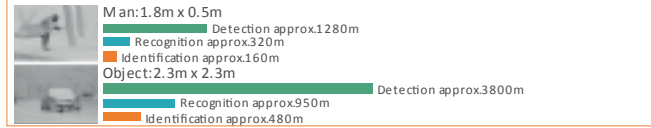
Range performance 19mm lens



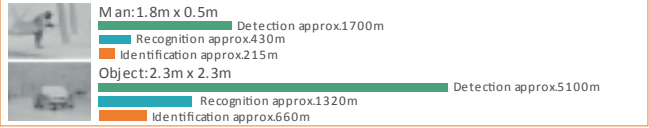
Range performance 25mm lens



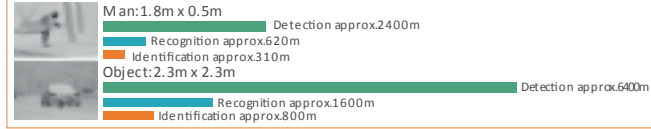
Range performance 35mm lens



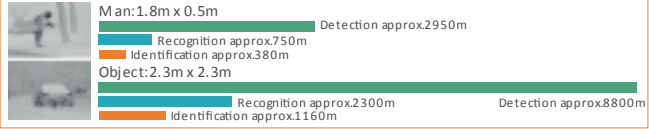
Range performance 50mm lens



Range performance 75mm lens



Range performance 100mm lens





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TC490 | TC790

Thermal Imaging Cores



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TC490 | TC790

Thermal Imaging Cores



TC490 | TC790 are the latest generation of shutterless thermal imaging camera cores, featuring the smallest size, lightest weight, ultimate IR resolution and lowest power consumption on the market. It's can be used in any integrations that have most demanding requirements.

FEATURES

Shutterless and IVE Technologies

NETD<60mK 17μm 50Hz

Compact design, 28x28mm size, just 32g

Energy-saving design, lowest power consumption (less than 0.6w/0.8w)

Digital zoom up to 4X

APPLICATION CASE

- Thermal imaging integration(helmet, telescope, weapon sight, etc)
- Electro-optical system for UAV& aircraft
- Driver's Vision Enhancement system



STANDARD PACKAGE

standard package	
Thermal Imaging Core×1	Interface Cable×1
Warranty Card×1	Lens
Software CD×1	40-pin Keyboard×1



TECHNICAL SPECIFICATIONS

Item	TC490	TC790
Detector Data		
Detector type	aSi	
IR resolution	384x 288pixels	640 x 512pixels
Pixel pitch	17μm	
Spectral range	7.5~14μm	
Thermal sensitivity(NETD)	<60mK	<60mK
Frequency	50	
Image Presentation		
Nonuniformity calibration	Shutterless	
Time to image	<3s	
Digital zoom	2x, 4x	
Polarity/LUT	Black hot / White hot	
Image enhancement	IVE	
Gain	Auto/Manual	
Cross cursor	Movable	
Text overlay	Yes	
Interface		
Primary electrical connector	40-pin output	
Control port	RS232	
Keyboard	5-button keyboard (optional)	
Analog video output	BNC(75Ω); Support dual RS170 CCIR/PAL composite video	
Digital video output	16-bit raw infrared data output(50Hz) 8-bit BT656(customized)	

Item	TC490	TC790
Power System		
Working voltage range	DC: +2.5V ~ 5.5V	
Typical working voltage	DC: +3.7V	
Consumption	<0.65W	<0.85W
	BT656 version <1.0W	BT656 version <1.3W
Reverse polarity protection	Yes	
Over voltage protection	Yes	
Environmental Data		
Operating temperature	-40 C ~60 C	
Storage temperature	-50 C ~70 C	
Humidity	5% ~ 95% non-condensing	
Shock	GJB150-18 Test7 GJB150-16 2.3.1 100g; 6msec shock pulse(all axes)	
Vibration	GJB150-16 2.3.1 4.3g 3axes, 8hours each	
Encapsulation	IP67 (for lens)	
Physical Data		
Weight (w/o lens)	32g(w/o cover)	
Size (w/o lens)	28x28 x22.2mm	
Mounting	M2 X 0.4	
Packing		
Standard	Thermal imaging core, serial Interface cable, manual CD, warranty card	
Option	IR lens, keyboard	

Lens Data

Lens Type		9mm Lens	13mm Lens	19mm Lens	25mm Lens
FOV	TC790	69.2°x51.6°	46.4°x35.2°	31° x 24°	25° x 18°
	TC490	39.9° x30.4°	28°x 21.3°	19.4° x 14.7°	15° x 11°
Spatial Resolution (mrad)		1.9	1.3	0.9	0.68
Min. Object Distance	Athermal	0.05m	0.1m	0.2m	0.3m
F No.		1	1	1	1

Camera Lens Range Performance (Standing man 1.8m by 0.5m)

9mm	250 meters---Detection 63 meters---Recognition 31 meters---Identification
13mm	490 meters---Detection 95 meters---Recognition 47 meters---Identification
19mm	570 meters---Detection 144 meters---Recognition 72 meters---Identification
25mm	820 meters---Detection 210 meters---Recognition 104 meters---Identification

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TC388HQ | 688HQ非制冷红外机芯组件 产品说明书

浙江红相科技股份有限公司

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目 录

1 产品描述.....	1
2 产品性能参数.....	1
3 机芯组件用户接口说明.....	2
3.1 Hirose 60芯连接器用户接口定义.....	2
3.2 14bit or 10bit LVCMOS数字视频.....	4
3.3 LVDS数字视频.....	6
4 用户扩展组件.....	7
4.1 用户扩展组件与配件选型.....	7
4.2 A00-16000型用户扩展组件	8
4.3 A00-11000型用户扩展组件	9
5 注意事项.....	11
6 支持与服务.....	11
6.1 技术支持.....	11
6.2 售后服务.....	11
附录一TC620\320\688HQ\388HQ装配图.....	12
附录二TC620\320\688HQ\388HQ适配A00-16000用户扩展板装配图.....	13
附录三TC620\320\688HQ\388HQ适配A0001机芯组件外壳装配图.....	14
附录四TC620\320\688HQ\388HQ适配A00-11000用户扩展板装配图.....	15
附录五TC620\320\688HQ\388HQ适配A0002机芯组件外壳装配图.....	16
附录六TC1024装配图.....	17
附录七TC1024适配A00-16000用户扩展板装配图.....	18
附录八TC1024适配A0001机芯组件外壳装配图.....	19
附录九TC1024适配A00-11000用户扩展板装配图.....	20
附录十TC1024适配A0002机芯组件外壳装配图.....	21

1 产品描述

TC388HQ|TC688HQ非制冷红外机芯组件，采用我司研发的氧化钒非制冷红外焦平面探测器为核心器件，图像清晰、灵敏度高，性能达到国际先进水平，满足安防监控、车载夜视、测温、工业探伤、医学等行业的应用需求。使用该系列机芯组件开发红外热成像产品，可缩短开发周期，降低二次开发难度。

2 产品性能参数

表1

产品类别		TC620	TC320	TC688HQ	TC388HQ	TC1024
性能指标						
探测器类型		氧化钒非制冷红外焦平面探测器				
分辨率		640×512	384×288	640×512	384×288	1024 × 768
像元间距		20μm		17μm		14μm
探测器帧频		50Hz				30Hz
响应波段		8 ~ 14μm				
噪声等效温差 (NETD)		≤ 60mK@25℃,F#1.0 (≤ 50mK 可选)				
TEC		有				
图像调节						
亮度、对比度调整		手动/自动 0/自动 1				
极 性		黑热/白热				
伪 彩		支持				——
十字线		显示/消隐/移动				
电子变倍		1.0~4.0×连续变倍 (步长 0.1)				
图像处理		非均匀性校正				
		数字滤波降噪				
		数字细节增强				
图像镜像		左右/上下/对角线				
电源						
供电范围		4 ~ 6VDC				5.2 ~ 6VDC
		用户扩展组件 5-24VDC				
典型工作电压		4VDC				5.5VDC
		用户扩展组件 12VDC				
典型 功耗 @25℃	不含用户扩展 组件	< 2W	< 1.7W	< 2W	< 1.7W	< 2.8W
	含用户扩展 组件	< 2.6W	< 2.2W	< 2.6W	< 2.2W	< 3.2W

接口			
视频输出	模拟视频	1 路 PAL 制式	——
	数字视频	14Bit or 10Bit LVCMOS/LVDS/Cameralink	
串行通信接口	RS-232		
	UART（3.3V）		
	RS-422（仅用户扩展组件支持）		
按 键	4 个按键		
物理特性			
重 量	< 100g		
尺 寸	35mm × 35mm（电路板尺寸）		
环境适应性			
工作温度	-40℃ ~ +60℃		
存储温度	-45℃ ~ +85℃		

注：LA6230/3230/6110/3110选择数字视频输出时，不具有十字线显示/消隐、电子变倍和图像镜像功能。

3 机芯组件用户接口说明

机芯组件用户接口采用Hirose 60芯DF12-60DS-0.5V(86)连接器，其中包含机芯供电电源接口、串行通信接口、模拟视频接口、14Bit or 10Bit LVCMOS数字视频接口、LVDS数字视频接口，以及4个按键接口等。用户可采用Hirose 60芯DF12(5.0)-60DP-0.5(86)板间连接器与机芯组件用户接口进行对接。



图1 机芯组件Hirose用户接口

3.1 Hirose 60芯连接器用户接口定义

表2 Hirose 60芯连接器用户接口定义

管脚序号	名 称	类 型	说 明
1、2、3、4	Power Supply	电源	电源输入
5、6、7、8、 10、21、22、 41、42、56、59	GND	电源	电源地

9	3.3V	输出	电源输出 (典型值 3.3V/100mA)	
11 ~ 14、20、 40、55、57	---	---	不可用	
15	RS-232_RX	输入/输出	RS-232 串行通信接口	
16	RS-232_TX			
17、19	VGND	电源	模拟视频地	
18	VIDEO	输出	模拟视频	
23	DV1	输出	14Bit or 10Bit LVCMOS 数字视频 (3.3V)	数据信号
24	DV0			数据信号 LSB
25	DV3			数据信号
26	DV2			数据信号
27	DV5			数据信号
28	DV4			数据信号
29	DV7			数据信号
30	DV6			数据信号
31	DV9			数据信号 MSB(10bit)
32	DV8			数据信号
33	DV11			数据信号
34	DV10			数据信号
35	DV13			数据信号 MSB(14bit)
36	DV12			数据信号
37	Line_Valid			行有效信号
38	Frame_Valid			帧有效信号
39	Clock			时钟信号
44	UART_TX	输入/输出	UART 通信接口 (3.3V)	
46	UART_RX			
48	KEY1	输入	按键接口	C
50	KEY2	输入		-
52	KEY3	输入		+
54	KEY4	输入		M
43	LVDS_DATA1+	输出	LVDS 数字视频 (2.5V)	数据信号
45	LVDS_DATA1-	输出		数据信号
47	LVDS_DATA2+	输出		数据信号
49	LVDS_DATA2-	输出		数据信号
51	LVDS_SYNC+	输出		同步信号
53	LVDS_SYNC-	输出		同步信号
58	LVDS_CLK+	输出		时钟信号
60	LVDS_CLK-	输出		时钟信号

注：（1）串行通信接口中的TX和RX均指机芯组件；

（2）GND和VGND机芯组件内部已短接。

3.2 14bit or 10bit LVCMOS数字视频

机芯组件支持输出14bit or 10bit LVCMOS数字视频，该数字视频包括1个时钟信号（Clock）、1个行有效信号（Line_Valid），1个帧有效信号（Frame_Valid），以及14个数据信号（DV0-DV13）。像素数据位数分为14bit和10bit两种，当用户选择输出原始数据（ORG）或非均匀性校正（NUC）后数据时，数据位数为14Bit，即[DV0..DV13]，其中DV0为LSB，DV13为MSB；当用户选择输出图像处理（DRC）后的数据时，数据位数为10bit，即[DV0..DV9]，其中DV0为LSB，DV9为MSB。

表3

型号	时钟频率（Clock）
TC620	20.000MHz
TC320	6.000MHz
TC688HQ	18.000MHz
TC388HQ	6.000MHz
TC1024	25.000MHz

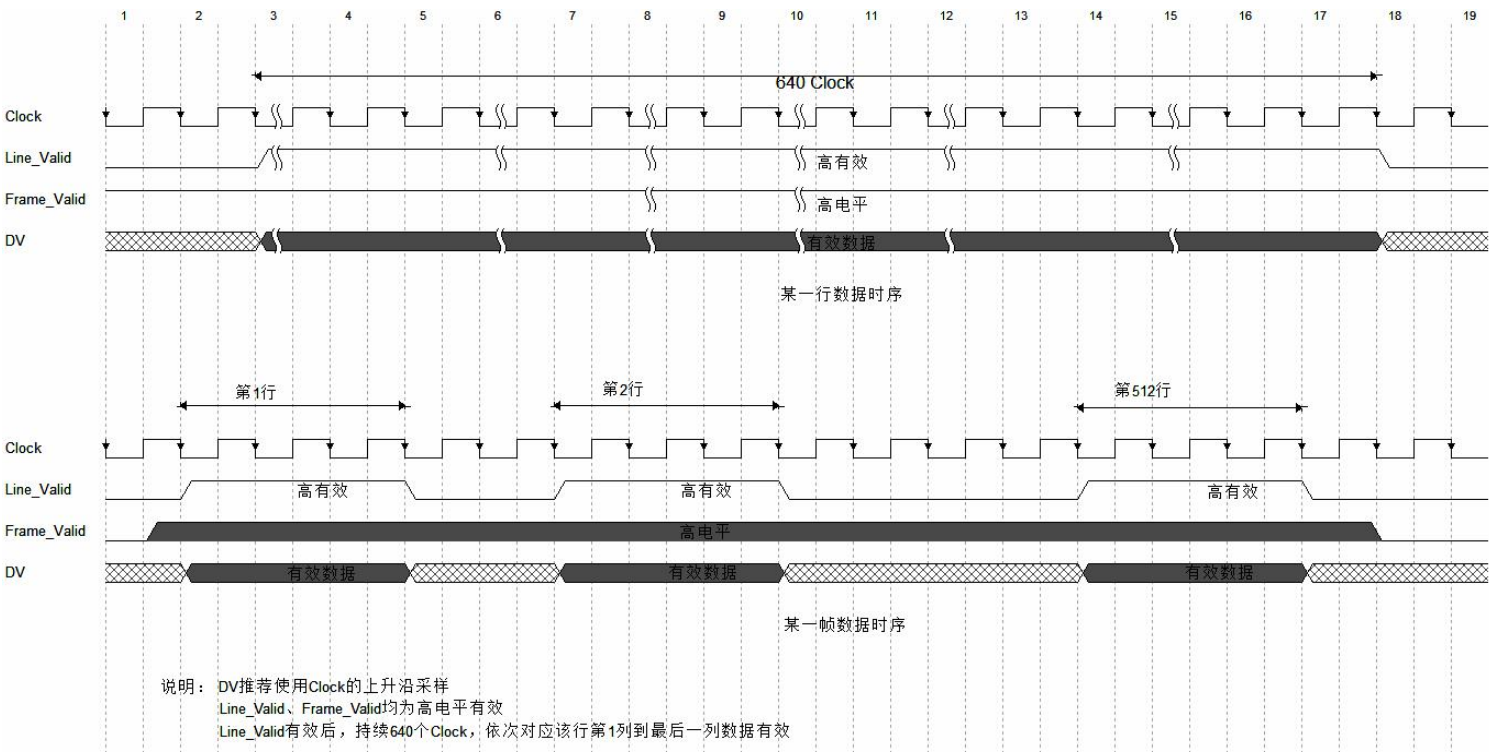


图2 TC620/TC688HQ数字视频时序图

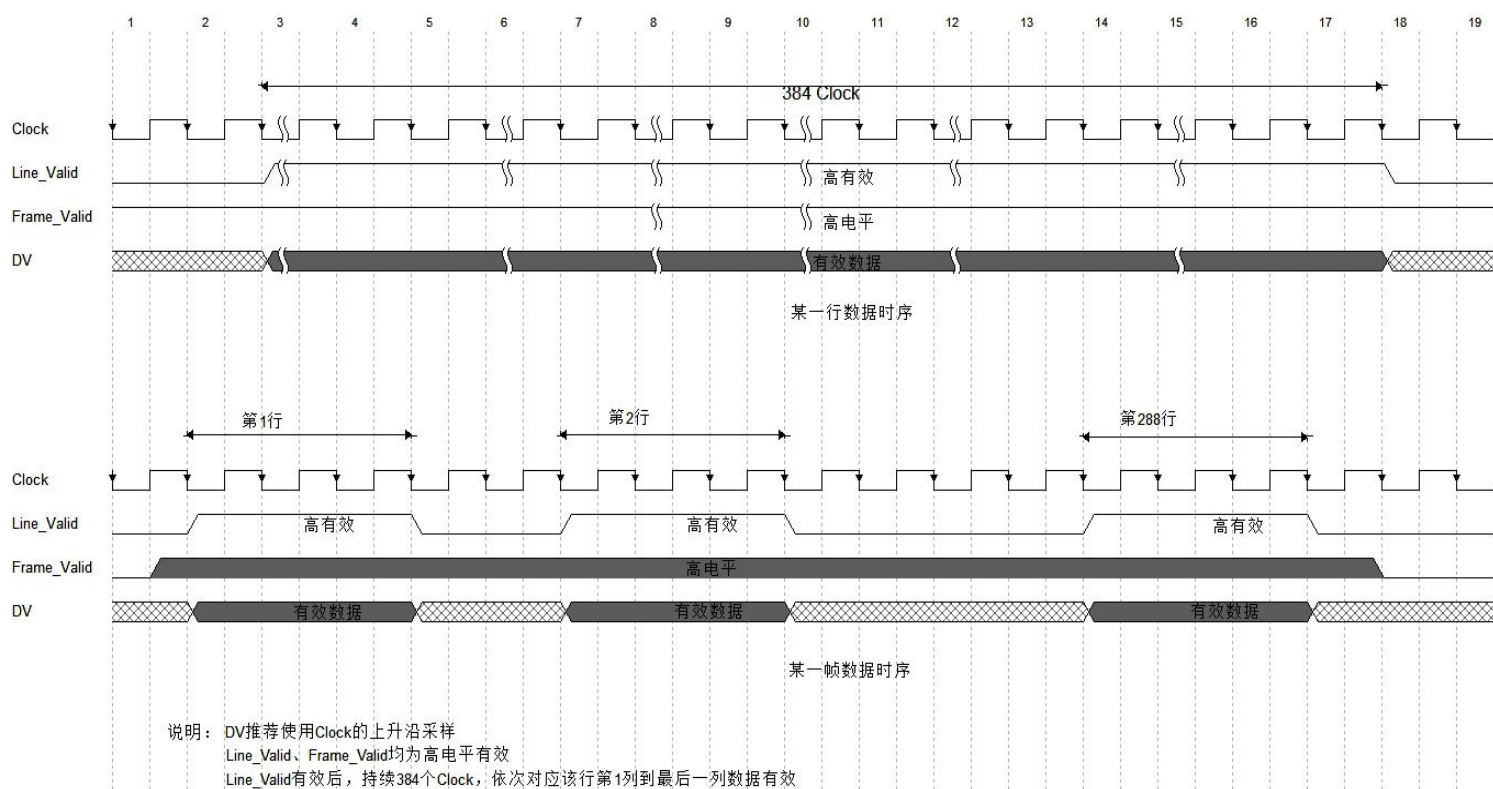


图3 TC320/TC388HQ数字视频时序图

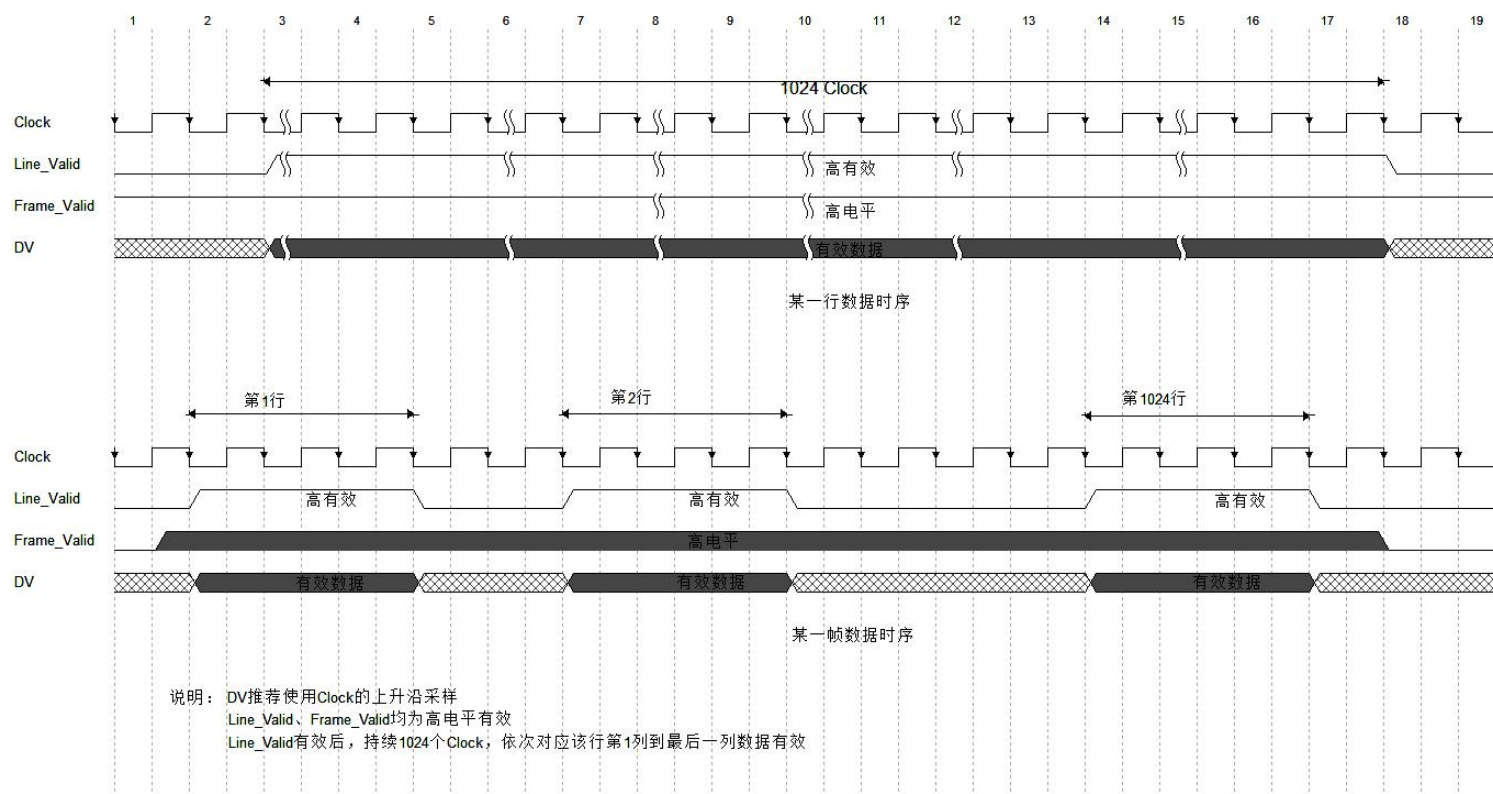


图4 TC1024数字视频时序图

3.3 LVDS数字视频

机芯组件支持输出LVDS数字视频，该数字视频包括1个时钟信号（LVDS_clk）、1个同步信号（LVDS_sync），以及2个数据信号（LVDS_data1和LVDS_data2）。像素数据位数分为14bit和10bit两种，当用户选择输出原始数据（ORG）或非均匀性校正（NUC）后数据时，数据位数为14Bit；当用户选择输出经过图像处理（DRC）后的数据时，数据位数为10bit。每个像素占用7个时钟，14bit数据在LVDS_data2上传输高7位，即[13..7]，在LVDS_data1上传输低7位，即[6..0]。10bit数据在LVDS_data2上传输高3位，即[9..7]，剩余高位补零，在LVDS_data1上传输低7位，即[6..0]。LVDS_sync为帧同步信号，“111XXXX”为帧同步标志，“11XX1XX”为像素有效标志，“11XX0XX”为空闲状态标志。以上各序列均为MSB在前。LVDS数字视频时钟频率参见表4。

表4

型号	时钟频率（LVDS_clk）
TC620	140.000MHz
TC320	42.000MHz
TC688HQ	126.000MHz
TC388HQ	42.000MHz
TC1024	175.000MHz

图4时序图以14bit、n×m阵列为例：

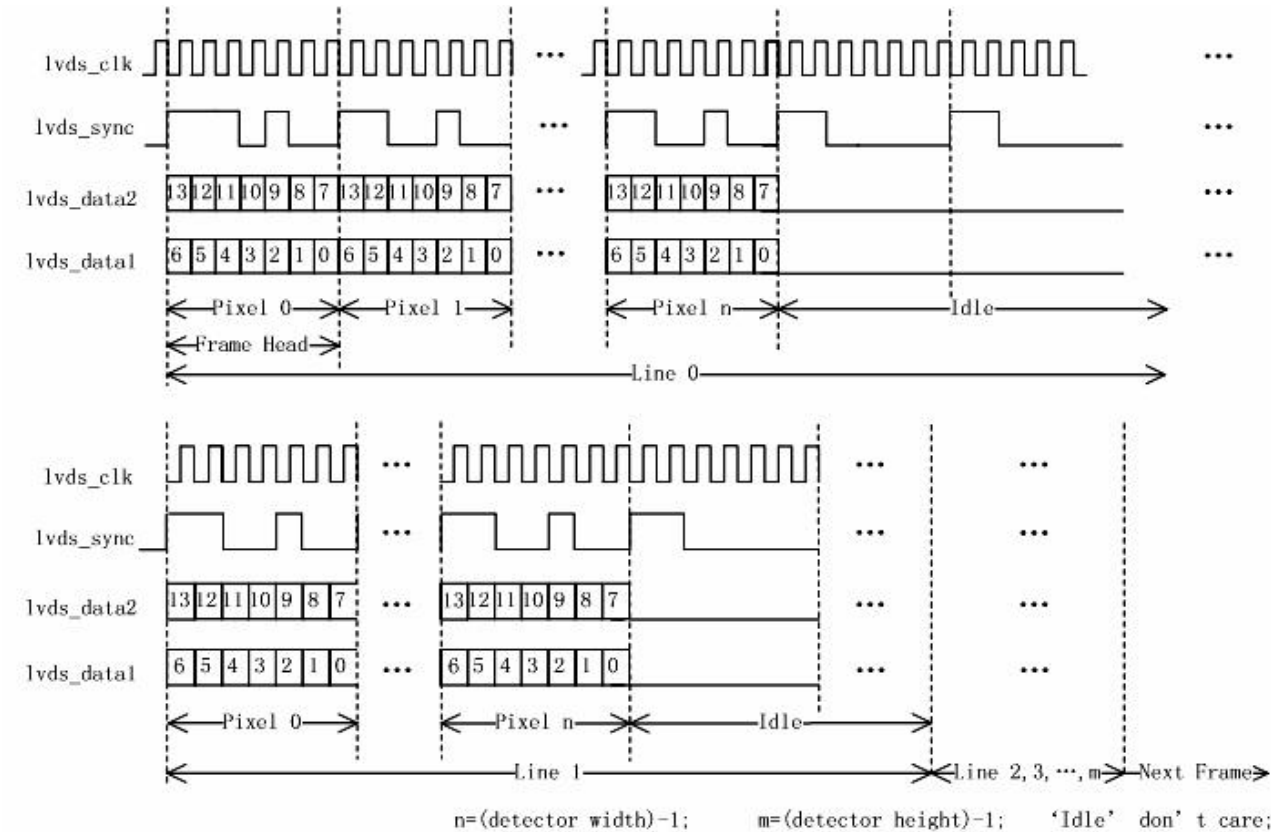


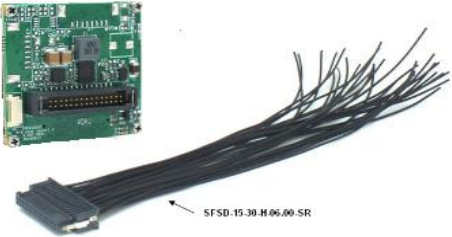
图5 LVDS数字视频时序图

4 用户扩展组件

4.1 用户扩展组件与配件选型

Xcore LA系列非制冷红外机芯组件可选配不同种类的用户扩展组件和配件，实现信号接口转换和功能扩展。

表5 用户扩展组件与配件

序 号	类 别	型 号	产品图例	说 明
1	用户扩展组件	A00-16000		可用于适配TC 系列所有类型产品
2	用户扩展组件	A00-11000		可用于适配TC 系列所有类型产品
3	机芯组件外壳	A0001		可用于适配TC 系列产品中，选配 A00-16000型用户扩 展组件的产品
4	机芯组件外壳	A0002		可用于适配TC 系列产品中，选配 A00-11000型用户扩 展组件的产品

4.2 A00-16000型用户扩展组件

A00-16000型用户扩展组件，可插接在机芯组件后端，其用户接口采用SAMTEC 30针TFM-115-02-L-D-WT 连接器，包含供电电源接口（5-24VDC）、RS-232和RS-422接口、1路模拟视频接口、LVDS数字视频接口，以及4个按键接口，详细定义参见表6。其次，还配有带防脱落卡扣的SAMTEC 30芯SFSD-15-30-H-06.00-SR排线（线缆部分长度约为13cm-14cm），以供机芯组件与其他系统之间的互联。使用该线缆时，需注意线缆连接器上的线序标号不与用户扩展组件的接插件管脚序号存在对应关系，线缆上的“Pin1”标签标示了序号为1的线缆位置，请参照图6和表6定义进行相关电气连接。

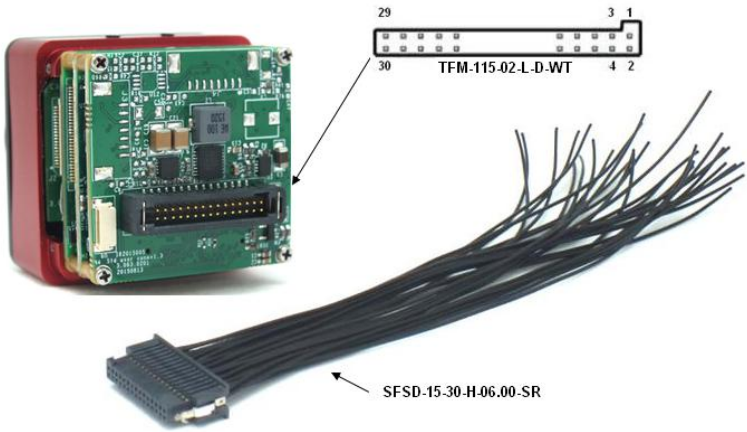


图6 A00-16001型用户扩展组件

表6 TFM-115-02-L-D-WT连接器接口定义

管脚序号	名称	类型	说明	
1、2、5、6	GND	电源	电源地	
3	Power Supply	电源	电源输入（5~24VDC）	
4	+3.3V	输出	电源输出 （典型值 3.3V/100mA）	
7	RS-422_TX-	输入/输出	RS-422 串行通信接口	
8	RS-422_TX+			
10	RS-422_RX+			
12	RS-422_RX-			
9	RS-232_RX	输入/输出	RS-232 串行通信接口	
11	RS-232_TX			
13	LVDS_DATA1-	输出	LVDS 数字视频 （2.5V）	数据信号
15	LVDS_DATA1+			
17	LVDS_SYNC-	输出		同步信号
19	LVDS_SYNC+			
21	LVDS_CLK-	输出		时钟信号
23	LVDS_CLK+			
22	LVDS_DATA2-	输出		数据信号
24	LVDS_DATA2+			
25、26、28、30	—	—	不可用	
27	VGND	电源	模拟视频地	

29	VIDEO	输出	模拟视频	
14	KEY1	输入	按键接口	C
16	KEY2	输入		-
18	KEY3	输入		+
20	KEY4	输入		M

注：（1）串行通信接口中的TX和RX均指机芯组件；

（2）LVDS数字视频参见3.3；

（3）GND和VGND机芯组件内部已短接。

4.3 A00-11000型用户扩展组件

A00-11000型用户扩展组件，可插接在机芯组件后端，其用户接口采用SAMTEC 30针TFM-115-02-L-D-WT连接器，包含供电电源接口（5-24VDC）、RS-232和RS-422接口、1路模拟视频接口，以及4个按键接口，详细定义参见表7。其次，还配有带防脱落卡扣的SAMTEC 30芯SFSD-15-30-H-06.00-SR排线（线缆部分长度约为13cm-14cm），以供机芯组件与其他系统之间的互联。使用该线缆时，需注意线缆连接器上的线序标号不与用户扩展组件的接插件管脚序号存在对应关系，线缆上的“Pin1”标签标示了序号为1的线缆位置，请参照图7和表7定义进行相关电气连接。

该用户扩展组件通过DS90CR285实现Cameralink数字视频输出，输出接口采用MDR26连接器，其接口定义见表8。

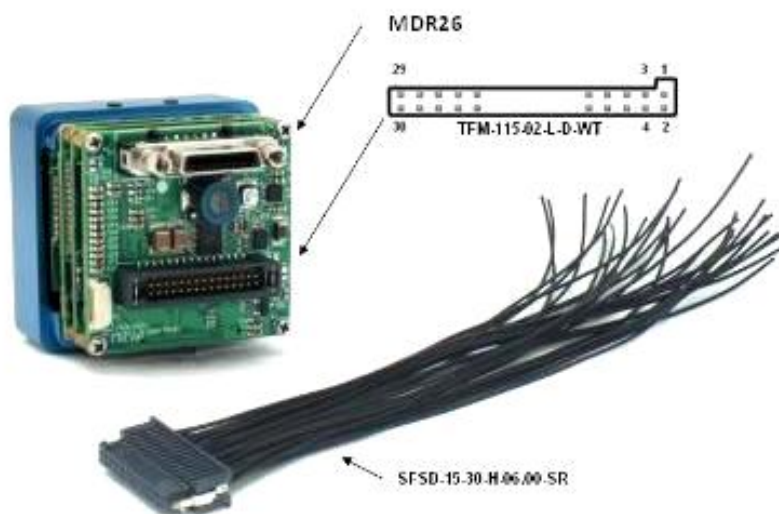


图7 A00-11000型用户扩展组件

表7 TFM-115-02-L-D-WT连接器接口定义

管脚序号	名称	类型	说明	
1, 2, 5, 6	GND	电源	电源地	
3	Power Supply	电源	电源输入 (5 ~ 24DC)	
4	3.3V	输出	电源输出 (典型值 3.3V/100mA)	
7	RS-422_TX-	输入/输出	RS-422 串行通信接口	
8	RS-422_TX+			
10	RS-422_RX+			
12	RS-422_RX-			
9	RS-232_RX	输入/输出	RS-232 串行通信接口	
11	RS-232_TX			
13, 15, 17, 19, 21, 22, 23, 24, 25, 26, 28, 30	——	——	不可用	
14	KEY1	输入	按键接口	C
16	KEY2			-
18	KEY3			+
20	KEY4			M
27	VGND	电源	模拟视频地	
29	VIDEO	输出	模拟视频	

注：（1）串行通信接口中的TX和RX均指机芯组件；

（2）GND和VGND机芯组件内部已短接。

表8 MDR26连接器接口定义

管脚序号	名称	类型	说明	
13, 14	GND	电源	信号地	
2	X0-	输出	Camera Link 数字视频	数据信号
15	X0+			数据信号
3	X1-			数据信号
16	X1+			数据信号
4	X2-			数据信号
17	X2+			数据信号
5	XCLK-			数据信号
18	XCLK+			数据信号
6	X3-			数据信号
19	X3+			数据信号
1、26、7、8、9、 10、11、12、20、 21、22、23、24、25	——	——	不可用	

5 注意事项

为了保护您和他人免受伤害或保护您的设备免于损坏，请阅读以下全部信息后再使用您的设备。

1. 请勿将机芯组件直视太阳等高强度辐射源；
2. 理想使用环境温度为-20℃～50℃；
3. 请勿用手触摸或用其他物品碰撞探测器窗口；
4. 请勿用湿手触摸设备和线缆；
5. 请勿弯折或损坏各连接线缆；
6. 请勿用稀释剂擦洗您的设备；
7. 请勿在未断开电源的情况下拔插其他电缆；
8. 请勿接错附带的连接线缆，以免损坏设备；
9. 请注意防止静电；
10. 请勿拆卸设备，如有故障请与本公司联系，由专业人员进行维修。

6 支持与服务

6.1 技术支持

1. 可根据用户的不同应用需求进行改装设计；
2. 可对特殊技术规格的材料进行加工制作；
3. 可对用户的技术人员、操作人员进行系统培训等。

6.2 售后服务

TC系列非制冷红外机芯组件，由我公司自行研制，具有良好的设备维护与维修等售后服务保障。如有任何需求，请与我司联系。



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TC690-Gen 2

Thermal Imaging Cores



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TC690-Gen 2

Thermal Imaging Cores



TC690-Gen 2 are high level shutterless thermal imaging camera cores which can be used for various applications such as UAV&Robot integration, defense&surveillance system integration, thermal night vision and so on.

FEATURES

Compact design, 38mmx38mm size, weight 55g

Energy-saving design, lowest power consumption (less than 0.85W)

Shutterless and IVE(Intelligent View Enhancement) technologies

Isolated metal frame for radiating

Digital zoom up to 4X

APPLICATION CASE

- Thermal imaging integration(telescope, thermal weapon sight, etc)
- Electro-optical system for UAV&aircraft
- Driver’ s Vision Enhancement system



STANDARD PACKAGE

standard package	
Thermal Imaging Core×1	Interface Cable×1
Warranty Card×1	Lens
Software CD×1	40-pin Keyboard×1



TECHNICAL SPECIFICATIONS

Item	TC690-Gen 2
Detector Data	
Material	aSi
IR resolution	640 x 480
Pixel pitch	17μm
Spectral range	7.5~14μm
NETD/Sensitivity	50mK
Lens Data	
Lens(Optional)	9mm/13mm/19mm/25mm/35mm/50mm/75mm athermal lenses, various motorized lenses
Image Performance	
NUC	Shutterless technology
Image enhancement	IVE image enhancement algorithm
Frequency	50Hz
Zoom	2x、 4x
Polarity/LUT mode	Black hot/White hot
Startup time	3s
Image gain	Auto/Manual
Cross cursor	ON/OFF
Interface	
Primary electrical connector	40pin
Control port	RS232
Analog video output	BNC(75Ω); CCIR/PAL
Digital video output	16-Bit original data, 8-Bit BT656(customizable)
Keypad	5 button keyboard
Power System	
Working voltage	DC: +2.5V~+5.5V(standard: 3.7V)
Power consumption	0.85W (BT656<1.3W)
Reverse polarity protection	Yes
Over voltage protection	Yes
Environmental Parameters	
Operating temperature range	-40 °C~+60°C
Storage temperature range	-50 °C~+70°C
Humidity	5%~95% (non-condense)
Shock	GJB150-16 2.3.1, 100g: 6msec
Vibration	GJB150-16 2.3.1, 4.3g 3 axes, 8h
Physical Data	
Size	38mm×38mm×21mm(From FPA to back)
Weight	≤55g(without lens)
Mounting	M2×0.4
Packing	
Standard	Thermal imaging core, integrated cable, user manual of CD, warranty card, calibration certificate

Technical Specifications

Item	TC640SMW
Cooler	Stirling
Detector Data	
Type	MCT
IR resolution	640×512
Pixel pitch	15μm
Spectral range	3~5μm
NETD/Sensitivity	23mK
Lens Data	
FOV	2°×1.6°~30°×24°
Focal distance	18mm~275mm continuous zoom lens
F/#	5.5
Lens(Optional)	50/250mm duel FOV lens, 25/80/320 triple FOV lens, 18mm~275mm continuous zoom lens, 18mm~435mm continuous zoom lens(optional: 960mm continuous zoom lens)
Image Performance	
Correcting	Manual correction, background correction
Image enhancement	Auto Image Filtering, DDE
Image mirroring	Vertical, horizontal
Frequency	50Hz
Zoom	2x、4x
Polarity/LUTmode	Black hot/White hot
Cross display	Yes
Interface	
Control port	RS232/RS422
Analog video output	PAL
Digital video output	SLVDS/CameraLink
Power System	
Working voltage	DC: +24V ~ +32V
Power consumption	<10W@25°C(standard)
	<20W@25°C(max)
Cooling time	≤8min
Environmental Parameters	
Operating temperature range	-40 °C~+60°C
Storage temperature range	-40 °C~+70°C
Humidity	5%~95% (non-condense)
Shock	1/2 Sine, 3 axis, 50g/11mg, 40g/18mg
Vibration	Sine, 5Hz~9Hz, Amplitude 12mm; 9Hz~27Hz,4g; 27Hz~200Hz,5g; 200Hz~300Hz,4g; 300Hz~2000Hz,2g
Physical Data	
Size	188mm×116mm×89mm(with 18-275 continuou zoom lens)
Weight	1.75kg(with 18-275 continuou zoom lens)

Technical Specifications

Item	TC320MW	TC640MW
Cooler	Stirling	
Detector Data		
Type	MCT	
IR resolution	320×256	640×512
Pixel pitch	30μm	15μm
Spectral range	3~5μm	
NETD/Sensitivity	20mK	
Lens Data		
FOV	36.5°(H) ×29.2° (V) ~2.2°(H) ×1.8° (V)	
Focal distance	15~250mm continuous zoom lens	
F/#	2/4	
Lens(Optional)	50/250mm dual FOV lens, 15mm~250mm continuous zoom lens, 21mm~420mm continuous zoom lens, 30mm~660mm continuous zoom lens	
Image Performance		
Correcting	Manual correction, background correction	
Image enhancement	Auto image Filtering, DDE	
Image mirroring	Vertical, horizontal	
Frequency	Max200Hz	Max100Hz
Zoom	2x	2x、 4x
Polarity/LUT mode	Black hot/White hot	
Cross display	Yes	
Interface		
Control port	RS232/RS422	
Analog video output	PAL	
Digital video output	CameraLink	
Power System		
Working voltage	DC: +24V~+32V	
Power consumption	<12W@25°C(standard)	
	<24W@25°C(max)	
Cooling time	≤8min	
Environmental Parameters		
Operating temperature range	-40 °C~+60°C	
Storage temperature range	-40 °C~+70°C	
Humidity	5%~95% (non-condense)	
Shock	1/2 Sine, 40g/18ms, 3 shocks per axis	
Vibration	5Hz~10Hz, peak 5mm, 10Hz~500Hz, 2.5g	
Physical Data		
Size	220mm×88.5mm×90mm (with 15-250 continuous zoom lens)	
Weight	≤1.65kg (with 15-250 continuous zoom lens)	



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Infrared Lenses



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Eagle40

Thermal Imaging Sights



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Eagle40

Thermal Imaging Sights



Eagle40 is designed for various applications, such as detecting enemies ahead of time, searching for the prey rapidly etc, in severe conditions, with optional LRF to realize automatic correction of ballistic.

FEATURES

Shutterless technology

Auto reticle correction function

Optional: laser range finder (automatic trajectory correction)

Compact and anti-shock design

50Hz frame rate, instant imaging

APPLICATION CASE

- Defense systems
- Targeting systems
- Law enforcement
- Hunting



STANDARD PACKAGE

standard package	
Eagle40×1	Transportation case×1
Battery×4	User manual×1
Composite output cable×1	Certificate of approval×1
Small Picatinny rail×1	Warranty card×1
Picatinny quick release interface×1	Power adapter(9V~12V)×1



TECHNICAL SPECIFICATIONS

Item	Eagle40
Detector Data	
IR resolution	384×288 aSi
Pixel pitch	17μm
Spectral range	8~14μm
NETD	<60mK@30℃, f/1.0
Detector frequency	50HZ
Image Performance	
Focus	42mm,F 1.0
FOV	8.8°×5.7°
Detection (Human)	1250m
Recognition (Human)	350m
Brightness/contrast	Manual
Electronic zoom	2X
Detection palettes	Black hot / White hot
Video output	PAL
Eye relief	48mm
Diopter	-6~+2D
System Features	
Displayer	768×480 OLED
Reticle color	White/Black/Red/Green(optional)
Reticle type	6 Reticle types (customizable)
Picatinny rail	MIL-STD 1913 Picatinny Rail
Startup	5s(contain boot screen)
Operating time	>6~7hrs(Normal Temp)
Battery	4pcs AA rechargeable batteries
Interface	
Interface type	Power, Video output, RS232
Environmental Data	
Operating temperature range	-20℃ ~ +50℃ (-35℃ ~ +60℃ optional)
Storage temperature range	-40℃ ~ +70℃
Shock/Vibration	MIL-STD-810F(Add live firing 2000 rounds)
Encapsulation	IP67
Physical Data	
Weight (w/batteries,w/o picatinny rail)	<550g
Size (L x W x H)	172x 62 x 65mm (w/o eye guard&scope mount)
Packing	
Standard	Thermal imaging sight, 4pcs AA batteries, Charger, Scope mount, Warranty card, User manual, Transportation case ,LRF(optional)



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Eagle70CC

Thermal Imaging Sights



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Eagle70CC

Thermal Imaging Sights



Eagle70CC are thermal weapon sights which are widely used for law enforcement.It can detect heat of any targets against cooler background during day or night,especially in severe conditions such total darkness, haze , dust, sleet, forest, grass, disguise and so on.

FEATURES

Shutterless technology

50Hz frame rate, instant imaging

Compact and anti-shock design

Photo & video recording

APPLICATION CASE

- Defense systems
- Targeting systems
- Law enforcement



STANDARD PACKAGE

standard package	
Eagle70CC×1	Transportation case×1
CR123A×4	User manual×1
Composite output cable×1	Certificate of approval×1
Small Picatinny rail×1	Warranty card×1
Picatinny quick release interface×1	Power adapter(9V~12V)×1



TECHNICAL SPECIFICATIONS

Item	Eagle70CC		
Detector Data			
IR resolution	640×480 aSi		
Pixel pitch	17μm		
Spectral range	8~14μm		
NETD	< 65mK@30℃,f/1.0		
Detector Frequency	50Hz		
Optical Property			
Focal Length	35mm	50mm	75mm
Field of view	17.6°×13.2°	12.4°×9.3°	8.3×6.5°
Focus range	3m~∞	5m~∞	5m~∞
Eye relief	48mm		
Dioptric adjustment	-6~+4		
Operation Distance			
Human Detection	1280m	1700m	2400m
Human Recognition	320m	430m	620m
Human Identification	160m	215m	310m
Vehicle Detection	3800m	5100m	6400m
Vehicle Recognition	950m	1320m	1600m
Vehicle Identification	480m	660m	800m
Image Performance			
Polarity	Black hot/White hot		
Start-up time	4s		
Digital zoom	2x,4x		
Brightness/Contrast	Manual		
Image enhancement	IVE		
Display	800×600 OLED		
Video output	PAL		
Reticle color	White/Black		
Reticle type	9 Reticle types(include no cursor type)		
System Feature			
Interface type	Power, Video output, USB		
Storage	Photos and videos		
Video recording	> 8h(32G)		
Picatinny rail	MIL-STD 1913 Picatinny Rail		
Battery	2pcs 18650 Lithium battery		
Operating time	≥7hrs		
Environmental Data			
Operating temperature range	-20℃~+50℃ (rechargeable batteries) -40℃~+60℃ (non-rechargeable batteries)		
Storage temperature range	-40℃~+70℃		
Shock/Vibration	MIL-STD-810F(Add live firing 2000 rounds)		
Encapsulation	IP67		
Physical Data			
Weight	1kg with batteries for eagle70cc+50mm lens		
Size	153mm×68mm×69mm(without eye guard&scope mount)		
Packing			
Standard	Thermal imaging sight, 4pcs batteries, Charger, Scope mount, Warranty card, User manual, Transportation case		



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Selina30 | Selina60

Driver's Vision Enhancer



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Selina30 | Selina60

Driver’s Vision Enhancer for Military Ground Vehicle



Selina30 | Selina60 Specially designed for enhancing the driver's visual ability and extending recognition distance in extreme situations with functions of the Intelligent Pedestrian Detection and Automobile Anti- collision Alarming System.

APPLICATION CASE

- Visual enhancement for armed vehicles
- Visual enhancement for civil vehicles



APPLICATION SCENARIOS

It can detect pedestrian 300 ~ 500 meters away, and vehicle within 800 ~ 1500 meters.



pedestrian presence detection

In pitch-darkness

Glare from the opposite vehicles

TECHNICAL SPECIFICATIONS

Item		Selina30		Selina60	
Thermal Imaging Performance	Detector Type	aSi			
	Resolution	384×288		640×480	
	Pixel Pitch	17μm			
	Spectral Range	8～14μm			
	Image Freme	50Hz			
	NETD	60mK			
	Lens	f=10mm		f=17mm	
	FOV	36°（H）x 27°(V)			
	Focus	Fixed Focus(Athermal)			
	Detection Performance	Human （1.8m x 0.5m） D=300m R=78m l=40m	Vehicle （2.3m x 2.3m） D=800m R=230m l=116m	Human （1.8m x 0.5m） D=510m R=133m l=68m	Vehicle （2.3m x 2.3m） D=1560m R=391m l=197m
Image Processing	Non-uniformity correction	shutterless			
	Boot time	5S			
	Image noise reduction	digital filtering			
	Image gain	automatic			
	Image enhance	detail enhancement			
	Output format	PAL			
Power System	Working Voltage	DC 7~32V			
	Consumption	<1W Steady <6.5W start the heater （when the temperature is below 4 °）			
	Overvoltage Protection	Yes			
	Surge Voltage Suppression	DC 80V ,20ms			
Environment Data	Operating Temperature	-40℃ ～+70℃			
	Storage Temperature	-45℃ ～+85℃			
	Humidity	40℃ /95%RH, Non-condensing			
	Salt Spray Test	Military Standard			
	Encapsulation	IP67			
	Shock	Weapon Firing Shock			
	Vibration	Combat Vehicle			
Physical Data	Size(mm)	62(H)×64(W)×83.5(L)			
	Weight	<380g			



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Venus30

Thermal Imaging Monocular



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Venus30

Thermal Imaging Monocular



Venus30 | Venus60 can be used on helmet or handheld, for multipurpose functions such as scouting, anti-smuggling, searching, rescuing or any other law enforcement.it can detect people ,objects and incidents in any harsh environment.

APPLICATION CASE

- Enforcement
- Defense systems
- Searching and rescuing
- Hunting



STANDARD PACKAGE

standard package	
Venus30×1	Certification×1
CR123A×4	Warranty card×1
Composite output cable×1	helmet bracket×1
Transport case×1	Night vision steering bracket×1
User manual×1	



FEATURES

50HZ instant imaging, 3s start-up

25mm or 35mm lens for option

OLED display, 800X600

Tiny size, 396g weight

PAL/NTSC analog video output

TECHNICAL SPECIFICATIONS

Item	Venus30		
Detector Data			
IR resolution	384×288		
Pixel pitch	17μm		
NETD	<65mK		
Spectral range	8～14μm		
Optical Property			
Focal Length	19mm	25mm	35mm
Field of view	19.4°×14.7°	15°×11°	10.6×8°
Operation Distance			
Human Detection	640m	930m	1280m
Human Recognition	160m	230m	320m
Human Identification	80m	116m	160m
Vehicle Detection	1950m	2800m	3800m
Vehicle Recognition	500m	710m	950m
Vehicle Identification	250m	360m	480m
Image Performance			
NUC	w/ shutter		
Start-up time	<4s		
Noise reduction	Digital filtering		
Gain adjustment	Manual		
E-Zoom	2X, 4X		
Video Output			
Video output	NTSC/PAL		
Frame	50Hz		
Polarity	Black hot/White hot		
Viewfinder	OLED 800×600		
Micro-display adjustment	Brightness		
Eyepiece			
Eye Relief	25mm		
Pupil diameter	8mm		
Power System			
Working voltage range	4V~7.2V； External power: 8~15VDC		
Battery	2 x CR123		
Operation time	4hrs		
Overvoltage protection	Yes		
Reserve voltage protection	Yes		
Environmental Data			
Operation temperature range	-35℃～+60℃		
Storage temperature range	-40℃～+70℃		
Encapsulation	IP67		
Durability	1 meter drop		
Physical Data			
Weight	400g（w/ 19mm lens）		
Size	72x54x116mm（w/ 19mm lens）		



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Venus70CC

Thermal Imaging Monocular



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Venus70CC

Thermal Imaging Monocular



Venus70CC can be used on helmet or handheld, for multipurpose functions such as scouting, anti-smuggling, searching, rescuing or any other law enforcement.it can detect people ,objects and incidents in any harsh environment.

APPLICATION CASE

- Defense systems
- Law enforcement
- Targeting system
- Searching and rescuing



STANDARD PACKAGE

standard package	
Venus70CC×1	Certification×1
CR123A×4	Warranty card×1
Composite output cable×1	helmet bracket×1
Transport case×1	Night vision steering bracket×1
User manual×1	



TECHNICAL SPECIFICATIONS

Item	Venus70CC		
Detector Data			
IR resolution	640×480 aSi		
Pixel pitch	17μm		
Spectral range	8~14μm		
NETD	< 65mK@30 ℃ ,f/1.0		
Detector Frequency	50Hz		
Optical Property			
Focal Length	35mm	50mm	75mm
Field of view	17.6°×13.2°	12.4°×9.3°	8.3×6.5°
Focus range	3m~∞	3m~∞	3.5m~∞
Eye relief	25mm		
Dioptric adjustment	-6~+4		
Operation Distance			
Human Detection	1280m	1700m	2400m
Human Recognition	320m	430m	620m
Human Identification	160m	215m	310m
Vehicle Detection	3800m	5100m	6400m
Vehicle Recognition	950m	1320m	1600m
Vehicle Identification	480m	660m	800m
Image Performance			
Polarity	Black hot/White hot		
Start-up time	4s		
Digital zoom	2x,4x		
Brightness/Contrast	Manual		
Image enhancement	IVE		
Display	800×600 OLED		
Video output	PAL		
Reticle type	Range Finder Reticle		
System Feature			
Interface type	Power, Video output, USB		
Storage	16G,Photos and videos		
Battery	4pcs 18650 rechargeable batteries		
Operating time	≥7 hrs		
Environmental Data			
Operating temperature	-30 ℃ ~+60 ℃		
Storage temperature	-40 ℃ ~+70 ℃		
Shock/Vibration	MIL-STD-810F		
Encapsulation	IP67		
Physical Data			
Weight	≦ 860g with batteries	≦ 880g with batteries	≦ 1100g with batteries
Size(L x W x H)	164mm×114mm×65mm	171mm×114mm×67mm	210mm×114mm×88mm

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Zhejiang ULIRVISION Technology Co.,LTD.

Wolf30|Wolf60

Thermal Imaging Binocular

Wolf30|Wolf60 as high-quality thermal binoculars, can detect people, weapons and animals in any harsh environment. They have been widely used in the night observation and surveillance for soldiers, commanders, armed policemen and other law enforcers.

Features

Built-in SD card for recording videos and images

OLED display, 800×600

Light weight, tiny size

50Hz frame rate, digital zoom up to 4X

Applications

Law enforcement

Scouting

Searching and rescuing

Defense systems



ULIRVISION



Follow ULIRVISION, Application is All Around Make the World More Secure

TC320PTZ | TC620PTZ

IP Full High-Definition
Thermal Security Monitoring Systems



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TC320PTZ | TC620PTZ

IP Full High-Definition Thermal Security Monitoring Systems



TC400PTZ | TC600PTZ The series of high-performance, multi-sensor pan/tilt cameras bring dual-channel with thermal and visible-light imaging together. Their precision pan/tilt mechanism gives you accurate pointing control while providing sharp image and video for critical facilities.

APPLICATION CASE

- Surveillance for station, airport, city, etc
- Forest fire detection
- Coastal and harbor defense
- Border defense and control



STANDARD PACKAGE

standard package	
Support ×1	Certification×1
User Manual×1	Warranty card ×1



FEATURES

Simultaneous IP and analog video outputs – dual channel with thermal & visible light

Laser Illumination wavelength 808nm, Range: 3km

Exchangeable camera cassettes allow for quick upgrade or repair of sensors and optics

Open IP standards for plug-and-play integration; ONVIF compliant

IP66 with water, dust, shock, vibration, and corrosion-resistant

TECHNICAL SPECIFICATIONS

Item	TC320PTZ				TC620PTZ	
Thermal Imaging Camera						
Detector type		aSi				
IR resolution		384×288			640×480	
Pixel pitch		17μm				
Spectral range		8～14μm				
Detector frequency		50Hz				
Video output		PAL/NTSC				
Thermal sensitivity (NETD)		60mK				
Lens type		Athermal ,Fixed Lens				
Time to image		< 3s				
Brightness/Contrast		Auto/Manual				
Polarity/LUT		White hot, Black hot				
Electric zoom		2×、 4×				
Lens Data						
Focal distance		Model No.	F No.	FOV	Human(m)	Vehicle(m)
TC400PTZ	50mm		F=1	7.5×5.5°	1700	5100
	75mm		F=1	5×3.75°	2400	6400
	100mm		F=1	3.75°×2.75°	2950	8800
TC600PTZ	50mm		F=1	12.5×9.1°	1700	5100
	75mm		F=1	8.3×6.5°	2400	6400
	100mm		F=1	6.3°×4.5°	2950	8800
Laser Illumination						
Bandwidth		Wavelength 808nm, Range: 3km (12W semiconductor laser unit; Controlled by RS485)				
Pan/Tilt						
Horizontal angle		0～360°				
Vertical angle		-90°～+90°				
Horizontal speed		0.1°～80°/S , variable				
Vertical speed		0.1°～60°/S, variable				
Presets		Up to 256, ±0.1				
Material		Aluminum or stainless steel				
Backlash		Less than 0.1°				
Limits		External adjustable				
Protection Cover						
Structure		Aluminum or stainless steel				
Encapsulation		IP66				
Power System						
External power		DC9～DC36V(AC24V option)				
Power consumption		≤30W				
Environmental Data						
Operating temperature range		-25 C ～+55 C				
Humidity		< 90%RH				
Physical Data						
Size		265mm×180mm×315mm				
Weight		25Kg				
Interface						
Interface protocol		ONVIF				
Support protocol		IPv4/v6,RTSP/RTP/RTCP,TCP/UDP,HTTP,DHCP,DNS,FTP,DDNS,PPPOE,SMTP,SIP				
Communication protocol		Pelco-D				
Communication baud rate		2400/4800/9600 bps				
Communication mode		RS485				
Alarm		Yes				
Analog Vedio		Yes				
Security		User security authentication, Reset, Hardware WatchDog				
Ethernet		1 Ethernet (10/100 Base-T) RJ-45 Connector				
BNC Output		Yes				
Edge Storage		Micro SD/SDHC slot ,Max 32GB				



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TC350PTZ | TC650PTZ

IP Full High-Definition
Thermal Security Monitoring Systems



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TC350PTZ | TC650PTZ

IP Full High-Definition Thermal Security Monitoring Systems



TC400PTZ | TC600PTZ The series of high-performance, multi-sensor pan/tilt cameras bring dual-channel with thermal and visible-light imaging together. Their precision pan/tilt mechanism gives you accurate pointing control while providing sharp image and video for critical facilities.

APPLICATION CASE

- Surveillance for station, airport, city, etc
- Forest fire detection
- Coastal and harbor defense
- Border defense and control



STANDARD PACKAGE

standard package	
Support ×1	Certification×1
User Manual×1	Warranty card ×1



FEATURES

Simultaneous IP and analog video outputs – dual channel with thermal & visible light

Laser Illumination wavelength 808nm, Range: 3km

Exchangeable camera cassettes allow for quick upgrade or repair of sensors and optics

Open IP standards for plug-and-play integration; ONVIF compliant

IP66 with water, dust, shock, vibration, and corrosion-resistant

TECHNICAL SPECIFICATIONS

Item	TC350PTZ			TC650PTZ	
Thermal Imaging Camera					
Detector type		aSi			
IR resolution		384×288		640×480	
Pixel pitch		17μm			
Spectral range		8～14μm			
Detector frequency		50Hz			
Video output		PAL/NTSC			
Thermal sensitivity (NETD)		60mK			
Lens type		Athermal ,Fixed Lens			
Time to image		< 3s			
Brightness/Contrast		Auto/Manual			
Polarity/LUT		White hot, Black hot			
Electric zoom		2×、 4×			
Lens Data					
Focal distance	Model No.	F No.	FOV	Human(m)	Vehicle(m)
TC400PTZ	50mm	F=1	7.5×5.5°	1700	5100
	75mm	F=1	5×3.75°	2400	6400
	100mm	F=1	3.75°×2.75°	2950	8800
TC600PTZ	50mm	F=1	12.5×9.1°	1700	5100
	75mm	F=1	8.3×6.5°	2400	6400
	100mm	F=1	6.3°×4.5°	2950	8800
CCD Video Camera					
Resolution		1920×1080			
Focus		14mm～500mm			
Resolution		200M pixels			
Model		1/1.9” SONY CMOS with WDR			
D-Zoom		36X optical, 12X digital			
Recommended illumination		Color: 0.1Lux@(F1.2.AGC ON.IRC ON); Black/White: 0.01Lux@(F1.2.AGC ON.IRC OFF))			
3D noise reduction		Yes			
Pan/Tilt					
Horizontal angle		0～360°			
Vertical angle		-90°～+90°			
Horizontal speed		0.1°～80°/S , variable			
Vertical speed		0.1°～60°/S, variable			
Presets		Up to 256 , ±0.1			
Material		Aluminum or stainless steel			
Backlash		Less than 0.1°			
Limits		External adjustable			
Protection Cover					
Structure		Aluminum or stainless steel			
Encapsulation		IP66			
Power System					
External power		DC9～DC36V(AC24V option)			
Power consumption		≤30W			
Environmental Data					
Operating temperature range		-25℃～+55℃			
Humidity		< 90%RH			
Physical Data					
Size		760mm×335mm×573mm			
Weight		45Kg			
Interface					
Interface protocol		ONVIF			
Support protocol		IPv4/v6,RTSP/RTP/RTCP,TCP/UDP,HTTP,DHCP,DNS,FTP,DDNS,PPPOE,SMTP,SIP			
Communication protocol		Pelco-D			
Communication baud rate		2400/4800/9600 bps			
Communication mode		RS485			
Alarm		Yes			
Analog Vedio		Yes			
Security		User security authentication, Reset, Hardware WatchDog			
Ethernet		1 Ethernet (10/100 Base-T) RJ-45 Connector			
BNC Output		Yes			
Edge Storage		Micro SD/SDHC slot ,Max 32GB			



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TC400 | TC600

IP Thermal Security Cameras



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TC400 | TC600

IP Thermal Security Cameras



TC400 | TC600 support the around-the-clock thermal security monitoring in pitch darkness or any other harsh environment. Embedded with cutting-edge thermal imaging technology, it provides thermal video monitoring for critical infrastructure.

APPLICATION CASE

- Surveillance for critical facilities, like warehouse, prison, port, residence, airport, nuclear plant, pubic area, etc
- Border and coastal control
- Firefighting



STANDARD PACKAGE

standard package	
Support ×1	Certification×1
User Manual×1	Warranty card ×1



FEATURES

Shutterless technology, continuous& optimal images in all scene conditions

POE, AC and DC inputs, analog and network outputs

IP66 encapsulation for dust & water protection

24/7 intrusion protection

Dimension: 344×146mm

TECHNICAL SPECIFICATIONS

Item	TC400	TC600
Detector Data		
Detector type	aSi	
IR resolution	384×288	640×480
Pixel pitch	17μm	
NETD	≤65mK	
Frequency	50Hz	
Spectral range	8-14μm	
LENS		
Thermalized lens	35mm 50mm	
F Number	F1.0	
Image Performance		
NUC	Shutterless	
Brightness/Gain	Manual / Auto adjustment	
Polarity	Black hot/White hot	
Electric zoom	2x、 4x	
Video Compression	H.264(MPEG-4 Part 10/AVC)Baseline, Main, High profile Motion JPEG	
frame rate	H.254: 25/30fps （PAL/NTSC） Motion JPEG: 25/30fps （PAL/NTSC）	
Imaging Setting	Compression, Brightness, Sharpness, Contrast, Rotation: 0° , 90° , 180° , 270°, Aspect Ratio Correction, Privacy mask, Anti-Aliasing, Sharpness, noise reduction, image partial enhance	
Internet		
Safety protect	Password protection, IP address filtering, HTTPS encryption, IEEE802.1 X network access control, Digest authentication, User access log, Centralized certificate management	
Support protocol	IPv4/v6、 HTTP、 HTTPS、 SSL/TLS、 QoS Layer 3 DiffServ、 FTP、 CIFS/SMB、 SMTP、 Bonjour、 UPnP、 SNMP v1/v2c/v3(MIB- II)、 DNS、 DynDNS、 NTP、 RTSP、 TCP、 UDP、 IGMP、 RTCP、 ICMP、 DHCP、 ARP、 SOCKS、 SSH	
Interface		
Internet Interface	RJ45 10BASE-T/100BASE-TX PoE	
Power Supply Interface	AC/DC Input	
Normal Interface		
Power Supply	AC24V/DC12V/ POE-Power Over Ethernet	
Power consumption	< 12W	
Operating Temperature	-40℃~60℃	
Storage Temperature	-40℃~70℃	
Operating Humidity	≤95%	
Encapsulation	IP66	
Dimension		
Weight	< 2kg	
Covering material		
Material	Aluminum alloy	
Sun Shade	Yes	

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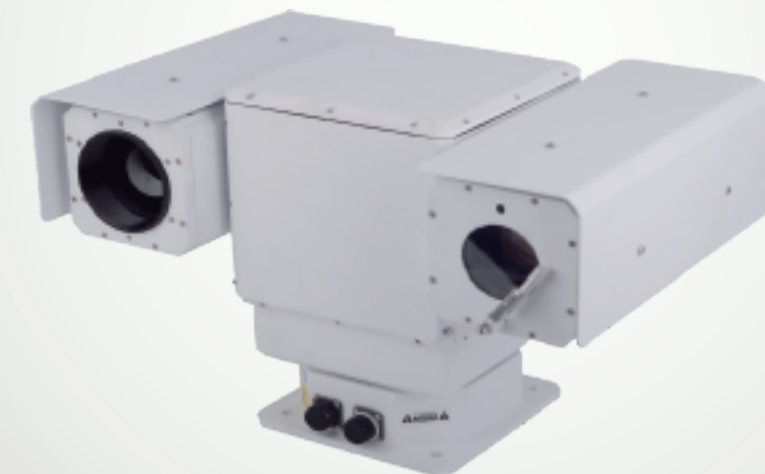
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TC400PTZ | TC600PTZ

IP Full High-Definition
Thermal Security Monitoring Systems



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TC400PTZ | TC600PTZ

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TC400PTZ | TC600PTZ The series of high-performance, multi-sensor pan/tilt cameras bring dual-channel with thermal and visible-light imaging together. Their precision pan/tilt mechanism gives you accurate pointing control while providing sharp image and video for critical facilities.

APPLICATION CASE

- Surveillance for station, airport, city, etc
- Forest fire detection
- Coastal and harbor defense
- Border defense and control



STANDARD PACKAGE

standard package	
Support ×1	Certification×1
User Manual×1	Warranty card ×1



FEATURES

Simultaneous IP and analog video outputs – dual channel with thermal & visible light

Shutterless and IVE(Intelligent View Enhancement) technologies

Exchangeable camera cassettes allow for quick upgrade or repair of sensors and optics

Open IP standards for plug-and-play integration; ONVIF compliant

IP66 with water, dust, shock, vibration, and corrosion-resistant

TECHNICAL SPECIFICATIONS

Item	TC400PTZ				TC600PTZ	
Thermal Imaging Camera						
Detector type		aSi				
IR resolution		384×288			640×480	
Pixel pitch		17μm				
Spectral range		8～14μm				
Detector frequency		50Hz				
Video output		PAL/NTSC				
Thermal sensitivity (NETD)		60mK				
Lens type		Athermal				
Time to image		< 3s				
Brightness/Contrast		Auto/Manual				
Polarity/LUT		White hot, Black hot				
Electric zoom		2×、 4×				
Lens Data						
Focal distance		Model No.	F No.	FOV	Human(m)	Vehicle(m)
TC400PTZ	50mm		F=1	7.5°×5.5°	1700	5100
	75mm		F=1	5×3.75°	2400	6400
	100mm		F=1	3.75°×2.75°	2950	8800
TC600PTZ	50mm		F=1	12.5°×9.1°	1700	5100
	75mm		F=1	8.3×6.5°	2400	6400
	100mm		F=1	6.3°×4.5°	2950	8800
CCD Video Camera						
Resolution		1920×1080				
Focus		F=7.75mm(F1.6) . 310mm(F5.6)				
Model		1/2.8” SONLY Exmor CMOS Sensor				
D-Zoom		40X optia				
Video Format		H.264BP/MP/HP/MJPEG				
Recommended illumination		Color: 0.1Lux@(F1.2.AGC ON.IRC ON) ; Black/White Color : 0.002Lux@(F1.2.AGC ON.IRC OFF))				
3D noise reduction		Yes				
Pan/Tilt						
Horizontal angle		0～365°				
Vertical angle		-90°～+30°				
Horizontal speed		0.1 ° ～ 80 ° /s ,				
Vertical speed		0.1° ～ 60° /s				
Presets		200				
Auto scanning		Industrial V0.0: 5 lines; other protocols: 1 line				
Auto cruise		Industrial V0.0: 5 lines; other protocols: 1 line				
Material		Aluminum or stainless steel				
Backlash		Less than 0.1°				
Limits		External adjustable				
Protection Cover						
Structure		Aluminum or stainless steel				
Encapsulation		IP66				
Power System						
External power		A/DC24V±10%				
Power consumption		≤40W				
Environmental Data						
Operating temperature range		-40 C ～+60 C				
Humidity		< 90%RH				
Physical Data						
Size		463mm×310mm×304mm				
Weight		22Kg				
Interface						
Interface protocol		ONVIF				
Support protocol		IPv4/v6,RTSP/RTP/RTCP,TCP/UDP,HTTP,DHCP,DNS,FTP,DDNS,PPPOE,SMTP,SIP				
Communication protocol		Pelco-D				
Communication baud rate		2400/4800/9600 bps				
Communication mode		RS485				
Alarm Trigger		Temperature Alarm,MotionDetection,Networkdisconnect,Diskalarm,I/Oalarm				
RTSP Video		Standard RFC2326, Support QuickTime / VLC Player.				
Security		User security authentication, Reset, Hardware WatchDog				
Ethernet		1 Ethernet (10/100 Base-T) RJ-45 Connector				
BNC Output		Yes, 75 ohm				
Edge Storage		Micro SD/SDHC slot ,Max 32GB				



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TC600PT

IP Thermal Security Monitoring System



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TC600PT

IP Thermal Security Monitoring System



FEATURES

- 50Hz real-time frequency, fast moving without trailing
- Exclusive image enhancement algorithm, clearly imaging
- IP thermal security monitoring system, supporting ONVIF interface protocol
- Protection cover with special anticorrosive coating protective cover
- IP66 encapsulation

APPLICATION CASE

- Surveillance for station, airport, city, etc
- Forest fire detection
- Coastal and harbor defense
- Border defense and control



STANDARD PACKAGE

standard package	
Support ×1	Certification×1
User Manual×1	Warranty card ×1



TECHNICAL SPECIFICATIONS

Model	TC600PT			
Application	Surveillance for oilfield,watercourse,lakes,expressway,high speed railway,border and coastal defense,harbor,airport,forest fire prevention and city outlook etc.			
Thermal imaging camera				
Detector type	Uncooled FPA detector			
Detector material	aSi			
IR resolution	640×480			
Pixel pitch	17μm			
Spectral range	8～14μm			
Detector frequency	50Hz			
NETD	75mK			
Lens focus	F#	FOV	Detect(H)	Detect(V)
100mm	F=1	6.2°x 4.5°	2950m	8000m
Lens type	Athermal lens			
Start time	< 3s			
Polarity	Black hot . White hot			
E-ZOOM	1×、 2×、 4×			
Image enhancement	IVE			
Calibration	Automatic timing correcting			
P&T				
Load weight	20KG(Max)			
Control Angle	Horizontal : 360° , Vertical:-45°~+45°			
Rotation speed	Horizontal : 60°/s , Vertical: 30°/s			
Presets	80 (optional high precision speed change P&T)			
Interface				
Communication protocol	RS-485(PECLO-D protocol)			
Interface protocol	ONVIF,PSIA,CGI,ISAPI,GB28181			
Support protocol	TCP/IP,HTTP,DHCP,DNS,DDNS,RTP/RTSP,PPPoE,SMTP,NTP,UPnP,SNMP,HTTPS,FTP,802.1x			
Baud rate	2400/4800/9600/19200 bps			
Menu control	OSD			
Interface	RJ45 network interface			
Power	AC24V			
Environment data				
Operating Temp.	-35℃～55℃ (-45℃ optional)			
Storage Temp.	-40℃～70℃			
Encapsulation	IP66			
Housing	Super strong aluminum alloy sealed housing,avoid the growth of mold and water vapor.			
Physical data				
Size	490mm×285mm×511mm (L×W×H)			
Weight	≦ 26kg			

TC800PTZ

IP Thermal Imaging Video Camera

TC800PTZ as a high-performance, multi-sensor pan/tilt camera brings dual-channel with thermal and visible-light imaging together. It can achieve 24/7 continuous long-distance surveillance especially for harbor, coast, military base, etc.

Features

RS485 remote control, support
PELCO-D

IP66 encapsulation, protection shield
for all-weather conditions

Two lenses for option: 30mm~150mm,
or 60mm/150mm

Thermal imaging video&digital video
output

Applications

Border control

Surveillance for harbor, coast, military
base, etc

Electrical inspection, rescuing



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Technical Specifications

Item	TC800PTZ
Detector Data	
Type	Uncooled FPA
Material	Vox
IR resolution	640x512
Pixel pitch	17μm
Spectral range	8~14μm
NETD/Sensitivity	50mK
Lens Data	
Type	Continuous Lens
FOV	WFOV: 20.4°
	NFOV: 4.4°
Focal distance	31mm~155mm
Detection distance(human)	4.2km
Detection distance(ship)	11km
Image Performance	
Correction	Auto timing correction
Image enhancement	SDE image enhancement algorithm
Frequency	50Hz
Zoom	2X
Polarity/LUT mode	Black hot/White hot
Contrast/Brightness	Auto/Manual
CCD Camera	
Resolution	1920×1080
CCD type	200M 1/1.8" CMOS star level super low-lux gun type digital camera
Lens	12.5mm~775mm
FOV	0.39°~ 35.29°(wide angle~telescoping)
Illuminance	Color: 0.002Lux@(F1.2, AGCON)
	B/W: 0.0002Lux@(F1.2, AGCON)
Focus	Motor
Aperture	Auto
WDR	Yes
Fog-through	Support
Pan & Tilt	
Angle back function	PELCO-D
Pan angle	0°~ 360°
Tilt angle	-45°~ +45°
Pan speed	0.1°~ 30° /s
Tilt speed	0.1°~ 15° /s
Presets	80
Auto scanning	One line
Auto cruise	One line
Material	Aluminum alloy
Protection Cover	
Cover appearance	Oyster white coating
Material	Aluminum alloy
Sun shade	Yes
Fan & Heater	Yes
Interfaces	
Format	Aviation plug
Power interface	Yes
Network interface	One RJ45 10M/100M self-adaption Ethernet port
Video output	PAL/NTSC
Power System	
Working voltage	AC: 24V±10%
Power consumption	≤150W(Normal)
	≤200W(Heating)
Environment Parameters	
Operating temperature range	-30℃~+60℃
Storage temperature range	-40℃~+70℃
Encapsulation	IP66
Physical Data	
Size	750mm×450mm×650mm
Weight(with battery)	50kg
Packing	
Standard	Thermal imaging camera, Warranty card, User manual, Transportation case
Option	Laser range finder, Laser illumination

Technical Specifications

Item	Wolf30	Wolf60
Detector Data		
Type	Uncooled FPA	
Material	aSi	
IR resolution	384×288	640×480
Pixel pitch	17μm	
Spectral range	8~14μm	
NETD/Sensitivity	65mK	75mK
Lens Data		
Focal distance	75mm/50mm(optional)	
F	F 1.0	
Eye relief	27mm	
Diopter	-5~+5	
Image Performance		
Display	800×600 binocular OLED	
NUC	Shutterless technology	Shutter correction
Polarity/LUT mode	Black hot/White hot	
Frequency	50Hz	
Focus mode	Manual	
Noise reduction	Digital filtering	
Digital zoom	2X, 4X	2X, 4X
Image enhancement	Manual	
Startup time	4s	
Contrast/Brightness	Manual	
Compass	No	Yes
Interfaces		
Format	Composite aviation plug	
Power interface	Yes	
Video output	PAL	
Storage card	64G	
Power System		
Battery type	2pcs lithium batteries	
Operation time	>7h continuous(normal temperature)	>6h continuous(normal temperature)
Environment Parameters		
Operating temperature range	-25℃~+50℃(-40℃~+60℃ optional)	
Storage temperature range	-45℃~+70℃	
Encapsulation	IP67	
Vibration	MIL-STD-810F	
Shock	MIL-STD-810F	
Physical Data		
Size	170mm×140mm×75mm(without eyepiece)	
Weight	≤1.1kg(with battery)	
Packing		
Standard	Thermal imaging binocular, 4pcs 18650 batteries, Charger, Combination cable, Warranty card, User manual, Certificate, Transportation case	

INFRARED LENS

Our infrared lenses include manual lens, athermal lens, motorized lens, dual-view lens and zoom lens. They are with advanced optical performance for industry applications, commercial activities and security & surveillance markets.

Manual Lenses

HXC6M54/HXC6M75/HXC6M100



Item	Focal Length	F No.	FOV	Weight	Size (Length/ L x Diameter/D, mm)
HXC6M54	54mm	1	640*48017μm 11.5°x8.6° 384*288 17μm 6.9°x5°	240g	56.8Lx68D
HXC6M75	75mm	1	640*48017μm 8.3°x6.5° 384*288 17μm 5°x3.75°	403g	77Lx86D
HXC3M100	100mm	1	640*48017μm 6.2°x4° 384*288 17μm 3.75°x2.75°	960g	124Lx113D

Athermal Lenses

HXC6A9/HXC6A13/HXC6A19/HXC6A25/
HXC6A35/HXC6A50/HXC6A75/HXC6A100



Item	Focal Length	F No.	FOV	Weight	Size (Length/ L x Diameter/D, mm)
HXC6A9	9mm	1	640*48017μm 69.2°x51.6° 384*288 17μm 42.5°x32°	65g	33Lx38D
HXC6A13	13mm	1	640*48017μm 46.4°x35.2° 384*288 17μm 28°x21.3°	65g	33Lx38D
HXC6A19	19mm	1	640*48017μm 31°x24° 384*288 17μm 19.4°x14.7°	65g	33Lx38D
HXC6A25	25mm	1	640*48017μm 25°x18° 384*288 17μm 15°x11°	85g	35.2Lx38D
HXC6A35	35mm	1	640*48017μm 17.6°x13.2° 384*288 17μm 10.6°x8°	105g	39.5Lx45D
HXC6A50	50mm	1	640*48017μm 12.5°x9.1° 384*288 17μm 7.5°x5.5°	250g	60.5Lx60D
HXC6A75	75mm	1	640*48017μm 8.3°x6.5° 384*288 17μm 5°x3.75°	308g	96Lx85D
HXC6A100	100mm	1	640*48017μm 6.2°x4° 384*288 17μm 3.75°x2.75°	895g	128.5Lx110D

Motorized Lenses

HXC6E50/HXC6E75/HXC6E100/HXC6E150



Item	Focal Length	F No.	FOV	Weight	Size (Length/ L x Diameter/D, mm)
HXC6E50	50mm	1	640*48017μm 12.5°x9.1° 384*288 17μm 7.5°x5.5°	<685g	79Lx134D
HXC6E75	75mm	1	640*48017μm 8.3°x6.5° 384*288 17μm 5°x3.75°	<700g	79Lx126D
HXC6E100	100mm	1	640*48017μm 6.3°x4.5° 384*288 17μm 3.75°x2.75°	<760g	132Lx112D
HXC6E150	150mm	1	640*48017μm 4.2°x3.1° 384*288 17μm 2.5°x1.9°	<2000g	203Lx166D

Dual-view Lenses

HXC6D44/132 HXC6D60/150



Item	Focal Length	F No.	FOV	Weight	Size (Length/ L x Diameter/D, mm)
HXC6D44/132	44mm/132mm	0.8/1.1	640*48017μm f=44 14°x11° f=132 4.7°x3.5° 384*288 17μm f=44 8.5°x6.4° f=132 2.8°x2.1°	<2100g	160Lx160D
HXC6D60/150	60mm/150mm	1	640*48017μm f=60 10.4°x7.8° f=150 4.2°x3.1°	<2100g	240Lx163D

Continuous Zoom Lenses

HXC6Z25~100/HXC6Z30~150



Item	Focal Length	F No.	FOV	Weight	Size (Length/ L x Diameter/D, mm)
HXC6Z25~100	25mm~100mm	1	640*48017μm f=25 25.6°x19° f=100 6.3°x4.5° 384*288 17μm f=25 15°x11° f=100 3.75°x2.75°	<1900g	191Lx130D
HXC6Z30~150	30mm~150mm	1	640*48017μm f=30 20.6°x15.5° f=150 4.2°x3.1° 384*288 17μm f=30 12.4°x9.3° f=150 2.5°x1.9°	<2500g	236Lx158D

Note: please contact ULIRvision for the information of more lenses.

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