

## 13 Industrial USB2.0 CMOS Camera

### 13.1 ICMOS Series C-mount USB2.0 CMOS Camera

#### 13.1.1 ICMOS Basic Characteristic

ICMOS is an industrial CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device. USB2.0 is used as the data transfer interface. Dimensions: 29x29x29 mm excluding lens holder, without optics (metal case) is realized to obey the industrial camera standard.

A 8-pin Hirose HR25-7TR-8PA GPIO connector for trigger, strobe (Optional);

Further, the ICMOS comes with advanced video & image processing application ToupView and providing Windows/Linux/OSX multiple platforms SDK;

Also, native C/C++, C#/VB.NET, DirectShow, Twain Control API are provided.

The ICMOS can be widely used in machine vision and on-line inspection.

The basic characteristic of ICMOS cameras are as follows:

- C-Mount camera with Aptina or OnSemi CMOS sensor;
- Dimensions: 29x29x29 mm excluding lens holder, without optics (metal case);
- 8-pin Hirose HR25-7TR-8PA GPIO connector for trigger, strobe (Optional);
- USB 2.0 interface with screw locks for camera control, data, and power;
- With advanced video & image processing application ToupView;
- Providing Windows/Linux/Mac OS multiple platforms SDK;
- Native C/C++, C#/VB.NET, DirectShow, Twain Control API;



### 13.1.2 ICMOS Datasheet(4)

Order Code	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure(ms)
<b>ICMOS14000KPA</b> <b>IP614000A</b>	14M/MT9F002(C) 1/2.3"(5.73x4.60)	1.4x1.4	0.724v/lux-sec 65.3dB 35.5dB	2.7@4096x3288 10@2048x1644 35@1024 x822	1x1, 2x2, 4x4	0.4ms~2000ms
<b>ICMOS10000KPA</b> <b>IP610000A</b>	10M/MT9J003(C) 1/2.3" (5.98x4.59)	1.67x1.67	0.31v/lux-sec 65.2dB 34dB	3.7@3584x2748 13@1792x1374 35@896 x684	1x1, 2x2, 4x4	0.4ms~2000ms
<b>ICMOS03100KPA</b> <b>IP603100A</b>	3.1M/MT9T001(C) 1/2" (6.55x4.92)	3.2x3.2	1.0 V/lux-sec 61dB 43dB	12@2048x1536 43@1024x768 83@680x510	1x1	0.128ms~2000ms
<b>ICMOS01300KMA</b> <b>IM601300A</b>	1.3M/MT9M001(M) 1/2" (6.66x5.32)	5.2x5.2	2.1 V/lux-sec 68.2dB 45dB	30@1280x1024	1x1	0.64ms~1035.62ms

C: Color; M: Monochrome;

#### Other Specification for ICMOS Camera

Spectral Range	380-650nm (with IR-cut Filter)
White Balance	ROI White Balance/ Manual Temp Tint Adjustment/NA for Monochromatic Sensor
Color Technique	Ultra-Fine™ Color Engine/NA for Monochromatic Sensor
Capture/Control SDK	Windows/Linux/macOS/Android Multiple Platform SDK(Native C/C++, C#/VB.NET, Python, Java, DirectShow, Twain, etc)
Recording System	Still Picture and Movie
Cooling System*	Natural
Cable Connection	<b>Include Locking Screws</b>
User IO	<b>IO with Optocoupler Isolation(Trigger and Flash)</b>

#### Operating Modes

Continuous Capture Mode	Video Mode
Single Capture Mode	<b>Hard Trigger or Soft Trigger</b>

#### Operating Environment

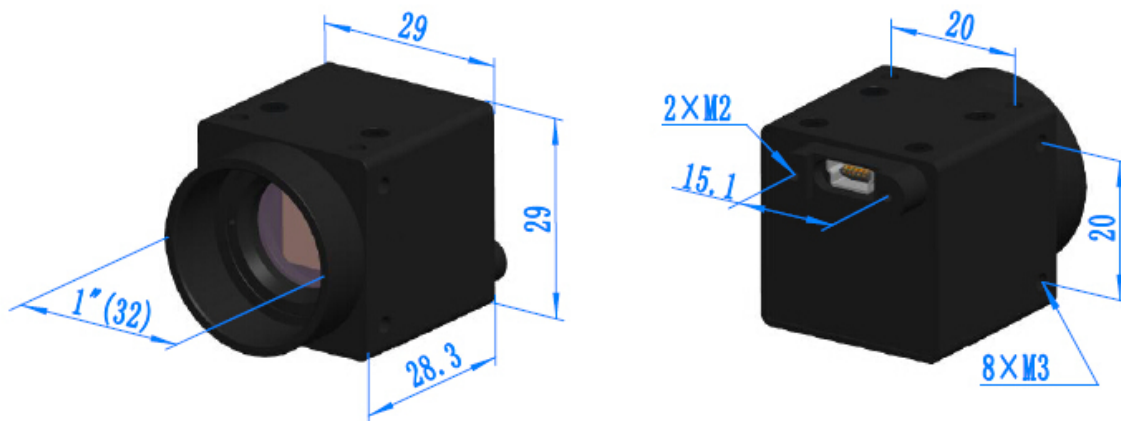
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Power Supply	DC 5V over PC USB Port

#### Software Environment

Operating System	Microsoft® Windows® XP / Vista / 7 / 8 /10 (32 & 64 bit) OSx(Mac OS X) Linux
PC Requirements	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory:2GB or More
	USB Port:USB2.0 High-speed Port
	Display:17" or Larger
	CD-ROM

### 13.1.3 Dimension of ICMOS

The ICMOS body, made from tough, aluminum alloy, ensures a heavy duty, workhorse solution. The camera is designed with a high quality IR-CUT to protect the camera sensor. No moving parts included. This design ensures a rugged, robust solution with an increased lifespan when compared to other industrial camera solutions.



Dimension of ICMOS



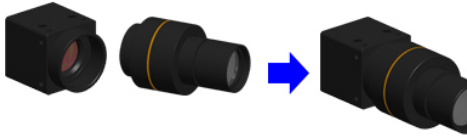
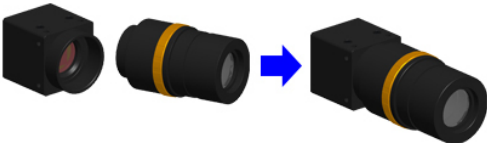

### 13.1.4 Packing Information for ICMOS Camera



Packing Information ICMOS

Standard Camera Packing List			
A	Carton L:52cm W:32cm H:33cm (50pcs, 12~17Kg/ carton), not shown in the photo		
B	Gift box L:14cm W:9.7cm H:6cm (0.17~0.18Kg/ box)		
C	ICMOS series USB2.0 C-mount camera		
D	High-speed USB2.0 A male to B male gold-plated connectors cable /2.0m		
E	CD (Driver & utilities software, Ø12cm)		
Optional Accessory			
F	Adjustable lens adapter	C-mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108001/AMA037 108002/AMA050 108003/AMA075
		C-mount to Dia.31.75mm eyepiece Tube (Please choose 1 of them for your telescope)	108008/ATA037 108009/ATA050 108010/ATA075
G	Fixed lens Adapter	C-mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)	108005/FMA037 108006/FMA050 108007/FMA075
		C-Mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)	108011/FTA037 108012/FTA050 108013/FTA075
<b>Note: For F and G optional items, please specify your camera type(C-mount, microscope camera or telescope camera) , ToupTek engineer will help you to determine the right microscope or telescope camera adapter for your application;</b>			
H	108015(Dia.23.2mm to 30.0mm Ring)/Adapter rings for 30mm eyepiece tube		
I	108016(Dia.23.2mm to 30.5mm Ring)/ Adapter rings for 30.5mm eyepiece tube		
J	108017(Dia.23.2mm to 31.75mm Ring)/ Adapter rings for 31.75mm eyepiece tube		
K	Calibration kit	106011/TS-M1(X=0.01mm/100Div.);	
		106012/TS-M2(X,Y=0.01mm/100Div.);	
		106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)	

### 13.1.5 Extension of ICMOS with Microscope or Telescope Adapter

Extension	Picture	
<p>C-mount Camera</p>	 <p>Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;</p>	
<p>Microscope Camera</p>	 <p>ICMOS+AMAXXX(23.2mm Adapter)</p>	 <p>ICMOS+FMAXXX(23.2mm Adapter)</p>
<p>Telescope Camera</p>	 <p>ICMOS+ATAXXX(31.75mm Adapter)</p>	 <p>ICMOS+FTAXXX(31.75mm Adapter)</p>