

## 8.5 U3CMOS Series C-mount USB3.0 CMOS Camera

### 8.5.1 U3CMOS Basic Characteristic

U3CMOS is an ultra-high performance USB3.0 CMOS camera and it adopts ultra-high performance CMOS sensor as the image-picking device and USB3.0 is used as the data transfer interface.

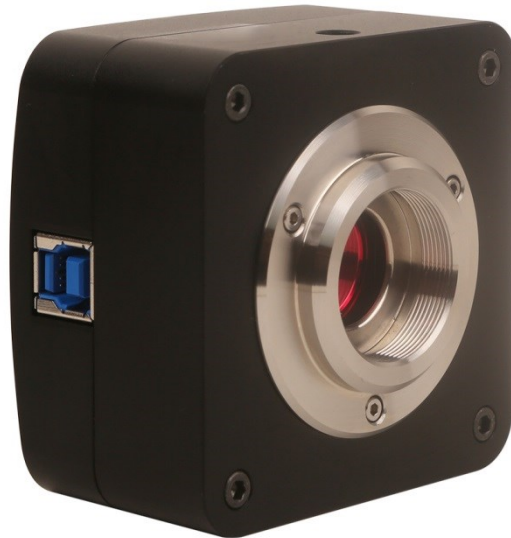
U3CMOS hardware resolutions range from 3.0M to 14M and come with the integrated zinc aluminum alloy compact housing.

U3CMOS comes with advanced video & image processing application ToupView; Providing Windows/Linux/ OSX multiple platforms SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API;

The U3CMOS can be widely used in bright field light environment and microscope image capture and analysis with higher frame rate.

The basic characteristic of the U3CMOS cameras are as follows:

- Standard C-Mount camera with Aptina CMOS sensor;
- With hardware resolution among 3.0M to 18M;
- Integrated zinc aluminum alloy housing;
- USB3.0 5 Gbps interface ensuring high frame rate;
- 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;



## 8.5.2 U3CMOS Datasheet(10)

| Order Code                        | Sensor & Size                          | Pixel(μm)   | G Responsivity<br>Dynamic range<br>SNRmax                              | FPS/Resolution                                                               | Binning                             | Exposure       |
|-----------------------------------|----------------------------------------|-------------|------------------------------------------------------------------------|------------------------------------------------------------------------------|-------------------------------------|----------------|
| U3CMOS18000KPA<br>TP118000A (New) | 18M/AR1820(C)<br>1/2.3"(6.14x4.61)     | 1.25x1.25   | 0.62 V/lux-sec<br>65.8dB<br>36.3                                       | 5.6@4912x3684<br>18.1@2456x1842<br>32.2@1228x922                             | 1x1,2x2,4x4                         | 0.1ms~2000ms   |
| U3CMOS16000KPA<br>TP116000A (New) | 16M/MN34120(C)<br>1/2.33"(6.18x4.66)   | 1.335x1.335 | R: 2453LSB<br>Gr: 2444LSB<br>Gb: 1054LSB<br>B: 996LSB                  | 6.0@4632x3488<br>15.0@2320x1740<br>26.0@1536x1160                            | 1x1, 2x2,3x3                        | 0.2ms~2000ms   |
| U3CMOS16000KPB<br>TP116000B (New) | 16M/MN34230PLJ(C)<br>4/3"(17.60x13.30) | 3.8x3.8     | R: 1315LSB<br>Gr: 2413LSB<br>Gb: 2413LSB<br>B: 1042LSB<br>(Gain = 0dB) | 6.0@4648x3506<br>15.0@2304x1750<br>30.0@1536x1168                            | 1x1,2x2,3x3                         | 0.06ms~15s     |
| U3CMOS16000KMB<br>TM116000B (New) | 16M/MN34230ALJ(M)<br>4/3"(17.60x13.30) | 3.8x3.8     | A: 2650LSB<br>B: 2650LSB<br>C: 2650LSB<br>D: 2650LSB<br>(Gain = 0dB)   | 22@4640x3506<br>36@3840x2160<br>43@2304x1750<br>43@1920x1080<br>49@1536x1168 | 1x1,<br>1x1,<br>2x2,<br>2x2,<br>3x3 | 0.224ms~15s    |
| U3CMOS14000KPA<br>TP114000A       | 14M/MT9F002(C)<br>1/2.3"(5.73x4.60)    | 1.4x1.4     | 0.724v/lux-sec<br>65.3dB<br>35.5dB                                     | 6.2@4096x3286<br>20.8@2048x1644<br>53.3@1024x822                             | 1x1,<br>2x2,                        | 0.224ms~2000ms |
| U3CMOS10000KPA<br>TP110000A       | 10M/MT9J003(C)<br>1/2.3"(5.98x4.58)    | 1.67x1.67   | 0.31v/lux-sec<br>65.2dB<br>34dB                                        | 7.2@3584x2746<br>24.5@1792x1372                                              | 1x1,2x2,4x4                         | 0.4ms~2000ms   |
| U3CMOS10000KMA<br>TM110000A       | 10M/MT9J003(M)<br>1/2.3"(5.98x4.58)    | 1.67x1.67   | 0.4v/lux-sec<br>65.2dB<br>34dB                                         | 7.2@3584x2746<br>24.5@1792x1372                                              | 1x1,2x2,4x4                         | 0.4ms~2000ms   |
| U3CMOS08500KPA<br>TP108500A       | 8.5M/Special(C)<br>1/2.4"(5.56x4.26)   | 1.67x1.67   | 0.31v/lux-sec<br>65.2dB<br>34dB                                        | 8.3@3328x2548<br>26.2@1664x1272                                              | 1x1,2x2,4x4                         | 0.1ms~2000ms   |
| U3CMOS05100KPA<br>TP105100A       | 5.1M/MT9P006(C)<br>1/2.5"(5.70x4.28)   | 2.2x2.2     | 1.76v/lux-sec<br>67.74dB<br>38.5dB                                     | 14.2@2560x1922<br>38.3@1280x960<br>101.2@640x480                             | 1x1,2x2,4x4                         | 0.1ms~2000ms   |
| U3CMOS03100KPA<br>TP103100A       | 3.1M/AR0330(C)<br>1/3"(4.51x3.38)      | 2.2x2.2     | 1.9v/lux-sec<br>100dB<br>39dB                                          | 27.3@2048x1534<br>53.3@1024x770                                              | 1x1, 2x2                            | 0.1ms~2000ms   |

C: Color; M: Monochrome;

### Other Specification for U3CMOS 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 API | Native C/C++, C#/VB.NET, DirectShow, Twain and Labview                     |
| Recording System    | Still Picture and Movie                                                    |
| Cooling System*     | Natural                                                                    |

### Operating Environment

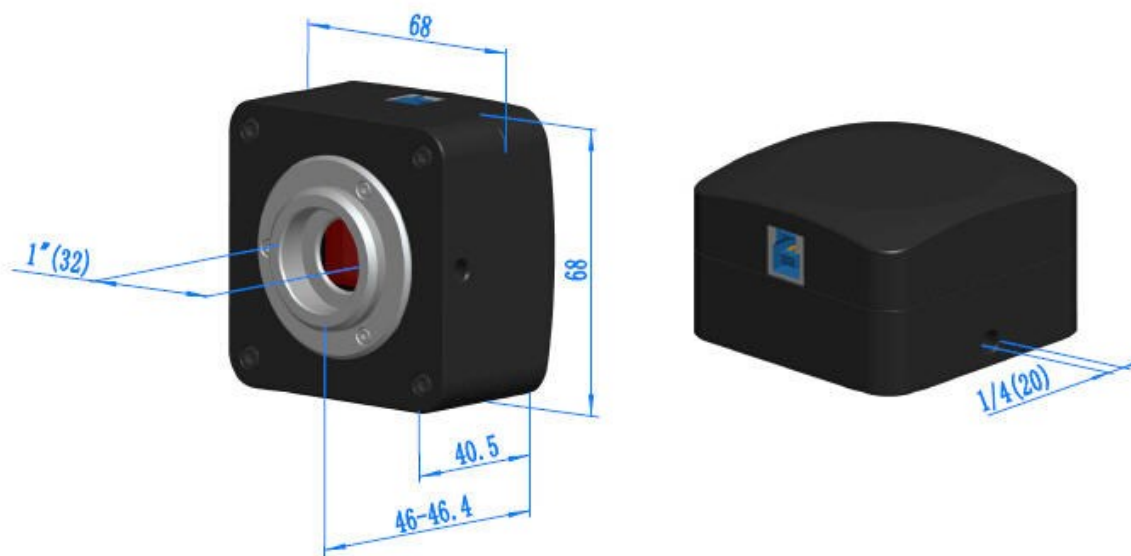
|                                       |                        |
|---------------------------------------|------------------------|
| Operating Temperature(in Centidegree) | -10~ 50                |
| Storage Temperature(in Centidegree)   | -20~ 60                |
| Operating Humidity                    | 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)<br>OSx(Mac OS X)<br>Linux                                                     |
| PC Requirements  | CPU: Equal to Intel Core2 2.8GHz or Higher<br>Memory:2GB or More<br>USB Port:USB3..0 High-speed Port<br>Display:17" or Larger<br>CD-ROM |

### 8.5.3 Dimension of U3CMOS

The U3CMOS body, made from tough, zinc 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 U3CMOS

## 8.5.4 Packing Information for U3CMOS



Packing Information of U3CMOS

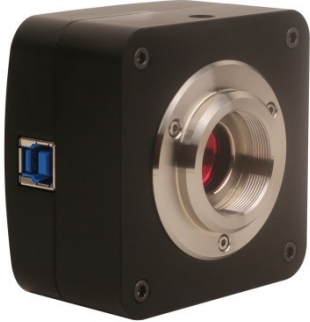
### Standard Camera Packing List

|   |                                                                              |
|---|------------------------------------------------------------------------------|
| A | Carton L:52cm W:32cm H:33cm (20pcs, 12~17Kg/ carton), not shown in the photo |
| B | Gift box L:15cm W:15cm H:10cm (0.67~0.7Kg/ box)                              |
| C | U3CMOS series USB3.0 C-mount CMOS camera                                     |
| D | High-speed USB3.0 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<br>(Please choose 1 of them for your microscope)                                   | 108001/AMA037<br>108002/AMA050<br>108003/AMA075 |
|   |                                                                                                                                                                                                                                        | C-mount to Dia.31.75mm eyepiece tube<br>(Please choose 1 of them for your telescope)                                   | 108008/ATA037<br>108009/ATA050<br>108010/ATA075 |
| G | Fixed lens Adapter                                                                                                                                                                                                                     | C-mount to Dia.23.2mm eyepiece tube<br>(Please choose 1 of them for your microscope)                                   | 108005/FMA037<br>108006/FMA050<br>108007/FMA075 |
|   |                                                                                                                                                                                                                                        | C-Mount to Dia.31.75mm Eyepiece Tube<br>(Please choose 1 of them for your telescope)                                   | 108011/FTA037<br>108012/FTA050<br>108013/FTA075 |
|   | 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; |                                                                                                                        |                                                 |
| 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.);<br>106012/TS-M2(X,Y=0.01mm/100Div.);<br>106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.) |                                                 |

## 8.5.5 Extension of U3CMOS with Microscope or Telescope Adapter

| Extension         | Picture                                                                                                                                                                                                                                                                        |  |
|-------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|
| C-mount Camera    |  <p>Machine vision; Medical imaging;<br/>Semiconductor equipment; Test instruments;<br/>Document scanners; 2D barcode readers;<br/>Web camera and security video;<br/>Microscope imaging;</p> |  |
| Microscope Camera |  <p>U3CMOS+AMAXXX(23.2mm Adapter)</p>  <p>U3CMOS+FMAXXX(23.2mm Adapter)</p>                                 |  |
| Telescope Camera  |  <p>U3CMOS+ATAXXX(31.75mm Adapter)</p>  <p>U3CMOS+FTAXXX(31.75mm Adapter)</p>                             |  |