BUC1D Series C-mount USB2.0 CMOS Camera

Introduction

BUC1D series cameras adopt ultra-high performance CMOS sensor as the image-capture device. USB2.0 is used as the data transfer interface.

BUC1D series cameras' hardware resolutions ranges from 2.1MP to 12MP and come with the zinc aluminum alloy compact housing. BUC1D come with advanced video & image processing application ImageView;Welding Inspection software & Metallurgical Analysis software; Providing Windows/Linux/OSX multiple platform SDK; Native C/C++, C#/VB.NET, DirectShow, Twain Control API; The BUC1D can be widely used in bright field light environment and microscope image capture and analysis with moderate frame rate.

Feature

1. Standard C-Mount camera with Sony or OnSemi CMOS sensor;
2. USB2.0 interface ensuring high speed data transmission;
3. Integrated with large capacity memory chip ensures data synchronous transmission, low latency, high frame rate and stability;
4. Compatible with Microsoft USB Video Class protocol and support the third-party software development;
5. Built in Ultra-fine hardware ISP engine ensures high color restoration;

(1) Support automatic/manual exposure switching, accurate exposure time control, and real-time adjustment of exposure target area;

(2) Support automatic/manual/ROI white balance;

(3) Support color adjustment/color mode selection/image flipping;

(4) Support histogram adjust/flat field correction/dark field correction/video ROI;

7. High performance MJPEG compression algorithm, combined with the unique decoding method of image restoration algorithm ensure highest frame rate of USB2.0 camera in the industry. The FPS for 5MP and 8MP can be up to 30FPS; the FPS for 12MP can be up to 15FPS;

8. Comply with CE and FCC agreements;

9. CNC aluminum alloy housing;

10. With advanced video & image processing application ImageView;

11. Providing Windows/Linux/Mac OS multiple platforms SDK;

12.Weld Penetration Inspection Software

(1) Supports all Weld parameters like depth/penetration, leg lengths, throat lengths, root penetration, angle, % penetration and all 2D measurements
(2) Can find mid-points, perpendiculars to lines, angle between lines
(3) User defined parameters
(4) User defined templates for different types of components, with user defined parameters, expected values and tolerances
(5) User defined Rules/ Criteria for PASS/FAIL
(6) Ability to create a master template for measurements for each type of component
(7) Ability to set expected value as well as tolerances at individual work level or at a master template level
(8) Component level reporting
(9) Date and time on image
(10) Result and parameter name on image
(11) Can add comments to the image
(12) Integrated Help
(13) Reports in Excel or PDF format
(14) Report will have the measurement data as well as the image with drawings
(15) Component level summary report, with images & measurements of each weld spots

13. Very competitive pricing.

14. Metallurgical Image Analysis Software

(1) Image functions

- Image rotation

- Gray scale
- Image flipping (horizontal or vertical)
- Histograms
- Invert
- Brightness correction
- Alpha Blending for Comparison
- Image Rotation for Comparison

(2) Custom Programming (Macros)

- User can create custom programs (Macros) using inbuilt Image processing functions for image enhancement and measurment
- Has a rich set of Image processing functions
- Can use user defined macros with any modules

(3) Images

- Image database
- Image database filtering by date and type (grains, phases, nodularity, inclusion etc)
- Image view or Live view
- Switch between image view and live view
- Supports multiple image formats like JPEG, BMP, PNG etc
- Batch processing of a set of images with modules

(4) Image Analysis Routines

- Powerful image analysis routines which can be used to make custom programs
- Total 37 image functions which can be used for making custom programs for imag analysis

(5) Grain size analysis

- User defined program
- User defined image enhancement & grain detection functions
- User can save program as configuration for future use
- Automatically creates Grain Boundary structure
- Planimetric method
- Hayn Linear Intercept method
- Hillard/Abrams Circle Intercept method
- Manual grain analysis
- Custom grain analysis functions
- Supports grain editing/correction
- Supports multiple samples

(6) Particle size analysis

- User defined configurations with filter conditions
- Image enhancement functions for particle detection
- Analyze and detects particles based on defined configuration/filter
- Analyze particles for length, area, circularity/elongation/roundness, Ferret length/major axis, minor axis
- Can detect area, length, width, circularity/roundness/shape factor, ferret length, perimeter of various particles of different shapes like fibre, impurities on filter etc
- Can group particles identified into different buckets (user defined) by length, area, roundness, width, circularity etc
- Supports multiple samples

(7) Coating thickness measurement
- User defined configurations with filter conditions
- Image enhancement functions
- Automatically identifies coating boundary
- Gives MIN/ MAX/ AVG/ STD DEV of results
- Can measure thickness at user selected points, all points or at user selected intervals
- Supports multiple samples

(8) Porosity analysis
- User defined configurations with filter conditions
- Nodularity by count, Nodularity by area and Nodule density
- Group results by Nodule size 1 to 8
- Can export results for Phase analysis
- Automatically detects Nodules based on set filter conditions
- Supports multiple samples

(9) Inclusion
- User defined configurations with filter conditions
- Detects Inclusions and group by type (A, B, C, D) and further by THIN/THICK
- Detection of Oversized Inclusions
- Supports multiple samples

(10) Phase analysis
- User defined configurations with filter conditions
- Can import results from Nodule/Flake analysis for Graphite/Phase report
- Can detect and isolate Nodules in the image automatically or manually
- Supports Phase splitting
- Supports Manual point count method
- User can save configurations for future use
- Supports multiple samples

(11) Flake analysis
- User defined configurations with filter conditions
- Detects and group Flakes by type A, B, C, D and E
- Detects and group Flakes by size (1 to 8)
- User can manually set Flake types/correction
- Can export results for Phase analysis
- Supports multiple samples

(12) Dendrite Arm Spacing (for Al)
- User defined configurations with filter conditions
- Image enhancement functions
- For analysis on Aluminum
- Supports multiple samples

(13) Decarburization analysis
- User defined configurations with filter conditions
- Image enhancement functions
- Decarburization on Steel
- Supports multiple samples

(14) 2D measurements

- Supports all 2D measurements like length, width, distance between points, angle, area, perimeter
- Supports tools for boundary detection like Line, Circle, Arc, Angle, Curve, Closed curve
- Reports in PDF and Excel format

Specification

Order Code	Sensor & Size(mm)	Pixel(μm)	G Responsivity Dynamic range SNRmax	FPS/Resolution	Binning	Exposure
BUC1D-1200C	12M/IMX577(C) 1/2.3" (5.95x4.71)	1.55x1.55	250LSB 70dB 43dB	20@3840x3040 20@1920x1520 20@960x760	1x1 1x1 1x1	0.1-2000 ms
BUC1D-830C	8.3M/IMX274(C) 1/2.5" (6.22x3.50)	1.62x1.62	236mV 70dB 43dB	30@3840x2160 30@1920x1080 30@1280x720 30@960x540	1x1 1x1 1x1	0.1-2000 ms
BUC1D-510AC	5.1M/AR0521(C) 1/2.5" (5.70x4.28)	2.2x2.2	18.8ke-/lus 73dB 40dB	30@2592x1944 30@1280x960 30@640x480	1x1 1x1 1x1	0.1-1000 ms
BUC1D-510BC	5.1M/IMX335(C) 1/2.8" (5.18x3.89)	2.0x2.0	505mV 70dB 43dB	26@2592x1944 26@1280x960 26@640x480	1x1 1x1 1x1	0.1-2000 ms
BUC1D-310C	3.1M/Aptina(C) 1/2.5" (5.73x4.3)	2.8x2.8	18.8ke-/lus 73dB 40dB	30@2048x1536 30@1024x768	1x1 1x1	0.1-1000 ms
BUC1D-210C	2.1M/IMX307(C) 1/2.8" (5.73x4.3)	2.9x2.9	1300mV 73dB 43dB	38@1920x1080 38@1024x768	1x1 1x1	0.1-2000 ms

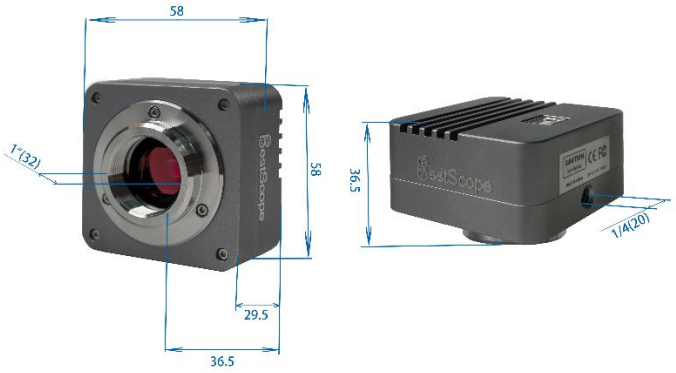
C: Color; M: Monochrome;

Other Specification for BUC1D Camera	
Spectral Range	380-650nm (with IR-cut Filter)
White Balance	Auto/Manual/ROI White Balance/Manual Temp Tint Adjustment/NA for Monochromatic Sensor
Color Technique	Ultra-fine hardware ISP 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
Operating Environment	
Operating Temperature (in Centidegree)	-10~ 50
Storage Temperature (in	-20~ 60

Centidegree)	
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
Min PC Configuration	Win 10 64 bit, 8 GB RAM, 2 free USB ports, 21 inch or higher monitor, 500 MB free space. MS Excel 2016 or higher if you need reports in Excel format, Adobe Reader 11.0 or higher if you need reports in PDF format

Dimension of BUC1D

The BUC1D 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.



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Packing Information for BUC1D

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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 (0.5~0.55Kg/ box)	
C	BUC1D series USB2.0 C-mount CMOS 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)
		C-mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)
G	Fixed lens Adapter	C-mount to Dia.23.2mm eyepiece tube (Please choose 1 of them for your microscope)
		C-mount to Dia.31.75mm eyepiece tube (Please choose 1 of them for your telescope)
	Note: For F and G optional items, please specify your camera type(C-mount, microscope camera or telescope camera) , Our 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.); 106012/TS-M2(X,Y=0.01mm/100Div.); 106013/TS-M7(X=0.01mm/100Div., 0.10mm/100Div.)

Extension of BUC1D with Microscope or Telescope Adapter

Extension	Picture	
C-mount Camera		Machine vision; Medical imaging; Semiconductor equipment; Test instruments; Document scanners; 2D barcode readers; Web camera and security video; Microscope imaging;
Microscope Camera	 23.2mm Adjustable Adapter 23.2mm Fixed Adapter	
Telescope Camera	 31.75mm Adjustable Adapte 31.75mm Fixed Adapter	