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AFDM411 Electric Controlled Continuous Zoom and Autofocus Digital Microscope



- 5 groups 16 elements EMZO with 0.028~0.56X, 20 zoom ratio, supports auto and manual focus
- 192mm standard working distance with 150~195mm depth of field
- At standard working distance, the large field of view 200mm*112.5mm at low magnification, helping users to quickly locate the target object, the small field of view 10mm*5.6mm at higher magnification, helping users to observe microscopically
- Sony 1/2.8" 4K Starvis CMOS with high signal-to-noise ratio
- 4K HDMI/USB/ETH/WiFi multiple video outputs
- 4K/1080P auto switching according to monitor resolution
- SD card/USB flash drive for captured image and video storage, support local preview and playback
- Built-in mouse control software XFCAMView, all functions can be realized with USB mouse
- Embedded mouse Camera Control Panel, Measurement Toolbar, Synthesis Control Toolbar, AF Control Panel
- Multi-language support
- Head suction LED ring light, the brightness can be directly controlled by XFCAMView
- With the adapter bracket of 76mm diameter, a electric controlled continuous zoom AFDM can be built

AFDM411 Electric Controlled Continuous Zoom and Autofocus Digital Microscope

AFDM is a series of electric controlled continuous zoom and autofocus all-in-one digital microscope with a large field of view by ToupTek Photonics. It is integrated with HDMI camera, Electric Controlled Continuous Zoom Auto-focus Objective and LED Integrated Illumination Light. AFDM is the abbreviation of Auto-focus Digital Microscope. Different products in the AFDM series can be formed with different part to satisfy the application requirement.

AFDM can be assembled with various brackets or arms and offer a continuous zooming ratio with different lens. AFDM also supports autofocus mode and manual focus mode.

AFDM comes with a high-performance SONY CMOS sensor. It also has an embedded ARM core, allowing the camera to be connected directly to the HDMI monitor. The camera has XFCAMView software built within it, including Camera Control Panel, Auto Focus Control Panel, Measurement Toolbar, and Synthesis Camera Control Toolbar. Users can directly control the camera and perform various operations through a USB mouse. The images and videos captured by AFDM can be saved on an SD card for on-site analysis and follow-up research.

AFDM can be widely used in industrial inspection, medical observation, teaching and scientific research, automation system, and other fields.

AFDM411 supports 4K30FPS HDMI output and USB/ETH/WIFI outputs.

AFDM Camera Module Datasheet

Order Code	Sensor & Size(mm)	Pixel(μm)	G Sensitivity Dark Signal	FPS/Resolution	Binning	Exposure
H1080PA	Sony IMX462LQR-C 1/2.8"(5.57x3.13)	2.9x2.9	921 mv with 1/30s 0.15 mv with 1/30s	60@1920x1080 (HDMI)	1x1	0.06ms~918ms
H4KPA	Sony IMX415LQR-C 1/2.8"(5.57x3.13)	1.45x1.45	300mv/0.13 with 1/30s	30@3840*2160(HDMI) 30@3840*2160(NETWORK) 30@3840*2160(USB)	1x1	0.04~1000

C: Color; M: Monochrome;

AFDM Lens Module Datasheet

Order Code	Working Distance(mm)	Zoom Range	MTF(lp/mm)	Distortion	FOV@1.0X(mm)	FOV@20X(mm)
EMZO20XA	156-196	0.028X~0.56X	160	0.5%	200x112.5	10x5.6

1X and 20x are defined as the normalized magnification, which is only used to represent the relative relationship between the lowest and highest magnification. Here, the normalized equation $1x = 0.028/0.028$; $20X = 0.56/0.028$;

AFDM Light Module

Order Code	LED	Power	Inner Dia.(mm)	Out Dia.(mm)
DRL-5076A-NPC	8 CREE xpes	3V/3A	50	76

DRL: LED direct ring light with adjustable brightness; NPC: No power cable

AFDM411 Characteristic And Specification

The AFDM411 comes with H1080PA HDMI camera, EMZO-20XA lens and DRL-5076A-NPC light source;



Interface & Button Functions

USB Mouse	USB mouse forXFCAMViewcontrol
USB2.0	Connect USB flash drive to save pictures and videos Connect 5G WLAN module to transfer video wirelessly in real time withToupView/ToupLite
HDMI	Comply with HDMI1.4 standard. 4K/1080P format video output and supporting automatic switch between 4K and 1080P format according to the connected monitors
USB Video	Connect PC or other host device to realize video image transmission withToupView/ToupLite
LAN	LAN port to connect router and switch to transfer video withToupView/ToupLite
ON/OFF	Power on/off switch
LED	Power LED indicator
SD	Comply with SDIO3.0 standard and SD card could be inserted for video and images saving
DC12V3A	DC12V3A power input

XFCAMView Software Functions

UI Operation	With USB mouse to operate on the embeddedXFCAMView
Image Capture	8M (3840*2160) JPEG/TIFFimage in SD card or USB flash drive
Video Record	Video format : 8M(3840*2160) H264/H265encoded MP4 file Video saving frame rate:30fps
Camera Control Panel	IncludingExposure,Gain,White Balance,Sharpness,Denoise,Denoise,Saturation, Gamma, Contrast,Brightness,Power Frequencycontrol
Measurement Toolbar	IncludingCalibration,Measurement, and measurement parameterExportfunctions
Synthesis Control Toolbar	Including softwareZoom,Flip,Freeze,Crosshair,LEDControl,Auto-focus,Comparison,Browser,Setting,VersionCheckfunction
Auto Focus Control Panel	IncludingZoom,AutoFocus,OnePush,ManualFocus,Reset, and other functions

Software ToupView/ToupLite Environment under LAN/WLAN/USB Video Output

White Balance	Auto White Balance
Color Technique	Ultra-Fine Color Engine
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 or Movie
Operating System	Microsoft® Windows® XP / Vista / 7 / 8 / 8.1 /10(32 & 64 bit)/ToupView OSx(Mac OS

PC Requirements	X)/ToupLite Linux/ToupLite
	CPU: Equal to Intel Core2 2.8GHz or Higher
	Memory: 4GB or More
	Ethernet Port: RJ45 Ethernet Port
	Display:19" or Larger
	CD-ROM
Operating Environment	
Operating Temperature(in Centidegree)	-10~ 50
Storage Temperature(in Centidegree)	-20~ 60
Operating Humidity	30~80%RH
Storage Humidity	10~60%RH
Dimension	
Length x Width x Height	80mm x 80mm x 80mm
Shipping Weight	0.75kg

AFDM411

The AFM101 comes with H1080PA HDMI camera, EMZO-20XA lens and DRL-5076A-NPC light source(Optional);

	
Front View of the AFDM411	Back View of the AFDM411
	
Normal View	Side View
	
The AFDM411 and Screen	



UI of the XFCAMView for AFDM Series Product

Potential Application

- Scientific research, education (teaching, demonstration and academic exchanges);
- Digital laboratory, medical research;
- Industrial visual (PCB examination, IC quality control);
- Medical treatment (pathological observation);
- Food (microbial colony observation and counting);
- Aerospace, military (high sophisticated weapons);

AFDM411 Dimension

Installation drawings(Click to enlarge). The AFDM series body, made from tough, CNC aluminium alloy, ensures a heavy duty, workhorse solution. The HDMI 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 HDMI solutions.



Dimension for AFDM411

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