

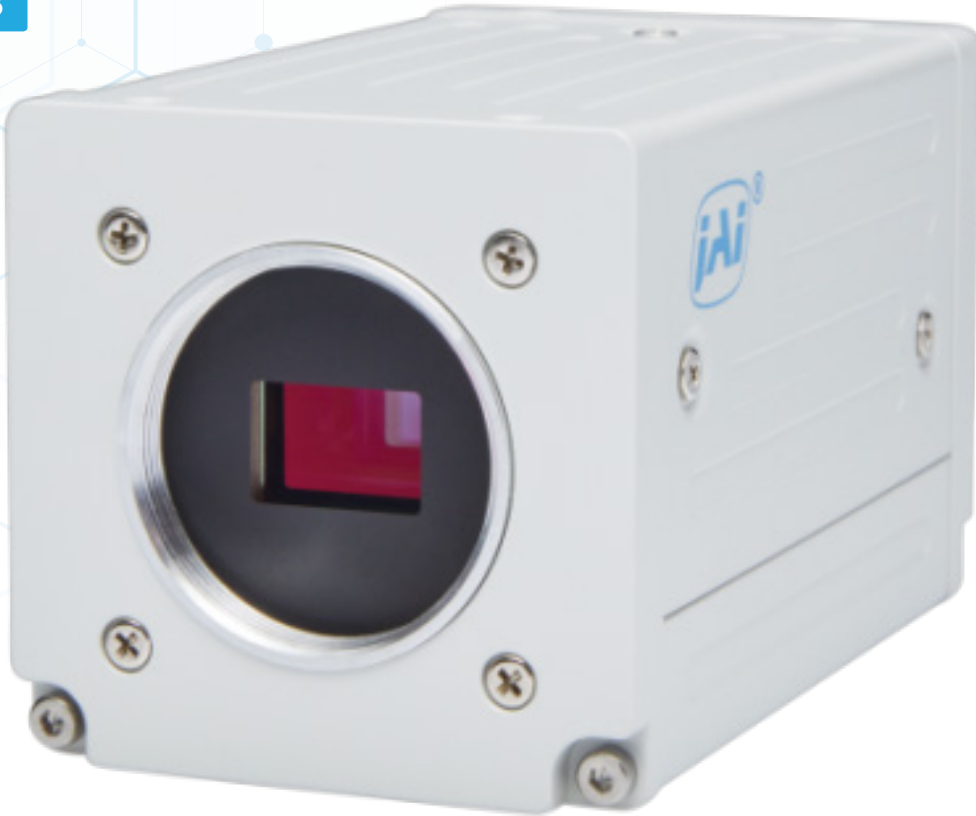
# AP-1600T-USB-LSX

## Technical Datasheet



See the possibilities

IMX273



## Apex Series

Apex Medical & Life Sciences Solutions is a suite of 3-CMOS area scan cameras offering advanced color imaging capabilities for a wide range of applications in the medical and life sciences markets. The multi-sensor prism technology provides better color fidelity and spatial precision than traditional Bayer color cameras, while the USB3 Vision interface offers excellent plug-and-play compatibility.

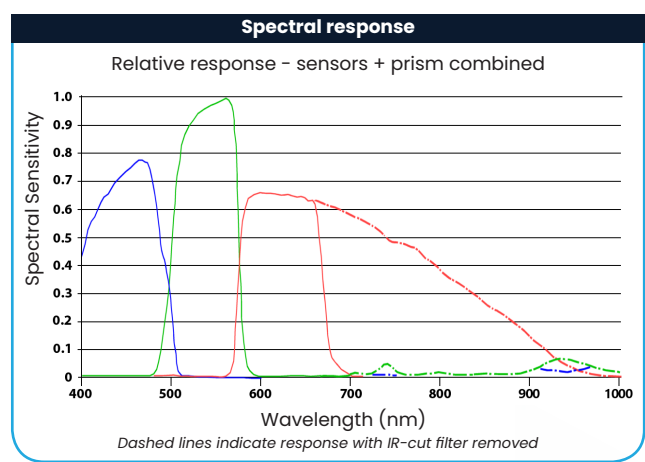
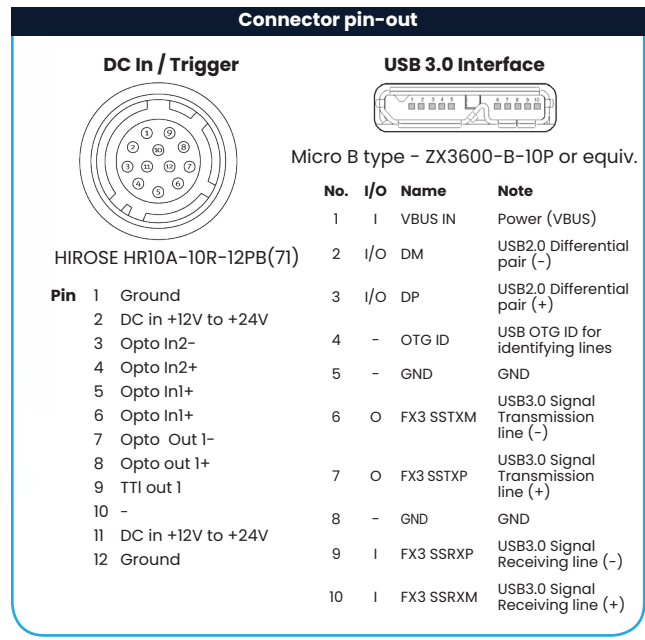
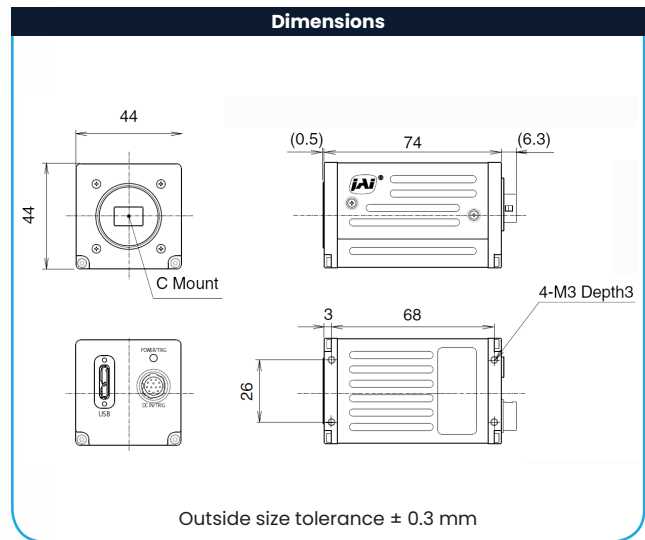
All Apex Medical models are fully integrated with two of the most popular microscopy software solutions – Image-Pro® from Media Cybernetics and the  $\mu$ Manager open source software package.

### Specification Highlights

<b>SENSOR:</b>	IMX273	<b>SHUTTER:</b>	Global Shutter
<b>FORMAT:</b>	1/2.9"	<b>FRAME RATE:</b>	79 fps
<b>PIXEL SIZE:</b>	3.45 x 3.45 $\mu$ m	<b>INTERFACE:</b>	USB3 Vision (PoUSB)
<b>LENS MOUNT:</b>	C-Mount	<b>RESOLUTION MP:</b>	1.6 MP
<b>SPECTRUM:</b>	Color (Visible + NIR)	<b>RESOLUTION WxH:</b>	1456 x 1088 px

Specifications	AP-1600T-USB-LSX
Sensor	1/2.9" 3-CMOS global shutter (IMX273)
Active pixels	1456 (h) x 1088 (v) x 3 (R,G,B)
Frame rate, full frame	78.9 frames/sec. @ 8-bit
Active area	5.02 mm (h) x 3.75 mm (v) - 6.27 mm diagonal
Pixel size	3.45 μm x 3.45 μm
System clock	74.25 MHz (for pulse generator)
Read-out modes	
Full ROI (single)	1456 (h) x 1088 (v) up to 78.9 fps H: 16 to 1456 pixels in 16 pixel steps V: 2 to 1088 lines in 2 line steps
ROI (multi) Binning	Up to 4 non-overlapping areas can be defined. 1x2, 2x1, 2x2
EMVA 1288 Parameters	12-bit output format
Absolute sensitivity	3.72 p (λ = 525 nm)
Maximum SNR	40.68 dB
Traditional SNR*	>60 dB (0 dB gain, 10-bit)
Video signal output	8/10/12-bits per channel <sup>†</sup> (24/30/36-bit RGB)
Video modes	Normal, Single ROI, Multi ROI, Sequencer
Gain	Manual control - master mode or individual R/G/B channels Auto gain control - off, continuous, one-push
White balance	Off, 4 presets (3200K, 5000K, 6500K, 7500K), or one-push/continuous AWB using gain or exposure time (3000K to 9000K)
Gamma/LUT	0.45 to 1.0 (9 steps) or 257-point programmable LUT
Shading correction	Flat shading, color shading
Trigger input	Opto In (2), Pulse Generators (4), Software, NAND Out (2), User Output (4)
Exposure modes	Timed/EPS, Trigger Width, Auto
Electronic shutter	(can be set independently for R/G/B channels) 15.26 μs to 8 sec. in 1 μs steps (8-bit) 15.26 μs to 8 sec. in 1 μs steps (10-bit)
Auto Level Control (ALC)	Shutter range from 100 μs to 13.427 ms, gain range from 0 dB to +12 dB. Tracking speeds and max. values adjustable.
Pre-processing functions	Color enhancer, edge enhancer, color space conversion (RGB to HSI, XYZ, sRGB, Adobe RGB), blemish compensation (200 px/channel)
Operating temp. (ambient)	-5°C to +45°C (20 to 80% non-condensing)
Storage temp. (ambient)	-25°C to +60°C (20 to 80% non condensing)
Vibration	3G (20 Hz to 200 Hz, XYZ directions)
Shock	50G
Regulations	CE (EN61000-6-2, EN61000-6-3) FCC Part 15 Class B, RoHS/WEEE
Power	+12V to +24V DC ± 10%. 5.3 W typical @ +12 V
I2-pin USB 3.0	Bus power: not supported
Lens mount	C-mount
Dimensions (H x W x L)	44 mm x 44 mm x 74 mm (excl. connectors)
Weight	170 g
Ordering Information	
AP-1600T-USB-LSX	3-CMOS prism color camera with USB3
AP-1600T-USB-NF-LSX	Vision Same as above with IR-cut filter removed

\*Traditional SNR is based on random noise in a single frame, where EMVA SNR measurements consider more comprehensive noise sources and variance over time.



<sup>†</sup>12-bit output available in video processing bypass mode. See manual for details.

## Product Highlights

- High resolution prism-based 3CMOS camera
- Full spatial resolution and true RGB color values with no interpolation
- Pre-screened to meet strict quality standards for dust/FODs in imaging path
- Available with or without IR-cut filter for applications needing extended red/NIR response
- Individual analog gain and exposure control for R, G, and B channels
- Color and edge enhancement functions
- On-board RGB to HSI, XYZ, sRGB and Adobe RGB color space conversions
- Single and multi-ROI's
- RGB video output with 8, 10, or 12-bits per channel\*
- Compact size and white housing designed for clinical/laboratory environments
- Excellent shock and vibration resistance
- USB3 Vision interface
- C-mount lens mount

\* Some video processing functions not available with 12-bit output

## Additional Product Images



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