

PRODUCT BRIEF

minnieScope™ -XS - videoscope with illumination;
up to 1Mpixel resolution, under 1.4mm OD for medical
or industrial applications

introduction:

With a distal tip diameter of less than 1.4mm, the minnieScope™ -XS is the world's smallest videoscope (imaging sensor and illumination) with up to 1Mpixel output resolution when used with Enable's Video Processing Units (VPUs).

It is an ideal solution for imaging applications that require good image quality within less than 1.4mm outside diameter at the distal end: For example medical devices where clinical use could be greatly enhanced with the addition of embedded real-time, low-cost, miniature size optical imaging. Or industrial application for accessing narrow conduits or passages while not compromising image quality or mechanical flexibility.

The minnieScope™ -XS assembly includes the CMOS image sensor, imaging optics (μ Objective™ lens), illumination fibers (lightPort™ high-NA fibers), a highly-flexible and miniature multi-conductor cable, and two proximal connections: electrical and optical; all in an incredibly compact cross-sectional footprint.

Still images or live video can be captured by connecting the proximal electrical connector into Enable's proprietary VPUs. The hardware is available with HDMI or USB3.0 output for displaying an image on a monitor or a computer.

The optical connector is compatible with Enable's white-light sources or any other fiber-coupled light source with a multimode SMA-905 female port.

The unique architecture of the minnieScope™ -XS design allows for combined ultra-low power consumption with high sensitivity rolling shutter pixel and large full-well capacity, for applications where high SNR is mandatory.

In order to address a broad array of imaging needs, Enable can design and procure custom lenses tailored to your specific imaging requirements without compromising the miniature footprint of the sensor. Same customizing goes for the electrical conductors.

Patented steering conduits are also available. They can provide full 360 degree steerability with single hand operation, in the smallest possible shaft profile, in a varying array of sizes and stiffness.

Custom arrangements can be made based on project and volume requirements.

Contact us to discuss your imaging and illumination needs.

product features:

- Up to 1Mpixel resolution in an extremely small footprint.
- highly-flexible and miniature cabling including fiber illumination.
- sterilizable design.
- low-cost for use with disposable products, yet durable enough to withstand multiple sterilization cycles for re-usable devices.
- custom optical designs for μ Objective™ lens for different imaging needs.
- custom cable and fiber sizes and designs available.
- custom videoscope shafts with different mechanical properties also available.
- video outputs include HDMI/DVI or USB 3.0.
- 360 degree steerable conduits with single-hand operation in the smallest possible OD profile are also available. Ideal for demanding endoscopic procedures.

product specifications: ENA-10005-AS

camera specifications:		optical & electrical cable:	
native resolution	160,000	electrical cable diameter, D2 , (mm)	<0.56 to <0.79 ⁴
effective pixels	400H x 400V	lightPort™ fiber diameter, D3 , (μm)	160 to 250 ⁴
frame rate	60 fps full resolution	length (optical or electrical) (m)	2.0 typ. - 5.0 max ⁵
electrical connector	Mini-B USB, 5pin ¹	video processing unit (VPU):	
optical connector	SMA-905 multimode ²	voltage input	12VDC typ. 400mA max
color mosaic	RGB Bayer pattern	system functions	Custom ⁶
scan mode	progressive	signal output	HDMI/DVI (1080p)
optical size	1/25.7"		400x400 to 1000x1000 ⁷
field of view (diagonal in air)	90 deg or 100 deg ³		or
device profile, D1 , (mm)	1.39mm to 1.62mm ³		USB 3.0 (400x400)

- ¹ Compatible with Enable’s Video Processing hardware. Enable Inc VPUs **ARE REQUIRED** to get an image out of the minnieScope™ -XS sensor. Two different types of VPUs are available: **ENA-10017-AS** (HDMI output only) and **ENA-10011-AS** (HDMI and USB 3.0 output).
- ² Compatible with Enable’s LED-based fiber-coupled light sources **ENA-6010-xxx-AS** or **ENA-10025-AS** or **ENA-10101-AS** or any other fiber coupled white-light source with a multimode-fiber SMA-905 connection.
- ³ See in the “mechanical dimensions” and “part number and configuration ordering” sections for specific sizes under different configurations.
- ⁴ The minnieScope™ -XS is available in 4 different sizes of electrical cables and 3 different fiber types and sizes. The electrical cable and fibers are all contained within a custom flexible shaft with a 1.3mm OD. Any other custom size of optical fiber or electrical cable can be designed and constructed as per customer’s specifications.
- ⁵ Shielded cable assemblies (**EC1** or **EC3** style cable from the configuration table) must be selected for applications that require minnieScope™ -XS lengths longer than 2m.
- ⁶ System functions and signal output format vary depending on VPU model. Custom solutions for the VPUs can also be designed and made to specific customer needs.
- ⁷ Interpolation algorithms allow increasing the output resolution of the HDMI output port of the VPU from half-VGA to XGA+ while maintaining sharp images and suppressing pixilation of the enlarged image. Both VPU models can step the resolution of the output image from 400x400 to 1,000x1,000 pixels in steps of 200 pixels. The USB3.0 output remains unchanged and always equal to 400x400.

Please contact us for all your imaging needs and more detailed data sheets.