15.6" MOBILE ENDOSCOPY IMAGING SYSTEM | EN–150

Configurable ODM/OEM Platform for Medical Visualization Systems



FEATURES

- 15.6" Full HD Capacitive Touch Display (1920 × 1080)
  (Customizable display sizes up to 32" for OEM/ODM projects)
- Deterministic FPGA-Based Real-Time Image Processing Architecture
- Heterogeneous ARM + FPGA Computing Platform
- Supports Up to 3 Customizable Endoscope Interfaces
- Support Multi-Resolution Endoscope Signal
- Support Dual-Stream Imaging
- Linux-Based Platform (Optional: Android OS Support)
- Multi-Interface Video Output (HDMI / 3G-SDI)
- Long Lasting Battery Power for Mobile Operation

The EN-150 is a portable FPGA-accelerated endoscopy imaging platform engineered for integration into advanced medical visualization and surgical imaging systems. Built on a heterogeneous ARM + FPGA architecture, the platform delivers deterministic real-time image processing, multi-scope hardware support, and flexible video output within a 15.6" baseline reference configuration. Display size, mechanical structure, electrical interfaces, and I/O architecture are fully scalable to align with OEM system specifications. Provided as a configurable integration platform rather than a fixed-function finished device, the EN-150 supports collaborative ODM/OEM development. Mechanical design, firmware architecture, regulatory alignment strategy, and feature configuration are jointly defined to support long-lifecycle medical deployment and structured compliance pathways.

SPECIFICATIONS

**Specifications subject to change without notice. Final configuration defined per project agreement.*

SYSTEM

System Processor	**Octa-core 64-bit ARM SoC**
	4 × Cortex-A76 (up to 2.4 GHz) + 4 × Cortex-A55 (up to 1.8 GHz)
Image Processing FPGA	AMD Kintex™-7 FPGA (XC7K325T)
Processing Architecture	Heterogeneous ARM SoC + FPGA Architecture
Memory	4 GB LPDDR4 (Optional: 8 GB)
Storage	64 GB eMMC 5.1 (Optional: 128 GB)
OS	Linux / Android
	Windows OS support available upon ODM project evaluation

DISPLAY

Screen Size	15.6-inch LCD (Scalable via ODM)
Resolution	1920 × 1080 (Full HD)
Brightness	350 nits standard (Up to 1000 nits via ODM Configuration)
Touch Screen	Capacitive 10-Point Multi-Touch
Cover Glass	Chemically strengthened

IMAGING INTERFACE

Physical Endoscope Ports	3 × Dedicated Endoscope Interfaces
Resolution Classes	Port 1: 1920 × 1080 class
	Port 2: 700 × 700 class
	Port 3: 400 × 400 class
	*Additional configurations available upon project evaluation.
Validated Image Sensors	OmniVision OV6946 / OV9734
	OCHTA10 / OCHFA10
	*Additional sensors supported subject to technical evaluation.
Default Configuration	Single Active Endoscope
	Single Video Output Stream
Extended Configuration (ODM)	Dual Simultaneous Endoscope Operation
	Dual Independent Video Streams
	(NRE and development timeline required)

COMMUNICATIONS

Wi-Fi	Wi-Fi 5 (802.11 a/b/g/n/ac), dual-band 2.4 GHz / 5 GHz
Bluetooth	Bluetooth 5.2

VIDEO OUTPUT & I/O INTERFACE

Video Output	1 × HDMI (1080p60)
	1 × 3G-SDI (1080p60, BNC)
USB	2 × USB 3.0 Type-A
	1 × USB 2.0 Type-A
Ethernet	2 × Gigabit Ethernet (10/100/1000Base-T, RJ-45)
Power Input	1 × DC Power Input
Controls	Physical Power Button
	Optional: On-Screen Controls
Audio (ODM Optional)	Speaker & Microphone available upon request

POWER

AC Adapter	**Input:** 100–240 V AC, 50–60 Hz
	Output: 19 V DC, 3.42 A (65 W)
Battery	10.8 V Lithium-ion, 8700 mAh (94 Wh)

MECHANICAL

Dimensions	391 × 255 × 37.5 mm
Mounting	VESA 100 × 100 mm compatible
Kickstand	180° Rotatable Integrated Design

ENVIRONMENTAL

Operating Temperature	10°C to 35°C
Storage Temperature	0°C to 40°C
Humidity	30% to 85% RH (Non-Condensing)
Atmospheric Pressure	80-106kPa
Altitude	≤ 2000 m

*Extended environmental specifications available via ODM customization.

REGULATORY & COMPLIANCE SUPPORT

Designed to support medical regulatory development programs, including alignment with:
IEC 60601-1, IEC 60601-1-2, IEC 61000-4-2

*Final certification, risk classification, and regulatory submission scope are defined and executed per customer project configuration.

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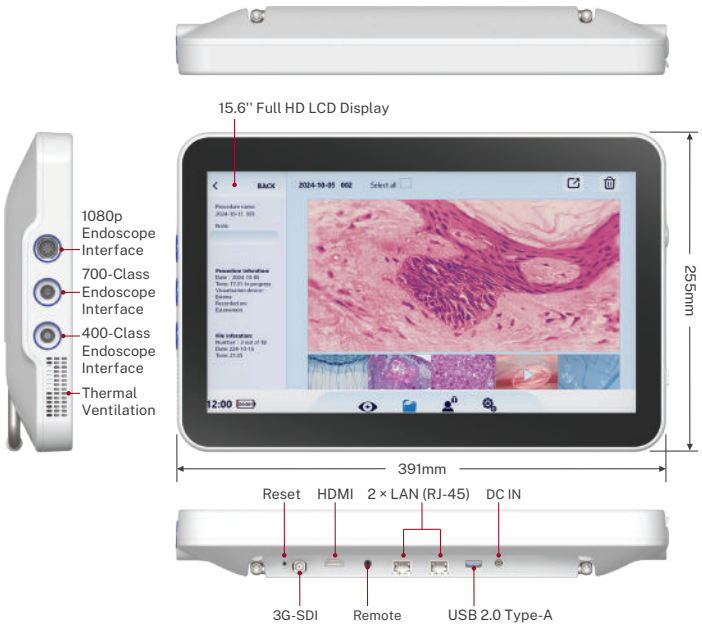
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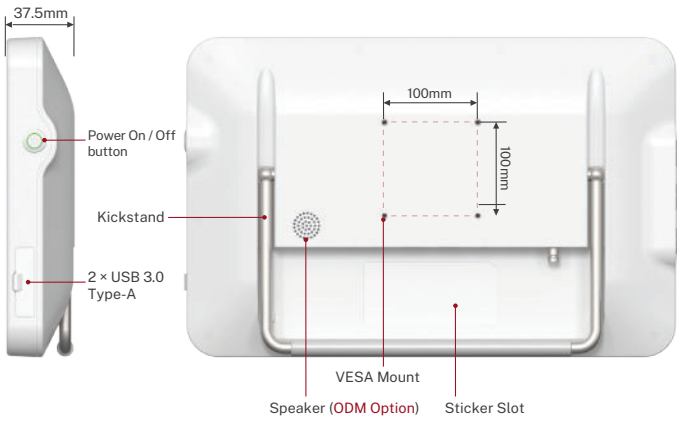
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DIMENSIONS AND SYSTEM LAYOUT





FLEXIBLE MOUNTING & USAGE OPTIONS



VESA 100 × 100 Mount Compatible

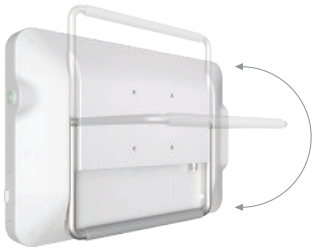
Example installations



Wall-Mounted via Articulating Arm



Mounted on a Mobile Medical Cart



180° Rotatable Design

180°



Can Be Used as a Carry Handle

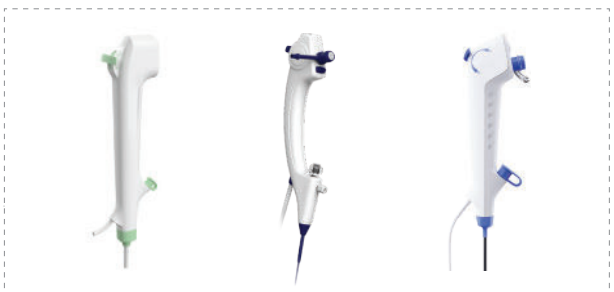


Can Be Used as a Kickstand

CUSTOMIZABLE ENDOSCOPE INTERFACES (ODM)



Customizable Endoscope Connectors (ODM)



Endoscope System & Handle Interface Customization (ODM)

Interface and control functions can be customized based on endoscope system design and project requirements, including:

- Directional control
- Lens bending adjustment
- Illumination control
- Camera module control
- Customizable function buttons
- Suction and irrigation control interfaces
- Video and image data handling
- Data transmission and storage
- System status and control signaling

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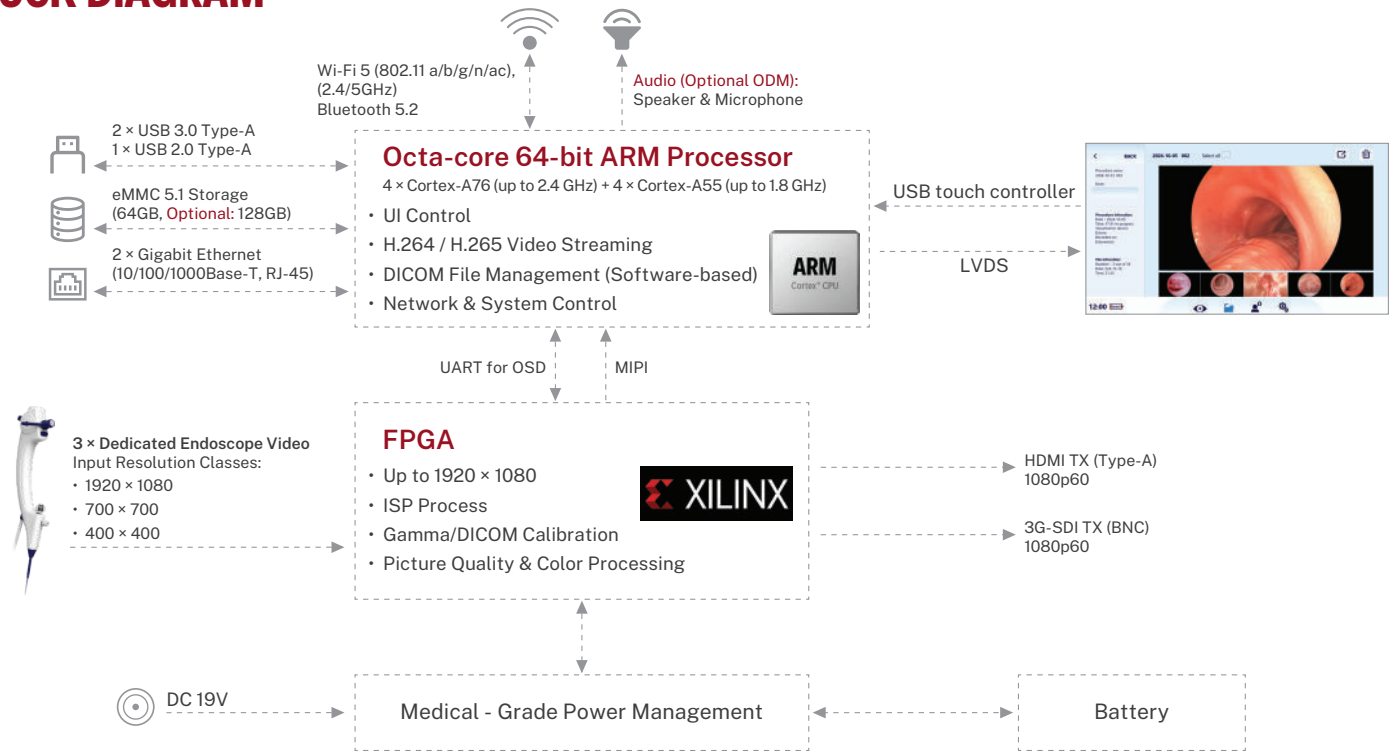
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BLOCK DIAGRAM



OSD & IMAGE PROCESSING (SAMPLE FIRMWARE CONFIGURATION)

Image Controls

Brightness	-50 to +50
Contrast	1 to 10
Saturation	-50 to +50
Gamma	1.0 to 2.6
Digital Zoom	1.0× to 2.0×

System Settings

Image Mask	Square / Octagon / Circle
LED Intensity	0 to 10
Language	English

Color Adjustment

Red Gain	-50 to +50
Green Gain	-50 to +50
Blue Gain	-50 to +50
Light Metering Mode	Peak / Auto / Average

Image Enhancement

Sharpening Mode	Edge / Detail
Sharpening Level	0 to 10
2D Noise Reduction	0 to 10
Bad Pixel Correction	0 to 10

FPGA-BASED IMAGE PROCESSING ARCHITECTURE

The EN-150 integrates an AMD Kintex™-7 FPGA to implement deterministic, hardware-accelerated image processing for real-time endoscopic imaging applications.

- **Deterministic Low-Latency Processing** – Parallel hardware pipelines enable predictable, sub-frame latency for stable surgical visualization.
- **Hardware-Accelerated Noise Reduction** – Dedicated FPGA logic performs real-time spatial filtering and noise suppression in low-illumination environments.
- **High-Precision RGB & Gamma Control** – LUT-based color matrix and gamma processing support accurate tissue visualization and DICOM-aligned calibration workflows.
- **Real-Time Edge Enhancement** – Hardware-executed convolution improves image clarity without CPU overhead or frame instability.
- **Configurable Processing Architecture** – Modular FPGA design enables sensor adaptation and project-level feature customization within defined resource allocation.

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