



VISION



AI



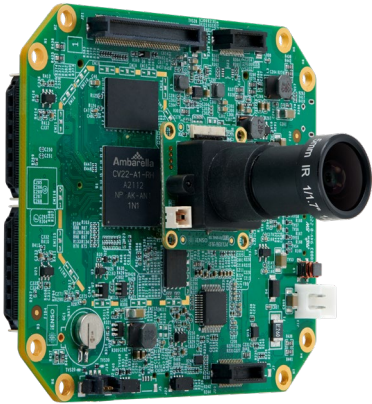
CLOUD



SECURITY

Embedded Vision Camera Platform

iVS-CV22



Unlock the full potential of vision data for your application.

Embedded, modular, cloud-connected, and secure – iENSO develops and delivers vision systems for any application.

Key features:

- Quad-core Arm®Cortex®-A53 up to 1 GHz
- Up to 4Kp60 maximum encoding performance
- CNN / DNN inference acceleration for detection, classification, and more
- +700 MPixel/s input rate
- Multi exposure HDR and 3-axis image stabilization
- 180° and 360° fisheye lens distortion correction
- Single or dual sensor input with independent ISP configuration
- H.265/HVEC, H.264, MJPEG encoding
- Support for 32-bit LPDDR4 / LPDDR4x
- Secure boot with TrustZone® and secure memory
- Broad image sensor support
- Based on 10nm low-power CMOS process

	Block Diagram			
Sensor 1 Connector	Image Signal Processor (ISP)	Quad-Core ARM® CORTEX A53 NEON DSP Extension	Computer Vision Processor CVFlow™	Wi-Fi + BLE Module
Sensor 2 Connector		System Peripherals Timers, UART, JTAG, SPI, RTC, I2C, I2S, GPIO, PWM, ADC	Memory LPDDR4, 32-Bit SPI NAND	Video CODEC AVC/HVEC/MJPEG Multi-CH, Encode
ALS/IRC Connector	Interfaces/Inputs MIPI CSI-2, PIR, ALS, Mic		Security Features Secure Boot – Trust Zone®, TRNG, OTP, DRAM Scrambling and DRAM Virtualization	Connectivity USB 2.0, SDI/SDIO, Ethernet, LED illumination, Speaker
PIR/Motion Connector		Micro SD Connector		
MIC Connector				Speaker Conn LED Out Conn

Give your vision the edge

- Application-based turnkey embedded vision solutions
- Edge AI for powerful on-device decision-making
- Flexible Cloud platform and end-to-end security



HARDWARE SPECIFICATIONS - iVS-CV22

Ambarella CV22 Based Vision SoC

Processor	<ul style="list-style-type: none"> • Quad-core Arm® Cortex®-A53 up to 1 GHz • NEON™ SIMD and FPU acceleration • 10 nm low-power CMOS
Sensor I/O	<ul style="list-style-type: none"> • MIPI CSI-2, sLVDS, SLVS • 2 sensor inputs • Supports up to 20MP CMOS image sensor
Advanced Image Signal Processing	<ul style="list-style-type: none"> • Up to 720 Mpixel/s maximum pixel rate • Lens shading correction • Multi-exposure HDR • 3D motion compensated noise reduction (MCTF) • 3-Axis Electronic Image Stabilization (EIS) • Digital PTZ and Virtual Cameras • OSD engine, overlays, privacy mask • Crop, mirror, flip, rotation • On-chip stitching • Geometric lens distortion correction • Gamma compensation and color enhancement • WDR with local tone mapping
Video Processing	<ul style="list-style-type: none"> • H.265 / HEVC, H.264, MJPEG • Up to 4K60 encoding performance • Up to 8 simultaneous stream encodes • Dynamic region of interest (ROI) • Multiple CBR and VBR rate control modules
AI Power Intelligence Video Analytics	<ul style="list-style-type: none"> • CVFlow® vision processor for CNN / DNN edge analytics • Pre-integrated AI Detectors or provide your own • Can utilize models trained with industry-standard tools such as Caffe, TensorFlow or PyTorch
Networking & Connectivity	<ul style="list-style-type: none"> • Wi-Fi 802.11a/b/g/n/ac (integrated) • BT4.2+ BLE (integrated) • mini-PCIe LTE Module (optional) • 10/100/1000Mbps Ethernet PoE Module (optional)
Audio	<ul style="list-style-type: none"> • Audio Codec • Line In and Line Out
Memory	<ul style="list-style-type: none"> • 16Gb LPDDR4 DRAM • 4Gb SLC NAND Flash • Optional eMMC storage
Interfaces	<ul style="list-style-type: none"> • USB 2.0 (Device / Host) • Micro SD • SPI, I2C, JTAG, UART, GPIO, PWM, ADC • LED Flash Control • Expansion I/O Port: MIPI-DSI, HDMI, GPIO
Security	<ul style="list-style-type: none"> • AES / SHA1 / SHA2-256 crypto acceleration • Secure boot with TrustZone® and secure memory, TRNG, OTP, DRAM scrambling and virtualization • Optional SOC monitoring
Power In	<ul style="list-style-type: none"> • 12 VDC +/- 15%
Physical	<ul style="list-style-type: none"> • Board size - 89 x 89 (mm) / 3.5 x 3.5 (inch) • Custom board size available
Environmental	<ul style="list-style-type: none"> • Operating temperature: -20°C to 70°C • Operating humidity: 5% to 90%
OS	<ul style="list-style-type: none"> • Linux
Camera Modules	<ul style="list-style-type: none"> • Sensor modules up to 20MP • Multiple lens options • IR or white LED illumination options • IR Filter for night vision options



SECURITY



PRECISION FARMING



DRONES



INDUSTRIAL / ROBOTICS



IoT



AFTERMARKET AUTOMOTIVE



Additional information:

- Compatible sensor modules (iSM): iENSO.com/ism
- Custom module versions available upon request

Contact iENSO.com to discuss your specific needs



www.iENSO.com



Established in 2003, iENSO provides embedded vision data systems that help global brands turn their products into vision data devices. iENSO provides fully secure end-to-end solutions that capture vision data and process it at the Edge and in the Cloud, giving product companies the opportunity to unlock the business benefits of recurring revenue and data monetization.

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