seeed studio

INDUSTRIAL PRODUCT DATASHEET

Seeed Studio Modbus RS485 Vision AI Camera

The Seeed Studio Modbus RS485 Vision AI Camera delivers on-device AI inference with Modbus-RTU output, IP66 protection, and support for pre-trained or custom models for industrial and monitoring applications.

SKU	UPDATED	PRICE
110992084	2026-09-07 04:26:48	$39.00(Excl. VAT)

Overview

The Seeed Studio Modbus RS485 Vision AI Camera combines an ESP32-C3 MCU with a Himax WiseEye2 HX6538 processor (dual-core Arm Cortex-M55, Ethos-U55 NPU) for low-power, on-device AI inference at 480×480 and 10 FPS. It outputs results via standard Modbus RS485, supports LoRaWAN/4G through DTUs and optional Wi-Fi keyframe transmission, and is suited for automatic meter reading, people counting, human detection, and custom models deployed through SenseCraft AI.

Key Features

Note:

This product includes only the AI sensor. The **S2100** data logger shown in the image needs to be purchased separately.

The Seeed Studio RS485 Vision AI Camera is an intelligent device that combines an ESP32-C3 MCU (**Seeed Studio XIAO**) with a **Himax WiseEye2 HX6538 processor**, featuring dual-core **Arm Cortex-M55** and an integrated Ethos-U55 neural processor. This advanced camera delivers high-performance AI recognition at 480×480 resolution and 10 FPS, while maintaining low power consumption through flexible options for transmitting inference results. With its standard Modbus RS485 interface, it seamlessly integrates with industrial systems and supports both LoRaWAN and 4G connectivity through SenseCAP DTUs or other standard RS485 DTU devices. Protected by an IP66-rated enclosure, it withstands harsh environmental conditions, making it ideal for both indoor and outdoor applications. The camera excels in various computer vision tasks including headcount, object detection, and classification. Users can deploy models from over 300 pre-trained models or train custom models on the no-code **SenseCraft AI** platform, while AI models in **TensorFlow** and **PyTorch** frameworks are supported. Privacy concerns are addressed through its design to transmit only inference results, with optional Wi-Fi keyframe transmission when needed.

- **Powerful Visual AI Processing Capability**: local inference up to 480*480 10FPS with WiseEye2 HX6538 processor featuring dual-core Arm Cortex-M55 and integrated Arm Ethos-U55 neural network unit
- **Edge Computing for High Data Security**: local image inference, send only the final result, suitable for applications requiring limited data transmission and high data privacy.
- **Multi-Functional AI Models**: shipped with 3 built-in models of human detection, people count, and meter reading, and it also easy to deploy public AI models or train customized AI models on **SenseCraft AI** with a few clicks. Support **TensorFlow** and **PyTorch** frameworks.
- **Multi-Transmission Protocols**: Supports transmitting inference results via standard RS485 protocol; connect with **SenseCAP S2100**/ **4G Sensor Hub** DTU to get the results via LoRaWAN or 4G. Also supports transmiting keyframes via Wi-Fi.
- **Dust and Water Resistance:** IP66-rated protection ensures stable long-term deployment in indoor and outdoor environments.
- **Model Management via SenseCraft App**: Configure and switch between pre-installed AI models with just a few taps. Easily adjust Model Confidence Thresholds to optimize performance for your specific use case.

What is Modbus RS-485?

Modbus RS-485 is an efficient and reliable serial communication standard, suitable for various applications that require long-distance and multipoint connectivity. Its noise immunity and flexibility have made it widely used in industrial and communication sectors.

How does Modbus RS-485 work?

Modbus RS-485 uses a pair of signal lines (A and B) to transmit data, providing excellent noise immunity and supporting half-duplex communication modes. It allows for the connection of up to 32 devices on the same bus, with each device having a unique address for identification in sending and receiving data. This standard is widely used in industrial automation, remote monitoring, and other applications, and when combined with the Modbus protocol, it facilitates efficient data exchange and management between devices.

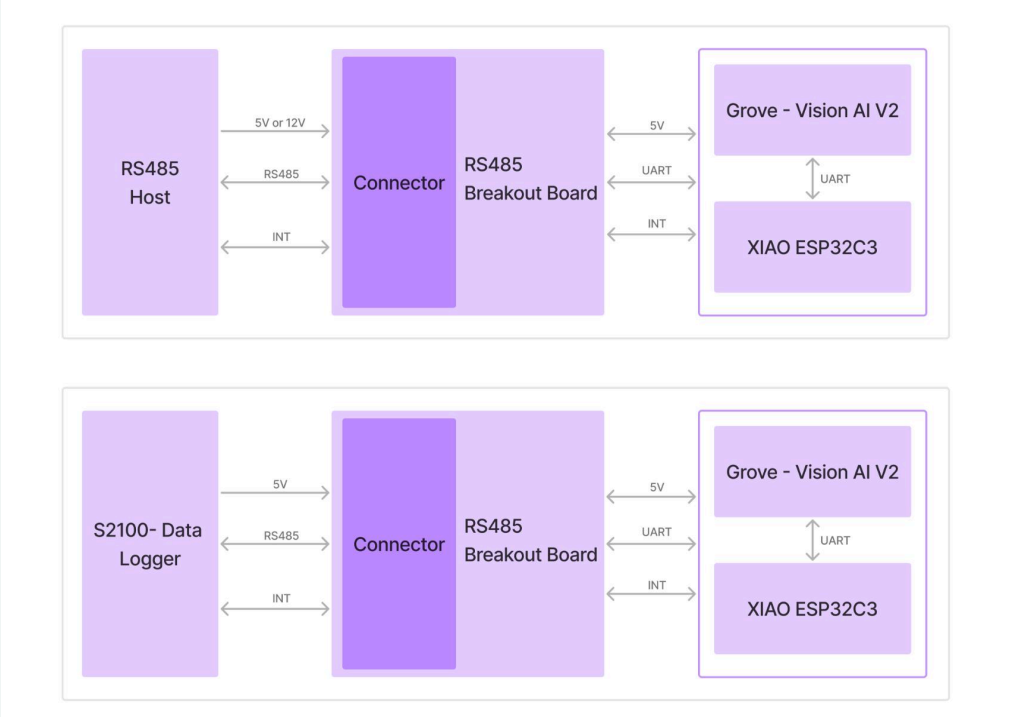
Learn more about it **here**.

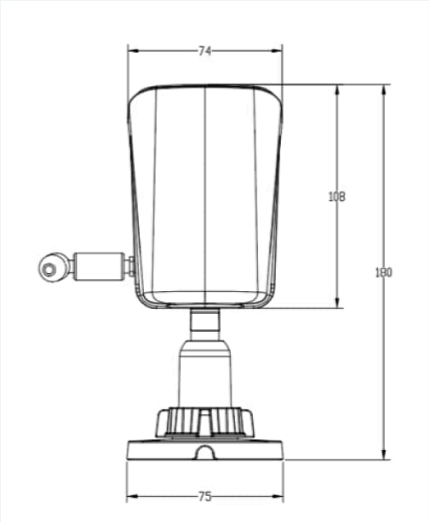
Product Gallery

Specification

Product Model	S-VA-01B
Current Input	1A
Voltage Input	5V/12V
Microcontroller	Vision AI: Himax-6538 Network: XIAO ESP32C3
Camera	Lens size: "1/4" Focal length: 3.4 mm (adjustable) Resolution: 2592 × 1944 pixels Pixel size: 1.4 µm × 1.4 µm Maximum frame rate: 1080p @ 30 fps, 720p @ 60 fps FOV: 62°
Model Execution and Inference	480 * 480 >10 fps
Connectivity	Modbus RS485 Wi-Fi (only for sending keyframes)
Modbus RS485	Chip: TP8485E, half-duplex tranceiver□RS485 Modbus-RTU Protocol
	Terminal Connection: 3-pin terminal for signal wire and 3-pin terminal for power
	Transmission Range: up to 1200 meters (varies on environment)
	Transmission Speed: 250k bps(Max)
Compatibility	Modbus RS485 DTU ● SenseCAP Sensor Hub 4G DTU ● SenseCAP S2100 LoRaWAN DTU
Memory	8GB MicroSD card (Class 10)
IP Rating	IP66
Operating Temperature	0 - 70 °C
Operating Humidity	0 - 100 %RH (non-condensing)
Device Size	180mm*75mm*70mm
Device Weight	439g
Cable Length	2 meters

Hardware Overview





Applications

- **Automatic Meter Reading:** Retrofit, Not Replace: AI Meter Reading for Legacy Utility & Industrial Meters Millions of mechanical water, gas, and energy meters are still read by hand. Aim this camera at the dial, and its built-in meter-reading model digitizes readings on-device, then drops the value straight into your SCADA or energy management system over Modbus-RTU. Replacing a legacy meter with a smart meter costs $207-457 per unit; this camera starts at $39 and rides the RS485 wiring you already have.
- **People Counting:** Privacy-First Footfall Analytics That Never Sees a Face Dedicated people-counting sensors run $299-799 per door plus $9-49/month software fees, and camera systems trigger privacy reviews. This camera counts people on-device and reports only the number over Modbus-RTU: no images, no video, no re-identifiable data leaves the sensor. $39 hardware, zero subscription, zero image storage.
- **Human Detection:** Give Your PLC a Pair of Eyes That Only See People PIR and pixel-motion sensors cry wolf all day — forklift heat and shadows trigger alarms until operators ignore them. AI human detection cuts false alarms by up to 90%. This camera detects human shapes on-device and reports events over Modbus-RTU, so a breach becomes a register value your PLC can act on directly — interlock a beacon, a siren, or an access door. One 1200m RS485 segment covers an entire plant floor.
- **Custom Models:** One Camera, Many Jobs: Custom AI Models for Parking, Agriculture & Equipment Monitoring Pick from 300+ pre-trained models on SenseCraft AI and deploy in three steps, or train on your own images with TensorFlow/PyTorch. Proven starting points: Seeed's official parking-occupancy demo, the open-source jomjol meter-reading project, and plant-leaf health monitoring on the same WiseEye2 platform. Read the meter today, count parking bays tomorrow — one SKU, one bus, any model.

Part List

Seeed Studio RS485 Vision AI Camera	x1
2.4GHz Rod Antenna	x1
Instruction Guide	x1
Screws Package	x1
Base Positioning Sticker	x1

Compliance & Logistics

HSCODE	9031809090
USHSCODE	9031808085
UPC	
EUHSCODE	9013101000
COO	CHINA

Resource Links

- https://www.seeedstudio.com/RS485-Vision-AI-Camera-p-6346.html

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