On-Camera AI — Buyer's Checklist

Take this into any AI-camera evaluation. The chip is fixed once mounted, so buy for the silicon and the update path, not the demo.

A. The chip (before you buy)

- [ ] Ask the NPU's AI throughput in TOPS — not just "has AI built in".
- [ ] Confirm which exact models it runs, and at what frame rate (fps).
- [ ] Confirm how many models it can run concurrently on one stream.
- [ ] Confirm the PoE power class (802.3af / at) and the camera's total draw.

B. Models and updates

- [ ] Confirm models are quantized (INT8) and fit the device's memory.
- [ ] Confirm the model/firmware update path across the whole fleet (OTA).
- [ ] Confirm you can add or swap analytics later — is there compute headroom?
- [ ] Confirm the supported framework (e.g. TensorFlow Lite, ONNX).

C. Events and integration

- [ ] Confirm ONVIF Profile M support for standardized metadata and events.
- [ ] Confirm the events you need are emitted (object class, counting, LPR, face).
- [ ] Confirm the metadata transport: stream, ONVIF event service, or MQTT.
- [ ] Confirm your VMS ingests the camera's metadata, not just its video.

D. Accuracy and privacy

- [ ] Ask for precision AND recall in lighting like yours — never a single "99%".
- [ ] Test the model in your worst scene (glare, night, crowd), not the demo.
- [ ] For on-camera face / LPR, confirm the legal basis first (GDPR Art. 9, BIPA).
- [ ] Confirm recognizable video can stay on-device if a residency rule requires it.

Remember: on-camera AI is capped by the few watts one PoE cable delivers, so a camera runs a small, largely fixed model — not a data-center one. A camera you can re-task is an asset; one you cannot is a fixed-function appliance wearing an AI label. Engineering guidance, not legal advice. Sources: ONVIF Profile M Specification v1.1 (2024); IEEE 802.3 PoE; vendor SoC documentation (Ambarella, Axis, Hailo); GDPR Art. 9 / EDPB Guidelines 3/2019.



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This checklist lists what to ask about the chip, models, events and accuracy before you buy AI cameras. Our seven-volume handbook covers the stack behind it: start with Volume 6 for detection, edge deployment and model artifacts, then Volume 7 for real-time pipelines and biometrics rules, and Volume 1 for the video the camera encodes.

WHAT YOU WILL FIND INSIDE

- Edge deployment topologies and model artifacts
- Real-time analytics pipelines and their latency
- Object detection, tracking and OCR
- Biometric data rules and the EU AI Act

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