GUIDE

What a vision station can hand to OEE, andon and MES

The data an inspection station produces, which systems use it, the interfaces that carry it, and who builds each side.

BY ADDASCAN ENGINEERING TEAM · TECHNICAL REVIEW: Frank Guo (https://www.linkedin.com/in/frank-g-15b59b57) · PUBLISHED 3 OCTOBER 2026 · 8 MIN READ

Discuss data from your station

// SHORT ANSWER

A vision station can hand over counts of inspected, passed and rejected units, reject reasons per check and SKU, yield per shift or batch, alarms and status, the recipe in use, codes read and links to images. OEE, andon and MES systems receive these through digital I/O, PROFINET, EtherNet/IP or Modbus TCP via the PLC, OPC UA at the PLC or SCADA layer, TCP or serial messages, or files and database records. The station supplies the data and a written interface description; the OEE or MES side is built by its owner.

// ON THIS PAGE

1. What data a station has

2. What OEE, andon and MES do with it
3. Interfaces, in general terms
4. What HIKROBOT lists for its devices
5. Data item, consumer and interface
6. Who builds what
7. Design points that prevent arguments later
8. Questions about vision data

Key points

- A station knows how many units it inspected, passed and rejected, why each reject failed, which recipe ran, which codes it read, and whether it was ready, faulted or bypassed.
- For OEE, the station mainly feeds the quality side; availability and performance come from the line and its PLC.
- Signals usually travel through the line PLC; counts and records can also go straight to a server or MES.
- Protocols differ by device model. We state a HIKROBOT protocol only where HIKROBOT lists it for that model, and confirm it for your PLC before quoting.
- The station supplies the data and a written interface description. The OEE, andon or MES side is built by its owner.

What data a station has

Every inspection produces a decision and the information behind it. Most of it is discarded unless someone asks for it. What a station can hand on:

- **Counts:** units inspected, passed and rejected, in total and per check, since the last reset or per batch.
- **Reject reasons:** which check failed for each rejected unit, per SKU or recipe.
- **Yield per shift or batch:** passed against inspected, calculated from the counts.

- **Alarms and status:** ready, fault, bypass active, a run of rejects, a reject that was not confirmed, a full reject bin.
- **Recipe:** which recipe is running, and whether it matches the product the line or MES expects.
- **Codes read:** barcode and 2D code content, and printed date and batch text read by OCR.
- **Measurements:** values such as a position, gap or dimension, where the check measures.
- **Images:** reject images and, where planned, images of good units, with a link stored in the record. The image archive guide covers what to keep and for how long.

What OEE, andon and MES do with it

OEE. Overall equipment effectiveness combines availability, performance and quality. A vision station mainly feeds quality: units inspected and rejected, and the reasons. Availability and performance depend on line states and speeds that the line PLC or the OEE system already records. One caution: a reject is not always a defect. False rejects count as quality loss in OEE, so reject reasons and reviewed reject images help separate a bad batch from a station that needs attention.

Andon. An andon light or board needs events, not records: station faulted, a run of rejects, a reject not confirmed, the reject bin full. These are single signals, usually wired or mapped through the PLC, so the line owner decides how each one is shown.

MES and quality systems. An MES needs records tied to an order or batch: counts, reject reasons, codes read, the recipe that ran and links to images. It can also send the expected product to the station, so a recipe that does not match the order stops the run before it starts.

Interfaces, in general terms

- **Digital I/O.** Hard-wired signals: ready, result, fault, reject. Simple and robust, for events rather than data.
- **Industrial Ethernet to the PLC:** PROFINET, EtherNet/IP or Modbus TCP. Bits for status, registers for counters, reasons and short strings. The PLC then passes data on to SCADA, OEE or MES.
- **OPC UA.** Common between PLCs, SCADA and MES; often provided by the PLC or SCADA layer rather than by the vision device.
- **TCP or serial messages.** A text or binary message per result, such as the code read and the decision, sent to a listening server or device.
- **Files, FTP and databases.** Images and result files copied to a server, or records written to a database, for archives and reports.

The PLC is usually the hub for signals that affect the line, because it already controls the reject and the line stop; records and images often go straight to a server. How the result reaches the reject is covered in the PLC and reject integration guide.

What HIKROBOT lists for its devices

Protocol support depends on the device model, not on the brand as a whole. For the HIKROBOT platform we use, the sources state:

- **VisionMaster software:** TCP/IP, Modbus, serial port, UDP, EtherNet/IP and other common industrial protocols (HIKROBOT Smart Product Catalog 2025 Q4). The sources we checked do not itemise PROFINET for the VisionMaster PC platform, so for a PROFINET line the route is confirmed per model.
- **Smart cameras and vision sensors:** the SC3000X product row lists RS-232, TCP, UDP, FTP, PROFINET, Modbus and EtherNet/IP, among others (HIKROBOT SC3000X product page); the SC1000 (SC1000) and SC6000 (SC6000) rows list PROFINET, EtherNet/IP, Modbus and FTP among theirs.
- **Smart code readers:** the catalogue lists PLC protocols per model; the IDH7000 row, for example, lists SmartSDK, TCP, FTP, PROFINET, EtherNet/IP, Modbus, UDP and serial (HIKROBOT Smart Product Catalog 2025 Q4).
- **Logistics code readers:** the ID6000 row lists SmartSDK, TCP, serial and FTP, not PROFINET or EtherNet/IP (HIKROBOT ID6000 product page); a gateway is used where a PLC needs the result.
- **Vision controllers:** the VC3000 series has opto-isolated digital inputs and outputs for hard-wired signals to a PLC (HIKROBOT VC3000 datasheet).

We have not found OPC UA listed in the HIKROBOT sources we checked, so we do not assume it; where a plant standardises on OPC UA, the data reaches it through the PLC,

SCADA or a gateway. Every route is confirmed for your exact model and PLC before quoting.

Data item, consumer and interface

A starting point for the interface description. The route for each item is confirmed per project.

DATA ITEM	TYPICAL CONSUMER	TYPICAL INTERFACE
Ready, fault, bypass active	Andon, PLC, OEE	Digital I/O or fieldbus bits via the PLC
Reject run (several rejects in a row)	Andon, shift supervisor	Digital output or fieldbus bit via the PLC
Reject not confirmed, reject bin full	Andon, PLC line stop	Digital I/O to the PLC
Inspected, passed, rejected counts	OEE quality, SCADA, shift report	Fieldbus counters via the PLC, or TCP messages
Reject reason per check and SKU	Quality team, MES, OEE loss analysis	Fieldbus registers, TCP messages or result files

DATA ITEM	TYPICAL CONSUMER	TYPICAL INTERFACE
Yield per shift or batch	Shift report, MES batch record	Calculated by the OEE or MES side from the counts
Recipe in use, recipe mismatch	MES order check, PLC	Fieldbus or TCP; recipe selected from the PLC or MES
Codes read (barcode, 2D code, date and batch text)	MES, warehouse system, traceability record	TCP or serial messages, fieldbus strings, or files
Measured values	SPC software, quality system	TCP messages or result files
Images and image links	Quality system, complaint investigation	FTP or file copy to a server; link stored with the record

Who builds what

- **The vision station side (addaScan):** producing each data item, the signals and messages, the interface description listing every bit, register, message and file, and testing them with the receiving side at SAT.
- **The PLC side (the owner of the PLC program):** mapping vision signals to tags, counters and the andon, and passing them on to SCADA or MES.

- **The OEE, andon and MES side (its supplier or your IT team):** the database, dashboards, reports, OEE calculation, MES records and any OPC UA server. addaScan does not build or supply OEE, andon or MES systems.

Writing this split into the proposal avoids the common gap where the station sends data that nobody receives. See what a station includes for the full split of trades.

Design points that prevent arguments later

- **Agree the definitions.** What counts as inspected, rejected and confirmed; whether a unit failed by two checks counts once or twice; whether test samples are excluded.
- **Counters or events.** Running counters survive a lost message; per-unit events give detail. Many stations send both. Agree when counters reset: per shift, per batch, or never, with the receiving side taking differences.
- **One clock.** Station, PLC and MES times are synchronised, so records line up.
- **When the receiver is down.** The station keeps inspecting and rejecting if the MES or server is unreachable; what is buffered, and what is lost, is stated in the interface description.
- **Bypass is data too.** A bypassed station means unchecked production. The bypass signal, with time and duration, belongs in the record.
- **Test it at SAT.** Count a run by hand and compare it with what the PLC and the receiving system show.

// FAQ

Questions about vision data

Can a vision system send data to our MES?

Yes. Counts, reject reasons, codes read, the recipe in use and links to images can be sent to an MES, usually through the line PLC or as TCP messages or files to a server. Which route fits depends on the device, your PLC and what the MES can receive; we agree it in the interface description. The MES side is set up by its owner.

Does a vision station calculate OEE?

No. OEE combines availability, performance and quality, and the first two depend on line states and speeds that the PLC or OEE system holds. A vision station supplies the quality side: units inspected, passed and rejected, and why. It also reports when it was faulted or bypassed, so unchecked production is visible.

Which protocols do HIKROBOT smart cameras support?

It depends on the model. The SC1000, SC3000X and SC6000 product rows we checked list PROFINET, EtherNet/IP, Modbus, TCP, UDP, serial and FTP, among others. HIKROBOT's catalogue lists TCP/IP, Modbus, serial, UDP and EtherNet/IP for the VisionMaster software. We confirm the protocol for your exact model and PLC before quoting.

Does the station support OPC UA?

We have not found OPC UA listed in the HIKROBOT sources we checked, so we do not assume it. Where a plant standardises on OPC UA, the data usually reaches it through the line PLC or SCADA that already serves OPC UA, or through a gateway, agreed per project.

Can the andon light show vision faults?

Yes, through the PLC or directly from a digital output: station fault, reject run, reject not confirmed or reject bin full. Which events light the andon, and in which colour, is decided by the line owner; the station provides the signals.

Who is responsible if the dashboard shows the wrong count?

Agree the definitions before the station is built: what counts as inspected, rejected and confirmed, and when counters reset. The station side is tested at SAT against a counted run. The dashboard calculation and display belong to the OEE or MES side and are tested by its owner.

SOURCES

1. HIKROBOT Machine Vision Smart Product Catalog 2025 Q4 (https://www.hikrobotics.com/en2/source/vision/video/2026/1/20/Machine%20Vision%20Smart%20Product%20Catalog_2025Q4.pdf) (vendor catalogue, re-verified 2026-09-25; VisionMaster protocols and code reader protocol rows)
2. HIKROBOT MV-SC1008M-05S-WBN-NR (SC1000) product page (https://www.hikrobotics.com/en/machinevision/productdetail/?id=7130) (vendor product data, checked 2026-10-02; communication protocols)
3. HIKROBOT MV-SC3013XC-16M-WBN (SC3000X) product page (https://www.hikrobotics.com/en/machinevision/productdetail/?id=6921) (vendor product data, checked 2026-10-03; communication protocols)
4. HIKROBOT MV-SC6016C-12M-XBN (SC6000) product page (https://www.hikrobotics.com/en/machinevision/productdetail/?id=7264) (vendor product data, checked 2026-10-02; communication protocols)
5. HIKROBOT MV-ID6120PM-00C-NNG (ID6000) logistics code reader (https://www.hikrobotics.com/en/machinevision/productdetail?id=5712) (vendor product page, checked 2026-10-02; protocols listed)
6. HIKROBOT VC3000 series vision controller datasheet (https://www.hikrobotics.com/en2/source/vision/document/2026/9/8/MV-VC310xX_VC3000_Series_Vision_Controller_datasheet_20260908_6900.pdf) (vendor datasheet 20260908, re-verified 2026-09-25; digital I/O)

RELATED: PLC & reject integration → Image archive for traceability → What a station includes → HIKROBOT and VisionMaster → Cost of poor quality (COPQ) → How we deliver a project →

// NEXT STEP

Decide what the station should report

Start an assessment

Tell us which systems should receive data from the station, and who runs them. We will propose the data points and the interface for your PLC and devices.