OMRON

MECHATRONIC SOLUTIONS

Precision traceability and inspection solutions for automation and OEM applications

Traceability

Your trusted partner for traceability

Founded in 1982, Microscan, which was acquired by Omron in 2017, has a strong history of technology innovation. Omron now holds over 100 former Microscan technology patents. We leverage our expert position to help manufacturers and labs create error-free operations using innovative, analytics-driven track, trace and control solutions.

Data acquisition and control solutions
Our barcode, machine vision and verification products boost manufacturing efficiency and quality control to a whole new level. We help our customers cut costs, monitor quality and increase production flow with easy-to-implement solutions.

Used in electronics manufacturing, clinical instruments and product packaging, our solutions facilitate critical production-level applications such as quality control, work-in-process monitoring, component traceability, sortation and lot tracking.

Technology leadership
Microscan revolutionized the automatic identification (auto ID) industry in the early 1980s with the invention of the first laser diode barcode scanner, and again in 1994 with the invention of the 2D symbology, Data Matrix. We pioneered the machine vision industry with our advanced vision and lighting products.

Today, Omron continues to be a recognized technology leader through our continuous development of new products in machine vision, auto ID and barcode quality verification.

Quality focus
We are proud of our unfaltering commitment to quality and our strong record maintaining ISO 9001 certification and meeting global regulatory compliance requirements.

Global Strength
As part of Omron's extensive distribution network, Omron has a global reach that includes expert customer service, engineering support and services. This builds upon 35 years of experience implementing traceability projects in many industries across all Global Regions.

Certified GS1 solution partner
As a member of the U.S. GS1 Solutions Partner Program, Omron has the experience and knowledge to provide manufacturers with solutions and guidance to address barcode verification applications and compliance with GS1 standards.

GS1 US Solution Partner

For further information on Omron Traceability solutions including the concept of Traceability 4.0 visit https://automation.omron.com/en/us/solutions/traceability/

OMRON

1D/2D symbols and direct part marks

Linear (1D) barcodes have been in commercial use since the 1970s and are the most common symbologies used for automatic identification. Increasing numbers of manufacturers are using two-dimensional (2D) symbols, such as Data Matrix, that offer greater placement flexibility and increased data capacity.

Machine-readable symbols generally fall into the categories of linear barcodes, stacked symbols, 2D symbols and Optical Character Recognition (OCR) fonts. A few examples of each are shown below (symbologies are not to scale).

Omron provides fast, reliable reading solutions for all symbologies and OCR. Our products read all popular linear barcodes and 2D symbols printed or marked by any means and verify them to industry standards.

LINEAR BARCODES


CODE 128


CODE 39


PHARMACODE


CODE 93


INTERLEAVED 2 OF 5

UPC

STACKED SYMBOLOGIES


PDF417


GS1 DATABAR (STACKED)


GS1 DATABAR (COMPOSITE)


MICRO PDF417

2D SYMBOLOGIES


DATA MATRIX


QR CODE


AZTEC CODE


DOTCODE

1D and 2D symbology standards

- ISO/IEC 15416
  1D Print Quality Standard
- ISO/IEC 15415
  2D Print Quality Standard
- Automotive Industry Action Group: AIAG B-4
  Parts Identification and Tracking
- U.S. Department of Defense: IUID MIL-STD-130
  Permanent and Unique Item Identification
- Electronics Industry Association: CEA-706
  Component Marking
- Clinical/Laboratory Standards Institute: AUTO2-A2
  Bar Codes for Specimen Container Identification
- ISO/IEC 16022
  International Symbology Specification
- ISO/IEC 15434
  Symbol Data Format Syntax
- Society of Aerospace Engineers: AS9132B
  Data Matrix Quality Requirements For Part Marking
- ISO/IEC 29158:2020
  Direct Part Mark Quality Guideline

Note: Symbologies on this page are not shown to scale and are not intended for testing purposes.

OCR FONTS

OCR-A	OCR-B	MICR E-13B	SEMI M12
1234ABCD	1234ABCD	1234	1234ABCD
Alphanumeric (+4 currency char.)	**Alphanumeric (+4 currency char.)**	**Numeric (+4 special char.)**	**Alphanumeric (+4 currency char.)**

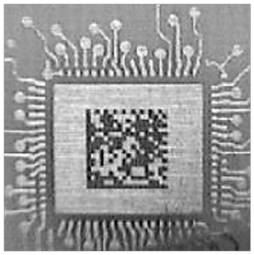
DIRECT PART MARKS

Direct part marks (DPM) are typically 2D Data Matrix symbols permanently marked by such methods as dot peen or laser/chemical etch onto substrates including metal, plastic, rubber or glass. Omron offers a comprehensive family of readers and verifiers with illumination and decode algorithms specifically designed for difficult direct part marks.


Thermal print on foil


Inkjet on plastic


Dot peen on metal


Laser etch on metal

Inkjet on plastic

Barcode verification and label inspection

Legible, accurate barcodes and text have never been more important than they are today. Inconsistencies in quality can lead to process inefficiencies and downtime. Unreadable barcodes may cause a need for constant rescanning, relabeling of products or even manual entry of critical information by a human operator. Inconsistent quality may also result in expensive vendor non-compliance fines and other penalties and cause reputation damage.

Readability of barcodes is determined by how well a barcode reader can decode the data stored in a symbol. Operators can save valuable time and effort when decoding reading issues if they understand the primary reasons for decoding failures. Once the cause of barcode unreadability is defined, it can be addressed with simple preventive measures.

Omron barcode verifiers are embedded off-line or in-line solutions that include camera, software and precision illumination specifically designed for the verification of 1D/2D codes and direct part marks to ISO/IEC standards. In-line inspection systems feature OCR, OCV and blemish detection that together provide 100% label inspection against a label reference image and expected label content.

Further information can be found at https://automation.omron.com/en/us/products/families/verification-and-print-quality-inspection-solutions

Benefits of barcode verification systems

- Comply with symbol quality industry standards and directives such as ISO 15415, ISO 15416, ISO 29158, FDA UDI, FDA FSMA, DOT Label Content, and others.
- Maximize efficiency of your manufacturing process
- Control quality in real time as you verify the output from your printer or code marking equipment
- Minimize returned goods due to bad labels
- Increase customer satisfaction
- Produce informative verification reports

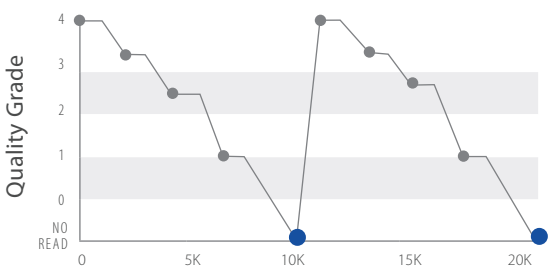
GS1 US Solution Partner

THE IMPORTANCE OF VERIFICATION

Automated data capture is critical to a company's success, and the results of scanning failure can have a serious impact. Without verification, bad barcodes are not identified until they are unreadable. By the time a bad barcode is identified, thousands of poor-quality barcodes may have already escaped down the line. With verification, bad barcodes are prevented from being applied to the product, eliminating the chance for future failures.

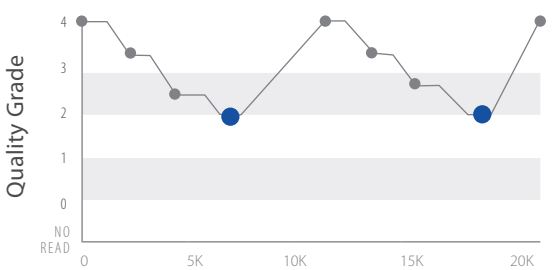
WITHOUT VERIFICATION

Barcode Quality Over Time:
Using a Reader to Check Quality



WITH VERIFICATION

Barcode Quality Over Time:
Using a Verification Solution to Check Quality



Machine vision inspection and guidance

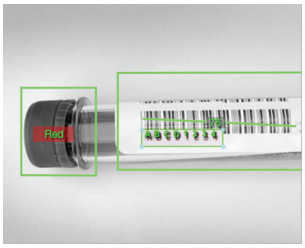
100% quality control in manufacturing reduces costs and ensures a high level of customer satisfaction. With its wide range of capabilities and applications, machine vision is becoming the standard discipline for automating inspection and other modern industrial processes, through complex image capture and analysis. While human inspectors working on assembly lines can visually inspect parts to judge the quality of workmanship, machine vision systems use a variety of advanced hardware and software components to perform similar tasks at high speeds with greater precision.

Omron holds one of the world's most extensive patent portfolios for machine vision technology, including hardware design, software algorithms and machine vision illumination. Our Visionscape® brand of machine vision software and hardware is an industry pioneer, and works in concert with AutoVISION® software to improve automated technical identification, inspection, measurement, and guidance capabilities to the benefit of manufacturers worldwide.

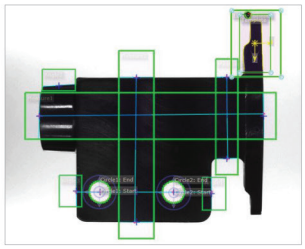
Further information can be found at https://automation.omron.com/en/us/products/category/machine-vision

Machine vision capabilities

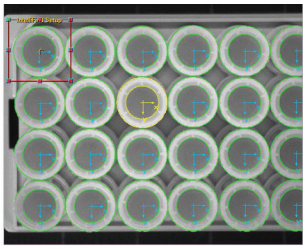
- **Identify**
  - Decode all standard 1D and 2D symbols
  - Optical Character Recognition (OCR) and Verification (OCV)
- **Inspect**
  - Color or flaw detection
  - Absence/presence of parts or components
  - Object location and orientation
- **Measure and Gauge**
  - Measure dimensions or fill levels
  - Preconfigured measurements such as line intersection or point-to-point distance
- **Guide**
  - Output coordinates to guide machines or robots to precise locations



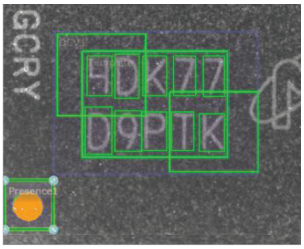
Color detection and OCR reading



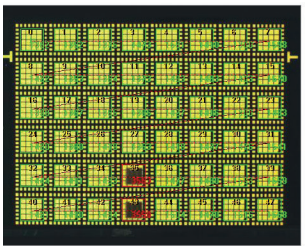
Part location and measurement



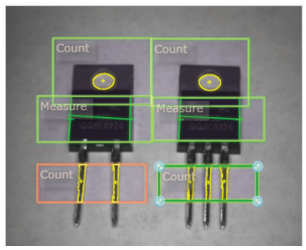
Counting



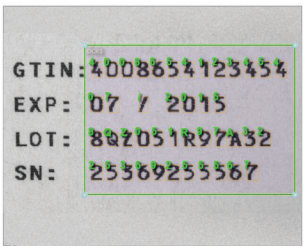
Optical Character Verification (OCV)



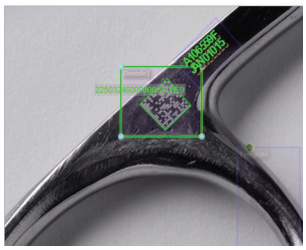
Grid-based inspection and reject mark detection



Shape inspection



OCR reading



1D/2D and DPM symbol decoding and grading

V780

RFID solutions for traceability

A radio-frequency identification (RFID) system consists of an interrogator (or reader) and a tag that is composed of a microchip and an antenna. RFID can improve operational efficiency in a variety of applications, including traceability and machine safeguarding.

Traceability uses

Unlike the barcodes in DPMs and printed labels, RFID tags let users write information as well as read it. When traceability information must be regularly updated, RFID might be the optimal choice.

RFID also offers more flexibility with respect to positioning, since it allows for objects to stand between the reader and the tag (except for objects made of metal or those with high water content).

An industry-ready option

RFID tags work well in very harsh environments, including high ambient temperatures and high IP protection applications. The ability to read or write to a large number of tags simultaneously (at read ranges up to 6m) can be deployed to quickly read individually tagged parts or packages passing through a portal.

Omron offers both HF and UHF ISO 180003 compliant RFID systems with direct connectivity to automation controllers in a rugged and compact form factor.

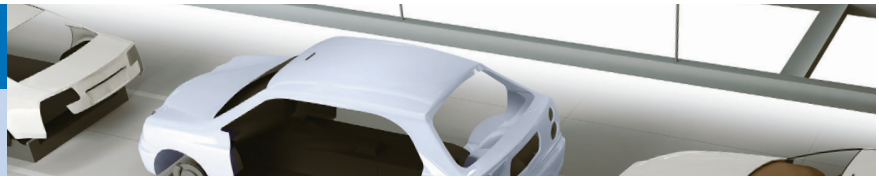
Further information can be found at https://automation.omron.com/en/us/products/families/rfid-solutions

Applications

Automotive

Suitable for a mixed model production strategy

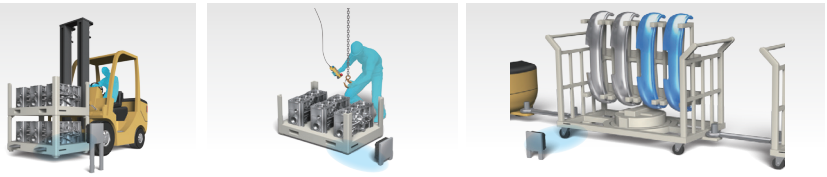
The wide communication range and focus mode enable automotive chassis to be reliably detected from several meters away.



Part tracking and management

Accurately supply parts even in high-mix production

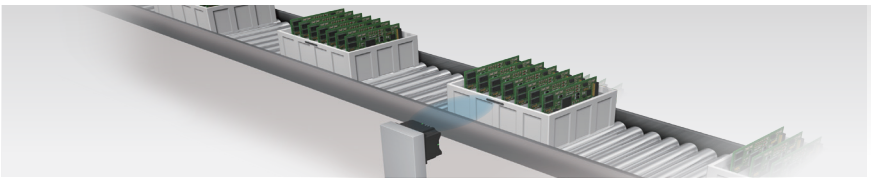
Track part pallets and racks through production. Bright LEDs give operators indication of good reads.



Material handling

Identify product for conveyor diverters and sortation systems

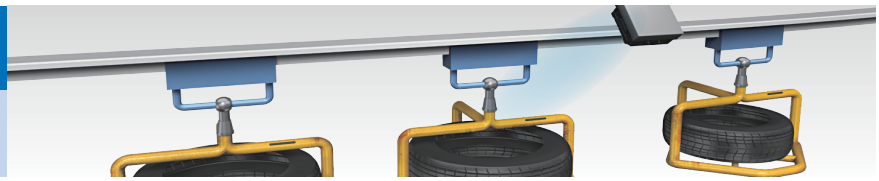
Identify work in process product in harsh environments where bar code readers or vision can not be applied.



Hanging conveyance

Identify product while the read distance changes due to conveyance method

Product can be identified while moving and without line of sight from the tag to the V780 reader.



Error proofing

Make sure the correct raw material or assembly is used in production.

Product going into machine areas or dock portals can be identified with up to 64 unique RFID tags in one read.

Regulations for UHF wireless (radio regulations)

RFID systems as well as mobile phones and TVs must comply with national radio regulations. The V780 Series currently complies with radio regulations in many countries. For the list of countries where V780 is available, please contact your Omron representative.

Solutions for packaging and labeling

Packaging systems are under constant pressure to ensure the quality of primary, secondary and final packaging while maximizing production flow. Omron barcode and machine vision products are commonly used throughout automated packaging applications to monitor, track and trace critical data that helps maximize both quality and productivity.

Barcode Verification
Verify Barcode Quality and Compliance

- ISO/IEC Print Quality
- GS1, HIBCC Compliance
- Data Accuracy

Machine Vision
Inspect Packaging Integrity and Label Quality

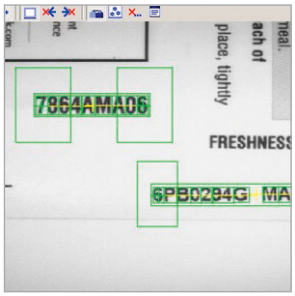
- Cap Presence and Fill Level
- Blemish and Color Check
- Text (OCR and OCV)
- Defect Detection
- Label Presence and Position

Barcode Reading
Read Any Linear Code or 2D Symbol

- Product Identification
- WIP Tracking
- Item Traceability
- Product Serialization
- Date/Lot Tracking

INDUSTRIES SERVED

Food and Beverage



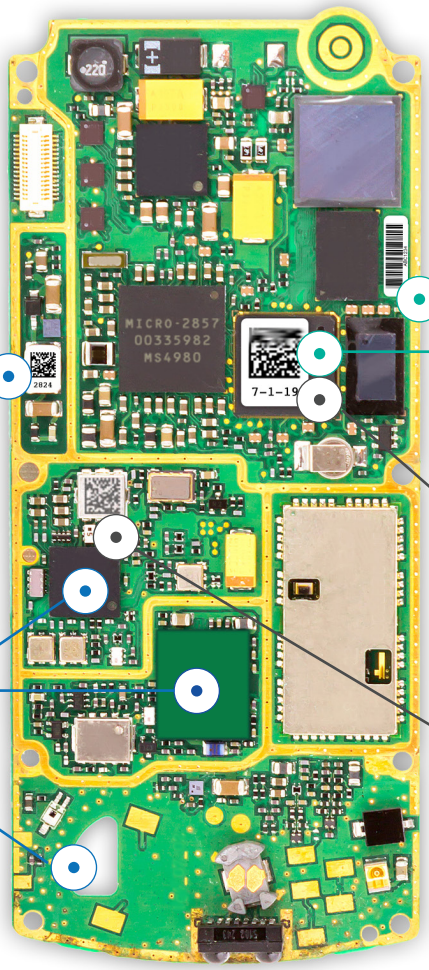
Pharmaceutical Manufacturing

Medical Devices

Fast-Moving Consumer Goods (FMCG)

Solutions for electronics manufacturing

Industry leaders within electronics depend on lean manufacturing and efficient use of resources to produce the highest quality products. Effective shop floor data collection is a competitive advantage. Omron barcode and machine vision solutions provide reliable product inspection and traceability to support electronics manufacturing throughout the entire production process.



Barcode Reading
Read Any 1D/2D Symbol or DPM

- Component Traceability
- WIP Tracking
- Recall Management
- Time/Date Stamping

Machine Vision
Inspect Parts and Assembly

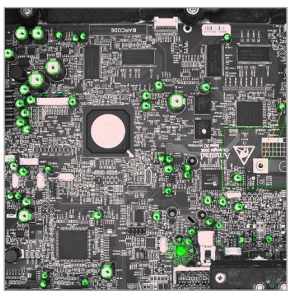
- Label Presence and Position
- Text (OCR and OCV)
- Reject Identification
- Absence/Presence of Components
- Dimensional Testing

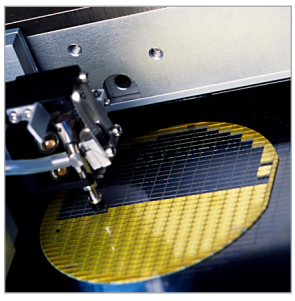
Barcode Verification
Verify Barcode Quality and Compliance

- ISO/IEC Print Quality
- DPM Mark Quality
- Data Accuracy
- Data Sequence

INDUSTRIES SERVED


Consumer Electronics


Automotive Electronics


Semiconductor


Machine Builders

Solutions for life sciences and medical

Manufacturers within the life sciences and medical industries require 100% data integrity and extremely reliable components that are small enough to fit into their instruments. From reading labels on specimen tubes or directly marked surgical instruments, to automated presence/absence detection of microtiter plates, manufacturers depend on the highest levels of performance and flexibility with minimal integration effort.

Barcode Reading
Read Any Linear Code or 2D Symbol

- Sample or Tube Carrier ID
- Reagent ID
- Match Test to Sample
- Sample Routing
- Sample Tracking

Machine Vision
Inspect and Enable Guidance

- Cap Color and Presence
- Text (OCR and OCV)
- Sample Location
- Fill Level
- Label Quality
- Measurement for Guidance

Barcode Verification
Verify Barcode Quality and Compliance

- Symbol Quality and Legibility
- GS1, HIBCC Compliance
- Data Content and Format
- Compare Data to Match String

INDUSTRIES SERVED

Lab Automation

Clinical Chemistry

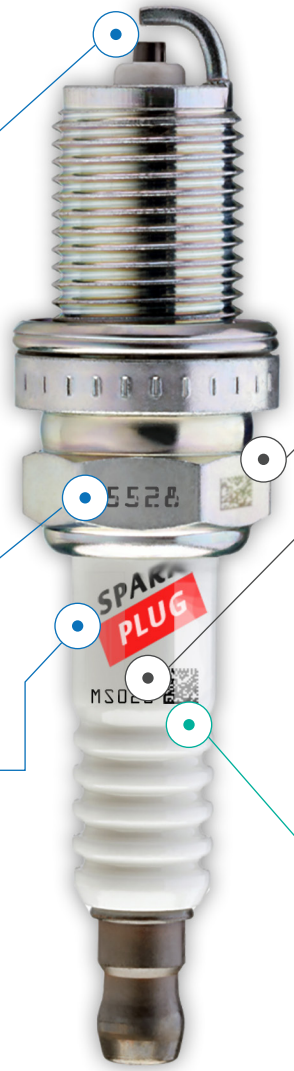
Reagent and Kit Tracking

Medical Devices

Solutions for Factory Automation

Solutions for factory automation

Production automation, lot tracking and component traceability are all common requirements for today's busy factories and assembly plants. Many suppliers choose Omron for reliable product inspection and data capture, enabling plant floor data tracking, outbound product traceability and part quality requirements from manufacturers.



Machine Vision
Inspect Parts and Assembly

- Dimensional Inspection
- Text (OCR and OCV)
- Part Presence and Position
- Label Presence and Position
- Defect Detection

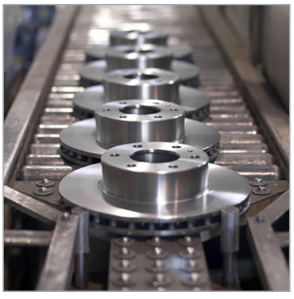
Barcode Verification
Verify Barcode Quality and Compliance

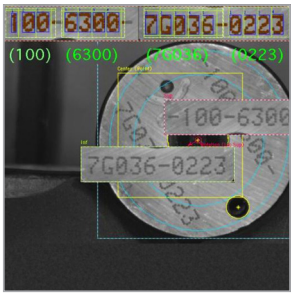
- Symbol Quality and Legibility
- Direct Part Mark Quality
- Data Sequence
- Data Accuracy

Barcode Reading
Read Any 1D/2D Symbol or DPM

- Part Traceability
- WIP Tracking
- Recall Management
- Bill-Sheet Reading

INDUSTRIES SERVED


Automotive Assembly



Powertrain Manufacturing


Aerospace and Defense


Consumer Goods

MicroHAWK ID

1D/2D fixed-mount barcode readers

Omron 2D barcode readers feature industry-leading technology for decoding both 2D symbols and linear barcodes based on Omron proven image processing and decode algorithm development. Engineered with modular hardware features in space-saving designs, our MicroHAWK® readers offer unrivaled performance for reliably decoding challenging codes and direct part marks (DPM).

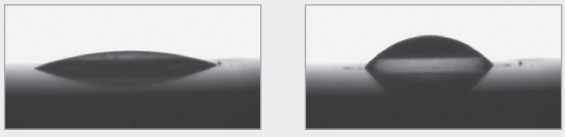
	Read Range	Focus	Sensor	Color	Power	IP Rating	Connectivity
 **MicroHAWK Engine** Adaptable engine with ultra-fast processor, aggressive optics and algorithms, and unlimited configurability.	2–12 in 50–300 mm	Fixed	Global WVGA or SXGA, Rolling QSXGA	✔	5 V	N/A	USB 2.0 High Speed, Ethernet over USB/HID
 **MicroHAWK ID-20** Software, optics, sensor and lighting in a fully-enclosed USB device measuring less than 2 in. (51 mm) on each side.	2–12 in 50–300 mm	Fixed	Global WVGA or SXGA, Rolling QSXGA	✔	5 V	IP40	USB 2.0 High Speed, Ethernet over USB/HID
 **MicroHAWK V320/V330** Ethernet or Serial Communication in a Micro Form Factor.	1.5–15.5 in 38–394 mm	Fixed	Global WVGA or SXGA, Rolling QSXGA	✔	V320: 5V V330: 44-57VDC IEEE80.23af POE	IP40	RS-232, USB 2.0, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O
 **MicroHAWK V420** Miniature IP54-rated imager with corner-exit RS-232 serial cable and liquid lens autofocus.	2–46 in 50–1160 mm	Fixed, Autofocus	Global WVGA or SXGA, Rolling QSXGA	✔	5 V	IP54	RS-232, USB 2.0 High Speed, Ethernet over USB/HID
 **MicroHAWK V430** Rugged industrial imager featuring Ethernet, PROFINET and liquid lens autofocus or fixed focus.	2–46 in 50–1160 mm	Fixed, Autofocus	Global WVGA or SXGA, Rolling QSXGA	✔	5–30 V	IP65/67	RS-232, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O®, Power over Ethernet (PoE)

OTHER FEATURES

- Includes X-Mode technology for aggressive decoding right out of the box
- WebLink interface provides simple, intuitive configuration of MicroHAWK readers with no software needed
- Connectivity to SQL based databases using EtherNet/IP via an Omron NX or NJ controller

INTEGRATED LIQUID LENS TECHNOLOGY

Embedded in V420 and V430, this system uses electrostatic pressure to create liquid lens curvature, optimizing the imaging system and providing a near-infinite working range in autofocus applications.



V440-F High Resolution/High Speed Barcode reader

V440-F
High Resolution Barcode Reader with a broad variety of C mount lens options and external lighting accessories for wide field of view or tiny barcode reading. Industrial Ethernet connectivity.

Read Range	Focus	Sensor	Color	Power	IP Rating	Connectivity
Up to 2.5m, lens dependent	Fixed	5MP monochrome, Global Shutter	Monochrome only	Power over Ethernet (IEEE802.3af) or 24VDC	IP40	RS-232C, 1000 BASE-T Ethernet TCP/IP, EtherNet/IP, PROFINET

Laser barcode scanners

From small devices for embedded OEM applications to rugged readers for industrial manufacturing environments, Omron offers a wide range of quality products to read 1D linear barcodes and stacked symbols. Features include high-speed decoding, wide field of view, symbol reconstruction and aggressive decode algorithms.

MS-3
Compact raster laser scanner offers high-performance decoding and wide scan angle at close range.

QX830/QX870
Compact laser scanner features QX platform, symbol reconstruction and optional embedded Ethernet protocols.

Read Range	Scans/Second	Power	Sensor	IP Rating	Connectivity
2–10 in 51–254 mm	Up to 1000	5 V	CCD, 32bit	IP54	RS-232, RS-422/485 (up to 115.2k), Keyboard Wedge, USB
1–30 in 25–762 mm	300–1400	10–28 V	Embedded Laser Diode	IP54	RS-232, RS-422/485, Optional Embedded Ethernet TCP/IP or EtherNet/IP™

Communication and Data Integration

Communication of traceability information from the sensor, such as barcode readers, to a higher level database and application via OPC-UA or MQTT protocol is possible. Connectivity of Omron sensors to Omron NX controllers via EtherNet/IP enables further connectivity to server or cloud based applications.

- Simple to send and receive data using function blocks
- MQTT function blocks make it easy to communicate with an MQTT broker locally or in the cloud.
- connectivity to other controllers, devices, SCADA, iOS, Windows, and other operating systems.

Handheld barcode readers

Omron handheld barcode readers feature the latest technology for decoding 1D and 2D symbols. From simple data tracking for inventory control to aggressive reading of the toughest direct part marks, we have a handheld solution for any track, trace, and control application. These compact designs feature durable, shock-resistant enclosures that are disinfectant-ready.

HS360-X DPM Handheld Reader CORDED
Ultra-rugged handheld with industry-leading DPM decoding performance and intuitive WebLinkPC interface

HS360-X DPM Handheld Reader CORDLESS
Easy-to-use wireless option for the high-performing DPM handheld with Bluetooth support and Wi-Fi friendly mode.

	1D/2D	DPM	Wireless	Enclosure	Read Range
HS360-X DPM Handheld Reader CORDED	✔	✔		IP67	6 in (150 mm)
HS360-X DPM Handheld Reader CORDLESS	✔	✔	✔	IP67 Cradle: IP65	6 in (150 mm)

UNSTOPPABLE POWER AND PRODUCTIVITY

Wrapped into an ultra-rugged IP67 casing, nothing matches the HS360-X when it comes to surviving toughest environments. This high-performing handheld reader has a skin that's thick enough to withstand harsh industrial fluids as well as multiple tumbles to a concrete floor.

- Industry-leading DPM decoding with X-Mode
- IP67 protection and IP65 sealed cradle
- Operating temperature of -30°C
- 8-food (2.45m) drop spec and 5,000 3.3 ft./1m tumble rating
- Up to 50,000 scans per charge with 3100 mAH Li-ion battery

V410-H
High Resolution Handheld Barcode Reader.

	1D/2D	DPM	Hygienic Design Corded	Enclosure	Read Range
V410-H High Resolution Handheld Barcode Reader.	✔	✔	USB or RS-232	IP42	11.5 in (290mm)

The Omron V410-H high resolution handheld barcode reader family provides a powerful, compact, and easy to use solution for a broad range of applications. With Omron's proven X-Mode scanning algorithms that provide reliable readability of even the most difficult codes, including direct part marks, the XD model delivers a solution that can be used to provide traceability throughout the industrial manufacturing environment, and can read the smallest of barcode symbols. The SR model provides outstanding read range, while the HC model is designed for use in Life Science lab and hospital environments.

Barcode verification

Omron LVS® Barcode Verifiers are fully-integrated off-line solutions designed for the verification of 1D and 2D symbols and direct part marks to application standards such as GS1, HIBC, USPS and ISO/IEC 15415/15416. Barcode Verification Kits offer flexible integration options for off-line or in-line grading to symbology standards or user-defined parameters.

LVS-9510
All-in-one desktop verifier for off-line ISO/IEC barcode verification.

LVS-9585
High-performance handheld verifier for 1D/2D and direct part mark (DPM) verification to ISO/IEC and GS1 standards. Includes red dome, 30 degree and white dome lighting. Ultra-HD model for 2 mil codes.

LVS-9580
All-in-one handheld verifier for flexible verification of multiple printed 1D/2D symbols and direct part marks (DPM). Can be used with a tablet for portability.

LVS-9570
All-in-one portable verifier featuring omni-directional line scan camera for 2D symbols and 1D barcodes up to 8 inches (203.2 mm) in length.

Barcode Verification Kits
Modular solutions for off-line or in-line barcode grading to ISO/IEC standards or user-defined parameters. Includes MV-4000 smart camera and lens paired with NERLITE Smart Series light, mounting bracket, and AutoVISION software.

	1D/2D	DPM	GS1 Data	GS1 Certified	Manage Permissions	Field of View
LVS-9510	✔		✔	✔	✔	Varies By Model
LVS-9585	✔	✔	✔	✔	✔	3 in (76 mm) horizontal, 2.25 in (57 mm) vertical for non-DPM; 1.75 in (44 mm) horizontal, 1.75 in (44 mm) vertical for DPM
LVS-9580	✔	✔	✔	✔	✔	3 in (76 mm) horizontal, 2.25 in (57 mm) vertical for non-DPM; 1.75 in (44 mm) horizontal, 1.75 in (44 mm) vertical for DPM
LVS-9570	✔		✔	✔	✔	5.4 in (137 mm) in Picket Fence Format
Barcode Verification Kits	✔	✔				Varies By Model

OTHER FEATURES

- GS1 US® and 21 CFR Part 11 compliant-ready
- Verifies to over 20 global application standards and over 30 symbology types
- Enables U.S. FDA UDI (Unique Device Identification) compliance for Medical Device Manufacturers and Labelers
- Provides comprehensive and user-friendly barcode defect analysis to help guide corrections
- Includes a local report archive, as well as an external database interface to provide flexible quality reporting

GS1 US Solution Partner

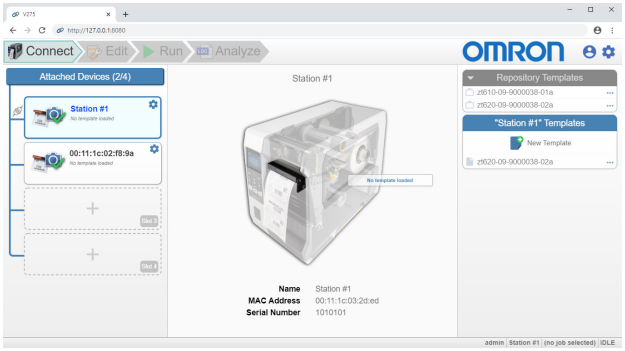
V275

Printer Integrated Label Inspection Systems

Ensure 100% label quality in real time with Omron LVS® Print Quality Inspection Systems. Our in-line ISO verification solutions help manufacturers catch defective labels immediately and maintain print quality standards throughout the printing process. Systems range from add-on hardware to custom-integrated solutions. These systems are designed to be installed directly at the point of printing, whether mounted on a printing press or integrated into a thermal printer.

V275
Modular print and barcode quality inspection system integrated directly into thermal printers.

1D/2D Read & Verify	OCR/OCV	Blemish Detection	Field of View	Equipment Mounting & Integration
✔	✔	✔	6.6" / 168 mm Maximum Inspection Width, 7.1" / 180 mm Maximum Web Width	Thermal Printers: Zebra ZT600 Series



OTHER FEATURES

- Automatically inspects both barcode quality and label content including OCR, OCV and blemishes
- Automatically stops the printer and alerts the operator in the event of a defective label
- Compares every label to a master image to detect variances
- Integrates directly with the popular Zebra ZT600 series thermal transfer label printers
- Intuitive defect analysis that quickly, accurately and reliably pinpoints label print quality problems
- Suitable for validated environments with IQ/OQ/PQ documentation and multiple security levels for managing user permissions
- Data integration with Label Management Software

GS1 US Solution Partner

MIcroHAWK Vision

Machine vision solutions

Our comprehensive line of machine vision hardware includes smart cameras and a variety of Omron Sentech industrial cameras that are scalable across software platforms for basic to advanced toolsets. Whether you require a compact form factor for tight spaces, high-speed imaging for fast-moving production lines, or high resolution for detailed inspection, Omron has a machine vision solution to meet your needs. Omron offers a complete line of Industrial Cameras for use with 3rd party vision software, see https://www.automation.omron.com/en/us/products/families/machine-vision-cameras

	Focus	Sensor	IP Rating	Power	Connectivity	Connectors	Software
 **MicroHAWK MV-20** Software, optics, sensor and lighting in a fully-enclosed, IP40-rated USB smart camera measuring less than 2 in. (51 mm) on each side.	Fixed, Autofocus	WVGA, SXGA, 5 MP Color	IP40	5 V	USB 2.0 High Speed, Ethernet over USB	Micro-B USB	AutoVISION, Visionscape
 **MicroHAWK F320/F330** Smallest imaging engine for basic to advanced vision.	Fixed, Autofocus	WVGA, SXGA, 5 MP Color	N/A	F320: 5V F330: 44-57VDC IEEE80.23af POE	RS232, USB 2.0, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O	RJ50 or RJ45, model dependent	AutoVISION, Visionscape
 **MicroHAWK F420** Miniature IP54-rated smart camera with corner-exit RS-232 serial cable and liquid lens autofocus.	Fixed, Autofocus	WVGA, SXGA, 5 MP Color	IP54	5 V	RS-232, USB 2.0 High Speed, Ethernet over USB	High Density 15-Pin D-Sub	AutoVISION, Visionscape
 **MicroHAWK F430** Rugged industrial smart camera in resilient IP65-rated enclosure featuring Ethernet, PROFINET and liquid lens autofocus.	Fixed, Autofocus	WVGA, SXGA, 5 MP Color	IP65/67	4.75–30 V	RS-232, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O	M12-12, M12-8 socket	AutoVISION, Visionscape
 **HAWK MV-4000** High-performance smart camera reaching near-PC processing speeds with complete vision, code reading and code verification toolset.	C-mount	VGA, SXGA, WUXGA, 5MP (Mono and Color)	IP67 with lens cap	24V	Gigabit Ethernet	M12-8, M12-12 socket, Digital I/O, M12-12 plug for VGA, USB	AutoVISION, Visionscape
 **Sentech GigE Solution** Gigabit Ethernet software and compact cameras allow rapid deployment of any scale machine vision solution. Illumination not included.	C-Mount	Options from VGA to 8 MP (Mono and Color)	IP54	8–30 V	Gigabit Ethernet	RJ45 socket, M8-3, M8-4	AutoVISION, Visionscape
 **FH**	C-Mount	0.3MP - 20MP	IP20	24VDC	Ethernet TCP/IP, RS-232, EtherNet/IP, PROFINET, EtherCAT	RJ45, USB 2.0, Parallel IO, DVI-I	FZ-PanDA (FHV/FH/FJ Software), Sysmac Studio
 **FHV7**	Autofocus, C-Mount	0.4MP - 12MP	IP67	24VDC	Ethernet TCP/IP, RS-232, EtherNet/IP, PROFINET, EtherCAT	M12 RJ45, Power, IO	FZ-PanDA (FHV/FH/FJ Software), Sysmac Studio

Software solutions

Omron offers intuitive software solutions for each of its product lines that accommodate all user levels and applications. MicroHAWK barcode readers work right out of the box thanks to Omron easy-to-use WebLink software. AutoVISION® features an intuitive interface for easy setup and deployment of vision applications, including scalability to Visionscape® for more complex configurations and advanced programming capabilities. FH/FHV7 software provides high performance image inspection, AI, and 3D Vision guidance capabilities

WebLink

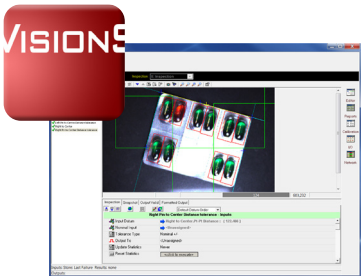
WebLink Software: As the world's first browser-based barcode reader configuration interface, WebLink provides real-time remote access to the settings on any MicroHAWK reader. Users can employ the web browser of their choice to set up, test, control and monitor any MicroHAWK device without needing to install any software. Its best-in-class usability makes it easy to read challenging codes and even train the interface to adjust settings according to varying conditions.

AutoVISION Software

AutoVISION is the easiest software available for basic to mid-range vision applications. Its intuitive interface guides the user to connect to a device, configure the hardware, program the job and monitor results. Jobs are fully scalable across cameras, software, industrial systems, PCs and mobile devices.

- Complete Tool Set includes X-Mode decoding technology and fully-teachable OCR. Locate, Measure, Count, Color ID or Matching, and Presence/Absence tools make inspection easy while Verification and OCV tools monitor barcode and text quality.
- Web Monitor provides feedback and real-time visualization of runtime data with a customizable, web-based HMI display that works on nearly any browser.

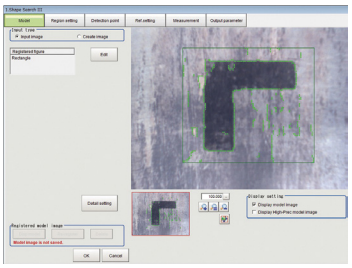
Visionscape Software



Visionscape gives advanced users all the elements required to develop and deploy complex industrial vision applications with a customizable configuration environment. It can open AutoVISION jobs for scripting and other advanced programming using numerous proven image processing tools and a powerful graphical user interface.

- FrontRunner Interface serves as an "Engineering" GUI for application evaluation, development, training, parameter change, and monitoring.
- Web Monitor provides feedback and real-time visualization of runtime data with a customizable, web-based HMI display that works on nearly any browser.

FHV/FH/FJ/FZ Programming interface



The same programming interface is shared within smart cameras like FHV7 all the way to powerful vision systems like FH, so scalability is key when considering this family. If using it with the FHV7 smart camera, the software will allow to choose from more than 75 inspection tools, and when using with a FH vision system for example it will expand for more than 100 tools. It is a single piece of software that can be used for Programming, Simulation and Monitoring purpose

Laser Marker

Durable laser marking

The need for high-quality, permanent identification is driven by manufacturers' efforts to trace their products for process and supply chain visibility or in the case of a recall. Omron fiber laser markers provide a flexible and reliable method for marking parts to support traceability across many industries.

Flexible and efficient

The Omron MX-Z Series of fiber laser markers is ideal for applying direct part marks (DPMs) to a wide variety of materials, ranging from metals like stainless steel, iron, aluminum and gold to plastics, resins and plastic films.

In addition, the MX-Z offers a high degree of flexibility with respect to connectivity and the ability to integrate easily with other systems and controls. Direct integration with a Vision camera for target based position-compensated marking.

Ideal for traceability

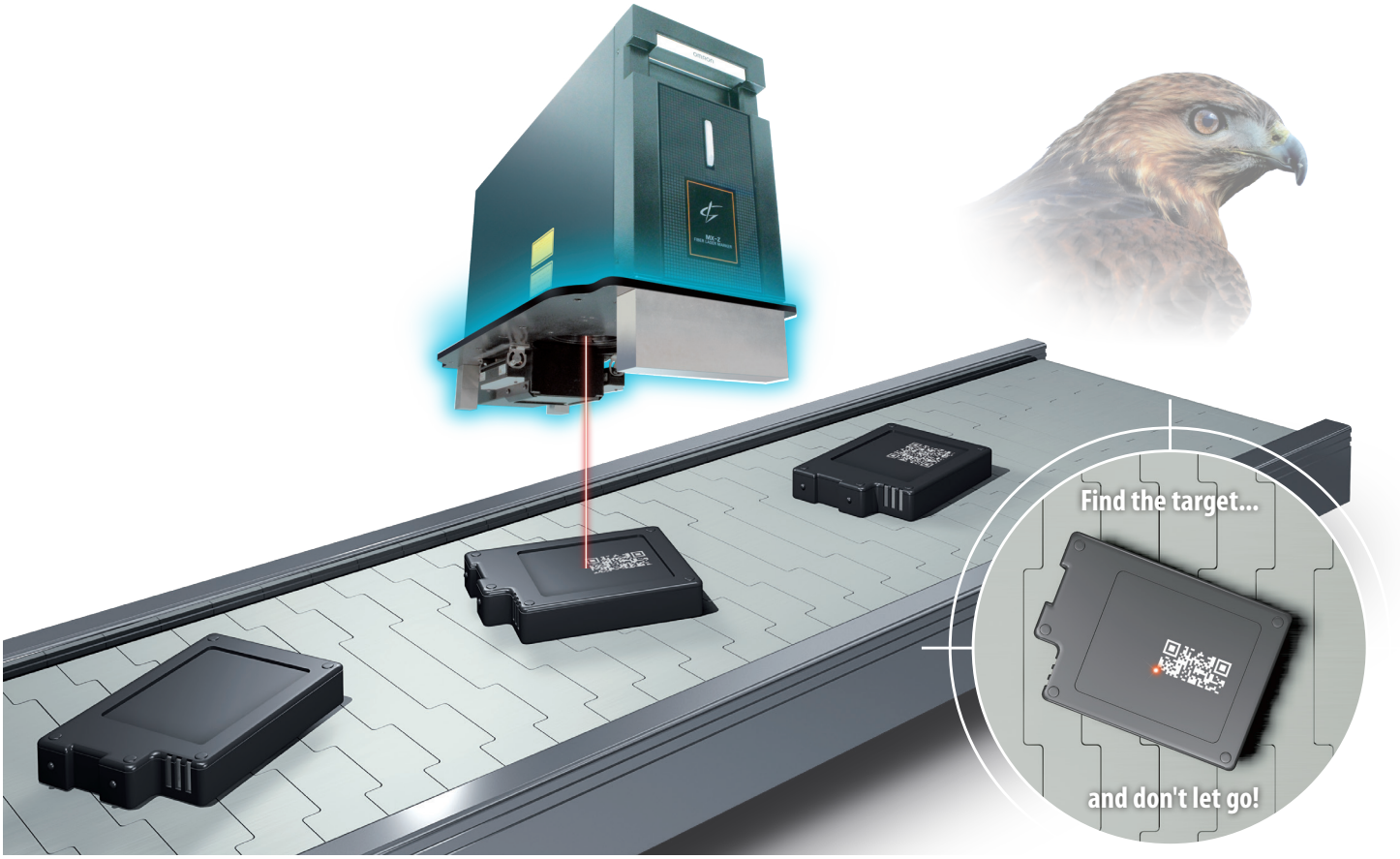
MX-Z users can obtain marking data directly from the laser marker and store inspection data, results, and images from the vision system in a database for recordkeeping and traceability purposes.

Omron provides a complete solution that includes the vision system along with a machine controller and SQL client to connect to an SQL database. This can even include Omron's IPC (industrial personal computer), where the SQL server can reside.

Other features

- Communications and control via EtherNet/IP, Ethernet TCP/IP, RS-232, RS-422
- Target materials include stainless steel, iron, aluminum, copper, gold, silver, ABS, PBT, POM, PC, PP, PVC and more
- Color marking can be performed on stainless steel
- High resolution (2µm) supports characters as small as 0.1mm (100µm)
- Can mark 1D and 2D codes (Code 39, NW-7, ITF, Code 128, JAN, GS1, QR Codes, Micro QR, Data Matrix - ECC200, GS1 Data Matrix)
- Imports and laser marks drawings (DXF) or JPG, BMP, PNG images

Further information can be found at https://automation.omron.com/en/us/products/families/fiber-laser-marker



How Much Space Does Your Symbol Need?

Data Matrix symbols set the standard for reliable, accurate and space-efficient identification. Because information is encoded in two dimensions, Data Matrix has much more data capacity than common linear symbologies such as UPC or Code 39. For example, 50 characters can be encoded in a Data Matrix symbol measuring just 6mm by 6mm. See the chart below for more information on Data Matrix sizes and capacities.

Symbol Size	**Data Capacity**		**5 mil Examples**	**7.5 mil Examples**	**10 mil Examples**	**15 mil Examples**
Row x Column	*Numeric*	*Alphanumeric*				
10 x 10	6	3	1.27 mm	1.90 mm	2.54 mm	3.81 mm
12 x 12	10	6	1.52 mm	2.29 mm	3.05 mm	4.57 mm
14 x 14	16	10	1.78 mm	2.67 mm	3.56 mm	5.33 mm
16 x 16	24	16	2.03 mm	3.05 mm	4.06 mm	6.10 mm
18 x 18	36	25	2.29 mm	3.43 mm	4.57 mm	6.87 mm
20 x 20	44	31	2.54 mm	3.81 mm	5.08 mm	7.62 mm
22 x 22	60	43	2.79 mm	4.19 mm	5.59 mm	8.38 mm
24 x 24	72	52	3.05 mm	4.57 mm	6.10 mm	9.14 mm
26 x 26	88	64	3.30 mm	4.95 mm	6.60 mm	9.91 mm
32 x 32	124	91	4.06 mm	6.10 mm	8.13 mm	12.19 mm
36 x 36	172	127	4.57 mm	6.86 mm	9.14 mm	13.72 mm
40 x 40	228	169	5.08 mm	7.62 mm	10.16 mm	15.24 mm
44 x 44	288	214	5.59 mm	8.38 mm	11.18 mm	16.76 mm

NOTE: Each Data Matrix symbol shown is a square matrix. Symbols are for size reference only, and may not be accurately reproduced on-screen or by some print methods. Scale is 1:1.

2.5 mil Data Matrix

These extremely small Data Matrix symbols are nearly invisible to the naked eye. They must be printed or marked with a high level of accuracy to ensure readability. Omron Microscan readers can decode Data Matrix symbols as small as 2.5 mil.

Symbol Size: 10 X 10
Data Capacity: Numeric: 6 / Alphanumeric: 3

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