# MICROSCAN®

BARCODE | VERIFICATION | MACHINE VISION

Precision Traceability and
Inspection Solutions for
Automation and OEM Applications
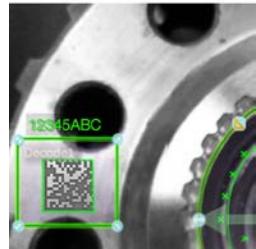
In-Position
Technologies

Precision Traceability and Inspection Solutions

At Microscan we will leverage our expert position to help manufacturers and labs create errorfree operations via innovative track, trace, control and analytics-driven solutions.

Data Acquisition and Control Solutions
Our barcode, machine vision and verification products boost manufacturing efficiency and quality control, helping our customers reduce costs, monitor quality and increase production flow.

From personal electronics to clinical instruments to product packaging, Microscan solutions enable critical production-level applications such as quality control, work-in-process monitoring, guiding the movement of goods, component traceability, sortation and lot tracking.

Technology Leader
Microscan has a strong history of technology innovation. We 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. We are experts in barcode verification.

Today, Microscan continues to be a recognized technology leader through continuous new product development in the areas of machine vision, auto ID and verification.

Quality Focus
An ISO 9001 certified company since 1996, with national recognition for Quality Leadership, Microscan is proud of our quality record.

Global Strength
Microscan products are represented and supported through a global network of more than 300 top automation integrators and value-added resellers. As a preferred supplier to companies around the world, we offer comprehensive service and support, including online and technical support, field services, and multilingual documentation.

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

MICROSCAN®

35 YEARS IN BUSINESS
FOUNDED 1982

Over **1 Million Products** Sold Worldwide

Barcode Readers

Barcode Verification

Machine Vision

More Than
100
Technology Patents
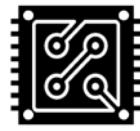
33 WORLDWIDE OFFICES

United States
Europe
China
Southeast Asia

South Korea
India
Mexico
Latin America

GS1 US
Solution Partner

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).

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

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: EIA 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: AS9132**
  Data Matrix Quality Requirements For Part Marking
- **AIM DPM / ISO 29158**
  Direct Part Mark Quality Guideline

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

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

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. Microscan 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
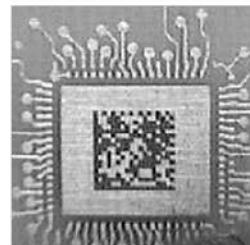
Laser etch on metal

Inkjet on ABS 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 require re-labeling, re-scanning, 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, plus damage the labeled product's perceived quality.

Readability of barcodes is determined by how well a barcode reader can decode the data stored in the symbol. Understanding the primary reasons for decoding failures can save operators valuable time and effort when diagnosing reading issues. Once the cause of barcode unreadability is defined, it can be addressed by taking simple, preventative measures.

Microscan's 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 which provides 100% label inspection against a label reference image and expected label content.

Benefits of Barcode Verification Systems

- Comply with symbol quality industry standards and directives

- 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

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
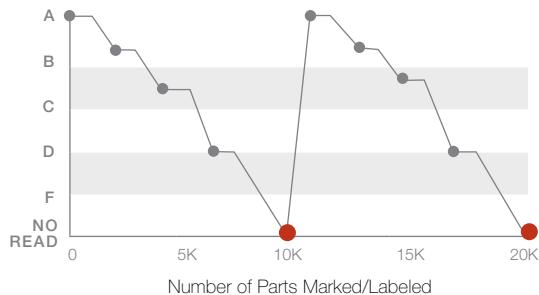
WITH VERIFICATION

Barcode Quality Over Time:
Using a Verification Solution to Check Quality
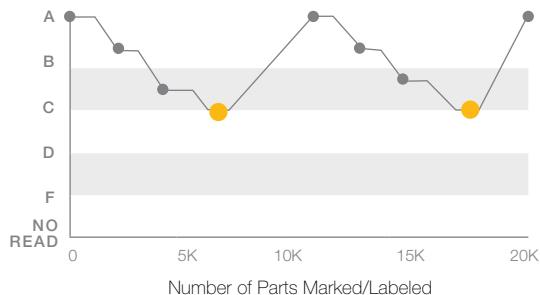
Machine Vision Inspection and Guidance

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 auto-mating 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 hard-ware and software components to perform similar tasks at high speeds with greater precision.

Microscan 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 auto-mated technical identification, inspection, measurement, and guidance capabilities to the benefit of manufacturers worldwide.

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 tools to precise locations

**Color detection and OCR reading**
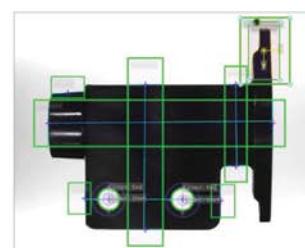
Part location and measurement
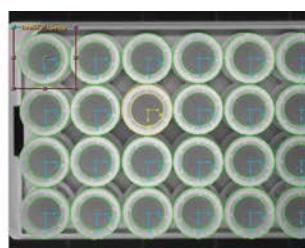
Intellifind®-based shape counting
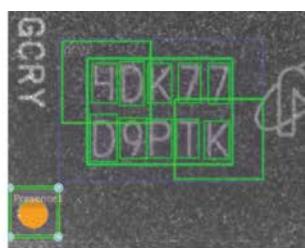
Optical Character Verification (OCV)
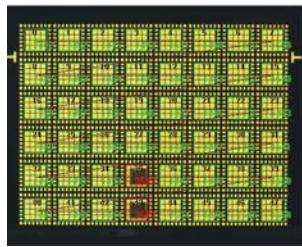
Grid-based inspection and reject mark detection
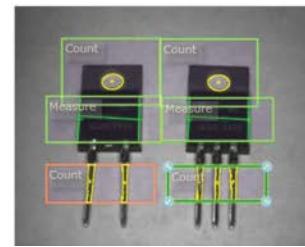
Shape inspection
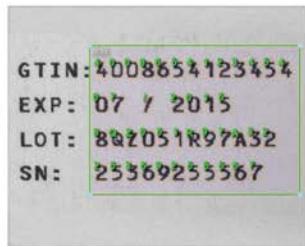
OCR reading
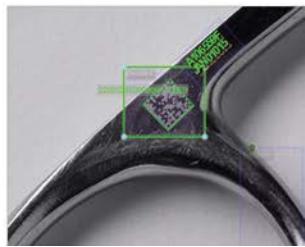
1D/2D and DPM symbol decoding

Optimal Lighting for Any Application

Proper lighting is critical to the success of a machine vision application, and should be the first consideration when setting up a system. A well-planned lighting solution will result in better system performance, and will save time, effort and money in the long run.

Machine vision lighting should maximize feature contrast while minimizing contrast of everything else, thereby allowing the camera to clearly "see" the part or mark. High-contrast features simplify integration and improve reliability; images with poor contrast and uneven illumination require more effort from the system and increase processing time. The optimal lighting configuration is dependent on the size of the part to be inspected, the part's surface features and part geometry, and the system needs. With a broad range of wavelength (color), field of view (size), and geometry (shape) options available, machine vision lighting can be tailored to virtually any application requirements.

Microscan's innovative NERLITE® line of products is the longest-established brand of machine vision lighting, enabling machine vision and auto ID systems to perform reliably in thousands of applications worldwide.

Five Considerations When Choosing Lighting

■ Is the surface flat, slightly bumpy or very bumpy?

■ Is the surface matte or shiny?

■ Is the object curved or flat?

■ What is the color of the barcode or mark?

■ Are you inspecting moving parts or stationary objects?

EXAMPLES OF PROPER LIGHTING

Printed text on foil pouch
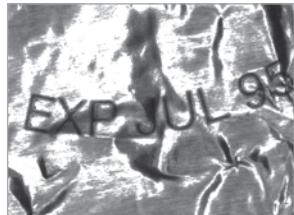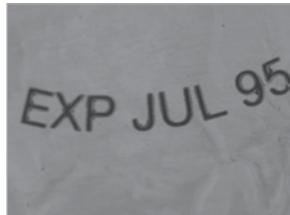
BEFORE   AFTER

Parts and components inspection
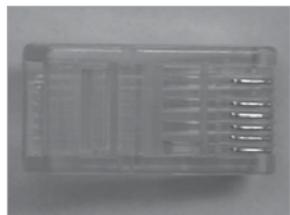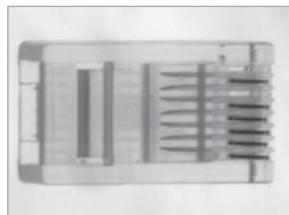
BEFORE   AFTER

Printed text on bottle cap

BEFORE   AFTER

Text and symbols on glossy label

BEFORE   AFTER

www.microscan.com

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. Microscan's barcode and machine vision products are commonly used throughout automated packaging applications to monitor, track and trace critical data to ensure quality while maximizing 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
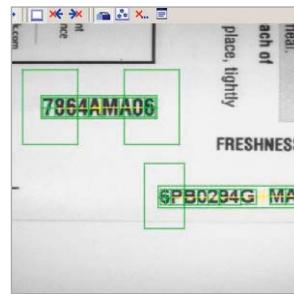
Pharmaceutical Manufacturing

Labeling

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. Microscan's 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
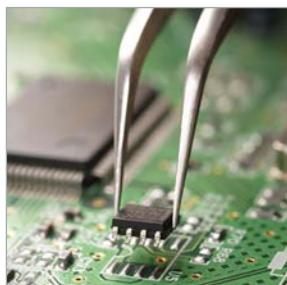
Consumer Electronics
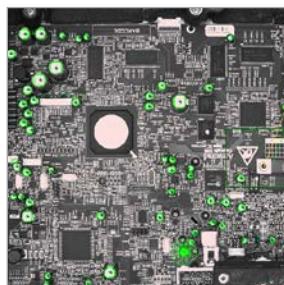
Automotive Electronics
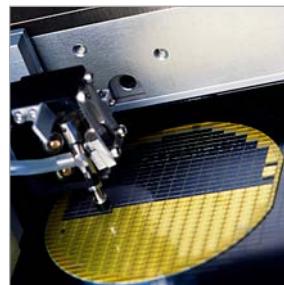
Semiconductor

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
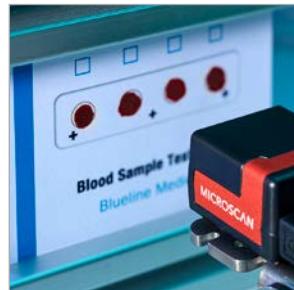
Reagent and Kit Tracking

Medical Devices

Solutions for Factory Automation

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

Barcode Verification
Verify Barcode Quality and Compliance

Symbol Quality and Legibility

Direct Part Mark Quality

Data Sequence

Data Accuracy

Machine Vision
Inspect Parts and Assembly

Dimensional Inspection

Text (OCR and OCV)

Part Presence and Position

Label Presence and Position

Defect Detection

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

White Goods

Laser Barcode Scanners

From small products for embedded OEM applications to rugged readers for industrial manufacturing environments, Microscan offers a wide range of quality products to read linear barcodes and stacked symbols, with features such as high-speed decoding, wide field of view, symbol reconstruction and aggressive decode algorithms.

	Read Range	Scans/Second	Power	Sensor	IP Rating	Connectivity
MS-1 Smallest CCD scan engine for 1D and stacked codes.	1.0–13.0 in 25–330 mm	Up to 530	5 V	CCD, 32bit	N/A	USB, RS-232 TTL
MS-2 Compact CCD image sensor available in several configurations to address a variety of applications.	0.8–12.8 in 20–325 mm	Up to 530	5 V	CCD, 32bit	IP54	USB, RS-232 TTL
MS-3 Compact raster laser scanner offers high-performance decoding and wide scan angle at close range.	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
QX-830 Compact laser scanner features QX platform, symbol reconstruction and optional embedded Ethernet protocols.	1–30 in 25–762 mm	300–1400	10–28 V	Embedded Laser Diode	IP64	RS-232, RS-422/485, Optional Embedded Ethernet TCP/IP or EtherNet/IP™
QX-870 Programmable sweeping raster laser scanner with QX platform, symbol reconstruction and optional embedded Ethernet protocols.	1–30 in 25–762 mm	300–1400	10–28 V	Embedded Laser Diode	IP65	RS-232, RS-422/485, Optional Embedded Ethernet TCP/IP or EtherNet/IP
MS-890 Heavy-duty laser scanner with extended read range, autofocus and sweeping raster.	10–120 in 254–3048 mm	400–1000	10–28 V	Semicon-ductor Visible Laser Diode	IP65	RS-232, RS-422/485, Optional Ethernet (via IB-890 Wiring Box)

OTHER FEATURES

- QX platform offers the best connectivity, networking and decode power
- Powerful X-Mode decoding includes symbol reconstruction and DPM reading
- ESP software provides a single program to setup any Microscan barcode scanner

2D Barcode Readers

Our 2D barcode readers feature industry-leading technology for decoding both 2D symbols and linear barcodes based on Microscan's legacy of 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
MS-2D Engine Miniature fully-decoded scan engine for decoding both 1D and 2D symbols.	1.5–15.5 in 38–394 mm	Fixed	CMOS DVGA		5 V	N/A	RS-232, USB 2.0
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 ID-30 Miniature IP54-rated imager with corner-exit RS-232 serial cable and liquid lens autofocus.	2–12 in 50–300 mm	Fixed, Autofocus	Global WVGA or SXGA, Rolling QSXGA	✔	5 V	IP54	RS-232, USB 2.0 High Speed, Ethernet over USB/HID
MicroHAWK ID-40 Rugged industrial imager in resilient IP65-rated enclosure featuring Ethernet, PROFINET and liquid lens autofocus.	2–12 in 50–300 mm	Fixed, Autofocus	Global WVGA or SXGA, Rolling QSXGA	✔	5–30 V	IP65	RS-232, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O®, Power over Ethernet (PoE)
QX Hawk Fully-integrated liquid lens imager with embedded Ethernet, IP65/67-rated enclosure and optional C-mount lens.	Varies by Configuration	Fixed, Autofocus	CMOS WVGA, CCD SXGA	✔	5–30 V	IP65/67	RS-232, RS-422/485, Ethernet TCP/IP, EtherNet/IP

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
- Thousands of customized hardware configurations are available

INTEGRATED LIQUID LENS TECHNOLOGY

Embedded in ID-30, ID-40 and QX Hawk, this system uses electrostatic pressure to create liquid lens curvature, optimizing the imaging system and providing a near-infinite working range in autofocus applications.

Handheld Barcode Readers

Microscan's 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.

	1D/2D	DPM	Wireless	Image Lock	Focal Point	Field of View
HS-21 Barcode Reader — Economical choice for reading linear and high contrast 2D symbols in either wide or high density field.	✔				4 in (100 mm)	30° Horizontal by 20° Vertical (High Density Field), 50° Horizontal by 33.5° Vertical (Wide Field)
HS-41X DPM Reader — Decoding capabilities include high density linear and 2D symbols, including simple direct part marks.	✔	✔		✔	4 in (100 mm)	30° Horizontal by 20° Vertical (High Density Field), 50° Horizontal by 33.5° Vertical (Wide Field)
HS-51X Wireless DPM Reader — Wireless decoding of linear and 2D symbols, including direct part marks.	✔	✔	✔	✔	4 in (100 mm)	30° Horizontal by 20° Vertical (High Density Field), 50° Horizontal by 33.5° Vertical (Wide Field)
Mobile Hawk DPM Reader — Best-in-class decoding and advanced lighting to reliably read the most challenging low-contrast direct part marks with only one touch.	✔	✔		✔	Optimal 0.25 in (6.3 mm)	1.59 in (40.39 mm) Horizontal by 1.27 in (32.31 mm) Vertical

BARCODE SOFTWARE AND CONNECTIVITY

WebLink Interface
Browser-based interface to set up, test, control and monitor any MicroHAWK barcode reader. No software installation required.

ESP® Software
Easy Setup Program (ESP) provides quick and easy setup of Microscan's complete line of barcode scanners and imagers.

MS-Connect 210
Ethernet connectivity solution and wiring box simplifies connectivity of Microscan readers in industrial applications.

QX-1
Complements and streamlines installation of QX platform products. Features M12 connectors and IP65 sealing.

View full product line and specifications at www.microscan.com.

13

Barcode Verification

Microscan's 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.

	1D/2D	DPM	GS1 Data	GS1 Certified	Manage Permissions	Field of View
LVS-9510 All-in-one desktop verifier for off-line ISO/IEC barcode verification.	✔		✔	✔	✔	Varies By Model
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.	✔		✔	✔	✔	5.4 in (137 mm) in Picket Fence Format
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.	✔	✔	✔	✔	✔	3 in (76 mm) Horizontal, 2.25 in (57 mm) Vertical
Barcode Verification Kits Modular solutions for off-line or in-line barcode grading to ISO/IEC standards or user-defined parameters. Includes Vision HAWK smart camera and lens paired with NERLITE Smart Series light, mounting bracket, and AutoVISION software.	✔	✔				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

Print Quality Inspection Systems

Ensure 100% label quality in real time with Microscan's 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.

	1D/2D Read & Verify	OCR/OCV	Blemish Detection	Delta E Color Control	Field of View	Equipment Mounting & Integration
LVS-7000 Modular print and barcode quality inspection system custom-integrated into web presses, slitter rewinders, and other equipment.	✔	✔	✔	✔	Varies By Model	**Printing Press, Slitter Rewinder, Folder Gluer, Conveyer**
LVS-7300 Turnkey inspection system that easily mounts onto existing printing systems and equipment for print and barcode quality inspection in most applications.	✔	✔	✔	✔	Varies By Model	**Printing Press, Slitter/Rewinder, Folder Gluer, Form-Fill-Seal, Conveyer**
LVS-7500 Turnkey print and barcode quality inspection system that easily mounts onto thermal printers and rewinders.	✔	✔	✔		8.5 in (216 mm) Maximum Label Width, 8.66 in (220 mm) Maximum Web Width	**Thermal Printers and Rewinders:** Printronix®, Zebra®, cab®, SATO®, Honeywell®, Others Upon Request
LVS-7510 Modular print and barcode quality inspection system integrated directly into thermal printers.	✔	✔	✔		8.5 in (216 mm) Maximum Label Width, 8.66 in (220 mm) Maximum Web Width	**Thermal Printers:** Printronix, Zebra

OTHER FEATURES

- Automatically inspects both barcode quality and label content including OCR and OCV
- Compares every label to a master image to detect variances, including color parameters
- Integrates directly with the most popular thermal transfer label printers including Zebra and Printronix
- Intuitive defect analysis that quickly, accurately and reliably pinpoints label print quality problems
- Multiple security levels for managing user permissions
- Data integration with Label Management Software

GS1 US
Solution Partner

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15

Machine Vision Cameras

Our comprehensive line of machine vision hardware includes smart cameras and PC-based GigE solutions 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, Microscan has a machine vision solution to meet your needs.

	Focus	Sensor	IP Rating	Power	Connectivity	Connectors	Software
MicroHAWK Engine Smallest imaging engine for basic to advanced vision.	Fixed, Autofocus	WVGA, SXGA, 5 MP Color	N/A	5 V	USB 2.0 High Speed	Micro-B USB, Second USB Port on ZIF Connector	AutoVISION, Visionscape
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 MV-30 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 MV-40 Rugged industrial smart camera in resilient IP65-rated enclosure featuring Ethernet, PROFINET and liquid lens autofocus.	Fixed, Autofocus	WVGA, SXGA, 5 MP Color	IP65	4.75–30 V	RS-232, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O	M12-12, M12-8 socket	AutoVISION, Visionscape
Vision HAWK Industrial smart camera featuring rugged plug-and-play design with liquid lens auto-focus and embedded Ethernet. Optional C-mount lens configuration.	Auto-focus, C-mount	WVGA, SXGA (Mono and Color), WUXGA	IP65/67	5–28 V	RS-232, Ethernet TCP/IP, EtherNet/IP, PROFINET I/O	M12-12, M12-8 socket	AutoVISION, Visionscape, Verification/ OCV Upgrades Available
Visionscape 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	Visionscape

OTHER FEATURES

- Fully-integrated smart cameras with lighting, lens, I/O, easy connectivity and advanced software tools
- Complete range of hardware components from OEM imaging engines to complex multi-camera PC/GigE vision systems
- Machine vision jobs are fully scalable across cameras, software, industrial systems, and PCs or mobile devices

Machine Vision Software

Microscan holds one of the world's most extensive patent portfolios for machine vision technology, with software solutions to accommodate all user levels and applications. 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.

AutoVISION Software

AutoVISION Software: The easiest software available for basic to mid-range vision applications. Simple to install, set up, and use, AutoVISION enables even novice users to easily accomplish their goals. It features an intuitive interface that guides the user to connect to a device, configure the hardware, program the job, and monitor results. AutoVISION jobs are fully scalable across cameras, software, industrial systems, and PCs or mobile devices.

■ **Complete Tool Set**
Includes Microscan's X-Mode decoding technology and fully-teachable OCR. Locate, Measure, Count, Color ID or Matching, and Presence/Absence tools provide easy inspection, while Verification and OCV tools inspect the quality of barcodes and text such as date/lot codes.

■ **Microscan Link**
Connects parameters within AutoVISION jobs to industrial control systems or to a PLC system with a simple click on the desired parameter.

■ **CloudLink**
Customizable web-based HMI displays AutoVISION runtime data on nearly any web browser to provide feedback and visualization in real time.

■ **Scalable with Visionscape**
For applications demanding more flexibility or configuration options, AutoVISION jobs can be opened with Visionscape FrontRunner enabling scripting and other advanced programming.

Visionscape Software
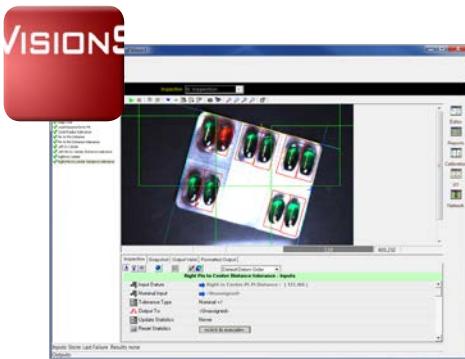
Visionscape Software: Supports our complete line of vision hardware. Visionscape provides advanced vision users all of the elements required to develop and deploy complex industrial vision applications, in a configuration environment that can be tailored to different users for maximum productivity. It can also open AutoVISION jobs to enable scripting and other advanced programming using an extensive collection of proven image processing tools and a powerful graphical user interface.

■ **FrontRunner Interface**
"Engineering" GUI provides application evaluation, development, training, parameter change, and monitoring.

■ **VsKit.NET**
Provides modules to make vision inspection an integral part of a machine setup interface by incorporating machine vision capabilities into any .NET program.

■ **Microscan Link**
Connects parameters inside Visionscape jobs to industrial control systems or to a PLC with a simple click on the desired parameter.

■ **CloudLink**
Customizable web-based HMI displays Visionscape runtime data on nearly any web browser to provide feedback and visualization in real time.

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17

Machine Vision Lighting

Microscan's advanced NERLITE® lighting solutions feature sophisticated optical technology and user-friendly designs. These precision illumination products allow machine vision and auto ID systems to perform reliably in any imaging application. In addition, Smart Series lighting includes a built-in controller with adjustable intensity continuous mode and high-output strobe mode for a complete and easily integrated solution.

LIGHT IN USE	OBJECT	RESULTING IMAGE

NERLITE Smart Series MAX Light
Illuminates small to very large areas, providing very high intensity when required. Suitable for indoor or outdoor use.

NERLITE Smart Series DOAL® Light
Provides high-intensity, diffuse illumination with superior uniformity for flat, specular surfaces.

NERLITE Smart Series Ring Light
Covers a broad range of applications, providing high-intensity illumination and a variety of optical accessories.

NERLITE Area Array Light
General purpose design for diffused surface lighting in applications that demand economical solutions.

NERLITE Backlight
Provides sharp contrast to outline a part's shape, hide clear housings, and view openings such as drilled holes.
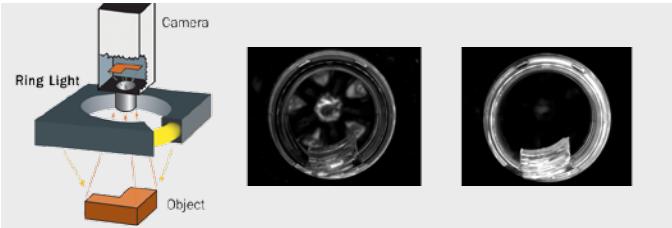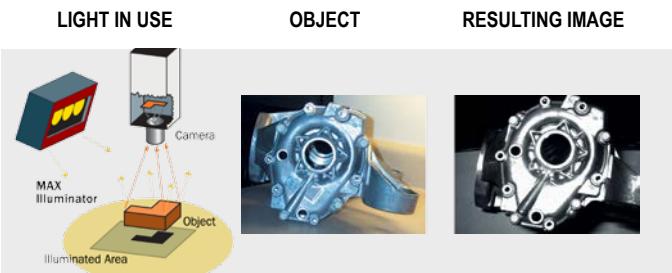
Depending on the product, wavelengths available include red, blue, ultraviolet, and infrared, as well as full-spectrum white.
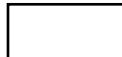
How Much Space Does Your Symbol Need?

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 Row x Column	Data Capacity Numeric	Data Capacity Alphanumeric	5 mil Examples	7.5 mil Examples	10 mil Examples	15 mil Examples
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. Microscan readers can decode Data Matrix symbols as small as 2.5 mil.

Actual Size

Displayed at 600%

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

Microscan is a global technology leader focused on barcode reading, verification and machine vision solutions serving a wide range of automation and OEM markets. Visit **www.microscan.com** for complete information on Microscan products, technology, specifications, case studies and more. Contact us online or at a global office below.

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