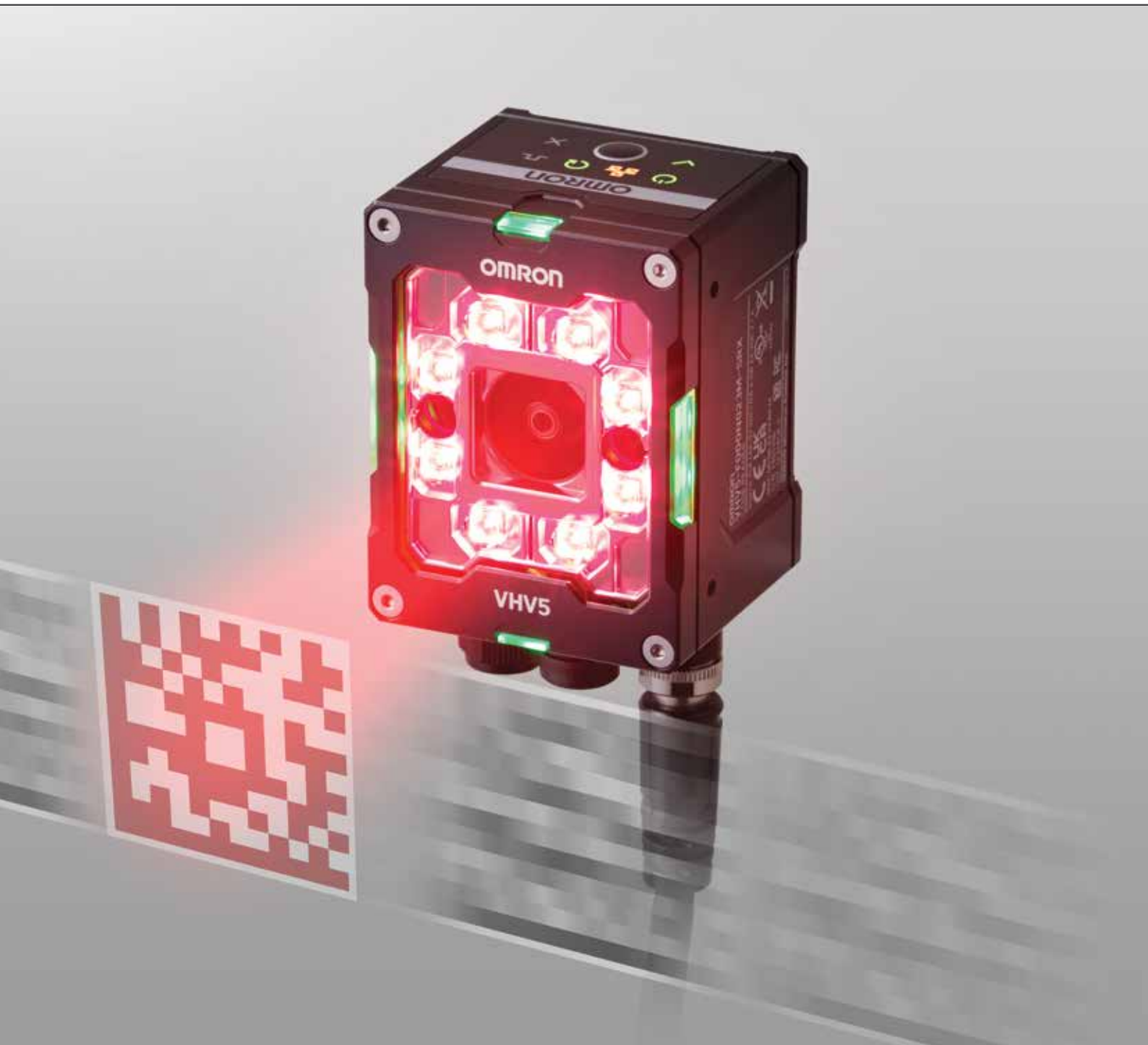


VHV5 Inline Verifier High-Performance Barcode Verification System



Inline Verification. Instant Feedback. Zero Compromise.



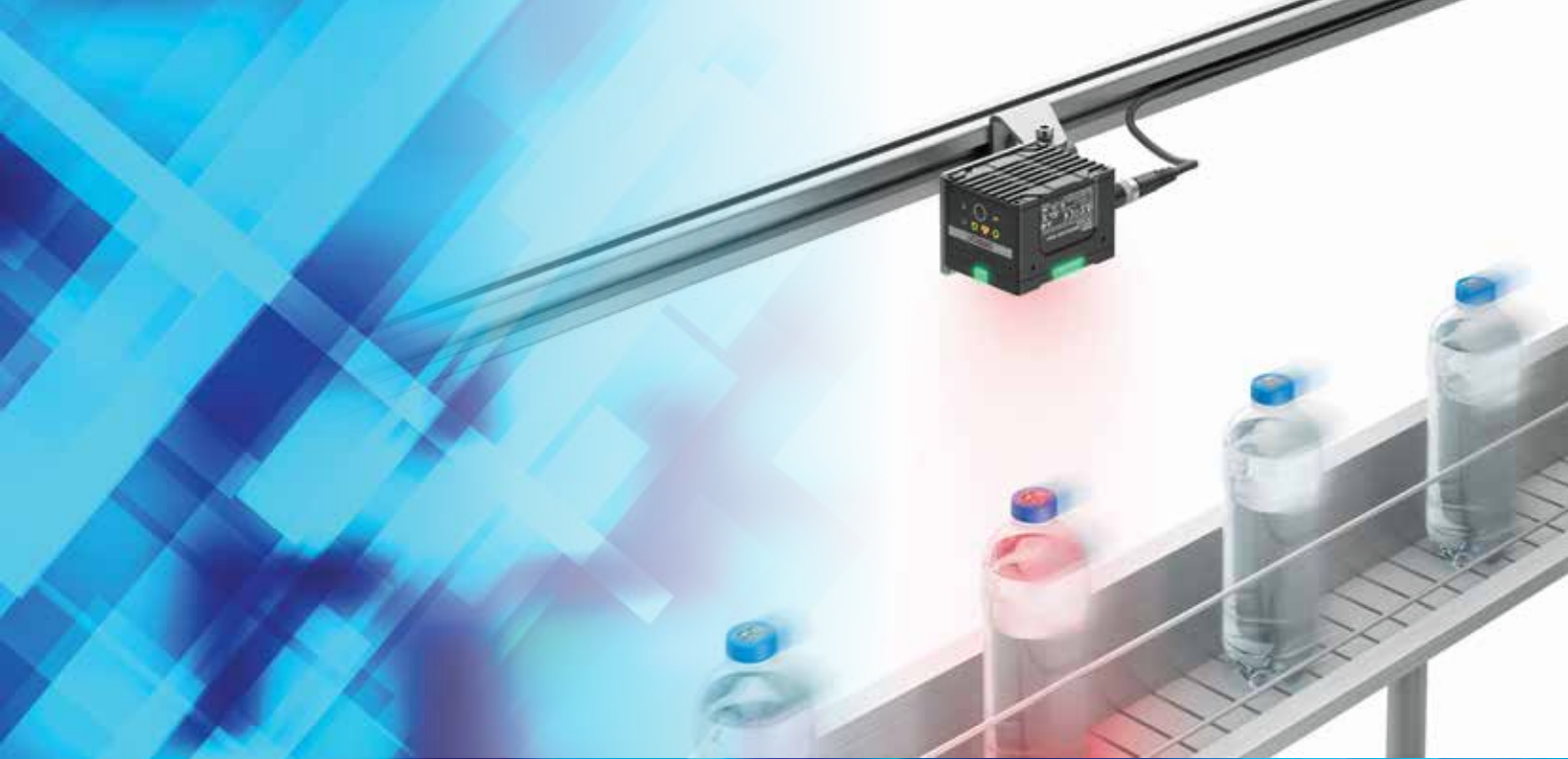
ISO/IEC 15416			ISO/IEC 15415			ISO/IEC 29158		
Verification Grades			Verification Grades			Verification Grades		
Overall	3.2	79	Overall	4.0	100	Overall	3.9	97
Reference Decode	4.0	100	Reference Decode	4.0	100	Reference Decode	4.0	100
Edge Determination	4.0	100	Axial Non-Uniformity	4.0	2	Axial Non-Uniformity	4.0	1
Quiet Zone	4.0	100	Contrast	4.0	72	Cell Contrast	4.0	78
Decodability	4.0	86	Fixed Pattern Damage	4.0	100	Cell Modulation	3.9	97
Defects	4.0	0	Grid Non-Uniformity	4.0	11	Fixed Pattern Damage	4.0	100
Minimum Edge Contrast	4.0	53	Modulation	4.0	100	Grid Non-Uniformity	4.0	11
Minimum Reflectance	4.0	2	Reflectance Margin	4.0	100	Unused ECC	4.0	100
Modulation	3.2	62	Unused ECC	4.0	83	Minimum Reflectance	4.0	100
Symbol Contrast	4.0	85						

Introducing the Next Generation Inline Barcode Verifier

The OMRON VHV5 Inline Verifier is a high-performance barcode verification system designed to deliver real-time, standards-based verification directly on the production line. By ensuring every printed or direct part marked codes meets global quality and compliance requirements, the VHV5 helps manufacturers eliminate risk, reduce rework, and protect brand reputation.

Key Capabilities

- ISO/IEC 15416 (1D), ISO/IEC 15415 (2D), and ISO/IEC TR 29158 (DPM) compliance
- Real-time inline verification at production speed
- Support for 1D, 2D, and Direct Part Mark (DPM) codes
- Built-in GS1 syntax and data structure validation
- Browser-based WebLink interface for setup and monitoring



Why Inline Verification Matters

Stop Problems Before Products Leave the Line

Inline verification checks barcode quality and data as each product is produced. Print defects, damage, or formatting issues are identified immediately, allowing operators to take action before non-compliant products move further down the line.

Cut Waste, Rework, and Unplanned Stops

By catching issues at the point of printing or marking, inline verification helps reduce scrap and rework while avoiding costly line stoppages caused by failures at final inspection or in the supply chain.

Protect Your Brand and Traceability

Consistently high-quality, standards-compliant barcodes scan reliably at every stage of the supply chain, safeguarding brand reputation and maintaining clear, end-to-end traceability.

Meet Regulatory and Customer Expectations

Inline verification helps ensure barcodes meet ISO and GS1 requirements by checking both symbol quality and data structure. This is essential in regulated industries such as pharmaceuticals, medical devices, and food and beverage.

Keep Production Moving at Full Speed

Verification runs at line speed, so quality and compliance are built into the process without slowing production or limiting throughput.

Where Inline Verification Adds Value

Typical Applications

- Inline verification of printed labels
- Verification of laser-marked codes
- Verification on primary and secondary packaging
- High-speed production lines with continuous marking

Industry Use Cases

Pharmaceuticals & Medical Devices

- Ensures compliance with ISO and GS1 requirements
- Supports traceability and audit readiness
- Prevents non-compliant products leaving the line

Food & Beverage

- Maintains barcode readability through packaging variations
- Reduces waste caused by late-stage detection
- Supports retailer and logistics compliance

Manufacturing & Automotive

- Verifies DPM codes on metallic or curved parts
- Improves stability in harsh production environments
- Reduces downstream quality escapes



Typical Customer Challenges Solved

- Late discovery of barcode quality issues
- High scrap or rework rates
- Unplanned line stoppages
- Inconsistent verification results
- Manual inspection dependence

How VHV5 Fits into a Verification Strategy

Inline verification enables continuous monitoring of barcode quality directly on the production line, identifying issues as they occur.

Offline verification supports periodic validation, audits, and documentation under controlled conditions.

Together, they provide real-time process control and documented audit confidence — without impacting production throughput.

- Inline verification for continuous monitoring
- Offline verification for validation and documentation
- Together, they provide real-time control and audit confidence

Why Install Inline Verification on Your Production Line?

Installing inline verification with the OMRON VHV5 helps production teams move from reactive problem-solving to controlled, stable operation.

Reduce batch risk

Every code is checked as it is produced, significantly lowering the chance of entire batches being placed on hold or scrapped due to late-discovered barcode issues.

Prevent late-stage surprises

Issues are detected immediately on the line, not during final inspection, shipment, or by customers.

Stabilise day-to-day production

Inline verification reduces intermittent failures and unplanned stops caused by print quality drift, material changes, or setup variation.

Support audits without slowing production

Continuous verification provides confidence during audits while allowing the line to run at full speed.

Build quality into the process

Barcode quality becomes a controlled parameter, not a final checkpoint or manual task.

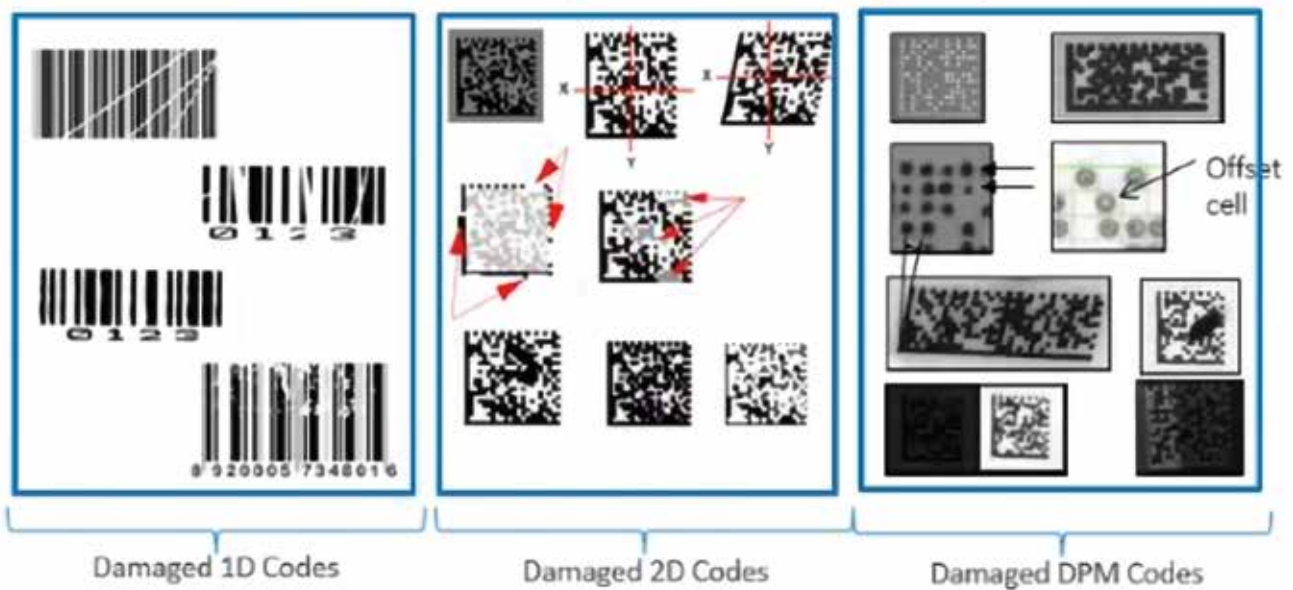
Before and After Inline Verification

Before Inline Verification

Without inline verification, barcode quality issues are often discovered too late — during final inspection, shipment, or even by customers.

- Print defects and data errors go unnoticed until downstream checks
- Entire batches may be placed on hold or scrapped
- Operators rely on manual checks or sampling, which can miss intermittent issues
- Root cause analysis is time-consuming and reactive
- Line stoppages occur when problems are found outside the production process

The result is higher waste, rework, downtime, and increased pressure on production teams.



After Inline Verification with OMRON VHV5

With inline verification installed directly on the line, barcode quality becomes a controlled process, not a risk.

- Every code is verified in real time as products are produced
- Issues are detected immediately, allowing fast corrective action
- Scrap and rework are reduced by catching problems at the source
- Production continues at full speed with confidence in compliance
- Operators and supervisors gain clear visibility into code quality

Inline verification shifts barcode quality from reactive troubleshooting to proactive control, supporting stable production and consistent output.

Why This Matters to Production

By identifying problems instantly and preventing non-compliant products from progressing, the OMRON VHV5 helps production teams maintain throughput, reduce disruption, and meet quality requirements without slowing the line.



Advanced Verification Technology

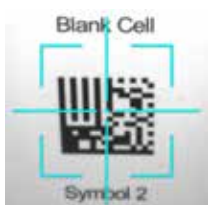
Tilted Coaxial Lighting

Key advantage: fewer false failures and less operator intervention.

The lighting system improves contrast on reflective, curved, or metallic surfaces, reducing glare-related grading errors. This results in more reliable verification and fewer nuisance stops caused by inconsistent lighting conditions.



Warped Image



Axial Non-Uniformity 0.0

Corrected Image



Axial Non-Uniformity 4.0

Unwarp Transform Technology

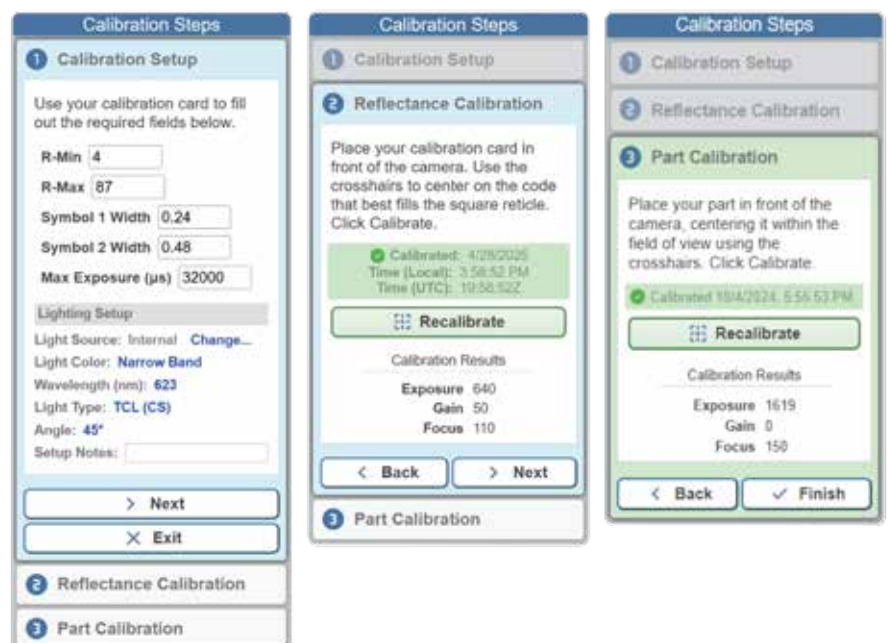
Key advantage: consistent grading even when mounting angles vary.

By correcting image distortion from angled or curved surfaces, unwarp transform prevents false fails caused by installation constraints. This allows greater flexibility in mounting while maintaining stable, repeatable verification results.

Guided Calibration Wizard

Key advantage: faster setup and fewer setup-related issues.

The step-by-step calibration process reduces reliance on specialist knowledge and helps ensure consistent setup across shifts, products, and lines—minimising setup errors and variation.

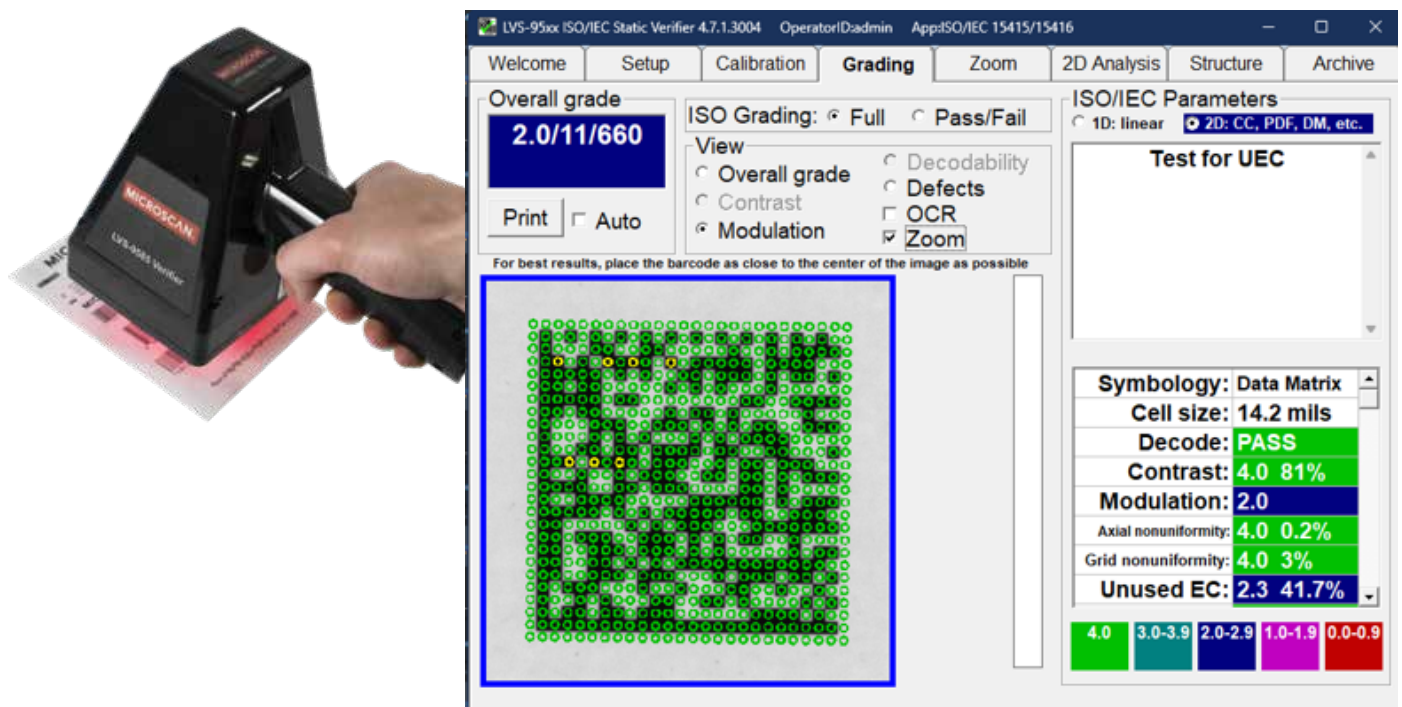
A screenshot of the Guided Calibration Wizard interface, showing three sequential steps: 1. Calibration Setup, 2. Reflectance Calibration, and 3. Part Calibration. Each step includes instructions, input fields for various parameters, and a 'Calibrate' button. The interface is designed to be user-friendly, with clear instructions and a progress indicator at the bottom.

Inline and Offline Verification – Working Together

Inline Verification (On the Line)	Offline Verification (Off the Line)
Verifies every code in real time	Verifies samples under controlled conditions
Detects issues immediately during production	Used for process validation and audits
Prevents non-compliant products moving downstream	Provides documented evidence for compliance
Reduces scrap, rework, and unplanned stops	Supports investigations and root cause analysis
Maintains full line speed	Independent confirmation of print quality

A Complete Verification Strategy

Using inline verification for continuous monitoring and offline verification for periodic validation gives production and quality teams the best of both worlds: real-time control on the line and documented confidence off the line.

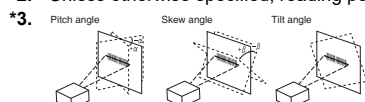


Ratings and Specifications

VHV5-F			
Model		VHV5-F□□□□023M-□□□	VHV5-F□□□□050M-□□□
Image Sensor	Resolution	2.3 MP - 1920 (H) x 1200 (V)	5.0 MP - 2472 (H) x 2048 (V)
	Pixel Size	3 μm	2.74 μm
	Color / Monochrome	Monochrome CMOS	
	Shutter	Global Shutter	
	Frames per Second	80 FPS	40 FPS
	Exposure	16 μs to 300,000 μs	50 μs to 300,000 μs (16 μs to 300,000 μs with strobe duration)
	Lens Selections	Focal Length: Medium = 8.5 mm, Narrow = 12.5 mm, Long = 20 mm	
Symbolologies *1	Focus	Liquid Lens Autofocus or Fixed Focus	
	1D Symbolologies	Code 39, Code 128, BC412, Interleaved 2 of 5, UPC/EAN, Codabar, Code 93, Pharmacode, PLANET, POSTNET, Japanese Post, Australian Post, Royal Mail, Intelligent Mail, KIX	
	2D Symbolologies	Data Matrix (ECC 0-200), QR Code, Micro QR Code, Aztec Code, DotCode	
ISO Code Quality Checking	Stacked Symbolologies	PDF417, MicroPDF417, GS1 Databar (Composite and Stacked)	
	Data Matrix, QR Codes, 1D Symbolologies	Models without Verification License: Code Quality Validation only using ISO 15416:2016, ISO 15415:2011, and ISO 29158:2020 Models with Verification License: Fully Calibrated ISO Code Quality Verification using ISO 15416:2016, ISO 15415:2011, and ISO 29158:2020	
Reading Performance *2	Number of Reading Digits	No upper limit (depends on bar width and reading distance)	
	Targeting Optics	Two green parallel LED spots	
	Illumination	8 high-power LEDs: White (6,500K) or Red (Wavelength: 625 nm)	
	Reading Distance / Field of View	Refer to "Distance, Field of View, and Readability Tables" earlier in this document for details based on Lens and Sensor Type.	
	Pitch Angle (α) *3	±30°	
	Skew Angle (β) *3	±30°	
Trigger	Tilt Angle (γ) *3	±180°	
	External Trigger (Edge or Level), Serial Trigger (Ethernet, RS-232C), PLC		
Digital I/O Specifications	Input Signals	3 Fully Configurable Inputs: IN1 (Trigger by Default), IN2, IN3. Bi-directional, Optoisolated, 4.5-28V-rated (10 mA @ 28 VDC).	
	Output Signals	3 Fully Configurable Outputs: OUT1, OUT2, OUT3 (Strobe Optional). Bi-directional, Optoisolated, 3-28V rated, (I _{CE} < 100 mA at 24 VDC, current limited by user).	
	External Strobe	24V, GND, Strobe+ (> 1.5kΩ, user-implemented), Strobe- (> 1.5kΩ, user-implemented), Analog Intensity Control (0-10V). (Strobe Trigger can operate as NPN or PNP).	
Communication	Connectivity	RS-232C, Ethernet TCP/IP, EtherNet/IP™, PROFINET	
	Ethernet Specifications	1000BASE-T	
Image Logging	Image Logging Type	To RAM	
Indicator LEDs	Membrane Switch	PWR (Green), LINK (Amber), MODE/STATUS (Amber), TRIGGER (Amber), PASS (Green), FAIL (Red)	
	360° Indicators	PASS (Green), FAIL (Red)	
Power Supply Voltage		Power over Ethernet (IEEE 802.3at) / 24 VDC +/- 10%	
Current Consumption		PoE+: 44-57 VDC @ 0.6 A (Max.); Direct: 24 VDC @ 2.1 A (Max.); External Light Port Connector: 24 VDC @ 1.5 A (Max) (Internally Current-Limited)	
Environmental / Immunity	Ambient Temperature Range	Operating: 0 to 45° C; Storage: -25 to 65° C (with no icing or condensation)	
	Ambient Humidity Range	Operating and Storage: 25% to 85%	
	Ambient Atmosphere	No Corrosive Gases	
	Vibration Resistance (Destructive)	Oscillation Frequency: 10 to 150 Hz; Half Amplitude: 0.35 mm; Vibration Direction: X/Y/Z; Sweep Time: 8 Minutes/Count; Sweep Count: 10 Times	
	Shock Resistance (Destructive)	Impact Force: 150 m/s ² , Test Direction: 6 Directions, 3 Times Each (Up / Down, Front / Behind, Left / Right)	
Weight	Degree of Protection	IEC 60529 IP69K	
	Main Body Only	372 g	
	Packaged Weight	505 g	
Dimensions	Main Body Dimensions	57.5 mm (W) × 50.5 mm (D) × 75 mm (H) (89 mm height with connectors)	
	Packaging Dimensions	170 mm (W) × 117 mm (D) × 86 mm (H)	
Accessories		ReadMeFirst, CE Compliance Sheet	
Safety Standards		IEC/EN 62368-1, 2nd and 3rd Ed; EN 62471 (LED Safety) UL 60950-1, 2nd Edition, 2019-05-09 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements) *4	
Materials	Case	Aluminum, black anodized	
	Reading Window	Acrylic	
Software		WebLink	

*1. Symbolologies are supported based on Omron's read capability validation standard. Omron recommends that validation be performed for each application.

*2. Unless otherwise specified, reading performance is defined with center of field of view, angle R = ∞.



*4. FCC = United States
 UL = United States
 CE = European Union
 UKCA = Great Britain (England / Wales / Scotland)
 RCM = Australia / New Zealand
 KC = South Korea

Ordering Information

Inline Verifier Models

Appearance	Standard Red 2.3 MP In-Line Verifier	Part Number
	VHV5-F, Autofocus, Medium Lens, 2.3 MP, Standard Red Light, In-Line Verifier	VHV5-F000M023M-SRV
	VHV5-F, Autofocus, Narrow Lens, 2.3 MP, Standard Red Light, In-Line Verifier	VHV5-F000N023M-SRV
	VHV5-F, Autofocus, Long Lens, 2.3 MP, Standard Red Light, In-Line Verifier	VHV5-F000L023M-SRV
	Standard Red 5 MP In-Line Verifier	Part Number
	VHV5-F, Autofocus, Medium Lens, 5.0 MP, Standard Red Light, In-Line Verifier	VHV5-F000M050M-SRV
	VHV5-F, Autofocus, Narrow Lens, 5.0 MP, Standard Red Light, In-Line Verifier	VHV5-F000N050M-SRV
	VHV5-F, Autofocus, Long Lens, 5.0 MP, Standard Red Light, In-Line Verifier	VHV5-F000L050M-SRV

Verification Accessories

Appearance	Category	Spec	Part Number
(File)	Verification License Upgrade for VHV5-F Readers	License Key delivered as a .LIC file	LIC-0801-009
	Kit – NIST-Certified Calibration Card	NIST-Certified Calibration Card	98-000265-01
	Kit - Calibration Card	Standard Calibration Card	98-000265-02

OMRON AUTOMATION AMERICAS HEADQUARTERS • Chicago, IL USA • 847.843.7900 • 800.556.6766 • automation.omron.com

OMRON CANADA, INC. • HEAD OFFICE

Montreal, Quebec, Canada • 416.286.6465 • 866.986.6766 • automation.omron.com

OMRON MÉXICO • HEAD OFFICE

Mexico City, Mexico • 55 5901 4300 - mela@omron.com

OMRON MÉXICO • GUADALAJARA

Guadalajara, Jal, Mexico • 55.5901.4300

OMRON ELETRÔNICA DO BRASIL LTDA • HEAD OFFICE

São Paulo, SP, Brasil • 55 11 5171-8920 • automation.omron.com

OTHER OMRON LATIN AMERICA SALES

+54.11.4521.8630 • +54.11.4523.8483 • mela@omron.com

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- Programmable Logic Controllers (PLC) • Temperature Controllers • Remote I/O

Operator Interfaces

- Human Machine Interface (HMI)

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- Frequency Inverters

Identification and Vision

- Vision Sensors & Systems • Measurement Sensors • Auto Identification Systems

Sensing

- Photoelectric Sensors • Fiber-Optic Sensors • Proximity Sensors
- Rotary Encoders • Ultrasonic Sensors

Safety

- Safety Light Curtains • Safety Laser Scanners • Programmable Safety Systems
- Safety Mats and Edges • Safety Door Switches • Emergency Stop Devices
- Safety Switches & Operator Controls • Safety Monitoring/Force-guided Relays

Control Components

- Power Supplies • Timers • Counters • Programmable Relays
- Digital Panel Meters • Monitoring Products

Switches & Relays

- Limit Switches • Pushbutton Switches • Electromechanical Relays
- Solid State Relays

Software

- Programming & Configuration • Runtime