

NS42 Smart Vision Sensor

Unbeatable Features, Flexibility, and Power Combined

In today's business landscape, the escalating demands of global commerce and its intricate supply chain exert greater pressure on companies to ensure quality, enhance productivity and accelerate delivery timelines. Whether in manufacturing, logistics or reaching the end consumer, the key to success lies in inspecting and tracking the essential products delivered by your enterprise.



Introducing the Zebra NS42 Smart Vision Sensor, a powerful new solution crafted to meet the challenging needs of modern production and delivery processes. Engineered to seamlessly address tough machine vision inspection applications, the NS42 includes anomaly detection tools for defect detection and assembly verification tasks and deep learning-based OCR (DL-OCR) for reliable, accurate reads without training.



At the core of the NS42 is Zebra Aurora Focus, an intuitive software platform tailored for easy setup, deployment and operation of all Zebra Vision Sensors. The NS42 has the processing power and increased memory capacity to take on intensive applications like Anomaly Detection and DL-OCR. New tools can be added through the simple purchase of a software license to secure your investment for the future. Enhance operational effectiveness and propel success to unprecedented levels with the NS42—exclusively from Zebra.

Zebra Aurora Focus™ Software

Zebra's Aurora Focus introduces a seamless, consolidated platform for managing both Zebra's Fixed Industrial Scanners and Machine Vision Portfolio. This innovative solution elevates the control of manufacturing and logistics automation across the enterprise with its refined simplicity and efficiency. With Aurora Focus, users can effortlessly set up, deploy, and operate all Zebra Fixed Industrial Scanners and Smart Vision Sensors, streamlining operations by eliminating the requirement for multiple tools.

Simple from day one

Both seasoned users and newcomers can effortlessly navigate through the modern user-friendly interface, slashing training and setup times. Experienced users will enjoy seamless access to all features and streamlined procedures while beginners are walked through each step in a logical sequence. Moreover, should users require assistance, the Learn-As-You-Go support provides built-in tutorials, walkthroughs, and videos covering every facet of the software and its extensive toolkit.

The NS42—Elevate capabilities. Unlock possibilities. Experience the difference with Zebra.
For more information, visit www.zebra.com/ns42

Easy to Maintain Quality

Catch Errors Early

Ensure defect-free products with the NS42's cutting-edge anomaly detection. With automated image comparison, it flags deviations from the reference standard, saving time and resources. Effortlessly maintain quality control with defect detection and assembly verification tasks.

Read with Ease

Readily unlock data extraction for tracking, tracing and verification with the NS42's deep learning-based OCR. This powerful tool uses a pre-trained deep neural network to read characters, digits, and certain symbols without font definition, eliminating tedious teaching or specification. Capture data with confidence and precision.

Easy to Set Up

Get Power & Data from Ethernet

Power the NS42 and attached accessories using the network, with support for Power-over-Ethernet (PoE). This reduces setup complexity and avoids the cost of additional power drops and power supplies. You can also power the NS42 with a standard 24V DC power supply or standard USB-C port in environments without PoE.

Limitless Connectivity with USB-C

Are you looking for enhanced flexibility? USB-C lets you power your camera using a single cable and unlocks a myriad of accessory possibilities. Effortlessly integrate the vision sensor with various Zebra devices like printers or tablets.

Quickly Access Device and Job Settings

The highly intuitive modern interface presents logical workflows. No need to hunt for needed features and functions — they are just a click or two away. And even complicated settings are easy to execute, presented as sliders and radio buttons.

Easy to Deploy

Programmable Input/Output (I/O)

Individually control up to nine digital I/O ports to directly interact with accessories and other devices like external lights and part detectors to fully automate your processes.

Status Indicators / Operator Feedback

Your operators can instantly see inspection or read statuses with 360° LED indicator lights. Workers can immediately see if an inspection or read was successful or unsuccessful—preserving product quality and traceability. Make it easy to verify whether vision sensors are fully operational or in need of attention with five built-in camera status LEDs—Power, Online/Run, Focus Warning, Error and Ethernet Status. For added safety, a beeper with adjustable volume provides an audible cue of a successful inspection or read, so workers can keep their eyes on the job—instead of the device.

Tough and Reliable

The ultra-rugged design ensures dependable operation in even the most demanding environments. The aluminum housing is chemical and oil resistant. An IP67 sealing rating means the device is dust tight and able to withstand high-power washdowns—or even total immersion in water.

Real-time Performance Insights with the Web HMI Dashboard

Empower workers with actionable intelligence where they require it—their workstation. Operators have access to key metrics for every vision sensor from your web browser including device health, resource utilization, inspection results and read performance metrics. This eliminates the necessity of installing a PC at each workstation, reducing hardware needs and installation expenses.

Power your Performance

The NS42 is loaded with class-leading features, including:

Modern Processor

The NS42's powerful new processing unit has the power to accelerate inspections and is optimized to accelerate artificial intelligence and other machine vision-based applications.

Increased Memory Capacity

As your application needs expand, the NS42 has the memory to handle it. Featuring 8 GB of memory, the NS42 can handle more complex machine vision use cases without sacrificing performance.

Software Licensing

Add what you need, whenever you need it.

Add support for new machine vision capabilities and decoding symbologies through a software license upgrade.

Anomaly Detection

Automate part of the QA process by using machine vision to compare images of products against a reference standard. Any deviations are flagged for rework or rejection, reducing the hardship of lower customer satisfaction and product recall.

Deep Learning-based OCR

AI-derived tool to easily capture text information from parts on the production line or labels on boxes with no font training required — just draw a box around the text you want to read.

Easy to Run

Worry Free Coverage with Complete Support Service

Achieve the consistent peak performance and device uptime that modern businesses require with Zebra OneCare™ Essential and Select Support Services. Say goodbye to prolonged disruptions and unplanned repair costs. With comprehensive coverage, everything is taken care of—including normal wear and tear and accidental damage. Tailor your support plan with a range of options to match your business needs, such as next-day delivery of replacement devices, on-site support, cloud-based access to your contracts, repair data, tech support cases and beyond.

Eliminate Overlooked Inspections and False Rejects with ImagePerfect+

Uneven lighting and the need to capture images from varying distances often lead to the need for extra cameras, external lighting, or complex custom code—factors that can significantly drive up the total cost of ownership. Address all of these challenges with ImagePerfect+, a groundbreaking new feature. In just one trigger event, this Zebra-exclusive technology captures up to 16 different images, each with distinct settings for focus, exposure, illumination control, and more. The result? Flawless images that ensure quick, accurate inspections, a streamlined solution, and a lower total cost of ownership.

Introducing the Zebra Fixed Industrial Scanner and Machine Vision Portfolio



FS10



FS20/VS20



FS40/VS40



FS70/VS70



FS42



NS42

Specifications

Device Characteristics	
Dimensions	2.1 in. H x 2.5 in. W x 3.6 in. D 54.0 mm H x 64.0 mm W x 91.4 mm D
Weight	14.1 oz./400.0 g
Power	External power supply: 10-30 VDC, 1.5 A max @ 24 VDC (36 W max) PoE+ supply: Class 4, 25.5 W max PoE supply: Class 3, 13 W max USB-C host: 5 VDC, 3 A max (15 W max)
Configurable IO	Four opto-isolated GPIO: GPIO0,1,2,3 Five non-isolated GPIO: GPIO4,5,6*,7*,8* Voltage GPIO: 10-30 VDC *Unavailable when External Light Mode is enabled
Color and Material	Industrial green aluminum housing
Interface Ports	One M12 X-Coded 1000/100/10 Mbps Ethernet One M12 12-pin Power/GPIO/RS-232 One M12 5-pin External Light Power & Control/GPIO One USB 3.0 SuperSpeed Type-C with DisplayPort Alt Mode
Communication Protocols	Ethernet/IP, PROFINET, Modbus TCP, TCP/IP, RS-232
Keyboard Support	USB HID
User Indicators	360 Degree Decode/Job Status LEDs, Power LED, Device Status LED, Focus Status LED, Warning LED, Ethernet Status LED; Beeper (adjustable volume)
Performance Characteristics	
Image Sensor	2.3MP: 1/2.6 inch CMOS, global shutter 1920 x 1200 3.0 um square pixels Monochrome
Acquisition Rate	2.3MP: Up to 60 frames/second
Aimer	Red Class II Laser; 8-point sunburst pattern
Illumination	Field replaceable modules: • Eight 660nm Red LEDs • Eight 2700K (Color Temperature) White LEDs
Imager Field of View	SR (Standard Range): 10.8mm Liquid Lens 30° H x 19° V Nominal WA (Wide Angle): 6.8mm Liquid Lens 46° H x 29° V Nominal
User Environment	
Operating Temp.	32° F to 113° F/0° C to 45° C (10-30VDC external power supply, duty cycle-dependent) 32° F to 104° F/0° C to 40° C (POE, duty cycledependent)
Storage Temp.	-40° F to 158° F/-40° C to 70° C
Environmental Sealing	IP65 and IP67
Humidity	5% to 90% RH, non-condensing
Shock Resistance	EN 60068-2-27, 30 g; 11 ms; 3 shocks on each axis
Vibration Resistance	EN 60068-2-6, 14 mm @ 2 to 10 Hz, 1.5 mm @ 13 to 55 Hz; 2 g @ 70 to 500 Hz; 2 hours on each axis

Software	
Management	Zebra Aurora Focus
Supported Symbologies ¹	1D: Codabar, Code 39, Code 93, Code 128, I 2 of 5, MSI Plessey, UPC/EAN 2D: Aztec, Data Matrix, DotCode, MaxiCode, PDF417, Micro PDF417, QR Code, Micro QR OCR: Deep Learning-based OCR via an add-on license. Supports Latin Letters (A-Z, a-z, digits or one of: !#\$%&()*+,-./:;<=>?@[\\]^_`{ }~""'€£¥)
Decoder Packages	Includes 1D/2D Standard (5 FPS); 1D/2D Fast (60 FPS); 1D/2D DPM with Fast 2D (60 FPS), OCR, Deep Learning OCR
Machine Vision (MV) Toolsets	Standard Machine Vision Toolset included. Anomaly Detection varies by SKU; upgrades available via a software license
Regulatory	
Environmental	EN 50581:2012; EN IEC 63000:2018
Electrical Safety	IEC 62368-1 (Ed.2); EN 62368-1:2014/A11:2017
Laser Safety	21CFR1040.10 & 21CFR1040.11 IEC/EN 60825-1:2014 (Ed.3)
LED Safety	IEC 62471:2006 (Ed.1); EN 62471:2008
EMI/EMS	EN 55032:2015/A11:2020 (Class B) EN 55035:2017 EN 61000-3-2:2014 (Class A) EN 61000-3-3:2013 47 CFR Part 15, Subpart B, Class B ICES-003, Issue 7, Class B
EU Declaration of Conformity	2014/30/EU; 2014/35/EU; 2011/65/EU. For more information visit: www.zebra.com/doc
Accessories	
Internal illumination, external illumination, internal filters, brackets, cables, power supplies	
Warranty	
Subject to the terms of Zebra's hardware warranty statement, the NS42 is warranted against defects in workmanship and materials for a period of Two (2) Years from the date of shipment. Complete Zebra hardware product warranty statement: www.zebra.com/warranty	

Specifications

Recommended Services		
Zebra OneCare Select™; Zebra OneCare Essential™		
Decode Ranges (Typical Working Ranges) ²		
NS42-SR—30° FOV Lens		
Symbology/Resolution	Near	Far
5 mil Code 128	3 in./8 cm	24 in./61 cm
10 mil Code 128	3 in./8 cm	49 in./124 cm
15 mil Code 128	3 in./8 cm	70 in./178 cm
20 mil Code 128	3 in./8 cm	92 in./234 cm
5 mil DataMatrix	3 in./8 cm	13 in./33 cm
10 mil DataMatrix	3 in./8 cm	28 in./71 cm
15 mil DataMatrix	3 in./8 cm	40 in./102 cm
30 mil DataMatrix	3 in./8 cm	78 in./198 cm
NS42-WA—46° FOV Lens		
Symbology/Resolution	Near	Far
5 mil Code 128	3 in./8 cm	14 in./36 cm
10 mil Code 128	3 in./8 cm	30 in./76 cm
15 mil Code 128	3 in./8 cm	42 in./107 cm
20 mil Code 128	3 in./8 cm	56 in./142 cm
5 mil DataMatrix	3 in./8 cm	8 in./20 cm
10 mil DataMatrix	3 in./8 cm	18 in./46 cm
15 mil DataMatrix	3 in./8 cm	27 in./69 cm
30 mil DataMatrix	3 in./8 cm	52 in./132 cm
Footnotes		
1. Refer to Product Reference Guide for complete list of symbologies.		
2. Printing resolution, contrast, power source, illumination source, and ambient light dependent.		
Specifications subject to change without notice.		

