ZEBRA
CAPTURE YOUR EDGE

VS20 Machine Vision Smart Sensor

Easily integrate machine vision into your network

From the factory floor to the control room, manufacturers are under intense pressure to meet increasing business demands. Every day, production lines strive to achieve consistent product quality and throughput quotas. Success requires a reliable and dependable process at every stage of production — a process that increases automation, reduces defects and validates assembly and tracking information.

Address it all with the Zebra VS20 Machine Vision Smart Sensor. With multiple connectivity options, the compact VS20 easily integrates into your PLC or Host network to perform essential quality inspections, providing a new level of intelligence and automation to improve product quality and meet production goals. The result? Leaner operations. Fewer product defects. Lower manufacturing costs. And more satisfied customers.

The VS20 brings a new level of simplicity to your machine vision solutions. It all starts with Zebra Aurora™ — a powerful and intuitive software platform that makes it exceptionally easy to set up, deploy and run Zebra's entire portfolio of Machine Vision Smart Cameras and Fixed Industrial Scanners. Zebra-exclusive features such as ImagePerfect and Feasibility Setup Assistant reduce steps, training and management time and cost, as well as the need for external peripherals. And since you can add advanced tools at any time with a simple software license upgrade, the device you buy today can support new needs tomorrow.

Take your success to the next level with extraordinary visibility into your operational processes — with the VS20, only from Zebra.

Zebra Aurora™ Software

A single unified platform across Zebra's fixed industrial scanner and machine vision portfolio

Zebra Aurora brings a new level of simplicity to controlling enterprise-wide manufacturing and logistics automation solutions. This powerful interface makes it easy to set up, deploy and run all of Zebra's Fixed Industrial Scanners and Machine Vision Smart Cameras, while eliminating the need for different tools.

For experts and beginners

Experienced and first-time users can easily navigate the highly intuitive modern interface, reducing training and deployment time. Experienced users will appreciate easy access to all functions and streamlined processes, while first-time users are guided through all the steps in the proper order. And if users need a little help, Learn-As-You-Go offers built-in tutorials, walk-throughs and videos on all aspects of the software and its comprehensive management toolset.

The VS20 — Enable performance. Inspire potential. Experience the difference with Zebra.
For more information, visit www.zebra.com/VS20

Easy to set up

Automatic setup with Auto-Tune
Just Auto-Tune and run for consistent, reliable inspections — right out of the box. With the press of one button, Auto-Tune dials in the perfect image for faster and more accurate set up.

IoT ready with Zebra Savanna™
The IoT-ready VS20 can send images to Zebra's subscription-based cloud service, Zebra Savanna™ — or any other cloud service — allowing you to meet industry regulations or store images for further analysis, all without the need to purchase and manage servers.

Power it all over Ethernet
Reduce setup complexity and cost with support for Power-over-Ethernet (PoE). This standard feature powers the VS20 and attached accessories right over the network, eliminating the cost of power drops and power supplies. Don't have a PoE infrastructure? No problem. You can also power the VS20 with a standard 24V DC power supply.

Feasibility Setup Assistant ensures your jobs work right from the start
This Zebra patent-pending feature compares images captured from a job to best practice metrics to determine if your job will be successful — and if not, provides tips on what to correct to achieve success.

Create tools faster with QuickDraw
Simply draw right on an image to create a tool in fewer steps than most competitive systems require.

Locate the right part successfully — every time
Zebra takes a new approach to the creation of two key error-proofing tools — Object Locate and Pattern Matching. Zebra's optimized algorithms and carefully crafted default settings enable users to dependably create successful tools with fewer clicks, less trial and error, and less deployment time and effort.

Easy to deploy

Programmable input/output (I/O) ports
Get the ultimate in I/O flexibility. Four digital I/O ports can be individually controlled to expand application functionality and improve error-proofing. Support additional peripherals, activate lights, or trigger an action to more fully automate your processes.

Ultra-rugged and ready for industrial spaces
Rely on dependable operation in the most demanding environments with an ultra-rugged design. The aluminum housing is chemical and oil resistant and IP65-sealed.

Operator feedback/status indicators
With four built-in camera status LEDs — Power, Decode, Online/Run and Ethernet Status — workers can see at a glance if a decode was successful or unsuccessful, protecting product quality and traceability — and whether cameras are operational or in need of attention. In addition, a beeper with adjustable volume provides an audible cue of a successful decode, so workers can keep their eyes on the job — instead of the device.

Added flexibility with the Zebra Aurora HMI dashboard
Give workers actionable intelligence right where they need it — at their station. Operators can see and interact with the Zebra Aurora Human Machine Interface (HMI) dashboard via any web browser. The need to install a PC at every workstation is eliminated, reducing hardware requirements and installation costs.

Simple, easy and fast integration with your network infrastructure
Built-in Ethernet/IP, PROFINET and other network protocols enable painless integration with any common PLC or host system. Network architecture is simplified and deployment time and cost are reduced.

Key Differentiators

The VS20 is loaded with class-leading features, including:

ImagePerfect
Eliminate bypassed systems and false rejects with perfect images
In one trigger event, capture up to three different images, each with its own unique setting for focus, exposure gain, illumination control and more.

Feasibility Setup Assistant
Ensure your jobs work right from the start
This patent-pending feature identifies whether the jobs you create will be successful — and calls out the steps to address any issues.

Golden Image Compare
Rapid troubleshooting for failed image capture
Compare any image to a golden 'perfect' image created at setup to immediately locate the source of the image degradation — such as a dirty lens, lighting issue or misalignment of the camera.

Software upgradeable
Add what you need, whenever you need it
Add support for new barcode symbologies, faster barcode capture and all the machine vision tools you need through simple software licensing.

PoE
Power it all over Ethernet
Power the VS20 right over your Ethernet cable — no more costly power drops and no more power supplies to purchase and manage.

Easy to run

Eliminate bypassed inspections and false rejects with ImagePerfect
Uneven lighting and the need to read images at various distances can require additional cameras, external lights or complex custom code — additions that can substantially increase the total cost of ownership. Address it all with a groundbreaking new feature — ImagePerfect. This Zebra-exclusive feature captures up to three different images of a single item, each with its own unique setting for focus, exposure, gain, illumination control and more. The result? High quality images that enable high read rates. A significant reduction in solution complexity. And a lower total cost of ownership.

Instantly identify emerging process issues with Statistical Triggering
Don't make key decisions based on a single image. This feature harnesses the power of multi-image statistics to help users make critical pass/fail decisions.

Get the features you need today — and add the features you need tomorrow
The modular architecture lets you select the Machine Vision (MV) toolset you need now, and add new functionality any time in the future. Just purchase licenses to upgrade to more advanced MV tools, allowing you to meet tomorrow's needs with the products you have today.

First-time every-time barcode capture
Need to capture barcodes? Superior optics and Zebra's exclusive PRZM Intelligent Imaging technology work together to deliver the reliable data capture you need to keep your operations running at peak capacity. The optical system enables the simultaneous capture of multiple barcodes, extends read ranges and focal distances and allows a larger field of view to capture more information with less equipment. And PRZM Intelligent Imaging delivers first-time capture of virtually any 1D, 2D and DPM barcode on any surface, in practically any condition.

Rapid troubleshooting with Golden Image Compare
If any image capture or barcode reads fail, this Zebra-only tool allows you to quickly identify and resolve the issue by comparing any image to a golden 'perfect' image created at setup. Minimize downtime by immediately diagnosing and rapidly correcting the source of any degradation — from a dirty lens or a lighting problem to misalignment of the camera.

Identify and correct setting changes with Job Compare
This unique tool compares current settings in the job and the camera to all initial settings, allowing users to revert back to the original settings with one click.

Complete support service — everything's covered
Get the constant peak performance and device uptime today's businesses demand with Zebra OneCare™ Essential and Select Support Services. Unexpected disruptions and unbudgeted repair expenses are eliminated. Everything is covered — including normal wear and tear and accidental damage. You can customize your support plan with numerous options to get the service level your business needs, including next-day delivery of a replacement device, on-site support, cloud-based visibility into your contracts, repair data, tech support cases — and more.

Introducing the Fixed Industrial Scanner and Machine Vision Portfolio

FS10

FS20/VS20

FS40/VS40

FS70/VS70

Specifications

Device Characteristics	
Dimensions	1.1 in. H x 3.7 D in. x 2.1 in. W 28.3 mm H x 94.2 mm D 54.6 mm W
Weight	7.76 oz./195 g
Power	External power supply: 10-30 VDC, 313 mA max @ 24 VDC (7.5 W) PoE supply: Class 2
Configurable IO	Two opto-isolated inputs: IN 1,2 Two opto-isolated outputs: OUT 1,2
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
Communication Protocols	Ethernet/IP, PROFINET, Modbus TCP, TCP/IP, RS-232
User Indicators	Decode Status LEDs, Power LED, Online/Run LED, Ethernet Status LED; Beeper
Performance Characteristics	
Image Sensor	1/4 inch CMOS, global shutter 1280 x 800, 3.0 um square pixels Monochrome
Acquisition Rate	Up to 60 frames/second
Aimer	Amber LED; circular pattern
Illumination	Two 660nm Red LEDs or two 2700K White LEDs
Imager Field of View	6.0mm Liquid Lens: 35° H x 26° 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 113° F/0° C to 40° C (PoE, duty cycle-dependent)
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
Supported Symbologies[2]	
1D	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	OCR-A, OCR-B, MICR, US Currency, Trainable OCR (available on select models or via an add-on OCR license)
Software	
Management	Zebra Aurora™
Decoder Packages	Included in Standard and Advanced Machine Vision toolsets: 1D/2D Standard (5 FPS); 1D/2D Fast and OCR (60 FPS); 1D/2D DPM Full and OCR (60 FPS); Trainable OCR (standalone license)
Machine Vision (MV) Toolsets	Sensor, Standard, Advanced (MV toolsets vary by SKU; upgrades available via a software license)
Regulatory	
Environmental	EN 50581:2012; EN IE C 63000:2018
Electrical Safety	IEC 62368-1 (Ed.2); EN 62368-1:2014/A11:2017
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
Brackets, cables, power supplies

Warranty
Subject to the terms of Zebra's hardware warranty statement, the VS20 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

Recommended Services
Zebra OneCare Select; Zebra OneCare Essential

Specifications (continued)

Decode Ranges (Typical Working Ranges)[3]

VS20-SR — 35° FOV Lens

Symbology/Resolution	Near	Far
5 mil Code 128	2 in./5.08 cm	10 in./25.4 cm
10 mil Code 128	2 in./5.08 cm	15 in./38.1 cm
15 mil Code 128	2 in./5.08 cm	20 in./50.8 cm
20 mil Code 128	2 in./5.08 cm	24 in./61.0 cm
5 mil DataMatrix	2.5 in./6.35 cm	7.7 in./19.56 cm
10 mil DataMatrix	2 in./5.08 cm	15 in./38.1 cm
15 mil DataMatrix	2 in./5.08 cm	20 in./50.8 cm

Footnotes

1. Some features available in a future release. Contact your Zebra Partner or sales representative for more information.
2. Refer to Product Reference Guide for complete list of symbologies.
3. Printing resolution, contrast, illumination source, and ambient light dependent.

Specifications subject to change without notice.

Machine Vision (MV) Tools

Tool	Description	Sensor	Standard	Advanced
Object Locate	Find high contrast features	●	●	●
Pixel Counter	Count pixels with a set/given grey level in a specific area	●	●	●
Brightness	Provide the average brightness for an area	●	●	●
Contrast	Provide the average contrast for an area	●	●	●
Edge Tool	Find edges for fixturing and presence/absence	●	●	●
Distance Tool	Measure the distance between two existing tool results	●	●	●
Advanced Pattern	Find challenging features		●	●
Blob	Find, sort and count areas of joined pixels with a similar grey level		●	●
Predefined OCR	Identifies if text is present and correct: OCR A, OCR B, US Currency, MICR		●	●
Optical Character Verification (OCV)	Inspects the quality of text or logos		●	●
Find Circle	Find and measure circles		●	●
Caliper Tool	Find and measure the distance between two edges		●	●
Filters	Enhance image quality for more robust inspection		●	●
1D/2D/DPM	Read 1D, 2D and DPM barcodes		●	●
Trainable OCR	Create your own text library/read any font			●
Flaw Detection	Find complex defects (such as mouse bites of flashing)			●
Metrology	Precise measurement tools			●
Bead Inspection	Find and measure RTV and other applied adhesive beads			●

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