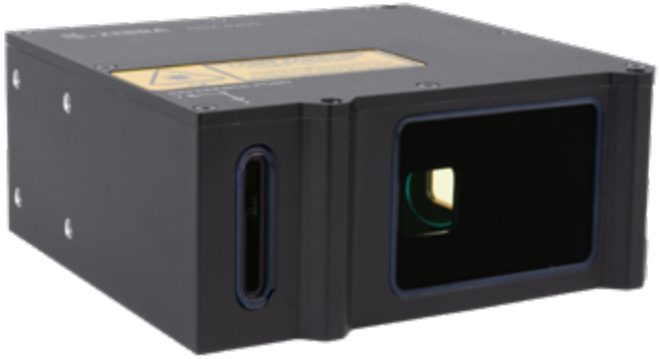
Zebra's AltiZ 4200 3D Profile Sensors

Enhanced 3D resolution, data and speed



With its AltiZ line of high-fidelity 3D profile sensors, Zebra introduced higher performance options for detecting defects and inspecting surface features in machine vision applications that require precise 3D sensing.

Zebra's AltiZ 4200 line extends those benefits and more to vision applications that require even higher resolution, faster capture and richer data for demanding inline inspections.

Higher Resolution from a More Compact 3D Profiler

Like Zebra's original AltiZ sensors, its AltiZ 4200 models leverage laser triangulation to generate various types of 3D data, including profiles, depth maps and point clouds. The AltiZ 4200 line, however, offers several distinct features that complement the capabilities of Zebra's overall AltiZ portfolio.

The AltiZ 4200 line incorporates only a single camera, for example, and deliver comparatively tighter fields of view (FoVs) measuring 26–32 mm, 43–58 mm or 70–93 mm in the X-direction. As a result, AltiZ 4200 profilers offer better resolution and a very compact form factor. They also deliver faster capture speeds as well as resolutions with more than double the data points per profile to address challenging applications, such as in-line bead inspection as well as inspection of electronics and automotive parts.

AltiZ 4200 3D profilers: At a Glance

- **High speed**–Capturing more than 42 million points per second, AltiZ 4200 profilers clock some of the fastest capture speeds in the industry
- **Rich data**–A top-of-the-line image sensor allows collection of 4,224 points per profile and acquisition of up to 14,000 profiles per second
- **Higher resolution**–Tight FoVs support enhanced resolution for inspection and detection of ultra-fine details and defects
- **Compact footprint**–The single-camera construction of AltiZ profilers makes them suitable for space-constrained configurations, in-line inspections or for mounting on robot arms
- **Expanded application range**–The unique design of AltiZ 4200 sensors makes them suitable for inspecting electronic modules and boards, glue or weld beads, smartphone assemblies and electric vehicle batteries and parts
- **Plug-and-play integration**–AltiZ 4200 sensors support GigE Vision standards for plug-and-play integration with existing machine vision systems. They also pair easily with Zebra's powerful vision controllers and Aurora software.
- **Dustproof and waterproof**–Featuring protection class IP67, AltiZ 4200 sensors are sealed tight to keep out dust and protect against low-pressure jets of water coming from any direction and at any angle

AltiZ 4200 3D Profilers—Vision without limits. Experience the difference with Zebra.
For more information, visit www.zebra.com/altiz-4200

Intuitive Setup, Flexible Operation

The command and data interface of Zebra AltiZ 4200 sensors leverages a 2.5 Gigabit Ethernet port using the GigE Vision communication protocol for plug-and-play integration with existing machine vision systems. The AltiZ Series is 100% GigE Vision compliant, making it easy to use with any software supporting the standard. Leveraging GenDC streaming support, the GigE standard transmits and receives real 3D image data without the need to run additional processing software on the host PC.

Though 24 V power is an option, the sensor's Power over Ethernet (PoE) support allows a single cable to provide both electric power and data connection. An internal object detection mechanism automatically starts and stops scans, eliminating the need for external triggers for presence detection. Just plug in and point the sensors at a scene to begin capturing accurate, high-resolution 3D data.

Enhanced Connectivity

The digital I/Os of AltiZ 4200 profilers support connectivity with incremental encoders to synchronize multiple 3D sensors when scanning large surfaces or when scanning any surface from different angles. Isolated discrete I/Os provide protection against improper electrical hookup. The AtliZ 4200 is also compatible with Zebra's I/O Breakout Box accessory, which simplifies connection of these profilers by providing convenient access to the digital I/Os through terminal blocks.

Powered by Zebra Aurora™ Software and 4Sight EV7 Vision Controller

AltiZ 4200 3D profilers seamlessly interface to Zebra's Aurora software, allowing users to leverage a deep collection of tools for image capture, processing, analysis, annotation, display and archiving. Zebra Aurora software enables users to quickly configure and deploy machine vision applications without having to implement multiple software environments. Users can further add Zebra's 4Sight vision controller for demanding single high-rate or multicamera imaging and machine vision applications.

Interactive Profiler Setup

The Aurora Capture Works software, included in Aurora Imaging Library and Aurora Design Assistant, is an interactive utility for Windows and Linux that enables users to conveniently verify the connection of their sensor. It also simplifies configuration and test acquisition from AltiZ 4200 devices leveraging the GenICam-based interface standard. Aurora Capture Works contains views specific to the Zebra AltiZ 4200 for tuning peak (laser line) extraction, configuring the scanning volume and setting up device triggering.

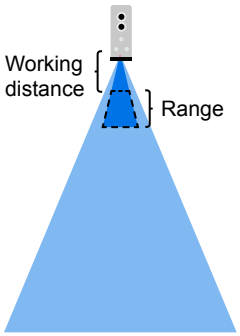
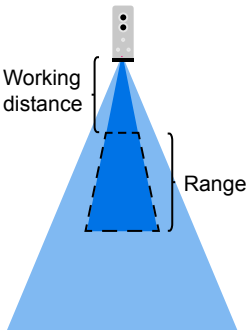
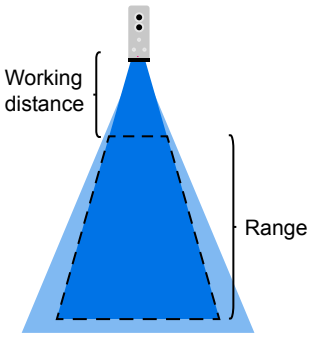
Deep Learning to Further Enhance Solution Quality

Pair AltiZ 4200 profilers with Zebra's advanced deep learning tools to solve complex machine vision problems that would be impossible to achieve with traditional tools. Locate irregular surface defects and enable other challenging 3D vision tasks to improve the quality and operational efficiency of your workflow.

Solid Construction and Flexible Mounting

Zebra AltiZ 4200 profilers are housed in sturdy IP67-rated aluminum housing with M12 connectors to protect them against harsh industrial environments. Back-, side- and top-attach points designed to accept M4-threaded screws allow for easy mounting on gantries or robots. Through-hole guides are also included to enable high-accuracy installation and the alignment of neighboring Zebra AltiZ 4200 units.

Specifications

Zebra AltiZ 4200 3D profile sensors		
Device Characteristics		
Model name	**AZ2S 2SB**	
Laser color	Blue (450 nm)	
Working distance	60 mm	
Z range	20 mm	
X FoV (near-far)	26–32 mm	
X resolution	6–7 µm	
Model name	**AZ2S 3SB**	
Laser color	Blue (450 nm)	
Working distance	100 mm	
Z range	45 mm	
X FoV (near-far)	43–58 mm	
X resolution	10–13 µm	
Model name	**AZ2S 5SB**	
Laser color	Blue (450 nm)	
Working distance	100 mm	
Z range	70 mm	
X FoV (near-far)	70–93 mm	
X resolution	16–22 µm	

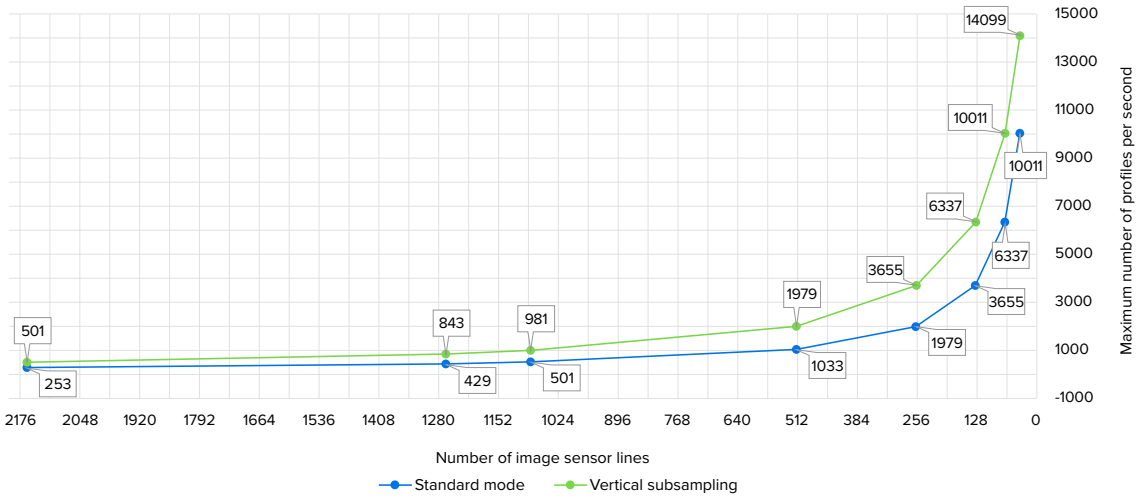
Note: Values are approximate and may vary slightly between 3D sensors of a given model.

Specifications

Zebra AltiZ 4200 3D profile sensors	
Device Characteristics	
Profiling characteristics	4,224 points per profile - Refer to Maximum Profile Rates chart on page 5
Network interface	2.5 Gigabit Ethernet
Data and command interface	GigE Vision 2.2 with GenDC 1.1
3D data output	Profile (RectifiedC/Coord3D_C16 or CalibratedABC_Grid/Coord3D_ABC32f) Depth map (RectifiedC/Coord3D_C16) Point cloud (CalibratedABC_Grid/Coord3D_ABC32f
Digital I/Os	Four (4) 24 V isolated inputs Two (2) 24 isolated outputs (5 KHz maximum)
Trigger source(s)	Quadrature encoder with A/B channels External input trigger Internal object detection trigger Internal timers, counters and/or logic blocks External software trigger
Scan type	Single-profile scan Fixed-length scan (frame start) Variable-length scan (frame active)
Connectors	M12-X 8-pin for network interface and power input M12-A 12-pin for digital I/Os and alternate power input
Indicator LEDs	Power, status, laser and network speed
Power	Vaux: connect 24 Vdc +/-10%, 0.5 A-rated power supply (default) PoE: connect IEEE 802.3af compliant PSE, 44-57 Vdc, 12 W
Dimensions	L 133 mm (5.24") x H 125 mm (4.92") x W 51 mm (2")
Weight	1550 g (54.67 oz.)
Operating temperature	0°C to 45°C (32°F to 113°F)
Ventilation requirements	Natural convection
Certifications	Refer to certifications table
Compatible software	Aurora Design Assistant, Aurora Vision Studio

Specifications

Zebra AltiZ 4200 maximum profile rates



Specifications

Zebra AltiZ 4200 3D profile sensors	
Certifications	
Electromagnetic compatibility	47 CFR Part 15 Class A ICES-001 Class A EN 55011/EN 61326-1 industrial environment, Class A
Electrical safety	CAN/CSA-C22.2 No. 61010-1-12, UL Std. No. 61010-1 (Third Edition)
Ingress protection	IP67
Laser safety Original DS incorporated labels for 8, 9, and 25 mW lasers	AZ2S 2SB  AZ2S 3SB  AZ2S 5SB 

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