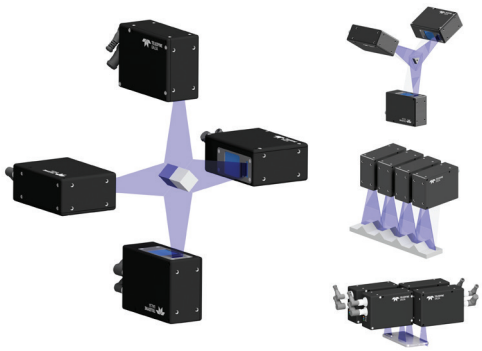
Z-TRAK2 S-2K SERIES

Factory Calibrated High-Performance 3D Profile Sensors

FEATURES

- Scan speed 45K profiles/sec, 2,000 points/profile
- Factory calibrated real-time measurements in real-world units
- Unified Measurement Space for 360° in-line inspection and measurements
- Handles highly reflected surfaces
- Built-in reflection compensation algorithms
- Multi-Sensor synchronization
- Simplified cabling
- Compact IP67 housing for harsh operating environments
- Free bundled software:
  - Sherlock™ for rapid application deployment
  - Sapera LT SDK for scan and control
  - Sapera Pro run-times 1D, 2D and 3D image processing
  - 3rd party software support for 3D image processing



The new Z-Trak2 family of 3D Profile Sensors delivers 45,000 profiles/sec for in-line measurement and inspection applications.

The Z-Trak2 S-2K Series combines speed and performance with easy to use software to deliver highly accurate, real-time results for a wide variety of 3D measurement and inspection applications in electronics, PCB, wafer, flat-panel, factory automation, food processing, and secondary battery markets.

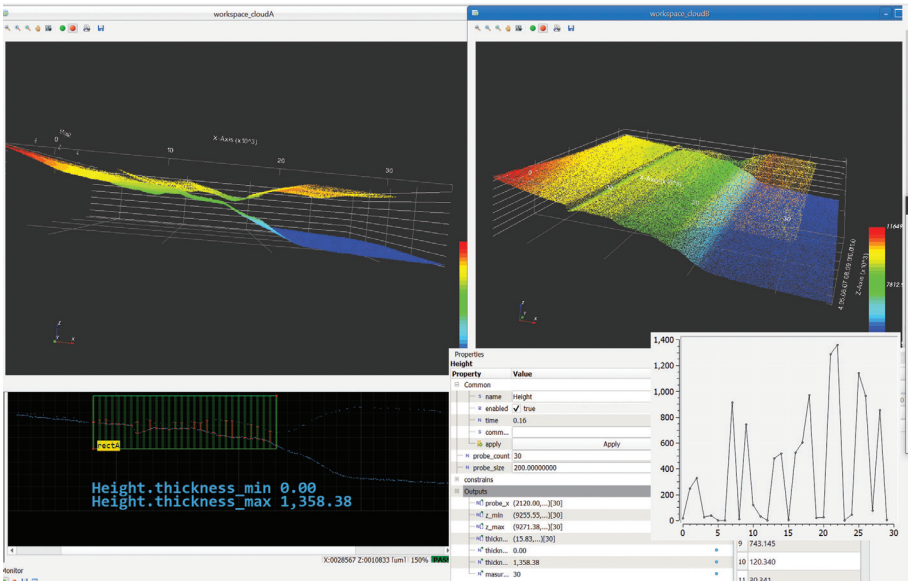
The Z-Trak2 S-2K Series delivers 2K points per profile with a larger FOV and scan speeds beyond 45K profiles/sec. Combined with its hardware-based reflection compensation algorithms and single-scan HDR capabilities, the Z-Trak2 S-2K Series supports a variety of FOVs with blue and red laser configurations.

High Dynamic Range (HDR) Imaging

Powered by Teledyne's 3D image sensor technology, the Z-Trak2 family features built-in single-scan HDR capability. This allows Z-Trak2 to scan objects made of highly reflective surfaces like machine aluminum/glass and low reflectivity materials like rubber, plastic, etc. at the same time. The HDR capability helps reduce processing complexity and time, thereby improving system efficiency.

Multi-Sensor Configuration and Unified Measurement Space (UMS)

Multiple Z-Trak2 sensors can be combined and synchronized to create a unified measurement space, to measure an object in 360° or to eliminate occlusions. Multi-sensor synchronization can be accomplished using off-the-shelf Ethernet switches with better than +/- 1 µs precision. In addition, the Z-Trak2 series offers flexible connection topologies and a choice of calibration targets.



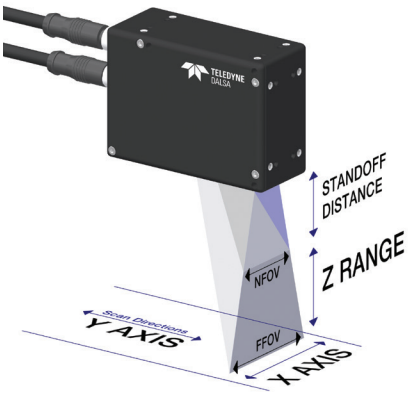
SPECIFICATIONS[1]

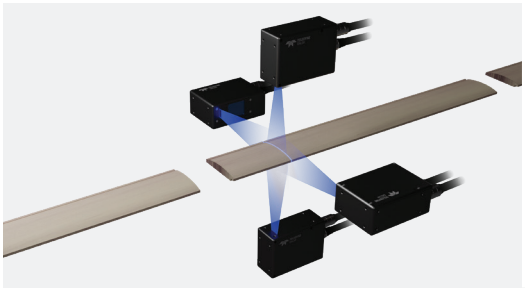
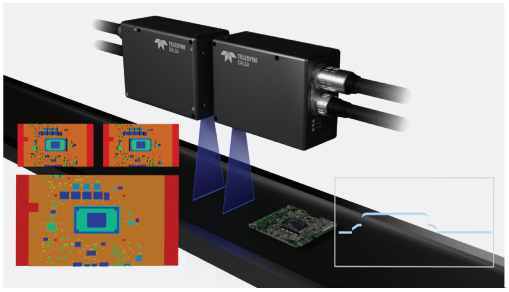
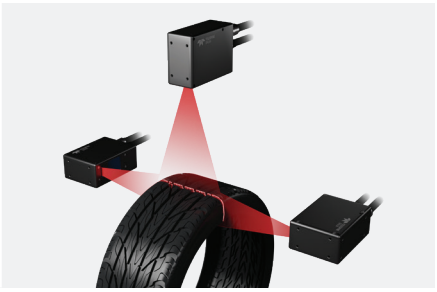
Function	Description
Scanning Rate	• AOI: Up to 45,000 profiles/sec
Connectors	• 1 x M12 17-pin: Controls • 1 x M12 8-pin X-Coded: Data Ethernet port
Image Enhancements	• Single scan HDR • Reflection elimination • Specular configuration • Filters: programmable median • Horizontal and vertical flip • Unified Measurement Space
Multi-Sensor Sync	• Single low-cost wiring using off-the-shelf network switches • Sensor grouping • Configuration wizard to ease timing setup
Lasers	• Red: 660n m 2M or 3R • Blue: 405 nm 2M or 3R
Reflectance Management	• Time integration • Laser power control: Automatic or manual • Gain control
Output Format	• Individual profile, range map and 3D point cloud • Depth (Z), Lateral (X), Reflectance (R) or Laser Peak Width (W) • GenICam 3.0 (SFNC 2.3) compatible 3D Data output formats compatible with • Calibrated Z; Rectified Z, Calibrated ZR/ ZR+W • Native values and world units (microns/mm/inch) • 16-bit mono (1D line-scan mode) • 10-bit mono (2D area-scan mode)
Temperature	**Storage:** • -40°C to +80°C (-4°F to +176°F) temperature • 20% to 80% non-condensing relative humidity • Operating: • 10°C (50°F) to 50°C (122°F) • Relative Humidity: up to 90% (non-condensing)
System Requirements	• 5, 2.5 or 1 Gigabit Ethernet • 4 GB or higher system memory
I/O	• 2 opto-isolated input • Configurable as a trigger input or as a start/ stop trigger • 2 opto-isolated output • Serial communication port[2] or Analog output[2] 4 – 20 mA

Function	Description
Encoder Input	• Quadrature (AB) shaft-encoder inputs • RS422/TTL • Up to 5 MHz (20M tick rate) • Backlash compensation
Scan Control	**Profile Trigger** • Encoder input, Internal timer/counter **Fixed Scan** • External input; Software; Timer/counter **Variable Scan** • Part in place; Start/Stop pulse
Unified Measurement Space	• Intuitive GUI for rapid setup • Up to 16 sensors • Supports multiple sensors in side-by-side, circular and in-line configurations • Combine red and blue laser models • Supports models with different measurement ranges
Power Supply	• PoE via 8-pin X-code circular connector (optional) • Separate power via 12M 17-pin connector • +12V to 36VDC +/-10% with surge protection
Enclosure	• Machined aluminum • IP67 • 4 x mounting holes

Software	• Microsoft® Windows® 10 (32/64-bit) compatible
	• Linux 32/64-bit:
	  • Ubuntu/Debian, RHEL/CentOS/Fedora, SLES/openSUSE
	  • Kernel: 2.6.32 or higher
	• Fully supported by Teledyne DALSA's software packages (bundled free):
	  • Sherlock 8.0
	  • Sapera LT 8.60 (or higher), Sapera Processing 8.0 (or higher) RTL
	  • Linux: Teledyne DALSA GevAPI Framework (SDK) ver. 2.40 or higher
	• 3rd party software:
	  • MVTec® Halcon®
	  • NI® Max/Labview®
	  • Cognex® VisionPro®
	  • Stemmer CVB
	  • Application development using C++ and Microsoft .Net (C++, C# or Visual Basic)

Markings	• FCC Class B, CE, ICE • ROHS, China RoHS



SPECIFICATIONS[1] (Continued)

Models	S2K-0004-B3[2]	S2K-0015-B3	S2K-0030-B3	S2K-0100-B3
Z-Range (mm)	4	15	30	100
Standoff Distance (mm)	25	32.7	43.7	64.5
Data Interface	5 GigE, 2.5 GigE, 1 GigE			
Z-Resolution (um)	1 - 1	1 - 2	3 - 5	8 - 14
NFOV-FFOV (mm)	13 - 14	27 - 32	53 - 72	97 - 185
X-resolution (µm)	7 -7	14 - 17	27 - 37	50 - 95
Repeatability (+/-µm)[3]	0.15 - 0.15	0.25 - 0.25	0.3 - 0.4	0.5 - 0.75
Linearity (% of F.S.)	<0.05%	<0.04%	<0.03%	<0.02%
Laser (nm)[4]	405	405	405	405
Laser Class	2M / 3R	2M / 3R	2M / 3R	2M / 3R
Housing type	T10	T20	T20	T20

Models	S2K-0150-R3	S2K-0250-R3	S2K-0300-R3	S2K-0400-R3[2]	S2K-0650-R3[2]
Z-Range (mm)	150	250	300	400	650
Standoff Distance (mm)	140	180	200	450	550
Data Interface	5 GigE, 2.5 GigE, 1 GigE				
Z-Resolution (um)	14 - 25	22 - 45	34 - 74	43 - 71	81 - 156
NFOV-FFOV (mm)	129 - 228	157 - 325	230 - 508	400 - 659	624 - 1211
X-resolution (µm)	66 - 117	81 - 167	118-261	206 - 339	321 - 623
Repeatability (+/-µm)[3]	1 - 1.5	1.5 - 2	2 - 4	3 - 10	4 - 12.5
Linearity (% of F.S.)	<0.02%	<0.02%	<0.02%	<0.02%	<0.02%
Laser (nm)[4]	660	660	660	660	660
Laser Class	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R
Housing type	T30	T30	T30	T40	T40

1. Subject to change without prior notice
2. Contact Teledyne DALSA Sales
3. ±2σ
4. Contact Teledyne DALSA for other laser options

FOR MORE INFORMATION CONTACT:

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Revision Number: N/A
Revision Date: 2022 12 15

Z-TRAK2 V-2K SERIES

Factory Calibrated High-Performance 3D Profile Sensors

FEATURES

- Scan speed 10K profiles/sec, 2,000 points/profile
- Factory calibrated real-time measurements in real-world units
- Unified Measurement Space for 360° in-line inspection and measurements
- Handles highly reflected surfaces
- Built-in reflection compensation algorithms
- Multi-Sensor synchronization
- Simplified cabling
- Compact IP67 housing for harsh operating environments
- Free bundled software:
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  - Sapera™ Pro run-times 1D, 2D and 3D image processing
  - 3rd party software support for 3D image processing

The new Z-Trak2 family of 3D Profile Sensors delivers 10,000 profiles/sec for in-line measurement and inspection applications.

The Z-Trak2 V-2K Series combines speed and performance with easy to use software to deliver highly accurate, real-time results for a wide variety of 3D measurement and inspection applications in electronics, PCB, wafer, flat-panel, factory automation, food processing, and secondary battery markets.

The Z-Trak2 V-2K Series delivers 2K points per profile with a larger FOV and scan speeds beyond 10K profiles/sec. Combined with its hardware-based reflection compensation algorithms and single-scan HDR capabilities, the Z-Trak2 V-2K Series supports a variety of FOVs with blue and red laser configurations.

HIGH DYNAMIC RANGE (HDR) IMAGING

Powered by Teledyne's 3D image sensor technology, the Z-Trak2 family features built-in single-scan HDR capability. This allows Z-Trak2 to scan objects made of highly reflective surfaces like machine aluminum/glass and low reflectivity materials like rubber, plastic, etc. at the same time. The HDR capability helps reduce processing complexity and time, thereby improving system efficiency.

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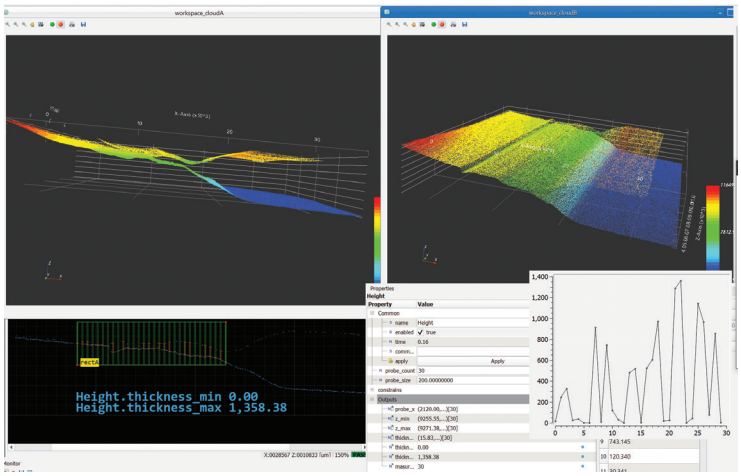
Multiple Z-Trak2 sensors can be combined and synchronized to create a unified measurement space, to measure an object in 360° or to eliminate occlusions. Multi-sensor synchronization can be accomplished using off-the-shelf Ethernet switches with better than +/- 1 µs precision. In addition, the Z-Trak2 series offers flexible connection topologies and a choice of calibration targets.



SPECIFICATIONS[1]

Function	Description
Scanning Rate	• AOI: Up to 10K profiles/sec
Connectors	• 1 x M12 17-pin: Controls • 1 x M12 8-pin X-Coded: Data Ethernet port
Image Enhancements	• Single scan HDR • Reflection elimination • Specular configuration • Filters: programmable median • Horizontal and vertical flip • Unified Measurement Space
Multi-Sensor Sync	• Single low-cost wiring using off-the-shelf network switches • Sensor grouping • Configuration wizard to ease timing setup
Lasers	• Red: 660 nm 2M or 3R • Blue: 405 nm 2M or 3R
Reflectance Management	• Time integration • Laser power control: Automatic or manual • Gain control
Output Format	• Individual profile, range map and 3D point cloud • Depth (Z), Lateral (X), Reflectance (R) or Laser Peak Width (W) • GenICam 3.0 (SFNC 2.3) compatible 3D Data output formats compatible with • Calibrated Z; Rectified Z, Calibrated ZR/ZR+W • Native values and world units (microns/mm/inch) • 16-bit mono (1D line-scan mode) • 10-bit mono (2D area-scan mode)
Temperature	**Storage:** • -40°C to +80°C (-4°F to +176°F) temperature • 20% to 80% non-condensing relative humidity • Operating: • 10°C (50°F) to 50° C (122°F) • Relative Humidity: up to 90% (non-condensing)
System Requirements	• 1 Gigabit Ethernet • 4 GB or higher system memory
I/O	• 2 opto-isolated input • Configurable as a trigger input or as a start/stop trigger • 2 opto-isolated output • Serial communication port[2] or Analog output[2] 4 – 20 mA

Function	Description
Encoder Input	• Quadrature (AB) shaft-encoder inputs • RS422/TTL • Up to 5 MHz (20M tick rate) • Backlash compensation
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Power Supply	• PoE via 8-pin X-code circular connector (optional) • Separate power via 12M 17-pin connector • +12V to 36VDC +/-10% with surge protection
Enclosure	• Machined aluminum • IP67 • 4 x mounting holes

Software	• Microsoft® Windows® 10 (32/64-bit) compatible
	• Linux 32/64-bit:
	  • Ubuntu/Debian, RHEL/CentOS/Fedora, SLES/openSUSE
	  • Kernel: 2.6.32 or higher
	• Fully supported by Teledyne DALSA's software packages (bundled free):
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	  • Sherlock 8.0
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	  • Linux: Teledyne DALSA GevAPI Framework (SDK) ver. 2.40 or higher
	• 3rd party software:
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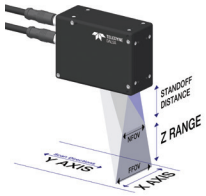
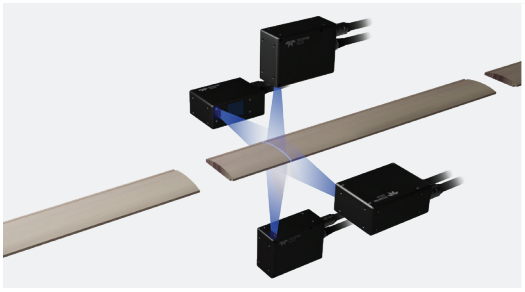
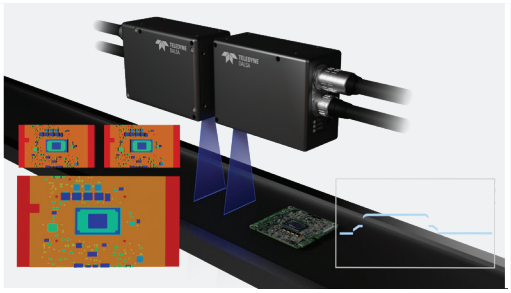
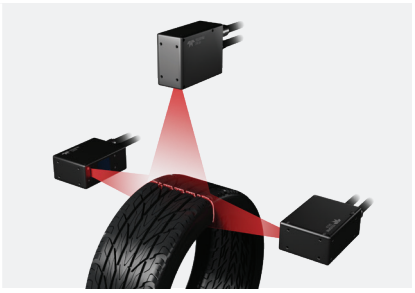
	  • Stemmer CVB
	  • Application development using C++ and Microsoft .Net (C++, C# or Visual Basic)

Markings	• FCC Class B, CE, ICE • ROHS, China RoHS



SPECIFICATIONS[1] (Continued)

Models	V2K-0004-B3[2]	V2K-0015-B3	V2K-0030-B3	V2K-0100-B3
Z-Range (mm)	4	15	30	100
Standoff Distance (mm)	25	32.7	43.7	64.5
Data Interface	1 GigE			
Z-Resolution (um)	1 - 1	1 - 2	3 - 5	8 - 14
NFOV-FFOV (mm)	13 - 14	27 - 32	53 - 72	97 - 185
X-resolution (µm)	7 -7	14 - 17	27 - 37	50 - 95
Repeatability (+/-µm)[3]	0.15 - 0.15	0.25 - 0.25	0.3 - 0.4	0.5 - 0.75
Linearity (% of F.S.)	<0.05%	<0.04%	<0.03%	<0.02%
Laser (nm)[4]	405	405	405	405
Laser Class	2M / 3R	2M / 3R	2M / 3R	2M / 3R
Housing type	T10	T20	T20	T20

Models	V2K-0150-R3	V2K-0250-R3	V2K-0300-R3	V2K-0400-R3[2]	V2K-0650-R3[2]
Z-Range (mm)	150	250	300	400	650
Standoff Distance (mm)	140	180	200	450	550
Data Interface	1 GigE				
Z-Resolution (um)	14 - 25	22 - 45	34 - 74	43 - 71	81 - 156
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Repeatability (+/-µm)[3]	1 - 1.5	1.5 - 2	2 - 4	3 - 10	4 - 12.5
Linearity (% of F.S.)	<0.02%	<0.02%	<0.02%	<0.02%	<0.02%
Laser (nm)[4]	660	660	660	660	660
Laser Class	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R
Housing type	T30	T30	T30	T40	T40

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