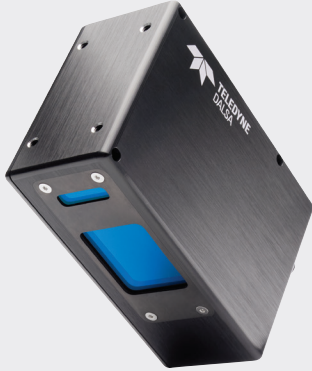


Z-TRAK LP2C 4K SERIES (Preliminary)

Factory Calibrated, Compact 3D Profile Sensors



FEATURES

- Scan speed 5K profiles/sec, 4096 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

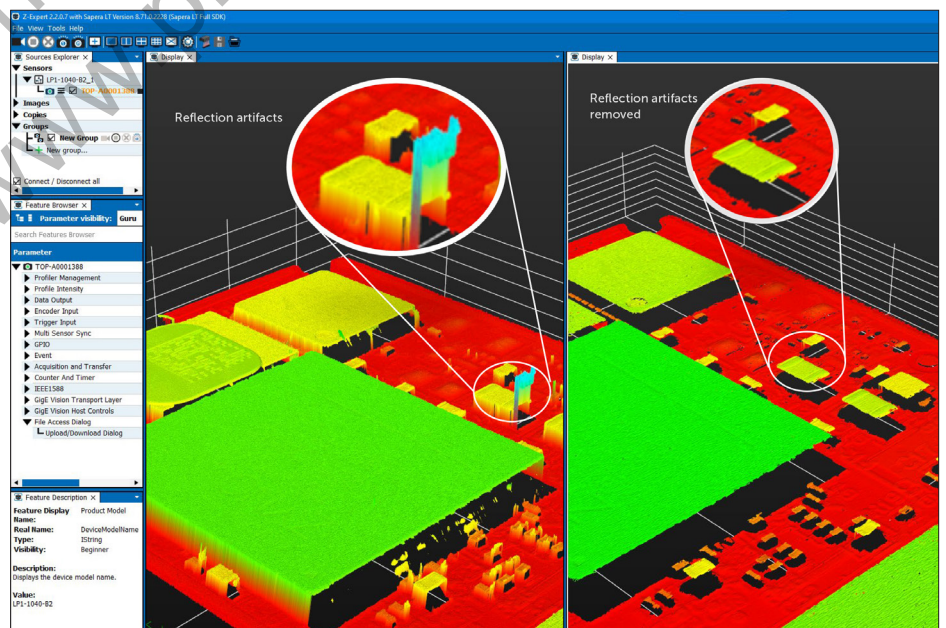
Z-Trak LP2C 4K A Family of 3D Profile Sensors for In-Line 3D Measurement and Inspection Applications.

Ready to use the Z-Trak LP2C 4K Series is factory calibrated and combines high scanning speeds with easy-to-use software tools to deliver highly repeatable and accurate 3D measurements and inspection results. It is ideal for applications in battery, automotive, factory automation, and logistics markets.

With its 4096 samples per profile, the Z-Trak LP2C 4K delivers more than just profile data and features inline real-time profile enhancement capabilities. Z-Trak LP2C models offer measurement ranges up to 650 mm with horizontal field-of-view up to 1100 mm. Z-Trak LP2C can handle 3D measurement applications involving a wide variety of surface and material types with its red and blue eye-safe lasers.

REFLECTION ELIMINATION AND IN-LINE PROCESSING

Z-Trak LP2C features in-line processing capabilities to improve and enhance the profiles. In addition, it can generate additional meta data that can be used by up-stream algorithms to eliminate un-wanted reflections. Cleaner 3D scans help applications produce accurate and dependable results.



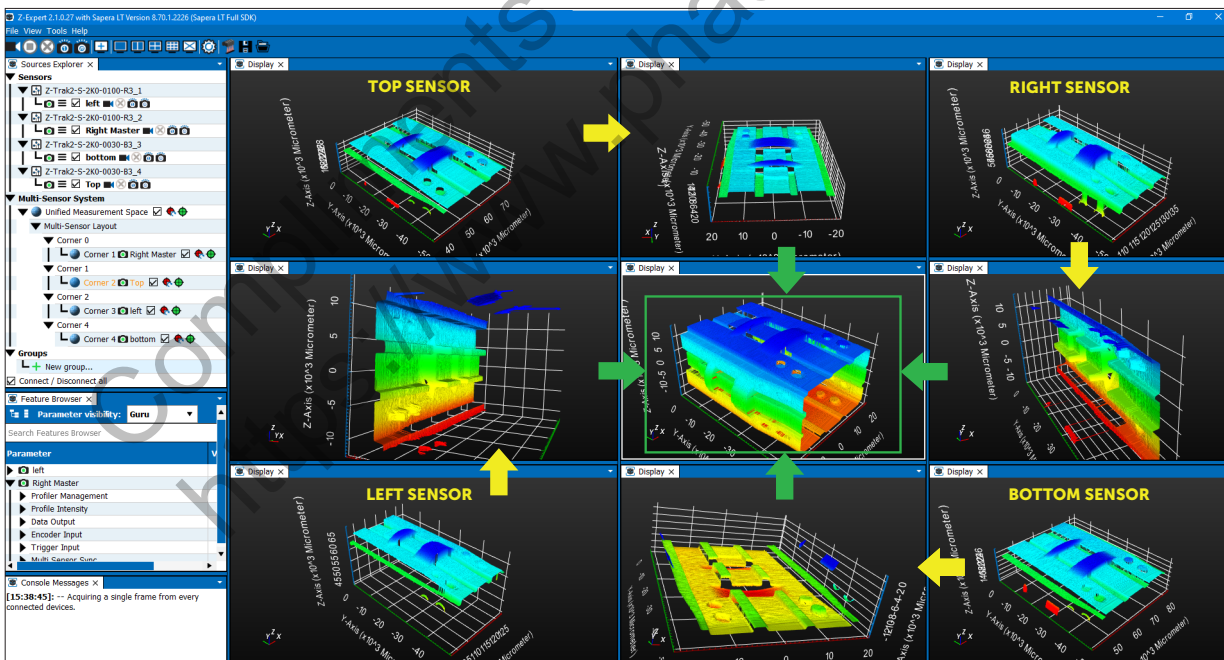
MULTI-SENSOR CONFIGURATION AND UNIFIED MEASUREMENT SPACE (UMS)

3D inspection applications requiring 360° views, thickness measurement, an extended horizontal field of view without sacrificing the z-resolution or removing occlusion etc. require the combination of multiple profile sensors.

Combining and synchronizing multiple Z-Trak LP sensors helps create a Unified Measurement Space so that applications view the resulting 3D measurements from the point of view of the entire system. The 3D applications benefit from consistent, accurate and easier to handle object measurements and for added flexibility, the Z-Trak LP architecture also enables models with different measurement ranges and laser colors to be combined.



Z-TRAK UNIFIED MEASUREMENT SPACE

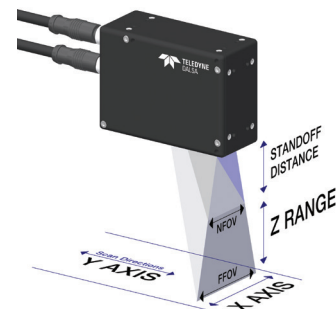


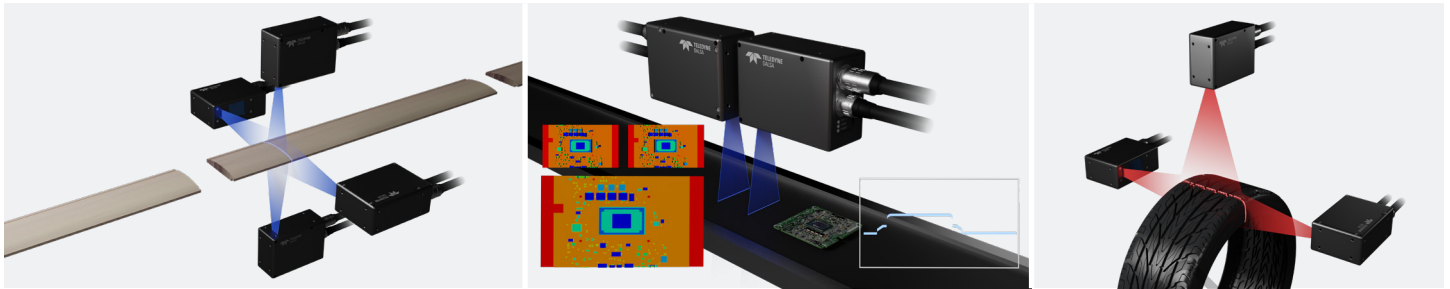
**Z-Expert
360° View Using 4 Synchronized Z-Trak Sensors**

SPECIFICATIONS¹

| Function | Description |
|------------------------|---|
| Scanning Rate | <ul style="list-style-type: none"> • AOI: Up to 5K profiles/sec |
| Connectors | <ul style="list-style-type: none"> • 1 x M12 17-pin: Controls • 1 x M12 8-pin X-Coded: Data Ethernet port |
| Image Enhancements | <ul style="list-style-type: none"> • Reflection elimination • Specular configuration • Filters: programmable median • Horizontal and vertical flip • Unified Measurement Space |
| Multi-Sensor Sync | <ul style="list-style-type: none"> • Single low-cost wiring using off-the-shelf network switches • Sensor grouping • Configuration wizard to ease timing setup |
| Lasers | <ul style="list-style-type: none"> • Red: 660 nm 2M or 3R • Blue: 405 nm 2M or 3R |
| Reflectance Management | <ul style="list-style-type: none"> • Time integration • Laser power control: Automatic or manual • Gain control |
| Output Format | <ul style="list-style-type: none"> • 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 | <p>Storage:</p> <ul style="list-style-type: none"> • -40°C to +80°C (-4°F to +176°F) temperature • 20% to 80% non-condensing relative humidity <p>Operating:</p> <ul style="list-style-type: none"> • 10°C (50°F) to 50°C (122°F) • Relative Humidity: up to 90% (non-condensing) |
| System Requirements | <ul style="list-style-type: none"> • 1, 2.5 or 5 Gigabit Ethernet • 4 GB or higher system memory |
| I/O | <ul style="list-style-type: none"> • 2 opto-isolated input • Configurable as a trigger input or as a start/stop trigger • 2 opto-isolated output |
| Encoder Input | <ul style="list-style-type: none"> • Quadrature (AB) shaft-encoder inputs • RS422/TTL • Up to 5 MHz (20M tick rate) • Backlash compensation |

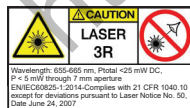
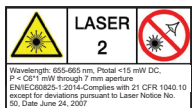
| Function | Description |
|---------------------------|---|
| Scan Control | <p>Profile Trigger</p> <ul style="list-style-type: none"> • Encoder input, Internal timer/counter <p>Fixed Scan</p> <ul style="list-style-type: none"> • External input; Software; Timer/counter <p>Variable Scan</p> <ul style="list-style-type: none"> • Part in place; Start/Stop pulse |
| Unified Measurement Space | <ul style="list-style-type: none"> • Intuitive GUI for rapid setup • 2 or more 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 | <ul style="list-style-type: none"> • PoE via 8-pin X-code circular connector (optional) • Separate power via 12M 17-pin connector • +12V to 36VDC +/-10% with surge protection |
| Enclosure | <ul style="list-style-type: none"> • Machined aluminum • IP67 • 4 x mounting holes |
| Software | <ul style="list-style-type: none"> • Microsoft® Windows® 10 /11 (32/64-bit) compatible • Linux 32/64-bit: <ul style="list-style-type: none"> • Ubuntu/Debian, RHEL/CentOS/ Fedora, SLES/openSUSE • Kernel: 2.6.32 or higher • Fully supported by Teledyne DALSA's software packages (bundled free): • Free Software <ul style="list-style-type: none"> • Sherlock 8.x • 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: <ul style="list-style-type: none"> • MVTec® Halcon® • NI® Max/Labview® • Cognex® VisionPro® • Stemmer CVB • Application development using C++ and Microsoft .Net (C++, C# or Visual Basic) |
| Markings | <ul style="list-style-type: none"> • FCC Class B, CE, ICE • ROHS, China RoHS |




SPECIFICATIONS¹ (Continued)

| Models | LP2C 4K0-0004 | LP2C 4K0-0015 | LP2C 4K0-0030 | LP2C 4K0-0100 |
|------------------------------------|------------------|---------------|---------------|---------------|
| Z-Range (mm) | 4 | 15 | 30 | 100 |
| Standoff Distance (mm) | 25 | 32.7 | 43.7 | 64.5 |
| Data Interface | 5, 2.5, or 1GigE | | | |
| Z-Resolution (um) | 1 - 1 | 1 - 2 | 3 - 5 | 8 - 14 |
| NFOV-FFOV (mm) | 12.8 - 13.8 | 24.7 - 30 | 49 - 66 | 90 - 173 |
| X-resolution (um) | 3.5 - 3.5 | 7 - 8.5 | 13.5 - 18.5 | 25 - 47.5 |
| Repeatability (+/-um) ³ | 0.15 - 0.15 | 0.3 - 0.3 | 0.4 - 0.5 | 0.5 - 0.75 |
| Linearity (% of F.S.) | <0.05% | <0.04% | <0.03% | <0.02% |
| Laser (nm) ⁴ | 405 | 405 | 405 | 405/660 |
| Laser Class | 2M / 3R | 2M / 3R | 2M / 3R | 2M / 3R |
| Housing type | T10 | T20 | T20 | T20 |

| Models | LP2C 4K0-0150 | LP2C 4K0-0250 | LP2C 4K0-0300 | LP2C 4K0-0400 | LP2C 4K0-0650 |
|------------------------------------|-----------------|---------------|---------------|---------------|---------------|
| Z-Range (mm) | 150 | 250 | 300 | 400 | 650 |
| Standoff Distance (mm) | 135 | 175 | 195 | 463 | 558 |
| Data Interface | 5, 2.5 or 1GigE | | | | |
| Z-Resolution (um) | 14 - 25 | 22 - 45 | 34 - 74 | 43 - 71 | 81 - 156 |
| NFOV-FFOV (mm) | 120.6 - 212 | 146.3 - 305 | 214.7 - 472 | 373.3 - 615 | 582 - 1130 |
| X-resolution (um) | 33 - 58.5 | 40.5 - 83.5 | 59-130.5 | 103 - 170 | 160 - 312 |
| Repeatability (+/-um) 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 | 405/660 | 405/660 | 405/660 | 405/660 | 405/660 |
| 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. $\pm 2\sigma$
4. Contact Teledyne DALSA for other laser options

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