

Z-Trak2 2K/4K

고속 In-line 검사에 적합한 3D Laser Profiler

3D
Z-Trak2

Z-Trak2는 레이저 삼각법 기술을 기반으로 2K/4K 해상도로 물체 표면을 스캔하는 대면적, 고속 In-line 3D 검사에 적합한 솔루션입니다.

Teledyne만의 3D 이미지 센서 기술을 활용하여 단일 스캔 HDR 기능이 탑재되어 있어 반사도가 높거나 낮은 재질을 동시에 스캔하더라도 고품질의 이미지를 제공합니다.

또한, 다양한 형태로 여러 대의 센서를 구성할 수 있는 멀티 센서 동기화 기능과 통합 좌표계를 위한 Calibration 기능을 지원합니다.



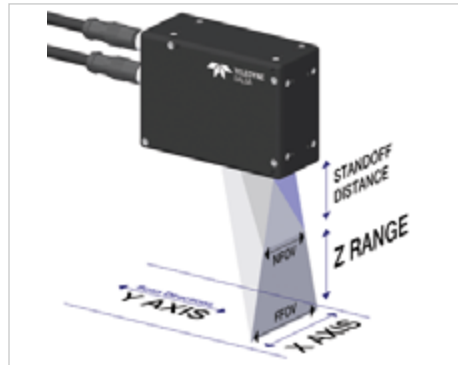
특징

- 스캔속도 최대 45 kHz
- 4K 고해상도
- 단일 스캔 HDR 모드
- 멀티 센서 동기화
- 다양한 내장 필터로 이미지 품질 개선
- 1, 2.5, 5 GigE 인터페이스

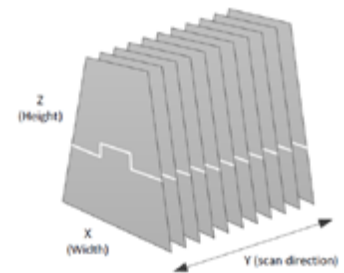
어플리케이션

- 이차전지
- 반도체
- 전자 부품
- 공장 자동화
- 자동차
- 로보틱스
- 물류

기술 설명



Profile acquisitions via time consistent external triggers for 3D reconstruction

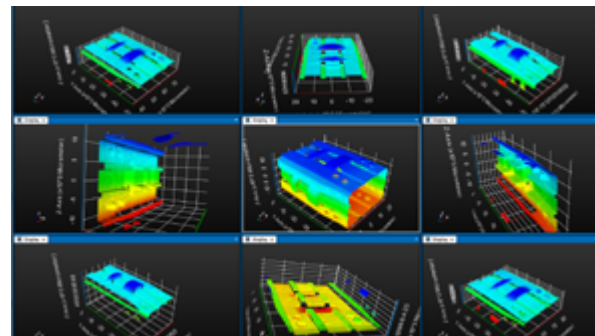


Line 형태의 레이저 광이 Object의 표면에서 확산 반사되어 Area 센서에 결상됩니다.

센서에 감지된 광의 위치와 형상 데이터를 광삼각법으로 계산하여 Lateral (X axis) 및 Depth (Z axis) 정보를 제공합니다.

세번째 축인 Y 정보는 Object를 스캔하여 얻을 수 있습니다.

구성 예시



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제품 사양

	Model	Profile Points	Measurement Range (mm)	Z-resolution (μm)	Repeatability (±μm) ¹	Linearity (% of F.S)	Clearance Distance (mm)	Near-Far FOV (mm)	Max. X-resolution (μm)	Laser (nm) ²	Laser Class	Housing type	Date Interface	Scanning Rate (Profiles/sec)
NEW	S2K-0004-B3 V2K-0004-B3 LP2C-4K0-0004	2K 2K 4K	4	1 - 1	0.15 - 0.15	<0.05	25	13 - 14	7.0 - 7.0 7.0 - 7.0 3.5 - 3.5	405	2M / 3R	T10	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0015-B3 V-2K-0015-B3 LP2C-4K0-0015	2K 2K 4K	15	1 - 2	0.25 - 0.25	<0.04	32.7	27 - 32	14.0 - 17.0 14.0 - 17.0 7.0 - 8.5	405	2M / 3R	T20	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0030-B3 V-2K-0030-B3 LP2C-4K0-0030	2K 2K 4K	30	3 - 5	0.3 - 0.4	<0.03	43.7	53 - 72	27.0 - 37.0 27.0 - 37.0 13.5 - 18.5	405	2M / 3R	T20	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0100-B3 V-2K-0100-B3 LP2C-4K0-0100	2K 2K 4K	100	8 - 14	0.5 - 0.75	<0.02	64.5	97 - 185	50.0 - 95.0 50.0 - 95.0 25.0 - 47.5	405 / 660	2M / 3R	T20	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0150-R3 V-2K-0150-R3 LP2C-4K0-0150	2K 2K 4K	150	14 - 25	1 - 1.5	<0.02	140	129 - 228	66.0 - 117.0 66.0 - 117.0 33.0 - 58.5	405 / 660	2M / 3R	T30	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0250-R3 V-2K-0250-R3 LP2C-4K0-0250	2K 2K 4K	250	22 - 45	1.5 - 2	<0.02	180	157 - 325	81.0 - 167.0 81.0 - 167.0 40.5 - 83.5	405 / 660	2M / 3R	T30	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0300-R3 V-2K-0300-R3 LP2C-4K0-0300	2K 2K 4K	300	34 - 74	2 - 4	<0.02	200	230 - 508	118.0 - 261.0 118.0 - 261.0 59.0 - 130.5	405 / 660	2M / 3R	T30	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0400-B3 V-2K-0400-B3 LP2C-4K0-0400	2K 2K 4K	400	43 - 71	3 - 10	<0.02	400	400 - 659	206.0 - 339.0 206.0 - 339.0 103.0 - 170.0	405 / 660	2M / 3R	T40	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K
NEW	S-2K-0650-B3 V-2K-0650-R3 LP2C-4K0-0650	2K 2K 4K	650	81 - 156	4 - 12.5	<0.02	550	624 - 1211	321.0 - 623.0 321.0 - 623.0 160.0 - 312.0	405 / 660	2M / 3R	T40	5 GigE 1 GigE 1, 5 GigE	45K 10K 5K

1) ±2σ 2) 레이저 옵션 선택

전 모델 공통 사양

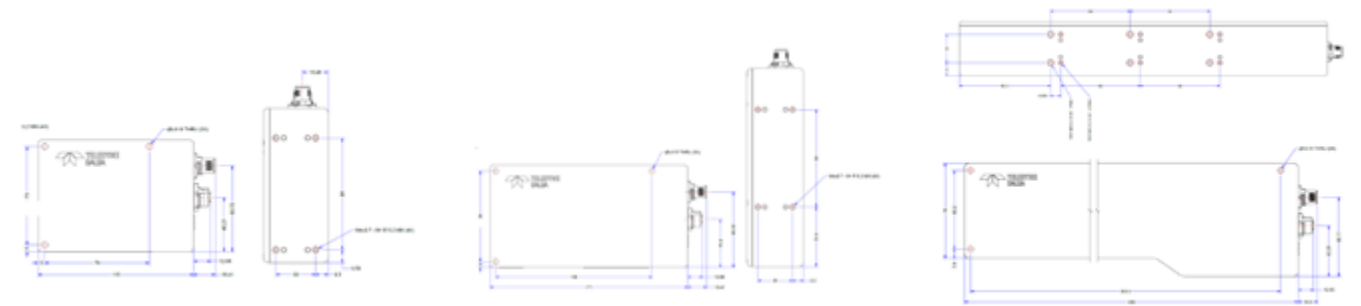
출력 포맷	16-bit 1D Profile, 3D Point Cloud 출력 / Depth(Z), Lateral (X), Reflectance (R), Laser Peak Width (W) 출력
인터페이스	5, 2.5, 1 Gigabit Ethernet (S-series) / 1 Gigabit Ethernet (V-series)
입력 신호	Shaft Encoder (RS422 / TTL), Opto-isolated I/O
입력 전압	PoE 지원 (8-pin X-code connector) / +12~36VDC(±10%) (12M 17-pin connector) / Surge Protection
스캔 소프트웨어	Windows® 10, Linux (32/64-bit) / Sapera LT 8.70 (Z-Expert) / Sherlock 8.0 / C++, .NET, 3rd Party SW

도면

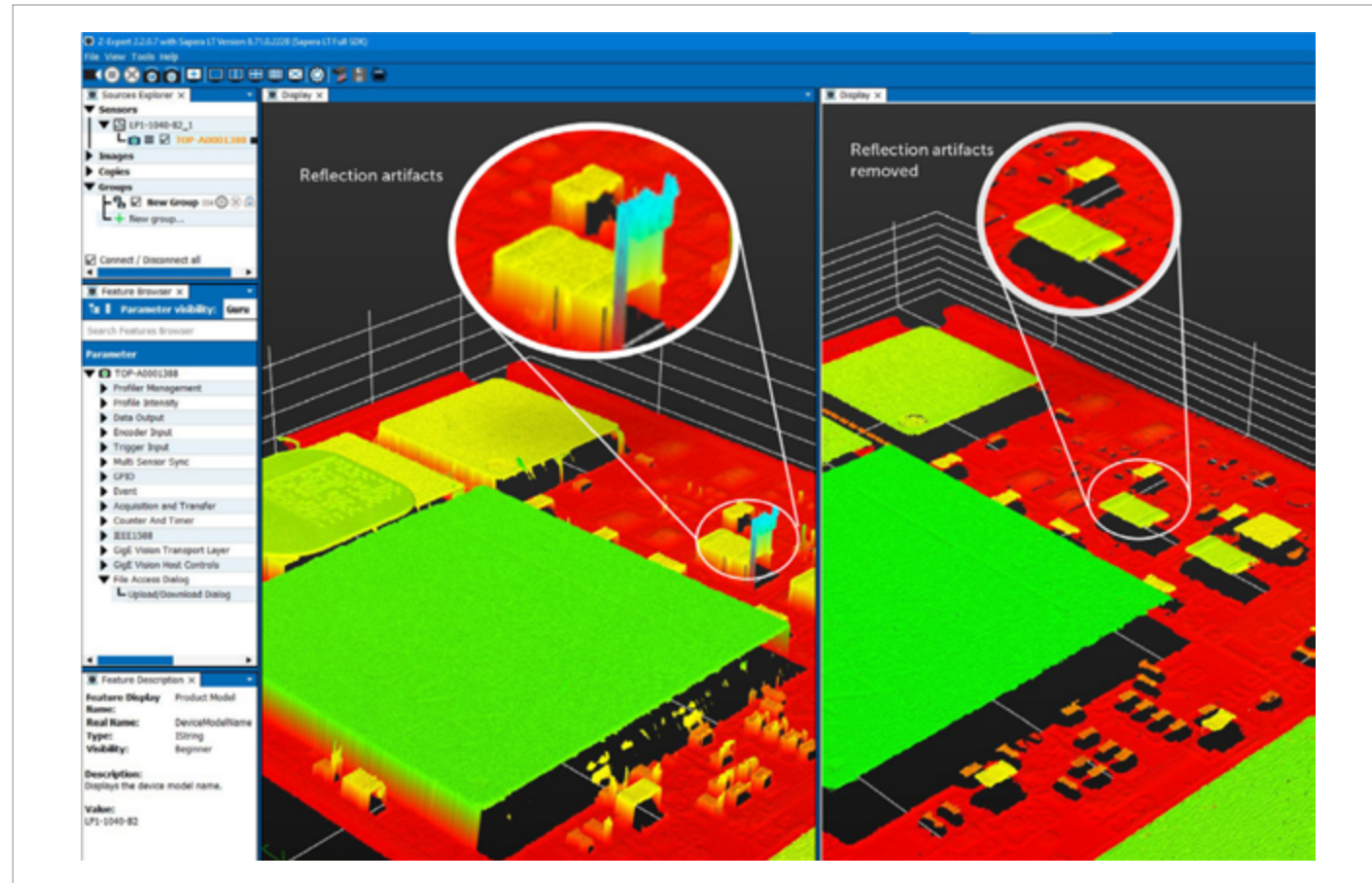
T20

T30

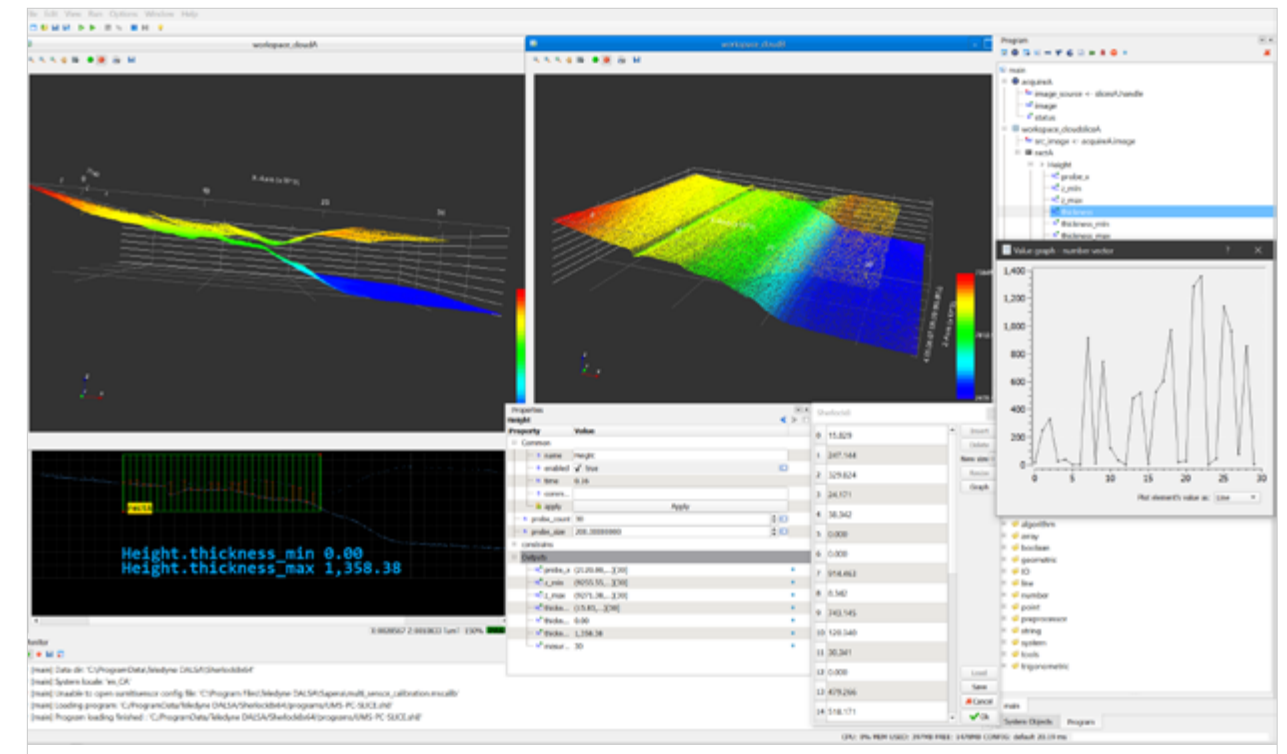
T40



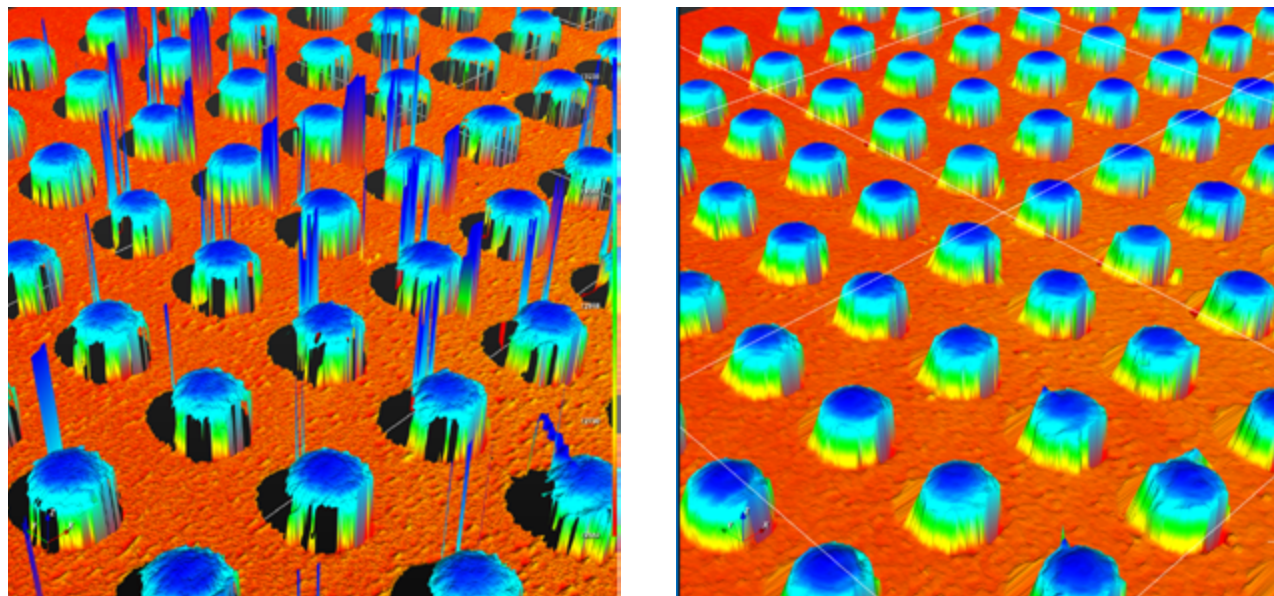
다중반사제거



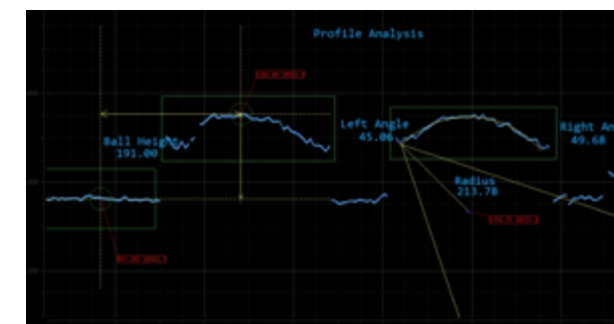
Free Bundle Image Processing Tool – Sherlock 8



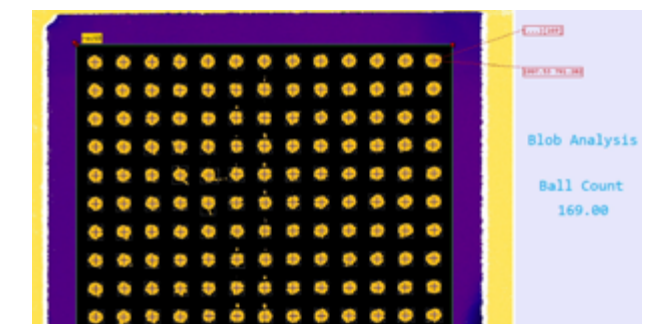
다중반사제거 - Bump ball 이미징 결과



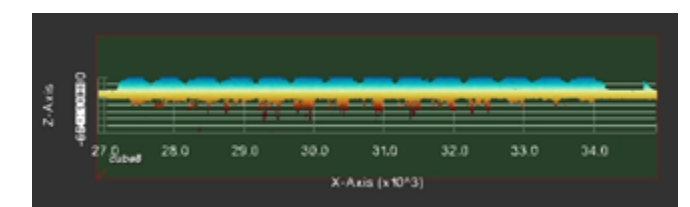
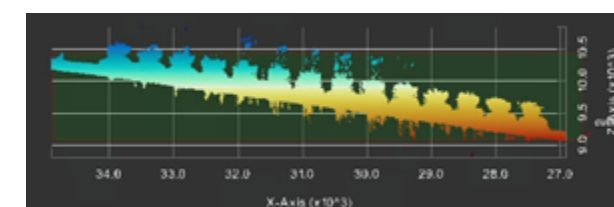
1D Profile Analysis with Sherlock



2D Blob Analysis with Sherlock



3D Tilt Control with Sherlock



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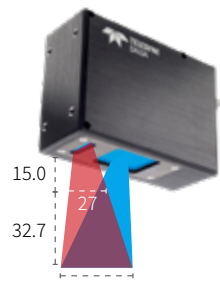
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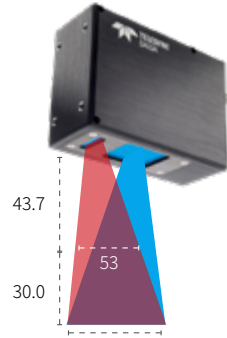
**S2K-0004-B3
V2K-0004-B3
LP2C-4K0-0004**



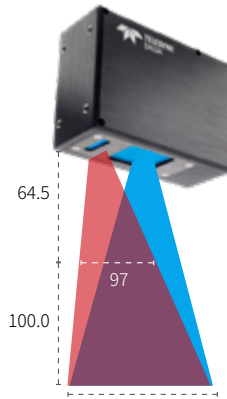
**S-2K-0015-B3
V-2K-0015-B3
LP2C-4K0-0015**



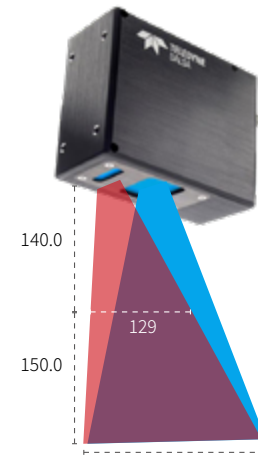
**S-2K-0030-B3
V-2K-0030-B3
LP2C-4K0-0030**



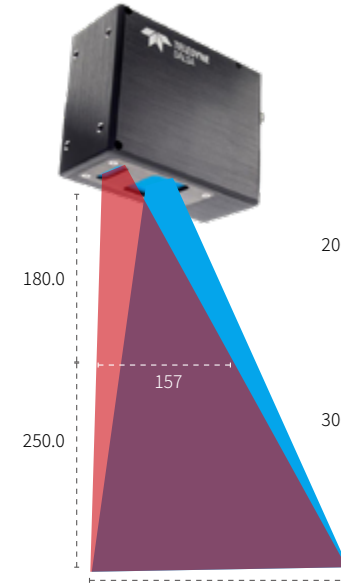
**S-2K-0100-B3
V-2K-0100-B3
LP2C-4K0-0100**



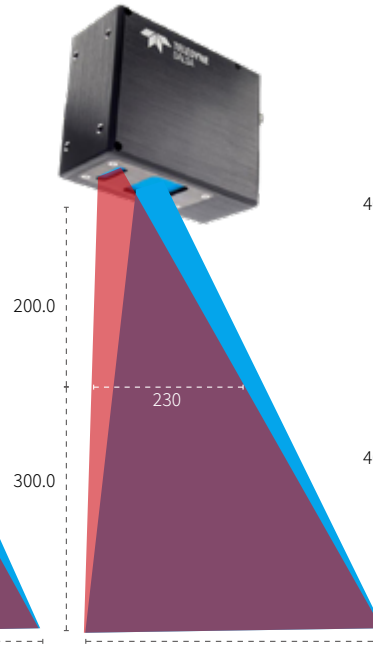
**S-2K-0150-R3
V-2K-0150-R3
LP2C-4K0-0150**



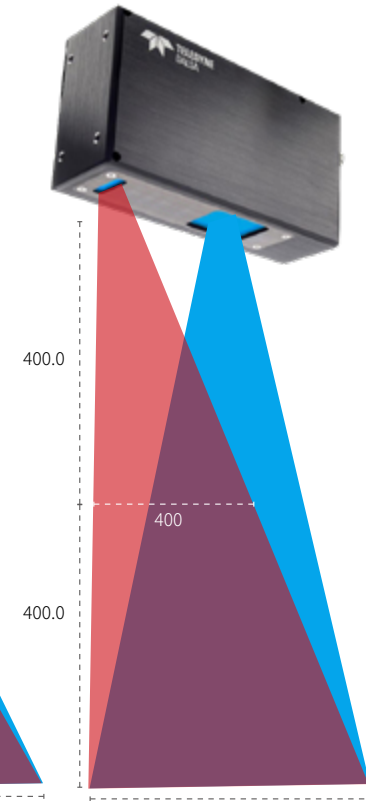
**S-2K-0250-R3
V-2K-0250-R3
LP2C-4K0-0250**



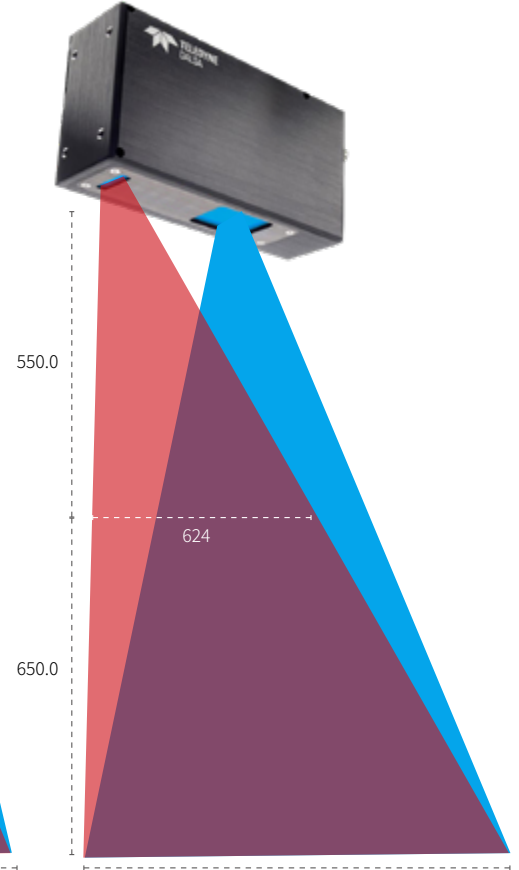
**S-2K-0300-R3
V-2K-0300-R3
LP2C-4K0-0300**



**S-2K-0400-B3
V-2K-0400-B3
LP2C-4K0-0400**



**S-2K-0650-B3
V-2K-0650-R3
LP2C-4K0-0650**



Profile Points	2K 2k 4k	2K 2k 4K	2K 2k 4k	2K 2k 4k	2K 2k 4k	2K 2k 4k	2K 2k 4k	2K 2k 4k	2K 2k 4k
Measurement Range (mm)	4	15	30	100	150	250	300	400	650
Z-resolution (μm)	1-1	1-2	3-5	8-4	14 - 25	22 - 45	34 - 74	43 - 71	81 - 156
Repeatbility (±μm)	0.15 - 0.15	0.25 - 0.25	0.3 - 0.4	0.5 - 0.75	1 - 1.5	1.5 - 2	2 - 4	3 - 10	4 - 12.5
Linearity (% of F.S)	<0.05	<0.04	<0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02
Clearance Distance (mm)	25	32.7	43.7	64.5	140	180	200	400	550
Near-Far FOV (mm)	13 - 14	27 - 32	53 - 72	97 - 185	129 - 228	157 - 325	230 - 508	400 - 659	624 - 1211
Max. X-resolution (μm)	7.0 - 7.0 7.0 - 7.0 3.5 - 3.5	14.0 - 17.0 14.0 - 17.0 7.0 - 8.5	27.0 - 37.0 27.0 - 37.0 13.5 - 18.5	50.0 - 95.0 50.0 - 95.0 25.0 - 47.5	66.0 - 117.0 66.0 - 117.0 33.0 - 58.5	81.0 - 167.0 81.0 - 167.0 40.5 - 83.5	118.0 - 261.0 118.0 - 261.0 59.0 - 130.5	206.0 - 339.0 206.0 - 339.0 103.0 - 170.0	321.0 - 623.0 321.0 - 623.0 160.0 - 312.0
Laser (nm)	405	405	405	405 / 660	405 / 660	405 / 660	405 / 660	405 / 660	405 / 660
Laser Class	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R	2M / 3R
Housing type	T10	T20	T20	T20	T30	T30	T30	T40	T40
Date Interface	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE	5 GigE 1GigE 1.5 GigE
Scanning Rate (Profiles/sec)	45K 10K 5K	45K 10K 5K	45K 10K 5K	45K 10K 5K	45K 10K 5K	45K 10K 5K	45K 10K 5K	45K 10K 5K	45K 10K 5K