C

2D / 3D Measurement & Analysis

2D / 3D Measurement & Analysis

3D ProfileMaster - 3D 非接觸式量測儀

3D ProfileMaster 是一台高精度的同軸雷射表面量測系統，此系統核心採用以色列同軸雷射探頭，可在多種不同材質表面上進行三軸的量測與成像，可根據不同應用提供研究、量測與審查等任務，並保持高精度的真實效能。

此同軸雷射可依照待測物的高低差搭配不同的鏡頭，量測範圍可從 0.12mm 至 180m 並達到微米等級的量測精度。X、Y、Z 三軸為電控移動，提供最簡易的軟體操作使量測過程簡易化，並何依照您的需求提供客製化軟體服務，大大節省量測與報告製作時間。

強大的量測能力像是透明玻璃鏡片、高反射金屬、塑膠、深色橡膠、電路板、液體等等都可幫您達到最佳的量測效果。

3D ProfileMaster 提供半徑、直徑、角度、高度、孔 / 溝深度、曲度、球形曲度、距離與全 3D 的 CAD(Computer Aided Design) 比較等其他量測功能。

09IAE-909020-G-3D

09IAE-303010-G-3D

產品特色
* 複雜幾何圖形之 3D 量測
* 共線技術能應付盲孔
* 即時在線量測
* 可替換之物鏡 (16 to 250mm)
* 手機玻璃厚度
* 鍍膜檢測
* 量測速度 3000 ~ 9000Hz

軟體功能
* 表面粗糙度
* 深度（高度、厚度）
* 長寬尺寸
* 角度
* 曲率半徑

Collinearity　Time saving　3D Imaging　In line inspection

量測技術 - 獨特的能力

09IAE-303010-A-3D

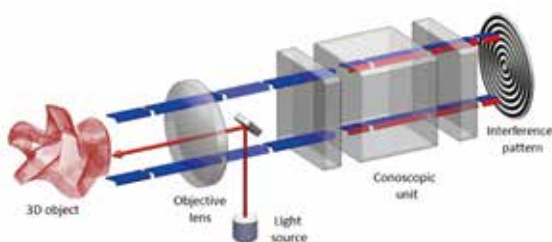|				
OEM 設計開發可依需求開發量測功能結合現有檢測設備	量測功能建全應用於不同材質表面_透明、半透明、高反射率、粗糙面皆可量測	超大的角度量測量測角度可至 170 度可使難以量測之處保有高精度再現性	表面量測無死角可量測深孔比 1:10 配合特殊光學鏡組可做側向表面掃描
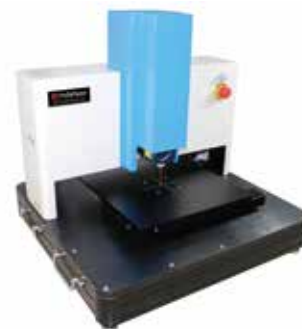
Conoscopic Holography 是利用光學干涉方式量測物體表面三維變化，使用同軸共線收光方式可以量測到表面複雜的幾何圖形及深度過深的孔洞（孔深比 1:10 ），搭配高頻的掃描速度收集大量的單點資料使每次量測更加精準，針對不同材質，斜面，曲面，幾何圖形，皆可量測

3D 量測應用

雷射切割深度檢測

錫球高度&弧度檢測

黑色橡膠紋路量測&CAD檔案

內螺紋間距高低檢測

高爾夫杆頭溝槽自動量測分析系統

非球面透明鏡片檢測

透明曲面鏡片檢測

高反射晶圓蝕刻檢測
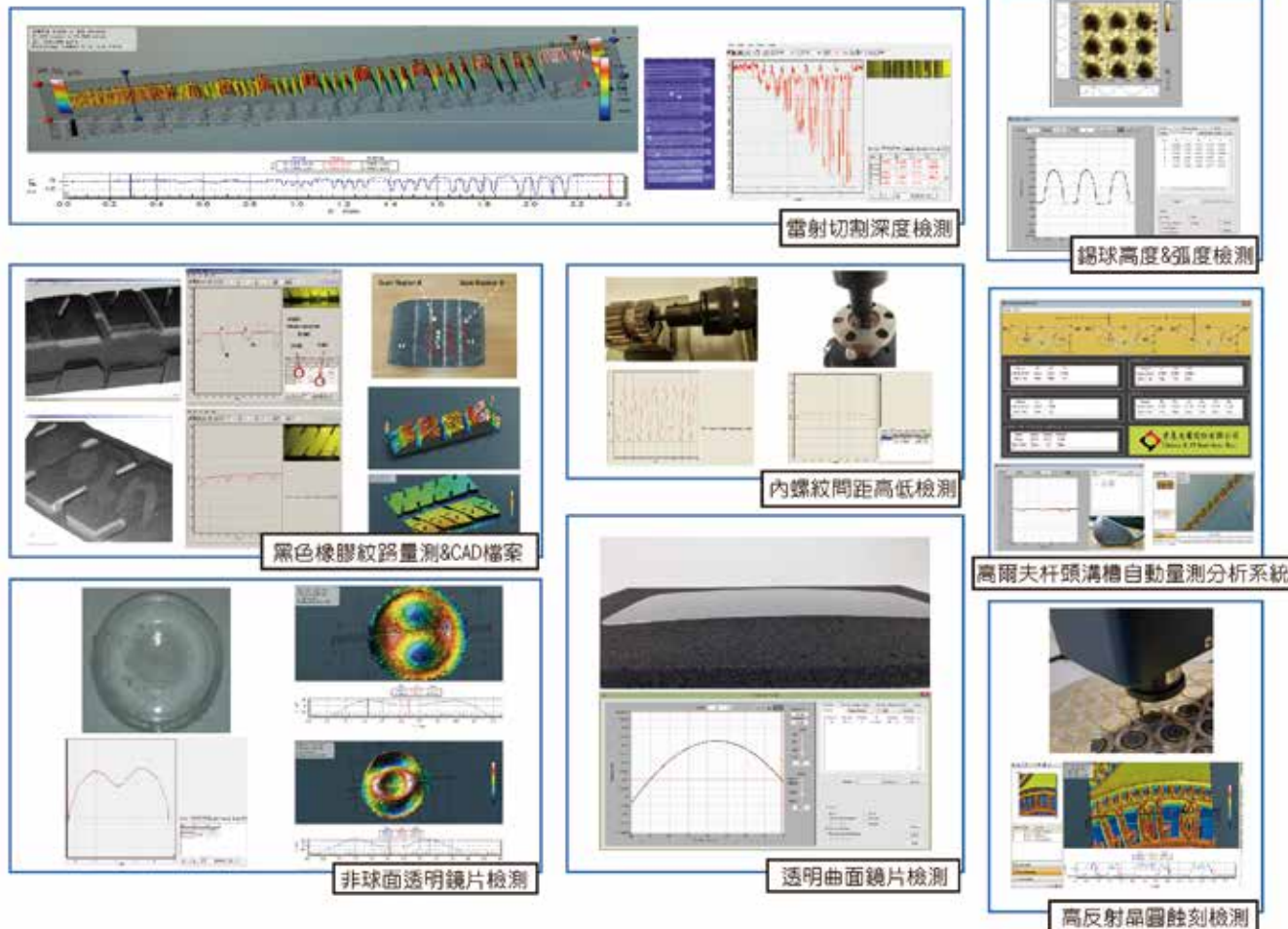
硬體規格

XY Stage

檯面尺寸	390 x 390mm / 510 x 510mm / 900 x 900mm
行程	150mm / 300mm / 900mm
解析度	up to 0.1um
重複精度	± 1 count, depends on encoder resolution

Z Stage

行程	100 mm
解析度	0.01mm
底座	花崗岩 或 組合型鋁座
電源需求	110V/220V

偵測器規格

Scanner Type	Lens Size	Precision	Working range(mm)	Repeatability(um)	Laser spot size(um)	Cover angle(deg)
R type for Reflective	25mm	0.5um	1	0.06	< 5	5
	50mm	2um	5	0.1	16	3
C type for Diffusive	25mm	3um	1.8	0.06	27	150
	50mm	6um	8	0.1	37	170
	75mm	10um	18	0.3	47	170

* Higher working ranges are available.

訂購資訊：

Model No：09IAE- ☐☐ ☐☐ ☐☐ - ☐ - 3D - CPXX- ☐☐

X 軸行程	Y 軸行程	Z 軸行程	平台底座	偵測器型式	物鏡焦距
15 = 150mm 30 = 300mm 50 = 500mm 90 = 900mm	15 = 150mm 30 = 300mm 50 = 500mm 90 = 900mm	10 = 100mm 20 = 200mm	G = 花崗岩 A = 組合型鋁座		
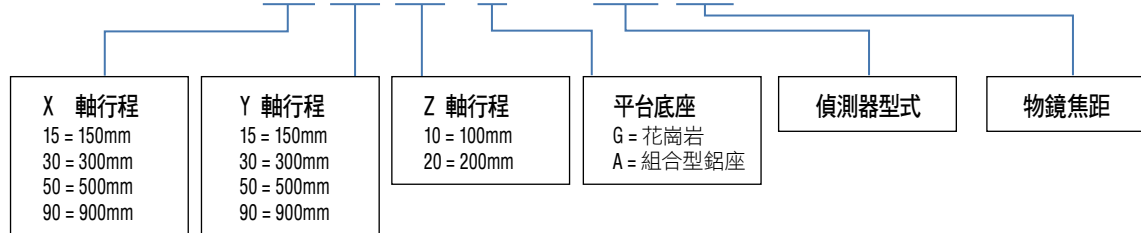
* 其他行程或規格可依客戶需求訂製

3D ProfileMaster - 3D None Contact Profile Measurement / Inspection System
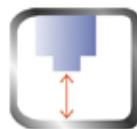
09IAE-909020-G-3D　　　　09IAE-303010-G-3D　　　　09IAE-151510-A-3D

∗ High standard quality control usage
∗ Up to 0.2um precision
∗ Full inspection process & auto analyzed functions
∗ Able to measure all kinds of materials
  • transparent and dark samples
  • high reflective and diffusive
  • measuring range up to 180mm (Z axis)

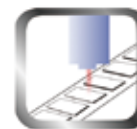**It's here to make things better**

Collinearity　　Time saving　　3D Imaging　　In line inspection

Able to measure objects ranging from sub-microns to half a meter, using interchangeable lenses

Capable of measuring angles very close to normal incidence,as high as 85°.This unique capability permits the reproduction of complex shapes with high fidelity to the original model without distorting the profile.

Measure different types of surfaces, such as reflective, translucent, and diffusive, with no need for coating measurement enhancing materials.

The sensor's collinear operation allows measurement of deep and narrow slots, grooves and blind holes.
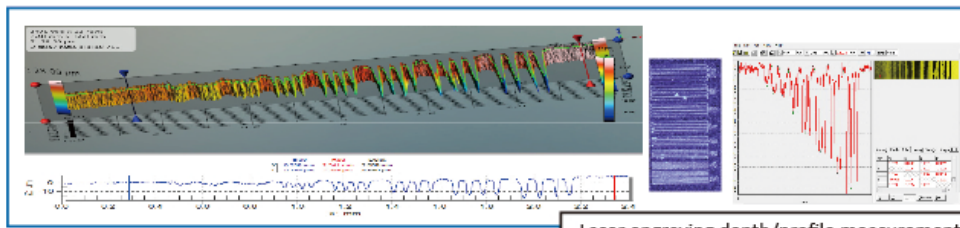
Analyzing Functions

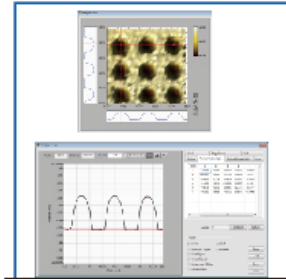∗ Parameter,angles,depth(height),roughness (Ra,Rq),radius, distance 3D CAD comparison and auto analysis

Scanning Functions

∗ X,Y Single/Multi line (snake move)
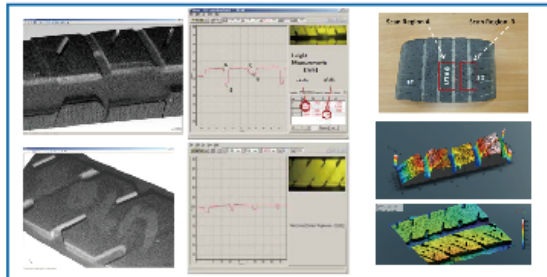∗ Full scan 3D imaging
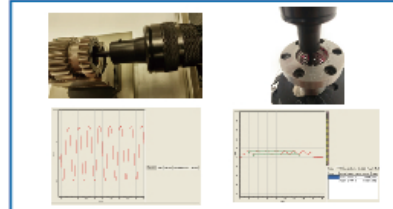
3D Measurement Applications

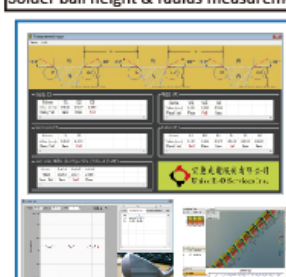Laser engraving depth/profile measurement

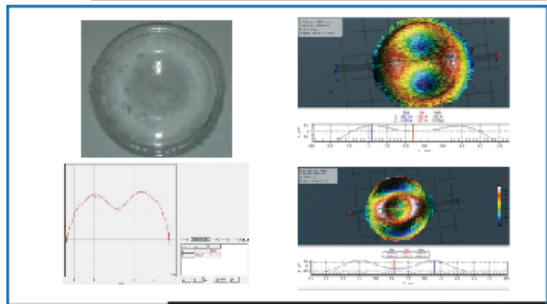Solder ball height & radius measurement

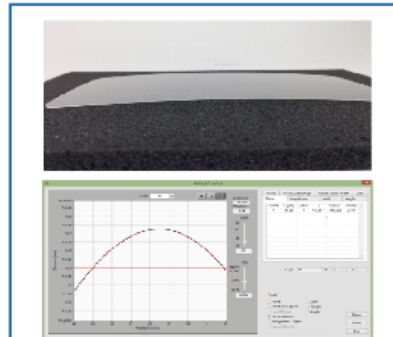Black rubber texture measurement & CAD file comparison
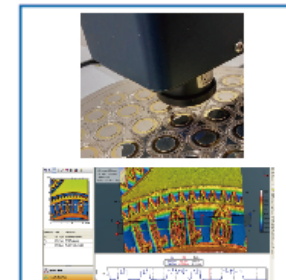

Internal thread pitch/height measurement

Golf club head grooves automatic measurement & analysis system

Transparent aspherical lens detection

Curve lens measurement

Highly reflective silicon wafer surface measurement

Hardware Specification

XY Stage

Stage Size	390 x 390mm / 510 x 510mm / 900 x 900mm
Travel Range	150mm / 300mm / 900mm
Resolution	up to 0.1um
Repeatability	± 1 count, depends on encoder resolution

Z Stage

Travel Range	100 mm
Resolution	± 0.01mm
Base	Granite or Aluminum
Power	110V/220V

Sensor Specification

Scanner Type	Lens Size	Precision	Working range(mm)	Repeatability(um)	Laser spot size(um)	Cover angle(deg)
R type for Reflective	25mm	0.5um	1	0.06	< 5	5
	50mm	2um	5	0.1	16	3
C type for Diffusive	25mm	3um	1.8	0.06	27	150
	50mm	6um	8	0.1	37	170
	75mm	10um	18	0.3	47	170

* Higher working ranges are available.

Ordering Information:

Model No : 09IAE- ☐☐ ☐☐ ☐☐ – ☐ – 3D – CPXX– ☐☐

X Axis Travel Range
15 = 150mm
30 = 300mm
50 = 500mm
90 = 900mm

Y Axis Travel Range
15 = 150mm
30 = 300mm
50 = 500mm
90 = 900mm

Z Axis Travel Range
10 = 100mm
20 = 200mm

Base
G = Granite
A = Aluminum

Sensor Type

Focusing Lens
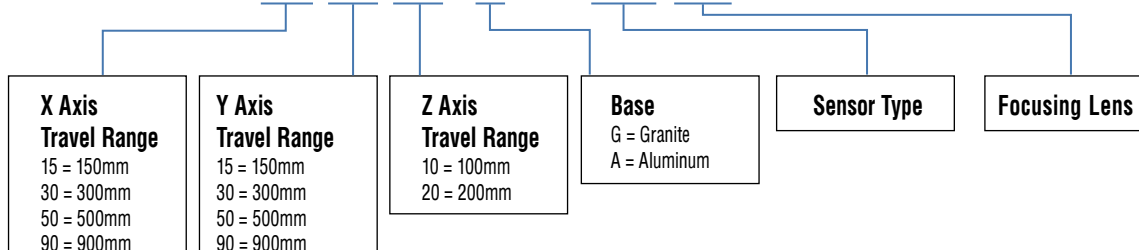
*All of the mechanical parts (Stage size, travel range and mechanical precision) an analyzing software and holding mounts can be customized base on requirement.

3D Measurement – Laser System

How does the sensor work?

The sensor emits an eye-safe laser beam which is projected onto the measured object. All of the reflected rays that are collected by the objective lens enter the conoscopic module. The resulting interference pattern is analyzed to determine the distance to the object.

Advantages

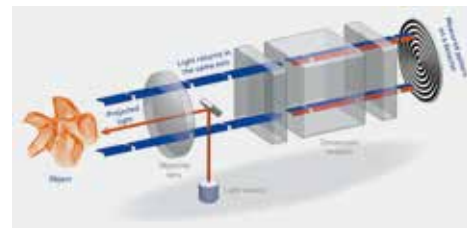Optimet's sensors are based on the unique and patented conoscopic holography technology, which is advantageous over standard distance measurement methods used for various industrial applications. The sensors are reliable, accurate and contain no moving parts. Our technology has major benefits when integrated in measurement systems compared to the standard triangulation method. Two major advantages are:

✳ **Collinearity:** our sensors' outgoing laser beam share the same optical axis as the reflected signal. This collinearity allows the sensor to measure inside holes, through folding optics, and steeplyinclined surfaces of up to ±85°. The ability to incorporate relay optics enables the sensor to be used simultaneously with the same focusing lens of laser welding or cutting applications and with machine vision applications.

✳ **Low electronic noise dependency:** in Optimet's sensors the entire detector is used to evaluate a single spatial frequency, making the measurement highly noise resilient. Moreover, if some of the light is blocked, other areas can provide sufficient measurement signal.

Here are some of the unique properties of our sensors:

Universality and Cost-Efficiency
Optimet's sensors are able to measure objects ranging from sub-microns to half a meter, using interchangeable lenses.

Versatility & Robustness
Optimet 's can measure different types of surfaces, such as reflective, translucent, and diffusive, with no need for coating measurement- enhancing materials.

Complex Feature Measurement
The sensor's collinear operation allows measurement of deep and narrow slots, grooves and blind holes.

Grazing Incidence Measurement
Optimet's sensors are capable of measuring angles very close to normal incidence, as high as 85°. This unique capability permits the reproduction of comples shapes with high fidelity to the original model without distorting the profile.

Applications

✳ Golf Club Grooves   ✳ Glass Screen Scratch Inspection   ✳ Tire Mold Inspection   ✳ CAD Compare
✳ Hole Measurement – Depth, Diameter and Angles   ✳ Tire Inspection   ✳ Autofocus

Example

Golf Culb Grooves
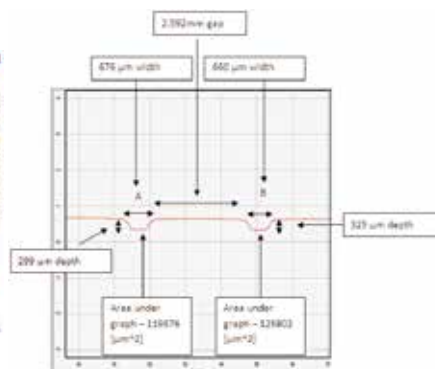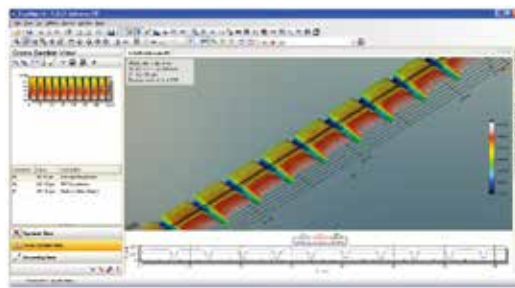
Glass Screen Scratch Inspection

Tire Mold Inspection

Hole Measurement – Depth, Diameter and Angles

Tire Inspection

Scan without auto-exposure

Image of tire with white paint

Scan with auto-exposure

ConoPoint-20

Laser Distance Sensor

The ConoPoint-20 is the latest version in Optimet's family of point sensors. It's a non-contact optical sensor for distance and 3D measurements based on the unique conoscopic holography technology. The ConoPoint-20 measures the distance to a single point at a rate of up to 20,000 points/second with up to sub-micron precision.

Features

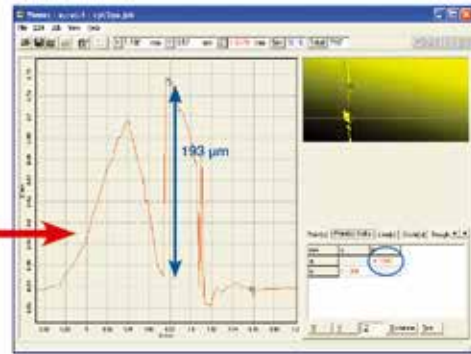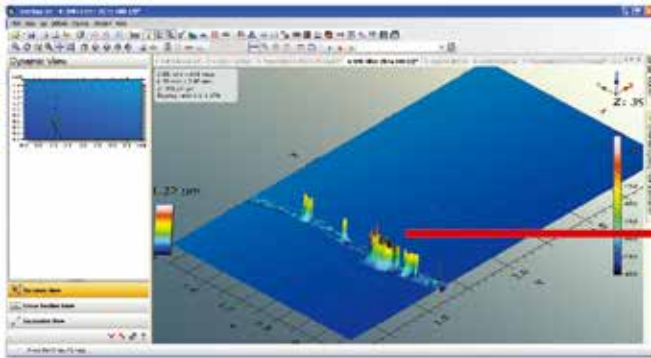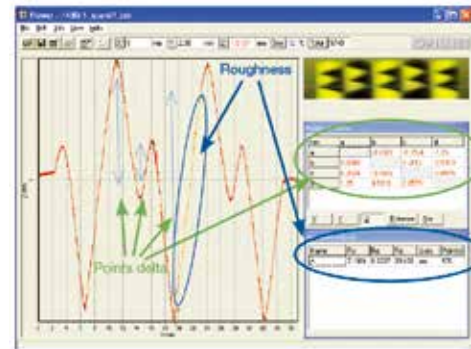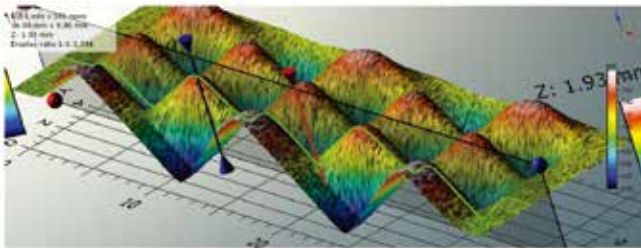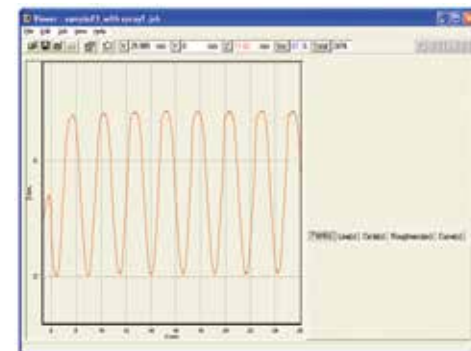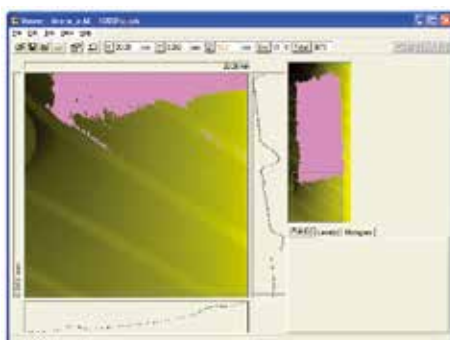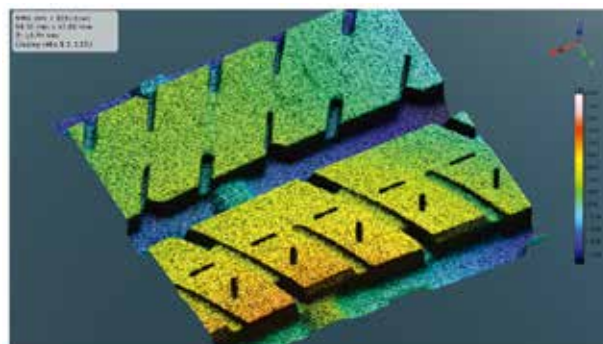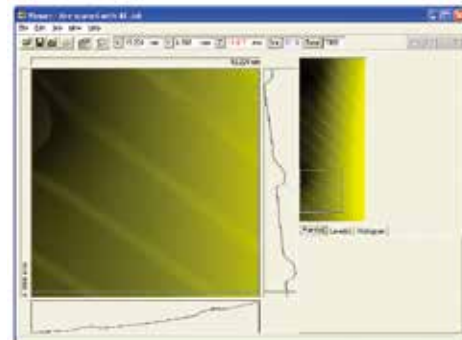* The ConoPoint-20 offers a variety of objective lenses allowing various accuracies, resolutions, standoffs and measurement ranges in the same sensor
* All data processing is performed in the sensor head
* The ConoPoint-20 supports external and internal trigger operation modes
* Communication to PC is accomplished via standard Ethernet physical interface UDP protocol
* Software integration is possible by using a single DLL file without any additional drivers or setups
* Multiple sensors operation in parallel is possible using standard Ethernet switch/HUB
* Measurement rate up to 20,000 Hz
* Sub-micron precision with short focal length objectives
* Analog output (optional)
* Auto-exposure mode enabling measurement of high and low reflective surfaces in real time without changing laser power
* Measurement of complex geometries, steep grooves, and angles up to ±85°
* Integration capability with relay optics
* The sensor can act as a Master synchronizer or as a Slave synchronized by a system
* OPS (Optimet Position Synchronizer) capability which records encoders output and synchronizes the accurate position of up to three system axes together with the sensor's measurements

Technical Specification*

Standard Lenses

Objective lens type		16	25	25G	40	50	75	100	150	200	250
P/N		3Z83016	3Z83025	3Z81030	3Z83040	3Z81050	3Z81075	3Z81100	3Z82006	3Z82007	3Z82008
Measurement range	mm	0.6	1.8	1.8	4	8	18	35	70	125	180
Standoff	mm	9.5	14	18	43.5	44	70	95	145	200	250
Linearity	±%	0.33	0.17	0.17	0.1	0.08	0.06	0.04	0.05	0.06	0.06
Repeatability	µm	0.02	0.06	0.06	0.04	0.1	0.3	0.5	2.5	3	6
X laser spot size	µm	20	27	27	34	37	44	63	85	105	126
Angular coverage	°	150	150	150	150	170	170	170	170	170	170

Sensor General Specifications

Measurement frequency	Hz	Up to 20,000
Dimensions (without lens)	mm	140x79x57
Weight	gr	700

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Electrical Specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Interface

Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Light Source

Type	Red Laser
Laser safety class	Class 3R, IEC60825-1:2007 complies with 21CFR and 1040.11 class IIIa - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

*Preliminary spec
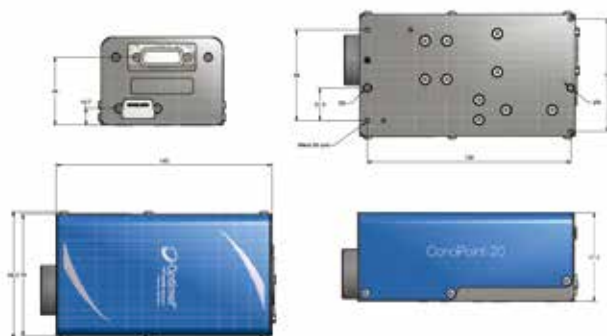
Sensor diagram

ConoPoint-10

Laser Distance Sensor

The ConoPoint-10 is a sensor for high precision 2D profiles and 3D measurements, working at up to 10,000 Hz. The ConoPoint-10 includes an auto-exposure feature enabling real time adjustment to various surface colors and reflection levels (black, white and absorbent).

Features

* Measurement of complex geometries with angle coverage up to ±85˚
* Collinear technology for measuring blind holes
* Automatically compensates for material variations using auto-exposure
* Interchangeable objective lenses from 16 to 250 mm
* Measures at 10,000 points/second, no averaging needed

Technical Specification

Standard Lenses

Objective lens type		16	25	25G	40	50	75	100	150	200	250
P/N		3Z83016	3Z83025	3Z81030	3Z83040	3Z81050	3Z81075	3Z81100	3Z82006	3Z82007	3Z82008
Measurement range	mm	0.6	1.8	1.8	4	8	18	35	70	125	180
Standoff	mm	9.5	14	18	43.5	44	70	95	145	200	250
Linearity	±%	0.33	0.17	0.17	0.1	0.08	0.06	0.04	0.05	0.06	0.06
Repeatability	µm	0.02	0.06	0.06	0.04	0.1	0.3	0.5	2.5	3	6
X laser spot size	µm	20	27	27	34	37	47	63	85	105	126
Angular coverage	°	150	150	150	150	170	170	170	170	170	170

Special Lenses

Objective lens type		High Power Sensitivity				Extended		
		100S	150S	200S	250S	50E	75E	125E
P/N		3Z84100	3Z84150	3Z84200	3Z84250	3Z83050E	3Z83075E	3Z83125E
Measurement range	mm	35	70	125	180	8	18	45
Standoff	mm	92	142	197	247	85	145	240
Linearity	±%	0.04	0.05	0.06	0.06	0.08	0.06	0.064
Repeatability	µm	0.5	2.5	3	6	0.1	0.1	0.05
X laser spot size	µm	63	85	105	126	63	85	126
Angular coverage	°	170	170	170	170	170	170	170

Sensor General Specifications

Measurement frequency	Hz	Up to 10,000
Dimensions (without lens)	mm	140x79x57
Weight	gr	700

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Electrical specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Interface

Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Light Source

Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

ConoPoint-10HD

Laser Distance Sensor

The ConoPoint-10HD is one of Optimet's family of point sensors for high precision 2D profiles and 3D measurements, working at up to 10,000 Hz. The ConoPoint-10HD includes an auto-exposure feature enabling real time adjustment to various surface colors and reflection levels (black, white, shiny and absorbent). The ConoPoint-10HD is more suitable than the ConoPoint-10 in the following cases:

∗ When higher precision is needed. Note that while standoff is the same as ConoPoint-10, the higher precision comes at the expense of working range
∗ When measuring shiny metal surfaces
∗ When higher lateral resolution is needed

Features

∗ sub-micron precision measurement
∗ Measurement of complex geometries with angle coverage up to ±75˚
∗ Collinear technology for measuring blind holes
∗ Automatically compensates for material variations using auto-exposure
∗ Interchangeable objective lenses from 16 to 50 mm
∗ Measures at 10,000 points/second, no averaging needed

Technical Specification

High Definition Lenses

Objective lens type		16H	25H	25GH	40H	50H
P/N		3Z84016	3Z81025	3Z81030	3Z83040	3Z81050T
Measurement range	mm	0.2	0.6	0.6	1.4	2
Standoff	mm	9.6	14.25	18.25	45	42
Linearity	±%	0.25	0.17	0.17	0.14	0.13
Repeatability	µm	0.02	0.06	0.06	0.04	0.1
X laser spot size	µm	7	12	12	10	19
Angular coverage	°	150	150	150	150	150

Sensor General Specifications

Measurement frequency	Hz	Up to 10,000
Dimensions (without lens)	mm	140x79x57
Weight	gr	700

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Electrical Specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Interface

Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Light Source

Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

Sensor diagram

ConoPoint-3

Laser Distance Sensor

The ConoPoint-3 is a robust optical sensor for high precision measurements of distance, 2D profiles and 3D scanning. Based on conoscopic holography technology, the ConoPoint-3 is a collinear sensor with a wide range of object coverage using interchangeable objective lenses between 16-250 mm. Thousands of ConoPoints are used in production in a large verity of industrial applications.

Features

* Measurement of complex geometries, with angle coverage up to ±85°
* Collinear technology for measuring blind holes
* In process inspection
* Interchangeable objective lenses from 16 to 250 mm

Technical Specification

Standard Lenses

Objective lens type		16	25	25G	40	50	75	100	150	200	250
P/N		3Z83016	3Z83025	3Z81030	3Z83040	3Z81050	3Z81075	3Z81100	3Z82006	3Z82007	3Z82008
Measurement range	mm	0.6	1.8	1.8	4	8	18	35	70	125	180
Standoff	mm	9.5	14	18	43.5	44	70	95	145	200	250
Linearity	±%	0.33	0.17	0.17	0.1	0.08	0.06	0.04	0.05	0.06	0.06
Repeatability	μm	0.02	0.06	0.06	0.04	0.1	0.3	0.5	2.5	3	6
X laser spot size	μm	20	27	27	34	37	44	63	85	105	126
Angular coverage	°	150	150	150	150	170	170	170	170	170	170

Special Lenses

		Extended		
Objective lens type		50E	75E	125E
P/N		3Z83050E	3Z83075E	3Z83125E
Measurement range	mm	8	18	45
Standoff	mm	85	145	240
Linearity	±%	0.08	0.06	0.064
Repeatability	μm	0.1	0.1	0.05
X laser spot size	μm	63	85	126
Angular coverage	°	170	170	170

Sensor General Specifications

Measurement frequency	Hz	Up to 3,000
Dimensions (without lens)	mm	140x79x57
Weight	gr	700

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Electrical Specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Interface

Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Light Source

Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

ConoPoint-3HD

Laser Distance Sensor

The ConoPoint-3HD is made for high precision 2D profiles and 3D measurements, working at up to 3KHz. The ConoPoint-3HD is more suitable than the ConoPoint-3 in the following cases:

* When higher precision is needed. Note that while standoff is the same as ConoPoint-3, the higher precision comes at the expense of measurement range
* When measuring shiny metal surfaces
* When higher lateral resolution is needed

Features

* Sub-micron precision measurement
* Measurement of complex geometries, with angle coverage up to ±75°
* Collinear technology for measuring blind holes
* Interchangeable objective lenses from 16 to 50mm
* Measures at 3,000 points/second, no averaging needed

Technical Specification

High Definition Lenses

Objective lens type		16H	25H	25GH	40H	50H
P/N		3Z84016	3Z81025	3Z81030	3Z83040	3Z81050T
Measurement range	mm	0.2	0.6	0.6	1.4	2
Standoff	mm	9.6	14.25	18.25	45	42
Linearity	±%	0.25	0.17	0.17	0.14	0.13
Repeatability	μm	0.02	0.06	0.06	0.04	0.1
X laser spot size	μm	7	12	12	10	19
Angular coverage	°	150	150	150	150	150

Sensor General Specifications

Measurement frequency	Hz	Up to 3,000
Dimensions (without lens)	mm	140x79x57
Weight	gr	700

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Electrical Specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Interface

Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Light source

Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

Sensor diagram

ConoPoint-3R

Laser Distance Sensor

The ConoPoint-3R is one of Optimet's family of point sensors for non-contact high precision measurements of distance, 2D profile and 3D surface scanning. The ConoPoint-3R is used for scanning transparent materials such as glass or liquids, and specular materials like mirrors and wafers. The ConoPoint-3R can also measure glass thickness and transparent coating layers by simultaneous reading of both top and bottom surface reflections. The ConoPoint-3R reaches sub-micron depth resolution using interchangeable objective lenses with lateral resolution of below 1µm.

Features

* High precision and repeatability
* Small spot size less than 5µm
* Collinear in-process inspection point sensor
* Flexible measurement ranges and standoffs due to interchangeable objective lenses
* True measurement rate of up to 3,000 point/second, with no averaging needed
* Optional synchronization with up to 3 axis system
* Robust product for industrial environment and production floor
* Detailed API manual and DLL software library with hardware emulator

Technical Specification

Standard Lenses

Objective lens type		25N	50N	75N
P/N		3Z79030	3Z79050	3Z79075
Measurement range	mm	1	5	9
Standoff	mm	16.4	40	65
Physical thickness range	mm	0.3 - 1	1.5 - 5	2.7 - 9
Linearity	±%	0.05	0.05	0.05
Repeatability	µm	0.06	0.1	0.3
X laser spot size	µm	<5	16	25
Angular coverage	°	5	3	1.5

Standard Lenses

Measurement frequency	Hz	Up to 3,000
Dimensions (without lens)	mm	140x79x57
Weight	gr	700

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Electrical Specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Interface

| Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Light Source

Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

Sensor diagram

Mini ConoPoint-9R

Laser Distance Sensor

The Mini ConoPoint-9R is one of Optimet's new generation of point sensors for reflective and specular surfaces. Endowed with an especially small footprint and low weight, it's the optimal sensor for True profile measurement and 3D scanning of specular and transparent materials with up to 9,000 Hz. It's perfect for in-process QC inspection and glass scratch analysis. The Mini ConoPoint-9R can measure glass thickness and transparent coating layers by simultaneous reading of both top and bottom surface reflections. The control unit is separated from the sensor which enables placing the small sensor at the most convenient location and on light weight CMM machinery.

Features

* Low weight and small footprint
* High precision and repeatability below 1µm
* True measurement rate of up to 9,000 point/second, with no averaging needed
* Built-in quality parameters allow efficient filtering
* Small spot size less than 3µm
* Objective 25mm lens
* Easy setup, user friendly software controls sensors parameters and range indicators

Technical Specification

Objective Lens type		25
P/N		3Z79025
Measurement range	mm	1
Standoff	mm	16
Linearity	±%	0.025
Repeatability	µm	0.1
X laser spot size	µm	3
Angular coverage	°	6

Light Source

Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Sensor General Specifications

Measurement frequency	Hz	9,000
Dimensions (without lens)	mm	91 x 65 x 33
Weight	gr	390
Cable length (sensor to controller)	m	Pigtailed 0.5m, optional 5/20m
Indicators		Green LED – On when sensor's power is on
Conformity		Vibration (IEC 600068-2-6), Shock(IEC 600068-2-7)

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

Control Unit General Specifications

Dimensions (L x W x H)	mm	105x167x54
Weight	gr	630
Control signal		ROG – output, External trigger – input, Analog output (optional) ±4.5 V, OPS (Position Synchronization),+5V output (100mA)
Operating voltage	V	24 ±10% (0.5A)
Indicators		Connect: Green LED – On when sensor head connected;
		Power : Green LED – On when power is on
Communication		Ethernet 10/100/1000 UDP
Software Development Kit		C, C++, C#, Labview

TEL：(03)462-6569 (桃園-總公司) / (04)2261-0357 (台中) / (06)208-6651 (台南)
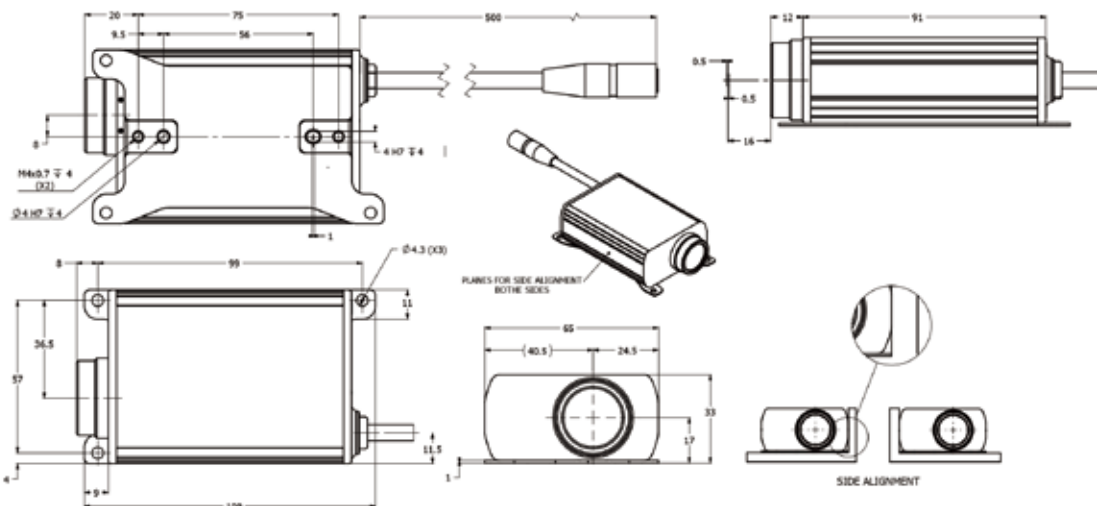
ConoLine-100

Non-Contact Laser Line Distance Sensor

The ConoLine-100 is a non-contact optical line sensor for distance and 3D measurements based on the unique Conoscopic Holography technology. The ConoLine-100 contains the new ConoPoint-20 sensor which has a measuring rate of up to 20,000 points per second, and a rotating mirror generating up to 100 lines per second. The ConoLine-100 offers an adjustable line length of up to 18mm and down to micron precision. Controlling the mirror's position enables an angular coverage of ±120° allowing a clear view of undercuts, steep grooves and side walls.

Features

* Adjustable line length allowing various lateral resolutions and scanning speed with up to 100 lines/second
* Adjustable line angle allowing scans of undercuts, steep grooves and side walls
* Angular coverage of 240°
* Measuring rate of up to 20,000 Hz
* Supports external and internal trigger operation mode
* Communication to PC is accomplished via standard Ethernet physical interface UDP protocol
* Easy software integration with only a single DLL file without additional drivers or setup
* Operating multiple sensors using standard Ethernet switch/HUB
* Analog output (optional)
* Auto-exposure mode enabling measurement of high and low reflective surfaces in real time without changing laser power Adjustable line Scan angle Adjustable line position Line length Clearance Measurement

Technical Specification*

Objective lens type = 85E

Vertical Axis Z

Measurement range	mm	30
Standoff	mm	50
Linearity	±%	0.05
Repeatability	µm	0.4
Angular coverage	°	170

Sensor General Specifications

Measurement frequency	Hz	Up to 20,000
Lines / sec		100
Dimensions (without lens)	mm	260X110X65
Weight	gr	2100

Interface

Communication	Ethernet 10/100/1000 UDP
Software development kit	C, C++, C#, Labview

Electrical Specification

Power supply voltage	12 VDC±10% 65-265 VAC 50/60Hz

Synchronization

Trigger input	VTTL	5
Strobe output	VTTL	5

Line Specifications

Line length @ Near range	mm	13
Line length @ Center range	mm	15.5
Line length @ Far range	mm	18
Line resolution (Near-Far)	mm	0.07 – 0.09
Line width (X direction) @ center range	µm	47
Adjustable line position	°	0, ±10, ±20, ±30
Adjustable line scan angle	°	10, 20, 30, 40, 50
Angular coverage (Y)	°	240

Analog Signal (Optional)

Boundary ranging	±4.5 V ± 0.004 V
Analog linearity	±0.1%

Light Source

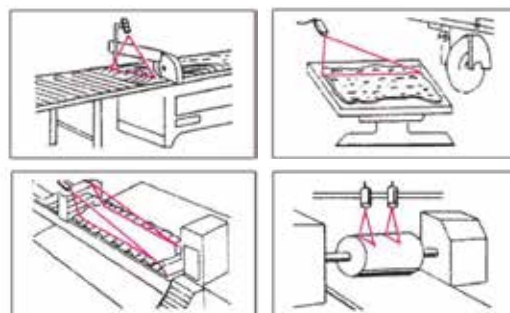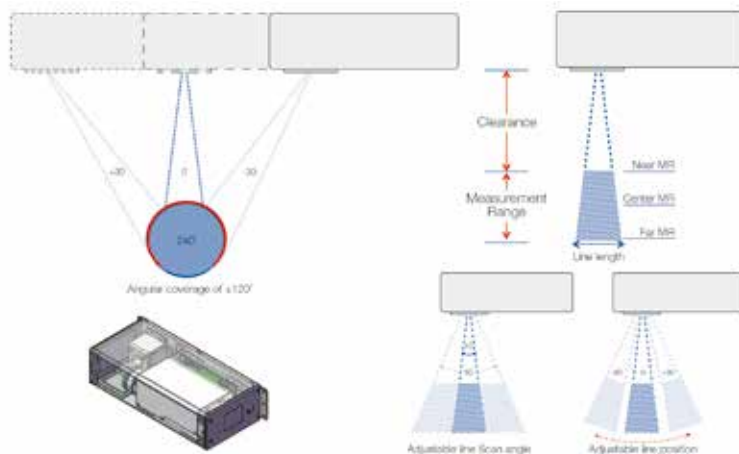| Type	Red Laser
Laser safety class	Class 2, IEC60825-1:2007 complies with 31CFR and 1040.11 class II - FDA

Environmental Resistance

Operational temperature	℃	18 to 45
Temperature stability	F.S./℃	0.03%
Permissible ambient light	lx	Up to 15,000

*Preliminary spec

ConoPoint with Periscope

Laser Distance Sensor for Hole Measurement

The periscope is a unique accessory developed by Optimet which overcomes some basic limitations when measuring diameters, steep angles and inner structures of holes and pipes. The periscope is integrated with a regular 75mm lens and enables measuring perpendicularly to the sensor's standard direction. It has all advantages and accuracies of the ConoPoint with the add-ons of measuring areas impossible to reach otherwise.

Features

* Inspection at 90° related to a standard sensor direction
* Available with 75mm lens, other lenses can be customized upon request
* The periscope can be rotated 180° by user to reach desirable measuring direction
* All of the advantages and features as a regular ConoPoint sensor
* Angular coverage of 150°
* Telescopic joint design prevents tip damage in axial direction

Technical Specification

Accessory type		Periscope for 75mm lens
P/N		3Z80510
Measurement range	mm	9.5
Clearance	mm	0.5
Linearity	±%	0.15
Repeatability	µm	0.3

Lateral Axis X/Y

X laser spot size	µm	47
Angular coverage	°	150

General Specifications

Weight periscope	gr	120

Maximum Depth Range

Maximum penetration	mm	15
Minimum Hole diameter	mm	6
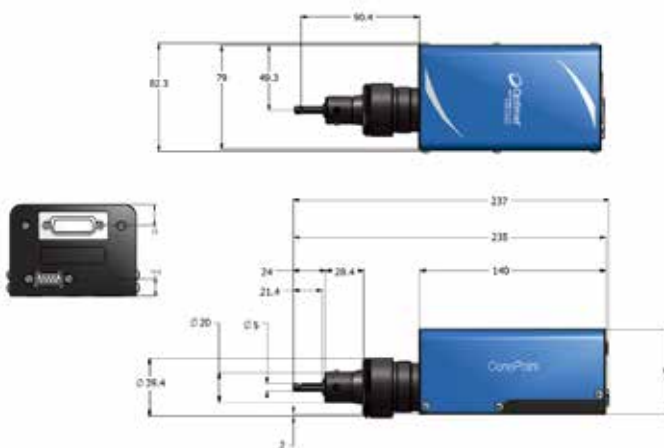
Industries & Quality Control · ZeeScan®

3D Add-On For Optical Microscope
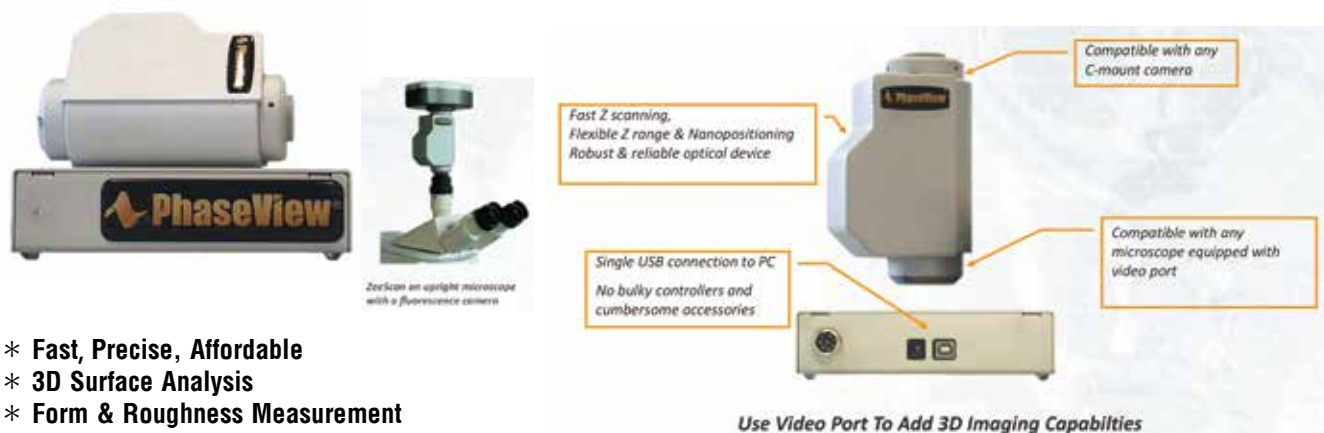
ZeeScan an upright microscope with a fluorescence camera

Fast Z scanning, Flexible Z range & Nanopositioning Robust & reliable optical device

Single USB connection to PC

No bulky controllers and cumbersome accessories

Compatible with any C-mount camera

Compatible with any microscope equipped with video port

Use Video Port To Add 3D Imaging Capabilties

✳ **Fast, Precise, Affordable**
✳ **3D Surface Analysis**
✳ **Form & Roughness Measurement**
✳ **Automatic Depth Composition**
✳ **Z Depth Measurement**

Smart Hardware Architecture

No internal or external motorization, no additional accessories for the microscope are required, ZeeScan is connected to your PC using a single USB2 connection. Accurate calibration is achieved using an automated procedure and stored in an internal memory to prevent any losses.

Camera compatibility(not included)	Format 2/3" or Less, C-mount
Microscope Interface	Video Port – Recommended 1X C-mount adapter
PC Interface	USB 2.0
Power Supply	110 / 220 AC
Physical Dimensions	ZeeScan Head: 110(H) x 80(W) x 56(D) mm Control Unit: 40(H) x 158(W) x 150(D) mm
Weight	ZeeScan Head: 470g Control Unit: 150g

An optional API / SDK includes ZeeScan acquisition controls, routines for Z-stack, 3D reconstruction, EDF,DIC, Phase, and 3D surface analysis.

Acquisition & Processing
* 2D / 3D Acquisition Wizard
* Region-of-Interest
* Navigator
* Stitching
* Macro Recording

2D/3D Display & Analysis
* BF, DF, Ph, DIC, 3D views
* Text & Graphics overlay
* 2D / 3D measurements
* Image fusion (EDF)
* Roughness ISO standards
* Step Height Measurements

Image Data Export & Report
* Project Archiving
* 3D Data in Excel Format
* 3D Data for 3rd Party Software
* Report Editor
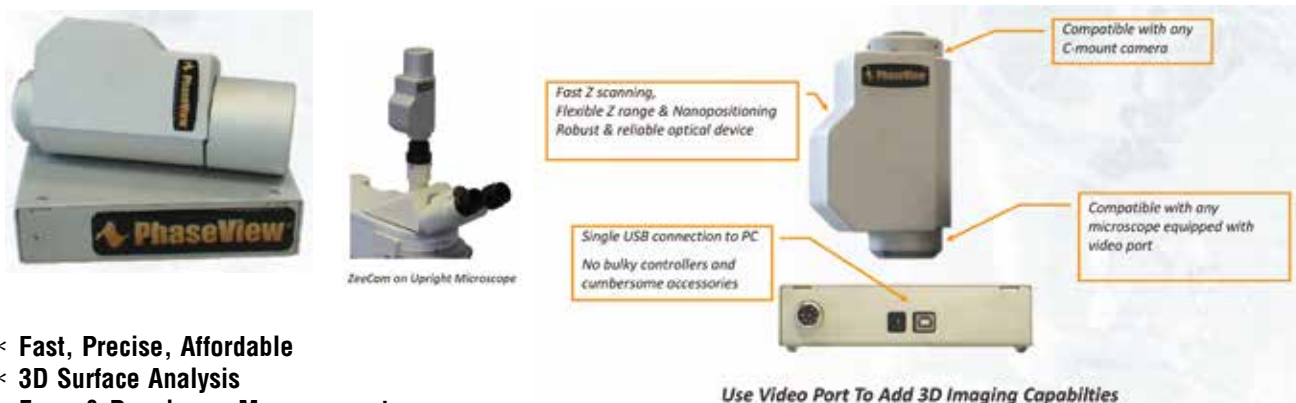* HTML Compatible Presentation

3D Measurement Performance

Z Range = 16mm / (G_Obj * G_adapt)^2
Z Resolution = Objective Depth of Field /4
G_Obg = Objective magnification
G_adapt = c-mount coupler magnification

Objective Mag /NA	Z Range (µm)	Z Resolution (µm)
5X / 0.10	640	0.32
10X / 0.25	140	0.08
20X / 0.45	40	0.02
50X / 0.8	6.4	0.003

Z accuracy: 1%
Z Repeatability: 0.35%
Max slope: 90˚
XY Spatial resolution determined by camera resolution and objective magnification

ZeeCam®

3D Microscope Camera

Compatible with any C-mount camera

Fast Z scanning, Flexible Z range & Nanopositioning Robust & reliable optical device

Single USB connection to PC No bulky controllers and cumbersome accessories

Compatible with any microscope equipped with video port

ZeeCam on Upright Microscope

Use Video Port To Add 3D Imaging Capabilties

✳ **Fast, Precise, Affordable**
✳ **3D Surface Analysis**
✳ **Form & Roughness Measurement**
✳ **Automatic Depth Composition**
✳ **Z Depth Measurement**

Smart Hardware Architecture

No internal or external motorization, no additional accessories for the microscope are required, ZeeCam is connected to your PC using a single USB2 connection. Accurate calibration is achieved using an automated procedure and stored in an internal memory to prevent any losses.

Model	ZeeCam 100	ZeeCam 150	ZeeCam 200
Camera	1/2" CMOS 1280 x 1024 5.2μm square pixels 30fps@full resolution	1/1.8" CCD 1616 x 1216 4.40 square pixels 12fps@full resolution	1/2" CCD 2560 x 1920 2.20 square pixels 6fps@full resolution
Microscope interface	video Port – C-mount, recommended 1x c-mount coupler		
Dimensions & weight	ZeeCam Head: 155(H) x 80(W) x 56(D)mm, 375g		
	Control unit: 40(H) x 158(W) x 150(D)mm,150g		
Power supply	110/220V AC		
PC interface	USB 2.0		

An optional API / SDK includes ZeeCam acquisition controls, routines for Z-stack, 3D reconstruction, EDF, DIC, Phase, and 3D surface analysis.

Acquisition & Processing
* 2D / 3D Acquisition Wizard
* Region-of-Interest
* Navigator
* Stitching
* Macro Recording

2D/3D Display & Analysis
* BF, DF, Ph, DIC, 3D views
* Text & Graphics overlay
* 2D / 3D measurements
* Image fusion (EDF)
* Roughness ISO standards
* Step Height Measurements

Image Data Export & Report
* Project Archiving
* 3D Data in Excel Format
* 3D Data for 3rd Party Software
* Report Editor
* HTML Compatible Presentation

3D Measurement Performance-1X

Z Range = 16mm / (G_Obj * G_adapt $)^2$
Z Resolution = Objective Depth of Field /4
G_Obg = Objective magnification
G_adapt = c-mount coupler magnification

Objective Mag /NA	Z Range (μm)	Z Resolution (μm)
5X / 0.10	640	0.32
10X / 0.25	140	0.08
20X / 0.45	40	0.02
50X / 0.8	6.4	0.003

Z accuracy: 1%
Z Repeatability: 0.35%
Max slope: 90°
XY Spatial resolution determined by camera resolution and objective magnification

ZeeScope®

3D Measurement Microscope

* **High Resolution Digital Microscopy**
* **Accurate Z Depth Measurement**
* **Fast 3D Acquisition and Analysis**
* **Automatic Depth Composition**
* **3D Surface Metrology**

Smart Hardware Architecture

ZeeScope is an all-in one 3D digital microscope controlled by PC with a single USB2 connection and integrating the proprietary PhaseView ZeeScan optical assembly. Accurate calibration is achieved using an automated procedure and stored in an internal memory to prevent any losses.

Model	ZeeScope 100	ZeeScope 150	ZeeScope 200
Camera	CMOS 1280 x 1024 5.2µm square pixels 30fps@full resolution	CCD 1616 x 1216 4.40 square pixels 12fps@full resolution	CCD 2560 x 1920 2.20 square pixels 6fps@full resolution
Light source	Built-in coaxial LED light source		
Objectives	Interchangeable objectives (Finite-Infinite type) adapter provided for threads RMS and M25/0.75		
Dimensions & weight	ZeeScope Head: 225(H) x 40 (W) x 55(D) mm, 425g		
	Control unit: 40(H) x 158(W) x 150(D)mm,150g		
Power supply	110/220V AC		
PC interface	USB 2.0		

3D Measurement Performance - 1X

Z Range = 16mm / (G_Obj * G_adapt)²
Z Resolution = Objective Depth of Field /4
G_Obg = Objective magnification
G_adapt = c-mount coupler magnification

Objective Mag /NA	Z Range (µm)	Z Resolution (µm)
5X / 0.10	2400	18.5
10X / 0.25	600	3
20X / 0.45	150	1
50X / 0.8	24	0.25

Z accuracy: 1%
Z Repeatability: 0.35%
Max slope: 90°
XY Spatial resolution determined by camera resolution and objective magnification

Software – For Material

Powerful Imaging Tool

Z-stacking of high resolution images can be automatically achieved providing image fusion image (Extended depth of Fiel image, Z depth measurement or 3D reconstruction. In addition, GetPhase provides 2D measurements and image documentation tools.

* **Reveals finest structure details without specialized optics**
* **On click Image documentation with multiple views**
* **Automatic image fusion (Extended Depth of Field)**
* **2D measurements & report**
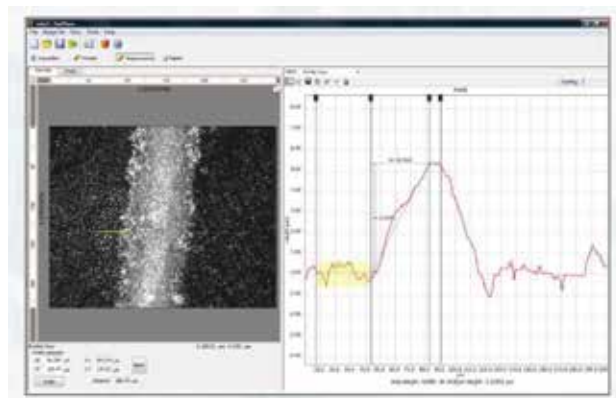
Fast & Accurate 3D Surface Metrology

ZeeScan with GetPhase performs 3D acquisition and analysis in a remarkable fast and easy way. Non contact optical surface profiling is highly repeatable.

* **3D surface analysis in micrometer and nanometer range**
* **Measurement capabilities from smooth to rough surfaces**
* **ISO Roughness and step heights measurements**
* **High throughput thanks to fast acquisition & processing time**
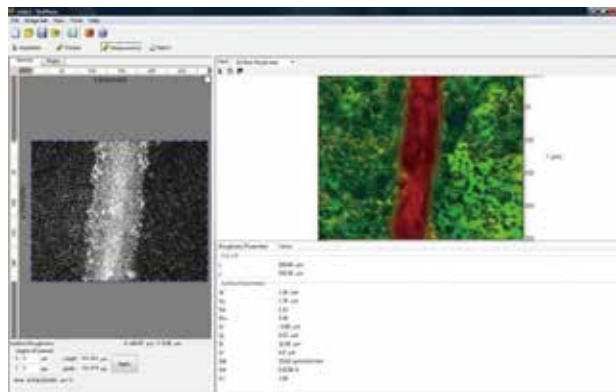
Advanced Digital Imaging for Material Science

ZeeScan with GetPhase sofwate is the ideal Imaging tool for R&D labs, quality control laboratories and shop floor:

* **Metal, Paint & Coatings, Ceramic, Polymers**
* **Semiconductor Materials**
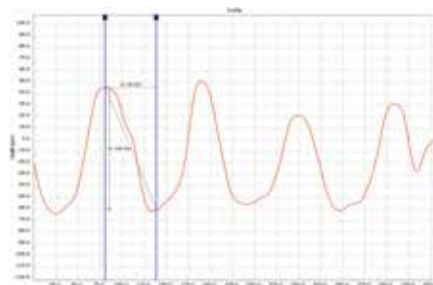* **Gemology, Museum**
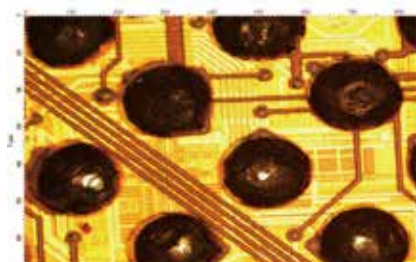* **Forensics**
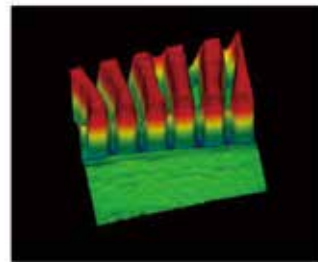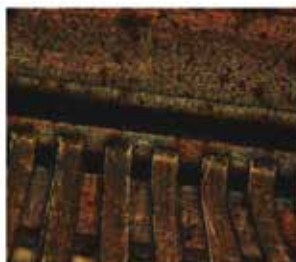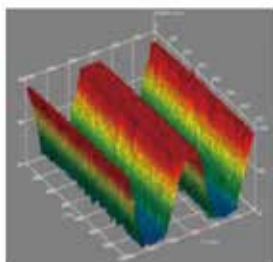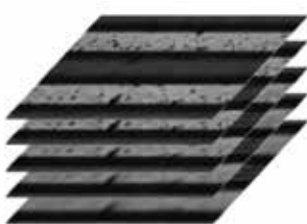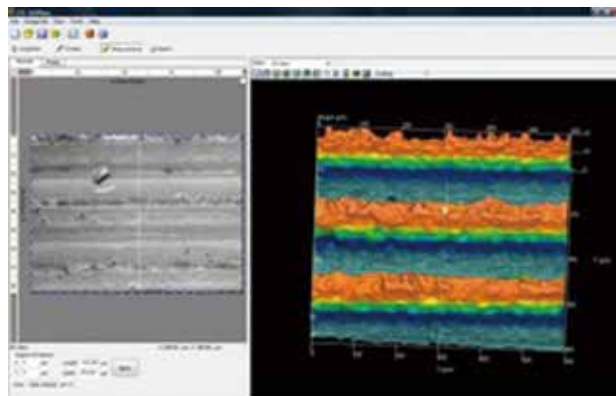
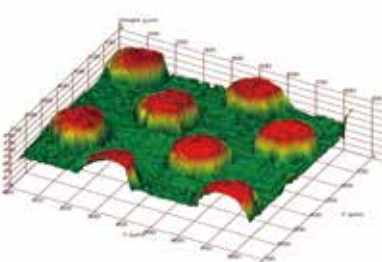## Case1: Laser Drilling Hloe Measurement
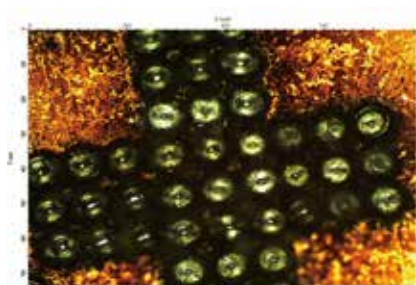
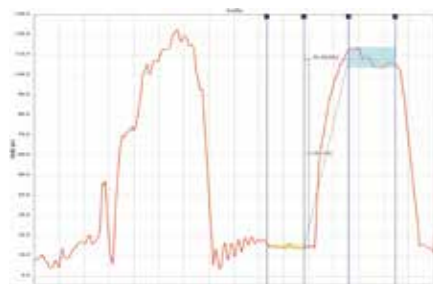**Sample**
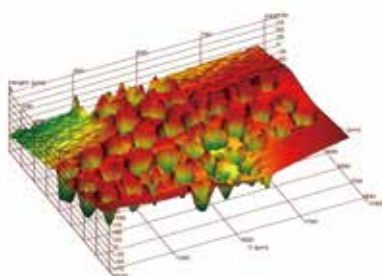
3D Image

Profile Contours Measurement

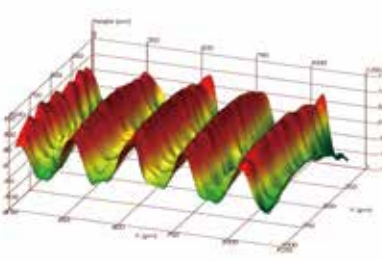## Case2: IC Bump Measurement

Sample

3D Image
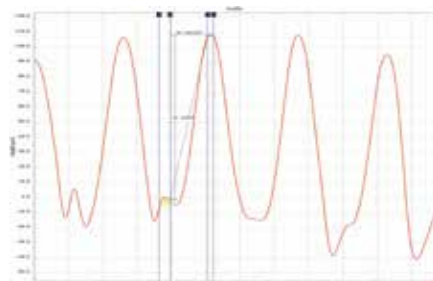

Profile Contours Measurement

Case3: Precision Screws Thread Measurement

Sample
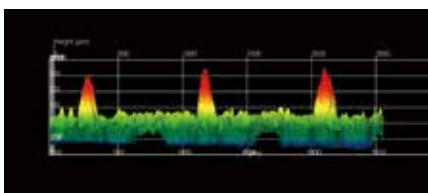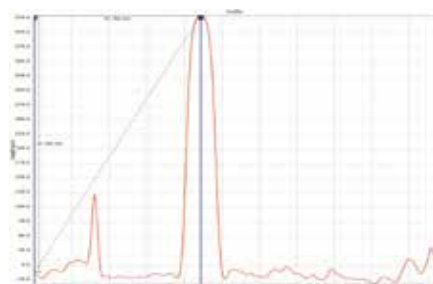

3D Image

Profile Contours Measurement

Case4: Micro Probe Measurement

Sample

3D Image

Profile Contours Measurement

3D Laser Systems

3D Microscope Systems

2D Image Analysis / Measurement Systems
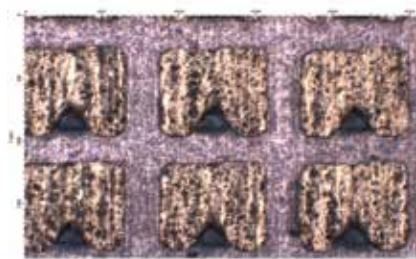
ThunderScan

Ultra High Speed Scanning

* 3D Volume Imaging Using Full Capabilities Of High Speed Cameras
* Record Multiple Optical Sections AT Optimum Speed With Any Objective
* Available As Add-On For Upright Microscope Setup Or Add-On For Horizontal SPIM setup

Applications

* Morphogenesis and embryogenesis: C. elegans, Drosophila or Zebrafish
* Fast imaging of cellular dynamics
* Neuronal activity
* Fluorescence imaging of marine organisms
* Live imaging of 3D cell cultures
* High-speed volumetric imaging of weak fluorescent specimens
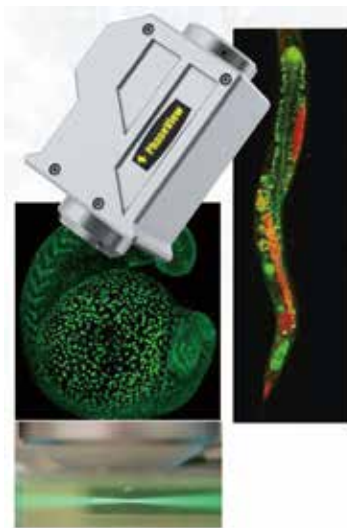
Principle

Instead of using stepper motors or piezo devices for scanning the depth of a sample, PhaseView smart acquisition method relies on a digitally controlled tunable lens with suitable aperture for microscope use. The lens power is driven by software thus enabling to select a particular image plane at any position along the Z axis with appropriate speed.

The ThunderScan optical device integrates precise aberration correction and is diffraction limited to ensure optimal imaging when used with top quality objectives, in addition ThunderScan allows microscopy imaging from deep UV to NIR without transmission loss.

Flexible Imaging Setup

ThunderScan is fully compatible with infinite objectives and scientific cameras with large field of view, high quantum efficiency, low noise readout and fast frame rate, enabling new 3D imaging capabilities for the most demanding applications.

* QtImage user interface touchscreen compatible lets you zoom, tap, drag and scroll right on screen only using your fingers.

* QtImage provides all controls for fast image plane stacking, multiple image display and key processing tools for life science microscopy applications including:

   Z-stacking / Digital Refocusing / Time Lapse / 3D Volume / Deconvolution / Multi Focus Image
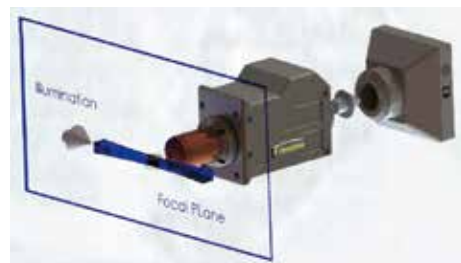
Microscopy Automation

Software Development Kit

The ThunderScan SDK comprise a set of APIs written in C.
The supported Operating Systems are Windows Vista, Windows 7, Windows 8.

ThunderScan specifications

Camera compatibility (camera not included)	Format 1" or more, C-mount (see compatibility list)
Obectives (not included)	Finite - Infinite type adapter provided for threads RMS and M25/0.75
PC Interface	USB 3.0
Physical Dimensions, Weight (for horizontal setup)	ThunderScan Head: 180(L) x 70(W) x 100(H) mm, 670g Control Unit: 50(H) x 160(W) x 150(D) , 220g

Objective Mag / NA	Scanning Range(μm)
5X / 0.10	2400
10X / 0.25	600
20X / 0.45	150
40X / 0.45	24

Scanning Range & Speed performance

Z range and Z step are objective dependant, see typical performance for standard objective magnification.

For any other magnification, the following formula can be applied:

Scanning Range = 60mm / $(G\_Obj)^2$
G_Obg = Objective magnification
Scanning speed: up to 100 images / second

Life Sciences & Scientific Imaging · NeoScan

Fast Volume Scanning

* Compatible With Any Microscope No Adaptation Required
* Fast and Precise Z-Stacking For BrightField and Widefield Imaging
* Free Sample Space and Vibration less 3D Imaging
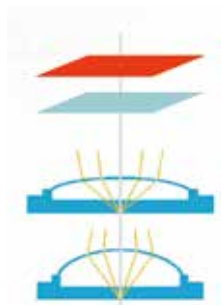
Applications

* Fluorescence and Brightfield Microscopy
* Biology
* Cell Pathology & Toxicology
* Electrophysiology
* Drugs Testing
* Forensic Sciences
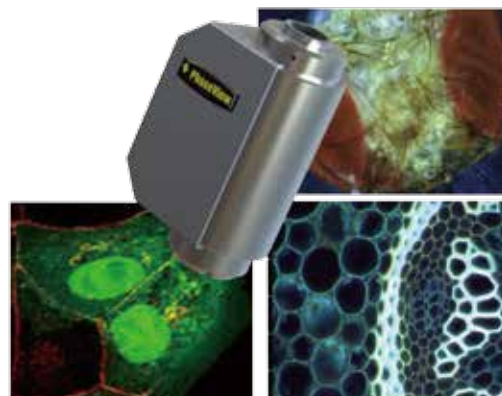
Principle

Instead of using stepper motors or piezo devices for scanning the depth of a sample, PhaseView novel acquisition method relies on a digitally controlled tunable lens with suitable aperture for microscope use. The software controls the lens power thus enabling to select a particular image plane at any position along the Z axis in a similar way to microscope focus wheel.

The NeoScan optical device integrates precise aberration correction and is diffraction limited to ensure optimal imaging when used with top quality objectives, in addition NeoScan allows microscopy imaging from deep UV to NIR without transmission loss.

### Flexible 3D Acquisition With Life Sciences Cameras

NeoScan is compatible with popular life sciences including scientific CMOS cameras with large format sensors enabling a wide range of imaging applications from brightfield to fluorescence imaging. NeoScan does not alter normal camera use, 2D and 3D imaging can be performed making your microscope a powerful imaging platform.

QtImage Digital Imaging Software Included

QtImage user interfacetouchscreen compatible lets you zoom, tap, drag and scroll right on screen only using your fingers.
QtImage provides all features to meet the most demanding needs in life sciences research and biotech industries including:

Z-stacking / Digital Refocusing / Time Lapse/
3D Volume / Deconvolution / Multi Focus Image
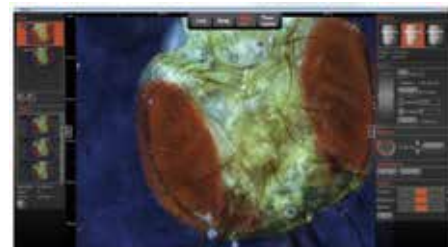
Microscopy Automation

Software Development Kit

The NeoScan SDK comprise a set of APIs written in C. The supported Operating Systems are Windows Vista, Windows 7, Windows 8.

NeoScan Specifications

Camera compatibility (camera not included)	Format 1" or more, C-mount (see compatibility list)
Microscope Interface	Video Port – Recommended 1X C-mount adapter
PC Interface	USB 2.0
Power Supply	110 / 220 AC
Physical Dimensions, Weight	NeoScan Head: 135(H) x 56(W) x 80(D) mm, 470g Control Unit: 40(H) x 160(W) xx150(D) mm, 150g

Objective Mag / NA	Z Range (µm)	Z Step(µm)
5X / 0.10	640	0.32
10X / 0.25	160	0.08
20X / 0.45	40	0.02
40X / 0.45	6.4	0.003

Z Range & Z-Step performance

Z range and Z step are objective dependant, see typical performance for standard objective magnification with 1X coupler.

For any other magnificatio, the following formulas can be applied:
Z Range = 16mm / $(G\_Obj)^2$
Z Step = Z Range / 2000
Z step accuracy = 1%
Z step repeatability = 0.3%
Scanning speed = up to 24 images / second

InSight

Real Time 3D - Acquisition

∗ Optimal Temporal Resolution With One Shot 3D Acquisition
∗ Extended Depth Of Field And Digital Refocusing
∗ Parallax View For Removing Partial Occlusion

Applications

∗ High-speed volumetric imaging of weak fluorescent specimens
∗ In-vivo imaging of C. elegans, Drosophila and zebrafish
∗ 3D functional imaging of neuronal activity
∗ High-speed Ca^{2+} imaging
∗ Fluorescence and brightfield microscopy
∗ Live Imaging of cellular dynamics in three dimensions
∗ Trajectory monitoring of microscopic objects
∗ Instant 3D recording of dynamic events or moving specimens

Principle

Instead of scanning systems inherently limited by the time for scanning a desired volume, InSight relies on a scanless method based on high resolution light-field imaging integrating PhaseView novel acquisition and software engines.

PhaseView Light-field imaging stores spatial and angular information in a 4D description without typical trade-off of common lenslet array method.

The new approach combines a digitally controlled tunable lens and a microlens array. The 4D collected data is then processed by PhaseView ray tracing software technology which allows high sampling of the angular information while keeping the spatial resolution at its optimum.
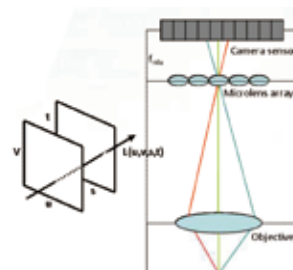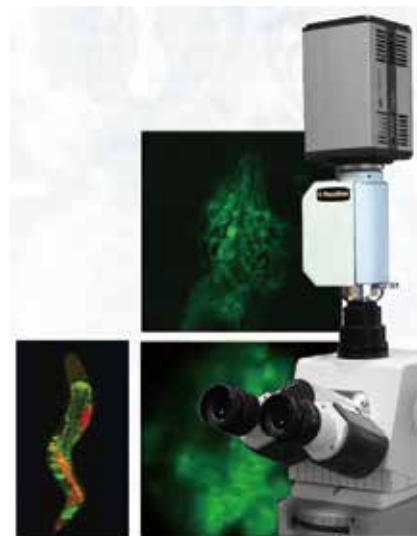
Flexible Imaging With Scientific Cameras

Two InSight models are available, both allows fast scanning and scanless 3D acquisition modes.

InSight LFM is an Add-On to any microscope, compatible with large format cameras.

InSight LFC comes with an embedded high sensitivity sCMOS camera offering unrivaled flexibility for a wide range of imaging applications, providing large field of view, high quantum efficiency, low noise readout and fast frame rate.

QtImage Digital Imaging Software Included

∗ QtImage touch screen user interface lets you zoom, tap, drag and scroll right on screen only using your fingers.
∗ QtImage provides all features to meet the most demanding needs in life sciences research and biotech industries including:
One Shot 3D Acquisition / Z-stacking / Digital Refocusing.Time Lapse / 3D Volume/ Deconvolution.Multi Focus Image / Parallax View

Microscopy Automation

Software Development Kit

The NeoScan SDK comprise a set of APIs written in C. The supported Operating Systems are Windows Vista, Windows 7, Windows 8.

InSight specifications

InSight LFM (add-on for any microscope)

Camera compatibility (camera not included)	Format >1"(see compatibility list)
Microscope Interface	Video Port 1X C-mount adapter
Physical Dimensions	InSight Head: 245(H) x 56(W) x 80(D)mm, 470g Control Unit: 40(H) x 160(W) x 150(D)mm, 150g

InSight LFC (with embedded camera)

Camera	Scientific CMOS
	13.31 mm x 13.31 mm
Sensor specs	2048 x 2048
	6.5μ m x 6.5 μm
Full well capacity	30,000 electrons
Dynamic range	33,000 : 1
Frame rate (full resolution)	Frame rate (Full resolution)

Scanless Mode (Light Field)

Z range and Z resolution are objective dependant
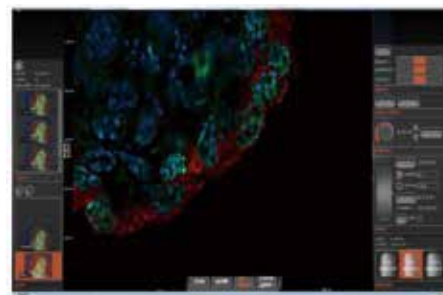Z Range = 100 x Objective Depth of Field
Z Resolution = Z Range / 10

Scanning Mode

Z range and Z step are objective dependant
Z Range = $16mm / (G\_Obj)^2$
Z Step = Z Range / 2000

Software – For Life Sciences Microscopy

Digital Phase Contrast Imaging

Simultaneous high resolution BF,DF,PH,DIC and 3D images can be acquired with conventional bright field objectives using digital phase contrast technique.

* **Phase Contrast without halos or gradients to ease segentation**
* **Cells can remain in their growth medium: Flasks, Petri dishes,multi-well plates**
* **No specialized optics for free space manipulation**
* **Reveals contrast changes even with very low absorption samples, no contrast agents required**

Fast & Accurate 3D Acquisition

Working within or beyond odjective depth of field, ZeeScan with Getphase performs 3D acquisition in remarkable fast and easy way whatever your sample preparation.

* **Z-stack and Extended Depth of Field**
* **3D quantitative data for post processing**
* **Monitoring of 3D morphological changes**
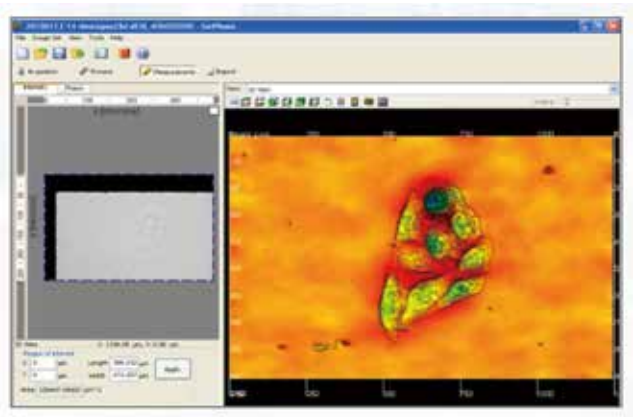
Advanced Digital Imaging for Life Sciences

ZeeScan with GetPhase software is ging device fulfill the needs of life sciences research and pharmaceutical industries for a wide application scope:

* **Cell pathology & toxicology**
* **Drugs testing**
* **Cell dynamics**
* **Forensic sciences**
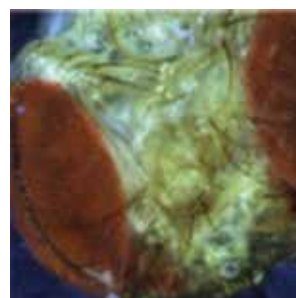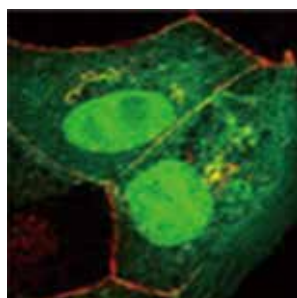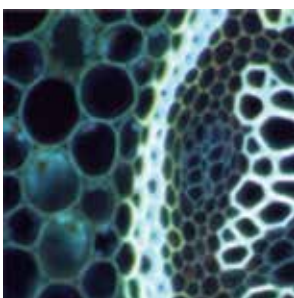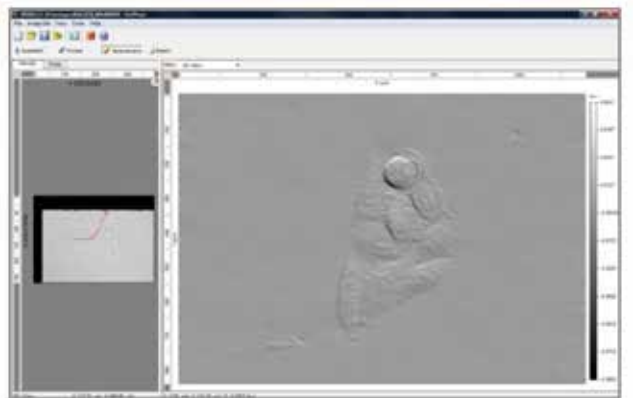
PAXcam Digital Microscope Cameras & Macro Cameras

Which PAXcam Microscope Camera is Right for You?

All of the full-version cameras in the PAXcam™ USB2 digital microscope camera lineup have the same general feature set. This includes the powerful PAX-it! image database software, live preview images at great frame rates, overlays on the preview image, the ability to add modules for making measurements on the live preview, measurements on captured images, image analysis and much more. Your PAXcam offers options as your needs grow and change!

Specifications

Camera Model	Mega-pixels	Sensor	Image Resolution	Image File Size (color, uncompressed)	Max Exposure Time	Frame Rates in Live Preview
PAXcam ARC+	Up to 32MP (selectable)	1/2" CCD	6464 x 4864	Up to 90MB	2500ms	21 fps @ 808×608 14 fps @ 1280×1024 12 fps @ 1616×1216
PAXcam5+	5.0 MP	2/3" CCD	2448 x 2048	15.0 MB	20 sec	8 fps @ 2448×2048
PAXcam5	5.0 MP	1/2" CMOS	2592 x 1944	15.1MB	1150ms	60 fps @ 640×480 7 fps @ 2592×1944
PAXcam3	3.1 MP	1/2" CMOS	2048 x 1536	9.4MB	1300ms	20 fps @ 1200×768 10 fps @ 2048×1536
PAXcam2+	2.0 MP	1/2" CCD	1616 x 1216	5.9MB	20 sec	30 fps @ 808×608 12 fps @ 1616×1216
PAXcam2	1.9 MP	1/2" CMOS	1600 x 1200	5.8MB	800ms	40 fps @ 800×600 10 fps @ 1600×1200
PAXcam1+	1.4MP	1/2" CCD	1392 x 1040	4.3MB	20 sec, low noise	15 fps @ 1392×1040

Order Information

Camera Model	PAX-it	PAX-it with Basic Measurement	PAX-it with Image Analysis	PAX-it with Basic Measurement & Live Measurement	PAX-it with Image Analysis & Live Measurement
PAXcam ARC+	PSP-24	PSP-24M1	PSP-24M3	PSP-24L1	PSP-24L3
PAXcam5+	P5P-24	P5P-24M1	P5P-24M3	P5P-24L1	P5P-24L3
PAXcam5	P5-24	P5-24M1	P5-24M3	P5-24L1	P5-24L3
PAXcam3	P3-24	P3-24M1	P3-24M3	P3-24L1	P3-24L3
PAXcam2+	P2P-24	P2P-24M1	P2P-24M3	P2P-24L1	P2P-24L3
PAXcam2	PL-24	PL-24M1	PL-24M3	PL-24L1	PL-24L3
PAXcam1+	P1P-24	P1P-24M1	P1P-24M3	P1P-24L1	P1P-24L3
PAXcamEDU	P1-24	P1-24M1	P1-24M3	P1-24L1	P1-24L3

The PAXcam copystand in action

PAXcam-equipped stereozoom microscope on the stand

PAX-it Software Modules

Basic Measurement

The PAX-it! Measurement Module allows you to measure, annotate, and analyze your images with just a few clicks. Create written reports that include the raw data obtained, a summary table of statistics, image database information, PLUS the images involved. When it comes to reporting, a picture is invaluable in communicating the results that were found.

There is no need to learn a complicated, hard-to-use additional piece of software. The PAX-it Measurement software is an addon module that is integrated into the PAX-it image archiving system.

Measurements Include:

∗ Point-to-point

∗ inear measurement

∗ Angle measurements

∗ Radius and diameter on ellipse

∗ Area and perimeter for ellipse or rectangle

∗ Length of segmented lines

∗ Area and perimeter of irregular shapes

∗ Manual counter for tagging and summing events

∗ Arc/Ellipse/Circle measurements including definition of center point, chord lengths, sweep angles, and radii

∗ Parallel line calipers for defining multiple layers or zones

∗ Live measurements on the PAXcam™ live preview are possible with the PAX-it Live Measurement Module

∗ Even more measurement and analysis tools are available in the PAX-it Image Analysis Module

Additional Features:

∗ All of PAX-it's measurements are stored as overlays or annotations. They all have the same easy-to-use features such as multiple levels of undo/redo, grouping, save & reload, transfer to reports, etc.

∗ Measurements may be named, to quickly drop a line, angle, arc or other measurement with a pre-defined name.

∗ Measurement attributes may also be stored and reused. For example, a "Gap Width" measurement line may be stored with its title, font, and color characteristics so that it displays differently than a "Stock Width" measurement line.

∗ Use PAX-it's Measurement Tolerance Indicator to automatically tell you if a measurement falls out of specifications.

∗ Built in calibration interface is easy to use.

∗ Images can be measured using microns, millimeters, centimeters, inches, pixels, feet, meters, and mils.

∗ Place scale bars on top of the image.

∗ Measurement lines may be extended or trimmed relative to other measurement objects, for easy alignment.

∗ Measurement overlays are included with the image in printed reports.

∗ Measurement statistics are generated in an easy-to-use format.

∗ Report templates may be created in Microsoft Word or Microsoft Excel.

∗ Auto-numbering of measurement lines. If you start with measuring "Leg1", the next measurement line will automatically be titled "Leg2".

∗ Measurement items may be drawn starting at the nearest, midpoint, center, endpoint, tangent, perpendicular or intersection of other measurement items. PAX-it will automatically adjust the starting point of these annotations per your request.

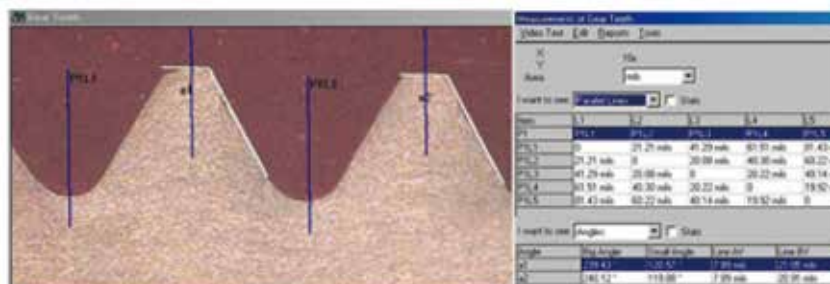∗ Calibration log is maintained, and calibrations may be updated on old images, if desired.
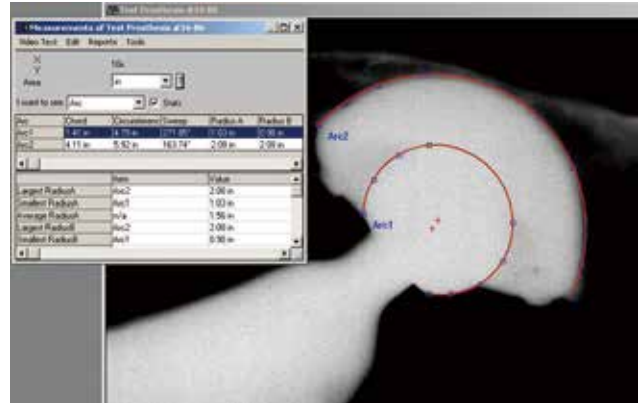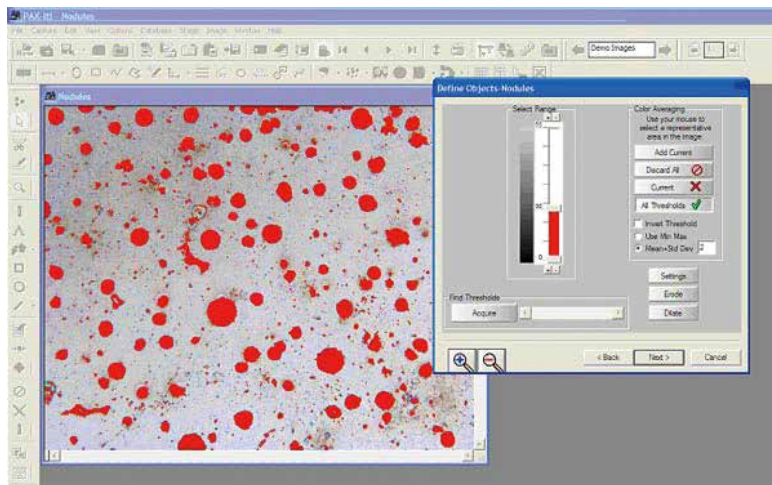
Image Analysis

The optional PAX-it Image Analysis Module provides an integrated, simple way to perform analysis on your images. It includes all the features of the Basic Measurement module, and adds an additional set of powerful image analysis tools.

The PAX-it image analysis software provides the most commonly sought measurement tools, while leaving out the confusion and cumbersome nature of most other image analysis software. All of the image analysis features can be run from an easy-to-use wizard that steps you through the entire process of analyzing your images. Routines that you create through the wizard can be saved and recalled later as a customized script.

PAX-it! Image Analysis tools allow you to quickly and easily detect objects by shape, size, color and other criteria. Filters may be applied to disregard objects of certain shapes, or to split the results into size categories.

Specific routines are built in for Materials Science imaging applications, including coating thickness detection, porosity analysis, nodularity analysis, ferrite-pearlite calculations, grainsizing, flake size distribution, and more. Design your own routine for area fractions or detection of objects via thresholding, for a customized analysis and report that is specific to your lab's needs.

PAX-it makes reporting simple. All image measurements are displayed in an easy to read table format. This image analysis information can be included as an overlay on the image, used in the PAX-it report generation link with Microsoft Word®, or Excel®, so you can chart and graph your results. PAX-it will also allows you to store your measurements in the database so that searches may be conducted on measurement results. The advantage to you is that instead of just reporting numbers, the PAX-it Image analysis software creates a report that includes a picture of the sample or samples that were analyzed, an indication on the image as to where the measurements were taken, the raw numbers obtained, and the summary statistics and graphs. All with just a few clicks of the mouse!

All Image Analysis routines may be defined once, then stored as a macro for oneclick recall for repetitive analyses. Combine these powerful image analysis tools with our Motorized Stage Module and Scripting Module to create automated image analysis routines!

PAX-it!'s intelligent software, combined with easy-to-use wizards and re-usable scripts, increase productivity and help eliminate user error.

Image Analysis Software Features (Partial List)

* Nodularity
* Particle Size Analysis
* Plating Thickness/Coating Thickness
* Ferrite/Pearlite
* Porosity
* Area Fractions
* Morphometry
* Optical Profiles
* Critical Dimension Metrology
* Grain Size
* Flake Size and Classification
* Data Processing & Reporting
* Object Shape and Size Categories
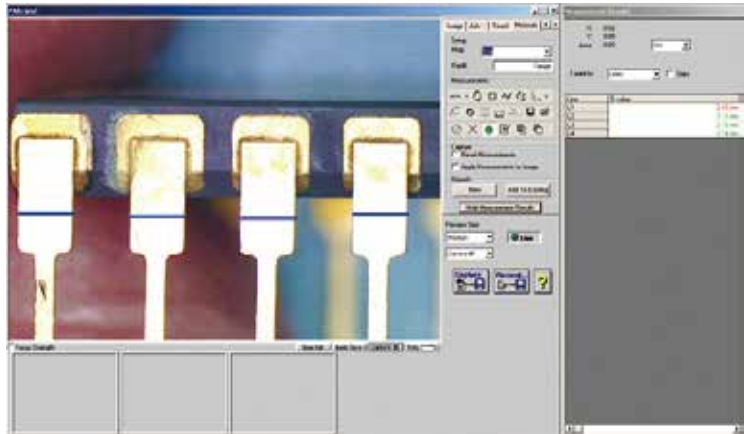
Live Measurement

The Live Measurement Module is an add-on for PAXcam™ digital microscope cameras that allows you the full functionality of the PAX-it! Basic Measurement module, including being able to immediately see if your samples are within tolerance specifications, and then quickly generates reports.

With this module, you no longer need to spend time capturing images, saving them to storage media and inserting information to a database. Repetitive measurements can be made quickly and easily right on the PAXcam live preview, without having to jump from screen to screen.

All of the measurements offered in PAX-it's Basic Measurement module are available in the Live Measurement module.

You can measure:

* Lines & Segmented Lines
* Ellipses & Circles
* Rectangles
* Polygons
* Angles
* Arcs
* Parallel Line Calipers

In addition to these measurement types, you can put a scale bar on your live image. You may also quickly create a measurement item of a specific size that you can move around on the PAXcam live preview screen as a quick visual gauge or go/no go indicator.

As you make a measurement, PAX-it's Measurement Tolerance Indicator can immediately tell you if your measurement is within specifications. Your operator can quickly be alerted if a measured value is outside of a certain range; perfect for video inspection routines.

Once you have gathered your data, you can easily transfer it to Microsoft Excel® with the click of a button. PAXit's Report Generator allows you to quickly record measurement data in a spreadsheet.

This Module will eliminate the need for users to manually record measurement data in a report, thereby reducing errors. The interface has been designed with a repetitive workflow in mind and can greatly speed up your daily tasks.