203 Galika

Welcome.

This 2018 Handbook of Products presents the full range of over 85 standard systems and dozens of standard sensor and software options offered by QVI.

This guide is not sales literature. It is intended for use by QVI employees and channel partners to guide customers toward the most effective QVI solution for their requirements.

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Using This Guide

These color codes indicate the channel classification for each product in this guide.

Distributed products

Represented products

Referral products

Accuracy specifications listed in this guide reflect the current standard and optional accuracies available for each model. Specific sensors, options and software are required to achieve optional accuracy specifications. Please consult the factory for more information.

Denotes a custom or special configuration not found in standard price lists.

Export of models designated with this symbol is controlled under U.S. Export Regulations. An Export License may be required for deliveries or re-export outside of the United States.

Benchtop Optical Comparators

CC optical comparators are known for solid construction, high resolution telecentric optics and versatile Tru-Light® illumination. Advanced technologies such as e-CAD® electronic chart gages and VidiProbe™ integral video measuring make CC comparators stand out from the competition.

CC-14L Comparator

These sturdy, compact benchtop horizontal 14" comparators have an attractive price point. They feature a cast mineral base for metrological stability, and all-LED TruLight illumination. A 10x mag lens is standard, with 20x, 31.25x, 50x, and 100x lenses optional. X,Y and focus motion is manual. Image is inverted and reversed.

Viewable Screen Diameter	355 mm (14")
XY Measuring Range	300 x 100 mm
Z Focus Range	38 mm
Load Capacity	20 kg
Shipping Weight	295 kg
Part No.	BC201-012CL

CC-16L Comparator

CC-16L offers the same rugged construction and compact footprint as the 14-inch model, with an extended viewing area and upright, corrected image. A 10x mag lens is standard, along with two TruLight LED illumination sources. Unlike the 14L, the 16L offers upright imaging.

Viewable Screen Diameter	406 mm (16")
XY Measuring Range	300 x 100 mm
Z Focus Range	38 mm
Load Capacity	20 kg
Shipping Weight	295 kg
Part No.	BC201-012AL

CC-14 Comparator

CC-14 is a high-quality, rugged benchtop 14" screen horizontal comparator. It features a sturdy all-steel design, all-LED TruLight illumination, and a 10x mag lens as standard, with 20x, 31.25x, 50x, and 100x lenses optional. Lenses are mounted in the standard internal 3-position lens turret. Motorized XY motion is optional. (Note: VidiProbe is not available on CC-14.)

Viewable Screen Diameter	355 mm (14")
XY Measuring Range	300 x 125 mm
Z Focus Range	38 mm
Extended X Option	380 mm
Load Capacity	20 kg
Shipping Weight	275 kg
Part No.	BC101-012C

CC-16 Comparator

These are rugged and capable benchtop horizontal comparators with a 16" diameter screen. They feature a rigid steel base, all-LED TruLight illumination, and 10x mag lens. 20x, 50x and 100x lenses are optional. Lenses not in use may be safely stowed in an internal storage rack. Internal 2 lens quick changer is an available option. Motorized XY motion is standard.

Viewable Screen Diameter	406 mm (16")
XY Measuring Range	380 x 150 mm
Z Focus Range	50 mm
Extended X Option	450 mm
Load Capacity	27 kg
Shipping Weight	336 kg
Part No.	BC201-012C

Floor Model Optical Comparators

CC-20 Comparator

The CC-20 features a high payload capacity stage and telecentric optics with an upright and unreversed image. TruLight LED profile and surface lights are standard. Worktable is 815 x 200 mm. Motorized XY motion with manual fine adjust is standard.

Viewable Screen Diameter	510 mm (20")
XY Measuring Range	380 x 230 mm
Z Focus Range	75 mm
Extended X Option	450 mm
Extended Y Option	255 mm
Load Capacity	115 kg
Shipping Weight	1066 kg
Part No.	FC101-010C

CC-30 Comparator

Not sold in EC countries

The CC-30 has a large 30" viewing screen. Its horizontal optical system delivers a fully-corrected telecentric image, near zero distortion, and superb image contrast. Its projection lenses feature a constant working distance and can measure large parts, even at the highest magnification. Worktable size is 815 x 200 mm. CC-30 has a heavy duty cast iron/nickel plated worktable with a 136 kg capacity, and DC servo motor drive for smooth, fast part translation. Motorized horizontal and vertical drives with manual fine adjust is standard.

Viewable Screen Diameter	760 mm (30")
XY Measuring Range	380 x 250 mm
Z Focus Range	75 mm
Extended X Option	450 mm
Extended Y Option	255 mm
Load Capacity	136 kg
Shipping Weight	1200 kg

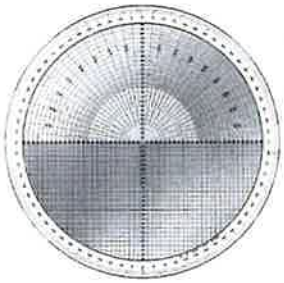


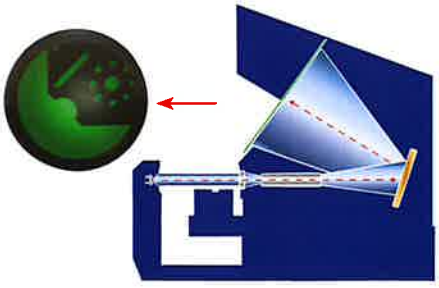
Chart Gauges

QVI offers a full range of standard and custom chart gauges. See the current chart and fixtures catalog for details.

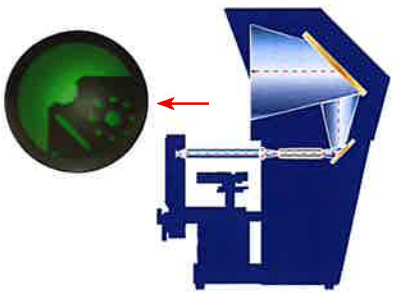
eCAD®

Electronic overlay projection provides "virtual charts" generated by a CAD file, and displayed on comparator screens. eCAD virtual charts can be compared to actual part profile for CAD-assisted inspection. eCAD is offered on CC-20 and CC-30 comparators only.

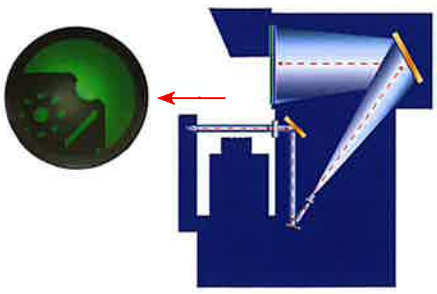
Comparator Optics



CC-14L single mirror optics produce an inverted and reversed image.



CC-14, CC-16L, CC-16 and benchtop c-vision dual mirror optics produce an upright and reversed image.



CC-20, CC-30 and floor model c-vision three mirror optics produce an upright and un-reversed image.

c-vision Video Contour Projectors

The c-vision™ Video Contour Projector® combines the speed and accuracy of a video measurement system with the rugged capacity of an optical comparator to create the world's best shop-floor measuring tools. Their tough construction and big viewing screen make inspection and measurement fast and easy.

c-vision Lite

The c-vision Lite is a manual, easy to use video comparator equipped with precision optics and vCAD electronic overlay charts. The c-vision Lite has tri-magnification optics with advanced digital imaging technology and manual XY table motion with precision linear scales and fine adjusters.

XY Travel Range	300 x 125 mm
Weight: 355 kg	**Shipping Weight:** 400 kg
Z focus Range:	35 mm
Helix Angle Range:	±6.5°
Load Capacity:	20 kg
Low Mag Viewing Area:	2" dia

Accuracy	Low Mag	Med Mag	High Mag
XY FOV	7.5 µm	5.0 µm	4.0 µm

c-vision (benchtop)

The c-vision Video Contour Projector combines the rugged high payload capacity of a benchtop contour projector with the convenience of a fully automatic large field of view digital imaging system. c-vision offers video image display only, featuring the QVI digital megapixel camera, with 15 x 6 inch motorized stage travel. Eight digital magnifications are available. The image is fully telecentric, upright and unreversed.

XY Travel Range	380 x 150 mm
Shipping Weight	295 kg
Z Focus Range	50 mm
Helix Angle Range:	±7.5°
Load Capacity	27 kg
Low Mag Viewing Area	62 x 47 mm (3" dia)
Part No.	LF201-014CV

*Extended X Option 450 mm

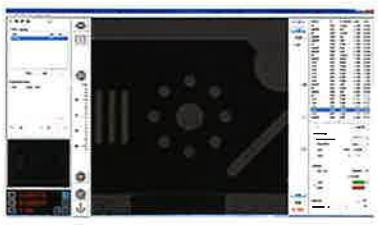
Accuracy	Low Mag	High Mag
XY FOV	7.5 µm	4.0 µm
XY Area E_2	(7.5 + L/1000) µm	

c-vision (floor model)

The c-vision floor model Video Contour Projector offers a high payload capacity to handle large, heavy parts. c-vision offers video image display only, featuring the QVI digital megapixel camera, with 15 x 6 inch motorized stage travel. Eight digital magnifications are available. The image is fully telecentric, erect and unreversed.

XY Travel Range	380 x 230 mm
Extended X Option	450 mm
Extended Y option	255 mm
Shipping Weight	800 kg
Z Focus Range	50 mm
Helix Angle Range:	±7.5°
Load Capacity	115 kg
Low Mag Viewing Area	62 x 47 mm (3" dia)
Part No.	LF301-016CV

Accuracy	Low Mag	High Mag
XY FOV	7.5 µm	4.0 µm
XY Area E_2	(7.5 + L/1000) µm	



vCAD

Virtual comparison chart software for c-vision systems displays an accurately magnified CAD model with tolerance zones, allowing direct comparison of part image to CAD. Convenient rotary knob on c-vision control panel allows video image rotation to align with CAD model. vCAD allows visual comparison to the CAD model only.

SNAP™ Digital Measuring Systems

SNAP large field of view systems combine highly telecentric, long depth of field optics with a high resolution camera for instant 2D measurement of many types of parts. Four SNAP models handle a range of part sizes, with each model offering a choice of single or dual optical magnifications, and wide field or high density cameras.

SNAP 100

SNAP 100 is a compact desktop unit with a fixed part stage, accommodating parts up to 100 mm in size. SNAP 100 has a 75 mm manual focus range, with optional motorized focus.

Weight 43.5 kg

Part No. Single Mag - LF401-097S1
Dual Mag - LF401-097D1

Accuracy	Standard	Optional		
Optics	Single Mag	Dual Mag		
XY FOV (E_2)	5 µm	Low	Med	High
		10 µm	5 µm	1 µm
XY Area (E_2)	(10 + L/50) µm			

SNAP 200

SNAP 200 includes a moving X-axis stage to extend the measuring range to a full 200 mm in the X-axis (250 mm with optional wide field camera) and 100 mm in the Y-axis. Motorized XYZ stage motion is optional.

Weight 55.5 kg

Part No. Single Mag - LF401-097S2
Dual Mag - LF401-097D2

Accuracy	Standard	Optional		
Optics	Single Mag	Dual Mag		
XY FOV (E_2)	5 µm	Low	Med	High
		10 µm	5 µm	1 µm
XY Area (E_2)	(10 + L/50) µm			

SNAP 300

SNAP 300 offers extended X and Y measuring range and optional dual magnification optics for large and small feature measurements. SNAP uses exclusive Zoom Anywhere™ technology to zoom in and measure details anywhere in the viewing area.

Weight 60 kg

Part No. Single Mag - LF401-097S3
Dual Mag - LF401-097D3

Accuracy	Standard	Optional		
Optics	Single Mag	Dual Mag		
XY FOV (E_2)	5 µm	Low	Med	High
		10 µm	5 µm	1 µm
X,Y Linear (E_1)	(12.5 + L/50) µm			
XY Area (E_2)	(15.0 + L/50) µm			

SNAP 350

SNAP 350 adds SNAP large field optics to one of QVI's most popular large travel platforms, extending the measuring range to 400 x 400 mm (450 x 450 with optional wide field camera), making it ideal for larger format parts, such as circuit boards, stencils, stampings and artwork. DRS laser and TP20 touch probe are available options.

XY Measuring Range 400 x 400 mm

Weight: 1000 kg

Part No. Single Mag - LF401-097S
Dual Mag - LF401-097D

Accuracy	Standard	Optional		
Optics	Single Mag	Dual Mag		
XY FOV (E_2)	5 µm	Low	Med	High
		10 µm	5 µm	1 µm
XY Area (E_2)	(5.0 + 8L/1000) µm			
Z (E_1)	N/A	Optical Autofocus (25.0 + 6L/1000) µm		
		W/ Optional touchprobe or DRS laser (5.0 + 6L/1000) µm		

StarLite™- Semi-Automatic Zoom Video Measuring Systems

QVI StarLite systems offer the "best value" in vision measurement systems. These systems feature the versatile Zoom 65 optical system, all LED lighting and digital, megapixel cameras with 3X electronic zoom. Full-function Measure-X® metrology software is standard, with part routines being interchangeable between semi-automatic and automatic systems.

StarLite 150

The QVI StarLite 150 benchtop video measuring system offers outstanding value and capability in a compact package. This entry-level system offers automatic measurement with manually operated X, Y, Z stages.

XYZ Measuring Range 150 x 75 x 125 mm
Weight: 43 kg **Shipping Weight:** 154 kg
Part No. RC101-3185

Accuracy	Specification
E_1 X,Y Linear	(3.5 + 6L/1000) µm
E_2 XY Area	(4.5 + 8L/1000) µm
E_1 Z	(7.0 + 8L/1000) µm

StarLite 200/250

StarLite 200/250/300 benchtop video measuring systems feature granite bases and steel posts for measurement stability. Precision manual controls and Measure-X metrology software provide repeatable, semi-automatic operation. **Now featuring motorized Z-axis and AutoFocus as available options.**

200 **XYZ Measuring Range** 200 x 150 x 150 mm
Weight: 89kg **Shipping Weight:** 245 kg
Part No. RC101-310

250 **XYZ Measuring Range** 300 x 150 x 150 mm
Weight: 91 kg **Shipping Weight:** 245 kg
Part No. RC101-310

Accuracy	Specification
E_1 X,Y Linear	(2.5 + 6L/1000) µm
E_2 XY Area	(3.5 + 6L/1000) µm
E_1 Z	(7.0 + 8L/1000) µm
E_1 Z (w/opt motorized Z)	(5.0 + 8L/1000) µm

StarLite 300

300 **XYZ Measuring Range** 300 x 300 x 150 mm
Weight: 127 kg **Shipping Weight:** 300 kg
Part No. RC101-310

Accuracy	Specification
E_1 X,Y Linear	(2.5 + 6L/1000) µm
E_2 XY Area	(4.5 + 6L/1000) µm
E_1 Z	(7.0 + 8L/1000) µm
E_1 Z (w/opt motorized Z)	(5.0 + 8L/1000) µm

SprintMVP- Fully Automatic Zoom Video Measuring Systems

SprintMVP systems set the standard for fully automatic 3-axis measurement performance. Rugged granite construction, precision motorized stages and flexible zoom optics handle a wide range of measurement needs.

SprintMVP 200/250/300

The SprintMVP 200-300 are low-cost, fully automatic benchtop CNC video metrology systems. They have dimensionally-stable granite columns and bases, and advanced illumination sources. Touch probes and DRS lasers are optional.

200	**XYZ Measuring Range**	200 x 150 x 150 mm	
	Weight: 130 kg	**Shipping Weight:** 255 kg	
	Part No.	AR105-312	
250	**XYZ Measuring Range**	300 x 150 x 150 mm	
	Weight: 130 kg	**Shipping Weight:** 255 kg	
	Part No.	AR105-312	
300	**XYZ Measuring Range**	300 x 300 x 150 mm	
	Optional Extended Z	250 mm	
	Weight: 180 kg	**Shipping Weight:** 300 kg	
	Part No.	AR105-312	

Accuracy	Standard	Optional
E_2 XY	(2.5 + 4L/1000) µm (200 Model) (2.5 + 6L/1000) µm (250, 300 Models)	
E_1 Z	(5.0 + 8L/1000) µm	(4.0 + 8L/1000) µm

SprintMVP 400/600

The SprintMVP 400 & 600 are CNC floor model machines with cantilevered optics mounts and compound X-Y stages. Touch probes and DRS lasers are optional.

400	**XYZ Measuring Range**	450 x 450 x 150 mm	
	Weight: 1010 kg	**Shipping Weight:** 1345 kg	
	Optional Extended Z	300 mm	
	Part No.	AR105-316	
600	**XYZ Measuring Range**	610 x 450 x 150 mm	
	Weight: 1030 kg	**Shipping Weight:** 1375 kg	
	Part No.	AR105-316	

Accuracy	Standard	Optional
E_2 XY	(3.0 + 8L/1000) µm (400 Model) (3.5 + 8L/1000) µm (600 Model)	
E_1 Z	(5.0 + 8L/1000) µm	(4.0 + 8L/1000) µm

SprintMVP 624

SprintMVP 624 is a compact floor model with large XYZ measuring volume. The moving bridge design is ideal for loading and unloading large or heavy parts.

XYZ Measuring Range	624 x 624 x 200 mm	
Optional Extended Z	300 mm	
Shipping Weight: 1358 kg		

Accuracy	Standard	Optional
E_2 XY	(5.0 + 8L/1000) µm	(3.0 + 8L/1000) µm
E_1 Z	(5.0 + 8L/1000) µm	(4.0 + 8L/1000) µm

SprintMVP 1500-1552

The SprintMVP 1500 Series are moving bridge machines designed for very large parts. All models offer 200mm Z-axis travel and dual Y axis scales and drives as standard.

1500	**Std. XYZ Measuring Range**	900 x 1500 x 200 mm	
	Opt. XYZ Measuring Range	900 x 1800 x 200 900 x 2000 x 200 900 x 1500 x 300	
	Shipping Weight: 2590 kg		
1550	**Std. XYZ Measuring Range**	1250 x 1500 x 200 mm	
	Opt. XYZ Measuring Range	1250 x 1800 x 200 1250 x 2000 x 200 1250 x 1500 x 300	
	Shipping Weight: 5460 kg		
1552	**Std. XYZ Measuring Range**	1500 x 1500 x 200 mm	
	Opt. XYZ Measuring Range	1500 x 2000 x 200 1500 x 1500 x 300	
	Shipping Weight: 6380 kg		

Accuracy	Standard	Optional
E_2 XY	(5.0 + 8L/1000) µm (1500 Model) (5.5 + 8L/1000) µm (1550 Model) (8.5 + 8L/1000) µm (1552 Model)	
E_1 Z	(5.0 + 8L/1000) µm	(4.0 + 8L/1000) µm

Spark™ and SparkMVP™- Fixed Lens Video Measuring Systems

The QVI Spark and SparkMVP high-resolution fixed lens optical systems provide the precision needed for measurement of very small parts and features. Interchangeable lenses allow configuration of magnification and field of view size. Digital megapixel color camera with electronic zoom is standard. Measure-X® metrology software is standard. Part routines are interchangeable between semi-automatic and automatic systems.

Spark Semi-Automatic Systems

Spark 200/250/300

Spark 200/250/300 benchtop video measuring systems feature granite bases and steel posts for measurement stability. Precision manual controls and Measure-X metrology software provide repeatable, semi-automatic operation. Motorized Z-axis and AutoFocus are available options.

200 **XYZ Measuring Range** 200 x 150 x 150 mm
Weight: 120 kg **Shipping Weight:** 245 kg
Part No. RC101-324

Accuracy	Standard	Optional
E_2 XY	(3.5 + 4L/1000) µm	
E_1 Z	(7.0 + 8L/1000) µm	With optional motorized Z (5.5 + 8L/1000) µm

250 **XYZ Measuring Range** 300 x 150 x 150 mm
Weight: 120 kg **Shipping Weight:** 245 kg
Part No. RC101-324

Accuracy	Standard	Optional
E_2 XY	(3.5 + 4L/1000) µm	
E_1 Z	(7.0 + 8L/1000) µm	With optional motorized Z (5.5 + 8L/1000) µm

300 **XYZ Measuring Range** 300 x 300 x 150 mm
Weight: 160 kg **Shipping Weight:** 300 kg
Part No. RC101-324

Accuracy	Standard	Optional
E_2 XY	(4.5 + 6L/1000) µm	
E_1 Z	(7.0 + 8L/1000)µm	With optional motorized Z (5.5 + 8L/1000) µm

SparkMVP Fully Automatic Systems

SparkMVP 200/250/300

SparkMVP 200/250/300 benchtop video measuring systems feature granite bases and posts for measurement stability. Precision CNC stages provide automatic measurement. Measure-X metrology software is standard. TTL laser, touch probe, and grid projector are optional.

200 **XYZ Measuring Range** 200 x 150 x 150 mm
Optional Extended Z 250 mm
Weight: 130 kg **Shipping Weight:** 210 kg
Part No. AR105-322

Accuracy	Standard	Optional
E_2 XY	(2.0 + 4L/1000) µm	
E_1 Z	(5.5 + 5L/1000) µm	(2.0 + 5L/1000) µm

250 **XYZ Measuring Range** 300 x 150 x 150 mm
Optional Extended Z 250 mm
Weight: 130 kg **Shipping Weight:** 215 kg
Part No. AR105-322

Accuracy	Standard	Optional
E_2 XY	(2.0 + 6L/1000) µm	
E_1 Z	(5.5 + 5L/1000) µm	(2.0 + 5L/1000) µm

300 **XYZ Measuring Range** 300 x 300 x 150 mm
Optional Extended Z 250 mm
Weight: 180 kg **Shipping Weight:** 235 kg
Part No. AR105-322

Accuracy	Standard	Optional
E_2 XY	(2.0 + 6L/1000) µm	
E_1 Z	(5.5 + 5L/1000) µm	(2.0 + 5L/1000) µm

SparkMVP 400/600

SparkMVP 400 and 600 floor model video measuring systems are built on a granite surface plate atop a welded steel frame for measurement stability. The X-Y compound stage offers high speed drives. The optical column and cantilever are precision machined castings. Measure-X metrology software is standard. TTL laser, touch probe, and grid projector are optional.

400 **XYZ Measuring Range** 450 x 450 x 150 mm
Optional Extended Z 300 mm
Weight: 1010 kg **Shipping Weight:** 1345 kg
Part No. AR105-325F

Accuracy	Standard	Optional
E_2 XY	(3.0 + 8L/1000) µm	
E_1 Z	(5.5 +5 L/1000) µm	(2.0 + 5L/1000) µm

600 **XYZ Measuring Range** 610 x 450 x 150 mm
Weight: 1010 kg **Shipping Weight:** 1345 kg
Part No. AR105-325F

Accuracy	Standard	Optional
E_2 XY	(3.5 + 8L/1000) µm	
E_1 Z	(5.5+ 5L/1000) µm	(2.0 +5L/1000) µm

SmartScope® Flash/CNC - Multisensor Measuring Systems

SmartScope Flash/CNC systems feature the exclusive AccuCentric® Zoom 12 lens system that gives great performance over its entire range. Flash and CNC systems can be configured as powerful multisensor systems, including touch trigger and scanning probes, laser and Feather Probe™ sensors.

SmartScope Flash/CNC Benchtop

SmartScope Flash/ Flash CNC 200

The Flash/Flash CNC 200 is one of the most popular video measurement systems on the market. This versatile benchtop system features a compact, patented "elevating bridge" design with machined-in squareness for built-in accuracy.

XYZ Measuring Range 200 x 200 x 150 mm

Weight: 100 kg **Shipping Weight:** 150 kg

Part No. S205-050F

Accuracy	Standard	Optional
E_2 XY	(2.0 + 6L/1000) µm	
E_1 Z	(3.5 + 6L/1000) µm	(2.5 + 6L/1000) µm

SmartScope Flash/ CNC 250

The Flash/CNC 250 offers great value in a space-saving benchtop platform. This machine features a heavy-duty cast base with Y-axis center drive for stability. Flash/CNC 250 is the only benchtop machine in the family to accept a Rainbow Probe™ or a DRS™ laser.

XYZ Measuring Range 300 x 150 x 200 mm (North America)
250 x 150 x 200 mm (Rest of World)

Weight: 120 kg **Shipping Weight:** 275 kg

Part No. S205-050C

Accuracy	Standard	Optional
E_2 XY	(2.5 + 5L/1000) µm	
E_1 Z	(3.0 + 5L/1000) µm	(2.0 + 5L/1000) µm

SmartScope Flash 302/ Flash CNC 300

The Flash 302/Flash CNC 300 is a benchtop multisensor-capable system with a patented "elevating bridge" design and Zoom 12 optics. It provides a large working volume on a benchtop system.

XYZ Measuring Range 300 x 300 x 250 mm

Weight: 158 kg **Shipping Weight:** 192 kg

Part No. S501-050

Accuracy	Standard	Optional
E_2 XY	(1.8 5L/1000) µm	
E_3 XYZ	(3.8 + 5L/1000) µm	
E_1 Z	(3.4 + 5L/1000) µm	(2.4 + 5L/1000) µm

SmartScope Global Branding

North America	Rest of the World
Flash 200	Flash CNC 200
Flash 250	CNC 250
Flash 302	Flash CNC 300
Flash 500	CNC 500
Flash 635	CNC 635
Flash 670	CNC 670
Flash 1500	CNC 1500
Flash 1550	CNC 1550
Flash 1552	CNC 1552

SmartScope® Flash/CNC Floor Models

SmartScope Flash/ CNC 500

The Flash/CNC 500 offers Flash optical performance in a popular slant bridge style transport.

XYZ Measuring Range 500 x 450 x 200 mm

Weight: 960 kg **Shipping Weight:** 1020 kg

Part No. S205-051C

*Optional 610 mm Y-Axis
*Optional 300 mm Z-Axis
*Optional 400 mm Z-Axis

Accuracy	Standard	Optional
E_2 XY	(2.5 +5L/1000) µm	
E_1 Z	(3.0 + 8L/1000) µm	(2.0 + 8L/1000) µm
E_3 XYZ		3.5 +8L/1000) µm

SmartScope Flash/ CNC 635

SmartScope Flash/CNC 635 provides built-in measurement stability with its solid granite base and lightweight aluminum moving bridge. This machine provides high XYZ velocity and acceleration for enhanced productivity.

XYZ Measuring Range 635 x 635 x 200 mm

Weight: 1310 kg **Shipping Weight:** 1750 kg

Part No. 5601-051F

*Optional 800 mm Y-Axis

Accuracy	Standard	Optional
E_2 XY	(3.0 + 5L/1000) µm	
E_1 Z	(3.0 + 5L/1000) µm	

SmartScope Flash/ CNC 670

SmartScope Flash/CNC 670 is a moving bridge floor model system with the availability of extended Z-axis travel. The granite bridge offers a highly rigid structure and dual Y-axis drives provide positive positioning for repeatability.

XYZ Measuring Range 650 x 660 x 200 mm

Weight: 1800 kg **Shipping Weight:** 2259 kg

Part No. S601-051G

*Optional 300 mm Z-Axis

*Optional 400 mm Z-Axis

Accuracy	Standard	Optional
E_2 XY	(2.0 + 5L/1000)	
E_1 Z	(3.0 + 8L/1000) µm	(2.0 + 8L/1000) µm
E_3 XYZ	NA	(3.5 + 8L/1000) µm

SmartScope Flash/ CNC 15xx

SmartScope Flash/CNC 1500 series models combine a very large X,Y measuring area with easy loading and unloading of oversized and overweight parts such as FPD glass panels. Dual Y-axis drives provide positive positioning of the moving bridge for repeatability.

1500 **XYZ Measuring Range** 900 x 1500 x 200 mm

Weight: 2590 kg **Shipping Weight:** 3000 kg

Accuracy	Standard	Optional
E_2 XY	(5.0 + 6L/1000) µm	
E_1 Z	(3.0 + 8L/1000) µm	

1550 **XYZ Measuring Range** 1240 x 1500 x 200 mm

Weight: 5460 kg **Shipping Weight:** 6260 kg

*Optional Extended Y-Axis 1800/2000 mm

1552 **XYZ Measuring Range** 1500 x 1500 x 200 mm

Weight: 6380 kg **Shipping Weight:** 7280 kg

*Optional Extended Y-Axis 1800/2000 mm

Accuracy	Standard	Optional
E_2 XY	(5.0 + 6L/1000) µm (1500 Model)	
	(8.0 + 6L/1000) µm (1552 Model)	
E_1 Z	(3.0 + 8L/1000) µm	

SmartScope® ZIP - Multisensor Measurement Systems

SmartScope ZIP systems offers a range of measurement volumes with the proven performance of the AccuCentric® Zoom 70 optics system. Zoom 70 optics offer a range of lens and back tube configurations to suit a wide variety of applications.

SmartScope ZIP 250

ZIP 250 features a heavy-duty cast base and integral compound stage with Y-axis center drive for stability. Integral electronics provide convenient serviceability and a small footprint.

XYZ Measuring Range 250 x 150 x 200 mm

Weight: 120 kg **Shipping Weight:** 280 kg

Part No. S102-020

*Optional 300 mm X-Axis

Accuracy	Standard	Optional
E_2 XY	(1.8 + 6L/1000) µm	
E_1 Z	(2.5 + 5L/1000) µm	(1.4 + 5L/1000) µm

SmartScope ZIP 300

The ZIP 300 is a fast, accurate floor-model system featuring a granite support structure and precision compound stage with high speed DC servo drives on all axes.

XYZ Measuring Range 300 x 300 x 200 mm

Weight: 750 kg **Shipping Weight:** 970 kg

Part No. S102-040

*Optional 300 mm Extended Z-Axis

Accuracy	Standard	Optional
E_2 XY	(1.5 + 6L/1000) µm	
E_1 Z	(2.5 + 5L/1000) µm	(1.4 + 5L/1000) µm

SmartScope ZIP 450

SmartScope ZIP 450 is a floor model system with granite base, uprights and bridge for applications involving larger or heavier parts.

XYZ Measuring Range 450 x 450 x 200 mm

Weight: 1040 kg **Shipping Weight:** 1380kg

Part No. S305-040

*Optional Extended Y-Axis 610 mm

*Optional Extended Z-Axis 300 mm

Accuracy	Standard	Optional
E_3 XYZ	(2.8 + 6L/1000) µm	
E_2 XY	(1.8 + 4L/1000) µm	
E_1 Z	(2.0 + 5L/1000) µm	(1.3 + 5L/1000) µm

SmartScope ZIP 635

SmartScope ZIP 635 is a high speed, moving bridge system with an ultra-light extruded aluminum bridge structure. 635 provides large area, high speed measurement in a compact footprint.

XYZ Measuring Range 635 x 635 x 200 mm

Weight: 1310 kg **Shipping Weight:** 1650 kg

Part No. S601-040

*Optional Extended Y-Axis 850 mm

Accuracy	Standard	Optional
E_2 XY	(2.5 + 5L/1000) µm	
E_1 Z	(2.0 5L/1000) µm	(1.3 + 5L/1000) µm

SmartScope ZIP 800

SmartScope ZIP 800 combines versatile Zoom 70 optics with a robust granite bridge X, Y transport with a large measuring area.

XYZ Measuring Range 800 x 820 x 200

Weight: 2665 kg **Shipping Weight:** 2960 kg

Part No. S305-040H

*Optional Extended Z-Axis 300 mm

Accuracy	Standard	Optional
E_3 XYZ	(2.8 + 6L/1000) µm	(2.4 + 7L/1000) µm
E_2 XY	(2.0 + 5L/1000) µm	(1.5 + 6L/1000) µm
E_1 Z	(2.0 + 5L/1000) µm	(1.3 + 5L/1000) µm

SmartScope® ZIP Lite

SmartScope ZIP Lite

ZIP Lite systems offer a compact granite base with versatile optics and illumination, and support a range of multisensor options.

250 **XYZ Measuring Range** 250 x 150 x 150 mm
Weight: 128 kg **Shipping Weight:** 245 kg
Part No. AR105-020
*Optional 300 mm X-Axis

300 **XYZ Measuring Range** 300 x 300 x 150 mm
Weight: 175 kg **Shipping Weight:** 300 kg
Part No. AR105-020

Accuracy	Standard	Optional
E_2 XY	250 Model (2.0 + 6L/1000) µm	Ext. X-Axis (2.0 + 8L/1000) µm
E_2 XY	300 Model (2.5 + 8L/1000) µm	NA
E_1 Z	(3.5 + 6L/1000) µm	(2.5 + 5L/1000) µm

SmartScope ZIP Advance

SmartScope ZIP Advance systems include standard high resolution scales, high speed ball-screw drives on X and Y, fine pitch lead screws on Z, and high resolution, monochrome metrology cameras. ZIP Advance systems are the only models in the ZIP line to offer the optional TeleStar Probe interferometric range sensor.

SmartScope ZIP Advance 250

ZIP Advance 250 is a high performance benchtop system. In addition to the Y-axis center drive, ZIP Advance 250 models feature ball screw drives for all axes, and dual X-axis scales for enhanced accuracy and repeatability.

XYZ Measuring Range 250 x 150 x 200 mm
Weight: 120 kg **Shipping Weight:** 280 kg
Part No. S102-020A
*Optional 300 mm X-Axis

Accuracy	Standard	Optional
E_2 XY	(1.25 + 6L/1000) µm	
E_1 Z	(2.5 + 5L/1000) µm	(1.4 + 5L/1000) µm

SmartScope ZIP Advance 300

ZIP Advance 300 is a mid-sized floor model system with a granite support structure for built-in measurement stability. It can be equipped with a range of optional high-performance sensors.

XYZ Measuring Range 300 x 300 x 200 mm
Weight: 750 kg **Shipping Weight:** 970 kg
Part No. S102-040A

Accuracy	Standard	Optional
E_2 XY	(1.25 + 5L/1000) µm	
E_1 Z	(1.4 + 5L/1000) µm	

SmartScope ZIP Advance 450

ZIP Advance 450 is a floor model system with granite base, uprights and bridge, providing high accuracy for larger, heavier parts.

XYZ Measuring Range 450 x 450 x 200 mm
Weight: 1040 kg **Shipping Weight:** 1380 kg
Part No. S305-040A
*Optional 610 mm Y-Axis

Accuracy	Standard	Optional
E_3 XYZ	(2.8 + 6L/1000) µm	
E_2 XY	(1.8 + 4L/1000) µm	
E_1 Z	(2.0 +5L/1000) µm	(1.4 +5L/1000) µm

SmartScope ZIP Advance 800

ZIP Advance 800 is a large area floor model system with granite base, uprights and bridge for extremely large, heavy parts.

XYZ Measuring Range 800 x 820 x 200 mm
Weight: 2665 kg **Shipping Weight:** 2960 kg
Part No. S305-040B

Accuracy	Standard	Optional
E_3 XYZ	(2.8 + 6L/1000) µm	
E_2 XY	(1.5 + 6L/1000) µm	
E_1 Z	(2.0 +5L/1000) µm	(1.4 +5L/1000) µm

SmartScope® SP - High Performance Scanning Systems

SmartScope SP systems are designed for maximum optical scanning performance over a wide range of applications. The standard front objective lens offers the convenience of a large field of view, while the 5.5X zoom lens offers a range of higher magnifications for smaller features. A 5.0 megapixel metrology camera and monochromatic illuminators develop sharp imaging at all zoom positions. SmartScope SP systems are sold with standard SP25 Scanning Probe and ZONE3® Express software.

SmartScope SP 332

SmartScope SP 332 offers high performance in a convenient benchtop package. The patented elevating-bridge design provides machined-in squareness and a large work envelope that uses very little floor space.

XYZ Measuring Range 300 x 300 x 200 mm

Weight: 160 kg

Shipping Weight: 220 kg

SmartScope SP 463

SmartScope SP 463 is rugged floor model system designed to handle larger, heavier parts in a workshop environment. The fixed bridge design separates the primary axis motions so they are completely independent, with no influence on each other.

XYZ Measuring Range 450 x 610 x 250 mm

Weight: 1400 kg

Shipping Weight: 1640 kg

SmartScope SP 663

SmartScope SP 663 offers a large measuring volume and high payload capacity in a compact footprint. Granite base and granite bridge with heavy duty cast uprights ensure thermal stability and vibration isolation for excellent scanning performance.

XYZ Measuring Range 650 x 660 x 250 mm

Weight: 1800 kg

Shipping Weight: 2300 kg

Standard Specifications

SmartScope SP Model		332	463	663
Unidirectional length measurement errors	$E_{U, MPE}$*	(3.9 + 5L/1000) µm [1,2,4,6]	(3.4 + 5L/1000) µm [1,2,4,6]	(4.4 + 5L/1000) µm [1,2,4,6]
Unidirectional XY length measurement errors	$E_{UXY, MPE}$*	(1.9 + 5L/1000) µm [1,2,3,4]	(1.9 + 5L/1000)µm [1,2,3,4]	(2.4 + 5L/1000)µm [1,2,3,4]
Repeatability of XY length measurement errors	$R_{UXY, MPL}$*	1.5 µm [2,3,4]	1.5 µm [2,3,4]	2.0 µm [2,3,4]
Unidirectional X or Y length measurement errors	$E_{UX (Y), MPE}$*	(1.5 + 5L/1000) µm [1,2,3,4]	(1.5 + 5L/1000)µm [1,2,3,4]	(2.0 + 5L/1000)µm [1,2,3,4]
Probing error at highest optical magnification	High Zoom $P_{F2D, MPE}$	1.9 µm [2,4]	1.9 µm [2,4]	1.9 µm [2,4]
Probing error at lowest optical magnification	Low Zoom $P_{F2D, MPE}$	10 µm [2,4]	10 µm [2,4]	10 µm [2,4]
Probing error of imaging probe at highest optical magnification	High Zoom $P_{FV2D, MPE}$	1.2 µm [2,4]	1.2 µm [2,4]	1.2 µm [2,4]
Probing error of imaging probe at lowest optical magnification	Low Zoom $P_{FV2D, MPE}$	5 µm [2,4]	5 µm [2,4]	5 µm [2,4]
Z -axis autofocus accuracy (per QVI #790218)	E_1	(3.5 + 5L/1000)µm [1,2,4]	(3.5 + 5L/1000)µm [1,2,4]	(4.0 + 5L/1000)µm [1,2,4]
Probing size error All	$P_{[Size Sph All:Tr:ODS], MPE}$	3.5 µm [2]	3.5 µm [2]	3.5 µm [2]
Z-axis laser measurement accuracy with optional 1X lens		1.0 µm [2,8]	1.0 µm [2,8]	1.0 µm [2,8]
Scanning probe errors	$MPE_{, THP}$	4.9 µm [2,5,7]	4.9 µm [2,5,7]	4.9 µm [2,5,7]
Time for scanning probe errors	$MPL_{,T}$	70 sec [2,5,7]	70 sec [2,5,7]	75 sec [2,5,7]
Single stylus form errors	$P_{FTU, MPE}$	3.9 µm [2,5]	3.9 µm [2,5]	3.9 µm [2,5]

*Refer to technical data sheet number 794047 for important details regarding accuracy specifications.

SmartScope® Quest/Vantage

SmartScope Quest/Vantage systems are designed to use a variety of sensors for high accuracy 3D measurement. The TeleStar® 10:1 zoom lens system offers the best optical performance of any zoom system offered by QVI. TeleStar optics are completely telecentric throughout their range, for distortion-free, high fidelity images - ideal for high accuracy measurement.

SmartScope Quest/Vantage 250

The 250 is a compact, benchtop system, specifically designed for smaller parts, or situations where space is at a premium.

XYZ Measuring Range 300 x 150 x 200 mm

Weight: 165 kg **Shipping Weight:** 275 kg

Part No. S301-022

Accuracy	Standard	Optional
E_2 XY	(1.8 4L/1000) µm	(1.0 + 6L/1000) µm
E_1 Z	(2.5 + 5L/1000) µm	(1.5 + 5L/1000) µm

SmartScope Quest/Vantage 300

The 300 is a benchtop system with a patented "elevating bridge" design, providing a large working volume.

XYZ Measuring Range 300 x 300 x 250 mm

Weight: 160 kg **Shipping Weight:** 218 kg

Part No. S501-022

Accuracy	Standard	Optional
E_2 XY	(1.5 + 5L/1000) µm	
E_1 Z	(2.5 + 5L/1000) µm	(2.0 + 5L/1000) µm
E_1 X,Y	(1.0 + 5L/1000) µm	
E_3 XYZ	(3.0 + 5L/1000) µm	

SmartScope Quest/Vantage 450

The 450 is designed to accommodate larger parts or fixture tooling including single or dual rotary indexers. Extended Y-axis range of 610mm is available as an option. For applications which do not require backlight, an extended X-axis range of 600mm is available as a special option.

XYZ Measuring Range 450 x 450 x 250 mm

Weight: 1380 kg **Shipping Weight:** 1650 kg

Part No. S305-200

*Optional 300 or 400 mm Z-Axis and 610 mm Y-Axis

Accuracy	Standard	Optional
E_2 XY	(1.5 +4L/1000) µm	
E_1 Z	(2.5 + 5L/1000) µm	(1.5 + 5L/1000) µm
E_3 XYZ	(2.5 + 5L/1000) µm	

SmartScope Quest/Vantage 650

The 650 combines a large measurement volume with high accuracy for the most demanding measurements on large, heavy parts. Linear motors drive the X and Y axes at speeds up to 350mm/sec for high throughput.

XYZ Measuring Range 610 x 660 x 400 mm

Weight: 4730 kg **Shipping Weight:** 5860 kg

Part No. S401-200

Accuracy	Standard	Optional
E_2 XY	(1.5 + 4L/1000) µm	(1.0 + 5L/1000) µm
E_1 Z	(2.5 + 5L/1000) µm	(1.5 + 5L/1000) µm
E_3 XYZ	(1.8 + 5L/1000) µm	(1.2 + 6L/1000) µm

SmartScope Quest/Vantage 800

The 800 is the largest fixed bridge model available from QVI. It provides a very large measuring volume, with Z-axis range of up to 400 mm. Linear motor drives on X and Y are an available option for high speed operation.

XYZ Measuring Range 790 x 815 x 250 mm

Weight: 2574 kg **Shipping Weight:** 2675 kg

Part No. S305-200H

*Optional Extended Z-Axis 300 mm or 400 mm

Accuracy	Standard	Optional
E_2 XY	(2.0 + 5L/1000) µm	(1.8 + 5L/1000) µm
E_1 Z	(2.5 + 5L/1000) µm	(1.5 + 5L/1000) µm
E_3 XYZ	(2.8 + 5L/1000) µm	(2.5 + 6L/1000) µm

VIEW - High Performance Video Measuring Systems

QVI® VIEW systems combine high accuracy transport and optical technologies with advanced software and customized application support to satisfy the unique demands of process monitoring near the production line. VIEW systems offer a choice between single or dual magnification fixed lens optical systems. Advanced motion control and error-correction techniques, superior illumination systems - including VIEW's multi-color Programmable Ring Light (PRL) and Through-The-Lens (TTL) laser and high-resolution digital cameras are standard on all models.

VIEW Benchmark 250

The VIEW Benchmark 250 metrology system delivers high performance and reliability in a compact, benchtop package. It features a heavy-duty cast base with dual X-axis scales and Y-axis center drive. Options include a TTL laser and LED-based Programmable Ring Light (PRL).

XYZ Measuring Range 300 x 150 x 150 mm
Weight: 145 kg **Shipping Weight:** 315 kg
Part No. QV105-214B
*Optional 200 mm Z-Axis

Accuracy	Standard	Optional
E_2 XY	(1.8 + 6L/1000) µm	(1.0 + 6L/1000) µm
E_1 Z	(2.0 + 5L/1000) µm	(1.2 + 5L/1000) µm

VIEW Benchmark 450

The VIEW Benchmark 450 floor model metrology system has an ample XY measurement range of 450 x 450 mm. Its electro-optical assembly travels across a slanted steel crossbeam for maximum stability. Dual Y-axis scales are standard.

XYZ Measuring Range 450 x 450 x 150 mm
Weight: 935 kg **Shipping Weight:** 1135 kg
Part No. QV105-214F
*Optional 200 mm Z-Axis

Accuracy	Standard	Optional
E_2 XY	(2.5 + 5L/1000) µm	
E_1 Z	(2.0 + 8L/1000) µm	(2.0 + 5L/1000) µm

VIEW Pinnacle 250

The VIEW Pinnacle 250 metrology system is a high accuracy, ultra-high-speed system with a compact footprint. Its linear motor drive XY stages give it high throughput for critical manufacturing operations.

XYZ Measuring Range 250 x 150 x 100 mm
Weight: 635 kg **Shipping Weight:** 782 kg
Part No. QV105-206

Accuracy	Standard	Optional
E_2 XY	(1.0 + 5L/1000) µm	
E_1 Z	(1.5 + 5L/1000) µm	(1.0 + 5L/1000) µm

VIEW Pinnacle Plus

The VIEW Pinnacle Plus metrology system offers ultra-high accuracy. It features a rigid granite optical support structure and a high performance Z-axis motion assembly to produce the lowest possible uncertainty on micro-electronic parts and assemblies.

XYZ Measuring Range 250 x 150 x 50 mm
Weight: 635 kg **Shipping Weight:** 771 kg

Accuracy	Standard	Optional
E_2 XY	(1.0 + 5L/1000) µm	
E_1 Z	(1.0 + 5L/1000) µm	(0.5 + 5L/1000) µm

VIEW - High Performance Video Measuring Systems

VIEW Summit 600

This fixed bridge floor model metrology system provides high accuracy and high measuring speeds for near-line process monitoring and quality assurance applications.

XYZ Measuring Range 450 x 600 x 150 mm
Weight: 1377 kg **Shipping Weight:** 1637 kg
Part No. QV105-205

Accuracy	Standard	Optional
E_2 XY	(2.0 + 4L/1000) µm	(1.5 + 5L/1000) µm
E_1 Z	(1.8 + 5L/1000) µm	(1.4 + 5L/1000) µm

VIEW Summit 625

The VIEW Summit 625 incorporates an extended bridge design for surface measurement applications requiring extended X-axis measurement range.
Note: backlight is not available for this Summit model.

XYZ Measuring Range 615 x 610 x 150 mm
Weight: 1410 kg **Shipping Weight:** 1685 kg
Part No. QV105-205

Accuracy	Standard	Optional
E_2 XY	(2.0 + 4L/1000) µm	(1.5 + 5L/1000) µm
E_1 Z	(1.8 + 5L/1000) µm	(1.4 + 5L/1000) µm

VIEW Summit 800

The VIEW Summit 800 combines a very large measuring area with high accuracy and high speed for the most demanding large format applications. Rod drive X and Y axis motion is standard, with high speed linear motors available as an option.

XYZ Measuring Range 800 x 820 x 150 mm
Weight: 2570 kg **Shipping Weight:** 2675 kg
Part No. QV105-205H
*Optional 300 mm Z-Axis

Accuracy	Standard	Optional
E_2 XY	(2.0 + 5L/1000) µm	
E_1 Z	(1.8 + 5L/1000) µm	(1.5 + 5L/1000) µm

VIEW MicroLine

The VIEW MicroLine is a high-performance microscope based critical dimension measurement system for wafers, masks, MEMS, and other micro-fabricated devices. It provides precise automated field-of-view X-Y size measurement ranging from 0.65 µm to 400 µm on wafers up to 300 mm. X,Y stage motion is manual. Motorized Z axis autofocus is standard.

XYZ Motion Range 100 x 100 x 175 (1000 Model)
200 x 200 x 175 (2000 Model)
300 x 300 x 75 (3000 Model)
Weight: 182 kg **Shipping Weight:** 250 kg

	Standard	Optional
FOV Accuracy	0.01 µm (operation is manual)	

VIEW Precis 200

*Shown with optional 100 mm Z

The VIEW Precis 200 coordinate measuring system delivers sub-micron field-of-view and point-to-point measurement accuracy on wafers, masks, and micro fabricated parts. VIEW Precis optics feature a 5-objective microscope lens turret with objective lenses up to 100x. FOV accuracy of 10 nm is achievable, with PTP measurement repeatability of 0.25 µm.

XYZ Motion Range 200 x 200 x 5 mm
Weight: 1016 kg **Shipping Weight:** 1316 kg

Accuracy	Standard	Optional
E_1 Z	0.25 µm	
E_1 X,Y	(0.25 + 2L/1000) µm	

TurnCheck - Shaft Measurement Systems

QVI TurnCheck™ systems are high speed, shop-floor optical metrology tools for measuring shafts, cylinders and other turned, ground or extruded parts. TurnCheck systems offer advanced, telecentric optics designed to produce distortion-free images of all types and finishes of shafts and cylinders, even in workshop conditions.

Series-6

The TurnCheck Series-6 system is a benchtop system designed for measuring small cylindrical parts with high precision. Series-6 systems offer an optional helix mechanism for correct measurement of thread forms.

FOV Diameter: 60 mm
Vertical Travel: $6|^{30}$: 300 mm
Weight: 210 kg **Shipping weight:** 280 kg
Part No. PT030-044F

Accuracy	Standard	Optional
Diameter Measurement	(1.5 L/100) µm	
Length Measurement	(3.5 + L/150) µm	

Series-10

TurnCheck Series-10 systems offer a fast, easy way to measure shafts, cylinders and other turned, ground or extruded parts. TurnCheck will scan the part in seconds using its telecentric, large field of view optical system.

FOV Diameter: 100 mm
Vertical Travel: $10|^{40}$: 400 mm
$10|^{60}$: 600 mm
$10|^{80}$: 800 mm
Weight: 350 kg **Shipping weight:** 450 kg
Part No. PT029-044B

Accuracy	Standard	Optional
Diameter Measurement	(1.8 L/100) µm	
Length Measurement	(3.5 + L/150) µm	

Series-14

TurnCheck Series-14 systems are designed for very large shafts and cylinders. TurnCheck will scan the part in seconds using its telecentric, large field of view optical system.

FOV Diameter: 140 mm
Vertical Travel: $14|^{80}$: 800 mm
$14|^{120}$: 1200 mm

Accuracy	Standard	Optional
Diameter Measurement	(2.5 + L/100) µm	
Length Measurement	(4.0 + L/150) µm	

ShapeGrabber - 3D Scanning Systems

ShapeGrabber Automatic 3D Scanners provide quick and accurate 3D laser scans to inspect parts by measuring their complete shape. ShapeGrabber systems include a variety of automated 3D scanning models to accommodate customer needs.

ShapeGrabber Ai210/Ai310

The ShapeGrabber Ai210 and Ai310 are designed for the complete inspection of complex small parts. Their compact size allows them to fit easily on a workbench. They are compatible with the interchangeable SG46 and SG156 scanheads. These easy to use systems provide fully automatic 3D surface quality control and design verification.

Report Types	Color error maps, flyout boxes, tables, cross sections, GD&T, statistical, etc...
Report Formats	PDF, HTML, csv, txt, EXCEL, pptx, Video, Word
Weight: 50 kg	**Shipping weight:** 75 kg

Data Acquisition Rate	39,000 to 800,000 points per second
Max Scan Volume, Ai210 with SG156 scanhead	200 mm H x 190 mm Dia
Scan Volume, Ai210 with SG46 scanhead	200 mm H x 50 mm Dia
Scan Volume, Ai310 with SG156 scanhead	300 mm H x 190 mm Dia
Scan Volume, Ai310 with SG46 scanhead	300 mm H x 50 mm Dia
Laser Type	CDRH Class II/ IEC Class 2M
Depth Resolution (Z)	SG46: 2 µm
	SG156: 5 µm
Accuracy, MPE_E (per ISO10360-8)	SG46: (16 + L/25) µm
	SG156: (30 + L/25) µm

Shapegrabber ai620

The Shapegrabber ai620 is a high performance, mid-sized 3D scanner designed to serve a wide variety of parts requiring 3D surface inspection and measurement. The ai620 supports a single scan head which moves vertically on a high precision motion assembly.

Report Types	Color error maps, flyout boxes, tables, cross sections, GD&T, statistical, etc...
Report Formats	PDF, HTML, csv, txt, EXCEL, pptx, Video, Word
Weight: 350 kg	**Shipping weight:** 450 kg
Part No.	PT032-045

Data Acquisition Rate	150,000 to 1,000,000 points per second
Scan Volume	600 mm H x 190 mm Dia
Laser Type	Class II, eye-safe
Depth of Field	185mm
Depth Resolution (Z)	sg198: <3 µm
Accuracy, MPE_E (per ISO10360-8)	sg156: (15+L/100) µm
Accuracy, MPE_E (per ISO10360-8)	SG198: (15 + L/25) µm

ShapeGrabber Ai810

The ShapeGrabber Ai810 inspection system is ideal for larger parts, like those produced for the automotive industry. The Ai810 can be configured with two measurement axes, vertical and horizontal ,as well as fitted with 4 interchangeable scanhead models (SG46, SG156, SG356 and SG1002) which are used individually or in pairs, accommodating a very wide range of scan volumes, inspection times, data resolutions and accuracies.

Report Types	Color error maps, flyout boxes, tables, cross sections, GD&T, statistical, etc...
Report Formats	PDF, HTML, csv, txt, EXCEL, pptx, Video, Word
Weight: 726 kg	**Shipping weight:** 1000 kg

Data Acquisition Rate	18,000 to 800,000 points per second
Max Scan Volume, with SG1002 scan-head	1250 mm H x 800 mm x 600 mm Dia
Laser Type	CDRH Class II/ IEC Class 2M
Depth Resolution (Z)	SG46: 2 µm
	SG156: 5 µm
	SG356: 10 µm
	SG1002: 25 µm
Accuracy, MPE_E (per ISO10360-8)	SG46: (16 + L/25) µm
	SG156: (30 + L/25) µm
	SG356: (45 + L/25) µm
	SG1002: (90 + L/25) µm

Fusion - Advanced Multisensor Metrology

Fusion systems offer a unique combination of dual optical paths — low mag with 100 mm viewing area, and high mag for small feature measurement and autofocus. Fusion adds multisensor versatility with optional touch probe, TeleStar® TTL laser, micro-probe, continuous contact scanning probe, and 4th and 5th axis rotary indexers. Fusion is equipped with ZONE3® Prime, with integral AutoID and AutoMeasure functions, ideal for large field of view (LFOV) optics.

Fusion 400

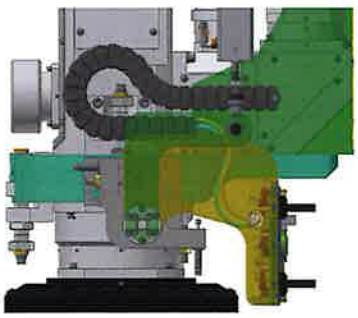
Fusion™ 400 is a high-performance multisensor system offering dual optical paths — low magnification with 100 mm viewing area and high magnification for small feature measurement and AutoFocus. Optional touch probe, TeleStar® TTL laser, micro-probe, continuous contact scanning probe, and 4th and 5th axis rotary indexers provide 3D multisensor versatility.

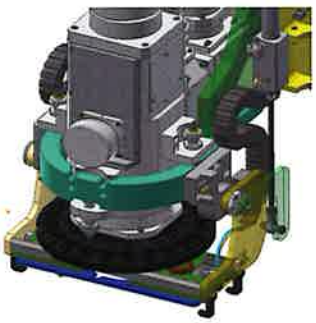
XYZ Measuring Range	350 x 250 x 250 mm
Weight: 2100 kg	**Shipping Weight:** 2325 kg
Part No.	PTO28-030

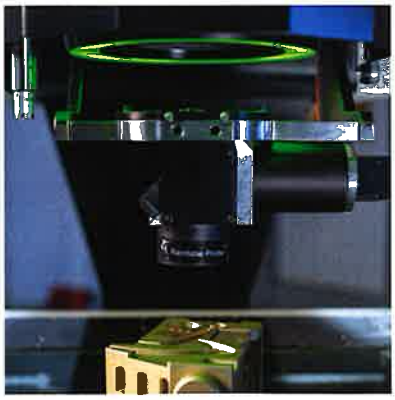
Accuracy	Standard	Optional
E_2 XY	(1.5 + 4L/1000) µm	
E_3	(2.5 + 4L/1000) µm	
E_1 Z	(3.5 + 4L/1000) µm	(1.0 + 5L/1000) µm

Fusion RDM Rapid Deploy Mechanism (U.S. Patent No. 9784564)

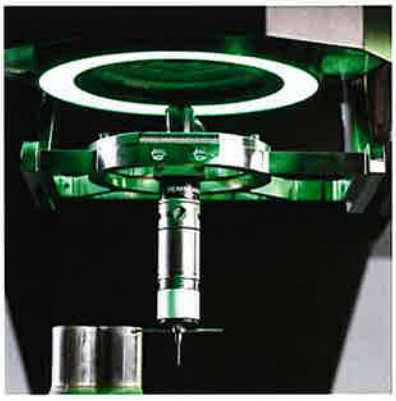
Fusion systems are equipped as standard with a patented air-driven mechanism which deploys a range of sensors on the optical axis for multisensor measurements. This high precision device is capable of deploying racks containing a range of sensors and illuminators, including touch-trigger and scanning probes, Rainbow and TeleStar probes, fold mirrors, a high magnification lens, a low incidence angle illuminator and a rotary mechanism which allows various probes or light sources to target the sides of a part. In this way, a wide variety of sensors with a working distance shorter than the optics can be used when needed, and then retracted to allow maximum working clearance.



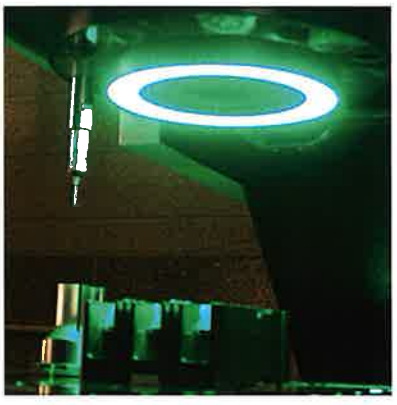




Rainbow Probe



Touch Trigger Probe



Scanning Probe

FlexPoint - Multisensor CMMs

FlexPoint™ is the new generation of large format, air-bearing multisensor coordinate measuring systems. FlexPoint offers a unique combination of sensors and CAD based programming to solve a wide variety of dimensional measurement problems for large format parts.

FlexPoint 7-Series

XYZ Measuring Range

700 x 700 x 600 mm (7.7.6)

700 x 1100 x 600 mm (7.11.6)

700 x 1500 x 600 mm (7.15.6)

Weight: 1730 kg

Shipping Weight: 2000 kg

FlexPoint 9-Series

XYZ Measuring Range

900 x 1200 x 800 mm (9.12.8)

900 x 1600 x 800 mm (9.16.8)

900 x 2000 x 800 mm (9.20.8)

Weight: 3200 kg

Shipping Weight: 3500 kg

FlexPoint 12-Series

XYZ Measuring Range

1200 x 1500 x 1000 mm (12.15.10)

1200 x 2000 x 1000 mm (12.20.10)

1200 x 3000 x 1000 mm (12.30.10)

Weight: 6680 kg

Shipping Weight: 7500 kg

FlexPoint systems feature a stable machine design with carefully selected materials, rigid body members, air bearing on all axes, and active temperature compensation. FlexPoint is also equipped with factory volumetric calibration using Etalon® Trac-Cal laser system to ensure the lowest possible calibration uncertainty.

FlexPoint Model		7-Series	9-Series	12-Series
Length measurement errors	$E_{0,MPE}$	3.1 + 3L/1000 [1,2,4,5]	3.4 + 3L/1000 [1,2,4,5]	3.7 + 3L/1000 [1,2,4,5]
Single stylus form error (µm)	$P_{FTU,MPE}$	4.6 [2,4]	4.9 [2,4]	5.3 [2,4]
Length measurement errors	$E_{0,MPE}$	2.4 + 3L/1000 [1,2,3]	2.7 + 3L/1000 [1,2,3]	3.0 + 3L/1000 [1,2,3]
Single stylus form error (µm)	$P_{FTU,MPE}$	2.7 [2,3]	3.0 [2,3]	3.3 [2,3]
Scanning probe errors	$MPE_{,THP}$	3.6 [2,3,6]	3.9 [2,3,6]	4.1 [2,3,6]
Time for scanning probe errors (sec.)	$MPE_{,\tau}$	65	65	70
Probing size error All	$P_{[Size\ Sph\ All;Tr;ODS],MPE}$	3.5 µm [2]	3.5 µm [2]	3.5 µm [2]
Laser measurement accuracy		1.0 µm [2,7]	1.0 µm [2,7]	1.0 µm [2,7]
Imaging probe length measurement error (µm)	$E_{UV,MPE}$	3.0 [2]	3.0 [2]	3.0 [2]

*Refer to technical data sheet number 794001 for important details regarding accuracy specifications.

Non-Contact Sensors

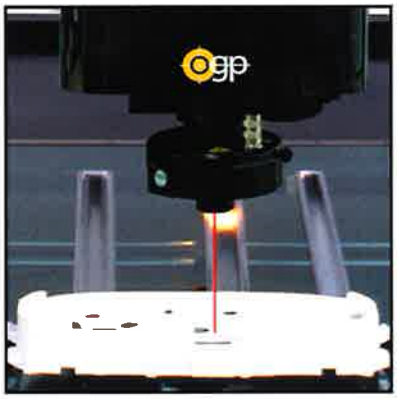
Triangulation Lasers

Blue DRS

QVI DRS (Dynamic Range Sensor) lasers are offered in five configurations with varying wavelength, capture range, working distance and resolution to suit a variety of application situations. DRS lasers are mounted off-axis from the system optics. On some models, the DRS may be mounted on a mechanical deploy which retracts when the laser is not in use.

Red DRS

Through The Lens (TTL) Lasers



TTL Laser

QVI TTL Lasers are offered on SmartScope Flash/CNC and ZIP, RAM Spark and all QVI VIEW models. QVI TTL lasers offer long working distance and no sensor offset, enabling them to be used throughout the full measuring range of the system. System software will dynamically adjust the Z-axis position to keep the TTL laser within its capture range as it scans a part surface.

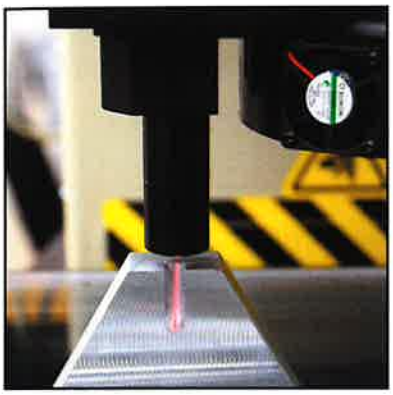
Linear Line Scan Lasers

sg198 / 190B

The sg family of line scan laser sensors are offered on Shapegrabber 3D Scanning and FlexPoint CMM systems. The sg family includes a range of wavelengths, capture ranges and speeds to suit various surface measurement applications. The 198 / 190B blue laser scan head offers the highest resolution and data rate of the available sg lasers.

Non-Contact Sensors

Interferometric Range Sensors



TeleStar® Probe

The TeleStar Probe and TeleStar Plus sensors offer ultra-high resolution and accuracy based on the principle of partial coherence interferometry. The measurement signal is compared in real time to the internal reference signal, assuring exceptional accuracy on both specular and diffuse surfaces. The TeleStar Plus is a TTL laser offered on SmartScope Quest / Vantage, SmartScope SP and Fusion models. The TeleStar Probe is an off-axis unit available on ZIP Advance and FlexPoint multisensor systems.

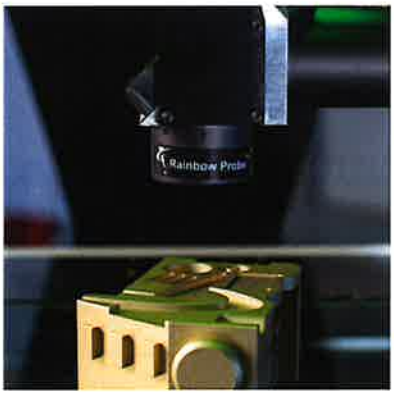
TeleStar Plus

Articulating Sensor Cluster

VersaFlex™ Sensor Cluster

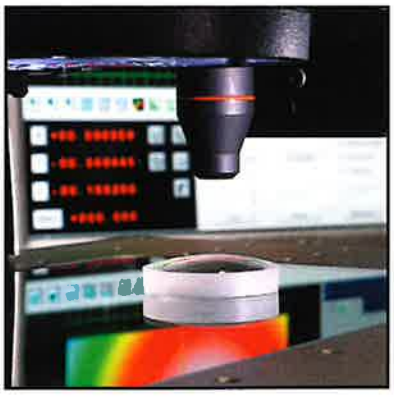
The VersaFlex™ sensor cluster is an arrangement of up to three QVI sensors mounted on an articulating probe head. SP25 scanning probe, QVI optical video probe, TeleStar Probe or CL-Series Rainbow probes can be mounted on the VersaFlex. VersaFlex is offered on QVI FlexPoint floor model CMMs only, and is not available as an OEM sensor or on other QVI platforms.

Chromatic Confocal Sensors



RP-1500

The Rainbow Probe™ family of chromatic confocal sensors offered on SmartScope, Fusion and QVI VIEW systems provide high resolution measurement on a wide variety of surface colors and textures. These sensors operate on the principle of chromatic aberration, segregating the reflected light into its component wavelengths for maximum focus accuracy. The RP-1500 probe is the most versatile with its long working distance and generous capture range. The CL-Series of probes offer a range of alternate optical arrangements to suit specific applications.



CL Series

Special Purpose Systems

QVI Custom Engineering Group (CEG) offers a variety of standard, semi-custom and fully custom systems, part handling solutions and fixture tooling to solve specific customer applications. Standard CEG models include the Cobra and Lazer family of laser measuring systems, and the Itaca FlexGauge line of benchtop CMMs.

Cobra

Cobra 3D with optional rotary stage shown

The QVI Cobra is an economical laser scanner that quickly scans virtually any surface to produce high-resolution 2D or 3D profiles (depending on model). Interchangeable DRS sensors yield Z-height resolutions to 0.125 µm. Cobra 2D may be used on a benchtop, in-line, or placed directly on the part being scanned. Cobra 3D is attached to a granite plate. Scan-X® software provides extensive profile analysis capabilities.

Max XY Scan Length	2D: 50 mm 3D: 100 mm x 50 mm
System Weight	2D: 10.5 kg 3D: 80 kg
Shipping Weight	2D:30 kg 3D:156 kg
Part No.	527057

DRS Type	Accuracy (within Z capture range)
DRS-300	1.0 µm
DRS-500	1.0 µm
DRS-500B	1.0 µm
DRS-2000	10.0 µm
DRS-8000	40.0 µm

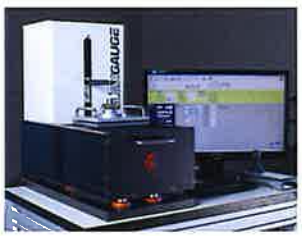
Lazer 200

QVI Lazer 200 is a unique DRS laser-based measurement system for scanning surfaces in 3 dimensions. Based on the benchtop 200 elevating bridge platform, it offers a 200 x 200 x 100 mm measuring range. The laser sensor is augmented by an on-axis video camera, allowing use of image processing tools to accurately measure datum targets and fiducials, and choose a specific measuring location/position. MeasureMind 3D or Measure-X software is available.

XYZ Measuring Range	200 x 200 x 100 mm
Weight:	100 kg
Shipping Weight:	149 kg

Accuracy	Standard	Optional
E_2 XY	(6.0 + 6L/1000) µm	
E_1Z	(1.5 + 5L/1000) µm	

FlexGauge T-16/T-22



FlexGauge T-16/ T-22 are precision, air-bearing X,Y stages for measurement of small precision parts such as gears, valve bodies, CV joints, racks and ballscrews. Single or dual probe configurations are available for FlexGauge.

XYZ Measuring Range	**T-16/111:** 160 x 100 x 160 mm **T-22/212:** 250 x 160 x 250 mm
X,Y,Z Scale Resolution	0.5 µm (std) 0.1 µm (opt)
Weight: 48 kg	**Shipping Weight:** 100 kg

Accuracy	Standard
MPE_e	1.0 + L/300 µm
Max	1.5 µm (with TP20)
MPE_p	1.2 µm (with SP25)

FlexGauge C-35

A stable granite support structure and ceramic, glass or laser scales make FlexGauge C-models equally at home on the shop floor or in the QC lab. FlexGauge C-35 offers high speed 3D probing with touch trigger or scanning probes, built-in thermal compensation, and flexible TANGRAM software.

XYZ Measuring Range	350 x 200 x 250 mm
X,Y,Z Scale Resolution	0.5 µm (std) 0.1 µm (opt)
Weight: 130 kg	**Shipping Weight:** 195 kg

Accuracy	Standard
MPE_e	1.0 + L/300 µm
Max	1.5 µm (with TP20)
MPE_p	1.2 µm (with SP25)

Rotary Indexers

QVI offers a number of rotary positioning devices for use with video systems and comparators. When a rotary-mounted part is rotated, its features can be presented to the optical axis of the measuring machine and imaged by the camera. All QVI software treats rotaries as "set-angle" devices. The rotary is moved to the desired angle, and part features are measured with reference to that angle as basic. MeasureMind® 3D and ZONE3® software automatically rotate the part coordinate system with the part, allowing feature location references to remain unchanged after a rotation. Measure-X® and VMS™ measurement software rotate the part, but not the coordinate system. Rotary devices have different degrees of accuracy, depending on design requirements. **Note:** Refer to the **QVI Guide to Rotary Indexers** for more information regarding single and dual rotary indexers.

The SNAP Miniature Rotary (SMR) combines the small package size of the MSR worm-gear rotary mechanism with a micro-stepper motor to create a convenient rotary indexer for SNAP desktop measuring systems.

The Precision Stepper Rotary (PSR) is a compact, stepper-driven rotary with a moderate load capacity. It is intended for use with the QVI Rotary Controller on comparators and c-vision systems.

The compact size of the Miniature Servo Rotary (MSR) makes it convenient to use, and it may be mounted on the machine in a number of ways. The MSR uses a worm and worm-gear drive that relies on the accuracy of the gearing system to achieve rotary positioning. MSR resolution is 16 seconds of arc and accuracy is ± 2 arc minutes.

The QVI Rotary Controller provides an interface between MTR, PSR and MSR rotary indexers and QVI systems that do not have an onboard DSP motion controller. Comparators, c-vision, and StarLite models can use this controller to add rotary 4th axis capability.

Rotary Controller

Part No.	Dash	Rotary
041542	-1	MSR
	-2	PSR
	-3	MTR

The MicroTheta Rotary (MTR) offers reasonably small size and accurate rotary positioning. MTR is worm and worm-gear driven, with a DC motor turning the worm. The MTR offers angular position resolution of <1 sec of arc and accuracy of ± 5 seconds of arc.

The Heavy Duty Rotary (HDR) is a machine-tool-type precision rotary designed for continuous duty applications with heavy parts or fixtures. The HDR features a precision rotary encoder attached directly to the spindle, with a resolution of 3.6 seconds of arc (360,000 counts per revolution). Dual HDR or HDR/MTR combinations may be used to provide 5-axis positioning.

The High Precision Rotary (HPR) is a compact, high-precision rotary air-bearing angular positioning device. HPR can be mounted either horizontally or vertically, or it may be combined with the HDR to provide a fifth axis of rotation.

Key Specifications

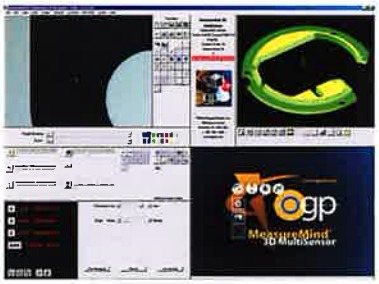
	Spindle to Stage (mm)	Faceplate Dia (mm)	Accuracy	Max Load (kg)	Max Moment (kg-cm)
SMR	46	61	±2 arc min	4.0	2.0
PSR	64	102	±2 arc min	25.0	10.0
MSR	46	61	±2 arc min	4.0	2.0
MTR	66	85	±5 arc sec	8.0	4.0
HDR	100	70	±5 arc sec	30.0	20.0
HPR	95	106	±1 arc sec	11.0	4.0

3D Metrology Software

State-of-the-art measurement software is an integral part of every QVI metrology system. Developed by QVI, this software has extensive capabilities for acquiring, filtering, displaying, and exporting system measurement data.

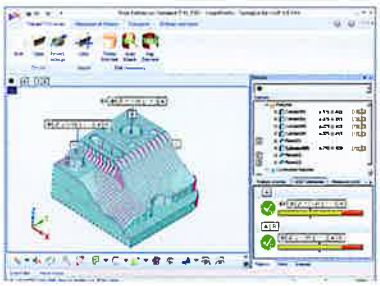
ZONE3®

ZONE3 is QVI's flagship 3D multisensor metrology software. It is standard on FlexPoint, Fusion and SmartScope SP models, and available as an option on all SmartScope models. ZONE3 is offered in four versions. ZONE3 ***Express*** has the ability to work with 2D CAD files. ZONE3 ***Prime*** is fully 3D capable. ZONE3 ***Pro*** adds enhanced analysis tools for the power user. ZONE3 ***Offline*** is designed for use at an offline workstation.



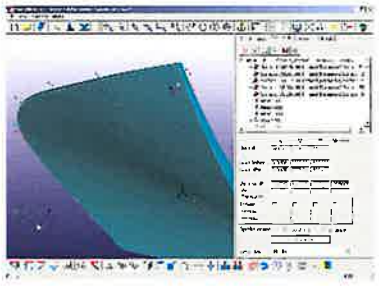
MeasureMind® 3D MultiSensor

Measurement software with true 3D functionality. Automatically measures cylinders, cones, spheres, planes, and intersections, in addition to 2D features and relationships. Interactive rotating wireframe or solid model. Full multisensor operation.



SmartProfile®

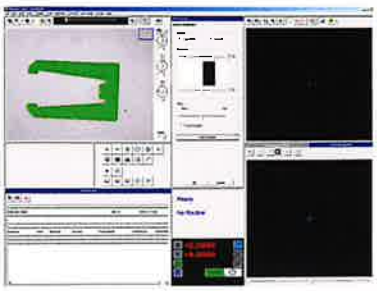
SmartProfile is a 3D best-fitting software package with ASME Y14.5 and ISO 1101 GD&T compliance. SmartProfile allows optimization and evaluation of shape, form, and dimensional requirements for rigid bodies and assemblies. CAD import.



SmartFit® 3D

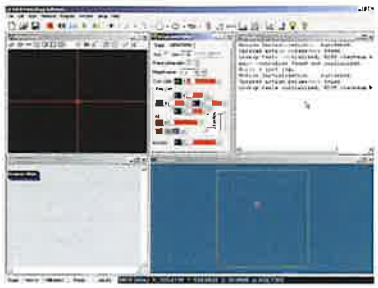
This comprehensive fitting software provides full 3D fitting capability. Incorporates automation macros with a choice of fitting algorithms and tolerance conventions. CAD import allows easy access to surface definition to allow association of data point clouds with object surfaces. Clearly identifies non-conformance.

2D & 2½D Metrology Software



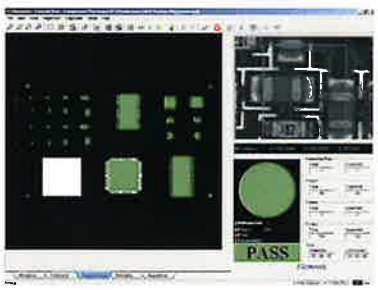
Measure-X®

Easy-to-use 2½ D measurement software, Measure-X features full measurement functionality, full CNC operation, AutoCorrelate and advanced image processing. CAD import is optional.



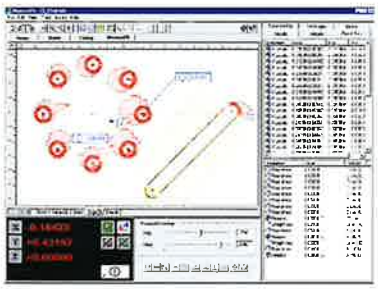
VMS™

Powerful 2½ D measuring software, with powerful parametric programming and built-in scripting for creation of custom routines and user interfaces. Standard on QVI VIEW systems, available on Portal-based systems.



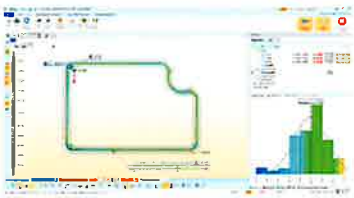
Elements®

Rules-based 2D CAD-based metrology software, ideal for measuring parts with very high feature density. Creates measurement routines directly from 2D CAD files, and optimizes measurement paths for high speed measurement. Available on QVI VIEW systems and selected Portal-based models.



MeasureFit® Plus

2D fitting package that analyzes all part features simultaneously and compares them to a nominal design template created from an inspection routine. Supports GD&T datum structures. Accepts data from MeasureMind 3D MultiSensor, Measure-X, and VMS measurement software.

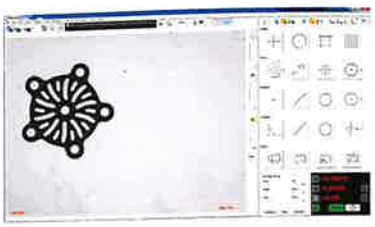


SmartProfile® 2D

2D fitting version of the popular SmartProfile program, evaluates 2D point clouds to ASME Y14.5 and ISO-1101 GD&T standards and offers optimization and evaluation of profile tolerances.

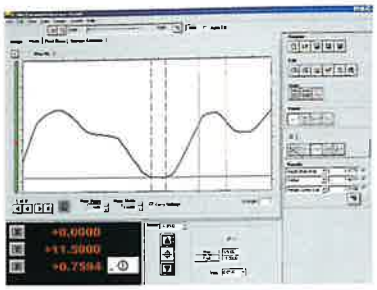
SNAP software

SNAP software is a shop floor friendly 2D metrology software for SNAP measuring systems. SNAP features a unique core user interface optimized for large field of view optical systems.



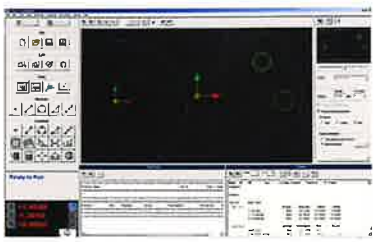
Scan-X®

Surface profiling application, primarily for the QVI Cobra, that analyzes laser scan data to produce a high-resolution 2D profile and/or 3D raster. Adjustable cursors facilitate measurements. Archive measurement results and use playback mode for automatic inspections.



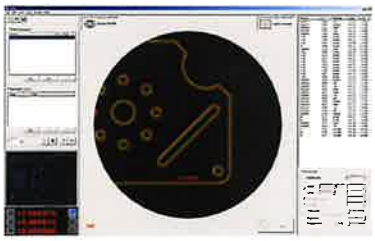
eChek™

Measurement software automatically measures 2D parts on QVI comparators with motorized worktables. Provides full measurement and construction functionality and CNC operation. CAD import is optional.



eCAD®

Electronic overlay package that provides "virtual charts" generated by a CAD file, and projects them onto properly configured comparator screens. Virtual charts can be compared to actual part profile for CAD-assisted inspection. eCAD requires a properly configured comparator.

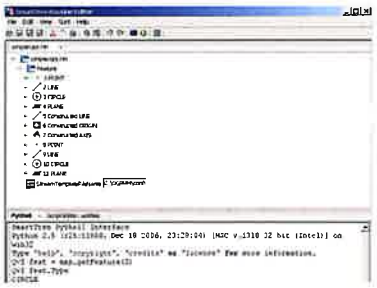


vCAD

Virtual comparison chart software for c-vision systems displays an accurately magnified CAD model with tolerance zones, allowing direct comparison of part image to CAD. Convenient rotary knob on c-vision control panel allows video image rotation to align with CAD model. vCAD allows visual comparison to the CAD model only.

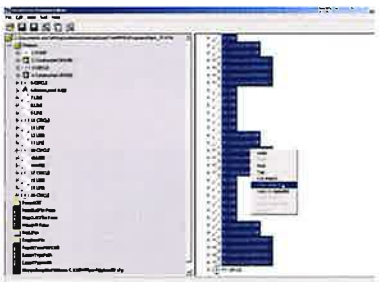
QVI Supporting Software

QVI offers a range of supporting software and plug-ins to add specific functionality to standard metrology software.

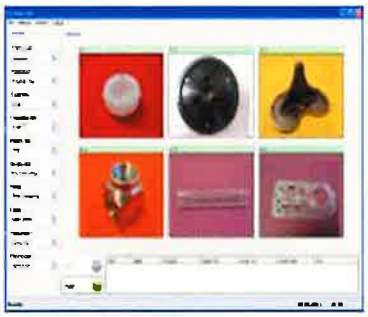


SmartScript®
Allows the user to write customized scripts for MeasureMind 3D using the Python scripting language. Applications include advanced logic statements, parametric part routine creation, advanced output, and task automation. Includes SmartTree.

SmartFeature®
SmartFeature is a customizable operator interface utility that allows the user to control which MeasureMind 3D programs, or parts of programs, to run. The enterprise version adds security features ideal for FDA 21 CFR Part 11 compliance. SmartFeature is offered and supported by OGP Messtechnik, GmbH.

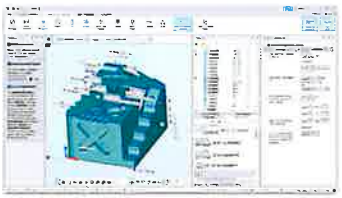


SmartTree™
Offline Measure-X and MeasureMind 3D routine viewer and editor. Used for database changes, feature editor, global editor, and cut and paste programming. Included with SmartScript, or purchased separately.



SmartSCS™
SmartSCS is a user interface for all QVI machine software - providing scalable capabilities for shopfloor, automation, robot part handling, MTconnect, machine monitoring, gears, threads and special stats formats. SmartSCS is a SmartFeature upgrade. SmartSCS is offered and supported by OGP Messtechnik, GmbH.

KOTEM EVOLVE Design - is a tool to aid CAD designers in the correct application of 3D GD&T. Apply functionally and syntactically correct GD&T in a 3D model, proof a CAD model's GD&T and get helpful guidance and communicate to downstream processes to eliminate waste and errors in transcriptions of GD&T.



KOTEM EVOLVE Manufacturing - graphically displays measured results based on design or manufacturing datums, helping determine why a part has failed during the GD&T evaluation, and which corrective action(s) can fix the manufacturing issue.

KOTEM EVOLVE SPC - is a powerful statistical process control software that was built for modern manufacturing. EVOLVE SPC incorporates the CAD Model making it easy for users to visually locate a dimension on the physical part. EVOLVE SPC includes a full powered database, making it easy to manage numerous data clouds.

Serial Number Prefixes

Serial Prefix		Machine Models
DOM	INTL	
CC-14	CC-14	CC-14
CC-14L	CC-14L	CC-14L
CC-16L	CC-16L	CC-16L
CC-V	CC-V	c-vision (Benchtop)
CC-V	CC-V	c-vision (Floor Model)
CC-16	CC-16	CC-16
CC-20	CC-20	CC-20
CC-30	CC-30	CC-30
CC-30S	CC-30S	CC-30S
SFC/SFD	SFC/SFD	SNAP 100
SFC/SFD	SFC/SFD	SNAP 200
SFC/SFD	SFC/SFD	SNAP 350
RSL	RSL	StarLite 150
ROS	ROS	StarLite 200-300
RSC	RSC	SprintMVP 200-300
RSC	RSC	SprintMVP 400, 600
RSC	RSC	SprintMVP 624
RSC	RSC	SprintMVP 1500, 1550, 1552
RHS	RHS	Spark 200-300
RHV	RHV	SparkMVP 200-300
SVZ	SVZ	SmartScope Lazer
CB	CB	Cobra
SVW/SVL	SVW	SmartScope Flash 200 w/ Embedded PC
SVW/SVL	SVW	SmartScope Flash 200 w/ External PC
SVW/SVL	SVW	SmartScope Flash CNC 200 w/Embedded PC
SVW/SVL	SVW	SmartScope Flash CNC 200 w/External PC
SVW/SVL	—	SmartScope Flash 250
—	SVC	SmartScope CNC 250
SVW/SVL	—	SmartScope Flash 302
—	SVC	SmartScope Flash CNC 300
SVW/SVL	—	SmartScope Flash 500

Serial Prefix		Machine Models
DOM	INTL	
—	SVC	SmartScope CNC 500
		SmartScope Flash 624
		SmartScope Flash/CNC 670
SVW/ SVL	SVC	SmartScope Flash/CNC 1500, 1550, 1552
SKA	SKA	SmartScope ZIP Advance 250
SKA	SKA	SmartScope ZIP Advance 300
SKA	SKA	SmartScope ZIP Advance 450
SK	SK	SmartScope ZIP 250
SK	SK	SmartScope ZIP 300
SK	SK	SmartScope ZIP 450
SK	SK	SmartScope ZIP 635
SK	SK	SmartScope ZIP 800
SKL	SKL	SmartScope ZIP Lite 250
SKL	SKL	SmartScope ZIP Lite 300
SQ	—	SmartScope Quest 250
—	SV	SmartScope Vantage 250
SQ	—	SmartScope Quest 300
—	SV	SmartScope Vantage 300
SQ	SV	SmartScope Quest/Vantage 450
SQ	—	SmartScope Quest 650
—	SV	SmartScope Vantage 650
SQ	SV	SmartScope Quest/Vantage 800
SWH	SWH	Fusion 400
B	B	VIEW Benchmark 250
B	B	VIEW Benchmark 450
P	P	VIEW Pinnacle 250
P	P	VIEW Pinnacle Plus
S	S	VIEW Summit 600/625
S	S	VIEW Summit 800
		VIEW Microline 300
		VIEW Precis 200

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