

Quick Scope

SERIES 359 — Manual Vision Measuring System

FEATURES

- Surface, contour and fiber-optic ring light illumination options enable users to configure the QS lighting to meet a variety of measurement needs.
- Powerful, Windows®-based QSPAK software offers a spectrum of measuring and analysis capabilities.
- Functions include auto-focus, measurement playback, one-click edge detection, graphic display, 48 different macros and a pattern matching function for several common part features.
- Excellent surface observation model for a variety of workpieces.
- 0.1µm resolution and 150mm Z-axis range.
- Power zoom enables quick magnification changes.
- Fine illumination capability enables lighting changes to match workpiece requirements.

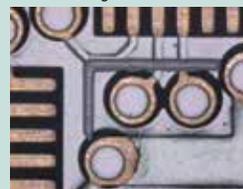
- The quick release system on the stage enables instant switching between coarse and fine movements.
- Quick Navigation function enables the user to repeat measurements quickly.



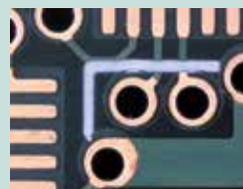
■ Illumination



Contour (stage) illumination



Surface (coaxial) illumination



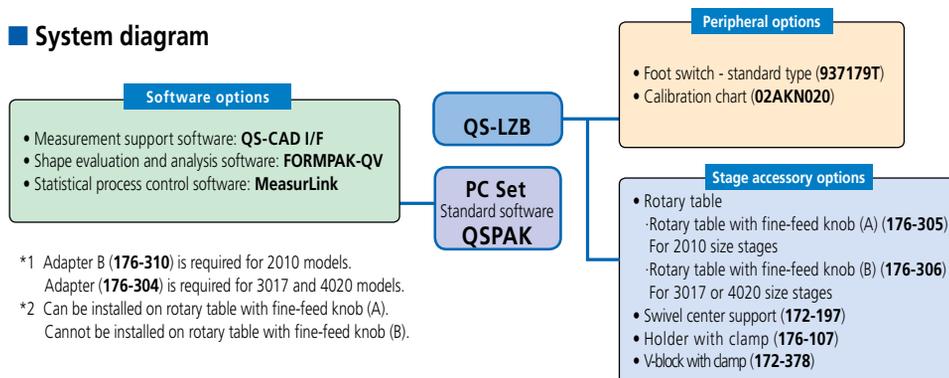
Fiber-optic ring illumination

During automatic measurement the part program provides automatic control over the illumination system, thus providing the necessary balance between user-friendliness and high efficiency.

SPECIFICATIONS

Model No.	QS-L2010ZB	QS-L3017ZB	QS-L4020ZB
Range (X-axis / Y-axis / Z-axis)	8" x 4" x 6" / 200 x 100 x 150mm	12" x 6.7" x 6" / 300 x 170 x 150mm	15.7" x 8" X 6" / 400 x 200 x 150mm
Resolution	0.1µm		
Scale type	Linear encoder		
Measuring accuracy (at 20°C and 3.0x magnification)	XY: (2.5+20L/1000)µm Z: (5+40L/1000)µm		
Image detecting unit	1/2" 3 MP Color CMOS camera		
Illumination (Halogen)	Co-axial light, fiber-optic ring light, stage light		
Stage glass size	9.84 x 5.91" (250 x 150 mm)	14.57 x 9.45" (370 x 240 mm)	17.32 x 9.45" (440 x 240 mm)
Max. workpiece height	6" / 150mm		
Max. stage loading	22 lbs / 10 kg	44 lbs / 20 kg	33 lbs / 15 kg
Dimensions (W x D x H)	25" x 30" x 28" / 624 x 769 x 722 mm	27" x 33" x 36" / 682 x 837 x 916 mm	30" x 33" x 37" / 757 x 837 x 930 mm
Mass (main unit)	158.7 lbs / 72 kg	308.6 lbs / 140 kg	321.9 lbs / 146 kg

■ System diagram



*1 Adapter B (**176-310**) is required for 2010 models.
Adapter (**176-304**) is required for 3017 and 4020 models.
*2 Can be installed on rotary table with fine-feed knob (A).
Cannot be installed on rotary table with fine-feed knob (B).

■ Control Box



For QS-LZB

■ Optical system magnification ratios available for QS-LZB

Total magnification Field of View (mm)	29X 8.8x6.6	38X 6.8x5.1	49X 5.2x3.9	58X 4.4x3.3	87X 2.9x2.2	116X 2.2x1.6	145X 1.7x1.3	202X 1.2x0.9
QS-LZB	0.75X	0.98X	1.28X	1.5X	2.25X	3X	3.75X	5.25X
Working distance (mm)	55							

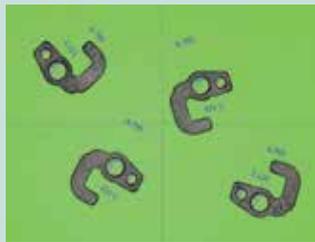
* Total magnification shown in the above table is a reference value displayed in the default window state when using 22-inch LCD.

Quick Image

SERIES 361 — Non-contact 2-D Vision Measuring System

Double-telecentric optics enable efficient measurement with a wide field of view

Batch measurement with a wide field of view 1.259" x 0.945" (32 x 24mm) realized using a 0.2X magnification model can substantially improve measurement efficiency. With a 0.5X magnification model, dimensions of very small workpieces and stepped workpieces easily can be measured.



Actual image acquired with a 0.2X magnification model

Quick Image is a new concept in 2-D vision measuring instruments. It provides unique features for improving measurement efficiency.

FEATURES

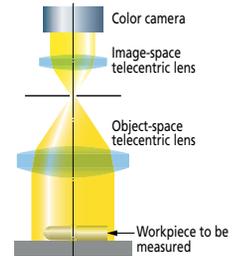
- Long focal depth and wide field of view
- Telecentric optical system
- 3 mega-pixel color CCD camera
- Large quadrant LED ring light
- Single-click measurement execution
- Displays measurement results on video window
- Orientation of part is automatically detected



QI-A2010D



QI-C2010D



SPECIFICATIONS

		Manual stage model					Motorized stage model		
0.2X	Model	QI-A1010D	QI-A2010D	QI-A2017D	QI-A3017D	QI-A4020D	QI-C2010D	QI-C2017D	QI-C3017D
0.5X	Model	QI-B1010D	QI-B2010D	QI-B2017D	QI-B3017D	QI-B4020D			
Measuring range (XxY)		3.94" x 3.94" 100x100mm	7.87" x 3.94" 200x100mm	7.87" x 6.69" 200x170mm	11.8" x 6.69" 300x170mm	15.7" x 7.87" 400x200mm	7.87" x 3.94" 200x100mm	7.87" x 6.69" 200x170mm	11.8" x 6.69" 300x170mm
Effective stage glass size		6.69" x 6.69" 170x170mm	9.53" x 5.51" 242x140mm	10.2" x 9.06" 260x230mm	14.2" x 9.06" 360x230mm	17.3" x 9.13" 440x232mm	9.53" x 5.51" 242x140mm	10.2" x 9.06" 260x230mm	14.2" x 9.06" 360x230mm
Maximum stage loading *1		Approx. 22 lbs.(10kg)		Approx. 44 lbs.(20kg)		Approx. 33 lbs. (15kg)	Approx. 22 lbs. (10kg)	Approx. 44 lbs.(20kg)	
Main unit mass		Approx. 143 lbs. 65kg	Approx. 152 lbs. 69kg	Approx. 330 lbs. 150kg	Approx. 348 lbs. 158kg	Approx. 361 lbs. 164kg	Approx. 158 lbs. 72kg	Approx. 337 lbs. 153kg	Approx. 354 lbs. 161kg

*1 Does not include extremely offset or concentrated loads

		QI-A / QI-C		QI-B	
View field		1.26" x 0.94" (32x24mm)		0.50" x 0.378" (12.8x9.6mm)	
Measurement mode		High resolution mode / Normal mode *4			
Travel range (Z axis)		3.94"(100mm)			
Accuracy	Measurement accuracy within the screen *1	High resolution mode	±2µm		±1.5µm
		Normal mode	±4µm		±3µm
	Repeatability within the screen (±2σ) *2	High resolution mode	±1µm		±0.7µm
		Normal mode	±2µm		±1µm
Measurement accuracy (E1xy) *1		±(3.5+0.02)µm L: arbitrary measuring length (mm)			
Monitor magnification *3		7.6X		18.9X	
Optical system	Magnification (Telecentric Optical System)		0.2X		0.5X
	Depth of focus	High resolution mode	±0.6mm		±0.6mm
		Normal mode	±11mm		±1.8mm
Working distance		3.54"(90mm)			
Camera		3 million pixels, 1/2", full color			
Illumination		Transmitted light: Green LED telecentric illumination Co-axial light: White LED Ring light: 4-quadrant white LED			
Power supply		100-240VAC 50/60Hz			
Accuracy guaranteed temperature range		19-21°C			

*1 Inspected to Mitutoyo standards by focus point position.

*2 The measuring accuracy is guaranteed to be accurate within the depth of focus.

*3 For 1X digital zoom (when using the 22-inch-wide monitor)

*4 Patent registered (Japan)

Mitutoyo

QV Active

Compact CNC Vision Measuring Systems

FEATURES

- High-quality zoom optics with interchangeable lenses
- High-resolution and high-speed color camera
- Compact design saves significant space—available in two sizes
- Powerful QVPAK 3D vision software
- Contact and noncontact measurement
- Touch-probe retrofittable
- Programmable LED stage, coaxial and 4-quadrant ring light



1X, 1.5X and 2X interchangeable lens



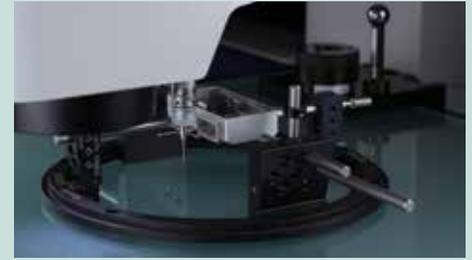
QV Active 202

Optical magnification	0.5X	0.65X	0.75X	0.85X	0.98X	1X	1.28X	1.3X	1.5X	1.7X	2X	2.25X	2.5X	3X	3.5X	3.75X	4X	5X	5.25X	7X	
View field Horizontal (H) (mm)	13.60	10.46	9.07	8.00	6.94	6.80	5.31	5.23	4.53	4.00	3.40	3.02	2.72	2.27	1.94	1.81	1.70	1.36	1.30	0.97	
View field Vertical (V) (mm)	10.80	8.31	7.20	6.35	5.51	5.40	4.22	4.15	3.60	3.18	2.70	2.40	2.16	1.80	1.54	1.44	1.35	1.08	1.03	0.77	
Objective 1X Working distance																					
Objective 1.5X Working distance																					
Objective 2X Working distance																					

SPECIFICATIONS

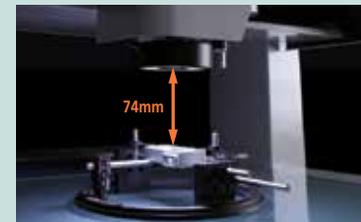
Name	Quick Vision Active	
Model No.	QV Active 202 / QV Active 202 TP	QV Active 404 / QV Active 404 TP
Range (X,Y,Z-axis) with vision head	9.84" x 7.87" x 5.91" 250 x 200 x 150 mm	15.75" x 15.75" x 7.87" 400 x 400 x 200 mm
Resolution	0.1 μm	
Accuracy (μm)*	$E_{1(X,Y)} = (2+3L/1000)$ $E_{1(Z)} = (3+5L/1000)$ $E_{2(X,Y)} = (2.5+4L/1000)$	
Max. stage loading	22 lbs. (10 kg)	44 lbs. (20 kg)
Mass	265 lbs. (120 kg)	606 lbs. (275 kg)
Illumination	(White LED) Contour / Coaxial / 4-quadrant ring light	
Magnification change system	Zoom optical system with 8 positions (Standard 1.5X magnification lens)	
Sensor type	High-resolution CMOS color camera	
Optional objective lenses	1X and 2X magnification	
Factory option	Series 364 (TP) Touch-Probe option (Page M-13)	

* L is arbitrary length in mm



Touch-Probe System

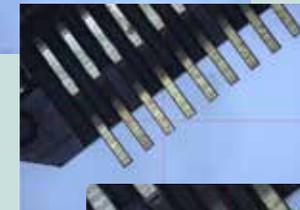
The QV touch-probe system is available on all the models. All touch-probe systems include probes, modules, calibration articles and installed software. (See page M-13)



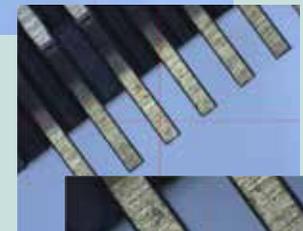
Long working distance 74mm
*when using Z-objective 1X



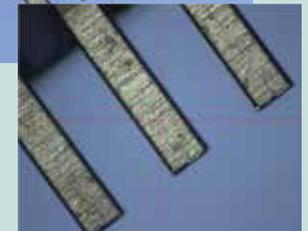
0.75X



1.28X



2.25X

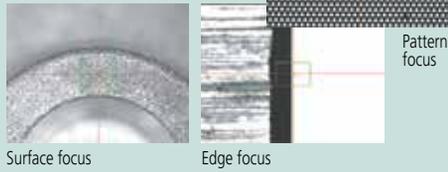


5.25X

8 steps high speed zoom

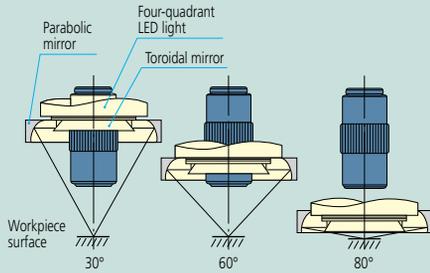
Image Multi-AutoFocus

The optimal focus can be selected for each surface texture and measured feature, realizing high reproducibility and reliable edge detection.



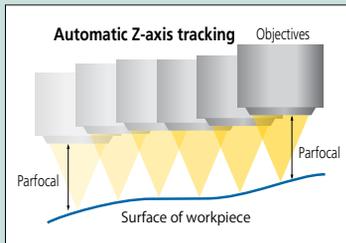
Programmable Ring Light (PRL)

Fine control of obliquity and direction provides illumination optimal for measurement. Obliquity can be arbitrarily set in the range from 30° to 80°. This type of illumination is effective for enhancing the edge of inclined surfaces or very small steps. Illumination can be controlled independently in every direction, front and back, right and left. Measurement with edge enhancement is possible by forming a shadow with lighting from only one direction.



Tracking Auto Focus (TAF)

The TAF feature focuses continuously, adjusting to changes in the height of the object being measured. Automatic tracking of surface waves and warpage (in the Z axis height direction) improves measurement throughput. The feature also eliminates the hassle of focusing during manual measurement.



Tracking Auto Focus (TAF)

AF principle	Objective coaxial autofocusing (knife-edge method)				
Suitable objectives	QV-HR1x	QV-SL1x	QV-HR2.5x	QV-SL2.5x	QV-5x
Tracking range*2	6.3mm (±3.15mm)	6.3mm (±3.15mm)	1mm (±0.5 mm)	1mm (±0.5 mm)	0.25mm (±0.125mm)
Spot diameter*3	5.2µm	8.0µm	2.1µm	3.1µm	1.5µm
Laser source	Semiconductor laser (peak wavelength: 690nm)				
Laser power	0.9mW				
Laser safety	Class 2 (JIS C6802:2011, EN/IEC 60825-1:2007)				

*2 Varies according to workpiece surface texture and reflectance.
*3 These are design values.

Optional Accessories: Refer to page M-14.

QV Apex

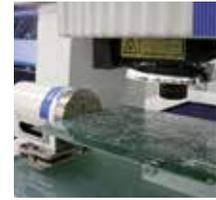
SERIES 363 — CNC Vision Measuring System



QV Apex 302 PRO



QV Apex 606 PRO



Optional Index Table*

Automatic multi-plane measurement is possible with the optional index table. Refer to page M-14 for more details.
*Not available with QV ACCELL models

SPECIFICATIONS

Name	Quick Vision Apex			
	QV Apex 302 PRO	QV Apex 404 PRO	QV Apex 606 PRO	
	QV Apex 302 (ISO10360-7)	QV Apex 404 (ISO10360-7)	QV Apex 606 (ISO10360-7)	
Model No.	QV Apex 302 (w/TAF)	QV Apex 404 (w/TAF)	QV Apex 606 (w/TAF)	
Measuring Range	X-axis	11.81" / 300mm	15.75" / 400mm	23.62" / 600mm
	Y-Axis	7.87" / 200mm	15.75" / 400mm	25.59" / 650mm
	Z-Axis	7.87" / 200mm	9.84" / 250mm	9.84" / 250mm
Resolution / Scale Unit	0.1µm / Reflective-type Linear Encoder			
Resolution Z Scale Using Tracking Autofocus (TAF)	0.3 µm			
Laser Auto Focus repeatability $\sigma \leq$	0.8 µm			
CCD camera	B & W			
Illumination Unit (LED)	Surface	White LED		
	Contour	White LED		
	Programmable Ring Light	White LED		
Max. Drive Speed	X/Y Axis	300 mm/s	400 mm/s	
	Z-Axis	300 mm/s	300 mm/s	
Measuring Accuracy*	E_{IX}, E_{IY}	(1.5+3L/1000)µm		
	E_{IZ}	(1.5+4L/1000)µm		
	E_{2XY}	(2+4L/1000)µm		
	$E_{U,MPE}$ (ISO10360-7:2011)	3+5.5L/1000, 3+6L/1000**		
	$P_{F2D,MPE}$ (ISO10360-7:2011)	2.3µm		
Magnification Change System	Programmable Power Turret (1x, 2x, 6x)			
Stage Glass Size	15.71" x 10.67" (399 x 271mm)	19.41" x 21.69" (493 x 551mm)	27.44" x 29.84" (697 x 758mm)	
Maximum Stage Loading	44 lbs. (20kg)	88 lbs. (40kg)	110 lbs. (50kg)	
Dimensions of Main Unit	37.44" x 33.82" x 41.06" (951 x 859 x 1043mm)	55.39" x 40.43" x 54.37" (1407 x 1027 x 1381mm)	78.15" x 51.54" x 61.81" (1985 x 1309 x 1570mm)	
Mass of Main Unit (Including Machine Stand)	794 lbs. (360kg)	1276 lbs. (579kg)	3197 lbs. (1450kg)	

*The measuring accuracy defined under the following conditions:

Programmable Power Turret: 2x Position; Objective Lens: 2.5x (HR or SL); L=Dimension between two arbitrary points (mm)

**Accuracy 3.5+5.5L/1000 for 20 ± 2°C, Accuracy 3+6L/1000 from 18 to 23°C

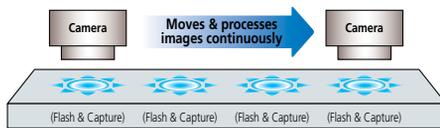
QV Stream Plus

SERIES 363 — CNC Vision Measuring System

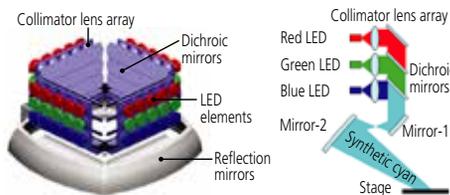


QV Stream Plus 606 PRO

STREAM MODE



High-density mounting of ultra-high intensity LED elements



SPECIFICATIONS

Name		Quick Vision Stream Plus		
Model No.		QV Stream Plus 302 PRO	QV Stream Plus 404 PRO	QV Stream Plus 606 PRO
		QV Stream Plus 302 (w/TAF)	QV Stream Plus 404 (w/TAF)	QV Stream Plus 606 (w/TAF)
Measuring Range	X-axis	11.81" / 300mm	15.75" / 400mm	23.62" / 600mm
	Y-axis	7.87" / 200mm	15.75" / 400mm	25.59" / 650mm
	Z-axis	7.87" / 200mm	9.84" / 250mm	9.84" / 250mm
Resolution / Scale Unit		0.1 μm / Reflective-type Linear Encoder		
Resolution Z Scale Using Tracking Autofocus (TAF)		0.3 μm		
Laser Auto Focus repeatability $\sigma \leq$		0.8 μm		
CCD camera		B & W, Progressive Scanning CCD		
Illumination Unit (C: Continuous; S: Stroboscopic; PRL: Programmable Ring Light)	Surface (C)	Red, Green, Blue & White (LED)		
	Surface (S)	Blue (LED)		
	Contour (C)	Blue (LED)		
	Contour (S)	Blue (LED)		
	PRL (C)	Red, Green, Blue & White (LED)		
	PRL (S)	Blue (LED)		
Max. Drive Speed		X/Y/Z Axis 300 mm/s		
Measuring Accuracy*	E_{1X}, E_{1Y}	(1.5+3L/1000) μm		
	E_{1Z}	(1.5+4L/1000) μm		
	E_{2XY}	(2+4L/1000) μm		
Magnification Change System		Programmable Power Turret (1x, 2x, 6x)		
Stage Glass Size		15.71" x 10.67" (399 x 271mm)	19.41" x 21.69" (493 x 551mm)	27.44" x 29.84" (697 x 758mm)
Maximum Stage Loading		44 lbs. (20kg)	88 lbs. (40kg)	110 lbs. (50kg)
Dimensions of Main Unit		37.44" x 33.82" x 41.06" (951 x 859 x 1043mm)	55.39" x 40.43" x 54.37" (1407 x 1027 x 1381mm)	78.15" x 51.54" x 61.81" (1985 x 1309 x 1570mm)
Mass of Main Unit (Including Machine Stand)		794lbs. (360kg)	1276 lbs. (579kg)	3197 lbs. (1450kg)

*The measuring accuracy defined under the following conditions:
Programmable Power Turret: 2x Position; Objective Lens: 2.5x (HR or SL); L=Dimension between two arbitrary points (mm)

FEATURES



Non-stop Vision Measurement Extreme Improvement in Throughput*

Conventional vision measuring systems endlessly repeat the cycle of stage displacement, stage stop, measurement, stage start and stage displacement. This mode of operation is a fundamental limitation on improving measurement throughput.

In contrast, the Quick Vision Stream system uses an innovative image capture technique that avoids the need to repeatedly stop the stage, thereby allowing for continuous measurement while still maintaining accuracy.

Measurement Throughput Comparison between QV STREAM and the Conventional System

STREAM PLUS series: more than 5 times faster

* Comparison of measurement throughput using a Mitutoyo sample workpiece with that of conventional Mitutoyo systems.

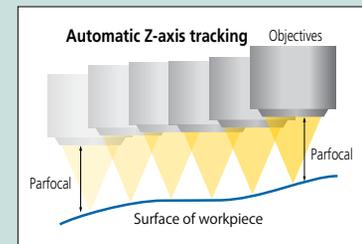
Newly Developed Stroboscopic Illumination System

The development of a high-intensity LED flash illuminator makes non-stop vision measurement possible. At the precise moment the stage reaches a measurement point, the illuminator creates an extremely short, high-intensity flash that effectively freezes all motion. The illuminator turns on and off so quickly that no image blur occurs, and the image is captured in full and accurate detail.

This innovative design takes full advantage of high-density, high-intensity LED arrays aided by collimating lenses and dichroic mirrors to produce ultra bright, directional and efficient illumination.

Tracking Auto Focus (TAF)

The TAF feature continuously focuses, adjusting to changes in the height of the object being measured. Automatic tracking of surface waves and warpage (in the Z axis height direction) improves measurement throughput. The feature also cuts out the hassle of focusing during manual measurement, reducing the work burden for measuring system operators.



Tracking Auto Focus (TAF)

AF principle	Objective coaxial autofocusing (knife-edge method)				
Suitable objectives	QV-HR1x	QV-SL1x	QV-HR2.5x	QV-SL2.5x	QV-5x
Tracking range*2	6.3mm (±3.15mm)	6.3mm (±3.15mm)	1mm (±0.5 mm)	1mm (±0.5 mm)	0.25mm (±0.125mm)
Spot diameter*3	5.2 μm	8.0 μm	2.1 μm	3.1 μm	1.5 μm
Laser source	Semiconductor laser (peak wavelength: 690nm)				
Laser power	0.9mW				
Laser safety	Class 2 (JIS C6802:2011, EN/IEC 60825-1:2007)				

*2 Varies according to workpiece surface texture and reflectance.

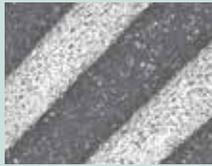
*3 These are design values.

Programmable Power Turret (PPT)

The three tube lens selection provides three magnification levels with the same objective lens. Replacement objective lenses allow a wide range of magnifications to support a variety of measurements.



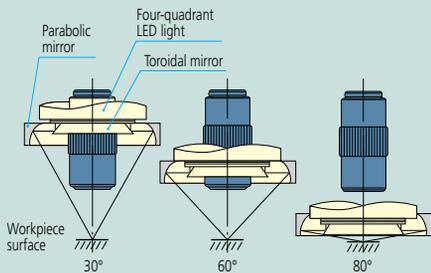
1X tube lens x 2.5X objective
View field: 2.5 x 1.88 mm



2X tube lens x 2.5X objective
View field: 1.25 x 0.94 mm



6X tube lens x 2.5X objective
View field: 0.41 x 0.31 mm



Programmable Ring Light (PRL)

Fine control of obliquity and direction provides illumination optimal for measurement. Obliquity can be arbitrarily set in the range from 30° to 80°. This type of illumination is effective for enhancing the edge of inclined surfaces or very small steps. Illumination can be controlled independently in every direction, front and back, right and left. Measurement with edge enhancement is possible by forming a shadow by lighting from only one direction.

QV Hyper

SERIES 363 — High-accuracy CNC Vision Measuring System



QV Hyper 404 PRO

SPECIFICATIONS

Name		Quick Vision Hyper		
		QV Hyper 302 PRO	QV Hyper 404 PRO	QV Hyper 606 PRO
Model No.		QV Hyper 302 (ISO10360-7)	QV Hyper 404 (ISO10360-7)	QV Hyper 606 (ISO10360-7)
		QV Hyper 302 (w/TAF)	QV Hyper 404 (w/TAF)	QV Hyper 606 (w/TAF)
Measuring Range	X-axis	11.81" / 300mm	15.75" / 400mm	23.62" / 600mm
	Y-Axis	7.87" / 200mm	15.75" / 400mm	25.59" / 650mm
	Z-Axis	7.87" / 200mm	9.84" / 250mm	9.84" / 250mm
Resolution / Scale Unit		0.02µm / Reflective-type Linear Encoder		
Resolution Z Scale using Tracking Autofocus (TAF)		0.26 µm		
Laser Auto Focus repeatability $\sigma \leq$		0.8 µm		
CCD Camera		B & W		
Illumination Unit (LED)	Surface	White LED		
	Contour	White LED		
	Programmable Ring Light	White LED		
Max. Drive Speed	XYZ-Axis	200mm/s		
Measuring Accuracy*	E_{1X}, E_{1Y}	(0.8+2L/1000)µm		
	E_{1Z}	(1.5+2L/1000)µm		
	E_{2XY}	(1.4+3L/1000)µm		
	$E_{U,MPE}$ (ISO10360-7:2011)	2.5+4L/1000, 2.5+4.5L/1000**		
	$P_{F2D,MPE}$ (ISO10360-7:2011)	1.7µm		
Magnification Change System		Programmable Power Turret (1x, 2x, 6x)		
Stage Glass Size		15.71" x 10.67" (399 x 271mm)	19.41" x 21.69" (493 x 551mm)	27.44" x 29.84" (697 x 758mm)
Maximum Stage Loading		44 lbs. (20kg)	88 lbs. (40kg)	110 lbs. (50kg)
Dimensions of Main Unit		37.44" x 33.82" x 41.06" (951 x 859 x 1043mm)	55.39" x 40.43" x 54.37" (1407 x 1027 x 1381mm)	78.15" x 51.54" x 61.81" (1985 x 1309 x 1570mm)
Mass of Main Unit (Including Machine Stand)		794 lbs. (360kg)	1276 lbs. (579kg)	3197 lbs. (1450kg)

*The measuring accuracy defined under the following conditions:

Programmable Power Turret: 2x Position; Objective Lens: 2.5x (HR or SL); L=Dimension between two arbitrary points (mm)

**Accuracy 2.5+4L/1000 for 20 ± 2°C, Accuracy 2.5+4.5L/1000 from 18 to 23°C

QV Hybrid Type 1, Type 4

SERIES 365 — CNC Vision Measuring System with Non-contact Displacement Sensor

FEATURES

The Quick Vision Hybrid is an advanced machine that allows vision measurement with both a CCD camera and high-speed scanning by applying a vision measurement unit in parallel with a non-contact displacement sensor.

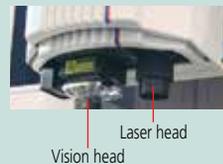


Type 4 Displacement Sensor

QVH 606

FEATURES: Hybrid Type 1

- The focusing point method minimizes the difference in the measuring face reflectance and realizes high measurement reproducibility.
- The double pinhole method (less directivity) is employed as the measurement principle.



CLASS 1 LASER PRODUCT

Safety precautions regarding laser autofocus system (factory-installed option)

This product uses a low-power visible laser (690nm) for measurement. The laser is a CLASS 1 EN/IEC60825-1 (2007) device. A warning and explanation label, as shown above, is attached to the product as appropriate.

SPECIFICATIONS

Name		Quick Vision Hybrid 302		Quick Vision Hybrid 404		Quick Vision Hybrid 606		
Model No.		QVH Apex 302 (ISO10360-7)	QV Hyper 302 (ISO10360-7)	QVH Apex 404 (ISO10360-7)	QV Hyper 404 (ISO10360-7)	QVH Apex 606 (ISO10360-7)	QV Hyper 606 (ISO10360-7)	
		QVH STREAM 302		QVH STREAM 404		QVH STREAM 606		
Measuring Range (XxYxZ)	Vision	11.81" x 7.87" x 7.87" (300x200x200mm)		15.75" x 15.75" x 9.84" (400x400x250mm)		23.62" x 25.59" x 9.84" (600x650x250mm)		
	Non-contact Displacement Sensor	TYPE1	7.09" x 7.87" x 7.87" (180x200x200mm)	TYPE4*1	6.92" x 7.87" x 7.87" (176x200x200mm)	11.02" x 15.75" x 9.84" (280x400x250mm)	18.90" x 25.59" x 9.84" (480x650x250mm)	
Measuring Accuracy	(Vision) ^{2,3}	E1X, E1Y	(1.5+3L/1000)µm	(0.8+2L/1000)µm	(1.5+3L/1000)µm	(0.8+2L/1000)µm	(1.5+3L/1000)µm	(0.8+2L/1000)µm
		E1Z	(1.5+4L/1000)µm	(1.5+2L/1000)µm	(1.5+4L/1000)µm	(1.5+2L/1000)µm	(1.5+4L/1000)µm	(1.5+2L/1000)µm
		E2XY	(2.0+4L/1000)µm	(1.4+3L/1000)µm	(2.0+4L/1000)µm	(1.4+3L/1000)µm	(2.0+4L/1000)µm	(1.4+3L/1000)µm
	(Displacement Sensor) ^{2,3}	E1Z	(1.5+4L/1000)µm	(1.5+2L/1000)µm	(1.5+4L/1000)µm	(1.5+2L/1000)µm	(1.5+4L/1000)µm	(1.5+2L/1000)µm
	(ISO10360-7:2011)	E _{L,MPE}	3+5.5L/1000 ⁴ 3+6.0L/1000 ⁵	2.5+4L/1000 ⁴ 2.5+4.5L/1000 ⁵	3+5.5L/1000 ⁴ 3+6.0L/1000 ⁵	2.5+4L/1000 ⁴ 2.5+4.5L/1000 ⁵	3+5.5L/1000 ⁴ 3+6.0L/1000 ⁵	2.5+4L/1000 ⁴ 2.5+4.5L/1000 ⁵
	P _{F2D,MPE}	2.3µm	1.7µm	2.3µm	1.7µm	2.3µm	1.7µm	
Scale Resolution		0.1µm	0.02µm	0.1µm	0.02µm	0.1µm	0.02µm	
Max. Drive Speed	XYZ Axis	300 mm/s	200 mm/s	300 mm/s	200 mm/s	300 mm/s	200 mm/s	
Stage Glass Size		15.71" x 10.67" (399 x 271mm)		19.41" x 10.67" (493 x 551mm)		27.44" x 29.84" (697 x 758mm)		
Maximum Stage Loading		44 lbs. (20kg)		88 lbs. (40kg)		110 lbs. (50kg)		
Dimensions of Main Unit		37.44" x 33.82" x 41.06" (951 x 859 x 1043mm)		55.39" x 40.43" x 54.37" (1407 x 1027 x 1381mm)		78.15" x 51.54" x 61.81" (1985 x 1309 x 1570mm)		
Mass of Main Unit (Including Machine Stand)		794 lbs. (360kg)		1276 lbs. (579kg)		3197 lbs. (1450kg)		

Name		Quick Vision ACCEL			
Model No.		QVH ACCEL808	QVH ACCEL 1010	QVH ACCEL 1212	QVH ACCEL 1517
Measuring Range (XxYxZ)	Vision	31.50x31.50x5.91" (800x800x150mm)	39.37x39.37x5.91" (1000x1000x150mm)	49.21x49.21x3.94" (1250x1250x100mm)	59.06x68.90x3.94" (1500x1750x100mm)
	Non-contact Displacement Sensor	TYPE1	26.77x31.50x5.91" (680x800x150mm)	34.65x39.37x5.91" (880x1000x150mm)	44.49x49.21x3.94" (1130x1250x100mm)
Measuring Accuracy	(Vision) ^{2,3}	E1X, E1Y	(1.5+3L/1000)µm		(2.2+3L/1000)µm
		E1Z	(1.5+4L/1000)µm		(2.5+5L/1000)µm
		E2XY	(2.5+4L/1000)µm		(3.5+4L/1000)µm
	(Displacement Sensor) ^{2,3}	E1Z	(2.5+4L/1000)µm		(3.5+5L/1000)µm
Scale Resolution		0.1µm			
Max. Drive Speed	XY Axis	400 mm/s		300 mm/s	
	Z Axis	150 mm/s		150 mm/s	
Stage Glass Size		34.76" x 37.72" (883x958mm)	46.69" x 46.69" (1186x1186mm)	56.69" x 56.69" (1440x1440mm)	67.48" x 77.48" (1714x1968mm)
Maximum Stage Loading		22 lbs. (10kg)		66 lbs. (30kg)	
Dimensions of Main Unit		58.07" x 73.23" x 62.13" (1475 x 1860 x 1578mm)	75.28" x 84.29" x 63.11" (1912 x 2141 x 1603mm)	85.28" x 93.31" x 61.18" (2166 x 2370 x 1554mm)	96.06" x 114.09" x 61.18" (2440 x 2898 x 1554mm)
Mass of Main Unit		4519 lbs. (2050kg)	6504 lbs. (2950kg)	7937 lbs. (3600kg)	9921 lbs. (4500kg)

*1 TYPE 4 is not supported by QVH STREAM

*2 L = arbitrary measuring length (mm)

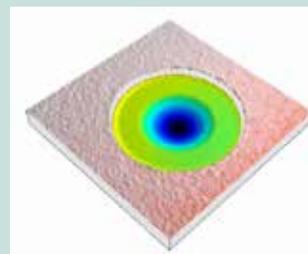
*3 Inspected by Mitutoyo standard

*4 Accuracy for 20 ± 2°C

*5 Accuracy from 18 to 23°C

FEATURES: Hybrid Type 4

- Enables detection of high inclination angles for both mirror and diffused surfaces.
- The automatic lighting adjustment function allows for high-accuracy measurements.
- Thickness measurement of thin and transparent objects such as film.



3-dimensional topographical result, data of plastic package by MCubeMAP

Common Specifications	QV Apex	QV Hyper	QV Accel	QV Stream
CCD camera	Black & White			Black & White; Progressive Scanning
Magnification Change System	Programmable Power Turret (1x, 2x, 6x)			
Guide Method	Linear Motion Hard Bearing			
Illumination (Catalog Page Number Reference)	M-5	M-7	M-12	M-6

* Specification of QVH1 ACCEL