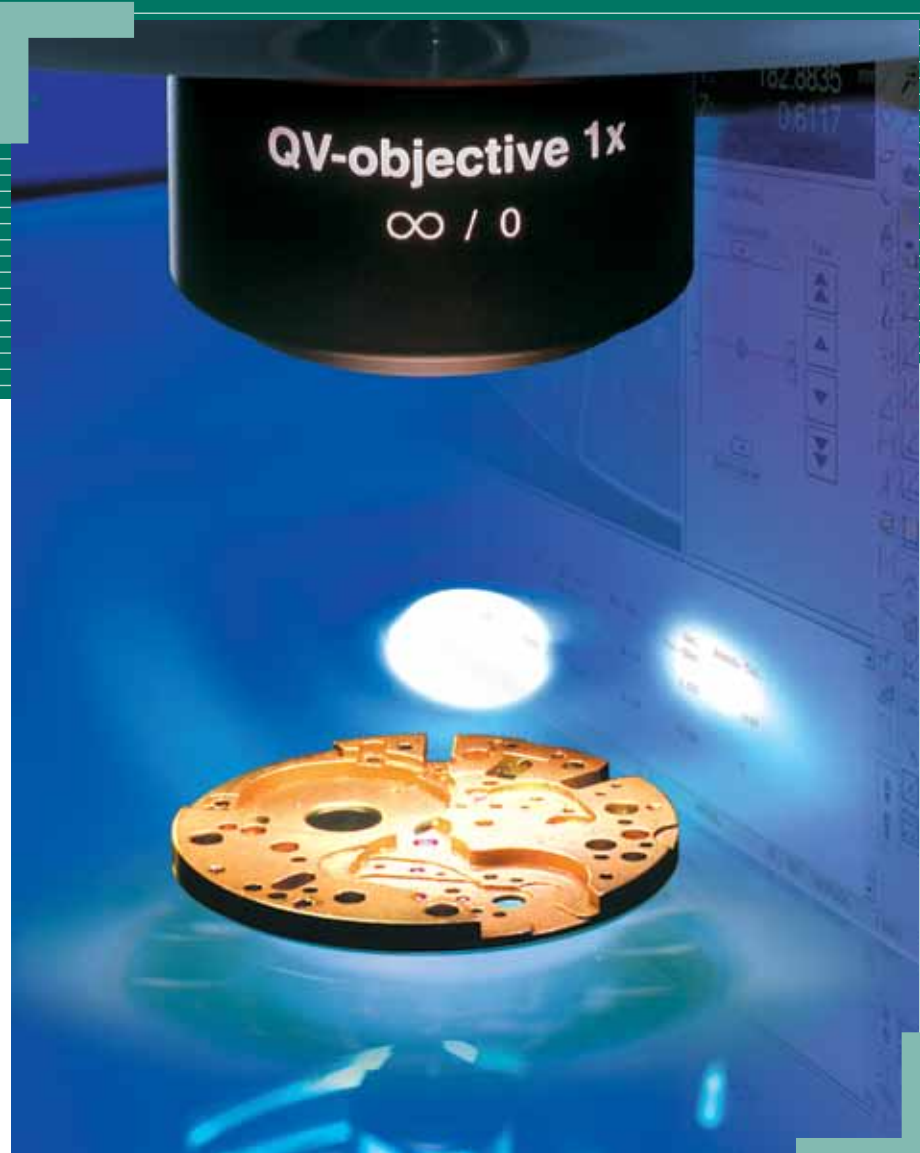# VISION MEASURING MACHINES

QV-objective 1x
∞ / 0

Precision and quality firmly in focus:
QUICK IMAGE, QUICK SCOPE and QUICK VISION.

Mitutoyo

QUICK IMAGE, QUICK SCOPE and QUICK VISION – focussing on the essentials.

On the production line, in the quality control room or the laboratory, Mitutoyo offers innovative solutions for all your optical measurement requirements using state-of-the-art image processing technology. Even the most demanding customers will find an off-the-shelf machine that suits their needs, or one that can be customised to do the job, in a range extending from a high-economy compact desktop machine through to the high-precision reference model.

In this brochure you will find all the essential facts on machine specifications, configurations, add-ons and software.

This quick, sure and efficient guide will help you to find the system you need. More detailed individual product brochures will then give you further information on the system of your choice.

Whatever machine you choose, with vision measurement technology from Mitutoyo, you can be sure of the experience, competence and performance of one of the world's leading measurement technology specialists and customer-oriented service without comparison.

Mitutoyo: right in the picture when it comes to precision.

Vision Measuring Systems by Mitutoyo – a full range for quality and precision.

QUICK IMAGE

2D vision system

With a large focal depth, workpieces of varying thicknesses or stepped surfaces can be measured simply and without refocussing. Complete capture of small parts in a single view – for quick, easy, automated measurement. Offering convenient, repeatable and programmable measuring sequences, QUICK IMAGE provides you with the best solution for fast evaluation of 2D parts.
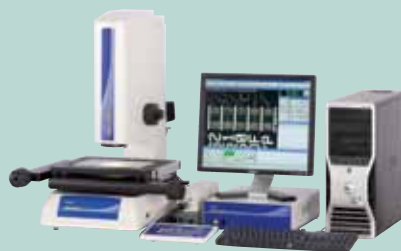
QUICK SCOPE

Measuring microscopes with vision

Manual and CNC vision systems for reliable non-contact precision measurement of parts and surfaces and vision profile testing. Deploying high-resolution colour CCD cameras for detailed image acquisition QUICK SCOPE performs complex, automatic measurements on batches of workpieces, or individual parts, with more measuring and analysis capability than any traditional microscope system.

QUICK VISION

Coordinate measuring machines with vision

Powerful CNC-operated systems for intelligent, easy and fully automatic measurement. Offering a variety of filtering functions for reliable measurements, normal and oblique illumination systems, degrees of accuracy and ranges of measurement all the way through to the flexible QV Basic programming language. QUICK VISION is your ideal visual measuring system for precision work.

QUICK SCOPE manual QS-L2010ZB

QUICK IMAGE QI-A1010

QUICK SCOPE CNC QS250Z

QUICK VISION ELF 202PRO

Model	Accuracy	Specific characteristics	Measuring range X : Y : Z (mm)
QUICK IMAGE A	5.0 µm	2D image processing system with large visible area and enhanced depth of field.	100 : 100 200 : 100
QUICK IMAGE B	5.0 µm	2D image processing system with large depth of field and enhanced accuracy.	200 : 170 300 : 170 400 : 200
QUICK SCOPE manual	2.5 µm	Manual machine with powerzoom with or without CNC autofocus.	200 : 100 : 150 300 : 170 : 150
QUICK SCOPE CNC	2.5 µm	CNC operation with powerzoom and autofocus.	400 : 200 : 150 200 : 250 : 100
QUICK VISION ELF	2.0 µm	Compact and economical machine for the measurement of medium-sized workpieces.	250 : 200 : 200
QUICK VISION APEX	1.5 µm	Floor-standing models with four-colour LED coaxial and ring lights to meet the highest demands in image-processing measurements. Particularly suited to economically measuring large workpieces either in production or a controlled environment. The HYBRID models are fitted with a laser scanning system for 3D surface evaluation.	300 : 200 : 200 400 : 400 : 250 600 : 650 : 250
QUICK VISION HYPER	0.8 µm		
QUICK VISION STREAM PLUS	1.5 µm		
QUICK VISION ACCEL	1.5 µm	Floor-standing models with stationary measuring table and moving bridge in all three axis for rapid traverse speed and high acceleration. This configuration drastically reduces measurement time required for large workpieces by eliminating the need for clamping. The HYBRID models are fitted with a laser scanning system for 3D surface evaluation.	800 : 800 : 150 1000 : 1000 : 100 1250 : 1250 : 100 1500 : 1750 : 100
QUICK VISION APEX TP	1.5 µm	Combining image processing and contact measurement turns the QUICK VISION APEX/HYPER TP into a versatile, multi-sensor measurement system.	300 : 200 : 200 400 : 400 : 250
QUICK VISION HYPER TP	0.8 µm		400 : 400 : 250
QUICK VISION WLI	0.8 µm	By combining an image processing system with a White Light Interferometer sensor, the QUICK VISION WLI becomes a powerful measuring system for detailed 3D topography analysis with highest accuracy on large workpieces or batches of workpieces.	400 : 400 : 240 600 : 650 : 240
QUICK VISION ULTRA	0.25 µm	Maximum precision, premium system with air bearings on all axes for maximum accuracy.	400 : 400 : 200

QUICK VISION HYPER 404PRO
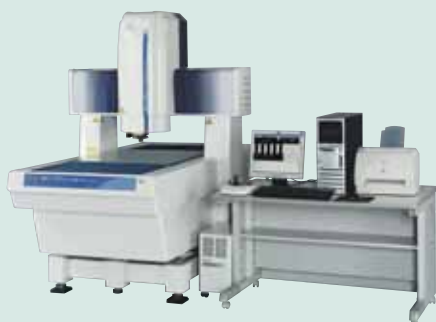
QUICK VISION STREAM PLUS 606PR0
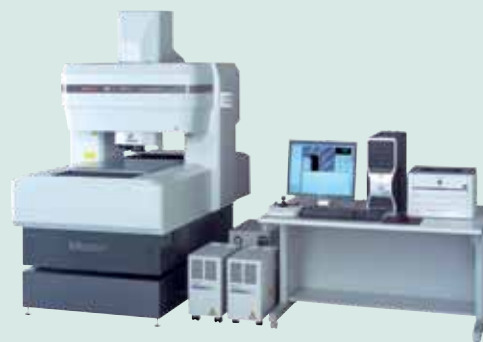
QUICK VISION ULTRA 404PRO

QUICK IMAGE Series – expanded capabilities.

QUICK IMAGE

The QUICK IMAGE Series exceeds the capability of profile projectors.

- Wide measuring range up to 400 x 200 mm
- Large visible area: 32 x 24 mm (QI-A) or 12.8 x 9.6 mm (QI-B)
- Rapid, complex on-screen evaluations in a single click
- View comparisons with CAD data as templates at a defined scale
- Image archiving with and without tools or templates
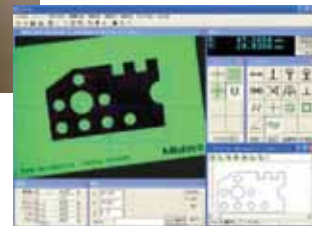- Bipolar telecentric 0.2X lens for QI-A; 0.5X lens for QI-B

Accuracy:
5 µm

From physical profile to CAD data comparisons

Comparison using a profile projector with engineering drawing as template

QIPAK – comparison using superimposed template from CAD data (CAD import option required)

Time saving example

Workpiece designation		Printed circuit board
Measurement task		9 bores, 2 pitch measurements
No. of measurement positions required		4
Average measurement time	Profile projector	4.4 min
	QUICK IMAGE	0.9 min
	Time saved using QUICK IMAGE	**80%**
Measurement time for 10 workpieces	Profile projector	43.3 min
	QUICK IMAGE	8.9 min
	Time saved using QUICK IMAGE	**82%**

Model	Measuring range X : Y (mm)	Infeed range Z	Measurement accuracy within video window	Repeatability within video window (±2σ)	U1 accuracy of X- and Y-axes
QI-A1010B	100 : 100	100	±5 µm (high-resolution mode) ±8 µm (normal mode, extended depth of focus)	±1 µm (high-resolution mode) ±2 µm (normal mode, extended depth of focus)	±(5+0.08L) µm; L is measured length
QI-A2010B	200 : 100				
QI-A2017B	200 : 170				
QI-A3017B	300 : 170				
QI-A4020B	400 : 200				
QI-B1010B	100 : 100	100	±2.7 µm (high-resolution mode) ±4 µm (normal mode, extended depth of focus)	±0.7 µm (high-resolution mode) ±1 µm (normal mode, extended depth of focus)	±(5+0.08L) µm; L is measured length
QI-B2010B	200 : 100				
QI-B2017B	200 : 170				
QI-B3017B	300 : 170				
QI-B4020B	400 : 200				

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QUICK SCOPE Series – the economical solution.

QUICK SCOPE manual

Compact, economical desktop machine for easy manual measurement of workpiece geometry.

- High performance-to-cost ratio
- Measurement table movements in the X- and Y-axes with convenient rapid adjustment
- 3 sizes (200 x 100, 300 x 170, 400 x 200 mm)
- With or without autofocus function
- Programmable 8X powerzoom
- Optical and digital zoom
- High resolution CCD colour camera
- Halogen fibre-optic lighting
- Stage, coaxial and ring lighting
- Resolution 0.1 µm (0.0001 mm)
- *One click tool* technology for optimum edge detection
- Fast and simple navigation
- User-friendly QSPAK software

Machine with powerzoom:
- Powerzoom programming with automatic adjustment of light intensity and pixel size

Accuracy:
2.5 µm

MANUAL

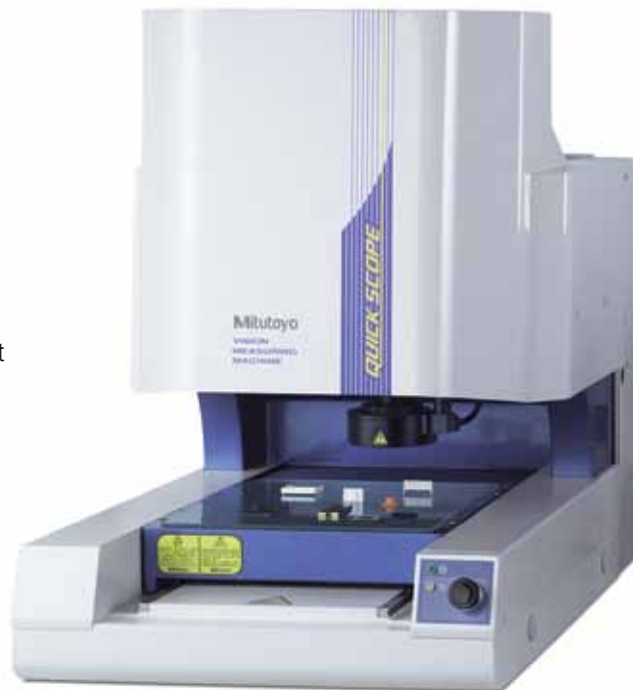| Model	Measuring range X : Y : Z (mm)	Accuracy	Zoom lens	Magnification on 48 cm (19") screen	Halogen transmitted light	Halogen coaxial light	Halogen ring light	Auto-focus
QS-L2010ZB	200 : 100 : 150	X,Y: (2.5+0.02L) µm Z: (5.0+0.04L) µm	•	0.75X - 5.25X Zoom lens: 30X - 208X	•	•	•	
QS-L3017ZB	300 : 170 : 150		•		•	•	•	
QS-L4020ZB	400 : 200 : 150		•		•	•	•	
QS-L2010Z/AFB	200 : 100 : 150	X,Y: (2.5+0.02L) µm Z: (5.0+0.006L) µm	•	0.5X - 3.5X Zoom lens: 28X - 193X	•	•	•	•
QS-L3017Z/AFB	300 : 170 : 150		•		•	•	•	•
QS-L4020Z/AFB	400 : 200 : 150		•		•	•	•	•

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QUICK SCOPE CNC

A CNC desktop machine with an attractive performance-to-cost ratio. Perfectly suited to the measurement of small and medium-sized workpieces.
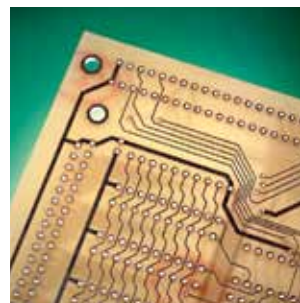
Accuracy:
2.5 µm

- Autofocus function
- Programmable 8X powerzoom
- High resolution CCD colour camera
- Halogen fibre-optic lighting
- Stage, coaxial and ring lighting
- Resolution 0.5 µm (0.0005 mm)
- *One click tool* technology for optimum edge detection
- User-friendly QSPAK software

Machine with powerzoom:
- Powerzoom programming with automatic adjustment of light intensity and pixel size

CNC

Model	Control	Measuring range X : Y : Z (mm)	Accuracy	Zoom lens	Magnification on 48 cm (19") screen	Halogen stage light	Halogen coaxial light	Halogen ring light	Auto-focus
QS250Z	CNC	200 : 250 : 100	(2.5+0.006L) µm	•	With powerzoom: 28X - 193X	•	•	•	•

QUICK VISION Series –
top technology for top-class results.

Quickly change magnification without calibration or refocussing

All QUICK Vision models feature programmable switchover between 1X, 2X and 6X magnification to let you select the optimum image size during the measurement cycle - and it's fast, with no need to calibrate and re-focus.

Depending on the magnification, the pixel size and light intensity are adapted to each new adjustment. This allows for 32X to 960X magnification on a 43 cm (17") screen, depending on the objective lens used (1X, 2.5X, 5X).

Optimizing the image thanks to stage, coaxial and ring lights

All QUICK VISION models come equipped with a stage light for high-contrast edge lighting, a coaxial light for optimized surface lighting and a ring light for lateral illumination.

CCD camera

Parabolic reflector for programmable ring light

Top left: typical application for the programmable ring light.
Top right: stage light
Bottom right: coaxial light
Bottom left: simple ring light

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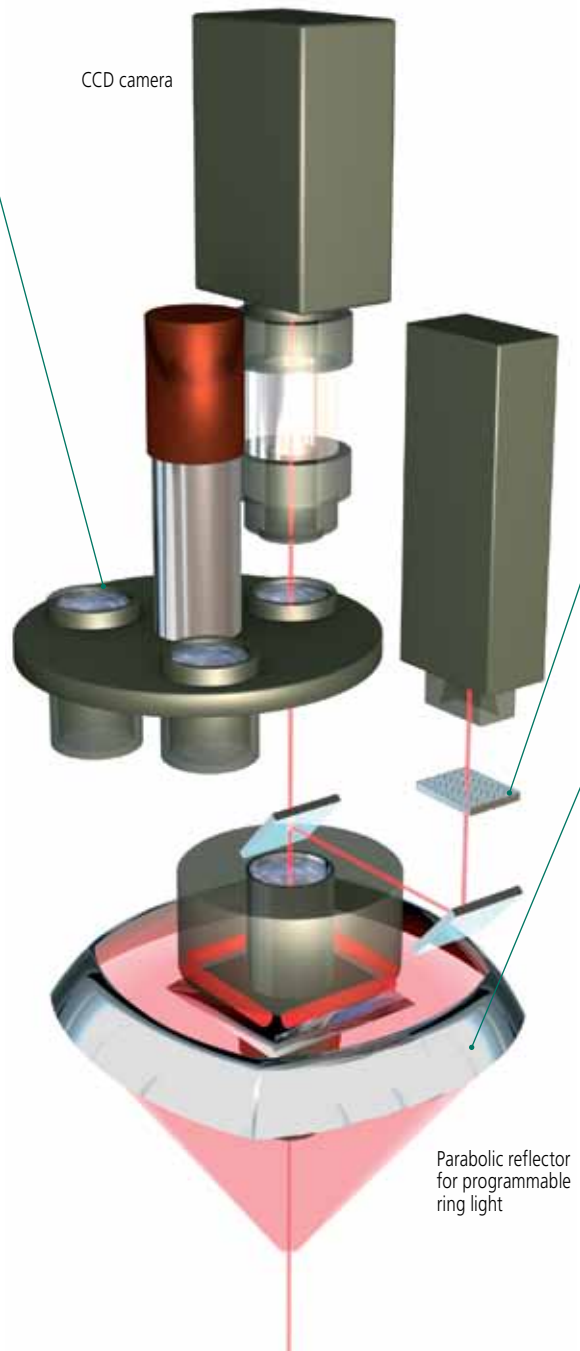
## Fast and precise triangle-pattern focussing

On difficult to detect, reflective and low-contrast surfaces, focussing is greatly facilitated by the projection of a triangular pattern. This is a standard feature on all QUICK VISION models.

Application example with triangular pattern focussing

Perfect illumination with the programmable LED ring light

For best results, even under difficult conditions, the QUICK VISION machines come as standard in their PRO versions with a programmable four-quadrant LED ring light. The brightness of each of the four quadrants can be separately controlled by the software, creating optimum lighting conditions that, for example, will provide contrasting edge definition due to the projection of a shadow. The angle of light incidence can therefore be changed within a range of 30 to 80° in order to adjust the size of the shadow to suit the workpiece topography.

LED ring light quadrant

Parabolic reflector

Workpiece surface

30°   60°   80°
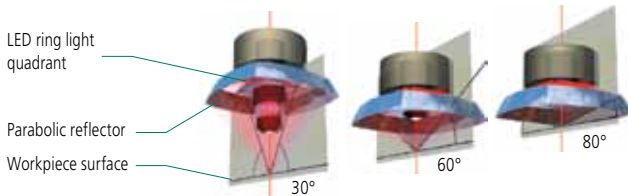
Four-colour LED coaxial and ring light

For improved high-contrast acquisition of images, the QUICK VISION measuring machines (with the exception of the ELF and ULTRA QV versions) operate with four-colour LED coaxial and ring lighting (RGB + white). The colour LEDs also act as colour filters and so also improve the measurement of coloured workpieces.

Four-colour ring light (white, red, green and blue)

Options

Flash of brilliance: stroboscopic lighting

In addition to the progressive CCD camera, QUICK VISION STREAM PLUS also uses a stroboscopic light to illuminate the target area. Even the already extremely short exposure times of the camera are still relatively long, given the enormous speeds at which QUICK VISION STREAM PLUS measures. The stroboscopic light flashes for just a fraction of a millisecond.

As such, the camera chip is only lit for this very small time period, rather than being continually lit from one frame to the next. Mitutoyo has perfectly mastered the art of triggering the flash and image acquisition while in motion at the required point of measurement.

Lens design   Dichroic reflector

LED elements

Reflector

Light source
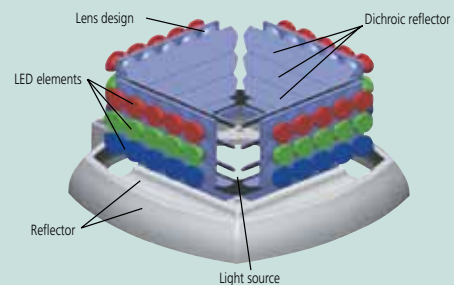
Laser autofocus system for fast and accurate measurement in the Z-axis

Except for HYBRID models, all QUICK VISION models can be equipped with a laser autofocus system for much faster and more repeatable Z-axis measurements compared to conventional autofocus technology. A *TTL* (through the lens) technique is used in which measuring range losses due to adjacent sensors are avoided. An additional benefit is that the visible laser point can also be used for fast and simple workpiece positioning.

Laser autofocus system.

QUICK VISION ELF

Compact desktop machine for powerful and economic vision measurement.
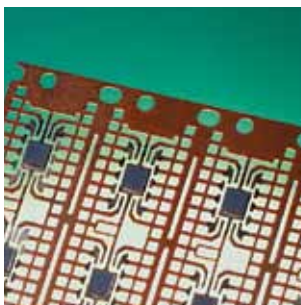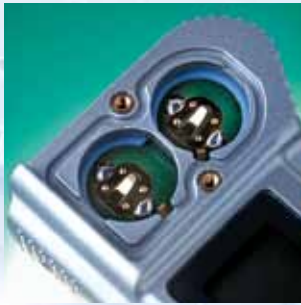
Accuracy:
2 µm

- CNC operation
- Triangular pattern focussing for low-contrast surfaces
- Programmable magnification changer 1X, 2X and 6X
- High-precision objective lens system 1X, 2.5X and 5X
- High-resolution CCD black and white camera
- Resolution 0.1 µm (0.0001 mm)
- Accuracy E1 (X, Y) at 20 °C: (2+0.003L) µm
- *One click tool* technology for optimum edge detection
- User-friendly QVPAK software

Coaxial and transmitted lighting (white)
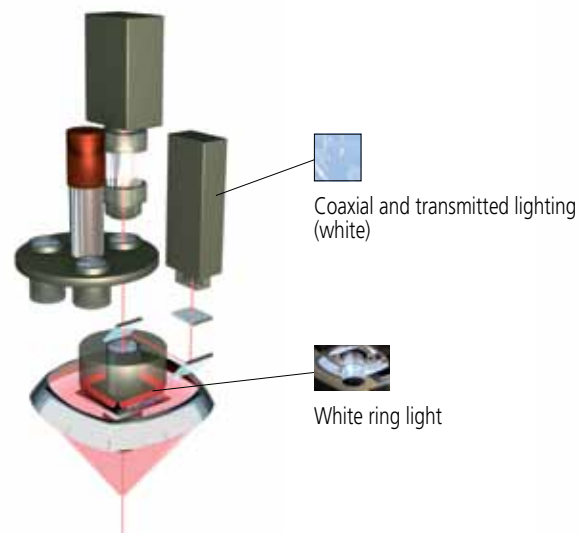
White ring light

Series	Model	Measuring range X : Y : Z (mm)	Accuracy	Ring light
Quick Vision ELF 202PRO	**QV-E202P1L-C**	250 : 200 : 200	(2+0.003L) µm	Programmable four-quadrant LED ring light, white

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QUICK VISION APEX/HYPER

Floor-standing CNC model designed for demanding tasks in vision-based measurement and featuring a choice of accuracy specification. Incorporates four-colour LED coaxial and ring lights.

Accuracy:
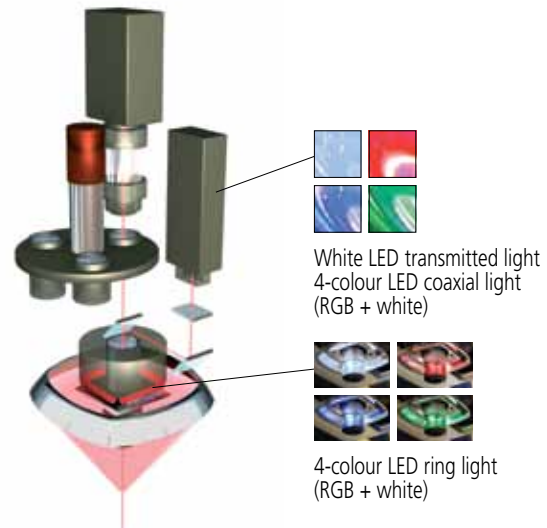**1.5 µm (QV APEX)**
0.8 µm (QV HYPER)

- White LED transmitted stage light
- LED coaxial light with variable light colour
- Programmable four-quadrant LED ring light with variable light colour
- CNC operation
- Triangular pattern focussing for low-contrast surfaces
- Programmable magnification changer 1X, 2X and 6X
- High-precision objective lens system 1X, 2.5X and 5X
- High-resolution CCD black and white camera
- Resolution of the QUICK VISION APEX: 0.1 µm (0.0001 mm)
- *One click tool* technology for optimum edge detection
- User-friendly QVPAK software

White LED transmitted light
4-colour LED coaxial light
(RGB + white)

4-colour LED ring light
(RGB + white)

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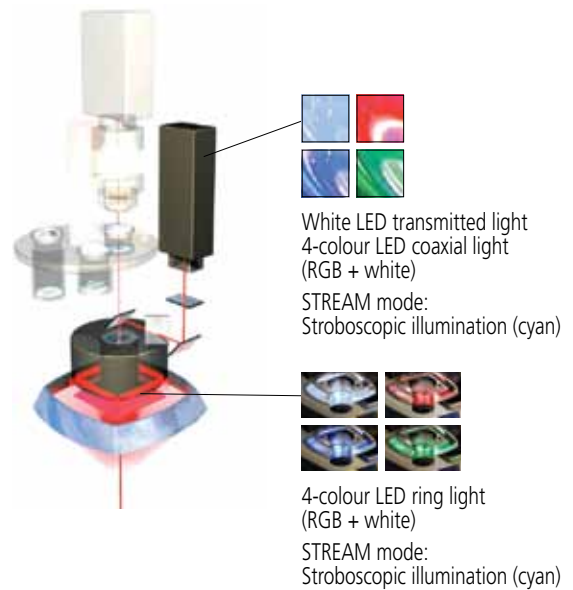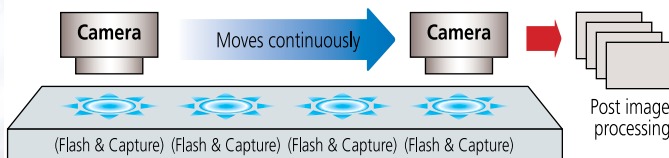# QUICK VISION STREAM PLUS

Non-stop measurement of workpiece geometry LED technology for improved illumination.

Accuracy:
1.5 µm

- Measures workpiece geometry while moving
- Drastic improvement in throughput
- Laser autofocus optionally available for fast focussing
- Measures at a speed up to 40 mm/s
- LED stage lighting
- LED coaxial light with variable colour
- Programmable four-quadrant LED ring light with variable colour
- Triangular pattern focussing for low contrast surfaces
- High-precision objective lens system 1X, 2.5X, and 5X
- *One click tool* technology for optimum edge detection
- User-friendly QVPAK software
- Progressive black and white CCD camera
- Programmable power turret 1X, 2X and 6X

White LED transmitted light
4-colour LED coaxial light
(RGB + white)
STREAM mode:
Stroboscopic illumination (cyan)

4-colour LED ring light
(RGB + white)
STREAM mode:
Stroboscopic illumination (cyan)

STREAM MODE

Camera → Moves continuously → Camera → Post image processing

(Flash & Capture) (Flash & Capture) (Flash & Capture) (Flash & Capture)

Overview of QV APEX, QV STREAM and QV HYPER

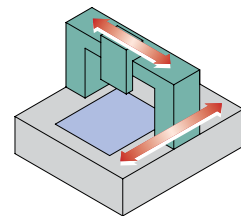| Series	Model	Measuring range X : Y : Z (mm)	Lighting system	Image sensor	Accuracy	Automatic magnification change
Quick Vision APEX PRO	QV-X302P1L-C	300 : 200 : 200	LED transmitted light (white) RGB LED coaxial light RGB LED ring light	12.7 mm (1/2") black and white CCD camera	E1 (X,Y): (1.5+0.003L) µm E1 (Z): (1.5+0.004L) µm E2 (X,Y): (2+0.004L) µm	3 levels: 1X / 2X / 6X
	QV-X404P1L-C	400 : 400 : 250				
	QV-X606P1L-C	600 : 650 : 250				
Quick Vision APEX PRO3	QV-X302P3N-C	300 : 200 : 200	Halogen transmitted light Halogen coaxial light Halogen ring light	8.46 mm (1/3") colour CCD camera		
	QV-X404P3N-C	400 : 400 : 250				
	QV-X606P3N-C	600 : 650 : 250				
Quick Vision STREAM PLUS PRO	QV-X302P1S-C	300 : 200 : 200	LED transmitted light (blue) RGB LED coaxial light RGB LED ring light	Progressive 12.7 mm (1/2") black and white CCD camera	E1 (X,Y): (1.5+0.003L) µm E1 (Z): (1.5+0.004L) µm E2 (X,Y): (2+0.004L) µm	3 levels: 1X / 2X / 6X
	QV-X404P1S-C	400 : 400 : 250				
	QV-X606P1S-C	600 : 650 : 250				
Quick Vision HYPER PRO	QV-H302P1L-C	300 : 200 : 200	LED transmitted light (white) RGB LED coaxial light RGB LED ring light	12.7 mm (1/2") black and white CCD camera	E1 (X,Y): (1.5+0.003L) µm E1 (Z): (1.5+0.004L) µm E2 (X,Y): (2+0.004L) µm	3 levels: 1X / 2X / 6X
	QV-H404P1L-C	400 : 400 : 250				
	QV-H606P1L-C	600 : 650 : 250				

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QUICK VISION ACCEL

Stand-alone machine with fixed measuring stage for fast acceleration and traversing speeds. The dynamic solution for time-optimized production testing.

Accuracy:
1.5 μm

- Fixed measuring stage
- Bridge movable in all three axes
- No clamping of workpieces or measuring equipment required
- Speed in X- and Y-axes 400 mm/s
- White LED transmitted lighting
- Equipped as standard with stage, coaxial and ring lights
- Programmable magnification changer 1X, 2X and 6X
- High-precision objective lens system 1X, 2.5X and 5X
- High-resolution CCD black and white camera
- Resolution 0.1 μm (0.0001 mm)
- *One click tool* technology for optimum edge detection
- User-friendly QVPAK software

Measuring without workpiece clamping

Moving portal

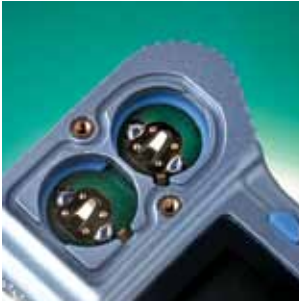| Series	Model	Measuring range X : Y : Z (mm)	Lighting system	Image sensor	Accuracy
Quick Vision ACCEL PRO	**QV-A808P1L-B**	800 : 800 : 150	LED transmitted light (white) RGB LED coaxial light RGB LED ring light	12.7 mm (1/2") black and white CCD camera	E1 (X,Y): (1.5+0.003L) μm E1 (Z): (1.5+0.004L) μm E2 (X,Y): (2.5+0.004L) μm
	QV-A1010P1L-B	1000 : 1000 : 150			
	QV-A1212P1L-B	1250 : 1250 : 100			E1 (X,Y): (2.2+0.003L) μm E1 (Z): (2.5+0.005L) μm E2 (X,Y): (3.5+0.004L) μm
	QV-A1517P1L-B	1500 : 1750 : 100			
Quick Vision ACCEL PRO3	**QV-A808P3N-B**	800 : 800 : 150	Halogen transmitted light Halogen coaxial light Halogen ring light	8.46 mm (1/3") colour CCD camera	E1 (X,Y): (1.5+0.003L) μm E1 (Z): (1.5+0.004L) μm E2 (X,Y): (2.5+0.004L) μm
	QV-A1010P3N-B	1000 : 1000 : 150			
	QV-A1212P3N-B	1250 : 1250 : 100			E1 (X,Y): (2.2+0.003L) μm E1 (Z): (2.5+0.005L) μm E2 (X,Y): (3.5+0.004L) μm
	QV-A1517P3N-B	1500 : 1750 : 100			

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QUICK VISION TP SERIES

Multi-sensor system – vision sensor and touch probe.

- Expanded application range by combining contact and non-contact measurement
- Equipped with TP20 or TP200 touch probe
- Flexible exchange of stylus configuration with MCR20 change rack (optional)
- User-friendly QVPAK software

Accuracy:
1.5 µm (QV APEX)
0.8 µm (QV HYPER)

Touch probe

Series	Model	Measuring range X : Y : Z (mm)		Accuracy	
		Using 1 sensor	Using both sensors	With optical sensor	With Touch Probe
Quick Vision TP Apex	**QVT1-X302P1L-C**	300 : 200 : 200	234 : 200 : 200	E1 (X,Y): (1.5+0.003L) µm	E1 (X,Y,Z): (1.8+0.003L) µm
	QVT1-X404P1L-C	400 : 400 : 250	334 : 400 : 250	E1 (Z): (1.5+0.004L) µm	
	QVT1-X606P1L-C	600 : 650 : 250	534 : 650 : 250	E2 (X,Y): (2+0.004L) µm	
Quick Vision TP Hyper	**QVT1-H302P1L-C**	300 : 200 : 200	234 : 200 : 200	E1 (X,Y): (0.8+0.002L) µm	E1 (X,Y,Z): (1.7+0.003L) µm
	QVT1-H404P1L-C	400 : 400 : 250	334 : 400 : 250	E1 (Z): (1.5+0.002L) µm	
	QVT1-H606P1L-C	600 : 650 : 250	534 : 650 : 250	E2 (X,Y): (1.4+0.003L) µm	

More TP models available in the Apex, Hyper and Elf series. Contact Mitutoyo for more information.

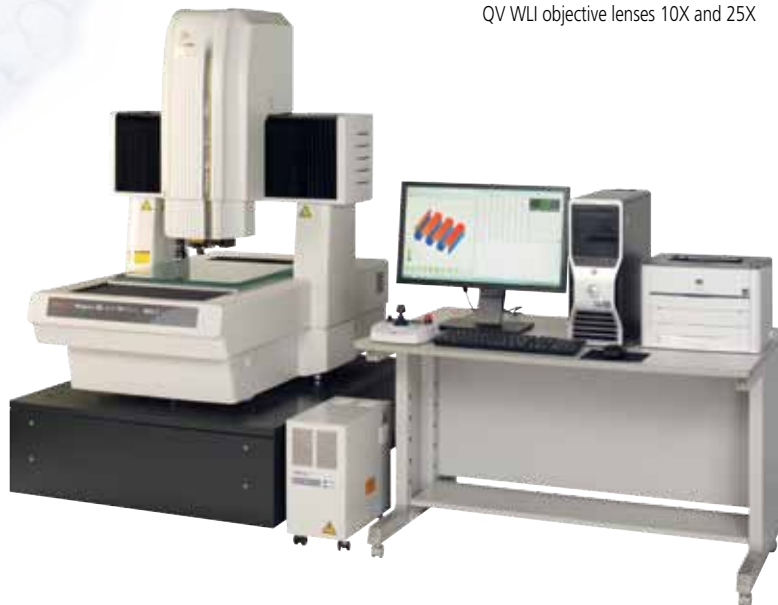**Mitutoyo**
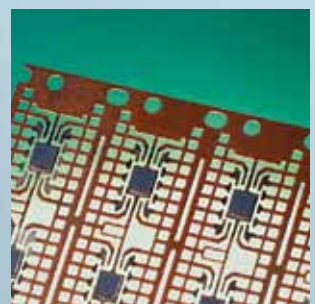
QUICK VISION WLI

QUICK VISION WLI

Multi-sensor system – vision sensor and *White Light Interferometer* sensor.

- Combined non-contact measurements with vision system and *White Light Interferometer* (WLI)
- Easy alignment and positioning with the vision sensor
- Full QVPAK functionality with vision system
- Enhanced functionality with WLI system for high-resolution topography evaluation
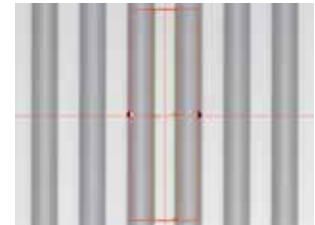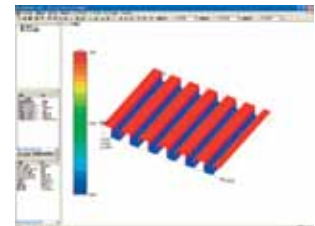- Large measuring range up to 600 x 650 x 240 mm

Accuracy:
0.8 μm

Application examples

2D top view (Vision system)

3D image (WLI sensor)

Section analysis

QV WLI objective lenses 10X and 25X

Model	Measuring range X : Y : Z (mm)		Resolution	Vision sensor illumination	Accuracy
	Vision sensor	WLI sensor			
Hyper QV WLI 404 PRO	400 : 400 : 240	315 : 400 : 240	0.01 μm	Stage light: white LED Coaxial light: colour LED Ring light: colour LED	E1 (X,Y): (0.8+2L/1000) μm E1 (Z): (1.5+2L/1000) μm E2 (X,Y): (1.4+3L/1000) μm
Hyper QV WLI 606 PRO	600 : 650 : 240	515 : 650 : 240			

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NEW-STYLE
Vision Measuring Systems

Hyper Quick Vision -WLI
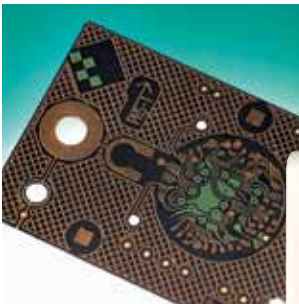
QUICK VISION ULTRA

Stationary CNC system with air bearings on all axes for the ultimate in measuring accuracy. The machine to use when nothing else will do.

Accuracy:
0.25 µm

- CNC operation
- Air bearings on all axes
- Halogen transmitted light
- Halogen coaxial light
- Programmable four-quadrant halogen ring light
- Programmable magnification changer 1X, 2X and 6X
- High-precision objective lens system 1X, 2.5X and 5X
- High-resolution CCD black and white camera
- Resolution 0.01 µm (0.00001 mm)
- *One click tool* technology for optimum edge detection
- User-friendly QVPAK software

PRO version:
- Programmable four-quadrant LED ring light
- 3-stage magnification changer
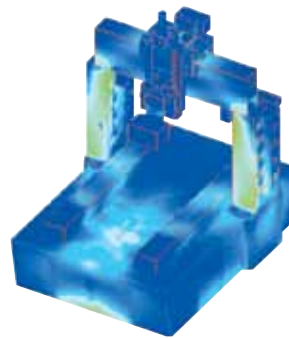
Stable fixed-bridge structure designed using the finite element method (FEM)

Standard glass scale

The Quick Vision Ultra is equipped with a crystallized glass scale having a resolution of 0.01 µm and linear expansion coefficient of 0.08×10^{-6}/K. This virtually zero thermal expansion means the Quick Vision Ultra can minimize accuracy fluctuation resulting from thermal changes.

Model	Measuring range X : Y : Z (mm)	Accuracy at 20 °C
QV-U404PRO	400 : 400 : 200	E1 (X,Y): (0.25+0.1L/100) µm E1 (Z): (1.5+0.2L/100) µm E2 (X,Y): (0.5+0.2L/100) µm

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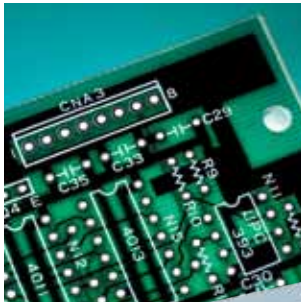
Accessories

Software-controlled indexing rotary table for QUICK VISION machines

The horizontal QV-Index rotary table turns the measured parts in 0.1 degree increments and thereby allows measurement of several sides of a workpiece without re-chucking. The software enables fully automatic CNC operation of the additional axis.

Mitutoyo objective lens systems for QUICK VISION machines

Quality workmanship for best image reproduction. Mitutoyo *long working distance* objective lens systems are distinguished by their excellent resolution at long working distances.

| Magnification	Objective lens	Order no.	N.A.	Working distance (mm)	Visible area (mm) black and white camera	Visible area (mm) colour camera (PRO3)
0.5X	**QV-SL0,5X**	**02AKT199**	0.025	30.5	12.54 x 9.4	9.4 x 7.04
1X	**QV-1X**	**02ALA400**	0.055	34	6.27 x 4.7	4.7 x 3.52
	QV-SL1X	**02ALA150**	0.055	52.5		
	QV-HR1X	**02AKT250**	0.084	40.6		
2.5X	**QV-SL2,5X**	**02ALA170**	0.14	60	2.5 x 1.88	1.87 x 1.41
	QV-HR2,5X	**02AKT300**	0.28	40.6		
5X	**QV-5X**	**02ALA420**	0.28	33.5	1.25 x 0.94	0.93 x 0.7
10X	**QV-10X**	**02ALG010**	0.28	30.5	0.62 x 0.47	0.46 x 0.34
	QV-HR10X	**02AKT650**	0.42	20		
25X	**QV-25X**	**02ALG020**	0.55	13	0.25 x 0.18	0.18 x 0.14

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Mitutoyo opti-fix

The Mitutoyo opti-fix system allows the quick and safe solution of very different tasks using only a few components. In the case of methods that use reflected as well as transmitted light for measurement of cubic, rotationally symmetrical and, especially, flat workpieces, the use of Mitutoyo opti-fix is a really practical solution. Furthermore, the spring clips and centering pins of different design which are integrated in the system also allow touch-probe measuring. Mitutoyo opti-fix offers the user a large number of possibilities for part fixing, from clamping tweezers for holding miniature parts to a precision vice for handling larger workpieces.

Mitutoyo opti-fix round

Mitutoyo opti-fix round, an innovative, newly developed tool completes the opti-fix family in the truest sense of the phrase 'the wheel comes full circle'. The circular design allows an infinitely variable adjustment through 360° in the horizontal as well as rotation in space and, additionally, the *pin fixing* at the sides ensures user-friendly access to the workpiece.
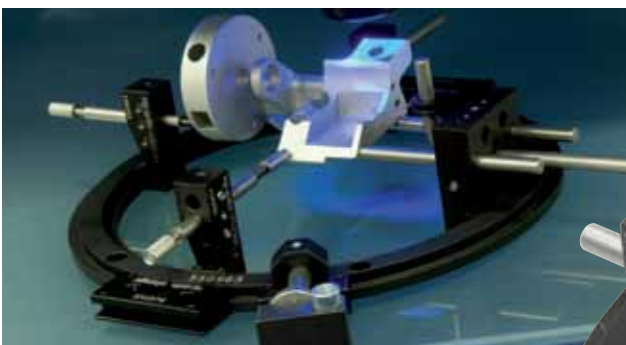
QIPAK

The software package for QUICK IMAGE vision measuring systems.
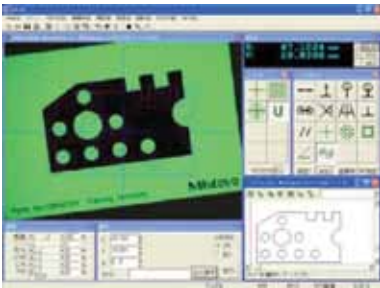
Everything to view, everything to hand: with clearly structured menus, easy-to-read symbols and logical operating sequences, QIPAK takes the effort out of work. All measurement software sequences such as light control, magnification or parts programming, can be followed directly and without difficulty.

QSPAK

The software package for QUICK SCOPE vision measurement systems.
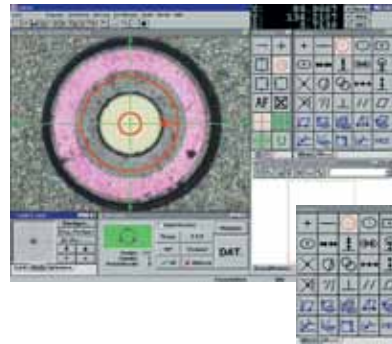
QSPAK is easy to learn, quick to use, and gives precise results for the QUICK SCOPE vision measuring machine – for quality work without complications.

QVPAK

The software package for the QUICK VISION system.

The enormously versatile and user-friendly basic software for QUICK VISION measuring systems. The sophisticated structure, practical tools and excellent on-screen representation open up a whole new world of efficient measurement. With QVPAK, even extremely complex measurement processes can be planned, controlled and evaluated easily. Even new users will have a smooth entry into the world of QVPAK with its integrated online help. And the programming language QV Basic, which is based on Visual Basic, ensures maximum flexibility – for example when connecting up barcode readers, for data transfer to MS Office applications or the creation of user-defined input and query dialogues.

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For **QUICK IMAGE** systems

QIPAK

Software package

Expansion modules

MeasurLink

Module for the statistical management of measurement data as well as the analysis and storage of that data.

QS CAD-IMPORT/EXPORT

Converts data for transfer between QIPAK and the CAD system. Easy import and export of IGES and DXF file formats.

FORMPAK-QV

Efficient, easy-to-use program for contour analysis and evaluation.

For **QUICK SCOPE** systems

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Converts data for transfer between QVPAK and the CAD system. Easy import and export of IGES and DXF file formats.

QV EIO PC/QV EIO

Serves communication between the QUICK VISION system and an externally programmable controller or an external PC via RS-232C interface.

QV Partmanager

The pallet management program enables testing of several different workpieces consecutively in one measuring flow. During measurement, evaluation is 'at a glance'.

PAGPAK

Generates parts programs specially for the measurement of bores in printed circuit boards. Reads CNC or NC data from milling or drilling machines and uses them in the test.

EASYPAG

Uses IGES or DXF data for the offline preparation of parts programs.

FORMPAK-QV

Efficient, easy-to-use program for contour analysis and evaluation.

QV GEARPAK

Generates a parts program for measuring gearwheels – including evaluation module for gearwheel parameters.

Another gauge to measure your partners: competent advice and service

Anyone who performs precision work needs a partner with sharp vision. Not only in the development and supply of the ideal measuring system, but also before and after – with advice and service. As a manufacturer of measuring machines with one of the world's broadest range of products and over seven decades of experience, Mitutoyo has a particularly refined range of services that guarantee absolute customer satisfaction long before, and for a long time after, the decision to purchase.

Service

A UKAS accredited calibration laboratory; central service workshop; large machine repairs on site at customers' premises; contract measuring at all orders of magnitude; professional maintenance including using online systems; training and ongoing training at the Mitutoyo Information Center of Metrology (MIM); comprehensive information and data pool in online product lounges; competent service hotlines; contacts at your Mitutoyo customer centres.

With all this, you can be sure that you have made the right choice with Mitutoyo – and we can be sure of being able to satisfy your needs completely, well into the future. Because that, at the end of the day, is the standard against which you will measure your machine suppliers. After all, technical perfection goes without saying – at least from Mitutoyo.

Advice

Depending on your requirements, you can define, in close dialogue with the Mitutoyo specialist consultants, the machine or system selection to fit your specific measuring tasks – either standard or special tailor-made solutions in the context of the revolutionary M³ solution concept from Mitutoyo. This guarantees that you will be operating with the most suitable measuring equipment, both in terms of technical aspects and cost. As the sole complete supplier in its sector, Mitutoyo is well placed to configure the most efficient and suitable systems for you.

Mitutoyo

Coordinate Measuring Machines

Vision Measuring Systems

Form Measurement

Optical Measuring

Sensor Systems

Test Equipment and Seismometers

Digital Scale and DRO Systems

Small Tool Instruments and Data Management

Mitutoyo