

ULTRA Quick Vision

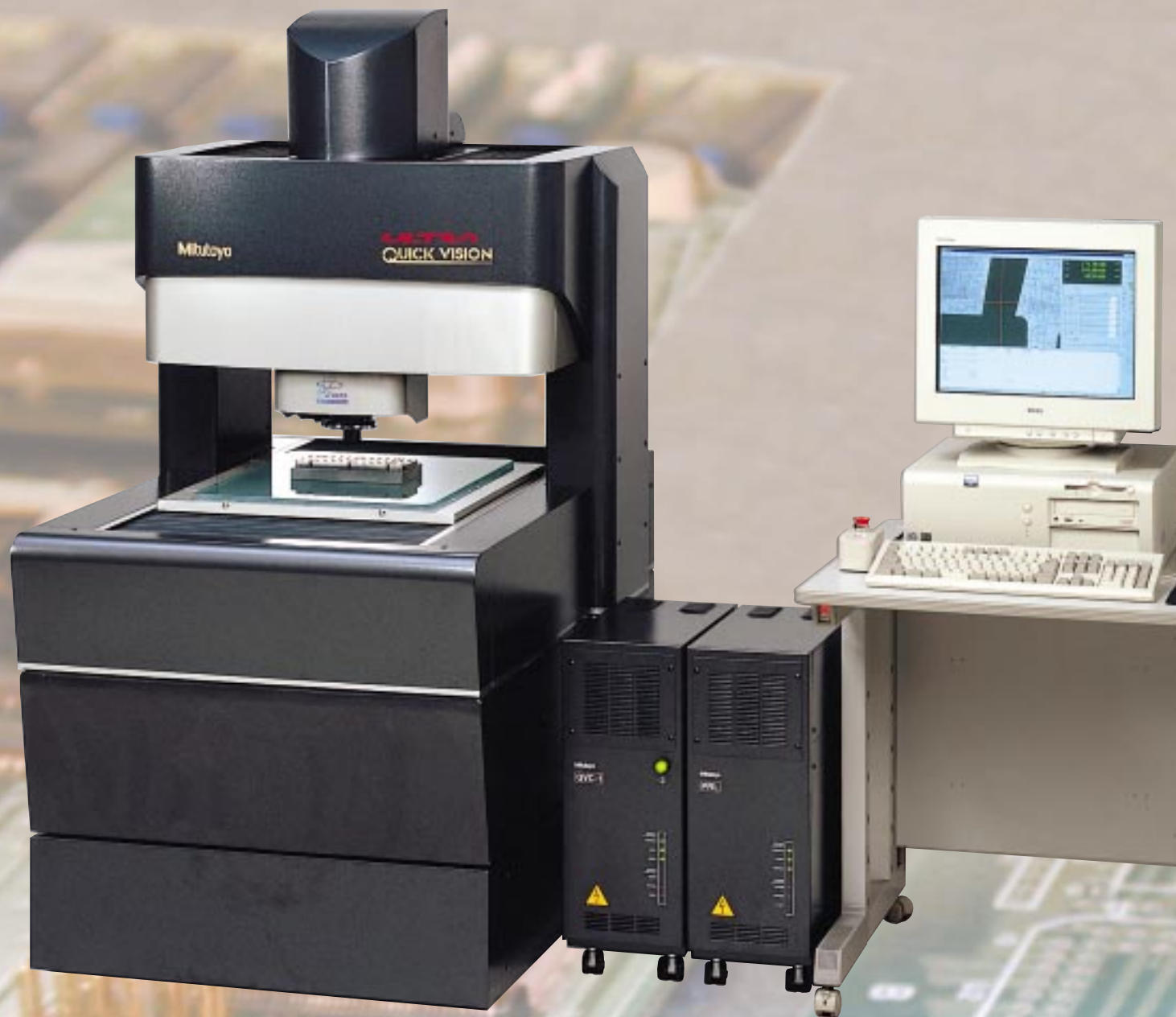
CNC Vision Measuring Machine

Bulletin No. 1784



ULTRA Quick Vision – High performance and ultra measuring accuracy.

Mitutoyo



**ULTRA Quick Vision –
High performance and
ultra measuring accuracy.**



Technical Data

Measurement range (XxYxZ)

350 x 350 x 150mm
(14" x 14" x 6")

Resolution

0.01μm

Length standard

Reflective linear encoder
(crystallized glass)

Measuring accuracy (at 20°C)

$U_{1xy} = (0.3 + L/1000) \mu\text{m}$
 $U_{2xy} = (0.5 + 2L/1000) \mu\text{m}$
 $U_{1z} = (3 + 2L/1000) \mu\text{m}$

Maximum drive speed

100mm/s

Tube lens

1x/2x/6x (programmable power turret)

Objectives

5x (1x, 2.5x: optional)

Magnification on 17" monitor

Using 1x objective:
32x (32x/64x/192x)
Using 2.5x objective:
80x (80x/160x/480x)
Using 5x objective:
160x (160x/320x/960x)

Sensor unit

High-resolution black & white
CCD camera

Illumination system

Surface: Coaxial light and
programmable ring light
Contour: Stage light

Table glass size

438 x 509mm
(17.24" x 20.03")

Maximum workpiece load

Height: 150mm (5.91")/
Weight: 40kg (88 lbs.)

Power supply

100/110/120/220/230/240V
AC±10%, 50/60Hz

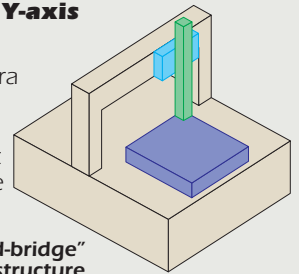
Power consumption

2260VA - 3260VA max.

KINEMATIC ACCURACY

Independent X-axis against Y-axis drive system

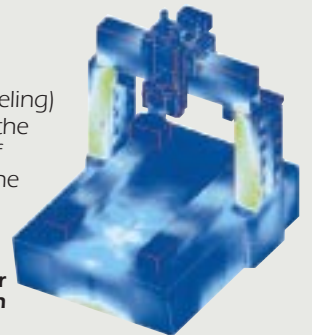
The fixed bridge structure of the Ultra Quick Vision allows the X-axis to operate totally independent of the Y-axis. The X-axis movement will not cause any load displacement on the Y-axis, allowing for extremely high accuracies.



"Fixed-bridge" structure

FEM analysis for optimum construction

By using FEM (Finite Element Modeling) analysis of the machine structure, the placement of ribs and allocation of weight has been determined for the Ultra Quick Vision. This results in exceptional structural rigidity.

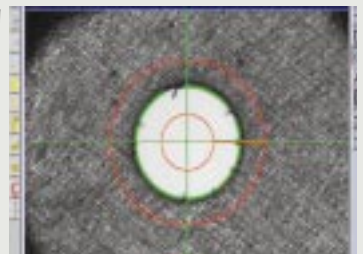


FEM analysis for optimum construction

GUIDE METHOD

Hydrostatic air bearing system

To maximize an accuracy of machine movement, the Ultra Quick Vision uses a "hydrostatic air bearing". This provides a sub-micron linearity for full-stroke travel.



Patent pending (Japan, U.S.A, UK, Germany)

LENGTH STANDARD

Linear glass scale with virtually zero thermal expansion coefficient

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

Standard glass scale



Ultra-precision manufacturing eleven meters underground

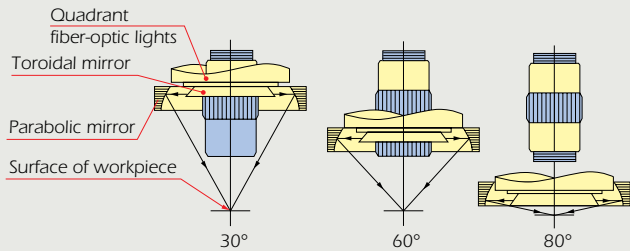


Virtually zero thermal expansion glass scale

ILLUMINATION SYSTEM

Programmable Ring Light (PRL)

The unique Mitutoyo four-quadrant, Programmable Ring Light (PRL) allows you to customize part illumination to maximize its effectiveness. Light intensity in each of four-quadrants is independently controlled. So, you can create the most effective light pattern for the part. A 30° - 80° angle of incidence lets you create the right amount of shadow for measuring.

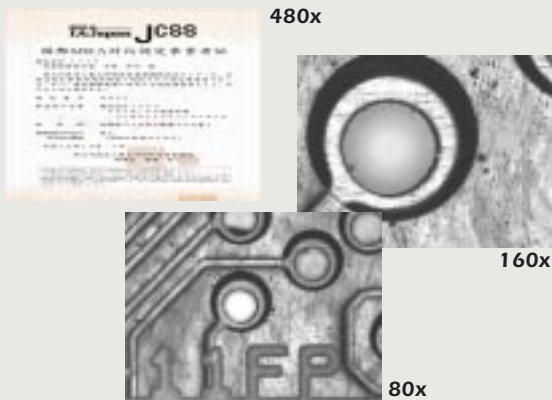


Patent pending (Japan)

IMAGE ZOOMING

Programmable Power Turret Tube Lens

Mitutoyo Programmable Power Turret Tube Lens provides three-step power zooming for wider field of view and highly detailed image by switching the internal tube lenses (1x, 2x and 6x). Every time the built-in tube lenses rotate, the pixel size is automatically calibrated and the light intensity and image aberration are also adjusted. Furthermore, the Programmable Power Turret Tube Lens is absolutely free from mechanical backlash.



ACCESSORIES



Calibration glass chart

Objectives

On-monitor magnification and view field

	1x tube lens	2x tube lens	6x tube lens
1x objective	32x6.27x4.7mm	64x3.13x2.35mm	192x1.04x0.78mm
2.5x objective	80x2.5x1.88mm	160x1.25x0.94mm	480x0.41x0.31m
5x objective	160x1.25x0.94mm	320x0.62x0.47mm	960x0.2x0.15mm

Focal depth and working distance

1x objective: 91 μ m/34mm (SL type*: 91 μ m/52.5mm)

2.5x objective: 14 μ m/34mm (SL type*: 14 μ m/60mm)

5x objective: 3.5 μ m/34mm

*Super-long working distance type

Order No.

02ALA400: 1x objective

02ALA150: 1x objective (SL type)

02ALA410: 2.5x objective

02ALA170: 2.5x objective (SL type)

02ALA420: 5x objective

958448: Calibration glass chart



Traceability / NIST

Our Traceability is "direct" to NIST and its standards

Mitutoyo, a manufacturer of precision measuring instruments, offers Quick Vision and a range of other measuring machines and instruments that are in full compliance with the national standards of various countries. They're traceable to the national standards through physical standards.

Our Grand Master Gage Block Sets, both inch and metric, are annually calibrated and certified by NIST. Our traceability is "direct" to NIST and its standards. Moreover, the standards of the United States are based on the Mitutoyo Gage Blocks.

Mitutoyo America Corporation holds A2LA accreditation for both of its calibration laboratories, located in Detroit, MI and Aurora, IL. This accreditation ensures that all of your Mitutoyo products will be calibrated to the industry's highest possible standard.

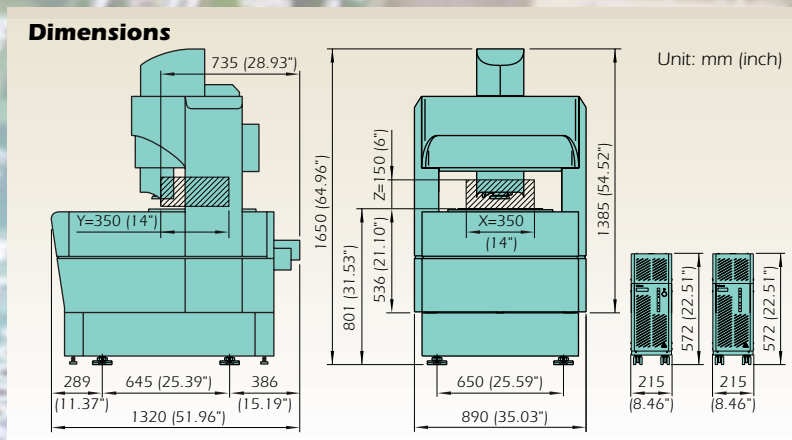
NIST



Interferometer as the standard for Linear Scale calibration (at the Kiyohara plant)



Iodine Absorption Stabilized HE-Ne Laser as the standard for length measurement (at Tsukuba Calibration Center)



QVPak Software

Mitutoyo QVPak software supports Quick Vision instruments with enhanced features including a refined GUI, extended 3-D data processing functions, complete support of touch probe systems with video/TP calibration, and two additional illumination tools. QVPak delivers reliable, stable operation to reduce measurement uncertainties and enhance productivity.

Features

- Single Mouse-Click Edge-Detection Tools
- Tools for Effective Measurement
- Noise Filters
- Elimination of Abnormal Data
- Graphic Display
- Online Help
- Video Image Capture
- QV Navigator — Macro Function
- SmartEditor for QVBasic
- Datum Fit



Coordinate Measuring Machines	_____
Vision Measuring Systems	_____
Surface, Form and Contour Measurement	_____
Optical Measuring	_____
Sensor Systems	_____
Hardness Measuring	_____
Digital Scale and DRO Systems	_____
Small Tool Instruments and Data Management	_____

Optional Software

Extends the Functions of Standard QVPak



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Precision is our Profession