QUICK VISION ACTIVE SERIES

CNC Vision Measuring System
A fully featured, automated vision measurement system featuring a space saving ergonomic design

Quick Vision Active
Aim Higher with Mitutoyo's QV Active Vision Measurement Systems

High Speed

High Accuracy

High Throughput
High Efficiency

Intelligent and Automated Feature Processing Tools allow unattended inspection

Automatic edge detection
The "automatic edge detection" function provides superior reproducibility of measurements regardless of the skill level of the operator.

Image auto focus
Multiple methods of "image auto focus" allows high-speed / high-accuracy height measurements of 3D features

Pattern search
The "pattern search" function automatically recognizes image patterns to create part alignment and feature measurement.

Manual tool
By applying a "manual tool" sequence to a CNC measurement routine, automatic measurement sequencing can be performed. This "One-Click" method reduces the need for fixtures as the zero point is created anywhere on the part, fixture or stage.

Easy to use measurement for multiple workpieces and repetitive feature arrays

Step & repeat
The "step & repeat" function will measure a large number of workpieces on the stage or fixture in one easy operation.

Integrated Multi-Sensor probe models enhance measurement functionality

With the Touch probe enabled system the measurement of the side faces of the workpiece are easily performed. Dimensional features such as perpendicularity, parallelism are possible. Internal side features hidden from the camera can be accessed with the star probe configuration.
Superior Flexibility with Color Zoom Optical System

From wide field of view measurement to micro-measurement

Interchangeable objective lens zoom unit
The newly designed 7:1 ratio zoom unit and interchangeable objectives provide 13x – 183x on-screen optical magnification.

<table>
<thead>
<tr>
<th>Objective 1X (option)</th>
<th>Objective 1.5X (Standard accessory)</th>
<th>Objective 2X (option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Optical magnification</td>
<td>0.5X</td>
<td>0.65X</td>
</tr>
<tr>
<td>Horizontal (H)</td>
<td>10.80</td>
<td>10.44</td>
</tr>
<tr>
<td>Vertical (V)</td>
<td>8.31</td>
<td>7.20</td>
</tr>
<tr>
<td>Working distance</td>
<td>74mm</td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Objective 1X (option)</th>
<th>Objective 1.5X (Standard accessory)</th>
<th>Objective 2X (option)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Working distance</td>
<td>42mm</td>
<td></td>
</tr>
</tbody>
</table>

Exceptional objective working distance handles the tallest part measurement requirements

Best in class working distance
A working distance of 74mm* reduces the risk of damaging the objective or workpiece by accidental collision.
* Using the 1X objective.

3D Vision and Touch-Probe with 3D measurement on the same workpiece
The QV Active series can perform complex measurements that are usually made using a multitude of measurement tools. The QV Active supports 3D features such as: Planes, Cylinders, Cones along with feature profile scanning.

Module change rack, MCR20
Two and three probe rack configurations are available. Various touch-probe module configurations can be mounted in this rack to meet a variety of needs. Automatic probe changing is supported as well as both the TP-20 and TP-200 probes.

3D Vision measurement

Touch-probe measurement

Module change rack, MCR20

Master ball (option)
Calibration ring (option)
Used for offset calibration of the image and the touch probe.

MCR20 (option)
Used for diameter compensation of the stylus.
Software that is simple to use, yet advanced when you need it

**Easy-to-operate across all skill levels**

One-click tool for feature measurements
Select the element type, and with just one click on an edge, a high-accuracy measurement is taken regardless of the proficiency level of the operator. The embedded outlier removal filter automatically excludes bad data caused by burrs and dust.

**Easily created measuring macros with walk through vitalization**

QVNavigator
ALL skill levels can easily run and repeat identical measurement routines. An image or diagram of the workpiece can be registered as an icon in an automatic measurement program, enabling the target program to be quickly executed.

User-specific macro creation function

The embedded intelligence of Easy Editor makes programming and editing simpler

QVEasyEditor
A teaching method is adopted in which programs are automatically recorded while measurement is performed. The insertion, revision, addition, and deletion of the part program can be performed easily using the tree-structure display. Also, execution of only a certain portion of the program after editing can be performed for the purpose of confirmation. Power-user-oriented QVBasicEditor is also available.

**Full featured 2D and 3D graphical results module allows the operator to perform visual analysis**

QVGraphics
A simple operation, just clicking a measurement graphic element shown in the graphic window, enables coordinate creation/change, combination arithmetic operations, and geometric deviation illustration of roundness, flatness, and more. A useful function is automatic creation of a measurement program just by dragging a pitch measurement element.
Operator Customizable Window Layouts

Access control
Measuring window layouts can be customized and assigned according to applications. For example, an administrator can display all the functions; an operator can display only the operation-related items.

Wide Field of view allows more image view, ensuring easier feature locating

Large screen format with high-definition color images reduces eye fatigue

High-definition color camera
Measurement and observation is performed using high-quality and high-definition images which prevents operator fatigue even over long periods of observation.

Clear edges ensure reliable measurement

Superior Lighting with automated feature illumination
Transmitted, co-axial and 4-quadrant ring lighting is provided so workpiece illumination can be set independently from the front, rear, right and left directions. This enables more reliable measurement by enhancing the sharpness of the edge of the feature to be measured.
Optional Software Tools

2D Profile Analysis Software FORMTRACEPAK-AP
This is contour analysis software that can perform sophisticated analyses such as design value verification (Toleranced Data Sets from Feature Creation) and shape analysis (2-D Profile) with data obtained via QVPAK measurement tools.

Contour tolerancing function
• Creating design data
  CAD data conversion, master work conversion, function assignment, text file conversion, creating spherical surface design data
• Verification of design data
  Verification of normal line direction, axial direction, and best fit
• Result display
  Result list, error diagram, error development diagram, error coordinate values, analysis results

Shape analysis
• Analysis items: Point measurement, line measurement, circle measurement, distance measurement, intersection point measurement, angle measurement, origin point setting, axis rotation
• Arithmetic operation items: Maximum value, minimum value, mean value, standard deviation, area

Report creation function
• Measurement results, error diagram, error development diagram

Other functions
• Record/execution of analysis procedure
• CSV format output, text output, DXF/IGES format output
• Fairing
• Quadratic curve approximating function
• Pseudo roughness analysis function

Part Program Management Software QVPartManager
QV PartManager is part program execution management software for multiple workpieces arranged on the measuring stage. A part program can be executed and managed for various kinds of workpieces and workpieces not arranged in an orderly manner.

CAD Program Software Modules QV-CAD I/F, EASYPAG, QV 3DCAD online
Two-dimensional CAD drawings (DXF or IGES format) can be imported to QV Graphics. The measurement results can also be converted to CAD drawings. The design value of each measurement item will be automatically entered. Because the current position can be easily found using graphics, the stage can be quickly moved to an arbitrary position on a CAD drawing which results in improving operability during the measurement. (Refer to QV Graphics on P6.)

Integrated solutions modules QVEio
QVEio is a client application software for external control. It provides three functions: QVEio-PLC, QVEio-PC, and QVEio-Signal. QVEio-PLC is a software package that can inform a user of the state of an external execution command via a PLC. As an example, this can be used to control robots. QVEio-PC allows control of the Quick Vision machine though an external PC connected via RS-232C, and it also exports results and error states. QVEio-Signal outputs the operating status of the Quick Vision machine. This is best suited for displaying the operating status to a signal tower, for example.

Data collection/statistics MeasurLink®
This is a process management program that can perform statistical processing control (SPC) based on measurement results. Display of the control chart in real time enables early detection of machining abnormality which is effective in preventing the generation of defective products.
# Specifications

<table>
<thead>
<tr>
<th>Model</th>
<th>QV-L202Z1L-D</th>
<th>QVT1-L202Z1L-D</th>
<th>QV-L404Z1L-D</th>
<th>QVT1-L404Z1L-D</th>
</tr>
</thead>
<tbody>
<tr>
<td>Measuring range (X×Y×Z)</td>
<td>250×200×150mm (9.8 x 9.8 x 5.9&quot;) (250×200×118: when a 1X objective lens is used)</td>
<td></td>
<td>400×400×200mm (15.7 x 15.7 x 7.8&quot;) (400×400×168: when a 1X objective lens is used)</td>
<td></td>
</tr>
<tr>
<td>Resolution</td>
<td>0.1µm (.00000394)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Scale type</td>
<td>Linear encoder</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Observation unit type</td>
<td>Zoom (8 positions)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Image sensor</td>
<td>Color CMOS camera</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Illumination Unit</td>
<td>Co-axial Light White LED</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td></td>
<td>Transmitted Light White LED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>PRL 4-quadrant fixed white LED</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy*1</td>
<td>E₁x, E₁y (2+3L/1000) µm</td>
<td>E₁z (3+5L/1000) µm</td>
<td>E_z (2.5+4L/1000) µm</td>
<td></td>
</tr>
<tr>
<td>Accuracy guaranteed with optics specified</td>
<td>Objective lens 1.5X and 3.5X zoom ratio</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Touch-probe measuring accuracy*2</td>
<td>E₁x, E₁y, E₁z — (2.4+3L/1000) µm — (2.4+3L/1000) µm</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Accuracy guaranteed temperature range</td>
<td>20±1°C 18 - 23°C</td>
<td>20±1°C 18 - 23°C</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Size of stage glass</td>
<td>311×269mm (12.24 x 10.59&quot;)</td>
<td>466x480mm (18.34 x18.89&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Maximum stage loading*2</td>
<td>10kg (22lbs)</td>
<td>20kg (44lbs)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimensions (WxDxH)</td>
<td>570×767×845mm (22.4 x 30.2 x 33.24&quot;)</td>
<td>776×1303×1004mm (30.55 x 51.29 x 39.52&quot;)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mass (including machine stand)</td>
<td>155kg (341lbs)</td>
<td>324kg (714lbs)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

*1 Inspected to a Mitutoyo standard. L = measured length (mm)
*2 Does not apply for unbalanced or concentrated loads.

## Options

### Calibration chart

This chart is used to correct the pixel size of image elements, correct the accuracy of automatic focusing at each magnification, and correct optical axis offset.
Quick Vision Active 202

Quick Vision Active 404
Excellent reliability

Traceability to national standards
Mitutoyo’s calibration artifacts and instruments that are used to establish machine accuracy specifications are maintained in a continuous chain of traceability to national dimensional standards. This is our customers’ assurance of reliable measurement.

A Global Market Leader

World’s top level of global network
Mitutoyo has expanded its market all over the world since the establishment of the first overseas sales company, MTI Corporation (currently Mitutoyo America Corporation) in the USA in 1963. At present, we have R&D, manufacturing, sales, and technical service bases in 29 countries with an agency network connecting over 80 countries.

Company Headquarters in Kawasaki, Japan
Whatever your challenges are, Mitutoyo supports you from start to finish.

Mitutoyo is not only a manufacturer of top-quality measuring products, but one that also offers qualified support for the lifetime of the equipment backed by comprehensive services that ensure your staff can make the very best use of your investment.

Apart from the basics of calibration and repair, Mitutoyo offers product and metrology training, as well as IT support for the sophisticated software used in modern measuring technology. We can also design, build, test and deliver measuring solutions, and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.