

## Optical Data-processing System QM-Data200 and Vision Unit



# Promotes Smart Factory by Collecting and Managing Measurement Data.

Collects data in the inspection process swiftly and accurately, and increases a company's competitiveness based on detailed data analysis.

**Optical data-processing system** is what supports such a system configuration.

In addition, "MeasurLink" offers the "Quality Control IoT that Mitutoyo advocates."



## Achieve Smart Measurement

### 2D Data Processing Unit QM-Data200

Faster, easier, and more accurate measurements with a projector and a microscope.

Much higher measurement efficiency due to coordinate measurements and combination calculations without requiring parallelism adjustment.



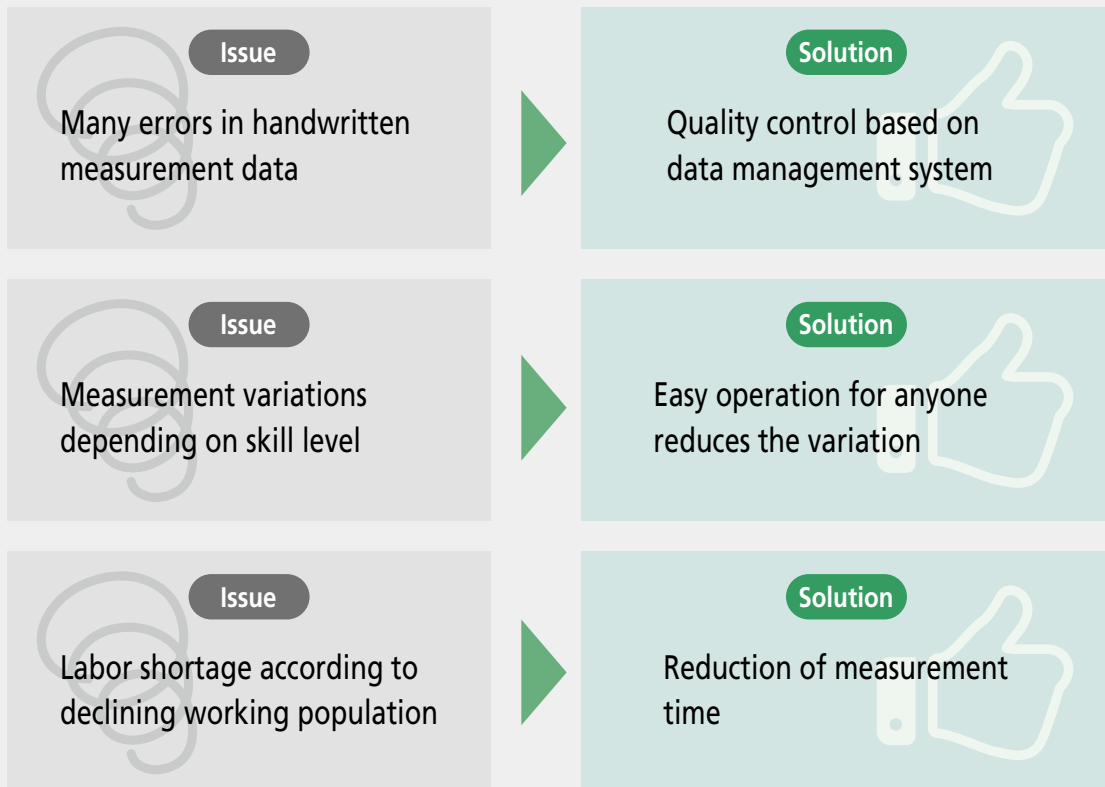
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### Vision System Retrofit for Microscopes Vision Unit

Image processing, such as automatic edge detection, offers more efficient and accurate measurements, reducing the operator-dependent variation (reproducibility).



## Solutions to issues



## What is **MeasurLink**® ?

**MeasurLink** is an IoT platform for quality management that realizes “Visualization of Quality” by enabling real-time data collection, centralized data management and implementing statistical process control from measuring instruments connected to the network. **QM-Data200** and **Vision Unit** support you as an infrastructure system that undertakes the collection and management of measurement data from a projector and microscope.

**Preventing defectives**

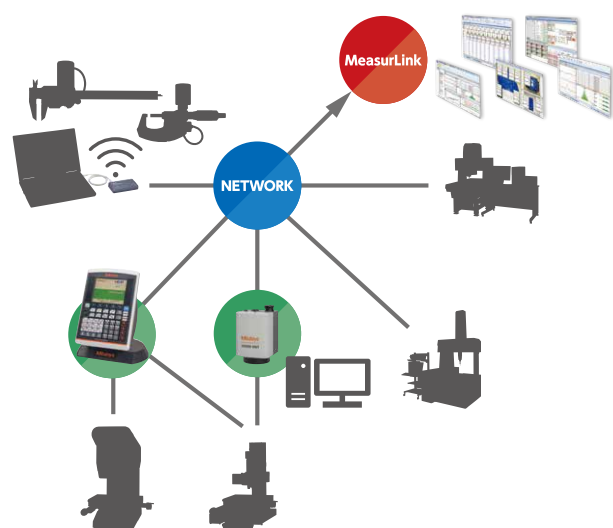
Collects data from Digimatic gages on the network and performs statistical process control (SPC) to warn of possible generation of defectives.

**Diagnosis by data analysis**

Checking measurement results by accessing the database and performing various analyses helps investigate and resolve process performance concerns.

**Simply start achieving IoT**

Utilizing conventional data storage and measuring instruments connected to the network, you can move from a simple configuration to the IoT in stages.



## 2D Data Processing Unit QM-Data200



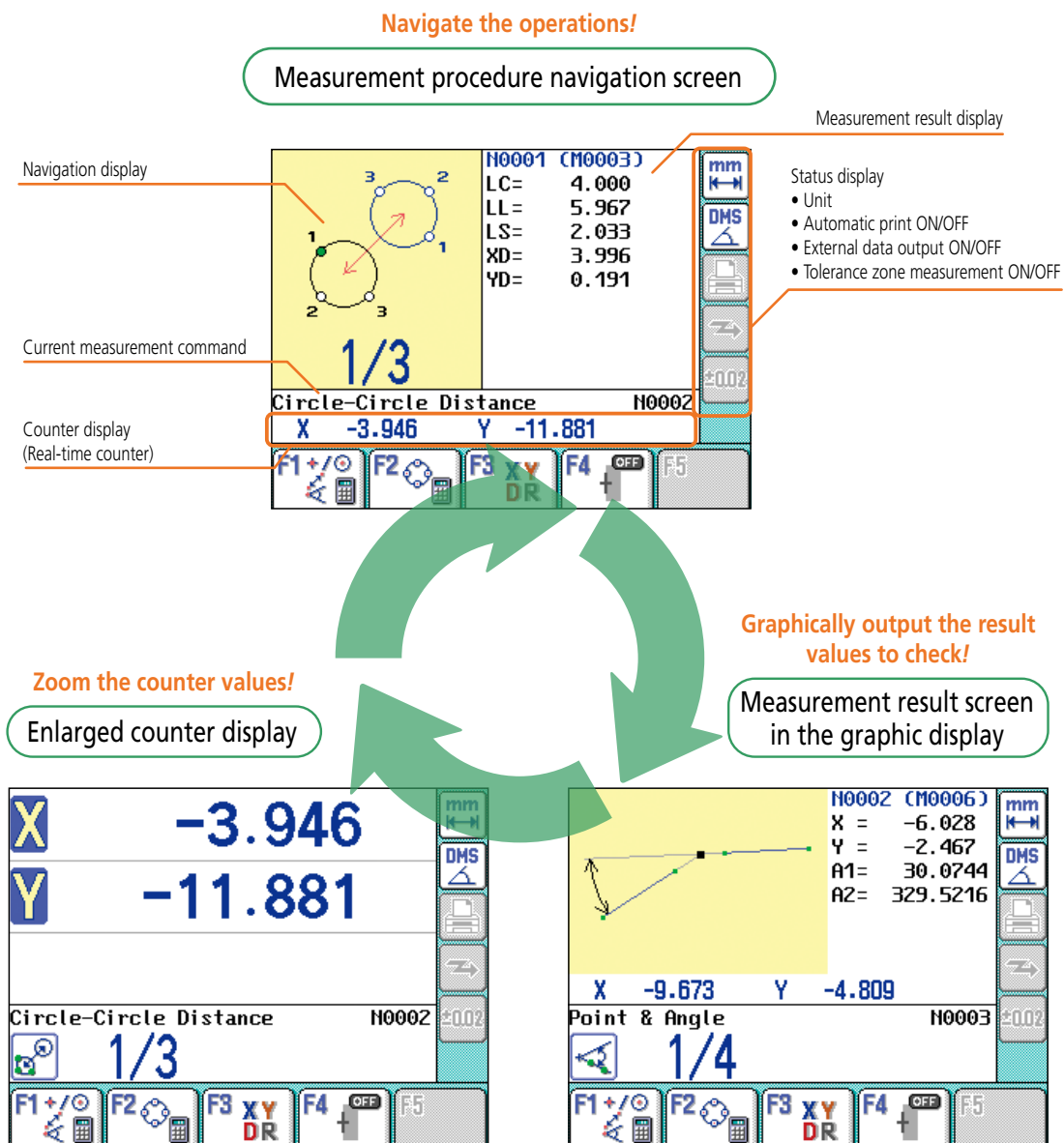
### Data Processing Unit with Easy Operation

#### Easy operation

A color LCD panel with high visibility is adopted for an interactive system that guides the operator according to screen instructions. This allows easy operation even for first-time users of the **QM-Data200**. This data processing unit is intended for production sites in various environments, adopting high durability sheet switches and proprietary electronic components.

#### Three screens selectable according to purpose

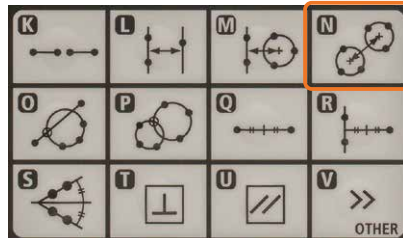
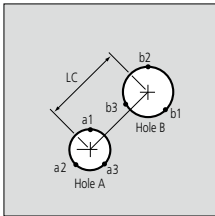
[Measurement procedure navigation screen], [Enlarged counter display], [Measurement result screen in the graphic display].  
Selectable according to your purpose.



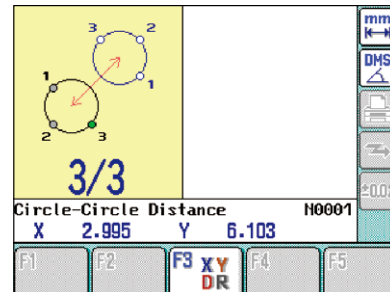
## Experience measurement with the QM-Data200

The comprehensive key panels of the **QM-Data200** make it easy for any operator to use. Simple operations help you concentrate on measurements.

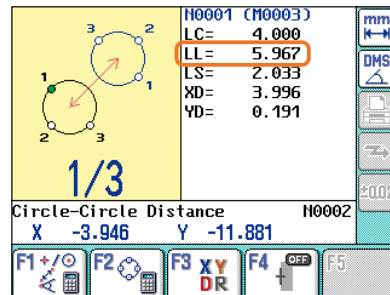
**Measurement example:** Measure the distance between the centers of holes A and B.



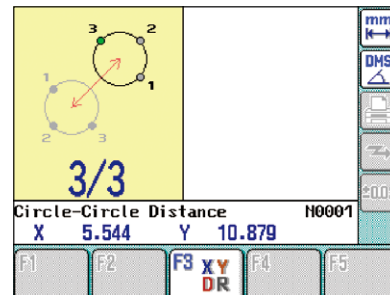
1. Select the "circle-circle distance" measurement key from the pattern-measurement keys.



2. Determine each position (a1, a2, a3) on round hole A, following the measurement navigation procedure on the LCD.



4. The measurement result is displayed.



3. Next, the measurement navigation procedure for round hole B will be displayed. Determine each position (b1, b2, b3) in the same manner as in step (2).

## USER MENU

In the User menu, the "Measurement command," "User macro," and "Part program" can be registered. (Up to 3 menus.)

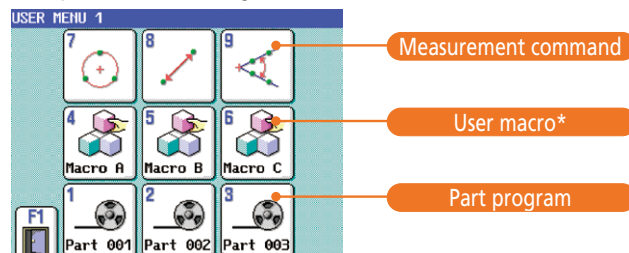
You can register a "Part program" for each workpiece to measure, and customize an original system to best suit the operator's needs.

The registered user menus can be saved on a USB storage device, enabling a backup or sharing on multiple **QM-Data200** units.

[USER MENU] key



### Example of user menu registration



\* A user macro is a measurement command created by the user, and is a combination of several standard **QM-Data200** measurement commands.  
 Note: Up to three user menus, from [USER1] to [USER3], can be registered.  
 A maximum of nine icons can be registered for one menu.

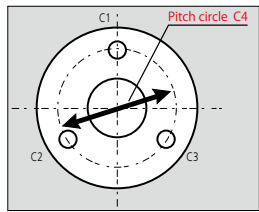
## Efficiency

### The coordinate entry format function (NP measurement)

In a measurement using the coordinate entry format, the coordinates calculated from the measurement data (coordinates of the center of a circle, etc.) are applied to data entry as one measuring point. For example, measurement of the pitch of a rectangular hole can be executed simply by selecting the [PITCH MEASUREMENT] key and [RECTANGULAR HOLE CENTER] in the coordinate entry format. Without calling up and re-calculating measurement result, [COORDINATE ENTRY FORMAT] can use with pattern and basic measurements.

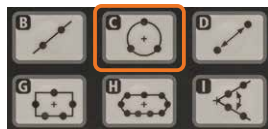
#### Measurement example:

Measurement of a pitch circle whose perimeter intersects the three hole centers



#### Types of coordinate entry formats

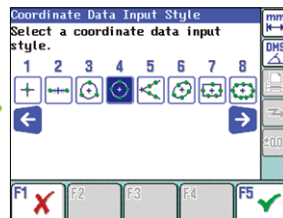
- Directly entered points**  
 Use the point that has been entered as a measuring point.
- Center of ellipse**  
 Use the center of the ellipse as a measuring point.
- Midpoint between the two**  
 Use the midpoint between the two points as a measuring point.
- Center of rectangular hole**  
 Use the center of the rectangular hole as a measuring point.
- Center of circle (three points)**  
 Use the center of the circle whose 3 points have been entered as a measuring point.
- Center of slotted hole**  
 Use the center of the slotted hole as a measuring point.
- Center of circle (four points)**  
 Use the center of the circle whose 4 points have been entered as a measuring point.
- Intersection of two straight lines**  
 Use the intersection of the two straight lines as a measuring point.



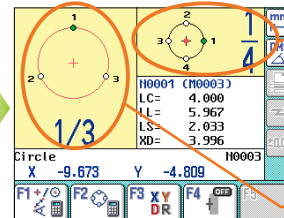
1. Press [CIRCLE MEASUREMENT] to measure pitch circle C4.



2. Press [COORDINATE ENTRY FORMAT].



3. Measure circle C1 (entry of four points). Likewise, measure circles C2 and C3.



Coordinate entry format display

The diameter of the pitch circle (C4) can now be found.

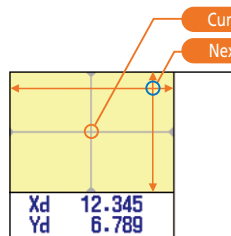
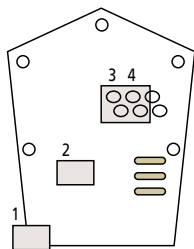
Measurement status of pitch circle display

4. Select the center of each circle (entry of four points).

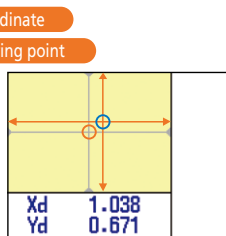
## Manual Operation Functions for Greater Measuring Efficiency

### Navigation of measuring position

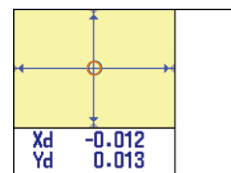
When using the Repeat function to execute a measurement procedure (part program) created with the teaching function\*, the Repeat function guides the operator to the next measuring point. The number of repeat times for a part program can be specified.



1. The next measuring point is indicated by the cross-hairs.



2. Move the measuring instrument stage to place one set of cross-hairs over the other (or to bring the counter reading to zero).



3. When the cross-hairs overlap, it is close to the next measuring point.

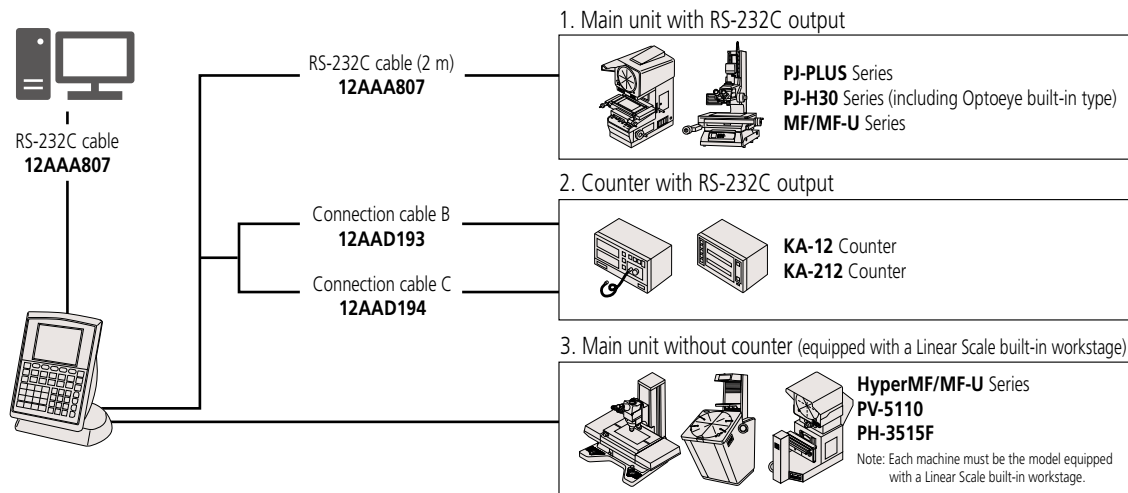


4. Press [LOAD] to enter data, using the cross-hairs of the measuring instrument.

\* Teaching function: When measuring more than one workpiece of the same form, the series of key operations performed in the measurement of the first workpiece can be stored as a part program.



# SYSTEM CONFIGURATION



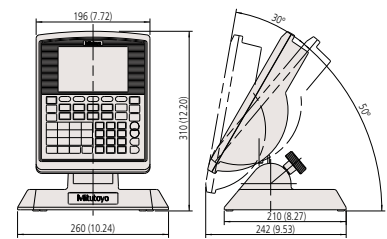
## Specifications

Model	QM-Data200	
Code No.	Stand-mount type 264-160-13*1	Arm-mount type 264-161-13*1
Display languages (selectable)	Japanese/English/German/French/Italian/Spanish/Portuguese/Czech/Simplified Chinese/Traditional Chinese/Korean/Turkish/Swedish/Polish/Dutch/Hungarian	
Measured value units	Length: mm Angle: degree/degree minute second (selectable)	
Resolution	0.1 μm	
Program functions	Part program creation, execution, editing	
Statistical processing	Number of data, maximum value, minimum value, mean value, standard deviation, range, histogram, statistics on a measuring function basis (by command)	
Display system	COLOR TFT LCD (with LED backlight)	
ABS (Absolute origin)	—	
LAF (Laser AF)	—	
Edge Sensor Position Compensation	Supported (Projector)	
Input/Output	X, Y, Z: Maximum of three Linear Scale Inputs RS-232C 1: For connecting to external PC RS-232C 2: For connecting to counter of measuring instrument OPTOEYE: For inputting edge signal from OPTOEYE (OPTOEYE MZ)	FS: For connecting to optional foot switch PRINTER: For connecting to optional printer USB-MEMORY: For connecting to USB memory*1
Measurement result file output	RS-232C output (CSV format, MUX-10 format)	
Power	AC100 - 240 V	
Maximum power consumption	17 W (does not include optional accessories)	
Dimensions (WxDxH)	Approximately 260x242x310 mm (including the stand)	Approximately 318x153x275 mm (when the arm is in the horizontal posture)
Mass	Approximately 2.9 kg	Approximately 2.8 kg
Applicable models	PJ-PLUS Series PJ-H30 Series PV-5110 (with KA-212 counter) PH-3515F (with KA-212 counter) MF/MF-U Series KA-12/KA-212 counter	PJ-PLUS Series PJ-H30 Series PV-5110 PH-3515F
Optional accessories	AC adapter, power cable, Easy Operation guide	

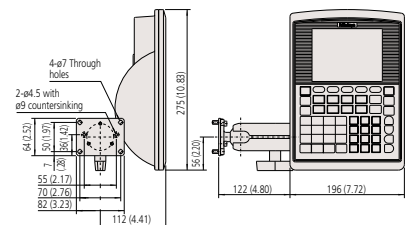
\*1 Mitutoyo does not guarantee the operation of all commercial USB memories except for the following:  
Mitutoyo recommends those USB memories made by SanDisk Corporation and that meet the following requirements.  
- Those that have no security function such as encryption and fingerprint authentication  
- Those that are not compliant with USB3.0

## Dimensions

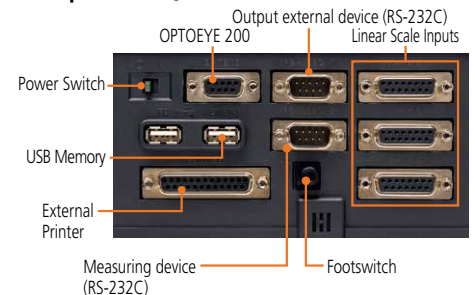
- Stand-mount type (Code No. 264-160-13)



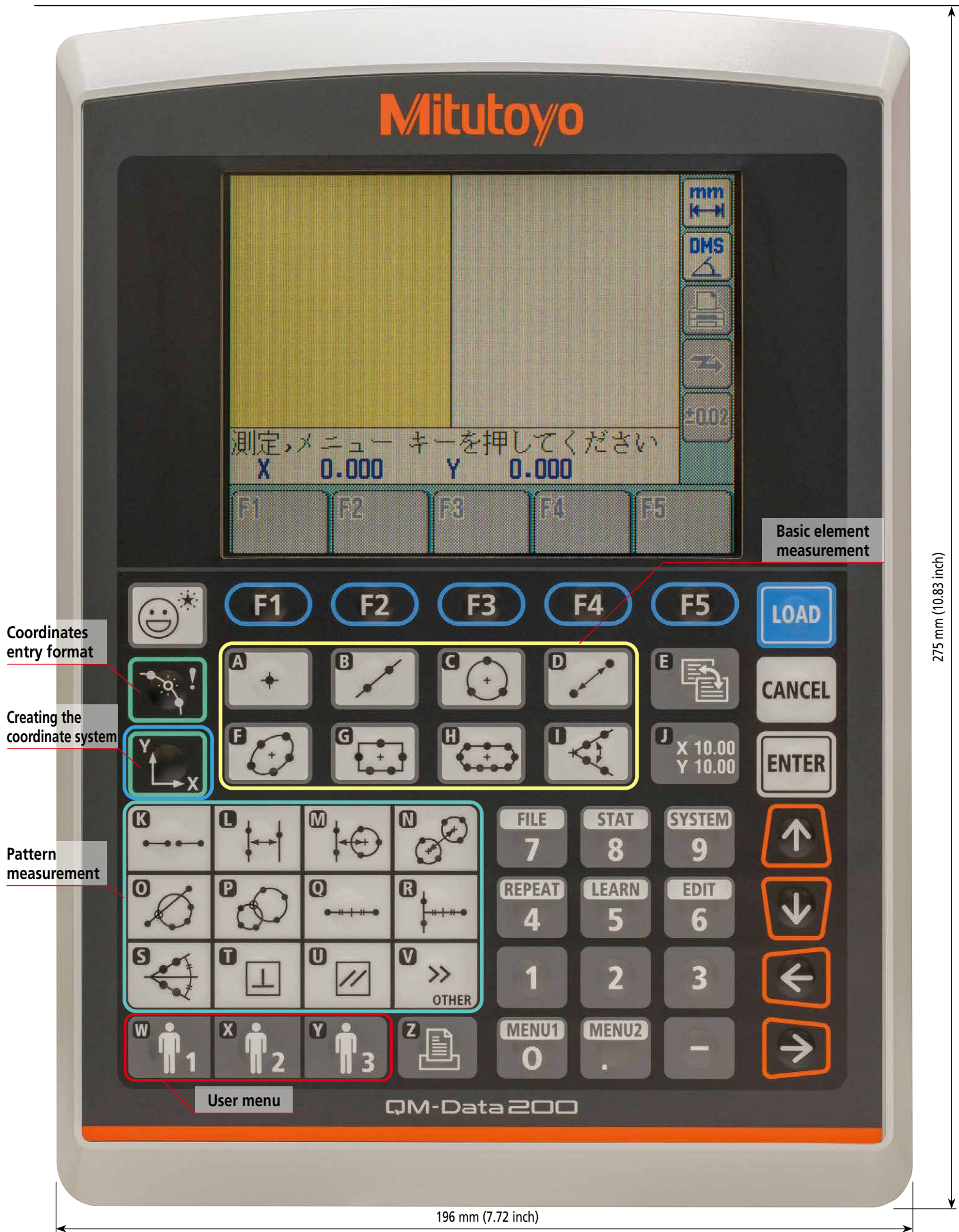
- Arm-mount type (Code No. 264-161-13)



## Rear panel of QM-Data200



## Key panel



Coordinates entry format

Creating the coordinate system

Pattern measurement

User menu

Basic element measurement

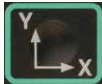
275 mm (10.83 inch)

196 mm (7.72 inch)



# Creating the coordinate system and measurement commands

## Creating the coordinate system



Key menu



**Coordinate system pattern 1**  
The line that passes through the measuring point is the X axis, and the line that passes through another measuring point and intersects the X axis making a 90-degree angle is the Y axis.



**Origin setting**  
Translate the coordinates horizontally until the measuring point is positioned as the origin. The displacement value can be entered directly.



**Coordinate system pattern 2**  
The line that passes through the measuring point is the X axis, and its midpoint is the origin.



**Determining axis by point**  
Rotate the X axis coordinate in such a way that it passes through the measuring point. (The origin is not transferred.) The rotation angle can be entered directly.



**Coordinate system pattern 3**  
The line that passes through the measuring point is the X axis, and the intersection with another line is the origin.



**Determining axis by line**  
Rotate the coordinate system in such a way that it becomes parallel to the measured line. (The origin is not transferred.)



**Coordinate system pattern 4**  
The measuring point is the origin, and the line that passes through another measuring point is the X axis.



**Compensation of offset axis**  
Rotate the coordinate system until the measuring point comes to the specified position. (The origin is not transferred.)



**Coordinate system handling**  
Save, recall and Reset the coordinate system



**Compensation of plane**  
Reduce the error caused by the inclination of workpiece setting. (effectively used by measuring machines with a Z axis.)



**Coordinate system saving**  
Save the current set coordinate system information in a coordinate system memory. (The number of memories is 10.)



**Coordinate system recall**  
Recall a coordinate system data from a coordinate system memory, then set it in the measuring target coordinate system.



**Coordinate system resetting**  
Clear the current coordinate system setting, then reset it to the initial status just after power-on.

## Basic element measurement



**Point**  
Coordinates (Multi-point processing for a maximum of 100 points)  
Note: In multi-point processing, the mean value is used as the measured value.



**Line**  
Angle and perpendicularity with the X axis. (Multi-point processing for a maximum of 100 points)



**Circle**  
Center coordinates, diameter, roundness (Multi-point processing for a maximum of 100 points)



**Point-point distance**  
Distance, Coordinates difference, radial difference



**Ellipse**  
Center coordinates, major-axis diameter, minor-axis diameter, angle with the X axis, departure from the X axis (Multi-point processing for a maximum of 100 points)



**Rectangular hole**  
Center coordinates, length, width



**Slotted hole**  
Center coordinates, length, width, radius of slotted hole



**Intersection point and intersecting angle**  
Intersection coordinates, intersecting angle, supplementary angle

## Pattern measurement



**Pitch**  
Point-point distance, difference between coordinates, angle, cumulative distance, cumulative angle



**Line-point distance**  
Perpendicular (shortest) distance



**Line-circle distance**  
Center-center distance, longest distance, shortest distance



**Circle-circle distance**  
Center-center distance, longest distance, shortest distance, difference between coordinates, radial difference



**Line-circle intersection**  
Coordinates of intersection



**Intersection of circles**  
Coordinates of intersection



**Midpoint between points**  
Coordinates of midpoint



**Midpoint between line and point**  
Coordinates of midpoint



**Center line between line-circle**  
Angle with the X axis



**Perpendicularity**  
Perpendicularity



**Parallelism**  
Parallelism



Key menu



**Circle-point distance**  
Center-center distance, longest distance, shortest distance, difference between coordinates



**Midpoint between circles**  
Coordinates of midpoint



**Projected point**  
Coordinates of the point projected on a line



**Point-circle tangent point**  
Coordinates of tangent point



**Circle-circle tangent line**  
Angle with the X axis



**Corner**  
Diameter, radius of corner circle, center coordinates



**Height**  
Height (distance between steps in the Z axis direction)

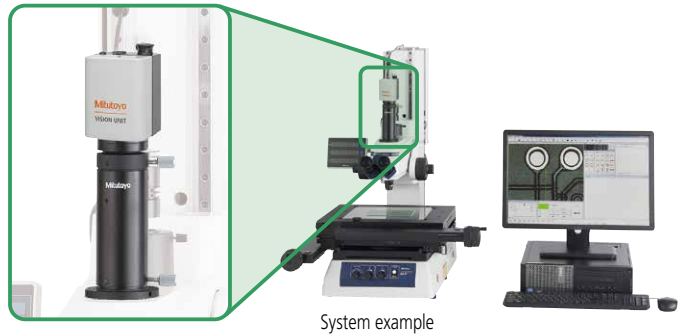


**Plane-plane distance**  
Distance between plane and plane (point)



**AI**  
With the AI measurement function (Automatic Element-Identification function), elements can be automatically identified based on data input from the measuring points.

# Image System Retrofit for Microscopes Vision Unit



System example

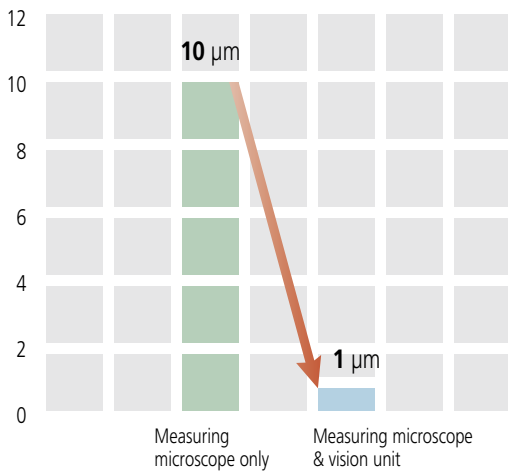
## Greatly Improved Workability by Data Processing Plus Image Measurement

### Improved measurement reproducibility and efficiency

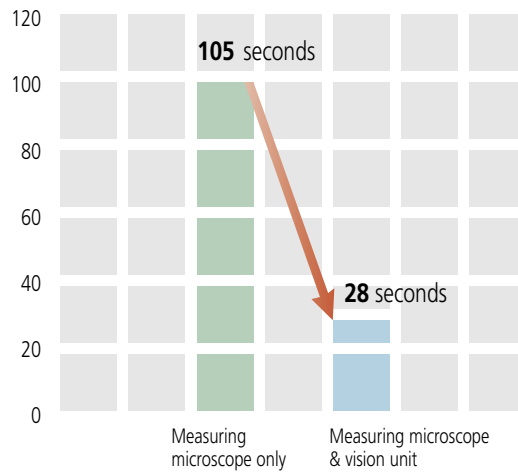
The vision unit allows anyone to perform quicker and more repeatable detection of an edge with just one click, resulting in much better reproducibility of dimension measurement among a group of operators. Also, using the vision unit eliminates the need for burdensome workpiece orientating and measuring-point detection with cross-hairs, thus allowing quicker inspection of dimensions.

Actual measurement results and measuring times when measuring a dimension of about 20 mm by a group of three operators

Unit:  $\mu\text{m}$  **About 90 % improvement** in reproducibility



Unit: sec **About 70 % reduction** in average measuring time



#### Group measurement with the measuring microscope only

	Operator A	Operator B	Operator C		
Maximum value (mm)	20.0863	20.0849	20.0811	Group maximum value (mm)	20.0863
Minimum value (mm)	20.0765	20.0802	20.0758	Group minimum value (mm)	20.0758
Reproducibility (mm)	0.0098	0.0047	0.0053	Group reproducibility (mm)	<b>0.0105</b>
Measurement time (sec)	76	150	89	Average measurement time (sec)	<b>105</b>



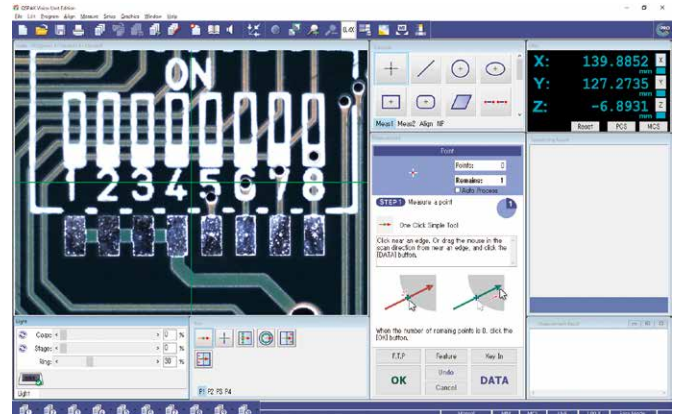
#### Group measurement with the measuring microscope & vision unit

	Operator A	Operator B	Operator C		
Maximum value (mm)	20.0847	20.0853	20.085	Group maximum value (mm)	20.0853
Minimum value (mm)	20.0846	20.0842	20.0837	Group minimum value (mm)	20.0837
Reproducibility (mm)	0.0001	0.0011	0.0013	Group reproducibility (mm)	<b>0.0016</b>
Measurement time (sec)	36	23	25	Average measurement time (sec)	<b>28</b>

# More User-friendly Manual Measurement Environments Available

## Wide-field measurement

Upsizing of the image sensor has made the view approximately 40% wider than previously in both the X and Y directions, thus allowing concurrent observation of the whole extent of many more target areas than before.



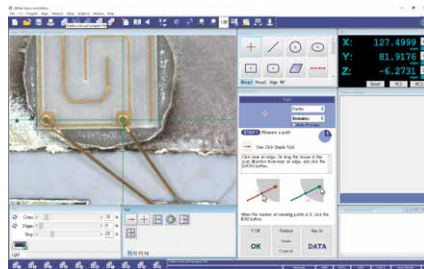
Note: An actual image using objective lens ML1X plus LED ring light

## Digital zoom function

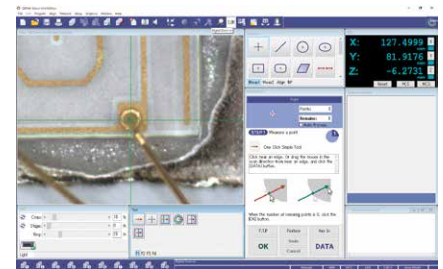
A normal 0.4X display image can be magnified to a 1X or 2X image by merely clicking the corresponding menu icon. The image can be measured in fine detail using the digital zoom display.



0.4X



1X

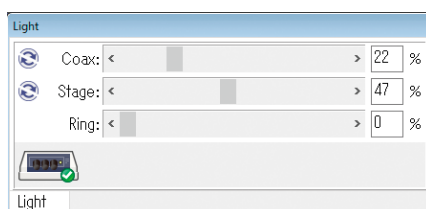
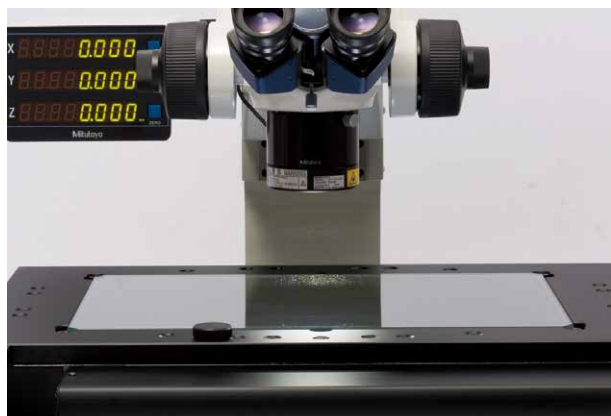


2X

## Auto-brightness control function (exclusive to MF/MF-U Series)

The light intensity of transmitted/reflected illumination used on a microscope can now be controlled via software. There is no hassle adjusting the illumination during repeat measurements, since the level is reproduced according to the setting selected during creation of the part program. Even in the measurement of a workpiece that requires variations in illumination, consistently accurate edge detection is ensured. This enhances the efficiency of repeated measurements. This function can be used even when an external lighting system, such as a ring fiber or an LED ring (either one is optional), is connected.

Note: Only for Measuring Microscopes **MF/MF-U** Series



Software

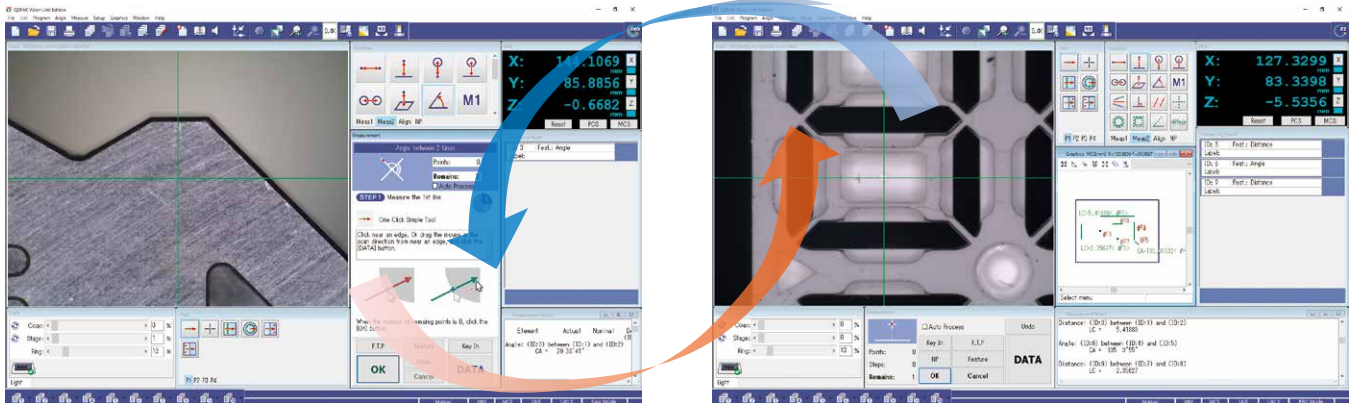
## QSPAK Supports A Wide Variety of Measurements.

QSPAK, which is software for the image unit, offers "Reliable image detection capability" and "Simple operability for anyone" to support a wide variety of measurements, from measurements of single workpieces in production of various kinds and small quantities to fast measurements of mass produced items.

QSPAK, which combines the two modes, offers strong backup to customers in various scenarios.

### EZ mode (Simple measurement mode)

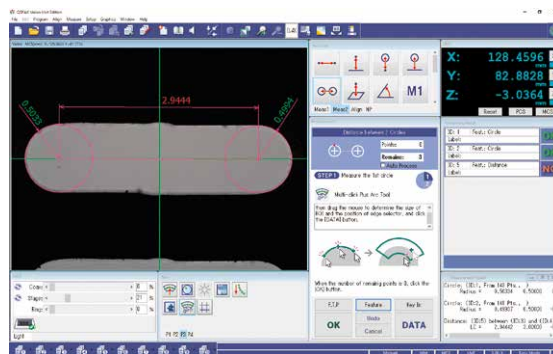
### PRO mode (Universal measurement mode)



## A Tool Enabling Quick and Simple Inspection of Measurement Results

### Measurement results display function on a video window

Just looking at a measurement image lets you understand the measurement result intuitively. Immediate judgment for tolerance and identification of NG parts is possible by setting different display colors for results between OK and NG. Adding a measurement image to an inspection record leads to higher efficiency in document preparation work.



Freely set any display colors for OK/NG

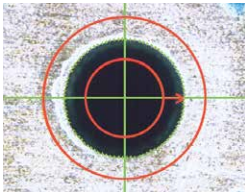
Examples  
Tolerance OK: Green  
Tolerance NG: Red



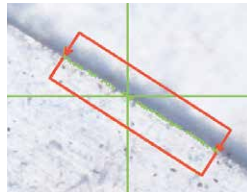
## Tools for Reducing Personal Errors and Improving the Accuracy of Repeat Measurements

### One-click tools

Just single-clicking around the edge with a mouse sets the automatic discrimination from automatic tool setup to edge detection/calculation. If measurement is performed in a single window, measurement time can be drastically reduced since there is no need for stage travel.



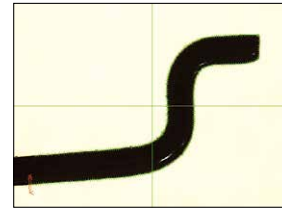
One-click circle tool



One-click box tool

### Auto Trace Tool

This is a tool to perform shape measurement by instantaneously detecting multiple points along the edge of an arbitrary form. The contour data in the window is acquired by autonomous profiling measurement.



If the acquired contour data are imported to the contour analysis software "FORMTRACEPAK-AP" (option), highly accurate contour analysis can be performed.

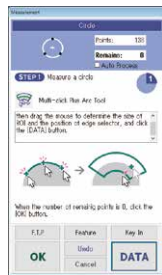
Note: For details of FORMTRACEPAK-AP, see page 16.

## Useful Tools Supporting Measurement of Various Features

### Multi-click plus arc tool

This tool allows for arbitrary setting of the entire tool size to be drawn, scanning direction, and position of the edge selector.

It is useful for measurements of a narrow-angle arc, or a contour that is hard to recognize due to having too many abnormal points.



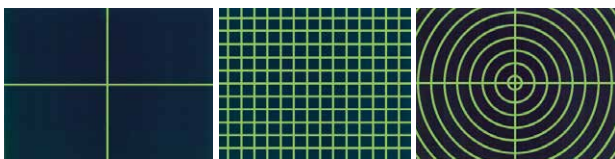
### Roundness tool

Roundness of circular features is calculated using the least-squares method by default but the maximum inscribed circle or minimum circumscribed circle methods are also available.

### Template tools

#### Basic templates

The tool provides three types of templates corresponding to the reticles of a measuring microscope.



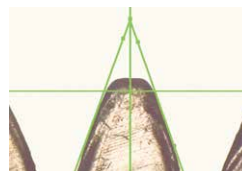
Cross-hairs

Grid

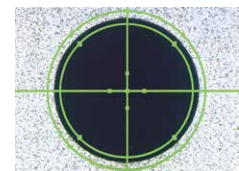
Concentric circles

#### Extended templates

Four kinds of templates are available as the extended templates: cross-hairs, circular, rectangular, and angular. This tool allows free setting of values such as diameter, distance and angle through key entry on a profile projector.



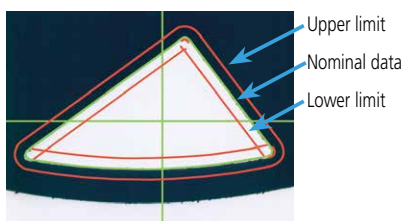
Angle template



Circle template

#### Manual pattern matching

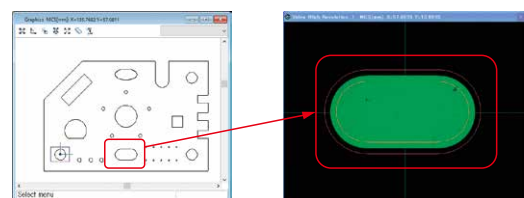
This tool creates a template that matches a workpiece feature exactly in the case of no match in basic/extended templates so that tolerance zone judgment can be performed visually. The displayed lines of the upper and lower limits entered with keys allow easy confirmation at a glance.



#### CAD user pattern template function

This tool allows a creation of a template by using a drawing in a graphics window (CAD data).

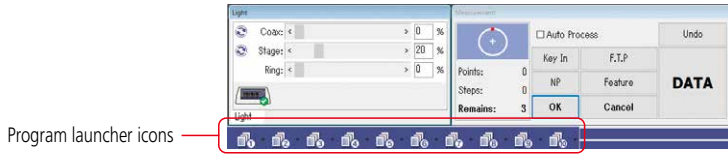
Note: To use this function, QS-CAD I/F (optional software) is required.



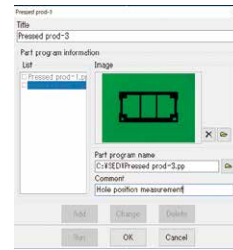
# Useful Functions for Easy Execution and Editing of Auto-Measurement Procedure Program

## One-click easy execution function Program launcher

It is now possible to register an auto-measurement procedure program created with pictures and comments in an icon, and easily recall a required program. A total of 10 icons are available, enabling the management of programs by each worker or workpiece.



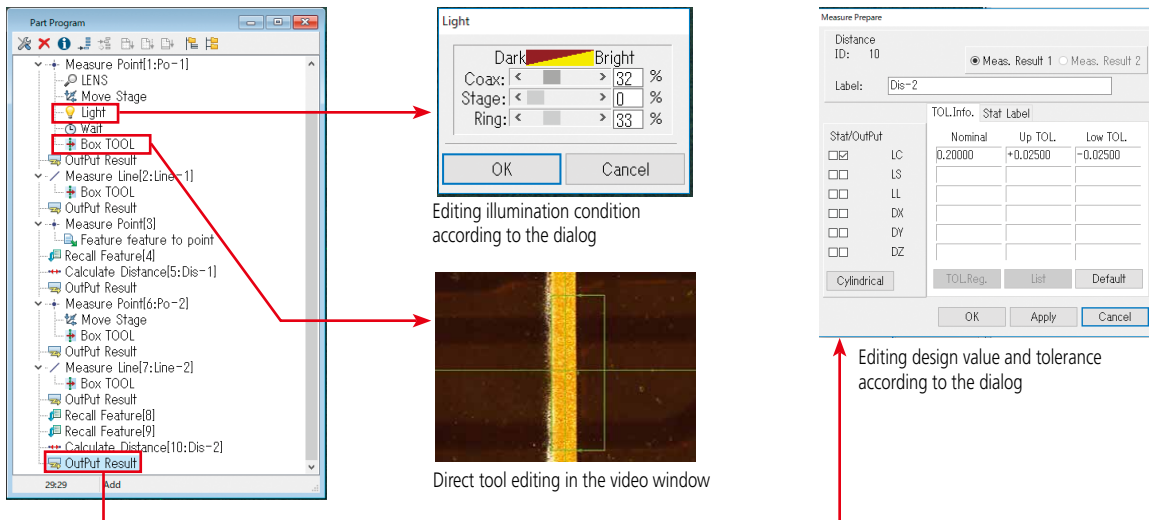
Program launcher icons



Auto-measurement procedure program storage window

## Smart Editor enabling intuitive program editing

During display of the list of the part programs (auto-measurement procedure program), the target position of X/Y stage travel, lens magnification, and illumination condition are displayed independently as icons or on labels, to facilitate part program editing.



Editing illumination condition according to the dialog

Direct tool editing in the video window

Editing design value and tolerance according to the dialog

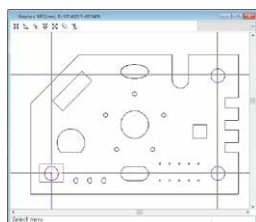
## Navigation Functions for Faster Measurement

### Stage navigation

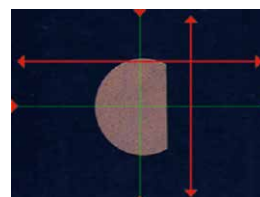
When indicating a point to measure in the graphics window with the mouse, the cross-hairs navigation appears. This helps to minimize unnecessary travel of the X/Y stage, such as overrun or short-run. Combination of this function and CAD data\* remarkably reduces the measurement program creation time. Furthermore, measurement results are displayed in the graphics window, allowing easy travel to the position you want to re-measure.

\* To use CAD data, **QS-CAD I/F** (optional software) is required.

### Stage travel on graphics window

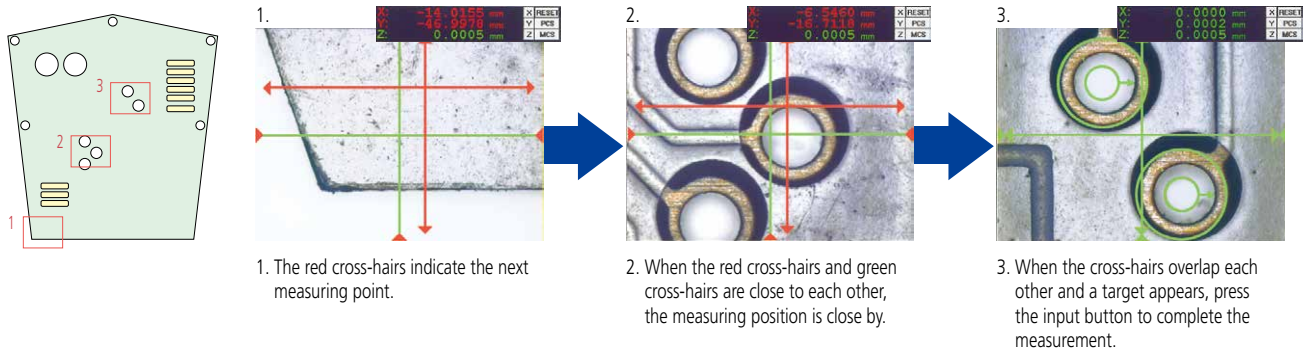


The destination will be indicated by the cross-hairs on the video window.



## Quick Navigation

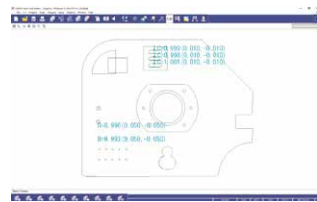
The navigation function is combined with the teaching and repeat functions, by which a series of measurement procedures is memorized and reproduced. This function guides the operator to the next measuring point, following the measurement procedure that has been memorized. Move the stage until the green cross-hairs, seen at the center of the monitor screen, are superimposed on the red cross-hairs, which indicate the next measuring point, and only the green cross-hairs remain. In this state the next measuring point will be displayed on the screen. As the digital counter approaches zero, the screen will display the next measuring point. This eliminates the need to constantly look at the workpiece in order to check the measuring point, thereby freeing the operator to concentrate on the screen displays.



## Support from Inspection Table Generation to Measurement Control

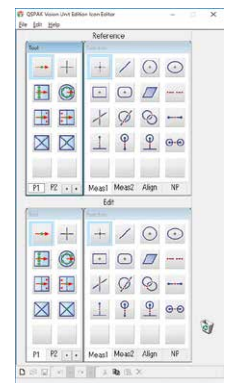
### Graphics window

The real-time graphic display of measurement result and element provides a visual image of the measuring point. Also, the graphic display of measuring elements facilitates the selection of a measuring element, making for a quicker measurement process. Inter-element calculations can be performed by using the graphics window.



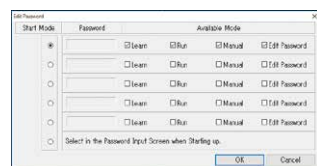
### Icon editor

Using the Icon Editor, the layout of icons such as the measurement item icon, tool icon, etc., can be freely arranged. The layout setting can be freely determined. For example, frequently used icons can be laid out on just one page.



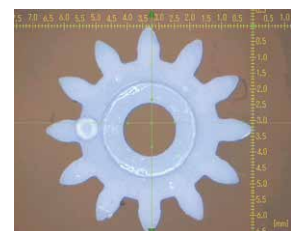
### Security function

The scope of use can be limited according to the work level, by setting a password when starting QSPAK.



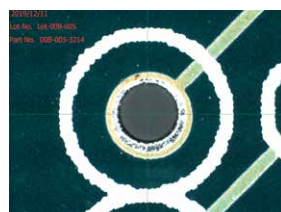
### Video image scale display

The scale display, which is proportionate to the real field of view, on the video window lets the operator quickly grasp the approximate size of a workpiece. The image can be saved along with the scale display for size reference.



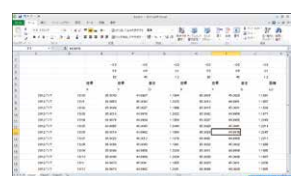
### Saving image files

The color image on the video window can be output as files in BMP-format and JPG-format. They can be easily attached to the workpiece image record or inspection table.



### Measurement result output

Measurement results using the part program can be output as CSV-format files. This means the measurement result can be output to a commercial spreadsheet program such as MS-Excel®, so that an inspection table can be generated in the original format.



# A Group of Applications Supporting Advanced Measurement Requirements (Optional software)

## Form assessment/analysis software

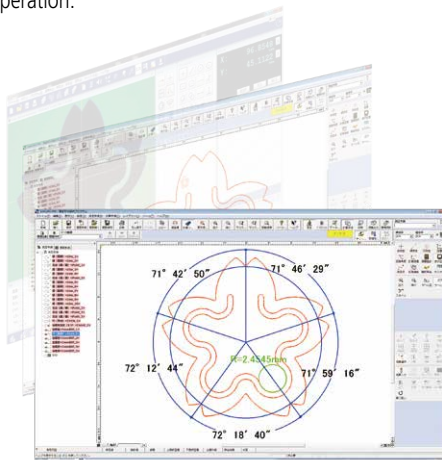
### FORMTRACEPAK-AP

FORMTRACEPAK-AP is software for form evaluation and analysis, that performs evaluation of geometrical tolerances, profiles and complex shapes, making use of point group data acquired with an auto trace tool, etc.

Note: The auto trace tool is executed in the tool window.

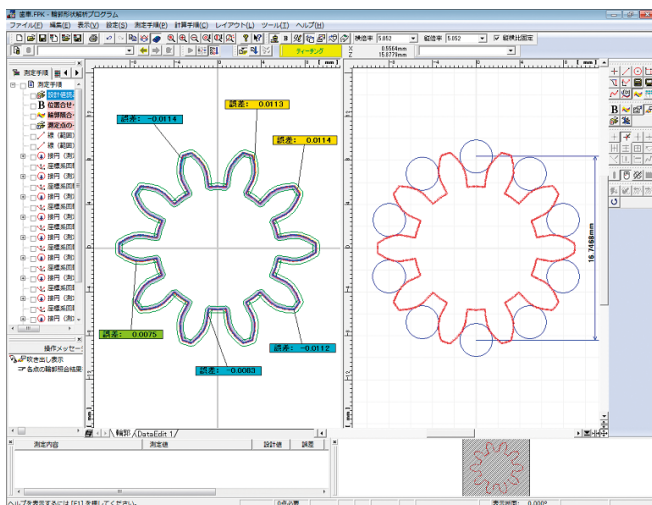
### Example of complex shape analysis

- Measurement of a complex shape displayed in the window is possible with a simple operation.



### Example of gear contour matching and over-pin diameter analysis

- Contour tolerancing against the nominal value is also enabled.
- Allows the definition of a virtual circle with a given diameter.



## Measurement support software

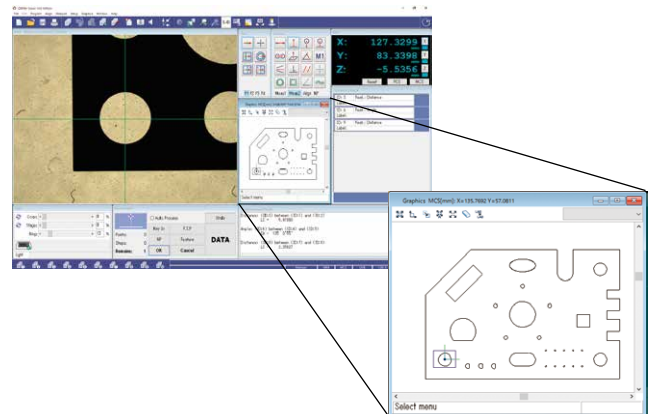
### QS-CAD I/F

“CAD Import function” for importing CAD data, and “CAD Export function” for exporting CAD data are available.

The CAD import function makes it possible to import CAD data to utilize it for stage travel or nominal value inputting. The CAD export function makes it possible to export the graphic data, nominal values, and measurement values acquired from a measurement unit, to an external CAD system.

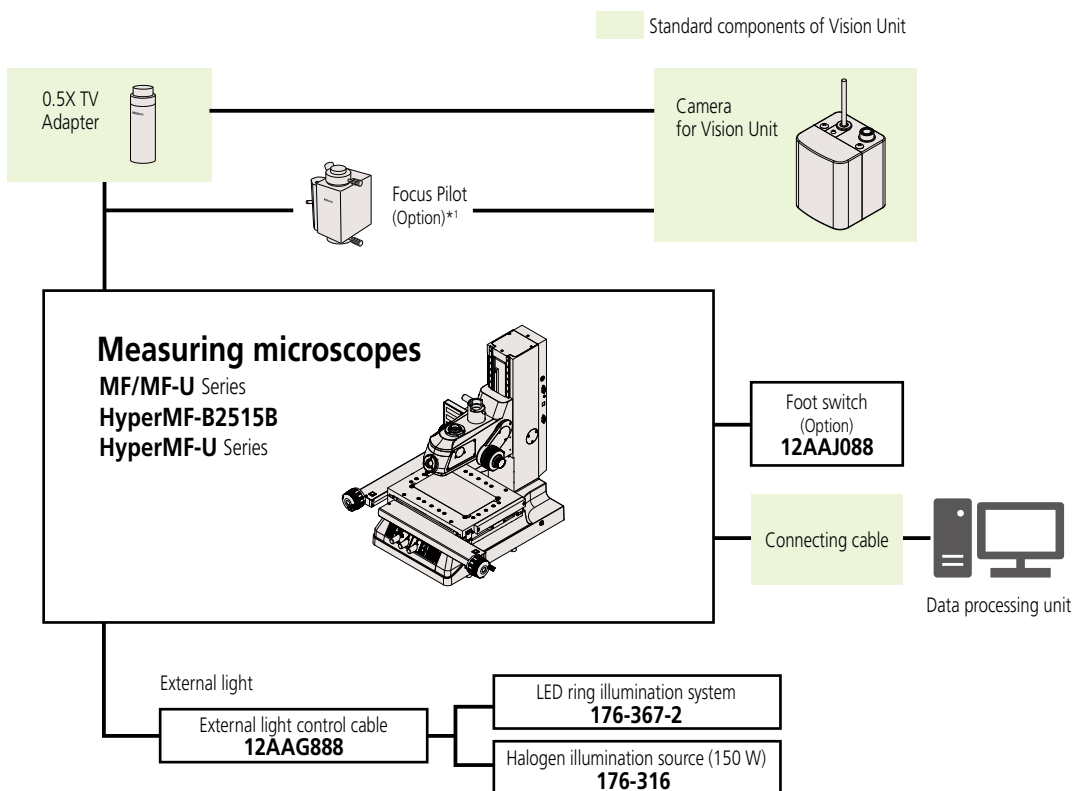
### Functions

- CAD data can be displayed in the graphics window.
- The nominal value of each measuring item is entered automatically.
- Travel to a desired position on CAD data can be displayed on the stage navigation window.
- Graphics data can be output in a specified CAD data format.

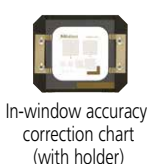
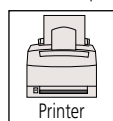




# SYSTEM CONFIGURATION



### Common optional accessories



### Code No.

Vision Unit 10D	<b>359-762</b>	<b>MF-•****D</b> Series <b>MF-U•****D</b> Series
Vision Unit 9D	<b>359-726</b>	<b>MF-•****C</b> Series
Vision Unit 9UD	<b>359-728</b>	<b>MF-U•****C</b> Series
Vision Unit 8D	<b>359-716</b>	<b>MF-•****B</b> Series
Vision Unit 8UD	<b>359-718</b>	<b>MF-U•****B</b> Series

Note: Express • in alphabetical characters and \*\*\*\* in figures.

## Specifications

Image detection camera	Image sensor	1/2-inch color CMOS with 3 megapixels
	External dimensions/Mass (camera only)	56 (W) x 54 (D) x 78 (H) mm/0.4 kg
	Optical system magnification	0.5X (0.5X TV adapter supplied standard)
PC	OS	Windows 11 64 bit
	Monitor	24 inch
	Software	<b>QSPAK</b> Vision Unit Edition
	Maximum power consumption	Max. 273 W (including monitor) Note: 703 W at max. (including monitor) for the Vision Unit 7D
	Monitor magnification	Approximately 19X (3X objective lens is used: approx. 57X/imaging range: 4.49 x 3.36 mm)
	Resolution	0.1 μm (0.01 μm if connecting to Hyper MF/MF-U)

\*1 Focus pilot is dependent on the Focus Detection Unit. The unit can detect a focus position at high accuracy and with high repeatability.

\*2 This measuring accuracy means a difference between an actual measurement value in vision measurement and a true value.

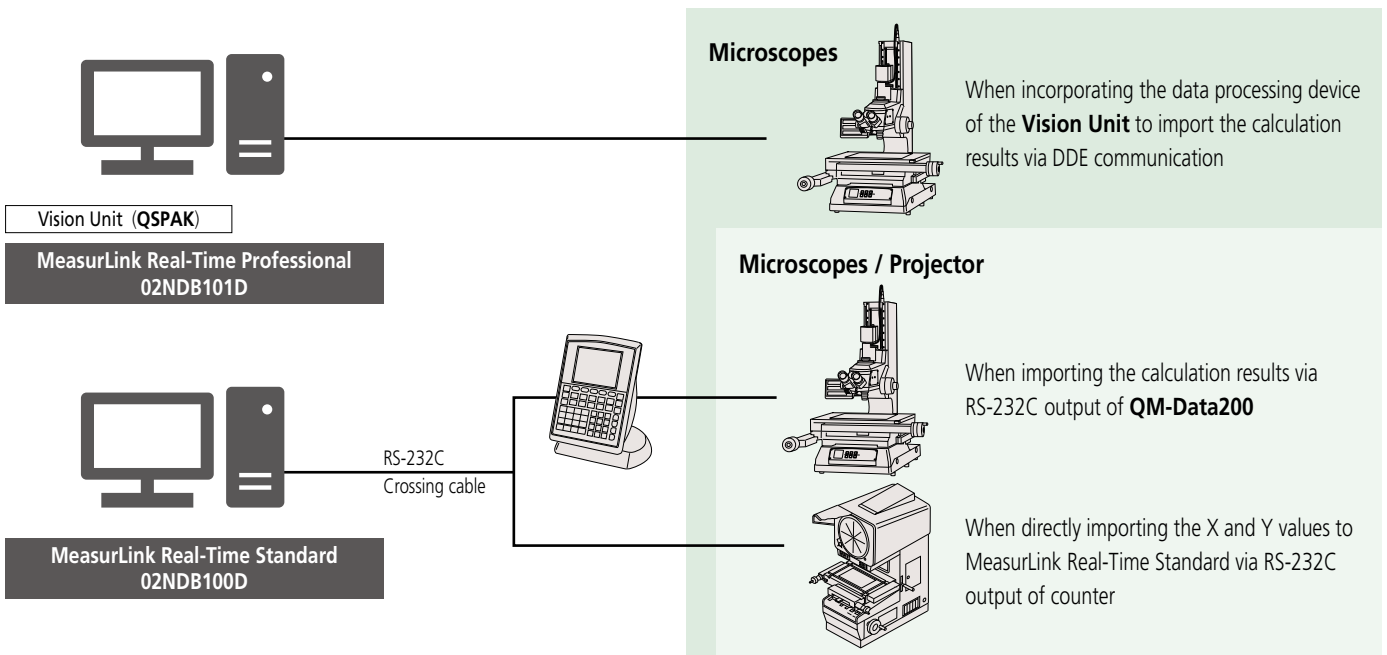
Real-time Process-controlling Program (Optional software)

# MeasurLink Real-Time Standard / Real-Time Professional

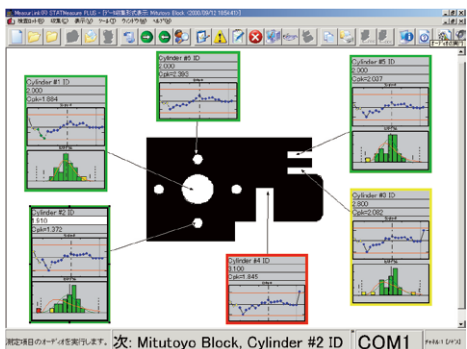
## FEATURES

MeasurLink performs real-time statistical processing of measurement data from **QM-Data200** and the image unit and displays the process capability and X-bar R control chart. The statistical report and measurement data processed by **MeasurLink** can be easily output as Excel files.

**MeasurLink** allows the data integration and collective control of multiple measurement devices via expanded network system. If the administrative optional software is used together then the real-time data in production sites, such as quality control, production technology and design can be confirmed, making early detection of process irregularities possible.



## Just Importing Data to MeasurLink Allows Immediate Confirmation of Each Statistical Report!



OK/NG judgment results are displayed in red/yellow/green for easy understanding by operators. Combined with the alarm message function, this prevents NGs from being overlooked. The "Parts data sheet" lets you grasp the evaluation of each workpiece at a glance even when measuring many evaluation items by filtering the total judgment, NG data, and important items.

Xbar-R control chart and histogram are displayed in real-time for each measurement item. A process manager can grasp time series data and data variations at a glance.

The work instruction image navigation window can be set by combining balloon displays of measurement items with workpiece image data (BMP, JPG, DXF, etc.). Extensive support functions are provided for beginners.

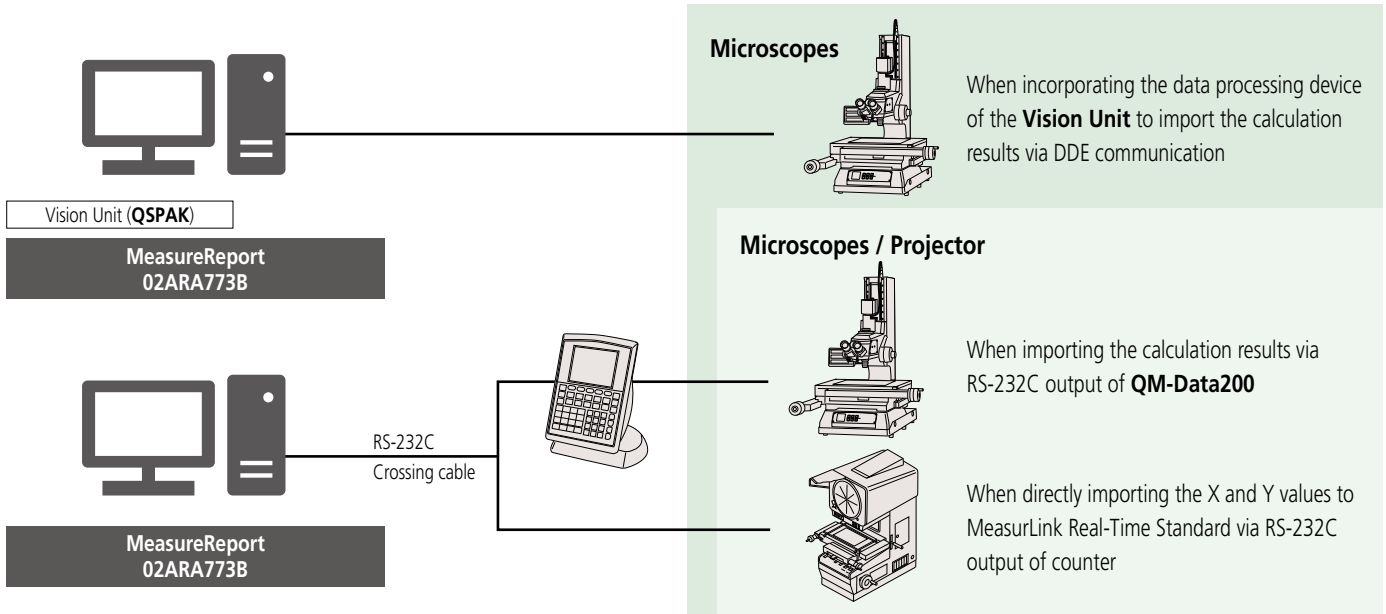
### Parts data sheet (Evaluation of each workpiece)

測定項目ID	目標値	UTL	LTl	実測値	差分	OK
AP2-2-TOLX17-CORTOL_X	-285.500	-285.300	-285.670	-285.620	-0.120	OK
AP2-7-TOLX17-CORTOL_X	-285.500	-285.300	-285.670	-285.555	-0.055	OK
AP2-9-TOLX17-CORTOL_X	-285.500	-285.300	-285.670	-285.530	-0.030	OK
AP2-16-TOLX17-CORTOL_X	-285.500	-285.300	-285.670	-285.350	0.150	OK
AP2-7-TPER2-PARLEL	0.000	0.200	0.000	0.000	0.000	OK
AP2-7-TPER2-PERP	0.000	0.200	0.000	0.000	0.000	OK
AP2-TBID2-CORTOL_X	-285.500	-285.300	-285.670	-285.650	-0.150	OK
H300-TBID0-CORTOL_Y	-4.000	-3.900	-4.100	-4.000	0.000	OK
H300-TBID4-CORTOL_Z	275.000	275.150	274.850	275.000	0.000	OK
H300-TDIA0-DIAM	14.275	14.275	14.250	14.276	0.001	NG
H300-TPOS0-POS_2D_R	0.000	1.000	0.000	0.000	0.000	OK
H301-TBID0-CORTOL_Z	275.000	275.150	274.850	275.000	0.000	OK
H301-TBID1-CORTOL_Y	325.800	325.950	325.700	325.800	0.000	OK
H301-TDIA0-DIAM	14.275	14.275	14.250	14.274	-0.001	OK
H301-TPOS0-POS_2D_R	0.000	1.000	0.000	0.570	0.570	OK
H301S-TTIA0-TIAM	14.275	14.275	14.250	14.275	0.000	OK

# Inspection Table Creation Program (Optional software) Measure Report

## FEATURES

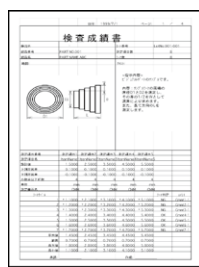
An inspection report can be created by importing the measurement data from **QM-Data200** and image unit, or the X/Y values from the counter. An original format can be created and used with simple editing (copy-and-paste) on an Excel file. No need for macros to make OK/NG judgments, and automatic statistical calculations are possible.



When directly importing to Excel

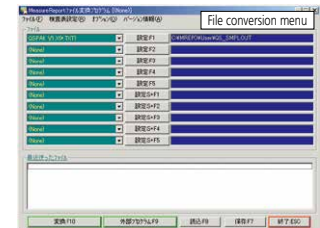
測定項目名	Item1	Item2	Item3	Item4
測定項目A	項目名A	項目名B	項目名C	項目名D
測定番号				
出力記号				
単位	mm	mm	mm	mm
測定機器名				
測定モード	1	1	1	1
小数点以下	2	2	2	2
設計値	10	10	10	10
上限許容差	0.5	0.5	0.5	0.5
下限許容差	-0.5	-0.5	-0.5	-0.5
次の工程	4	4	4	4
測定データ内ワークシート				
1 Work-1	10.31	9.98	9.79	10.42
2 Work-2	9.69	10.21	9.43	10.23
3 Work-3				
4 Work-4				
5 Work-5				

When inputting data, if NG is detected, the cell will turn red. After filling data, the window moves onto inspection report creation. Then, after selecting a destination Excel file, a macro program is executed to create the report.



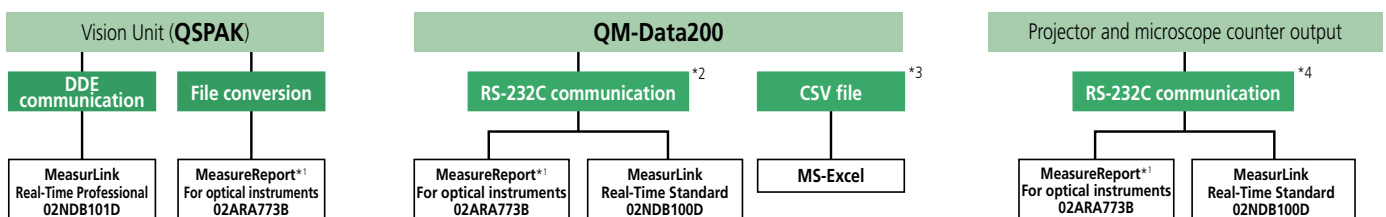
With a sample format attached to the program as a template for the Excel-format, an original format can be created by simple Excel editing (copy-and-paste).

When importing from file conversion menu



Specify a measurement data file from memory, then select a destination Excel-format file and execute the file conversion. Excel launches and executes a macro program to create a report.

## Connecting method

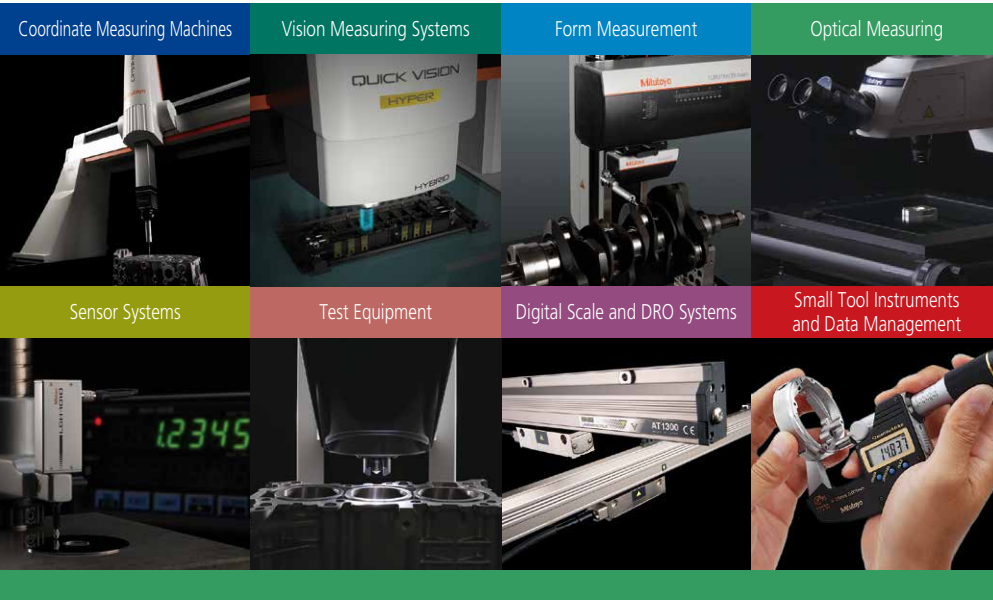


\*1 To use MeasureReport, Microsoft Excel is required separately. Please prepare this separately. Excel and Windows are trademarks of Microsoft Corporation.

\*2 RS-232C cable (cross) is required

\*3 USB memory is required

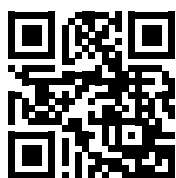
\*4 RS-232C cable (cross) and foot switch (12AAA846) are required



### 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 up by comprehensive services that ensure your staff can make the very best use of the 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.



Find additional product literature and our complete catalog here.

[www.mitutoyo.eu](http://www.mitutoyo.eu)

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