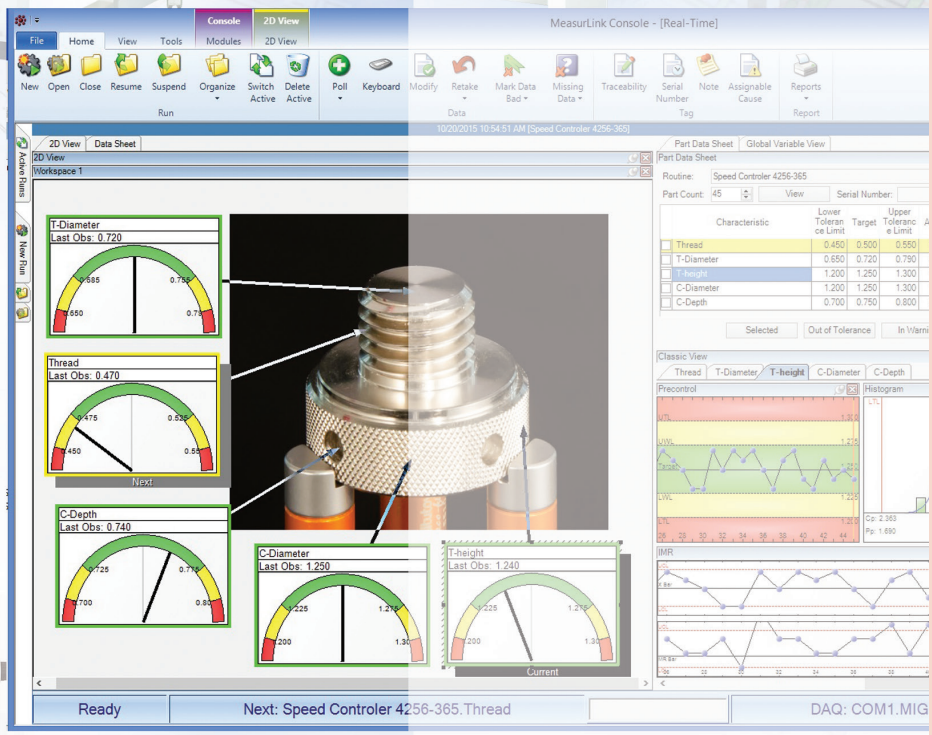
Measurement Data Management



INDEX

Mitutoyo

MeasurLink®

An Integrated Solution for Quality Data Management

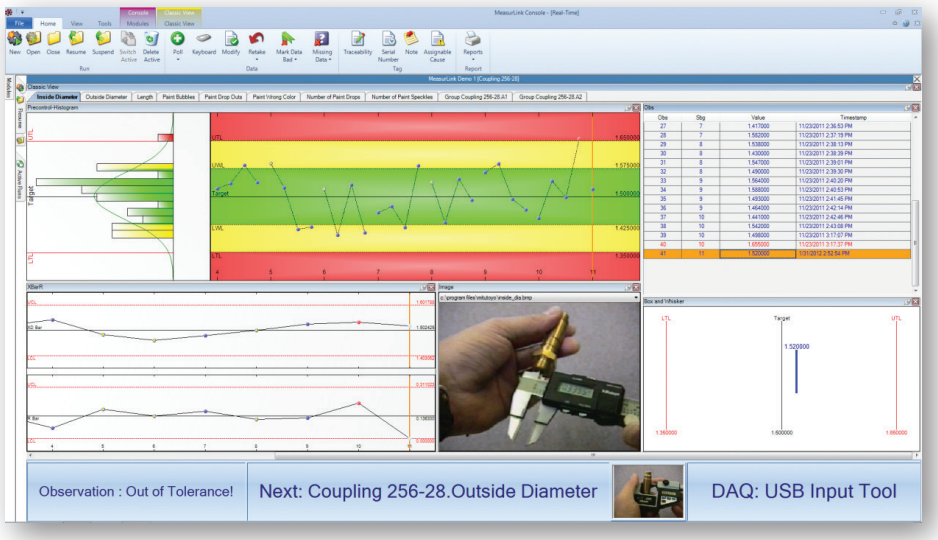
MeasurLink® meets the challenge of centralizing your quality data with the most versatile tool and instrument interface options available. This high-end statistical platform delivers real-time data—when you need it most—with instant message capabilities and comprehensive quality reporting. MeasurLink® provides part inspection visualizations that are second to none, ensuring a clear view of your inspection process and your measurement results.

Whether used as an enterprisewide quality data solution or as a stand-alone quality data station, MeasurLink® provides the complete situational awareness that you need to successfully manage your process improvement and defect prevention efforts.

MeasurLink® is backed by Mitutoyo, the global leader in metrology, combining a full product line of precision measuring tools, instruments and equipment with a worldwide information network that understands the unique precision measurement and quality management needs of every industry that it serves.

Most of Mitutoyo's electronic instruments can output data via optional connecting cables or wireless transmitters and receivers in the form of the Digimatic code. The Digimatic code can also be converted into RS-232C format with several available gage multiplexers. In this way, digital data can be sent to PCs for data acquisition and advanced statistical analysis.

As a client/server application, MeasurLink gives you the performance you need through distributed processing. Combined with a multi-user relational database, MeasurLink® delivers a safe and organized data warehousing system, making quality data available for viewing and analysis by any member of the production, engineering and managerial staff throughout your company. Inspection in the factory produces data for analysis, corrective action and various reporting needs. As the backbone of your quality efforts, MeasurLink® is guaranteed to reduce your production costs and increase your bottom line.



MeasurLink Suite of Software

MeasurLink is an easy-to-use, Windows-based family of quality data management software applications. MeasurLink combines real-time data acquisition, on-line statistical analysis, integrated networking and quality information sharing into a comprehensive data management solution.

- **Real-Time**
  Real-time data collection
- **Process Analyzer**
  Analysis of all data
- **Process Manager**
  Network monitoring dashboard
- **Gage R&R**
  Gage repeatability and reproducibility
- **Gage Management**
  Gage inventory and calibration control

MeasurLink 8 System Requirements

Database Management System (DBMS) Requirements

MeasurLink 8 ships with a copy of Microsoft® SQL Server 2014 SP1, which can be for a standalone or a workgroup installation. MeasurLink 8 also supports:

- Microsoft® SQL Server 2014
- Microsoft® SQL Server 2012
- Microsoft® SQL Server 2008

Operating System Requirements

All MeasurLink 8 products are supported on the following Microsoft® Windows Operating System versions:

- All Windows® 10 versions
- All Windows® 8 versions
- All Windows® 7 versions
- 32-bit and 64-bit supported

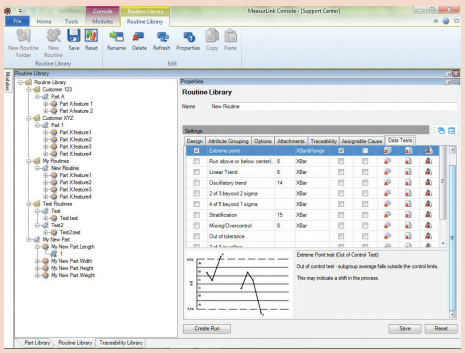
www.measurlink.com

Microsoft Partner
Gold Application Development

Windows 10 Compatible
Windows 8 Compatible
Compatible with Windows 7

MeasurLink®

An Integrated Solution for Quality Data Management



Easy-to-use MeasurLink® provides you the most intuitive interface with complete SPC functionality to help monitor and manage your manufacturing processes. With MeasurLink®, you can easily manage the quality levels of your parts, identify problem areas and apply corrective action to areas in need of attention.

www.measurlink.com

Microsoft Partner
Gold Application Development

Windows 10 Compatible | Windows 8 Compatible | Compatible with Windows 7

User-friendly

Click a gage button and watch the charts update in real-time. This helps the operator stay on top of the process. Begin collecting data in minutes with Inspection Wizard.

Data acquisition

Collects data from digital micrometers, calipers, indicators, bore gages, etc. Keyboard entry is a snap. Collect data for one or a million parts.

Comprehensive SPC

Easy-to-use control charts, histograms, capability, detailed statistics, assignable causes, corrective actions and traceability make this software best in class.

Variable data

Collect dimensional data (length, width, height, outside diameter, inside diameter weight, etc.). Supports derived features (calculations for run out, volume, true position, etc.) .

Attribute data

Collect data from visual inspections (burrs, cracks, dents, missing holes, etc.) to determine the fitness of a part. Track failures using a go/no-go style or count the defects on a characteristic to determine if a part is defective. There is complete flexibility to study the individual characteristics and as a group.

Engineering specifications

Attach drawings to parts, routines or individual characteristics for viewing. Most file formats are supported as an attachment (e.g. Word, PDF, CAD).

Multimedia aids

Attach movies (AVI, MOV, MPG), sound (WAV) and images (BMP, JPG, TIF) to parts, routines or individual characteristics as instructional aides for an operator.

Revision history

Track specification adjustments and preserve historical data.

Mathematically derived characteristics

Full functioning real-time calculator with standard math functions including square root, exponential, trigonometric, sum, average, max, min, calculations.

Variable collection frequency

Allows characteristics of the same routine to be measured at different intervals while maintaining appropriate prompted guided sequencing.

Part pictures

View scanned blueprints and digital photographs at a glance. On-screen guided sequencing keeps the operator moving to the right feature.

Data tests

Full support of Western Electric and Nelson Tests for pattern recognition in control charts (e.g. extreme point, trend, stratification, oscillation, etc.) along with various alerts for each failed test.

Forced assignable cause

Force assignable cause tags on inspector during collection if process is out of control. Empower operator to build on existing pick list.

Corrective action plans

Operators choose corrective action as applied to the part or process. Multiple corrective actions can be applied to any subgroup. Empower operator to build on existing corrective action list.

Sequenced and random gage input

Flexible data input. Collect data by feature, by part or randomly. Guided sequencing minimizes inspection errors.

Time-stamped data

All observation data is marked with the data and time from the computer clock.

Flexible reporting

Build report templates with company logos and free form text. Select and position chart types to customer specification.

Mixed variable/attribute data

Mix your dimensions and non-conformances in the same inspection routine. Track defects and defectives along with your dimensional data.

Crystal Reports

Create your own customized Crystal Reports for use with part or run data.

FDA 21CFR Part11 support

Provides support for medical and pharmaceutical manufacturers electronic records, including audit trails, e-signatures (Process Analyzer Professional only) and advanced security.

Inspection wizard

Begin collecting data in 60 seconds with a "Quick Run" by defining features, tolerances and input method.

MeasurLink® Real-Time

On-line Real-Time Data Collection

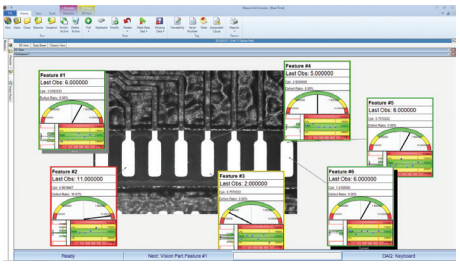
FEATURES

MeasurLink Real-Time performs as a data acquisition clearinghouse by enabling you to connect and acquire data from virtually any measuring device. It supports the full range of metrology technology, including calipers, micrometers, indicators, CMMs, vision systems and more. Select the edition to fit the device and the needs.

Real-Time Standard Edition

Designed for customers who want to acquire and analyze data in real-time and check variable and attribute inspection to maximize production and minimize defects. It has views to allow the user to create parts, characteristics with nominal and tolerance, and traceability lists. The data collection interface provides real-time graphics for Run charts, Control charts, Histograms and Statistics. Standard views include Datasheet (observations and charts), Classic View (chart windows), and 2D view (part images with callouts that include charts and statistical data) along with a customizable Info View and additional Manager views. Full reporting template functionality is provided.

Supported data sources: *keyboard, RS232 and USB devices.*



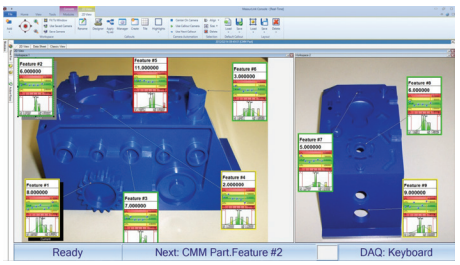
SPECIFICATIONS

Order No.	Description
64AAB470	MeasurLink 8 Real-Time Standard Edition

Real-Time Professional Edition

Enables customers to connect and acquire data from Mitutoyo coordinate measuring machines, vision and form measuring systems via native integration (DDE). ASCII and QMD (xml-based) file import are also supported. In addition to all of the features supported by **MeasurLink 8 Real-Time Standard Edition,** this application also supports data filters. Full reporting functionality with templates is also provided.

Supported data sources: *keyboard, RS232 and USB devices, native Mitutoyo integration (DDE), ASCII and QMD (xml-based) file import.*



Import templates

Easily create an import template that maps data in a text file to MeasurLink information. Templates are saved to the database for everyone to use and can be added as data sources to data collection stations. An import template can be verified against the source file without adding data to the system.

Direct data transfer

Collect data into MeasurLink from MeasurLink enabled Mitutoyo capital equipment. This provides a tighter and more robust interface than importing data from files.

Filter data

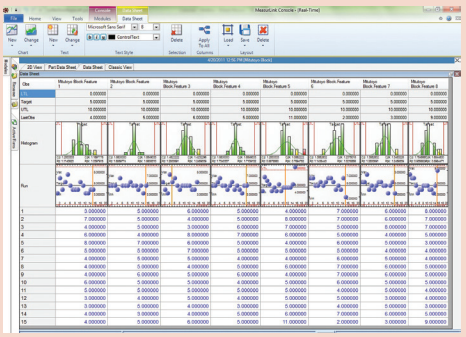
All data collected within a Real-Time run is related. Often, especially for runs containing a large volume of subgroups, requests are made for subsets of data that are further related from the entire run's population. MeasurLink provides robust filtering capabilities to comply with these requests.

Import data

When set up as a data source, import templates are readily available to the operator, or periodic imports can be executed.

SPECIFICATIONS

Order No.	Description
64AAB471	MeasurLink 8 Real-Time Professional Edition



MeasurLink is designed to detect and display patterns and provide additional statistical information. Many patterns can be seen appearing on SPC charts, including:

- Cycles
- Trends
- Freaks
- Mixtures
- Grouping or "bunching" of measurements
- Gradual change in level
- Sudden shift in level
- Instability (abnormally large fluctuations)
- Stratification (abnormally small fluctuations)
- Interactions (two or more variables acting together)
- Systematic variation
- Tendency of one chart to follow another
- Attribute data tests

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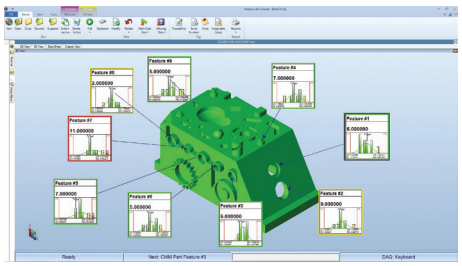
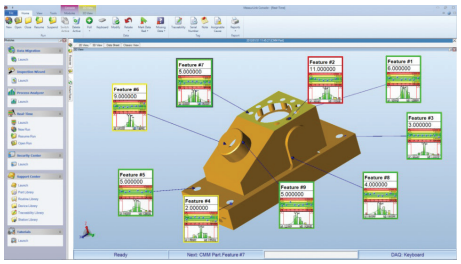
MeasurLink®
An Integrated Solution for Quality Data Management

Real-Time Professional 3D Edition

Designed for customers who wish to collect data using the Hoops 3D graphics view, in addition to all features offered by MeasurLink 8 Real-Time Professional Edition. Hoops 3D files can be exported from most CAD systems and provides the operator with a real view of the part. Camera angle and position can be saved for each characteristic providing for an intuitive prompted guided sequencing for the inspector.

Supported data sources: *keyboard, RS232, and USB devices, native Mitutoyo integration (DDE), ASCII and QMD (xml-based) file import.*





3D view

True three-dimensional model support with Hoops streaming files (*.HSF). Export your part's model from Catia, Solidworks or other CAD software and place callouts in the 3D space.

Flexible callout design

Callouts provide part acceptability at a glance. You can design them the same way as for the two-dimensional view to include charts or statistical information with the ability to size any element inside the callout.

Guided sequence

The display can automatically change during data collection to show the next or last observation point, providing a simple guided sequence for the inspection procedure. By saving a different view for each characteristic to be inspected, you can have the model rotate, pan or zoom to show the operator details of the part.

SPECIFICATIONS

Order No.	Description
64AAB472	MeasurLink 8 Real-Time Professional 3D Edition

Edition Definitions

Function	Real-Time Standard Edition	Real-Time Professional Edition	Real-Time Professional 3D Edition	Process Analyzer Lite Edition	Process Analyzer Professional Edition
Classic SPC views	x	x	x	x	x
Datasheet	x	x	x	x	x
2D View	x	x	x	x	x
Manager Views	x	x	x		
Hoops 3D View			x		
Filter		x	x		x
CMM/Vision/Form connectivity		x	x		
Import (ASCII)		x	x		
Audit Trails	x	x	x	x	x
Merge, Copy and Edit Data					x
Scatter Chart					x
Archive Data					x
Electronic Signatures					x
Summary Analysis					x
Test for Normality					x

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Microsoft Partner
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Windows 10 Compatible
Windows 8 Compatible
Compatible with Windows 7

Mitutoyo

MeasurLink® Process Analyzer

Data Analysis Software for Windows

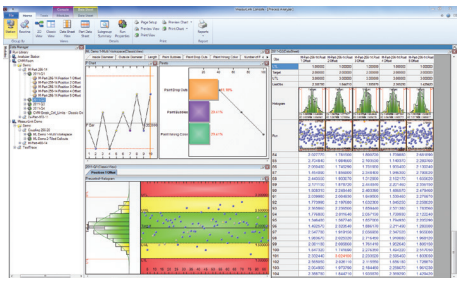
MeasurLink®
An Integrated Solution for Quality Data Management

FEATURES

Process Analyzer is an invaluable tool for your quality team. It gives you the flexibility to analyze your processes, identify problem areas and take corrective action to improve your product's quality. Inspection runs can be sorted by inspection station, routine or part, and are displayed with the look and feel of the Windows Explorer. Inspection data can be merged, filtered, grouped, charted and printed to the user's preferences.

Process Analyzer Lite Edition

Designed for offline viewing of real-time data in a networked environment. All views that are available in Real-Time Standard Edition are supported, with the exception of the Manager Views. Full reporting template functionality is also provided.



Review inspection data

Analyze inspection data, view notes and traceability. Open data from different runs to compare the data and process behavior.

Switch between databases

For larger installations that use different databases, the ability to switch the connection allows an engineer to analyze data from all sources.

Tree control navigation

Self-organized inspection data provided in an easy to use navigation tree. Sort data by station or inspection routine, part, year, month or day.

Reporting

Reporting is made easy through the use of a "what you see is what you get" style of template creation that allows you to pick chart and data through drag and drop with resizing. Several standard report templates are provided out of the box.

SPECIFICATIONS

Order No.	Description
64AAB474	MeasurLink 8 Process Analyzer Lite Edition

Process Analyzer Professional Edition

Designed for more robust manipulation of real-time data in a networked environment using advanced features not available in MeasurLink Process Analyzer Lite Edition. It enables quality engineering to slice and dice data in meaningful ways that contribute to quality control initiatives.

For larger installations that use different databases, the ability to switch the connection allows an engineer to analyze data from all sources.

Group, Search and Sort data

View data by part, routine, station, year, month, day. Apply saved filters to data and search for specific traceability or serial number criteria.

Merge Data

Combine lot based or just in time collected data to get a bigger picture of process variation and production quality.

Scatter Plots

Perform correlation studies to identify process interactions.

Summary Analysis

Use wizard to view and print a grid with capability and statistical information.

Electronic Signatures

The e-signatures can be applied to runs only in Process Analyzer Professional. When combined with audit trails available in Real-Time, and security is implemented, then MeasurLink provides support for FDA requirements for the medical and pharmaceutical manufacturers.

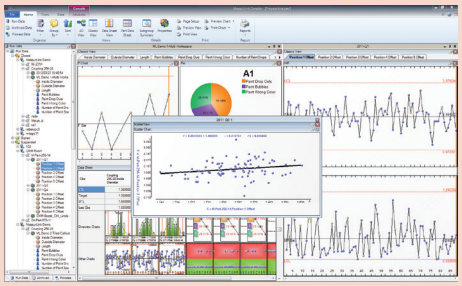
Filter Data

Robust filtering capabilities are provided. Often, for runs containing a large volume of data, requests are made for subsets of data.

Compare Capability to Traceability

Easily view charts showing the capability of a characteristic based on the traceability, subgroup or time. Compare the capability of machines, for example. The Cpk shows green for exceeding requirements and red for failing.

Process Analyzer Professional is known as the quality manager's favorite tool. Analyze and report on data collected across all machines. For example, merge three months of data together and easily compare operators, suppliers or machines.



SPECIFICATIONS

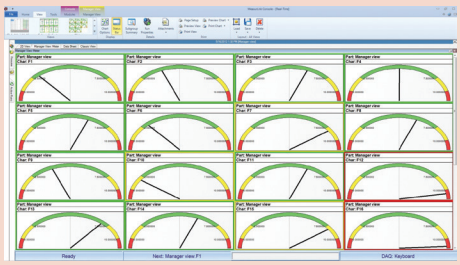
Order No.	Description
64AAB475	MeasurLink 8 Process Analyzer Professional Edition

MeasurLink® Process Manager

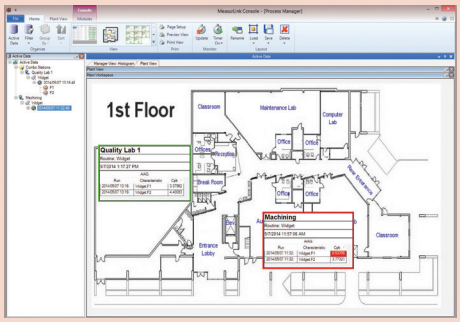
Network Monitoring Software for Windows

FEATURES

Real-time monitoring of data as it is collected. Provides the QC/production manager with the perfect tool to organize and maintain a shop-wide quality program at a glance.



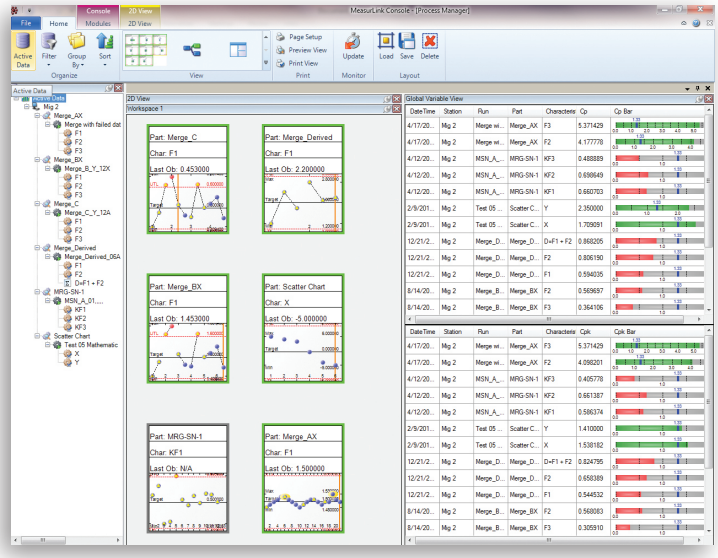
MeasurLink Process Manager displays snapshot windows of characteristics that are currently being collected in MeasurLink Real-Time. The data can be sorted by station, process, capability or timestamp.



Plant View allows users the highest level view of their shop floor processes. Callouts have a meaningful border color related to tests for capability that have been enabled in each routine's properties.

Process Manager Standard Edition

Process Manager provides a method to audit the entire shop floor inspection activity from a single PC. Easily see process information without walking from one inspection area to another by viewing current production across all machines. Show clients your quality operation for the entire facility.



Log View

Designed to display information from multiple stations in a tabular view format. The user can select the type of events to be monitored.

Group, Search and Sort Data

View data by part, routine, or station. Apply saved filters to data so you monitor only the data that you are responsible for.

Manager View

Display a snapshot window of characteristics that are currently being collected in MeasurLink Real-Time. The data can be sorted by station, capability or timestamp.

Global Variable View

Display process capability across all operations in your plant.

Remote viewing

See what the operators see and what your customers will see before product is delivered. Drill down through data to see detailed information. View traceability, assignable causes, corrective action, notes and raw data for current production across all machines.

Ticker View

Display capability values that continuously scroll on the screen.

SPECIFICATIONS

Order No.	Description
64AAB476	MeasurLink 8 Process Manager Standard Edition

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Microsoft Partner
Gold Application Development

Windows 10 Compatible
Windows 8 Compatible
Compatible with Windows 7

Mitutoyo

MeasurLink® Gage R&R

Measurement Systems Analysis

MeasurLink®
An Integrated Solution for Quality Data Management

FEATURES

Determines the repeatability and reproducibility, linearity, bias and stability of inspection systems, allowing you to isolate gaging problems.

Gage R&R

Measure the capability of a measurement system for a measurement task. These techniques provide information about a measurement system's reproducibility, repeatability, location or stability. Graphical tools allow for isolation of gaging problems including inconsistencies in technique between operators or inspectors.

Study Wizard
User-guided study setup helps the user define the study that needs to be performed in order to determine the measurement system's capabilities. All elements required for the selected study are captured before the study is created, and the user is warned to provide any missing information before beginning the study.

Data Input
The data for the study can be collected directly from a gage connected to the system or transferred from Mitutoyo coordinate measuring machines, vision and form measuring systems via native integration (DDE). Users can also key in data.

Group Studies
All studies in the database are visible and can be organized using different criteria.

Randomized Collection Sequence
As recommended by the academic community, the collection sequence can be automatically randomized.

Study Types
MeasurLink Gage R&R uses calculation methods based on AIAG's Measurement Systems Analysis, Fourth Edition (commonly known as MSA 4). The following study types are supported:

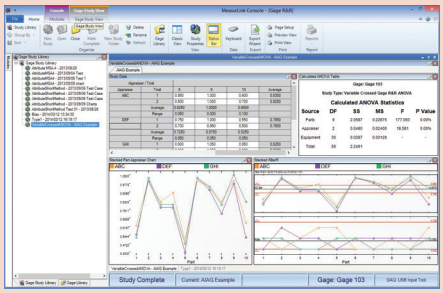
Location
- Bias
- Linearity

Reproducibility
- Type I
- Variable Range Method

Repeatability & Reproducibility
- Crossed ANOVA
- Crossed Average & Range
- Nested ANOVA
- Nested Average & Range

Stability
- Stability

Attribute Studies
- Attribute MSA 4
- Attribute Short Method



In addition to the standard calculations this software also provides graphical tools for analysis of the measurement system. The Xbar and R chart can show whether there is adequate gage discrimination to record part-to-part variation in production and operator consistency. The Part-by-Appraiser plot can show a lack of consistency between operator inspection techniques.

SPECIFICATIONS

Order No.	Description
64AAB477	MeasurLink 8 Gage R&R

MeasurLink® Gage Management

Gage Inventory and Calibration Control

FEATURES

Gage Management is essential for monitoring the calibration history of a gage. Periodic adjustments may be required to bring a gage into specification.

Gage Management Standard Edition

Gage Inventory Management
Easily enter and view details on all gages in a grid that can be grouped, filtered and sorted.

Email List of Gages Due or Overdue
Once the gage calibrations are scheduled, the list of gages due or overdue for calibration can be viewed as a report, and those lists are available for scheduled email notifications. Also available for gages due for Gage R&R studies (requires purchase of Gage R&R).

Gage Calibration
Perform and track calibrations using customizable gage calibration procedures. Also track outside calibration results. A "smart" calendar allows definition of working days.

Gage Tracking and History
Track gage movement as gages are transferred to various activities, locations and users. Supports vendor contact and user lists.

Print Gage Labels
Interface with a Brother's P-touch printer for printing labels for gages.

- Gage inventory management
- Gage calibration recall system
- Gage calibration procedure
- Assessment and reporting
- Gage vendor management
- Gage location management
- Gage R&R history

SPECIFICATIONS

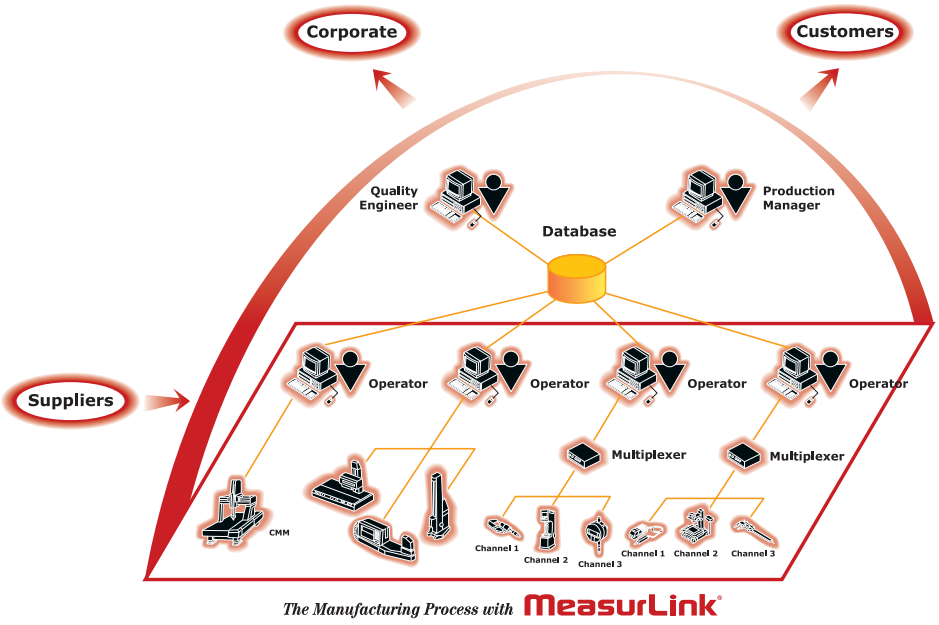
Order No.	Description
64AAB478	MeasurLink 8 Gage Management

MeasurLink® Workgroup and Site License Packages

Packages and Bundles

The MeasurLink suite is best acquired as a Workgroup or Site License. These packages are a mix and match bundle of any module. Workgroups are 5, 10 and 15 seats. A site license is 30 or more seats of MeasurLink. The package can be any combination of Real-Time*, Process Analyzer, Process Manager, Gage R&R and/or Gage Management modules. All of the stations in the installation store their data in an SQL database located on the user's network.

**Real-Time Professional 3D Edition has an additional surcharge per seat.*



The Manufacturing Process with MeasurLink®

MeasurLink Group Licensing

SPECIFICATIONS

Order No.	Description
64AAB479	MeasurLink 8 Site License

MeasurLink 8 Site License is a bundle package that provides the customer with the ability to install up to and including 30 copies (any combination) of any application in the MeasurLink 8 suite.

Order No.	Description
64AAB480	MeasurLink 8 Workgroup License

MeasurLink 8 Workgroup License is a bundle package that provides the customer with the ability to install up to and including 15 copies (any combination) of any application in the MeasurLink 8 suite.

Order No.	Description
64AAB482	MeasurLink 8 Workgroup License – 10 Pack

MeasurLink 8 Workgroup License – 10 Pack is a bundle package that provides the customer with the ability to install up to and including 10 copies (any combination) of any application in the MeasurLink 8 suite.

Order No.	Description
64AAB483	MeasurLink 8 Workgroup License – 5 Pack

MeasurLink 8 Workgroup License – 5 Pack is a bundle package that provides the customer with the ability to install up to and including 5 copies (any combination) of any application in the MeasurLink 8 suite.

Order No.	Description
64AAB484	MeasurLink 8 Academic License

MeasurLink 8 Academic License a bundle package that provides universities and technical colleges with the ability to install up to and including 20 copies (any combination) of any application in the MeasurLink 8 suite for educational purposes.

Note: Upgrade packages are also available.
Please contact our sales department for details.

www.measurlink.com

Benefits include:

- Better unit cost.
- Mix and match desired modules.
- Site licenses can be shared among multiple facilities.
- Security center can manage users access with each module.
- Support Center allows users to manage the suite through the network, eliminating interruption in data collection.

MeasurLink® Floating License

Floating License Upgrade Option

Users who want to use MeasurLink in a terminal server environment or want to have a number of concurrent users should consider the Floating License add-on. This upgrade is available in packs of 5, 10, 15 and 30. This upgrade includes a licensing sever that manages the number of seats available.

This type of installation is common in modern IT infrastructure. Thin-Client hardware or traditional PCs can utilize this option. A user could choose to upgrade a portion of or their entire number of seats to the Floating License upgrade option.

Benefits include:

- Easier maintenance of installations.
- Most flexible use of modules.
- Cost-effective way to include more users without purchasing additional seats.
- Can be added to an existing installation or integrated during the initial installation.

Microsoft Partner
Gold Application Development

Windows 10 Compatible
Windows 8 Compatible
Compatible with Windows 7

MeasurLink Floating Option

SPECIFICATIONS

Order No.	Description
64AAB479F	MeasurLink 8 Floating License Option 30

MeasurLink 8 Floating License Option 30 adds the Floating Option to a new or an existing installation. Must already have a minimum of 30 seats to add this option.

Order No.	Description
64AAB480F	MeasurLink 8 Floating License Option 15

MeasurLink 8 Floating License Option 15 adds the Floating Option to a new or an existing installation. Must already have a minimum of 15 seats to add this option.

Order No.	Description
64AAB482F	MeasurLink 8 Floating License Option 10

MeasurLink 8 Floating License Option 10 adds the Floating Option to a new or an existing installation. Must already have a minimum of 10 seats to add this option.

Order No.	Description
64AAB483F	MeasurLink 8 Floating License Option 5

MeasurLink 8 Floating License Option 5 adds the Floating Option to a new or an existing installation. Must already have a minimum of 5 seats to add this option.

Note: Upgrade packages are also available.
Please contact our sales department for details.

MeasurLink® ENABLED
Data Management Software by Mitutoyo

Input Tools

SERIES 264 — Digimatic Gage/PC Data Input Device

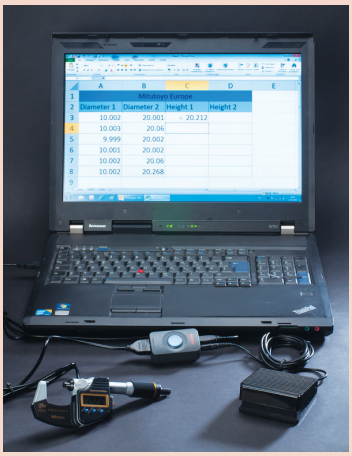
FEATURES

- The input tool allows you to connect any Mitutoyo gage, with SPC output, directly to your PC.
- An USB keyboard signal conversion input tool, IT-016U converts measurement data to keyboard signals and directly inputs them to cells in off-the-shelf spreadsheet software such as Excel.
- An RS-232C communication input tool, IT-007R is also available to input data through RS-232C communication.
- More accurate measurement is possible using an optional foot switch.

Optional Accessories

937179T: Foot switch
939039: Gage selector

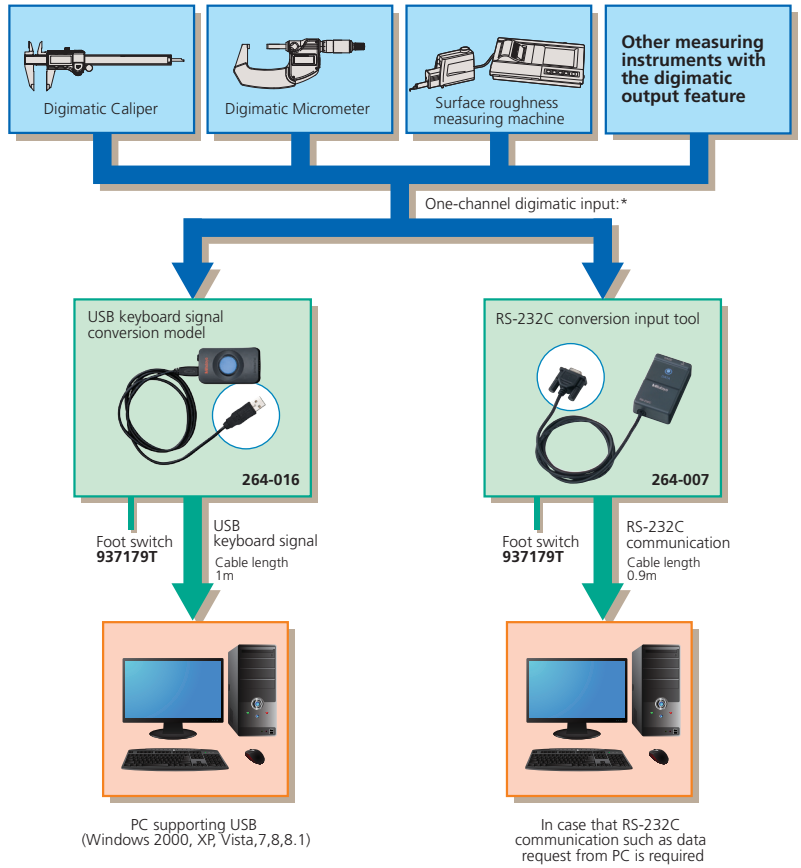
SPC connecting cables refer to page A-19.



SPECIFICATIONS

Product **Code No.**	Input Tool for RS-232C **264-007**	Input Tool for USB **264-016**
Measuring Tools Required*1	Mitutoyo Digimatic measuring tools with SPC output	
PC Requirement	PC Compatible, (including laptops) with RS-232C Interface Connects to RS-232C port on CPU (D-sub 9-pin connector)	PC Compatible, (including laptops) with USB 2.0 or 1.1 port
Outside Dimensions HxWxD	2.8″ x 1.7″ x .9″ (72 x 44 x 23.5 mm)	2.5″ x 1.5″ x .83″ (64 x 38 x 21 mm)
Mass	3.2oz. (91g)(including cable and connector)	2.0oz (56g)

*1: Connecting cable (optional accessory) is required for a connection to a digimatic measuring tool.
*2: Cannot be used for computers that use USB keyboard. When using a IBM Think Pad Series, a commercial keyboard adapter is required. When using AT style keyboard, adapter for conversion is required.



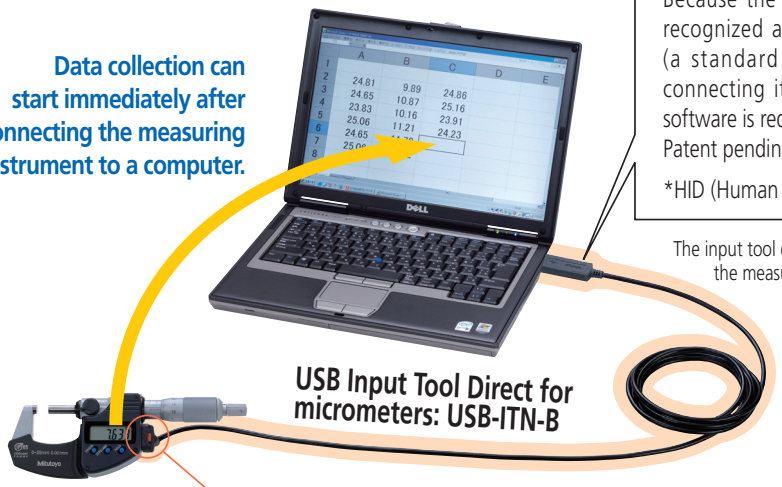
* When you use an optional gage selector 3, you can connect up to three measuring gages and select an input by switching them. When using **264-016**, you can connect multiple input tools at the same time with an off-the-shelf USB hub. Simultaneous input, however, is not supported.
For cables used to connect each measuring gage and input tool, refer to page A-15.

USB Input Tool Direct: USB-ITN

Our USB Input Tool Direct has been streamlined into a range of dedicated models for each type of measuring instrument.

MeasurLink® ENABLED
Data Management Software by Mitutoyo

Data collection can start immediately after connecting the measuring instrument to a computer.

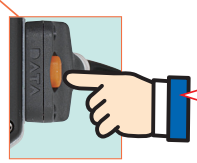


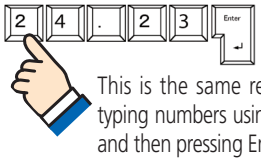
Because the input tool is automatically recognized as an *HID keyboard device (a standard Windows driver) just by connecting it to a USB port, no special software is required.
Patent pending (Japan)

*HID (Human Interface Device)

The input tool directly connects the measuring instrument to a USB port on a computer.

The values displayed on the measuring instrument can be sent to the computer just by pressing the data switch.





This is the same result as that of typing numbers using the keyboard and then pressing Enter.

Note on using a foot switch with USB-ITN

The USB-ITPAK and USB-FSW options are required (see below).
If not using optional software the IT-016U input tool can be used with a foot switch.

Although measurement data can be simply loaded directly into an Excel spreadsheet by connecting the instrument and input tool to a computer, using the optional USB-ITPAK software enables time-saving operations and procedures that significantly improve reliability and efficiency.

Measurement data collection software: USB-ITPAK® 2.0 Order No. 06AEN846

This setup and data collection software is used to input data from one or more measuring instruments (connected by way of **USB-ITN**) to any Excel sheet. Supports U-Wave. (This software package cannot be used with **IT-016U**.)

USB-ITPAK 2.0

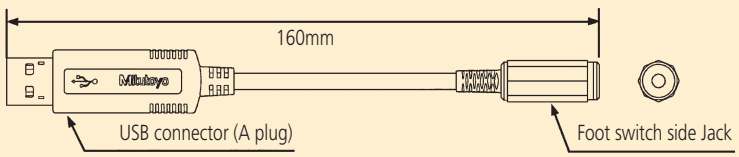
USB dongle

Software use requires USB dongle.

Major features

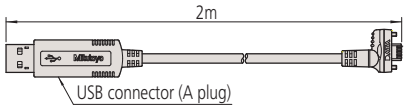
- Excel input settings: The input destination (a workbook, sheet, or cell), cell-fill direction (right or down), cell-fill interval, and other settings can be specified.
- Measurement method selection: Any of the following three methods can be selected: Sequential measurement, batch measurement, or individual measurement.
- Data input control: Data can be requested, canceled, or skipped by using mouse buttons, function keys, or foot switch.
- Character string input by the USB foot switch adapter, USB-FSW: Any previously specified character string can be input using the foot switch. Examples: *pass* or *fail*
- Number of units that can be connected (total number for both USB-ITN and USB-FSW): Up to 20 units for Windows Vista, Windows 7 and Windows 8/8.1, and up to 100 units for Windows 2000 or Windows XP.
  However, the above numbers might be less depending on the system configuration.
- Data importation time: About 0.2 to 0.3 seconds per unit. However, this value differs depending on the connected measuring instruments and measurement environment.
- Driver software: The VCP (virtual COM port) drivers for USB-ITN and USB-FSW are individually recognized using a built-in COM number. • Patent pending (Japan)

Optional:
USB-FSW
06ADV384



Major specifications of USB Input Tool Direct

- Output specifications: USB 2.0 or 1.1
- Communication speed: 12 Mbps (full speed)
- Power supply: USB bus power
- Mass: 59 g
- USB 2.0 certification obtained
- Complies with the EU EMC Directive
- Illustration (Example: **USB-ITN-A**)



Note: It is recommended to use a commercially available USB hub that has USB certification.

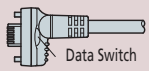
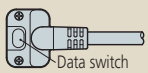
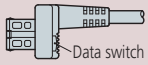
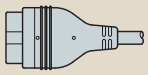
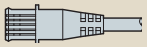
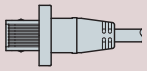
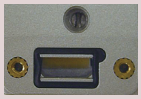
USB-ITPAK usage environment

Supported operating systems*	Windows 2000 SP4, Windows XP SP2 or later, Windows Vista, Windows 7 and Windows 8
Supported Excel versions	Excel 2000, 2002, 2003, and 2007
Hard disk	At least 20 MB of free space (required for installation)
CD-ROM drive	Required for installation
USB ports	At least two ports (for the USB dongle and USB-ITN)
Resolution	At least 800 x 600 pixels, and at least 256 displayable colors

*• 64-bit operating systems are not supported.
• The natural language selected in USB-ITPAK must be the same as that used in the operating system.

Codes for the main measuring instruments classified according to the USB Input Tool Direct code, part number, and plug type

Determine the plug type suitable for your measuring instrument (one of the seven types from **A** to **G**) in the following table, and then select the corresponding USB Input Tool Direct.

Model	USB-ITN-A	USB-ITN-B	USB-ITN-C	USB-ITN-D	USB-ITN-E	USB-ITN-F	USB-ITN-G
Order No.	06ADV380A	06ADV380B	06ADV380C	06ADV380D	06ADV380E	06ADV380F	06ADV380G
Whether the existence of a data switch affects usability	Incorporates a data switch, so the tool is usable regardless of whether or not the measuring instrument has a switch.			Does not incorporate a data switch, so an instrument fitted with a switch is required in order to use the instrument alone. (However, the tool can be used with USB-ITPAK.)			
Cable type	**A** Water-proof with switch	**B** Water-proof with switch	**C** With switch	**D** 10-pin plain	**E** 6-pin round	**F** Straight type	**G** Water-proof straight type
Illustration of the plug that connects to the measuring instrument							
Socket type on the measuring instrument							
Codes of major compatible measuring instruments	[Digimatic Caliper /Super Caliper] **-500 series CD67-S_PM CD-PMX/PM/GM -550/551 series CDC-P_PMX CDN-P_PMX** [Digimatic Carbon Fiber Caliper] **-552 series CFC-G/GL/GC/GU** [Digimatic Depth Gage] **-571 series VDS-PMX** [Digimatic Scale Unit] **-572 series SD-G** [Digimatic Exclusive Caliper] **-573 series NTD-PMX/PM** 	[Digimatic Micrometer, QuantuMike] **-293series MDC-MJ/MJB/MJT MDE-MJ** [Tubular Inside Micrometer] **-337 series IMZ-MJ -339 series IMJ-MJ** [Digimatic Micrometer Head] **-350 series MHN-MB/MJB/MJNB** [Digimatic Exclusive Micrometer] (The end of the mark is– **MJ/MJB/M/MB/PM/PMB** [Digimatic Holtest] **-468 series HTD-R** 	[Digimatic Micrometer Head] **-164 series MHD-MB** [Digimatic Caliper] **-500 series CD-CX/C/S_C - 550/ 551 CDC-C/CX, CDN-C/CX** [Digimatic Depth Gage] **-571 series VDS-DCX/DC** [Digimatic Scale Unit] **-572 series SD-D/SDV-D** [Digimatic Exclusive Caliper] **-573 series** The end of the mark is **-CX/C** 	Measuring instrument models that incorporate a data switch [Surface Roughness Tester] **-178 series SJ-201/210/301/ 400/500** [Coating Thickness Gage] **-179 series DGE-745/755** [Linear Height] **-518 series QMH-S** [Reference Gage] **-515 series HMD-C** [Digimatic Indicator] **-543 series ID-H** [Laser Scan Micrometer] **-544 series LSM-9506/6100/ 6200/6900** [μ-checker] **Digital μ-checker** (Using the foot switch)	[Digimatic Micrometer] **-121 series BD -164 series MHD-M -227 series CLM -293 series MDQ-M MDC-M** [Tubular Inside Micrometer] **-337 series IMZ-M** [Tubular Inside Micrometer] **-339 series IMJ-M** [Digimatic Holtest] **-468 series HTD** [Reference Gage] **-515 series HME-DM** [Boremetic] **-568 series SBM-C** [Hardness Testing Machines] **-810 series HM-100/200 HV-100/HH-411 HR-500**	[Digimatic Height Gage] **-192/570/574 series HDM-A/AX, HD-A/AX HDS-H_C/C HDF-N** [Digimatic Caliper] **-500/550/551 series CD/CDC/CDN** [Digimatic Bore Gage] **-511 series CG-D** [Digimatic Indicator] **-543 seires ID-C_X/_RB/_GB** [Digimatic Depth Gage/ Digimatic Thickness Gage] **-547 series** Digimatic model (**ID-CX**) [Digimatic Carbon Fiber Caliper] **-552 series CFC-P/-L/-C/-U** [Digimatic Scale Unit] **-572 series SD-E, SDV-E SD-F, SDV-F** [Portable Hardness Testing Instruments] **-811 series HH-300**	[Digimatic Indicator] **-543 series ID-N ID-B** 
				Measuring instrument models that do not have a data switch [Digimatic Indicator] **-543 series ID-F** [Linear Gage/Counter] **-542 series EF-PRH/ZR, EH-P/Z/S/D EB-P/Z/D EC-D** [Litematic] **-318 series VL-A/AS/AH**	No corresponding models	[Digimatic Indicator] **-543 series ID-C/S/C_A** [Digimatic Depth Gage/ Digimatic Thickness Gage] **-547 series** Digimatic model (**ID-C**) **-575 series ID-U**	No corresponding models

U-WAVE

Measurement Data Wireless Communication System

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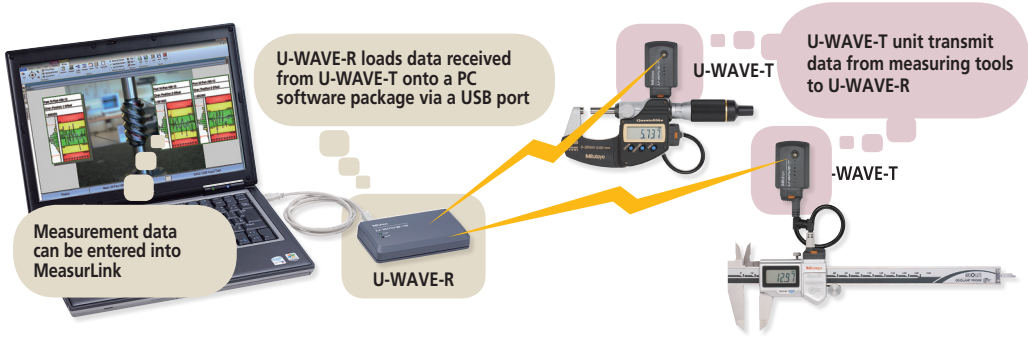
Data Management Software by Mitutoyo



The **U-WAVE** system enables easy wireless data communication from a measuring tool to a PC using the digimatic protocol. Measurement efficiency is improved by eliminating the long and cumbersome data cables. The user-friendly interface allows data to be loaded into any software product that accepts keyboard input, such as Excel* or Notepad.

1 U-WAVE-R · Registered Design (Japan)

Major Specifications of U-WAVE-R

Model	**U-WAVE-R**
Order No.	**02AZD810D***
Power supply	USB bus power system
Number of **U-WAVE-R** units that can be connected to one PC	Up to 16
Number of **U-WAVE-T** units that can be connected	Up to 100
External dimensions	5.51″ x 3.15″ x 1.24″ (140 x 80 x 31.6mm)
Mass	.29 lbs (130g)

*Detailed information on conformity standards of wireless communication specification is given below.

2 U-WAVE-T · Registered Design (Japan)

U-WAVE-T sends measurement data to **U-WAVE-R**.

Actual size

Standard accessory: screwdriver

Major specifications of U-WAVE-T

Model	**U-WAVE-T** (IP67 model)	**U-WAVE-T** (Buzzer)
Order No.	**02AZD730D***	**02AZD880D***
Protection Rating	IP67	–
Data reception indication	LEDs	LEDs and Buzzer
Power supply	Lithium battery CR2032✳1	
Battery life	Approx. 400,000 transmissions	
External dimensions	1.73″ x 1.17″ x .73″ (44 x 29.6 x 18.5 mm)	
Mass	.05 lbs (23g)	

*Detailed information on conformity standards of wireless communication specification is given below.

Installation Bracket Kit

Order No. 02AZE200

(optional)

500 Series Caliper

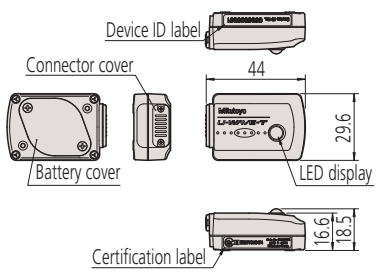
293 Series Micrometer

543 Series Indicator

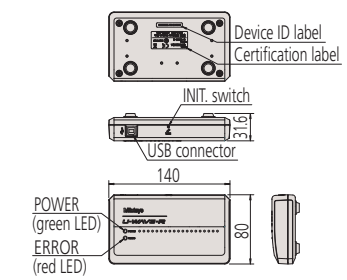
Dimensions of Each Part

Unit: mm

U-WAVE-T



U-WAVE-R



Specifications of wireless communication

Conformity standards	·European conformity standards* EN 50371:2002 EN 300 440-1 V1.3.1 EN 300 440-2 V1.1.2 EN 301 489-01 V1.6.1 EN 301 489-03 V1.4.1 ·U.S.A. conformity standards 47 CFR Part 15.247:(Subpart :C) 47 CFR Part 15,(Subpart :B) ·Canada conformity standards RSS-210 (Issue 7) RSS-Gen (Issue 2) ICES 003 (Issue 4)	Wireless standards	Conform to IEEE802.15.4
		Wireless communication distance	Approx. 60ft (within visible range)
		Wireless communication speed	250 kbps
		Transmission output	1 mW (0 dBm) or less
		Modulation method	DS-SS (direct sequence spread spectrum) Resistant to interfering signal or noise.
		Communication frequency	2.4 GHz band (ISM band: universal frequency)
		Used band	15 channels (2.405 to 2.475GHz at intervals of 5MHz) The noise search function can avoid interference with other communication devices.

Note: In accordance with wireless regulations the use of this product is permitted in Japan, Europe (a total of 32 countries including 27 EU members, 4 EFTA members and Turkey), U.S.A. and Canada. This product must not be used in other countries or areas.
· This product is not compatible with the conventional Mu-WAVE, for which communication specifications are different.
* Japan conformity standards: ARIB STD-T66

U-WAVE

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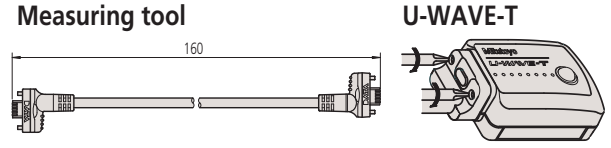
Data Management Software by Mitutoyo

Measurement Data Wireless Communication System

List of U-WAVE-T Connecting Cables

Select one from cables **A** to **G**, referring to the part number of connecting cable for wired connection in your measuring tool catalog or manual. If you are unsure which cable is appropriate, check the cable connectors, the shapes of terminal on the measuring tool side, or the codes of compatible measuring tool for cables **A** to **G** below.
It is not possible to connect to EF and EH counters.

From seven types of cables (**A** to **G**), select one compatible with your measuring tool.



When connected with U-WAVE-T Select one of the USB input tool direct from table below to fit the connector (A to G) and also select either standard type (fig.1) or foot switch type (fig.2) dependent on usage.
Note: Not connectable to these Mitutoyo products: Litematic VL, Linear Gage Counter EF/EH, Surftest SJ-500.


Fig.1 Standard type connecting cable

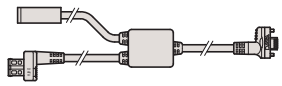
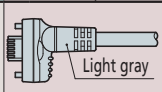
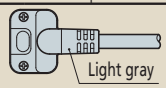
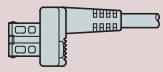
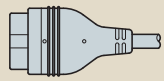
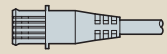
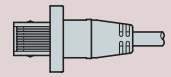
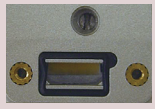


Fig.2 Connecting cable for foot switch

Reference Order No. of connecting cable		A	B	C	D	E	F	G
	1m	05CZA624	05CZA662	959149	936937	937387	905338	21EAA194
	2m	05CZA625	05CZA663	959150	965014	965013	905409	21EAA190

		A	B	C	D	E	F	G
For standard	Order No.	02AZD790A	02AZD790B	02AZD790C	02AZD790D	02AZD790E	02AZD790F	02AZD790G
For foot switch	Order No.	02AZE140A	02AZE140B	02AZE140C	02AZE140D	02AZE140E	02AZE140F	02AZE140G

Cable type	A Water-proof model with output button	B Water-proof model with output button	C With data-out button type	D 10-pin plain type	E 6-pin round	F Plain type straight	G Plain type straight water-proof model
Connector shape on the measuring tool side	 Light gray	 Light gray					
Socket shape on the measuring tool							
Codes of major compatible measuring tools and instruments	[Digimatic Caliper] **CD67-S_PM** **CD-PMX** **CD-PM/GM** **CDC-P_PMX** **CDN-P_PMX** **CFC-G/GL/GC/GU** [Digimatic Caliper] **NTD-PMX** [Digimatic Depth Gage] **VDS-PMX** [Digital Scale and DRO Systems] **SD-G**	[Digimatic Micrometer] **MDE-MJ** **MDC-MJ/MJT** [Digimatic Micrometer] The code suffix is -MJ. **BLM-M** **OMV-M** **OMP-M** **PDM-M** **IMP-M** **VM-M** [Digimatic Micrometer Heads] **MHN-M/MJ/MJN** [Digimatic Holtest] **HTD-R** [Digimatic Depth Gage] **DMC-M**	[Digimatic Caliper] **CD-CX/-C** **CD-S_C** **CDC-CX/C** **CDN-CX/C** [Digimatic Caliper] **NTD-CX/C** [Digimatic Depth Gage] **VDS-DCX** [Digital Scale and DRO Systems] **SD-D, SDV-D**	[Digimatic Indicator] **ID-H/F** [Linear Height] **QMH-S** [Linear Gage/Counter] **EB,EC-D** [µ-checker] **Digital µ-checker** [Laser Scan Micrometer] **LSM-9506** [Reference Gage] **HDM-C** [Coating Thickness Gage] **DGE-745/755** [Form Measurement] **SJ-201/301/401**	[Digimatic Micrometer] **MDQ-M** **MDC-M** **CLM1-QM/DK** **PDM-QM** **PMU-DM** **BD-M** [Digimatic Holtest] **HTD** [Reference Gage] **HDM-DM** [Hardness Testing Machines] **HM-100/200** **HV-100** **HR-500** **HH-411**	[Digimatic Caliper] **CD, CFC-P/-L/-C/-U** [Digimatic Height Gages] **HD-AX, HDM-AX** **HDS-H_C/-C** **HDM-A** **HDF-N** [Digimatic Indicator] **ID-C/_RB/_A/_GB** **ID-S/U** [Digimatic Depth Gage] **Digimatic model (ID-C)** [Digital Scale and DRO Systems] **SD-E, SDV-E** **SD-F, SDV-F** [Portable Hardness Testing Instruments] **HH-300**	[Digimatic Indicator] **ID-N** **ID-B**

Note on Wireless Communication Environment

Although the communication range for **U-WAVE** is approximately 60 ft. line-of-sight, performance may be affected by obstacles or environmental factors.

Item	Contents
Concrete wall	Communication is not possible in a completely enclosed room.
Metal partition	Communication speed may drop or communication may be interrupted.
Wireless LAN, communication device such as ZigBee Bluetooth, and microwave oven	Communication speed may drop or communication may be interrupted. Maintain the set frequency and installation distance if at all possible.
Medical instrument	Do not use this product near a medical instrument such as a laser knife or electronic scale.

Cautions

- **Safety caution:** Do not use this device near medical equipment that might malfunction due to radio interference.
- **Caution on radio law:** This device is certified as a 2.4 GHz band wide-band low-power data communication system based on the radio regulations in Japan, Europe, U.S.A. and Canada. It is prohibited by law to disassemble or modify this device or peel off the certification label from it.

Mitutoyo

Multiplexers – MIG-8USB, MIG-4USB

SERIES 982 — Digimatic/RS-232C Interface Unit

MeasurLink® ENABLED
Data Management Software by Mitutoyo

FEATURES

- A measurement data transfer device, multiplexer MIG-8USB and MIG-4USB converts digimatic output measurement data to RS-232C or USB-HID and outputs it to an external device such as PC.
- Up to eight/four measuring instruments with the digimatic output feature can be connected.
- Units can be daisy-chained to meet any size needs.
- MIG-4USB includes toggle switch for each input.

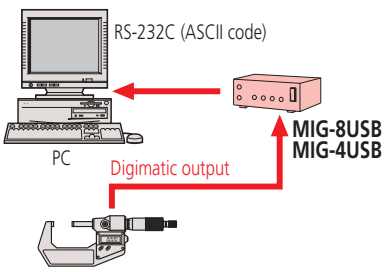
MIG-8USB

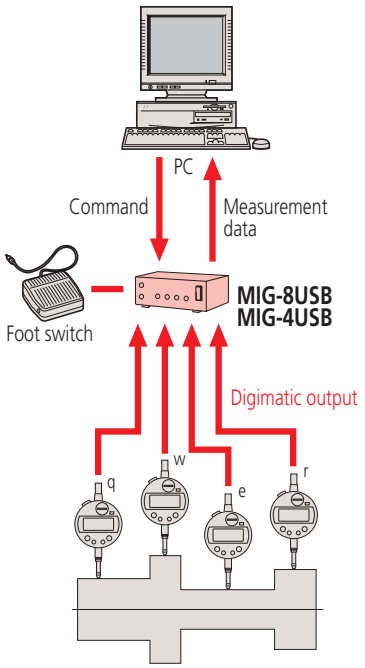
64AAB386
Front view

64AAB386
Back view

SPECIFICATIONS

Model No.	MIG-8USB	MIG-4USB
Order No.	**64AAB386**	**64AAB387**
Gage Capacity	8	4
Dimension (mm) W x D x H	146 x 150 x 45	146 x 150 x 70
Mass (g)	540	710





Technical Data

Data output: Via RS-232C interface / USB

Default Configuration

Data length: 8 bits
Start bit: 1 bit
Stop bit: 1 bit
Parity check: None
Baud rate: 4800

Standard Accessory

06AEG302JA: AC Adapter
RS232C: Cable (1.5m / 5ft)
USB Cable

Optional Accessories

937179T: Foot switch

Gage Selector 3

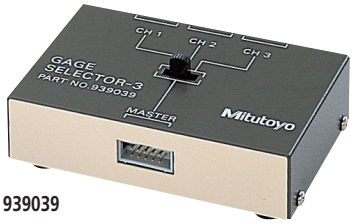
3-channel Switching Box for Data Transmission

Technical Data

Connection: Up to three gages
Signal: Digimatic code format
Connection: Bidirectional
External dimensions (W x D x H): 100 x 70 x 33mm

FEATURES

- Thee digimatic gages can be connected.
- You can specify the gage which outputs the data with the channel switch.

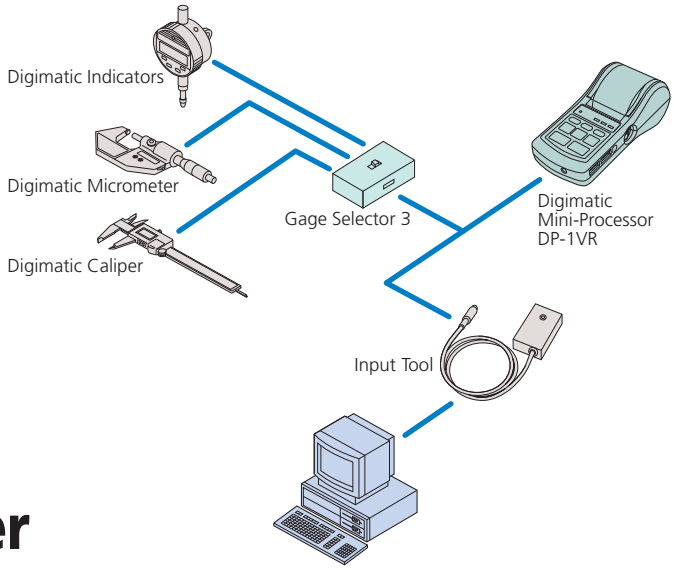


939039

SPECIFICATIONS

Order No.	Description
939039:	Gage Selector 3

Examples of Connections



EC Counter

SERIES 542 — Assembly-type Display Unit

Technical Data

Applicable gage: LGD, LGS, All SPC output gages
Resolution: .00005"/.0001"/0.001mm,
.0005"/.001"/0.01mm
No. of gage input: 1
Display: 6-digit LED and a negative [-] sign
Function: Preset
Go-no-go judgment
Output (open-collector): 3-step limit signal, Normal signal
External control: Preset, Data hold
Power supply: Via AC adaptor
Dimensions (W x D x H): 96 x 48 x 84.6mm
Mass: 50g

Standard Accessory

06AEG302JA: AC Adapter

FEATURES

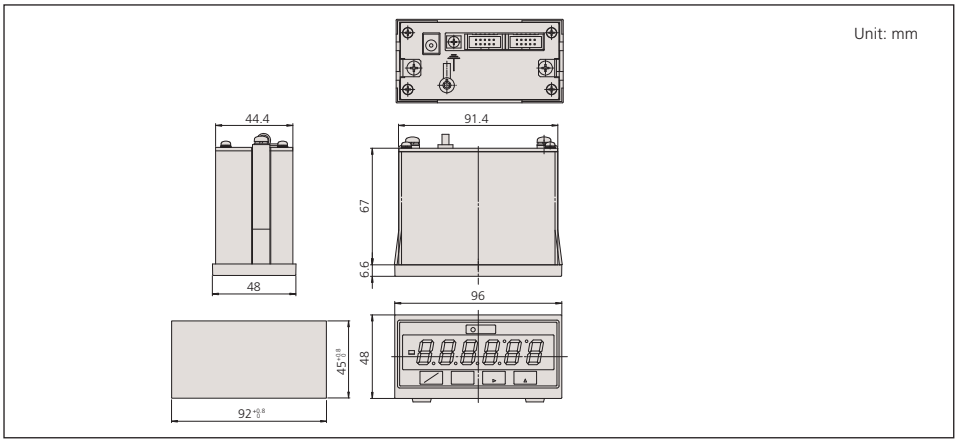
- Compact panel mounting type and DIN size. It can be easily incorporated into each system.

542-007A

SPECIFICATIONS

Order No.	Description
542-007A	EC Counter

DIMENSIONS



Mitutoyo

DP-1VR

SERIES 264 — Digimatic Mini-Processor

FEATURES

- This is a palm-sized printer used to print measurement data from the digimatic gage or to perform statistical analysis.
- This printer offers excellent functionality. You can use it not only to print measurement data, perform a variety of statistical analyses, and draw a histogram or D chart but also to perform complicated operations for X-R control chart.
- Equipped with RS-232C output and go/no-go judgment output as standard functions, this processor ensures high reliability as an advanced quality inspection machine.
- The line thermal printer enables fast and quiet printing.

SPECIFICATIONS

Order No.	Description
264-504-5A	DP - 1VR

264-504-5A

Technical Data

Printing method: Thermal line printer
Printing dot: 384dot (8dot/mm)
Printing speed: 6.5mm/s (using AC adapter)
Printing paper: 48m
Printing line: Approx. 6500 lines for large characters
Approx. 12000 lines for normal characters
Processing capacity: 9999 data (mode 1/2/3)
100000 data (mode 0)
Printing data: Measurement data, go/no-go judgment, No. of data, Max/min value, Range, Average, Standard deviation, No. of defective, Fraction defective, Process capability index, Histogram, D-chart, Control chart generation for Xd-bar and control limit data, date and time
Output function: Output the measuring data (RS232C) or go/no-go judgment
Input timer: 0.25s, 1s, 5s, 30s, 1min, 30min, 60min
Power: AC adapter 6V
Electric battery: LR6 (alkaline), Ni-Mh (AA size)
Battery life: 10 years (clock battery), 10000 lines (1600mA 1time/5 sec. using the nickel hydrofluoric battery)
Dimensions (W x D x H): 94 x 201 x 75.2mm
Mass: 390g

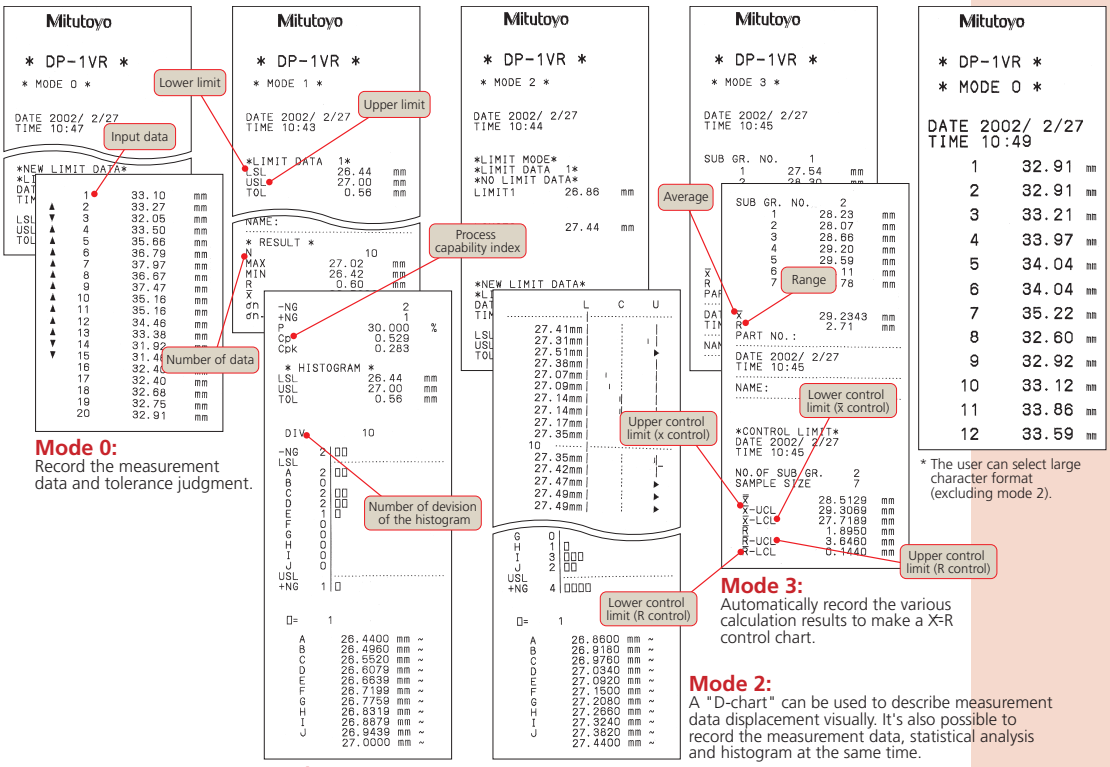
Standard Accessory

06AEG302JA: AC Adapter

Optional Accessories

09EAA084*: RS-232C changing cable (1m, 9pin)
965516*: GO/±NG judgment cable
937179T: Foot switch
09EAA082: (10 rolls)

*It is impossible to use the both RS-232C cable and GO/±NG judgment cable at the same time.



Mode 0:
Record the measurement data and tolerance judgment.

Mode 1:
Record the measurement data, statistical analysis and histogram.

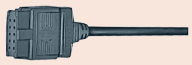
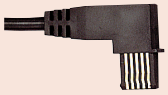
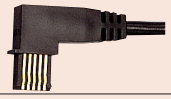
Mode 2:
A "D-chart" can be used to describe measurement data displacement visually. It's also possible to record the measurement data, statistical analysis and histogram at the same time.

Mode 3:
Automatically record the various calculation results to make a X-R control chart.

* The user can select large character format (excluding mode 2).

SPC Connecting Cables

- These cables are used to output measurement data from the digimatic gage with the output feature to the digimatic mini processor, digimatic display unit, multiplexer or other device.
- Cables of one or two meters are available.
- Note that the shape of connector differs depending on the model.

Input plug to Data Processor 	
Order No.	Applicable gages
Straight type  **905338**: 1m (40") **905409**: 2m (80")	**All CALIPERS WITHOUT ABSOLUTE ENCODER** Height Gage **570-2XX, 192-6XX, 192-67X** Indicators **575-XXX, 543-6XX, 543-2XX, 543-4XX** Depth Gages **547-21X, 547-25X, 571-2XX** Scale Unit **572-XXX** Thickness Gages **547-3XX, 547-4XX**
Back type  **905689**: 1m (40") **905690**: 2m (80")	
Right type  **905691**: 1m (40") **905692**: 2m (80")	
Left type  **905693**: 1m (40") **905694**: 2m (80")	
With data out switch type  **959149**: 1m (40") **959150**: 2m (80") **04AZB512**: 1m (40") L-Type **04AZB513**: 2m (80") L-Type	**ALL DIGIMATIC CALIPERS WITH ABSOLUTE ENCODER** Height Gage **570-2XX** Depth Gages **571-2XX** Scale Unit **572-XXX** Micrometers over 12"/300mm
With data out switch type  **05CZA624**: 1m (40") **05CZA625**: 2m (80")	Coolant-Proof Caliper **500-68X, 500-76X, 500-78X.** Coolant-Proof Digimatic scale units **572-61X.**
With data out switch type  **05CZA662**: 1m (40") **05CZA663**: 2m (80")	**Digimatic Micrometer IP65**
6 pins type  **937387**: 1m (40") **965013**: 2m (80")	**ALL MICROMETERS (not for IP65 mics)** Indicators **543-11X, 543-13X, 543-14X, 543-18X, 543-17X** Holtest **468-2XX, 468-9XX** Micrometer Head **164-162, 164-172, 350-71X, 329-71X** Boremetics **568-XXX** Others Mikematic, Quickmike Bench Mike **121-XXX**
10 pins type  **936937**: 1m (40") **965014**: 2m (80")	Indicators **543-5XX** MU-Checkers **519-4XX, 519-621A** MU-Gages **179-204, 179-205, 179-206** Display **542-022-5A, 542-032-5A, 542-036-5A** Display **572-011A, 572-031A** Linear Height **518-3XX** Litematic **318-2XX** Heightmatic **57X SERIES**. Digi Derm **179-7XX** Hardness Tester (**Micro Hardness Type**)
Flat straight type  **21EAA194:** SPC cable (40" / 1m) **21EAA190**: SPC cable (80" / 2m)	ID-N/ID-B coolant proof digimatic Indicators

Mitutoyo

Measuring System Implementation

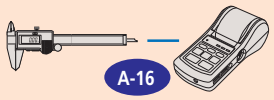
The following introduces system implementation principles showing how measurement results from various Mitutoyo measuring instruments are recorded and used for quality control purposes.

Implementation Step 1

- **Recording and storing measurement results**

Eliminating writing by hand

Prints out measurement data easily, providing the statistical calculation function.



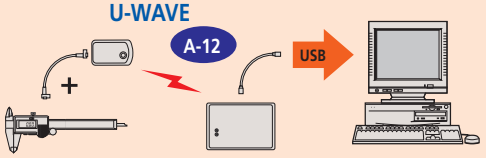
A-16

Digimatic Mini-Processor DP-1VR

To perform wireless communication

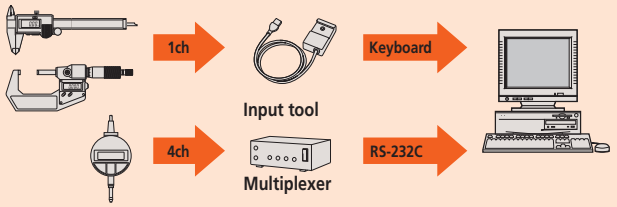
U-WAVE

A-12



To input data to a PC

A keyboard signal conversion type Input tool can input measurement data directly into spreadsheet software such as Excel.



RS-232C conversion type unit requires separate communication software.

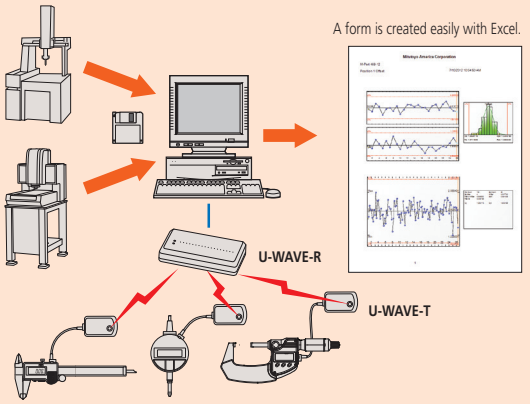
Input tool series A-10

Multiplexers A-14

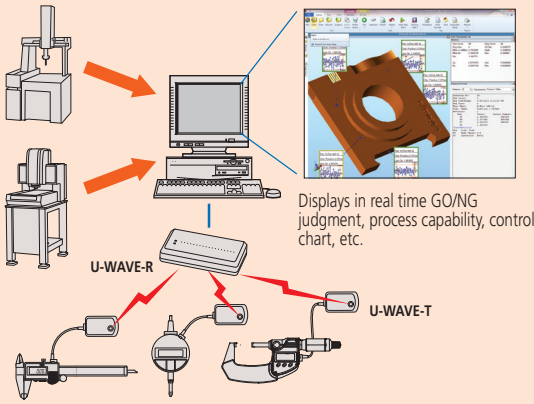
Implementation Step 2

- **Using dedicated inspection and quality control software**

Setup for statistical process control



Performing statistical process control



MeasurLink Real-Time A-4

Implementation Step 3

- **Networking quality control data gathered from various locations**

Centralizing and analyzing measurement results