

## MCOSMOS MANUAL

HIGH-END SOFTWARE FOR MANUAL  
COORDINATE MEASURING MACHINES.

COORDINATE  
MEASURING MACHINES



# 3D Coordinate Measuring Machines from Mitutoyo: A new dimension in quality assurance.

CMM SOFTWARE

MiCAT is the smart software platform from Mitutoyo, setting international standards for sophisticated 3D coordinate measurement. With MiCAT, your coordinate measuring machines become efficient information centres - power houses of design, production and quality control. Streamlined measurements and convenient and reliable data at your fingertips throughout the production process.

Our certified Computer Technology Laboratory (CTL) has developed MCOSMOS – the Mitutoyo Controlled Open System for Modular Operation Support. This is modular CMM software system giving professional measurement and evaluation.

MCOSMOS helps you carry out all your measuring and test jobs at lightning speed, simply and safely. MCOSMOS handles large amounts of data with ease, making it available across all the networked areas of the production chain. This streamlines the measuring process, optimises the flow of information and minimises non-conformances. The result is increased efficiency throughout the production process with significantly reduced costs.

With its specialist expansion modules, MCOSMOS can focus in on your company's very specific measurement requirements. With Mitutoyo software, you are best prepared for every imaginable 3D coordinate measurement challenge, both now and in the future, with maximum flexibility.

Mitutoyo: complete precision

# Experience

Mitutoyo. Near to you, wherever you are.

Precision measurement technology with global dimensions.

With seven decades of experience, Mitutoyo is a pioneer and a pace-setter in precision measurement technology throughout the world. The Mitutoyo Group has spread out from its birthplace in Japan, and today has a presence in more than 100 countries in the world in the form of branches, factories and national distribution networks.

With this world-wide network, Mitutoyo has become an international leader in providing precision measurement technology from a single source. A claim based both on the quality of the 5000 plus Mitutoyo products and in a service philosophy that sets an example throughout the world.

In its certified Computer Technology Laboratory (CTL) in Oberndorf on the River Neckar in Germany, Mitutoyo employs highly qualified specialists who devote their expertise to developing software for 3D coordinate measurement technology, thereby setting world standards.



## Software packages and expansion modules to meet every requirement

This modular software system developed by Mitutoyo allows you easy access to the capabilities of various software packages and expansion modules. For extensive analysis, documentation and impressive presentation of measuring results. The data are archived in clear, practice-relevant structures. A standard software package is, of course, supplied with all coordinate measuring machines.

### Basic modules of our software package for manual coordinate measuring machines: MCOSMOS 1 Manual

#### PartManager

Is the command centre that boots and manages the software package.  
Includes: ProtocolDesigner, ProbeBuilder, DialogDesigner, user management,

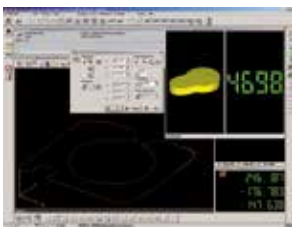
#### GEOPAK (Geometry module)

For easy parts program generation (online/offline) for measuring geometrical elements.  
Includes: Support user-defined dialogs (variable program creation) and flexible reporting

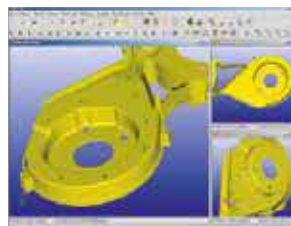
### Extension module for our MCOSMOS 1 Manual software package



**MeasurLink®**  
Statistical evaluation module.  
Real-time data collection, network-capable SPC analysis.



**SCANPAK**  
For the scanning and evaluation of workpiece contours (2D).  
Includes: supports electronic single measuring heads/fixed probes, variable contour tolerance, best fit, flexible reporting.



**CAT1000S**  
For the creation of desired/setpoint comparisons of freeform surfaces from the CAD model and measuring points.



**MAFIS**  
Bearing surface evaluation module.  
For the analysis of selected characteristics of bearing surface profiles, supports flexible reporting.



**GEO\_EDM**  
Online correction program for EDM tools and workpieces.

# PartManager.

## Control and command centre.

### Standardmodul

PartManager is the versatile management centre within MCOSMOS software, the control centre for all measurement tasks. From PartManager, boot main program modules such as GEOPAK, CAT1000S etc. as well as all configuration programs such as DialogDesigner and ProtcolDesigner and user management. Here too, detailed documentation and archiving of data records are organised in a simple, convenient and very user-friendly way.

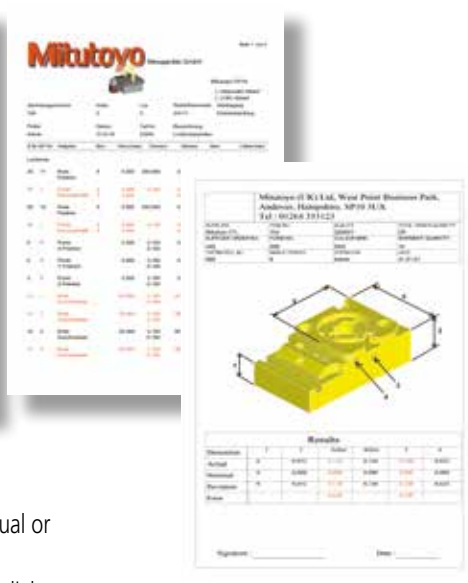
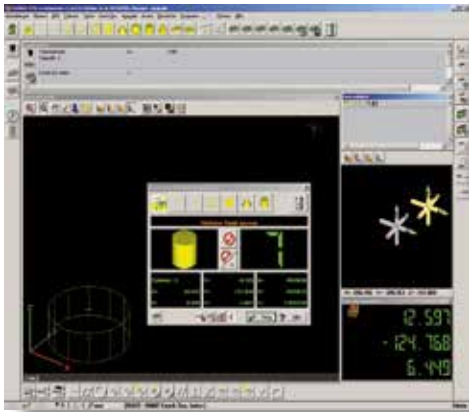


Use PartManager to organise all your notes, reports, data and images for any measurement process; clearly listed and assigned to each workpiece. A visible indicator is the parts list identifiable at first glance in the available data column. Click on the symbol and you can view the documents and start the programs you need. PartManager contains a user management system with a detailed system of user rights and revision management for measurement programs including change history. Here you have everything you need to comply with the German 21CFR Part 11 Directive.

# GEOPAK, the geometry module. Performance in the third dimension.

## Standardmodul

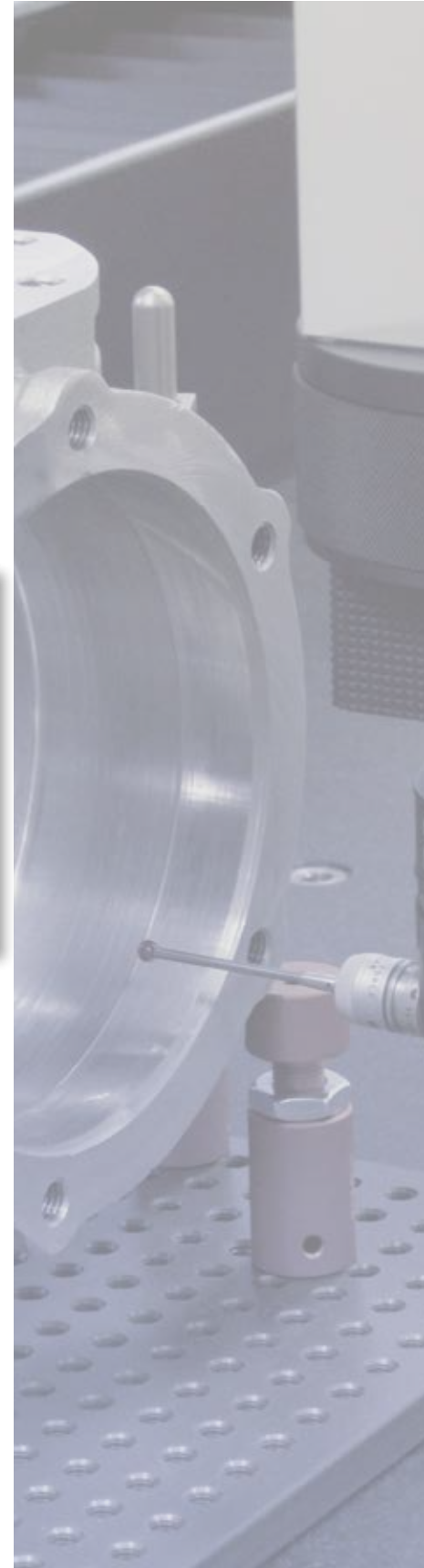
With the universal geometry measurement program for multidimensional measurement, you can control your workpiece from design to completion. Its multiple functions make GEOPAK one of the most powerful programs available, meeting the most stringent requirements, but very user friendly. For example, you can display step by step what exactly has to be done when aligning a workpiece. In addition to many dedicated reporting options, output on other systems (e.g. QS-Stat, Word, Excel) is also possible. Even the standard version of GEOPAK already supports a wide range of output options.



User-defined reports

### GEOPAK means:

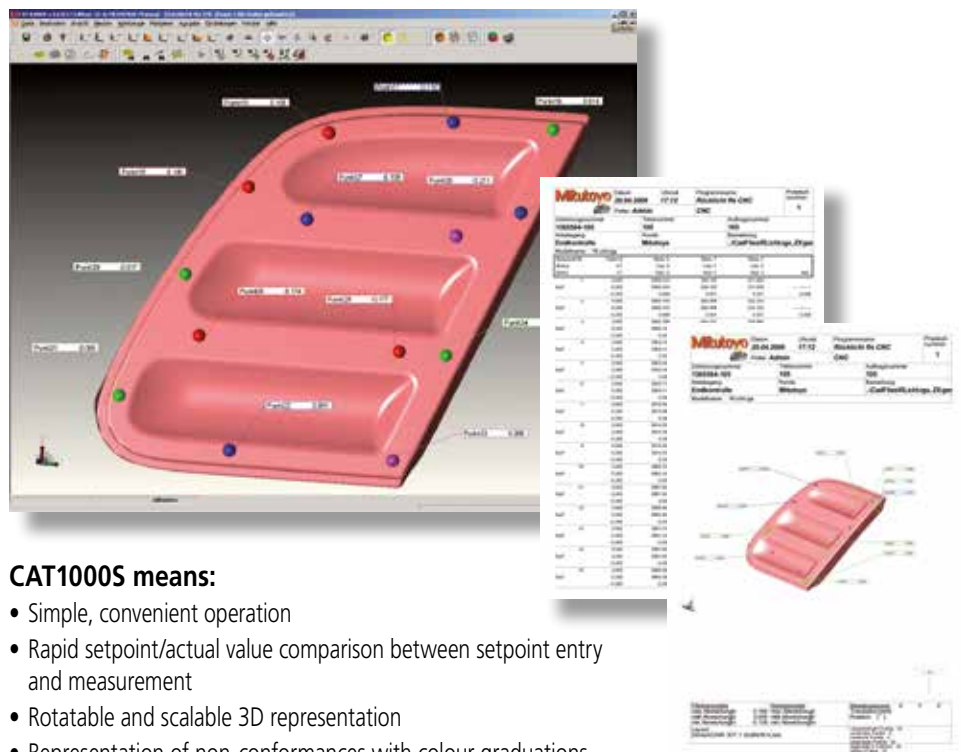
- Clear user guidance with menus and graphics
- Online/offline programming (in tutorial mode, virtual or editor mode)
- Flexible programming by the use of user-definable dialogues and variables
- Automatic element recognition
- Easy and rapid program correction (new tree structure in editor mode or in repeat mode)
- Integration of text, images and sound
- Flexible customer-specific reporting
- PTB-certified algorithms for geometry calculation
- Certified QS-Stat interface



# CAT1000S, the 3D freeform surface evaluation module. Tolerance comparison of freeform surfaces.

## Optional

CAT1000S shows its strengths in the precise comparison of solid bent surfaces with their desired setpoint entries from CAD data (e.g. bodywork parts). Individual measurement points can be allocated to the next surface or limited to one surface. The measurement results are represented as easy-to-interpret graphics, in which non-conformances are quickly and easily recognisable by colour marking.



### CAT1000S means:

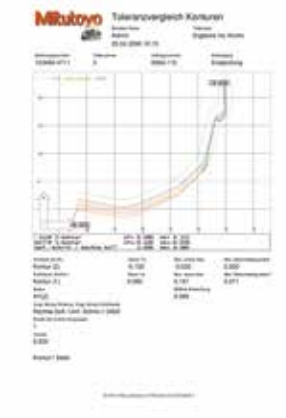
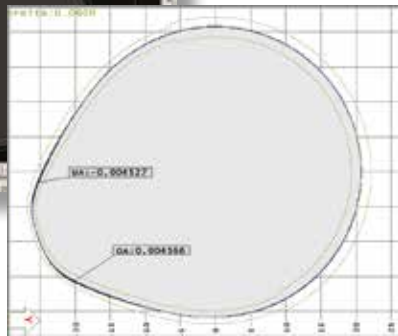
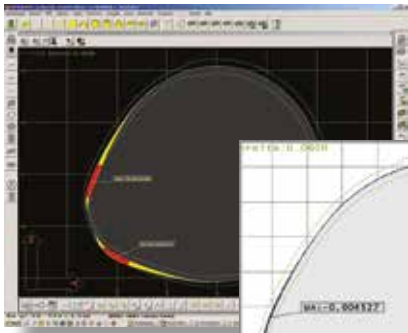
- Simple, convenient operation
- Rapid setpoint/actual value comparison between setpoint entry and measurement
- Rotatable and scalable 3D representation
- Representation of non-conformances with colour graduations
- Best fit of measurement points on the CAD model
- Flexible, customer-specific reporting
- Reading-in of standard interfaces ACIS (SAT) / STEP;  
other direct interfaces as an option: CATIA V4 / CATIA V5 /  
Parasolid / Pro/E / Unigraphics / SolidWorks / Inventor / IGES / VDAFS)

User-defined reports

# SCANPAK, the 2D contour evaluation module. Detection of non-conformances between setpoint and actual value contours.

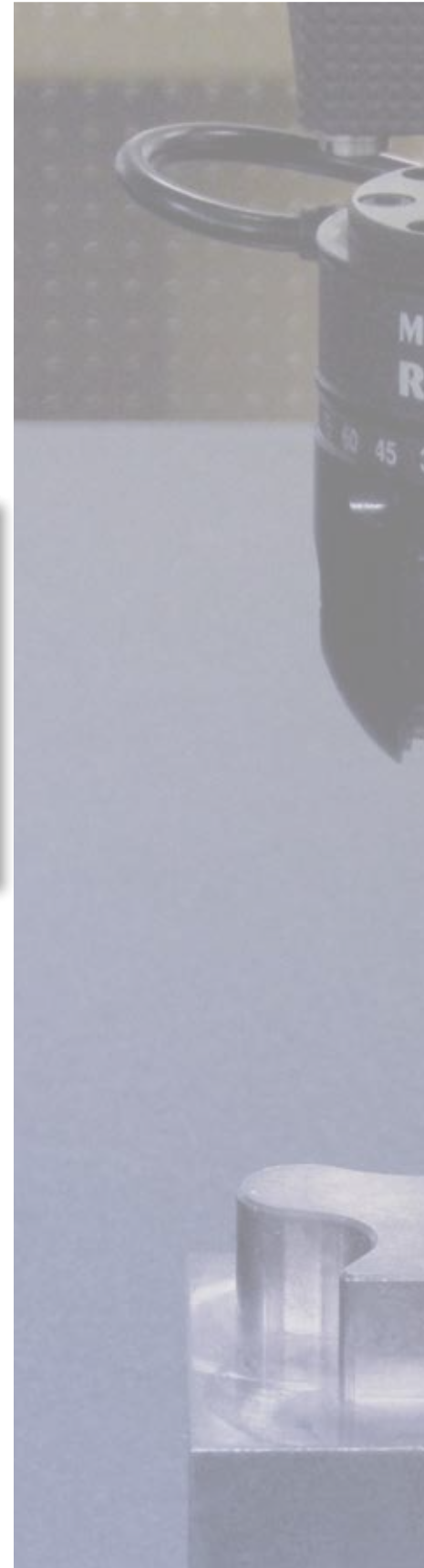
## Optional

With SCANPAK, non-conformances between the finished contour and the desired contour can be quantitatively determined. By feeding back the optimised contour in the production process, the workpiece can be successively optimised.



### SCANPAK means:

- Sophisticated functions for evaluating and processing contours
- Successful integration of contours into the geometric measurement program
- Simple and safe operation
- Scanning of forms with feedback of data into the CAD system (TRANSPAK) and at machine controls
- Graphic representation of setpoint/actual value comparison
- Support for flexible reporting functions (ProtocolDesigner)
- Supports the use of variable contour tolerances
- Best fit of contours

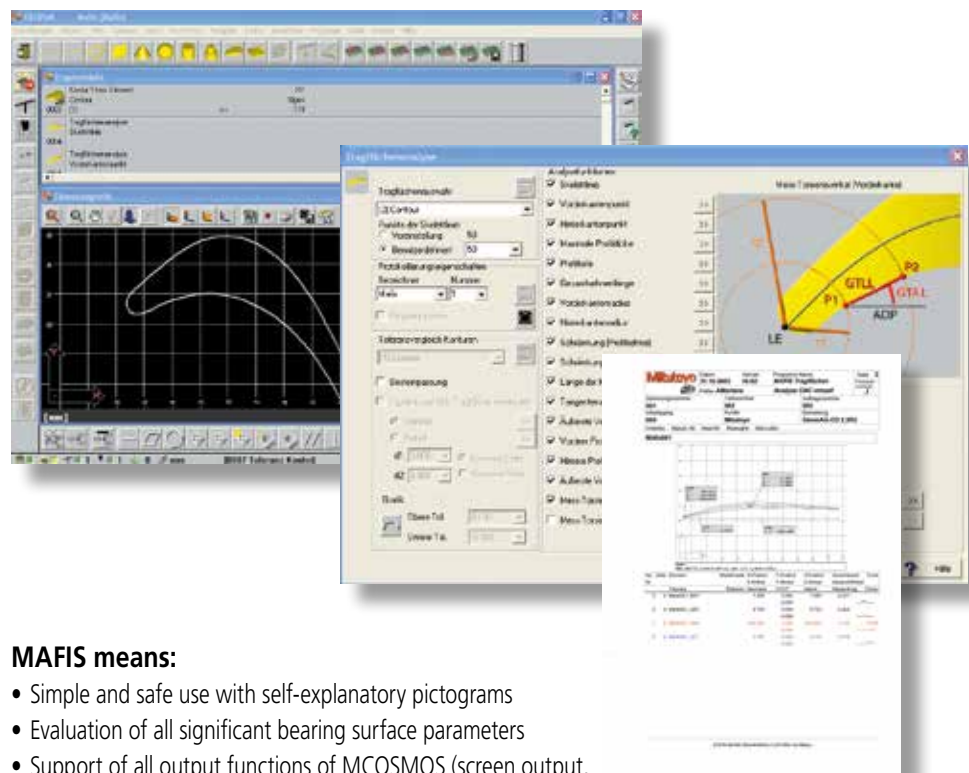




# MAFIS, the portable evaluation module. For soaring measurement skills.

## Optional

MAFIS stands for 'Mitutoyo Airfoil Inspection Software' and enables the calculation of all significant bearing surface parameters, e.g. of turbine blades on aeroplane engines or pump blades. It works in association with the MCOSMOS module SCANPAK, for the automatic scanning of workpiece forms. With SCANPAK the contour is first entered, after which in a separate menu the 'bearing surface analysis' can be selected for the evaluation of desired parameters. Using simple pictograms, all the necessary inputs can quickly be carried out. Outputting measured values is possible both in clear lists and graphs. All MAFIS parameters are supported by the MCOSMOS report designer with which individualised reports can be generated with ease.

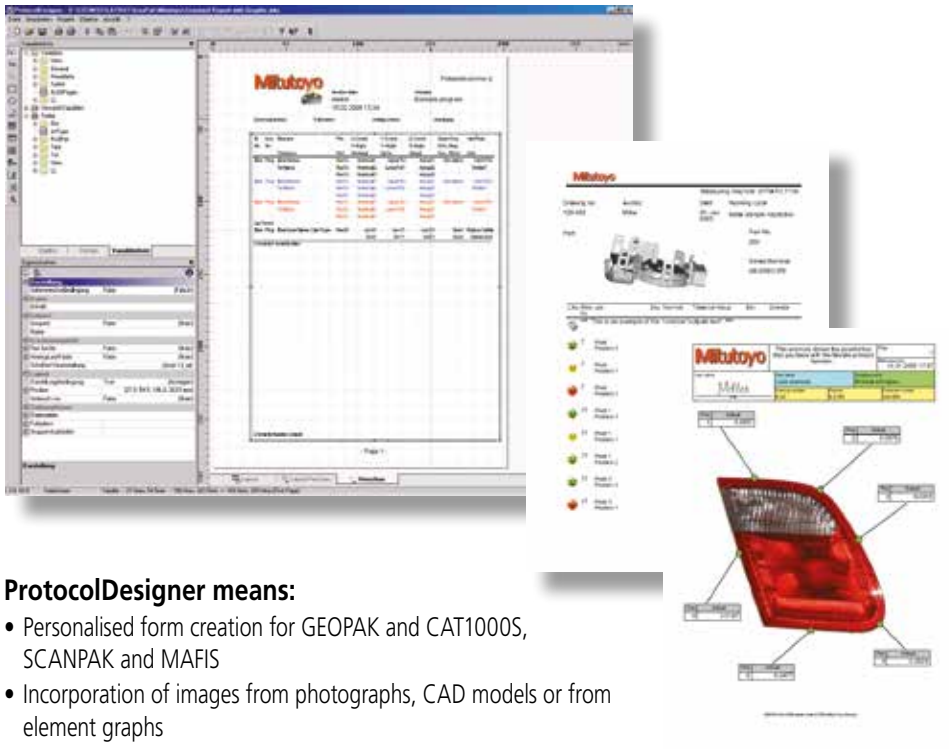


### MAFIS means:

- Simple and safe use with self-explanatory pictograms
- Evaluation of all significant bearing surface parameters
- Support of all output functions of MCOSMOS (screen output, text output, ProtocolDesigner, MeasurLink)
- Contours can be entered using the SCANPAK expansion module

# ProtocolDesigner, the form creation tool. Individual reporting, informative documenting.

With the ProtocolDesigner – a standard tool within MCOSOMOS – you can effortlessly draw up new, personalised forms for the GEOPAK, CAT1000S and MAFIS modules, or adapt existing forms to your personal requirements. The standard report becomes a flexible report and you can create the perfect models for basic pages, first and subsequent pages. For the graphic implementation of your own ideas, there is a wide range of variables, fields, tables and graphs available. You will be helped by an assistant, detailed documentation and detailed online help. Create with ProtocolDesigner, for example, headings with your company logo and setpoint/actual value comparisons in colourful images, or define new levels and enhance your reports with info-flags.



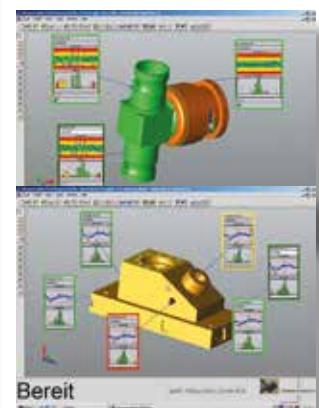
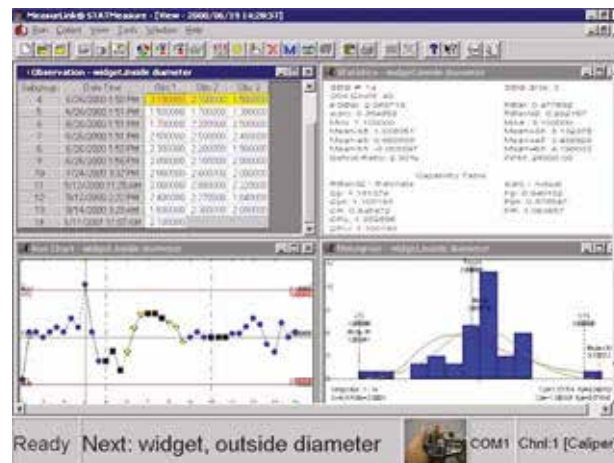
## ProtocolDesigner means:

- Personalised form creation for GEOPAK and CAT1000S, SCANPAK and MAFIS
- Incorporation of images from photographs, CAD models or from element graphs
- Easy Excel exports (even where Excel is not installed on your own system)
- Text exports into a CSV file (text-based table format)
- TIFF and multi-TIFF export
- PDF export (128 bit coding)
- ANSI or ASCII export
- HTML/MHTML export
- JPG, BMP and EMF export

# MeasurLink®, the statistical evaluation module. Evaluation, visualisation, process control.



MeasurLink is, for Mitutoyo users, the epitome of perfect measured data management, analysis and storage, giving comprehensive statistical evaluation of your measurements. As the 'analysis' component of the Mitutoyo expansion modules, this program is the tool you use to set out and compare your results. MeasurLink is therefore the ideal software for statistical process control, identifying trends and giving the opportunity to take action before the process exceeds preset intervention limits. As with all measurement programs, this is a multi-tasking-capable tool that can run in the background. Particular emphasis is given to simple, clear user-guidance. The dialogue fields can be flexibly arranged to your own requirements. MeasurLink is largely network-capable. Its resources are independent of the measuring device location and can be used all over the world on any authorised computer. Finally: MeasurLink supports, in addition to Coordinate Measuring Machines, all other digital Mitutoyo measuring equipment right through to dial and calliper gauges.



### MeasurLink means:

- Optimum configuration with modular program structure
- Real-time control card representation
- Monitoring of various measuring stations in network operation (hall plan, internal/external networks)
- Monitoring of test characteristics from GEOPAK, QVPAK, QSPAK, QIPAK, FORMPAK, ROUNDPAK, SURFPAK and FORMTRACEPAK
- Combination of measured data from all Mitutoyo measuring machines
- Clear tables, graphs and evaluations
- Availability of test equipment control and monitoring and test-equipment capability checks using an add-on module

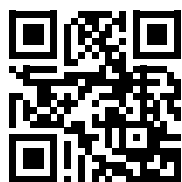
Request the separate MeasurLink brochure with more detailed information: [info@mitutoyo.eu](mailto:info@mitutoyo.eu)



**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 bespoke measuring solutions and even, if deemed cost-effective, take your critical measurement challenges in-house on a sub-contract basis.



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