



**MTL**

OPTICAL MEASURING MACHINES

English Version

# Make VICIVISION your first choice for quality inspection

From the experience of thousands of customers comes the range with the best price to performance ratio.

**Prima:** the measuring machine for all CNC lathes.

From 60 to 140 mm in diameter and 300 to 900 mm in length.



306 PRIMA



609 PRIMA

# PRIMA Series

## WORKING IN SHOPFLOOR ENVIRONMENTS FOR MORE THAN 15 YEARS

All the experience of thousands of VICIVISION customers in a machine optimised for turning process control.

## MAKING PRODUCTION MORE COST EFFECTIVE

The optical shop floor measuring machine that helps you to produce more.

Speed up processes, track quality, reduce rejects and downtime.

The 90% of the measurement tools you use every day in a single solution with a fast return on investment.

## DESIGNED FOR DAILY USE

The real image of the part shown by the software, combined with the large working area, gives a clear view of the condition of the part to be measured.

Retractable sensors during loading and unloading provide more space in the work area for even more comfortable access to the workpiece.

The ergonomic piece clamping lever has a considerably wide grip that allows both left-handed and right-handed to lock/unlock the workpiece without obstructing the view.



614 PRIMA



# Quality without compromise

Maximum performance with a  
broad range of machines.

From 40 to 180 mm in diameter, and 300 to 2000 mm in length.



M304 TECHNO



M609 TECHNO



# TECHNO Series

## CUSTOMIZE YOUR RANGE

The availability of different models makes it possible to choose the measuring range that best suits the type of production.

## THE MACHINE THAT IMPROVES PRODUCTIVITY

Operators are more independent during inspection, and tool offsets can be adjusted before parts become out of tolerance in order to reduce the amount of rejects produced.

## DIMENSIONAL CONTROL DIRECTLY ON THE SHOP FLOOR

Each part produced by the CNC lathe or grinding centre can be easily measured by operators in seconds.

## HIGHER PRODUCTIVITY EVEN IN SMALLER BATCHES

These systems facilitate part changeover, allowing you to switch from one lot to the next very quickly.

## ONE MEASURING SYSTEM FOR MULTIPLE CNC LATHES

The same measuring machine can operate next to multiple machining centers, involving more than one operator.

## HIGH RESOLUTION

Ultra-high resolution images to capture the smallest details.



M614 TECHNO

# The best way to measure the smallest details

A specific solution for biomedical components, watch-making and micromechanics.



MTL X5  
MTL X10



MTL X360

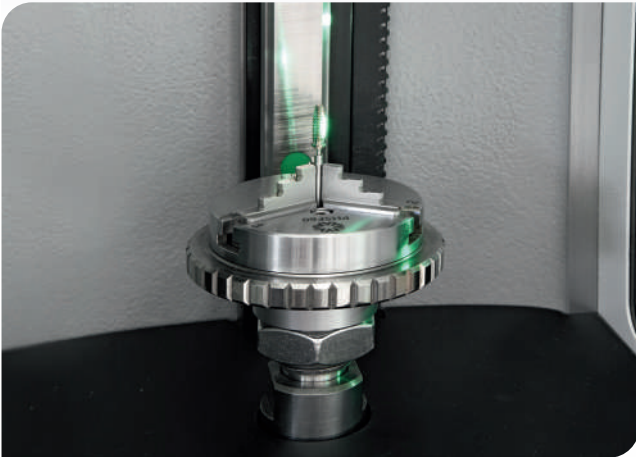
# X Series

## IDEAL FOR MICRO-COMPONENTS

The X series is specially designed to measure dental implants, biomedical components, watch parts and micro-mechanical parts.  
The high resolution, allows detection of the smallest details.

## PROVEN BY THOSE WHO MANUFACTURE MINUTE PARTS

The open design facilitates direct access and handling of even the smallest and most complex cylindrical components.  
As there are no openings or undercuts in the machine, there is no risk of small parts falling.

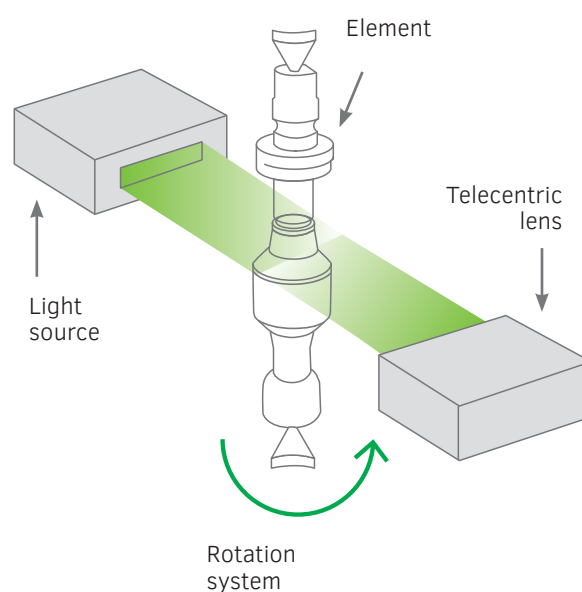




Fast  
and accurate

Using manual tools, quality control can be prone to operator error.

A VICIVISION system combines the functions of profile projectors, micrometers and roundness gauges, eliminating human error in acquiring measurements, allowing operators to manage the data. For this reason, carrying out measurements with a single tool means saving time, manpower and improving the accuracy of inspection.



#### Static measures:

- diameter
- length
- angle
- radius
- chamfer

#### Dynamic measures:

- coaxiality
- run-out
- circularity
- cylindricity
- taper

#### Threads:

- nominal diameter
- pitch diameter
- core diameter
- crests angle
- pitch
- roll dimension

#### Nuts:

- diameter
- asymmetry
- timing

#### Profile measurements (optional):

- DXF comparison
- DXF export

#### Tactile measurements:

- total axial run-out
- undercuts
- keyways: depth, width, length

#### Special applications:

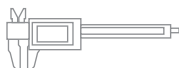
- camshafts
- crankshafts
- turbines

### TRADITIONAL MEASUREMENT SYSTEM

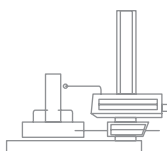
Measurement takes from 10 to 30 minutes.  
Data is conditioned by human interference.  
Difficult to use.  
Requires data collection.



Projector



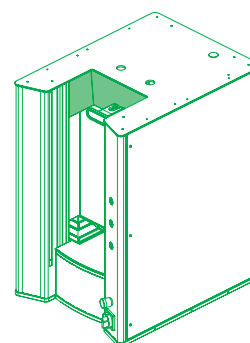
Manual tools



Roundness gauge

### VICIVISION MEASUREMENT SYSTEM

Measurement cycle time from 30 to 60 seconds.  
No more human error.  
Automatic cycle by pressing a button.  
Automatic data collection.

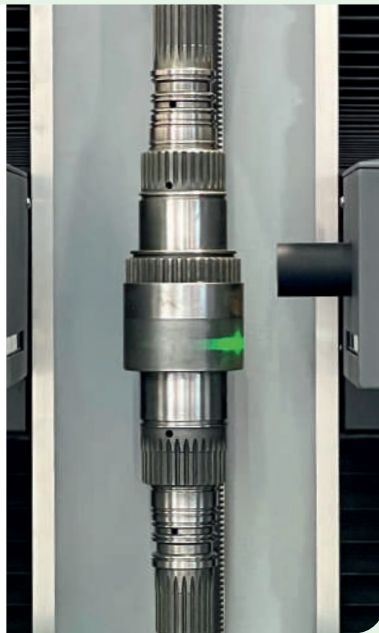
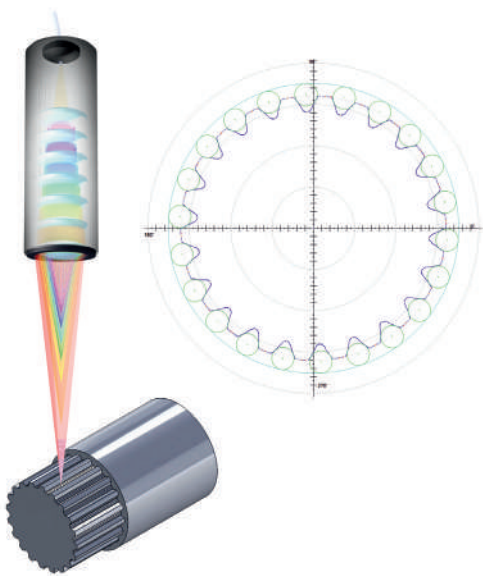




# Additional functionality

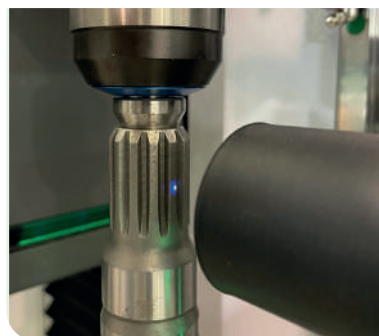
VICIVISION's experience combines the speed of optical measurement with the additional capability of the touch probe and confocal sensor.

VICIVISION's Techno Series can be equipped with additional sensors to add more capabilities and functionalities.



## Confocal

The confocal sensor makes it possible to check splined shafts very quickly. By reconstructing the entire profile, it is possible to determine the minor diameter, pitch diameter dimension and run-out on the pitch diameter.



### SPLINED SHAFTS

Check the conformity of a splined shaft in a matter of seconds with the confocal sensor.



# Touch probe

The touch probe for contact measurement offers more measuring capabilities on shafts and turned parts in the same measuring cycle, saving time, directly on the shop floor.

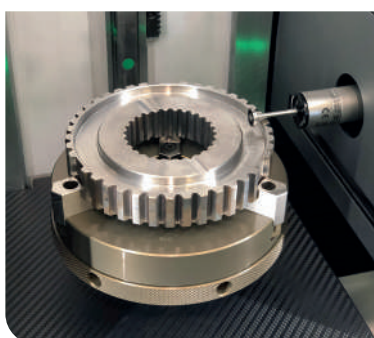
With a single machine it is possible to measure undercuts, total axial run-out and keyways.

The interchangeable styli adapt to different types of measurement and the quick qualification tool ensures measurement accuracy over time.



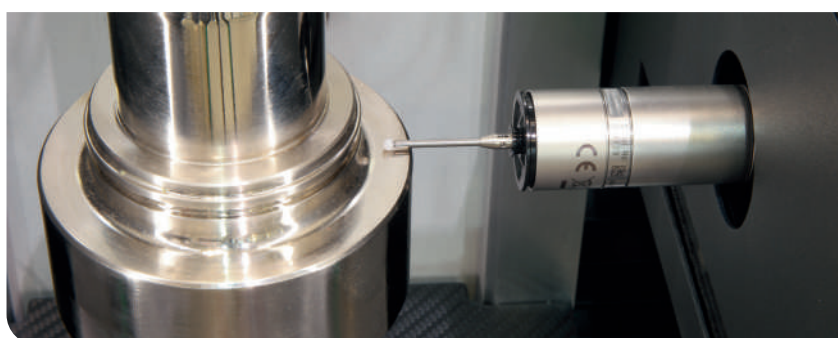
## KEYWAYS

Measuring keys directly on the machine without having to removing the part.



## UNDERCUTS

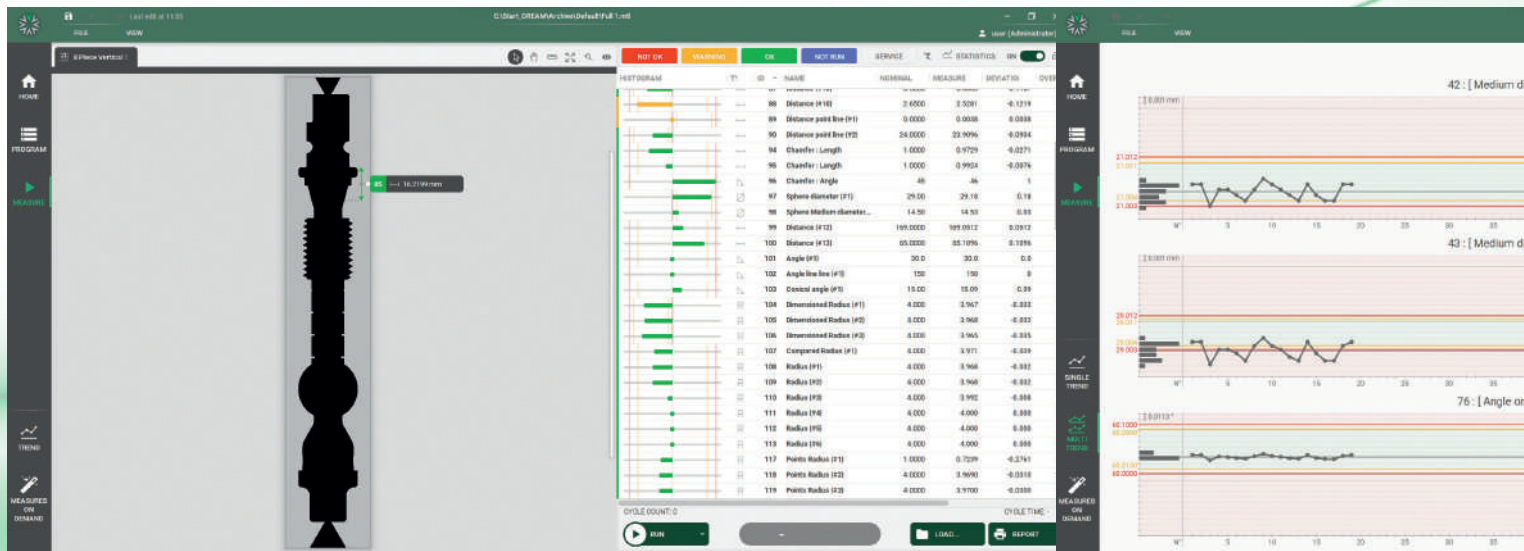
Detect undercuts on the part with the use of the probe.



## TOTAL AXIAL RUN-OUT

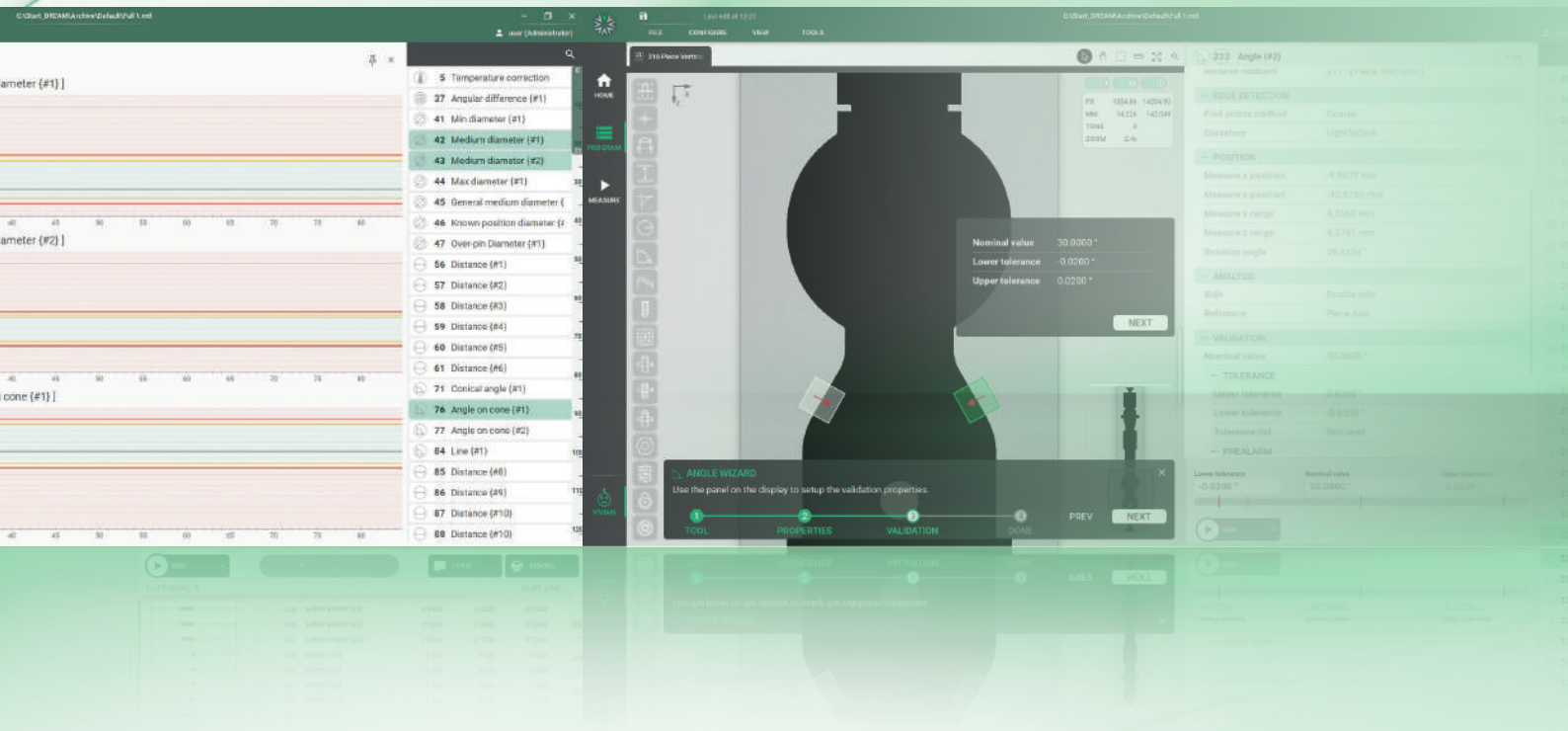
Measure total axial run-out with the correct method.

# New VICIVISION software: reduce learning curve of programming



## Simplified graphic interface

Forget the manual, with simplified steps  
and speed up programming.



## SPC at a glance

Monitor the trend of several measurements simultaneously and in real time.

Act quickly with tool correction to eliminate reject parts.

## Let VIVIAN guide you

VIVIAN, the virtual programming assistant, guides operators step by step through the creation of programmes and reduces the need for training.

With VIVIAN you cut down on learning time.

What is the next measure to be configured? Follow VIVIAN.



# Increasing your production

An optical measuring machine for turned and ground parts, capable of taking measurements in a matter of seconds on the shop floor.







## AUTOMATIC CORRECTION OF TOOL PARAMETERS

With the VICIVISION Tool Wear Compensation (TWC) function, the machine helps to correct the tool parameters, eliminating any human transcription error.

The TWC software reads the CSV files, processes them, calculates the offsets, then makes them available to a PLC via Profinet or Profibus connection, to implement automatic compensation.

The measuring machine, placed directly on the shop floor next to the CNC-lathe, collects data which can be output in a graphical PDF report and saved into a CSV file.



## POSSIBILITY TO INTEGRATE AUTOMATION

VICIVISION measurement systems can be integrated into automated lines to control the entire production process. Robot loading is available through the use of profinet, profibus, digital I/O and other communication protocols.

# Efficiency and speed on first article inspection

The first part of every batch must be measured to set the machining center.

Doing this on the shop floor rather than in the quality lab can save the company substantial time.

Integrated in CNC machining cells for more than 15 years.







### LOAD A PROGRAM WITH THE QR CODE

Programs can be recalled more quickly via a QR code or barcode reader.

In addition, other information such as the name of the operator, processing cycle and batch can be quickly entered via this function.

### A RANGE OF FIXTURES FOR ANY PART

A whole range of accessories on morse 2 taper is available for many clamping requirements.

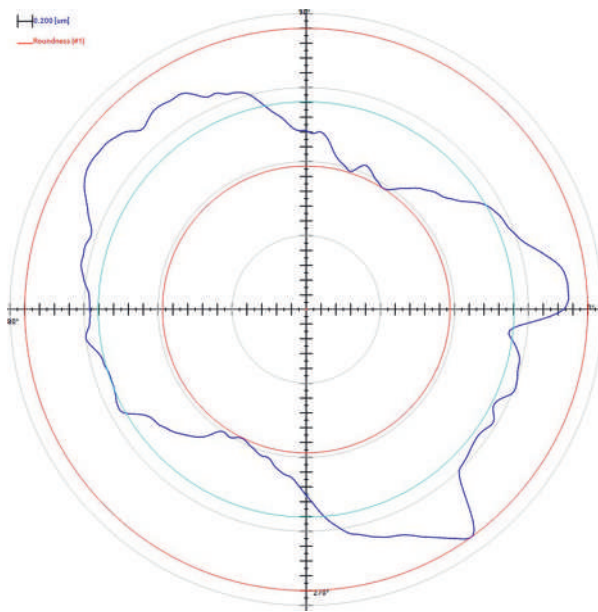
All types of clamping, such as tips of different sizes, tailstocks and chucks can be easily fitted and replaced.

In addition, VICIVISION measuring systems can be equipped with a pneumatic or electric tailstock to meet all automation requirements.



# Measuring form defects on the shop floor

VICIVISION performs form measurements directly on the shop floor, where tools like roundness gauges might not withstand the environmental conditions.



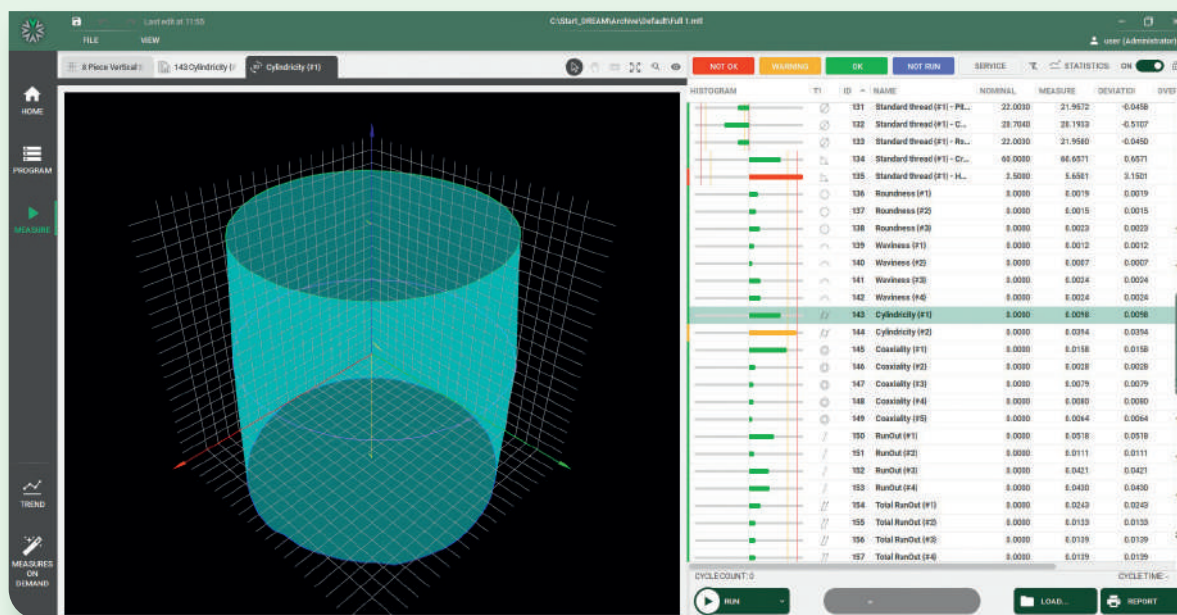
In a matter of seconds it is possible to take:

**CIRCULARITY**

**AXIAL AND RADIAL RUN-OUT**

**COAXIALITY**

**CYLINDRICITY**



Thanks to multi-rotation and software filtering systems, it is also possible to obtain form measurements on threaded elements such as nuts and bolts.

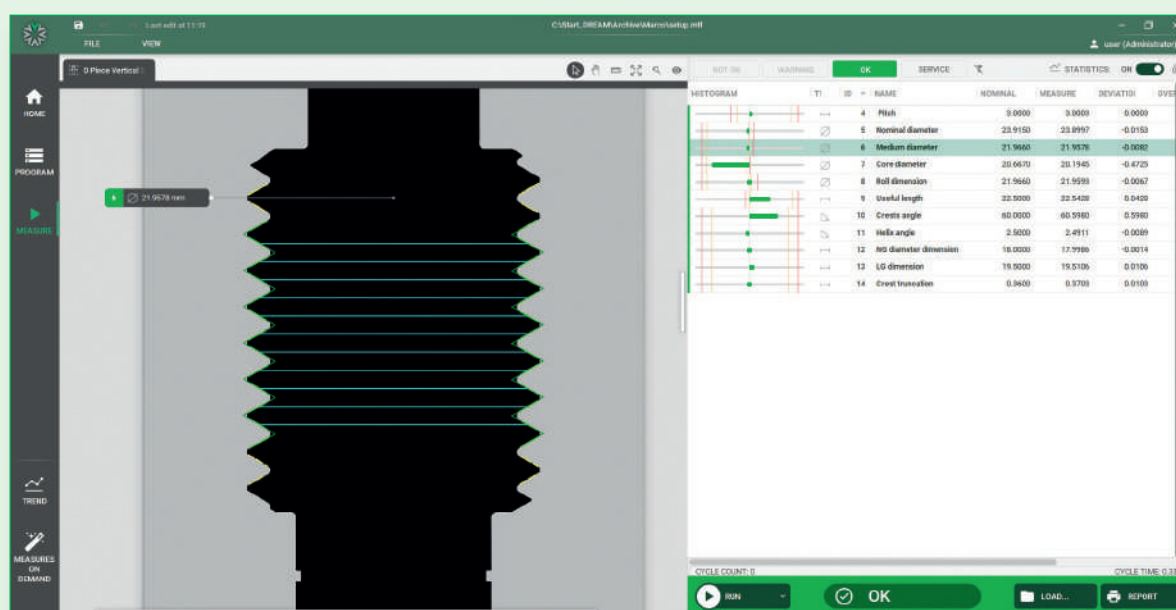


## ALL SOFTWARE TOOLS FOR THREAD MEASUREMENT

With MTL VICIVISION you can measure different types of threads in a matter of seconds.

For quick and easy programming of standard threads, the machine has preloaded tables with nominal values and tolerances.

Various measurements can be taken on the threads, such as pitch, major diameter, minor diameter, angle crest, helix angle and roll diameter.



## THREADS, FROM CUTTING OR ROLLING?

VICIVISION has developed thread measuring tools to meet clients' needs. For each parameter it is possible to validate the average value of the full thread, or alternatively, each crest can be validated, highlighting which parts of the thread are within tolerance, borderline, or out of tolerance.

Individual crest analysis allows you to identify where your tooling is wearing. The validation of each thread crest is indicated for production by identifying rolling where roll wear can result in half the thread being in tolerance and the other half out of tolerance.



# Special applications

## MEASURING CAMSHAFTS

The VICIVISION software has specific tools to measure camshafts. By simply importing data, such as the basic radius, the tappet type and the lift table, you obtain:

- confirmation of the basic radius;
- the maximum lift of the cam;
- deviation of the actual profile from the theoretical profile;
- deviation of acceleration;
- the run-out of the basic profile;
- phase angles.



### MEASURING SHAFTS WITH ECCENTRICS

Dozens of solutions for crankshaft pin measurements including form measurements such as circularity, cylindricity, run-out and stroke calculation



### MEASURING TURBINES

Specific functions make it possible to determine the position of the gauge diameter, dynamically, on the impeller. It is possible to compare the rotating profile with the respective DXF.



# Everything needed to operate in a production environment



## ON-BOARD GAUGE

The on board step-master guarantees the correct operation of the instrument when the temperature changes. This allows the machine to be used directly in the workshop.



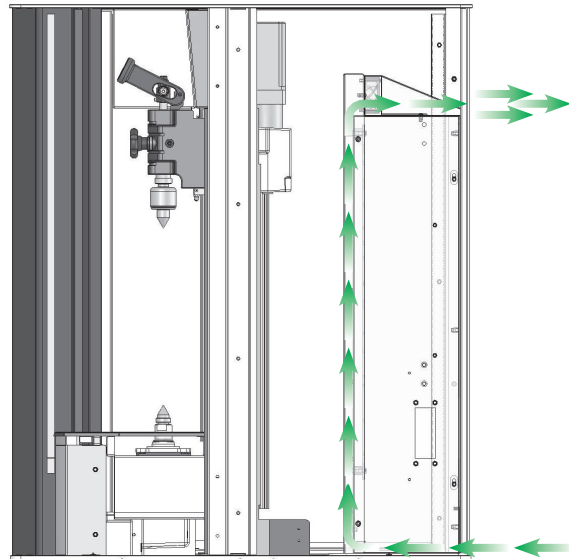
## IMPACT PROTECTION

Retractable sensors protect optics from damage during loading and unloading.



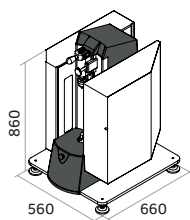
## SIMPLE AND PRECISE CLAMPING

Tailstocks slides on prismatic guides guaranteeing precision that lasts.  
Rack-and-pinion adjustment system for maximum convenience. Interchangeable clamping systems on morse 2 taper.

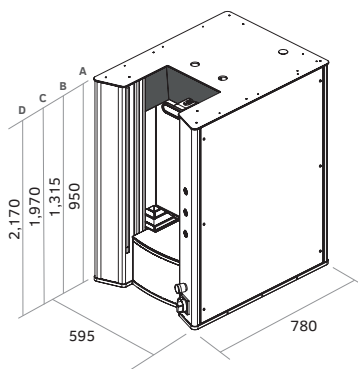


## AIR FLOW

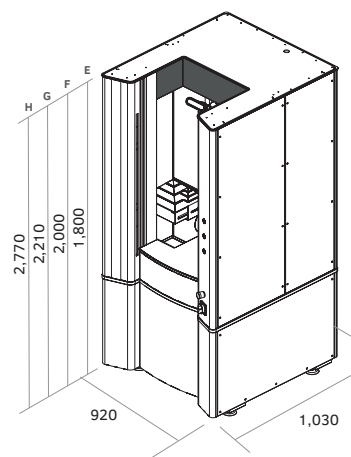
All VICIVISION machines feature the 'Air flow': forced air recirculation cooling system. Unique in the industry, to ensure additional stability of the entire system.



LAYOUT 1



LAYOUT 2



LAYOUT 3



|           | LAYOUT     | Measuring field | Max. loadable sizes | Accuracy <sup>(1)</sup><br>Ø - L                     | Repeatability <sup>(2)</sup><br>Ø - L | Size<br>LxDxH mm | Power supply |           |               |
|-----------|------------|-----------------|---------------------|------------------------------------------------------|---------------------------------------|------------------|--------------|-----------|---------------|
|           |            |                 |                     |                                                      |                                       |                  | Voltage      | Frequency | Nominal power |
| MTL X5    | LAYOUT 1   | 100x16 mm       | 270x90 mm - 3Kg     | $1,5+D[(mm)/100]] \mu m$<br>$4+L[(mm)/100]] \mu m$   | 0.4 $\mu m$ / 3 $\mu m$               | 560x660x860 mm   | 230 V        | 50/60 Hz  | 1.73 A        |
| MTL X10   | LAYOUT 1   | 100x8 mm        | 270x90 mm - 3Kg     |                                                      |                                       | 560x660x860 mm   |              |           |               |
| MTL X360  | LAYOUT 2/A | 300x60 mm       | 300x120 mm - 10Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 595x780x950 mm   | 230 V        | 50/60 Hz  | 1.73 A        |
| 306 PRIMA | LAYOUT 2/A | 300x60 mm       | 300x120 mm - 10Kg   |                                                      |                                       | 595x780x950 mm   |              |           |               |
| 309 PRIMA | LAYOUT 2/A | 300x90 mm       | 300x120 mm - 30Kg   | $1,5+D[(mm)/200]] \mu m$<br>$3,5+L[(mm)/200]] \mu m$ | 0.4 $\mu m$ / 2 $\mu m$               | 595x780x950 mm   | 230 V        | 50/60 Hz  | 1.73 A        |
| 314 PRIMA | LAYOUT 3/E | 300x140 mm      | 300x240 mm - 30Kg   |                                                      |                                       | 920x1030x1800 mm |              |           |               |
| 606 PRIMA | LAYOUT 2/B | 600x60 mm       | 625x120 mm - 30Kg   | $1,5+D[(mm)/200]] \mu m$<br>$3,5+L[(mm)/200]] \mu m$ | 0.4 $\mu m$ / 2 $\mu m$               | 595x780x1315 mm  | 230 V        | 50/60 Hz  | 1.73 A        |
| 609 PRIMA | LAYOUT 2/B | 600x90 mm       | 625x120 mm - 30Kg   |                                                      |                                       | 595x780x1315 mm  |              |           |               |
| 614 PRIMA | LAYOUT 3/F | 600x140 mm      | 625x240 mm - 30Kg   | $1,5+D[(mm)/200]] \mu m$<br>$3,5+L[(mm)/200]] \mu m$ | 0.4 $\mu m$ / 2 $\mu m$               | 920x1030x2000 mm | 230 V        | 50/60 Hz  | 1.73 A        |
| 909 PRIMA | LAYOUT 2/C | 900x90 mm       | 925x120 mm - 30Kg   |                                                      |                                       | 595x780x2000 mm  |              |           |               |
| 914 PRIMA | LAYOUT 3/F | 900x140 mm      | 925x240 mm - 30Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 920x1030x2000 mm | 230 V        | 50/60 Hz  | 1.73 A        |
| M304      | LAYOUT 2/A | 300x40 mm       | 300x120 mm - 10Kg   |                                                      |                                       | 595x780x950 mm   |              |           |               |
| M306      | LAYOUT 2/A | 300x60 mm       | 300x120 mm - 10Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 595x780x950 mm   | 230 V        | 50/60 Hz  | 1.73 A        |
| M309      | LAYOUT 2/A | 300x90 mm       | 300x120 mm - 30Kg   |                                                      |                                       | 595x780x950 mm   |              |           |               |
| M314      | LAYOUT 3/E | 300x140 mm      | 300x240 mm - 30Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 920x1030x1800 mm | 230 V        | 50/60 Hz  | 1.73 A        |
| M318      | LAYOUT 3/E | 300x180 mm      | 300x240 mm - 30Kg   |                                                      |                                       | 920x1030x1800 mm |              |           |               |
| M604      | LAYOUT 2/B | 600x40 mm       | 625x120 mm - 30Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 595x780x1315 mm  | 230 V        | 50/60 Hz  | 1.73 A        |
| M606      | LAYOUT 2/B | 600x60 mm       | 625x120 mm - 30Kg   |                                                      |                                       | 595x780x1315 mm  |              |           |               |
| M609      | LAYOUT 2/B | 600x90 mm       | 625x120 mm - 30Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 595x780x1315 mm  | 230 V        | 50/60 Hz  | 1.73 A        |
| M614      | LAYOUT 3/F | 600x140 mm      | 625x240 mm - 30Kg   |                                                      |                                       | 920x1030x2000 mm |              |           |               |
| M618      | LAYOUT 3/F | 600x180 mm      | 625x240 mm - 30Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 920x1030x2000 mm | 230 V        | 50/60 Hz  | 1.73 A        |
| M906      | LAYOUT 2/C | 900x60 mm       | 925x120 mm - 30Kg   |                                                      |                                       | 595x780x2000 mm  |              |           |               |
| M909      | LAYOUT 2/C | 900x90 mm       | 925x120 mm - 30Kg   | $1+D[(mm)/200]] \mu m$<br>$3+L[(mm)/200]] \mu m$     | 0.3 $\mu m$ / 1.2 $\mu m$             | 595x780x2000 mm  | 230 V        | 50/60 Hz  | 1.73 A        |
| M914      | LAYOUT 3/F | 900x140 mm      | 925x240 mm - 60Kg   |                                                      |                                       | 920x1030x2000 mm |              |           |               |
| M918      | LAYOUT 3/F | 900x180 mm      | 925x240 mm - 60Kg   | $1,5+D[(mm)/100]] \mu m$<br>$4+L[(mm)/100]] \mu m$   | 0.4 $\mu m$ / 3 $\mu m$               | 920x1030x2000 mm | 230 V        | 50/60 Hz  | 1.73 A        |
| M1209     | LAYOUT 2/D | 1250x90 mm      | 1300x120 mm - 30Kg  |                                                      |                                       | 595x780x2000 mm  |              |           |               |
| M1214     | LAYOUT 3/G | 1250x140 mm     | 1300x240 mm - 60Kg  | $1,5+D[(mm)/100]] \mu m$<br>$4+L[(mm)/100]] \mu m$   | 0.4 $\mu m$ / 3 $\mu m$               | 920x1030x2205 mm | 230 V        | 50/60 Hz  | 1.73 A        |
| M1218     | LAYOUT 3/G | 1250x180 mm     | 1300x240 mm - 60Kg  |                                                      |                                       | 920x1030x2205 mm |              |           |               |
| M2018     | LAYOUT 3/H | 2000x180 mm     | 2000x240 mm - 60Kg  |                                                      |                                       | 920x1030x2770 mm |              |           |               |

(1) Maximum permissible error according to EN ISO 10360-7 specifically applied to shafts optical measuring machines, relating to artifacts certified by EN ISO 17025 accredited laboratory (plus uncertainty of calibration masters U(d): 0.5  $\mu m$  and U(l): 1  $\mu m$ ), steel made, ground surfaces and standard shape. Environment condition 20+/- 0.5°C, max gradient 0.5 K/h. Uncertainty estimated considering a coverage range K=2 corresponding to a confidence level of about 95%.

(2) Repeatability calculated over 10 repetitions on ground part surfaces



**Vici & C S.p.A.**

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metri<sup>o</sup>s

MEASURING MACHINES

# WHAT DO YOU EXPECT FROM YOUR NEXT MEASURING MACHINE?

- Metrios
- Metrios Cross
- Metrios HD
- Metrios HD Cross
- Metrios 332



intuitive

# METRIOS

The natural evolution  
of the profile projector

Do you work with profile projectors?  
Does employees' training influence your measuring  
results? Metrios is the digital and automatic  
alternative to the old profile projector.  
A cost-effective solution for all workshops.  
Easy to start, automatic and repeatable:  
the shortest step to digitizing your company.

TECH INFO

- 95x65 mm
- The power of optical measurement  
combined with the ease of a tablet.  
An industrial product that replaces  
the profile projector.



fast

# METRIOS CROSS

Measure dozens of parts  
in a matter of seconds

Does dimensional inspection take too long?  
**Choose Metrios Cross, the measuring system  
designed for the most diverse applications.**  
Suitable for both multi-parts and larger individual  
components. You can measure one part in seconds,  
or check several parts in a single cycle. Quality  
is increasingly important. Metrios Cross is the industrial  
solution able to cut measurement time and costs.



TECH INFO

- 200x265 mm
- Place multiple parts  
on the stage and press start.
- Ideal for multi-part and  
medium to large components.





stable

# METRIOS HD

**Optimised for micromechanics**

Watchmaking, dental implants and precision mechanics. Choose an optical measuring machine with the highest resolution. We designed Metrios HD with the smallest elements in mind. A measuring field of 23x23 mm where you can place the part and measure it instantly, without any movement that may displace it.

**TECH INFO**

- 23X23 mm
- Designed for micro-components.
- Eliminate human error even when measuring the smallest details.

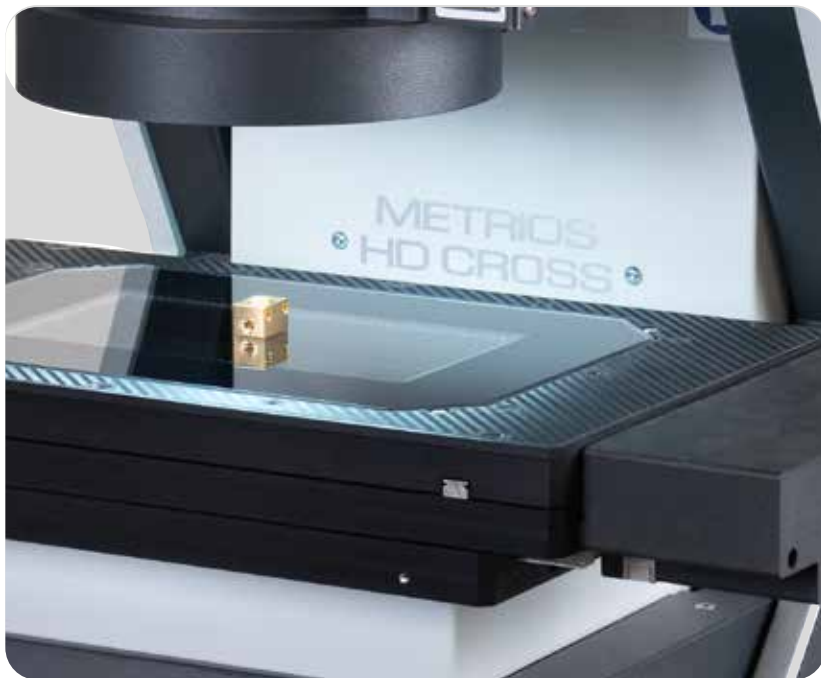


complete

# METRIOS HD CROSS

**A large measuring area where even the smallest details can be detected**

Small components, difficult to handle? Large components with barely visible details? How often are the smallest details the key for a job order? Metrios HD Cross makes checking these components quick, fast and cost effective. Its 200x100 mm working area allows dozens or hundreds of elements to be placed freely. There is no need to orient, block or reference them. The Snake function of the Metrios HD Cross scans the entire stage, detecting even the smallest elements. Advanced part search functions allow measurements to be referred with extreme precision. The ability to measure in X-Y-Z allows the operator to perform a complete inspection in a single cycle, without the need of moving the parts. The smaller and more difficult they are to handle, the more Metrios HD Cross expresses its advantage!



**TECH INFO**

- 200x100 mm with Z axis
- From micro-mechanics to the largest components. Perfect for multi-part measuring.



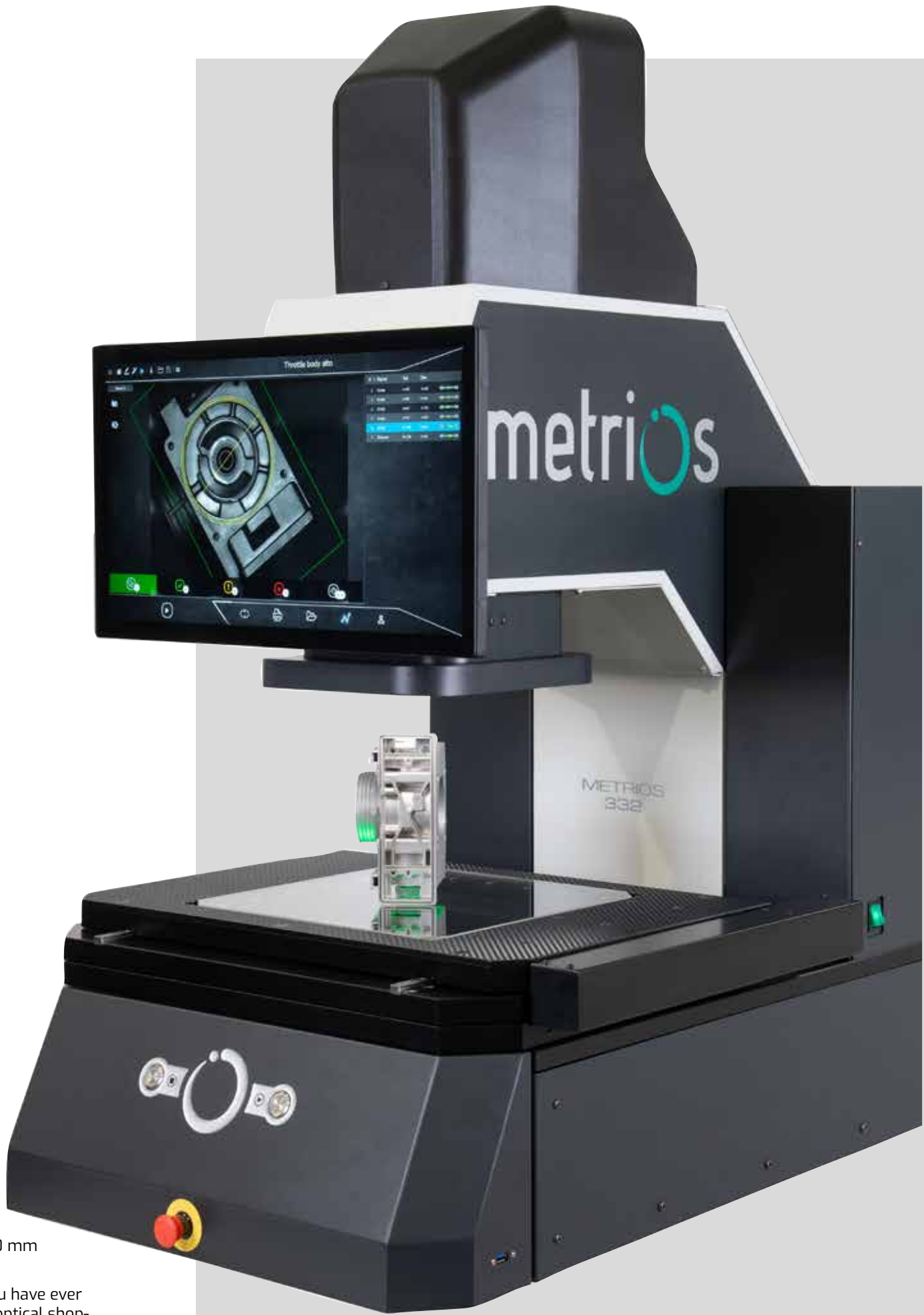
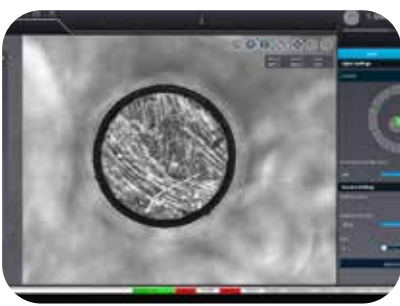
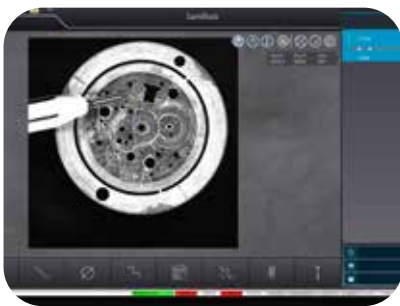


all-in-one

# METRIOS 332

Everything you have ever wanted in an optical shop-floor measuring machine

Modern vision measurement systems are fast and easy to use. Multi-sensor systems offer additional capabilities, but can become complex to program and operate. Metrios 332 offers the best of both worlds, combining speed and ease of use with precision and broad capabilities, in a single shop-floor instrument. A 300x300 mm X-Y measuring range, combined with a generous 200 mm part passage. Up to 25 kg on the stage. A wide-field sensor detects the parts on the stage and measures them at maximum speed. An ultra-high magnification sensor detects points in X-Y-Z even on the smallest details. The new, even more comprehensive lighting system shields from environment light and guarantees results on even the most difficult surfaces.



TECH INFO

- 300x300x200 mm with Z-axis
- Everything you have ever wanted in an optical shop-floor measuring machine.

# WHAT MAKES IT UNIQUE

- Fast
- Easy
- Stable



FAST

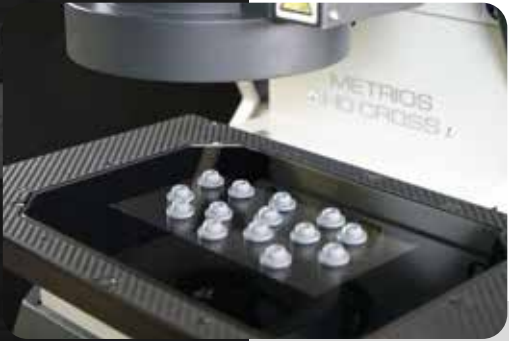
Optimize time, maximize savings

Fast right from the start. Save time and say goodbye to expensive and bulky fixtures

Conventional measuring instruments require the part to be oriented, referenced and clamped. This takes time with each loading and unloading. If I were to measure several components at the same time on a conventional machine, I would have to use expensive fixtures. With Metrios this is a thing of the past. Just place the components freely on the stage. Metrios finds, aligns and measures them automatically. **Place multiple parts on the glass, say goodbye to expensive fixtures!** There is no limit to the number of parts loaded. Where other imaging measurement systems stop, Metrios is able to acquire the entire area with the highest resolution and analyse countless of even the smallest parts. There is no need to count parts. Just place a handful of them onto the stage. Metrios finds, counts, and measures them: if the result is in tolerance, all parts are ready to be delivered. Ideal for very small components that are difficult to handle and count. The maximum number of parts that can be loaded depends only on your component.

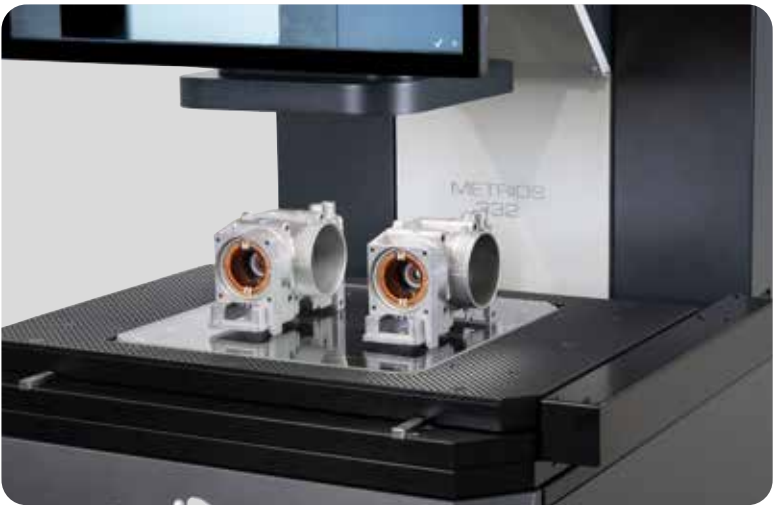


| #  | Name                | Val    | Dev        |  |
|----|---------------------|--------|------------|--|
| 7  | Ø 34.2              | 34.177 | -0.023     |  |
| 8  | Ø 23                | 23.019 | 0.019      |  |
| 9  | Ø 19                | 19.306 | 0.306      |  |
| 23 | Z distance          | 8.256  | 0.001      |  |
| 25 | True Position       | 0.082  | 0.082      |  |
| 27 | Profile Comparis... | 0.850  | -0.262     |  |
| 16 | Over Pin Diameter   | 38.192 | 0.192      |  |
| 17 | Of Teeth            | 48.000 | 0.000      |  |
| 18 | Diameter            | 37.289 | -0.011     |  |
| 19 |                     | 7.718  | -0.032     |  |
| 20 |                     | 7.553  | 0.003      |  |
| 21 |                     | 7.309  | 0.059      |  |
| 22 |                     |        | -0.024     |  |
| 24 |                     |        | 0.038      |  |
| 26 |                     |        | -0.005     |  |
| 28 |                     |        | 0.005      |  |
| 29 |                     |        | 0.008      |  |
| 30 |                     | 3' 52" | 0° 43' 52" |  |



Do you waste time searching for the right program?

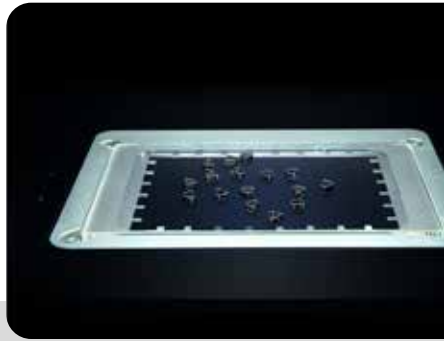
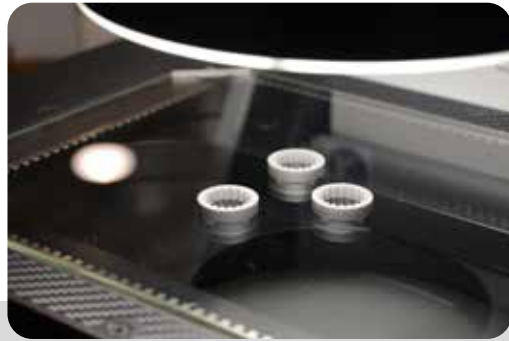
Let Metrios do it for you. Metrios can recognize which part you have placed on the stage and load the corresponding program. Useful when controlling several systems realizing different types of production. It avoids the operator having to think about loading the correct program each time.



As an alternative to auto-recognition, a barcode reader (linear or data-matrix) can be used if company procedure does not allow it.

Repetitive measurement? Discover the Auto-play function and measure in bursts!

When measuring many components, one after the other, in fast cycles, every action counts. Load the new batch and Metrios, thanks to the Auto-play function, automatically executes the program as soon as the component is placed on the stage.





## Features

# EASY

### See what you measure, measure what you see

#### Single part: measure without programming!

Want to measure quickly and easily?  
With Metrios you can place the part on the stage, take a picture and use gestures to get the dimensions you want. Powerful as a measuring machine, easy as a smartphone.

#### Metrology supporting production

Prepare a measurement routine to validate your production process. Use the actual image of the part or a DXF file and choose from numerous macros simplifying your steps. Metrios is equipped with a large multi-touch display that allows you to zoom in on the image and carefully select the profiles to be measured.

#### Program from the office without tying up the system

Metrios allows remote programming. The off-line programming software is free of charge. While the system is being used in production, the quality department can prepare programs from the comfort of their office, or from their home.

#### Cut training costs

Do you have new operators to train? Metrios provides the Training Arena where you can find up-to-date tutorials and tips on metrology.

#### We take care of everything

Do you produce highly complex components or simply want some help in the first steps of production? Our experts can prepare your measurement programs.





# STABLE

## Objective measurements not only in the metrology lab

### Make dimensional inspection automatic and objective

Metrios is an automatic measuring machine. With the click of a button, the system inspects the part. This eliminates human error and guarantees reliable results for production set-up, in-bound acceptance or final quality control.

### Step-master on board

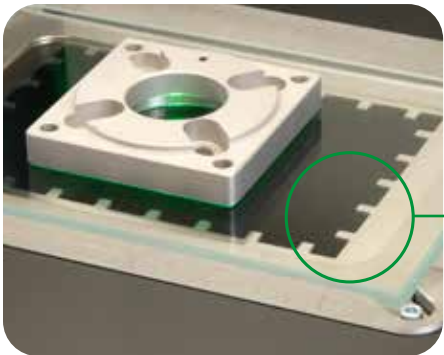
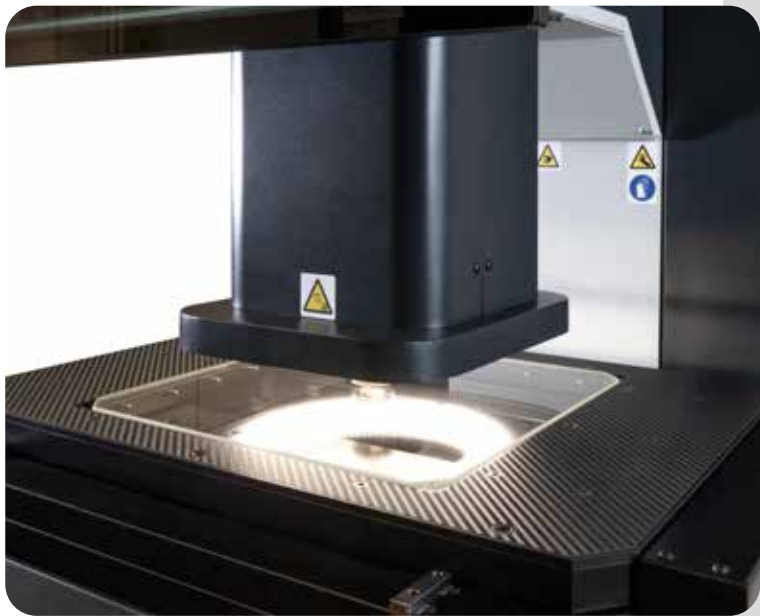
On the shop floor, temperature conditions can change. Metrios is equipped with an integrated step-master, unique in its class, and 3 temperature sensors to ensure optimal instrument operation at all times.

### Not affected by environmental light

Conventional optical measuring machines are affected by variations in the light of the room where they are located. The sun coming in through a window, the frequency of a neon light, the switching on of the light at dusk. This often affects the measurement of elements on the surface. Metrios guarantees stability through its unique lighting system with vertical movement that shields the part during measurement.

### Eagle Eye

The Eagle Eye function always brings the desired detail to the centre of the optics, increasing repeatability. The illumination system of Metrios combined with Eagle Eye creates the same lighting conditions as previous measurements regardless of how the part is subsequently positioned.

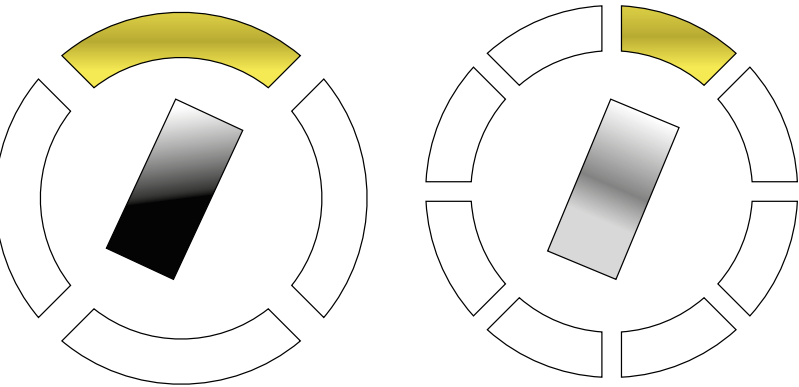


Step master



### A detail that gives stability

Conventional imaging measuring systems have a four-sector illumination. This constrains the positioning of the inspected part between 0 and 90 degrees. What happens if I position the part freely in a different position? Metrios has an 8-sector system that follows the orientation of the workpiece for optimal illumination and improved measurement repeatability.





# THE MEASURING MACHINE TAILORED FOR YOUR PROCESS

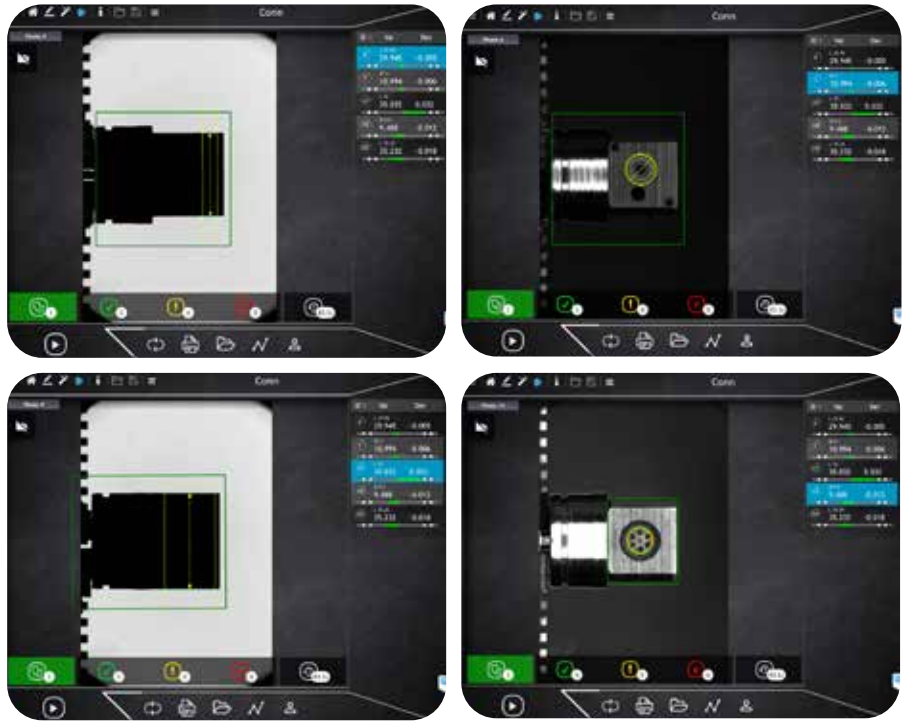
- Re-Light
- Exclusive features
- Applications



# MEASURE EACH SIDE OF THE PART IN A SINGLE CYCLE

## Automatic rotation of the part on each face

- Reduce cycle time
- Trust on a reliable cycle time
- Get all results in a single report



## Two solutions in one: flat and cylindrical parts on the same system

### ORIENT CYLINDRICAL PARTS AUTOMATICALLY

- Diameters, bevels, keys. Metrios automatically locates the reference element that orients the measurement
- No human positioning errors
- Save time
- Measure all parts in the same way
- Can be removed for use of the whole stage

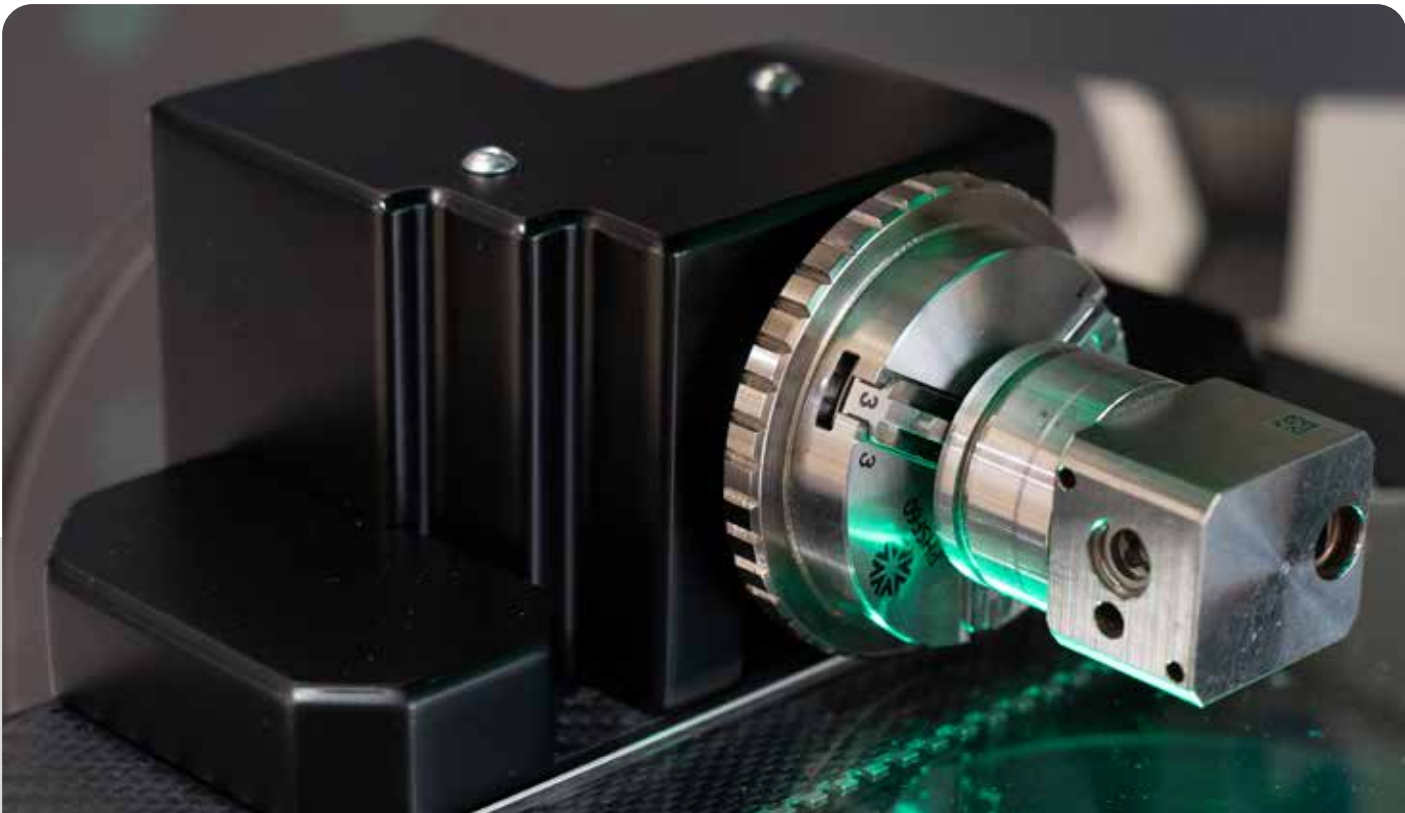


## Guided part orientation

Eliminate human error related to part positioning once and for all. Let Metrios do it.

## Are you really sure the part is level?

Take advantage of RE-LIGHT to orient parts that cannot be laid flat on the glass: positioning repeatability assured.





# EXCLUSIVE NEW FEATURES

Manual measurements: when automation is not enough

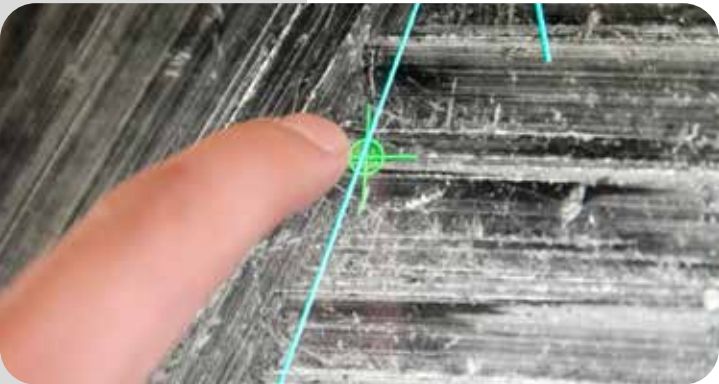
Some conditions, such as undefined edges or transitions, high process variability or reflective surfaces, can affect the use of automated measurement systems. This is why Metrios offers two features unique in its class: the ability to work on the actual image of the part and a large 22-inch touch screen. This allows operators to manually select the points to be used in the measurement cycle, solving complex situations that cannot be automated.

OCR function: read and verify text content

Recognize and detect text written on the component. Whether it is a serial number or a simple label, Metrios can read it, verify it and transcribe it into the measurement report. Useful for maximum traceability or quality verification.

True position and MCC

Check your components according to GD&T standards. Metrios now offers True Position measurement with maximum and minimum material functions to dynamically adjust tolerances.



Manual measurements



OCR function



True position



Gear measurement

A single instrument to measure all gear wheel characteristics:

- Inner diameter
- Outer diameter
- Number of teeth
- Pitch
- Over pin diameter
- Span/Wildhaber quote

Metrios can measure simple spur gears using backlight (episcopic) illumination. The machine can also check multi-level gears, which otherwise could not be measured using backlight, but would require surface illumination. Metrios features an advanced macro function that can be instructed by the operator to follow even the most difficult gear profiles, unique in its class.

DXF export

With Metrios, it is easy to create a measurement program directly on the image. However, if you do not have the physical part, you can use a DXF file to create the measurement part-program. In addition to the offline programming function, Metrios can create and export DXF files of the part. Ideal for reverse-engineering.

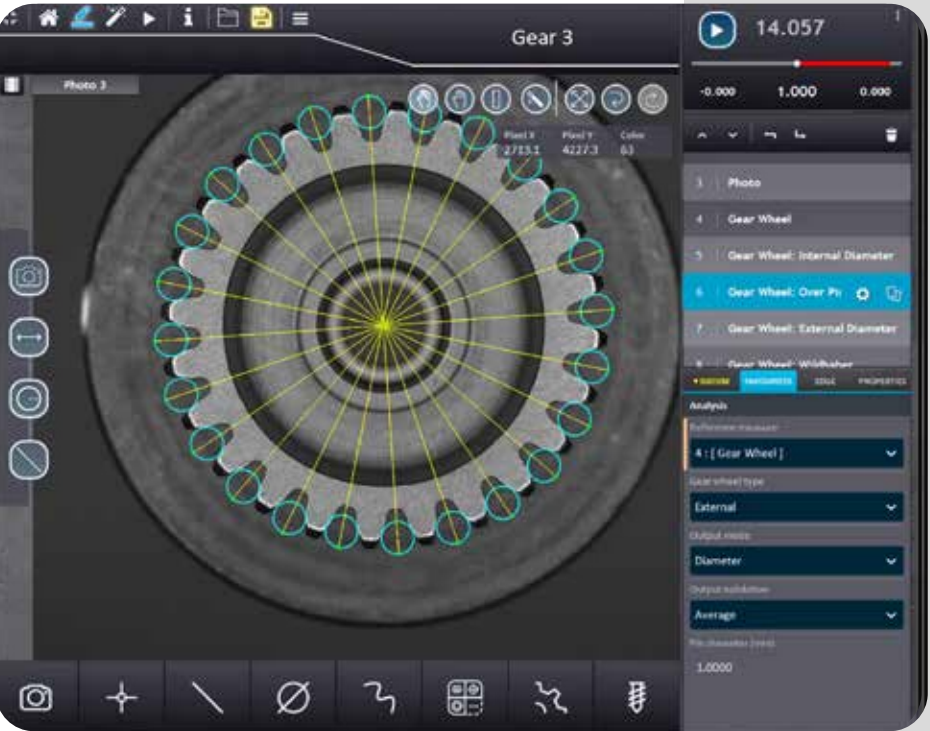
Orientation of the measurement datum to even the smallest details

What happens when an average-sized component has a tiny detail to which all dimensions must be referred?  
When one has to search for small details within very large images, traditional measurement systems fail. Metrios has a function that solves this task: the Sub-Part Search. After finding the main component, it focuses on the detail, making the analysis reliable and fast.

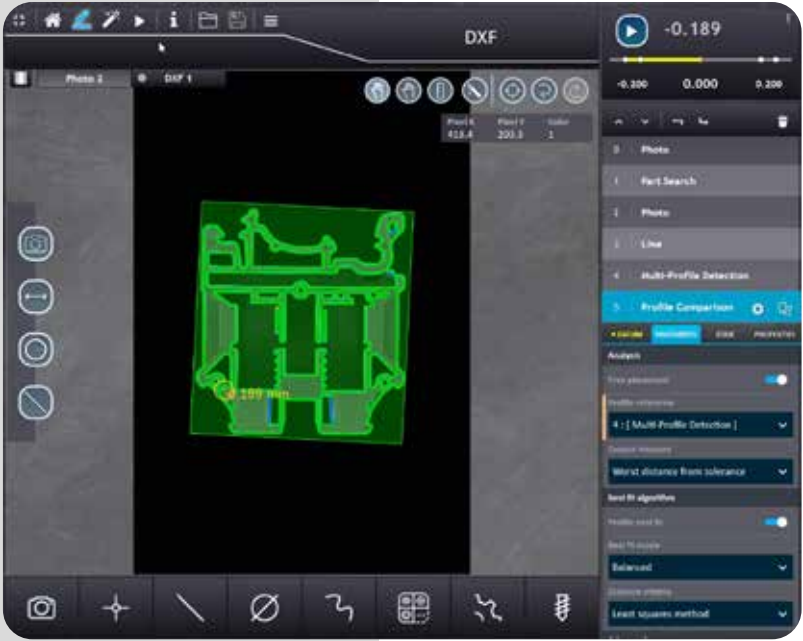
Optimized Edge Detection

Measuring components with backlighting is easy. What to do when you need to measure profiles with reflected illumination?  
Detecting a profile correctly with Metrios is easy. Just position the tool on the profile and click the 'optimise edge detection' button. No need to become an expert in machine parameters, the software will optimize the profile for you. Metrios, unique in its class, displays every single point detected along the profile. Some systems on the market try to detect the profile automatically, on very small screens and without showing the detected points. Metrios, on the other hand, shows the operator every single point detected, guaranteeing a correct setting. Stop measuring blindly, demand to see the profile you detect!

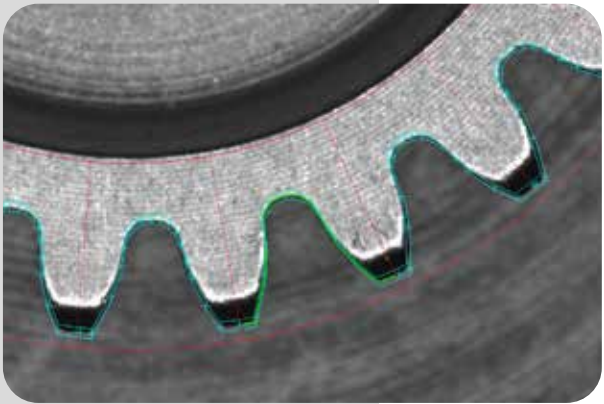
Optimized  
Edge Detection



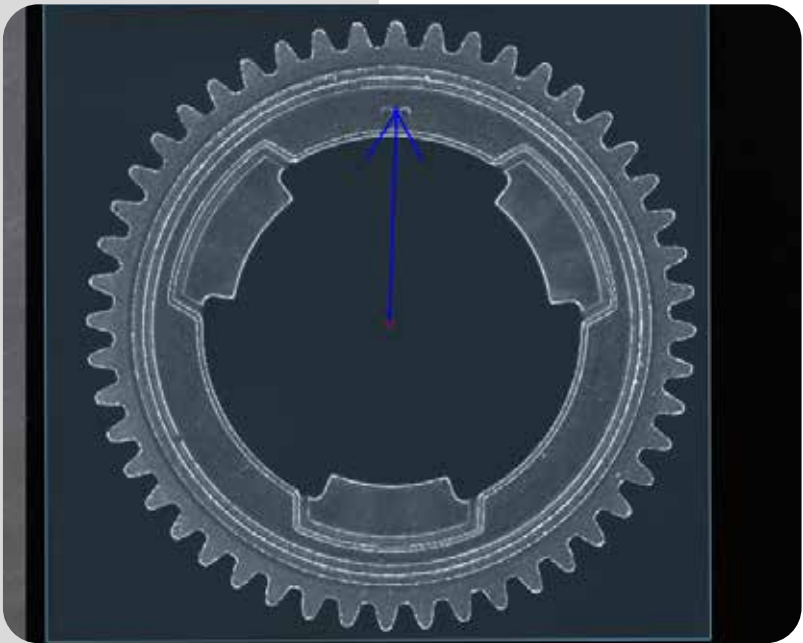
Gear tool



DXF export



Advanced gear



Sub-Part  
Search

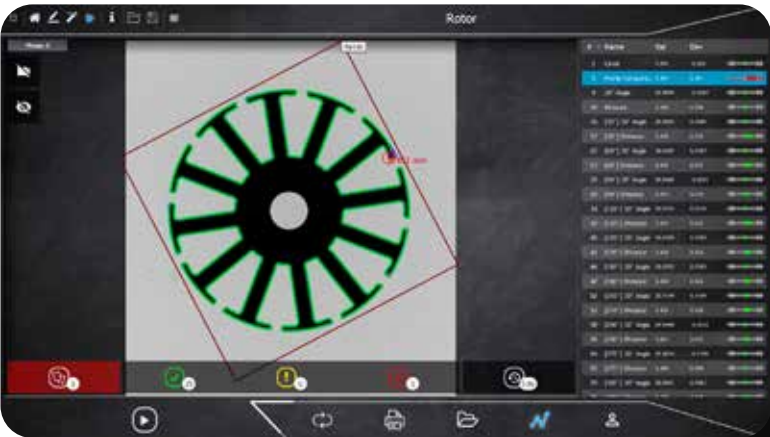


Compare the profile easily

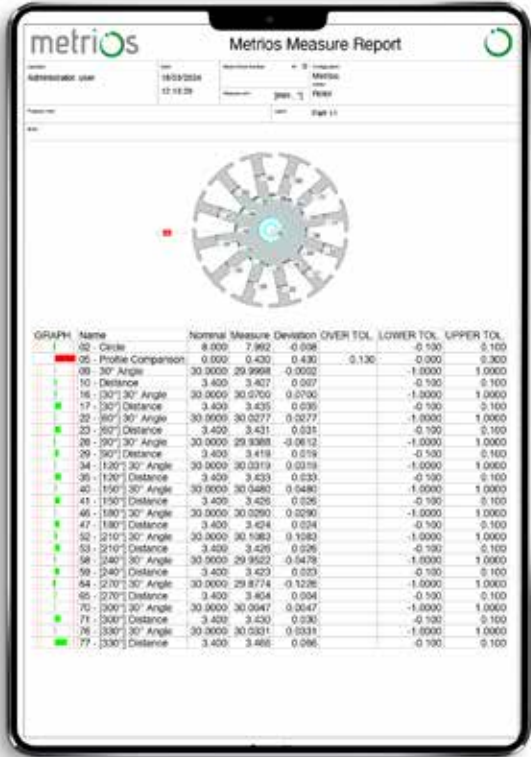
With DXF Comparison you can compare the actual profile with the imported theoretical DXF profile. By identifying points on the real profile, the system is able to check whether the profile is in tolerance or not. The histogram represents the trend of the detected edge, helping the operator to interpret the real trend of the profile. The comparison can be subdivided into different sectors, allowing even more in-depth analysis.

Automatic measurement trend

A graph shows the trend of each individual measurement providing information such as average trend, maximum deviation, average deviation, CP, CPK.



DXF comparison



Instant measurement report

The software allows a complete and customizable measurement report to be printed or exported as a pdf file. The histogram immediately shows whether each individual measurement is in tolerance and verifies the deviation from the nominal value.

Data Collection

Metrios performs data collection automatically and has several export formats (CSV, DFQ). It eliminates human errors, saves time and allows analytical evaluation of production trends.



Automatic measurement trend

# APPLICATIONS

The best product is the one for your needs, that grows with you and never leaves you alone

Custom solutions for specific needs

Every company is unique. Every process has its own specific demands. Metrios has a software development team capable of customizing the system to meet your process needs.

Over 40 specialised centres worldwide; online and on-site support.

We provide daily dedicated support, training, maintenance and calibration with ISO 10360-7 compliant procedure. Through remote support, you can connect directly with specialists from the headquarter. A network of certified subsidiaries and distributors guarantees on-site support.

A product that grows with you

Free software updates and compatibility of measuring programs to the latest models.





Measure, connect, automate

Integration and connectivity are essential in manufacturing. Metrios leverages connectivity by turning data into predictions.

Robot integration

Delegates loading and unloading operations to automation. Install Metrios in-line and take advantage of communication protocols (profi-net or profi-bus) for easy robotic integration.

Not just a measuring machine but a data collection station

Metrios collects data from external instruments via USB. In this way, measurements that cannot be obtained with an optical measuring instrument can be added to the measurement report. For example, weights, roughness, or any other data from external instruments.

Data for statistics or process correction.

Metrios can realize simple statistics or export data for external management systems. The data are available in CSV format or in native Q-DAS format. Metrios can be used to correct the production process, e.g. in machining operations. Through the additional software VV-linx Metrios can calculate tool correction parameters to be supplied to the CMM and make them available on the communication node (profi-bus or profi-net).

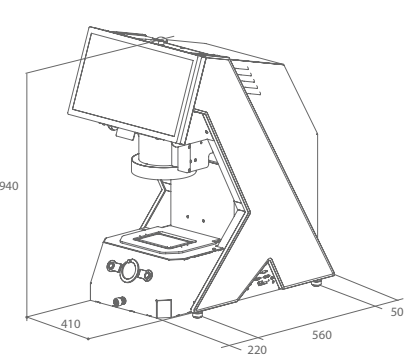


Export data for external management systems

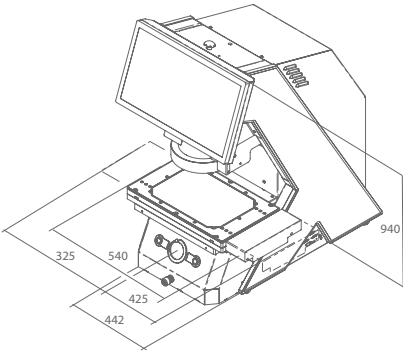
|                                           |                                    | Metrios                                                                                  | Metrios Cross       | Metrios HD            | Metrios HD Cross      | Metrios 332               |                                     |
|-------------------------------------------|------------------------------------|------------------------------------------------------------------------------------------|---------------------|-----------------------|-----------------------|---------------------------|-------------------------------------|
|                                           |                                    |                                                                                          |                     |                       |                       | Main camera               | Ultra HD sensor                     |
| Field of view size                        | Camera field of view               | 95x65 mm                                                                                 | 95x65 mm            | 23x23 mm              | 23x23 mm              | 47x47 mm                  | 3x2 mm                              |
|                                           | Measuring area                     | 95x65 mm                                                                                 | 265x200 mm          | 23x23 mm              | 200x100               | 305x305 mm                | 235x235 mm covered by all sensors   |
| Repeatability (2σ)                        | Inside camera's field of view      | 2 (μm)                                                                                   | 2 (μm)              | 1,5 (μm)              | 1,5 (μm)              | 1 (μm)                    | 0,2 (μm)                            |
|                                           | in the entire stage (X/Y axis)     | 2 (μm)                                                                                   | 3 (μm)              | 1,5 (μm)              | 2,5 (μm)              | 2,5 (μm)                  | 2,5(μm)                             |
| Measurement accuracy (2σ) <sup>(*)1</sup> | Inside camera's field of view      | (5+0,01 L[mm]) (μm)                                                                      | (5+0,01 L[mm]) (μm) | (2,5+0,01 L[mm]) (μm) | (2,5+0,01 L[mm]) (μm) | (2,5+0,01 L[mm]) (μm)     | (2,5+0,01 L[mm]) (μm)               |
|                                           | in the entire stage (X/Y axis)     | (5+0,01 L[mm]) (μm)                                                                      | (7+0,01 L[mm]) (μm) | (2,5+0,01 L[mm]) (μm) | (3,5+0,01 L[mm]) (μm) | (3,5+0,01 L[mm]) (μm)     | (3,5+0,01 L[mm]) (μm)               |
| AF height measurement <sup>(*)2</sup>     | Repeatability                      | not available                                                                            |                     |                       | 3 (μm)                |                           | 2 (μm)                              |
| Environmental resistance                  | Operating ambient temperature      | +10 to 45°C                                                                              |                     |                       |                       |                           |                                     |
|                                           | Back light                         | Telecentric green LED illumination                                                       |                     |                       |                       |                           |                                     |
|                                           | Top light                          | Green LED illumination inside the optic                                                  |                     | White top illuminator |                       | White and green top light | Secondary white and green top light |
|                                           | Surface / incident / grazing light | Motorized adjustable ring light (Light Dome) covering the part from environmental lights |                     |                       |                       |                           |                                     |
|                                           | Nr of rings                        | 2                                                                                        |                     |                       |                       | 1                         |                                     |
|                                           | Sectors for each ring              | 8 independent sectors following part orientation                                         |                     |                       |                       |                           |                                     |
| Illumination system                       |                                    |                                                                                          |                     |                       |                       |                           |                                     |
| Max Loading capacity Z (mm)               |                                    | 100 mm                                                                                   | 80 mm               | 100 mm                | 50 mm                 | 200 mm                    | 200 mm                              |
| Max Loading capacity (Kg) <sup>(*)3</sup> |                                    | 5 kg                                                                                     | 3 kg                | 5 kg                  | 3 kg                  | 20 kg                     |                                     |
| Rotary axis function                      |                                    | Not available                                                                            | Optional            | Not available         | Optional              | Optional                  |                                     |
| Resolution                                | X-Y-Z                              | 0,0001 mm                                                                                |                     |                       |                       |                           |                                     |
| Machine Weight                            |                                    | 110 Kg                                                                                   |                     |                       |                       | 250 kg                    |                                     |

(\*)1 Data in accordance with ISO 10360-7, within room temperature of +20°C ±1°C / (\*)2 Surface material/finishing may affect results.  
(\*)3 Load weight and/or unbalancing of the part may affect results.

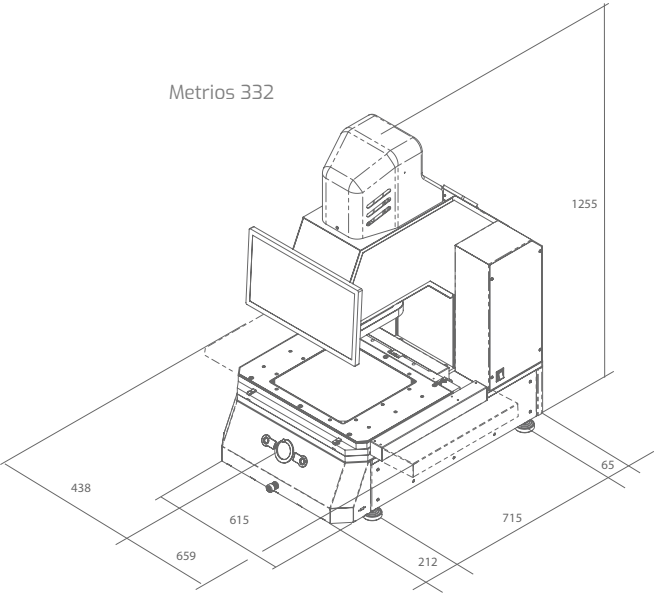
Metrios / Metrios HD



Metrios Cross / Metrios HD Cross



Metrios 332



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