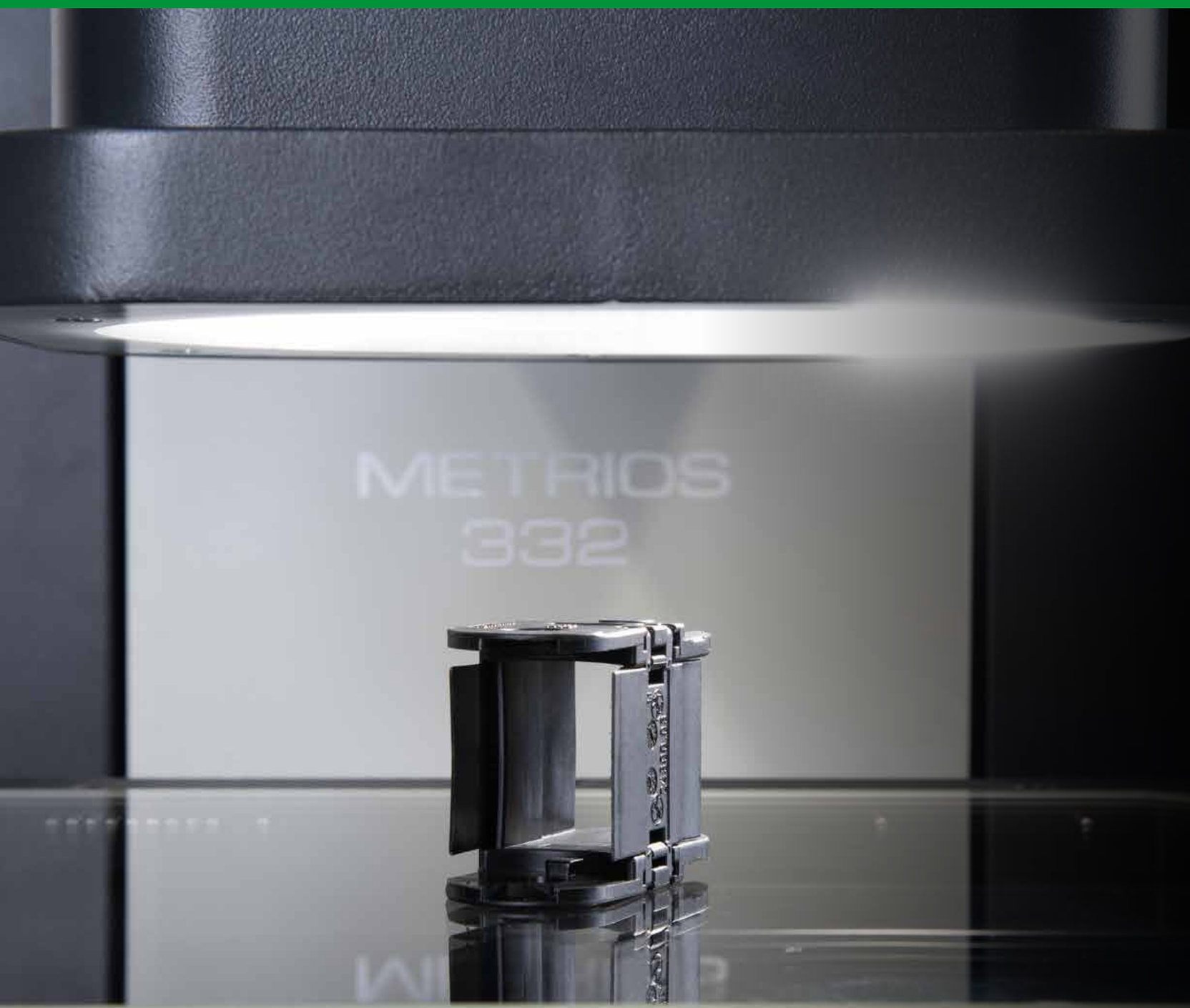
metrios

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

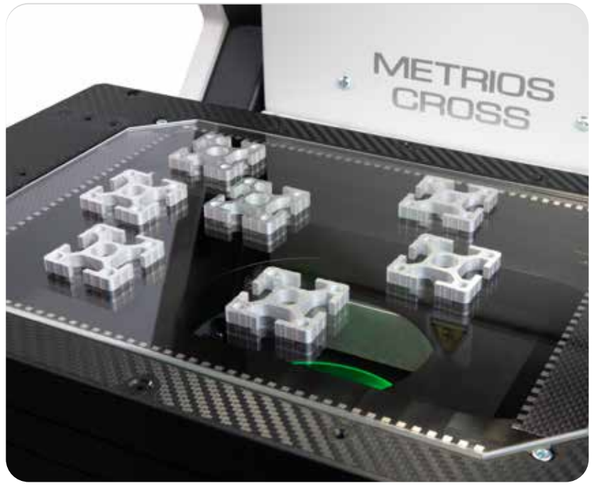
- 95x65 mm
- The power of optical measurement combined with the ease of a tablet. An industrial product that replaces the profile projector.

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

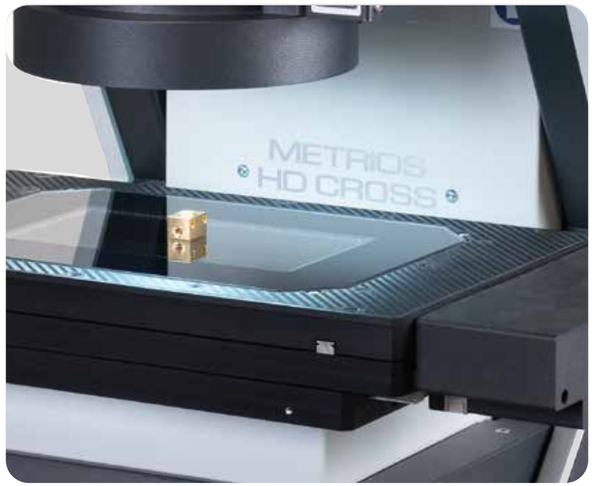
- 23X23 mm
- Designed for micro-components.
- Eliminate human error even when measuring the smallest details.

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

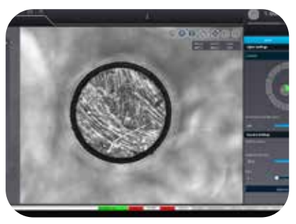
- 200x100 mm with Z axis
- From micro-mechanics to the largest components. Perfect for multi-part measuring.

all-in-one

METRIOS 332

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

Modern vision measurment 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

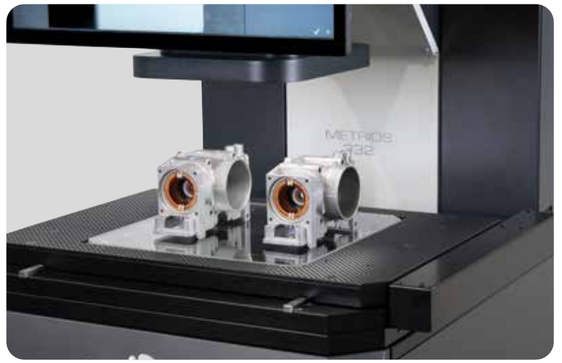
Optimize time, maximize savings

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.

Do you waste time searching for the right program?

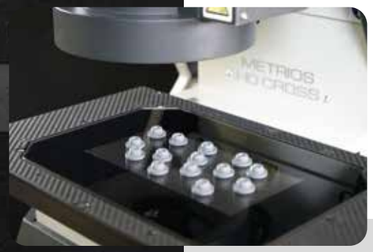
Let Metrios do it for you. Metrios can recognize which part you have placed on the stage and load the corresponding program. Useful when controlling several systems realizing different types of production. It avoids the operator having to think about loading the correct program each time.

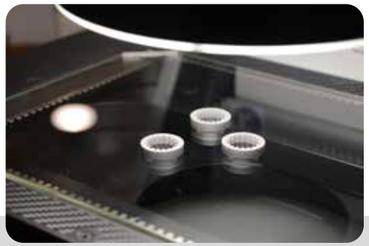


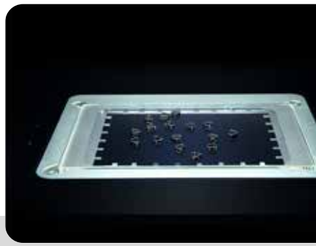
As an alternative to auto-recognition, a barcode reader (linear or data-matrix) can be used if company procedure does not allow it.

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

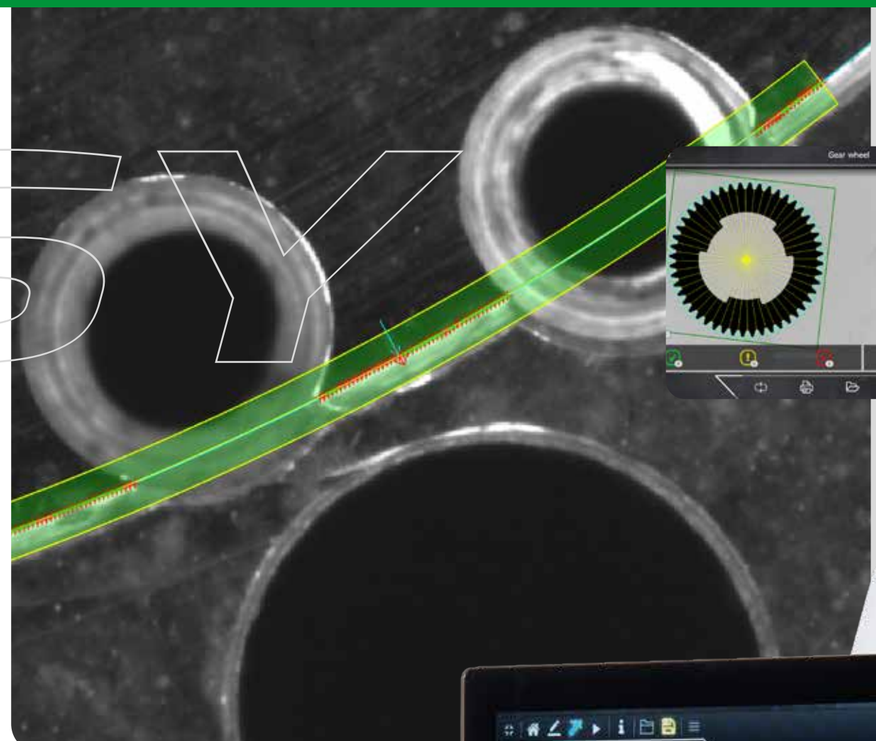
When measuring many components, one after the other, in fast cycles, every action counts. Load the new batch and Metrios, thanks to the Auto-play function, automatically executes the program as soon as the component is placed on the stage.

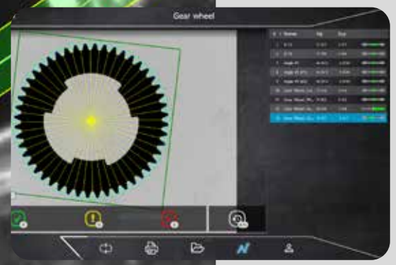


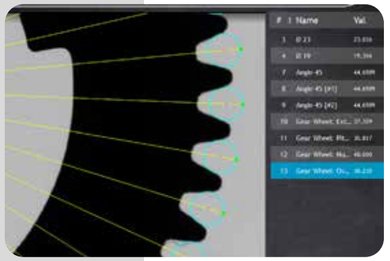




EASY







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

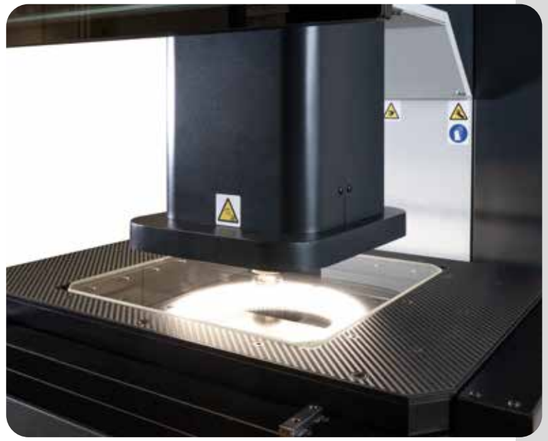
On the shop floor, temperature conditions can change. Metrios is equipped with an integrated step-master, unique in its class, and 3 temperature sensors to ensure optimal instrument operation at all times.

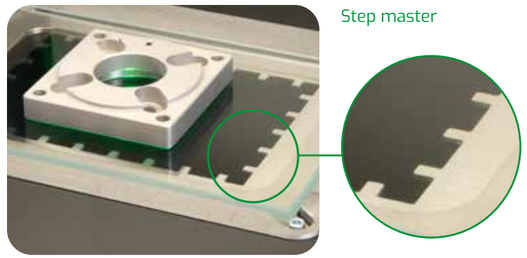
Not affected by environmental light

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.

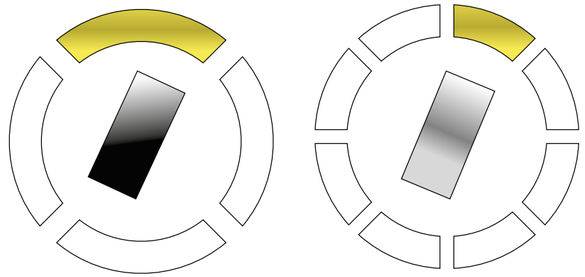


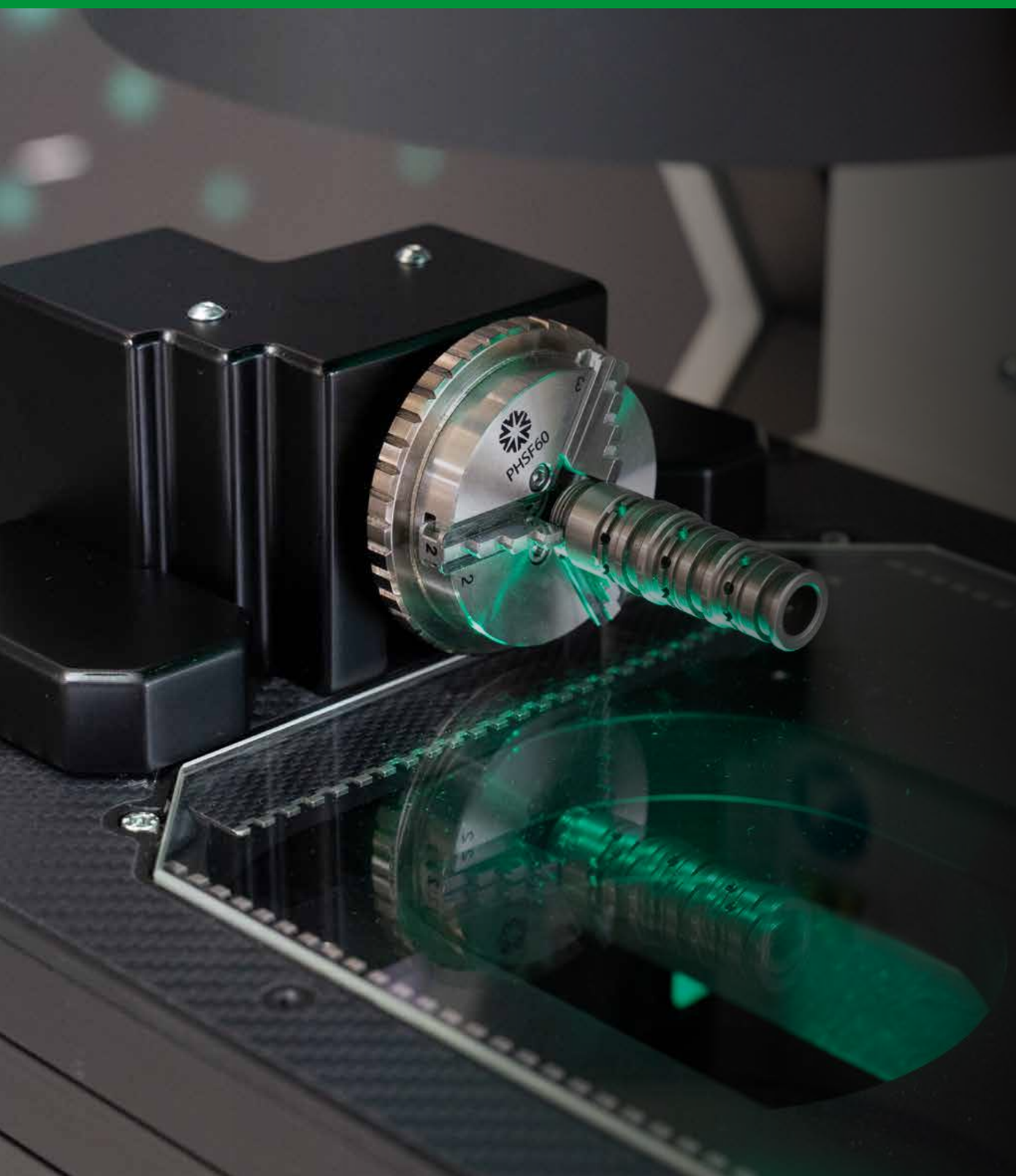


Step master

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.





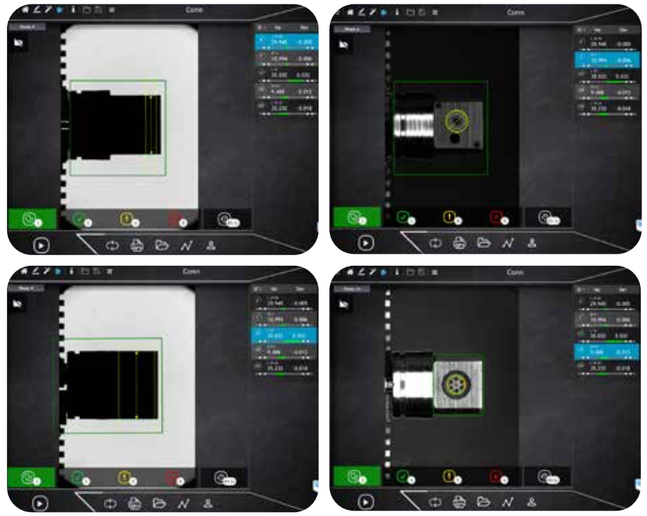
THE MEASURING MACHINE TAILORED FOR YOUR PROCESS

- 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

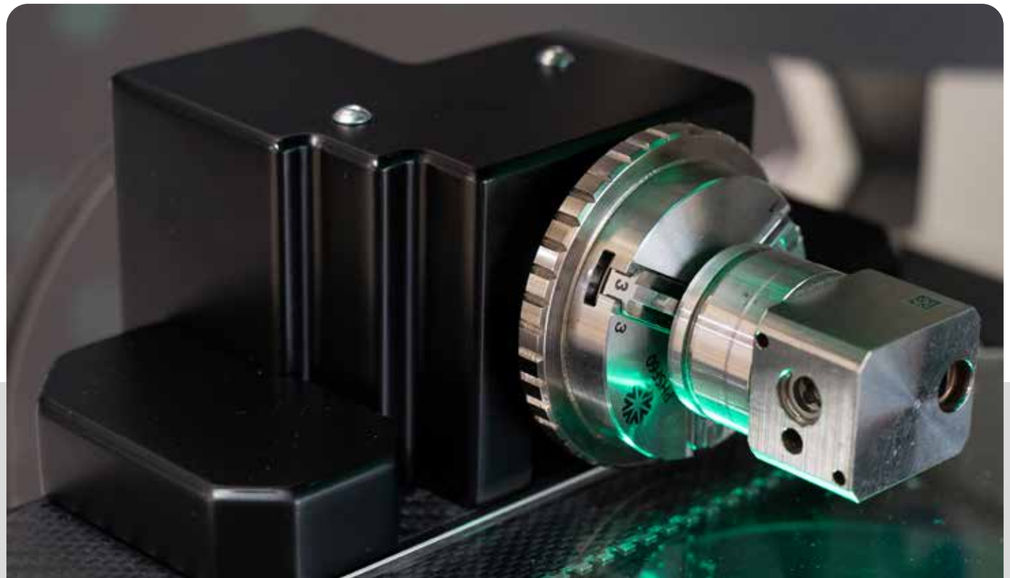


Guided part orientation

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.



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

EXCLUSIVE NEW FEATURES

Manual measurements: when automation is not enough

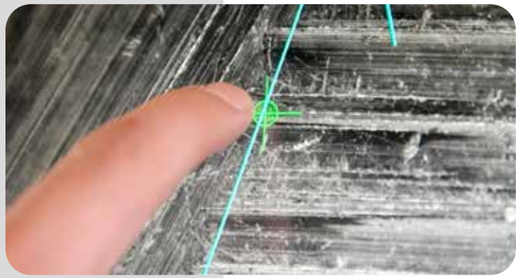
Some conditions, such as undefined edges or transitions, high process variability or reflective surfaces, can affect the use of automated measurement systems. This is why Metrios offers two features unique in its class: the ability to work on the actual image of the part and a large 22-inch touch screen. 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.

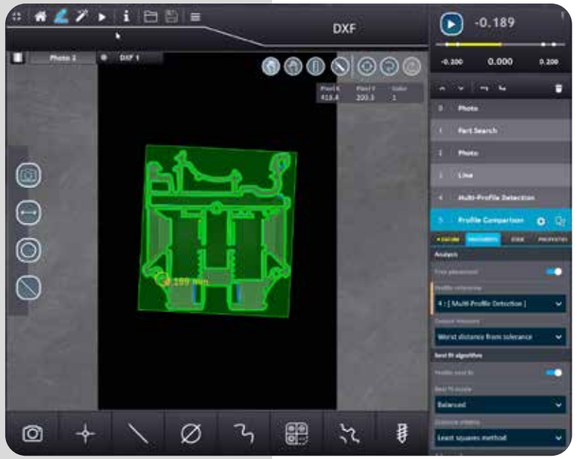
Orientation of the measurement datum to even the smallest details

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.

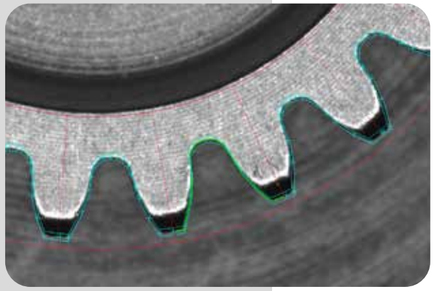
Optimized Edge Detection

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!

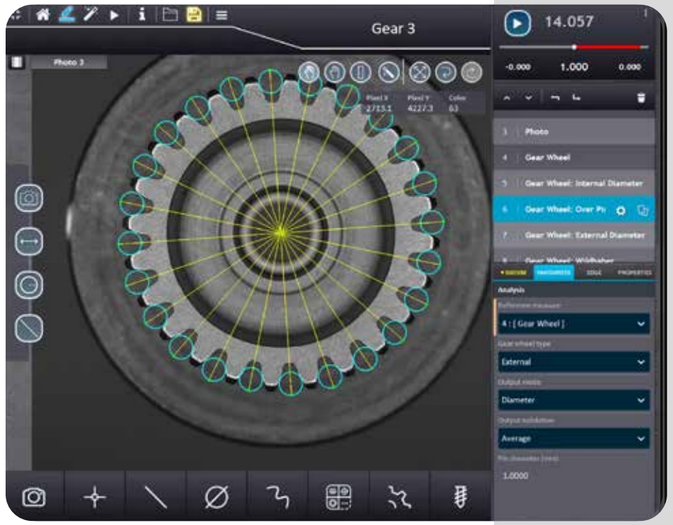
Optimized
Edge Detection



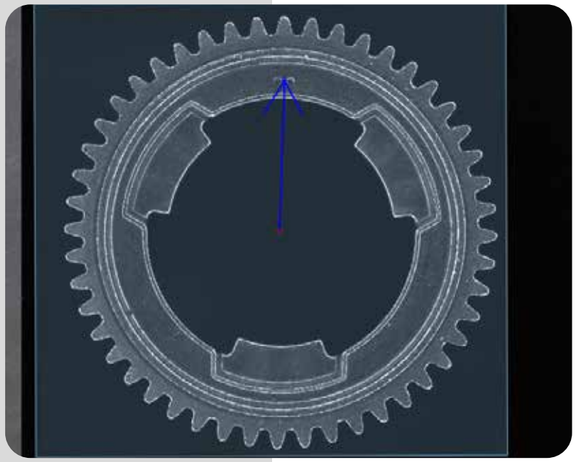
DXF export



Advanced gear



Gear tool



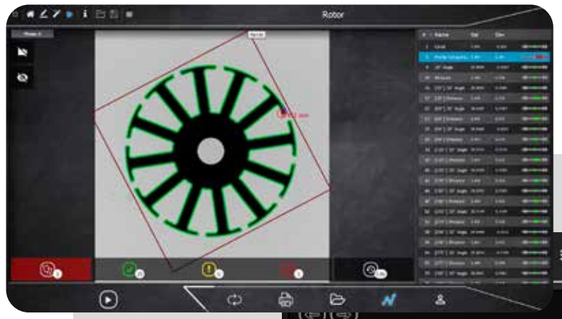
Sub-Part
Search

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.

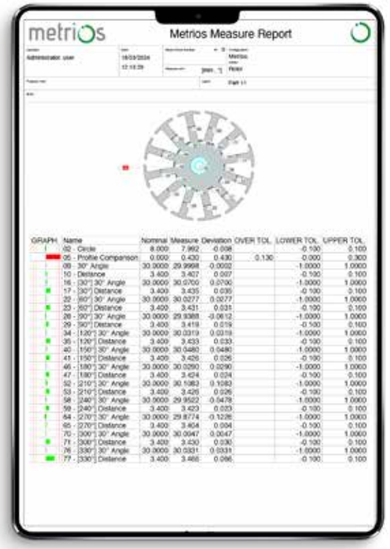


DXF comparison

Automatic measurement trend

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.

APPLICATIONS

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

Custom solutions for specific needs

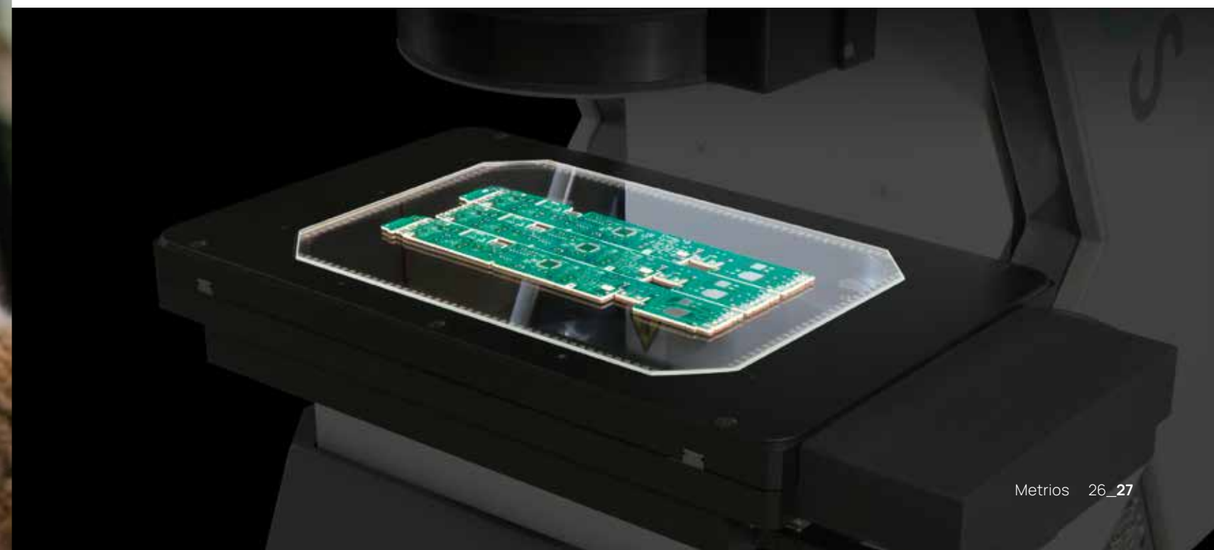
Every company is unique. Every process has its own specific demands. Metrios has a software development team capable of customizing the system to meet your process needs.

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

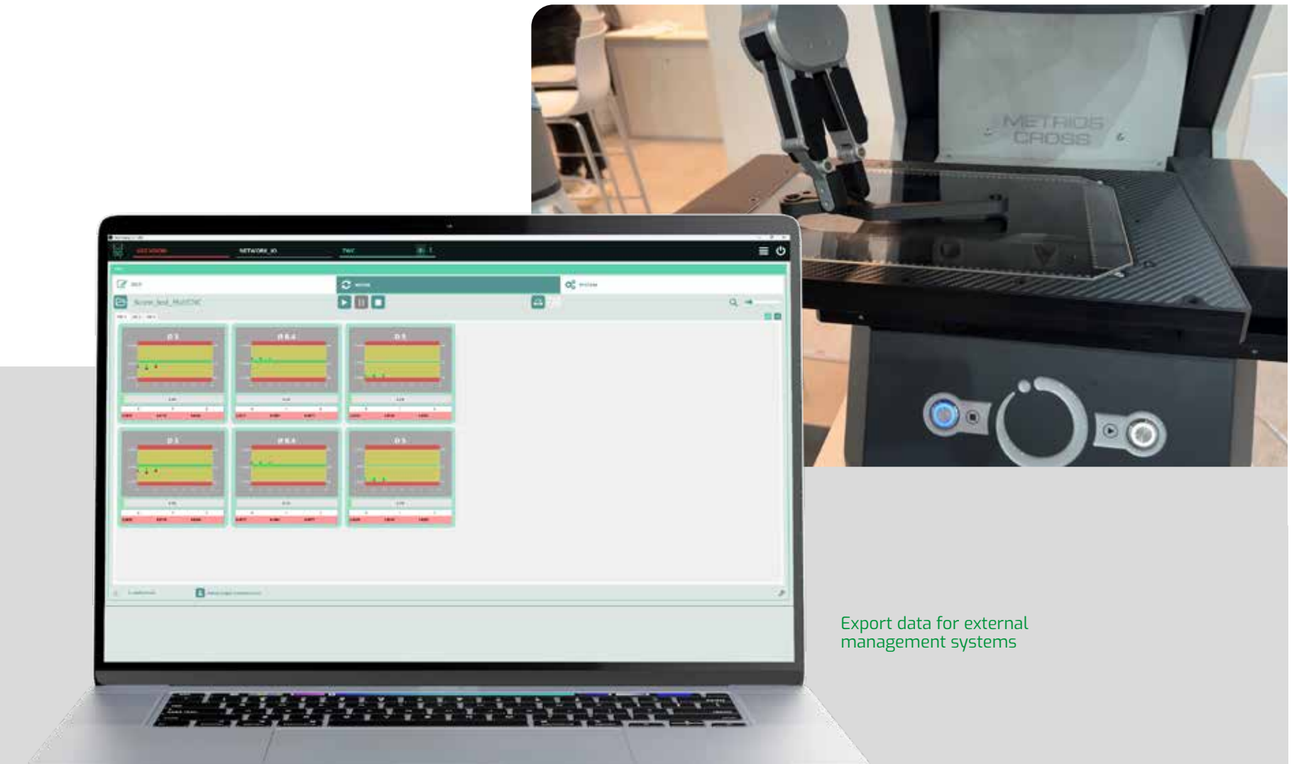
Delegates loading and unloading operations to automation. Install Metrios in-line and take advantage of communication protocols (profi-net or profi-bus) for easy robotic integration.

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).

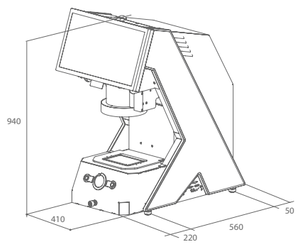


Export data for external management systems

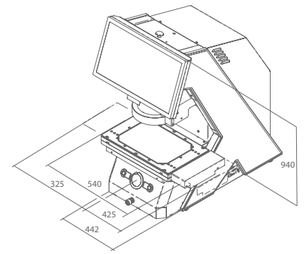
		Metrios	Metrios Cross	Metrios HD	Metrios HD Cross	Metrios 332	
						Main camera	Ultra HD sensor
Field of view size	Camera field of view	95x65 mm	95x65 mm	23x23 mm	23x23 mm	47x47 mm	3x2 mm
	Measuring area	95x65 mm	265x200 mm	23x23 mm	200x100	305x305 mm	235x235 mm covered by all sensors
Repeatability (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) (*1)	Inside camera's field of view	(5+0,01L[mm]) (µm)	(5+0,01L[mm]) (µm)	(2,5+0,01L[mm]) (µm)	(2,5+0,01L[mm]) (µm)	(2,5+0,01L[mm]) (µm)	(2,5+0,01L[mm]) (µm)
	in the entire stage (X/Y axis)	(5+0,01L[mm]) (µm)	(7+0,01L[mm]) (µm)	(2,5+0,01L[mm]) (µm)	(3,5+0,01L[mm]) (µm)	(3,5+0,01L[mm]) (µm)	(3,5+0,01L[mm]) (µm)
AF height measurement (*2)	Repeatability	not available			3 (µm)		2 (µm)
Environmental resistance	Operating ambient temperature	+10 to 45°C					
Illumination system	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					
Max Loading capacity Z (mm)		100 mm	80 mm	100 mm	50 mm	200 mm	200 mm
Max Loading capacity (Kg) (*3)		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.

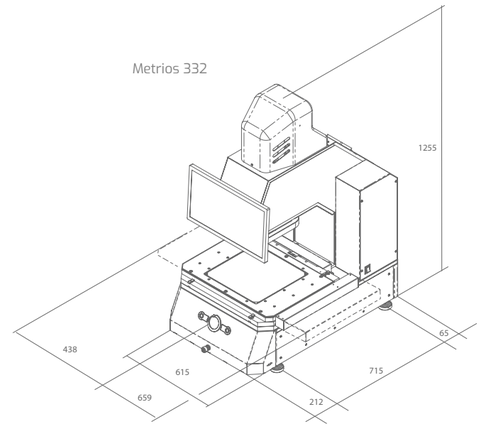
Metrios / Metrios HD



Metrios Cross / Metrios HD Cross



Metrios 332



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