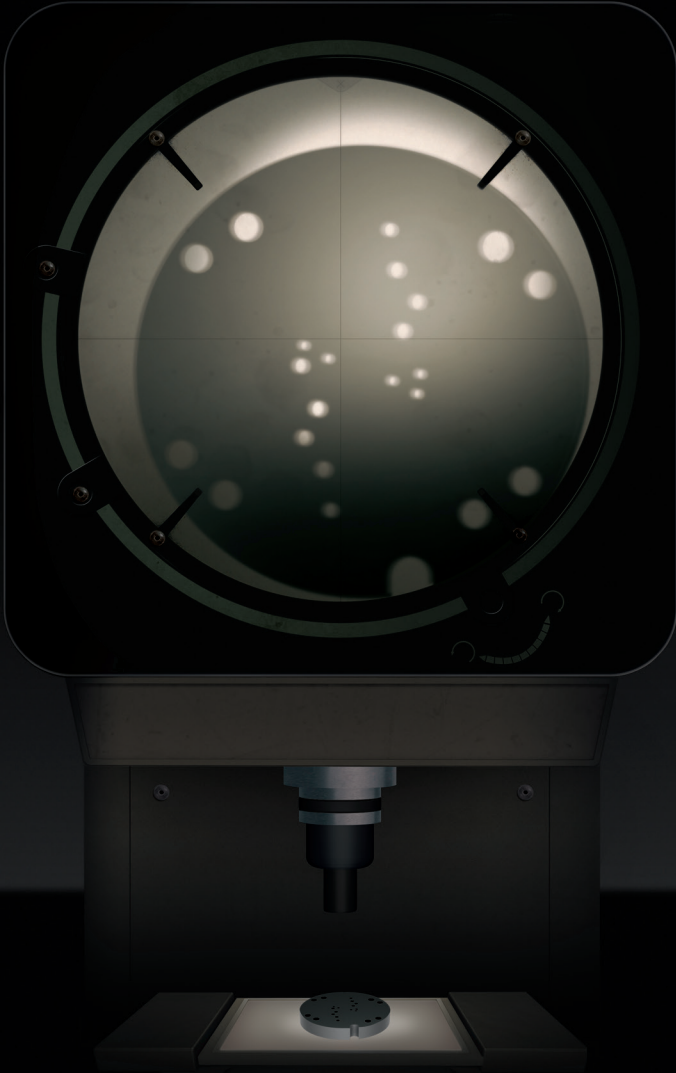


OPTICAL MEASUREMENT ON THE SHOPFLOOR

metriOS

THE PAST. PROFILE PROJECTOR



THE FUTURE. DIGITAL OPTICAL MEASUREMENT



PRODUCTION METHODS HAVE CHANGED
CHANGE YOUR WAY OF MEASURING

metrios

INDUSTRY 4.0 DIGITAL MEASUREMENT IS ESSENTIAL



Smart, automated, digitalized factories optimizing production processes.

Objective and digital measurements during the process eliminate human error and reduce rejects.

METRIOS is a state of the art, automatic and digital optical measuring machine designed for shopfloor inspection.

It performs accurate and objective quality tests directly in **production**, when parts are **incoming** or during **final inspection** prior to shipment, thus increasing productivity and reducing costs.

SPEED

Takes even complex measurements in a matter of seconds. Distances, radii, diameters, angles, straightness, roundness, as well as elements constructed on virtual lines.

INTUITIVE

A simple, intuitive click provides all the measurements required.

OBJECTIVITY

Consistent results unconditioned by the operator.

TRACEABILITY

Automatic data saving and instant measurement reports.

CUSTOMIZED

In-house software development to meet the users' requirements.

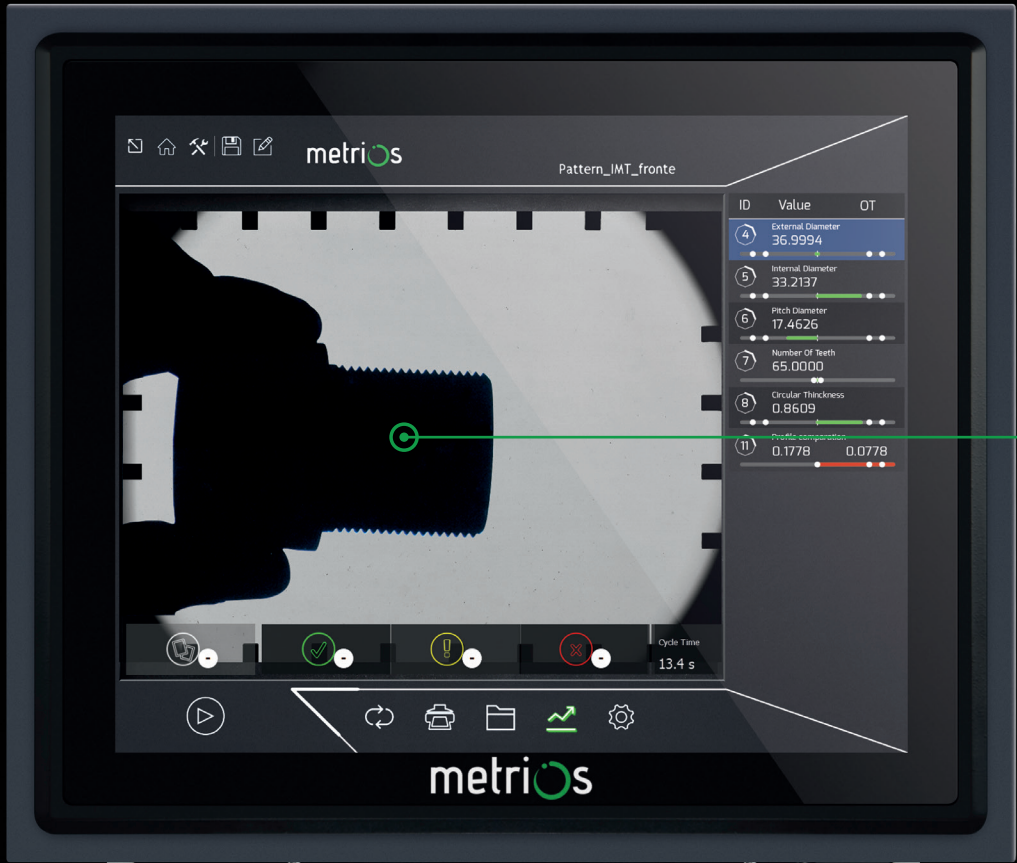
INCREASING PRODUCTIVITY BY REDUCING REJECTS

Metrios collects data about production trends. An easy-to-read panel allows the operator to monitor these trends and adjust parameters in advance to keep production in tolerance. Doing so leads to considerable reductions in machine down time and manufacturing waste, helping to drive up productivity.

IMMEDIATE TOOL PARAMETERS CORRECTION

The in-house Metrios-TWC (optional) software processes collected data and turns it into tool correction values. Directly transferred on a Profibus or Profinet node, this allows the automatic tool parameter adjustment of turning machines and CNC lathes.





3. ACQUIRE



1. PLACE

2. PRESS

AUTOMATIC MEASUREMENT SYSTEM

Place, press and acquire

With an innovative system and a METRIOS in-house software, all the necessary dimensional information is acquired with absolute precision, as simply as possible.

AUTOMATIC POSITION DETECTION

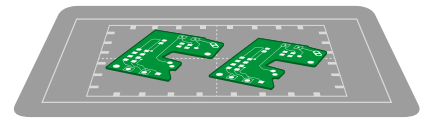
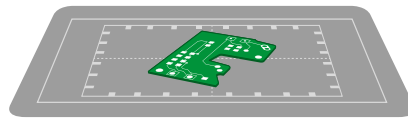
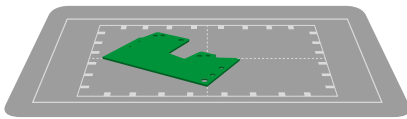
Free hand rapid positioning, no need for accurate placement.

LIMITLESS MEASUREMENTS FOR EACH PIECE

Complex parts with countless details: METRIOS acquires all the measurements in just a few seconds.

MULTIPIECE MEASUREMENTS

METRIOS inspects multiple parts at the same time.



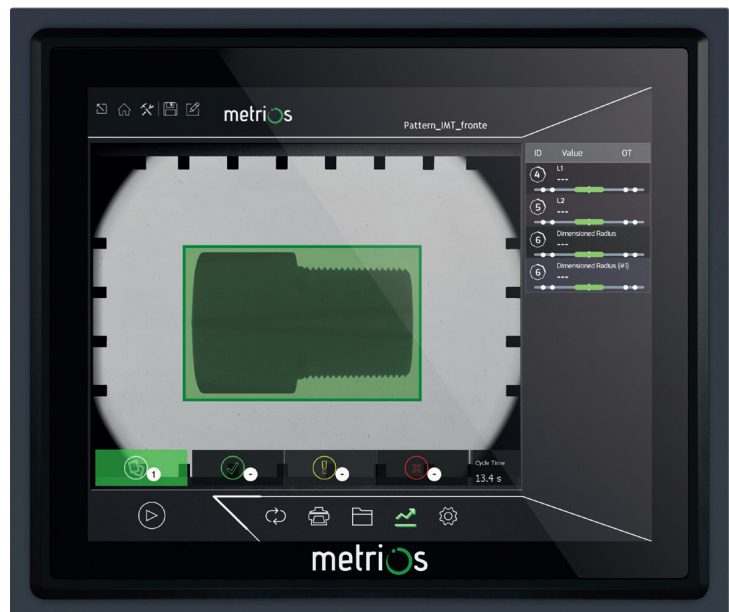
MEASUREMENT SOFTWARE

Highly practical and intuitive, it does not require specialized operators.

The histogram display provides an immediate good/reject result.

The operator sees the live image of the part directly on the screen and has the same practical sensation as when using the profile projector.

The measurements highlighted by the histogram are indicated on the live image of the element. This function provides the operator with immediate control.



Within tolerance

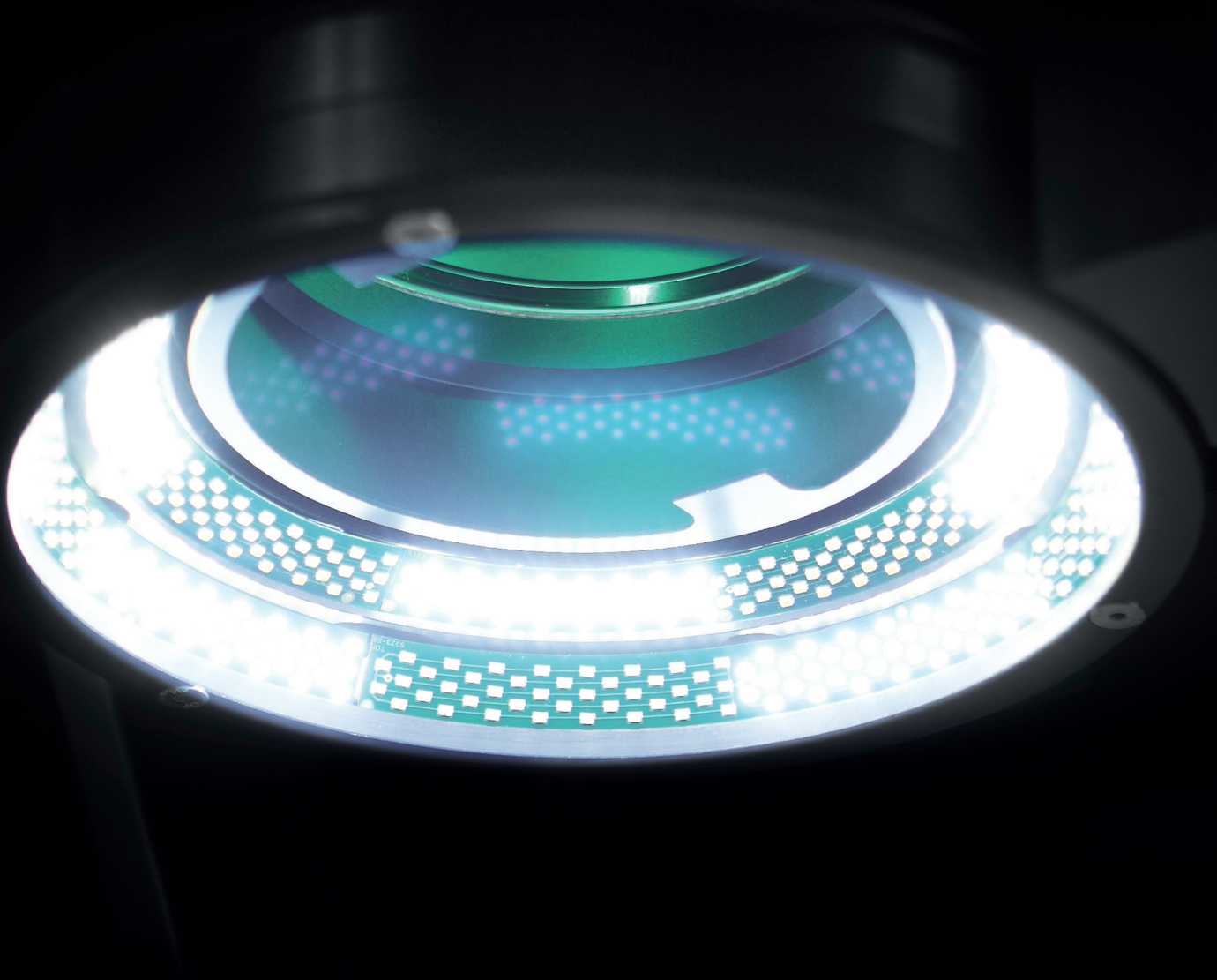


Limit of tolerance



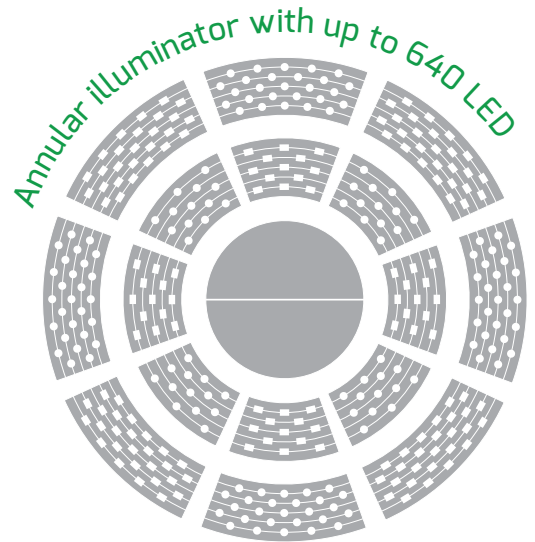
Out of tolerance

THE MOST COMPLETE LIGHTING SYSTEM IN ITS CATEGORY



OPTICAL MEASURING UNIT

METRIOS acquires measurements with a non-contact optical system. The system consists of a high-resolution sensor and three different lighting systems.



TELECENTRIC BACKLIGHTING

For maximum accuracy and repeatability on profiles.



COAXIAL EPISCOPIC ILLUMINATOR

The integrated coaxial episcopic illuminator is ideal for illuminating surfaces uniformly, making it possible to measure every single detail on the surface, such as blind holes or writings and markings.

Unlike other measuring systems, the coaxial episcopic illuminator is a standard METRIOS feature so no extra bulky and costly optionals are required.



UP TO 640 LED ANNULAR ILLUMINATOR

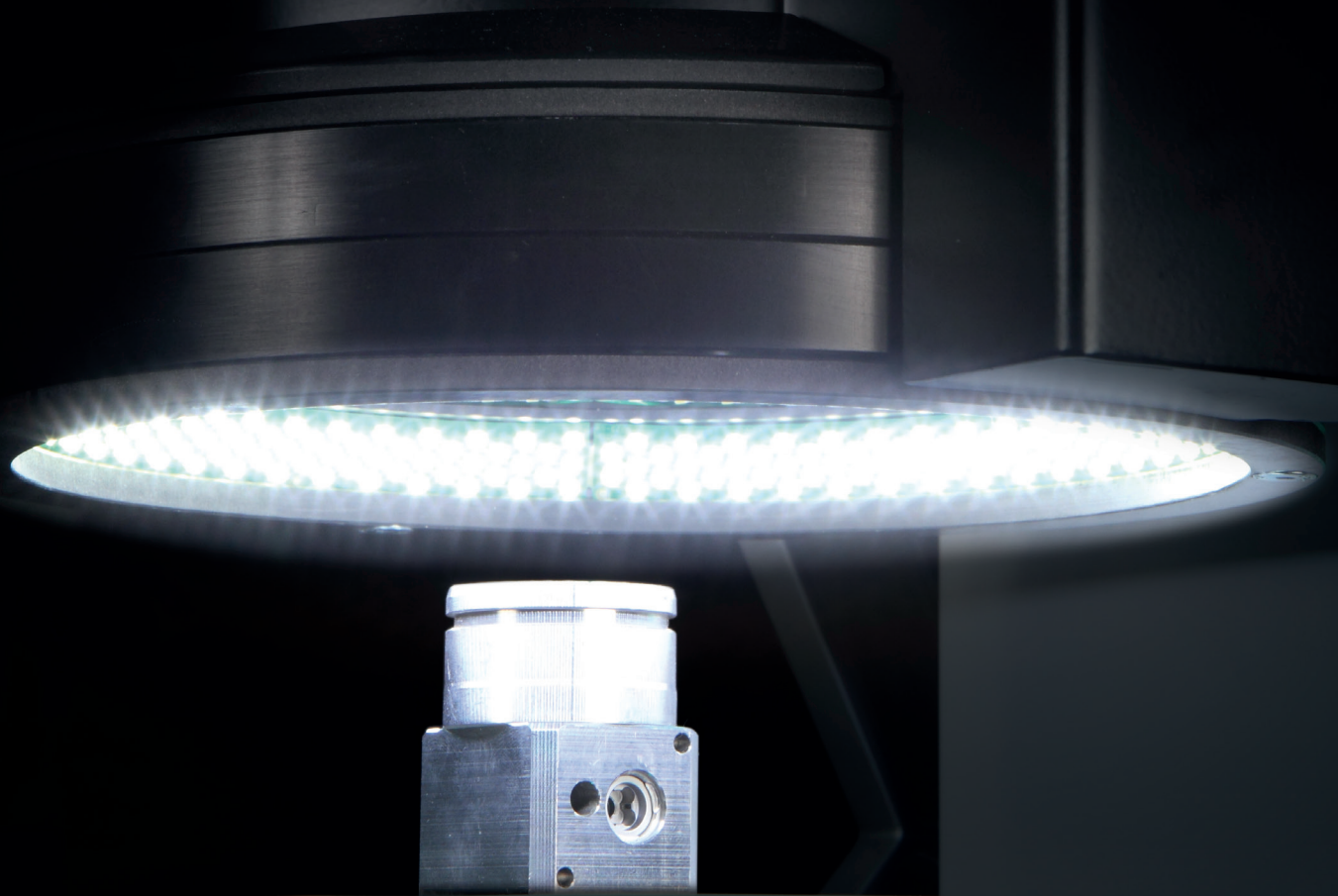
Programmable up to 16 sectors. Arranged on two rings at different tilt angles, the annular illuminator lights up the part from any angle. It is adjustable in height and can detect bevels or other elements on the surface. The powerful illumination solution, unique in its category, is stronger than the ambient light conditions.



ILLUMINATOR SECTORS

One or more sectors of the annular illuminator may be selected independently, as well as the intensity of each individual sector. The configuration of the selected sectors adjusts to the orientation of the part each time it is repositioned.

THE ILLUMINATION ANGLE CHANGES: WHAT YOU SEE CHANGES



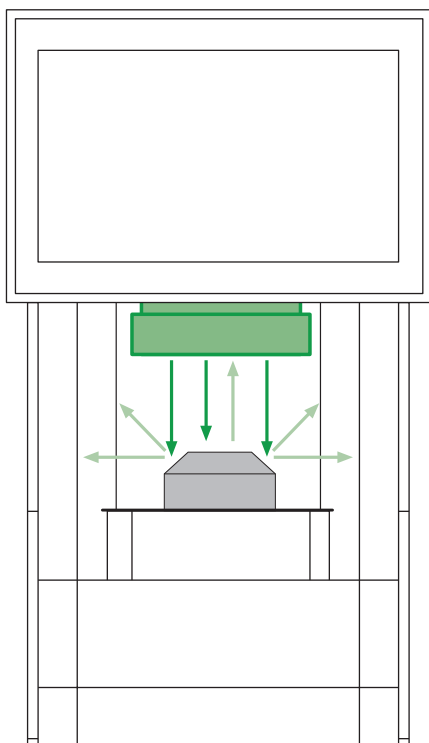
WRITING WITH LIGHT

METRIOS can change the illumination angle of incidence on the part. The motorized annular illuminator provides various angles of the light source within the same measurement cycle. Each illumination program saved can be used to carry out subsequent measurements.

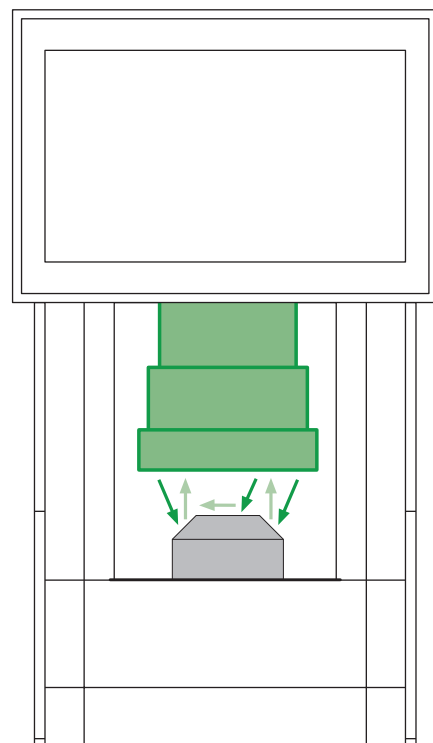
THE NEW MOTORIZED RING LIGHT:

- moves towards and away from the stage and is fitted with an automatic adjustment system;
- changes the illumination angle of each surface;
- highlights a number of features on the element.

RING LIGHT UP



RING LIGHT DOWN



PROJECTED LIGHT
REFLECTED LIGHT



EASY AS A TABLET, POWERFUL AS A SHOPFLOOR MEASURING TOOL

ACCESS - DIALOG - INTERACTION

Discovering every day the value of a cutting edge tool for your shopfloor.

IMMEDIATE ACCESS

Multi-touch industrial 17-inch screen designed for clear visibility, and a user-friendly interface with intuitive programming to facilitate daily use.

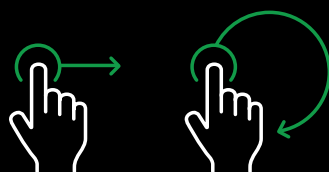
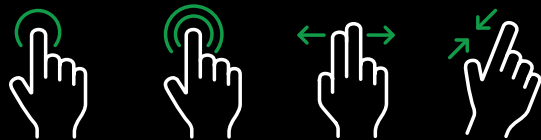
STRUCTURE

Innovative construction techniques have resulted in a tool capable of operating outside the metrology lab. Its sturdy steel alloy frame with reinforcing ribs houses and protects the delicate parts of the machine.

ERGONOMICS

- The loading area provides a great access space for the operator's hands.
- METRIOS has the ideal size for operating from the typical standing position in production.

MULTI-GESTURE TECHNOLOGY



Line

Radius



Sandbox model

metriOS

Px 1345.70 Py 2744.77
World Px 28.933 mm World Py 59.013 mm
Color 255 Zoom 3.04x

ID	Value	OT
----	-------	----

9	Line - line distance 85.853	
---	--------------------------------	--

10	Line - line angle 89° 57' 25"	
----	----------------------------------	--

12	Line - line distance 175.979	
----	---------------------------------	--

15	Line - line distance 11.571	
----	--------------------------------	--

18	Line - line angle 91° 52' 05"	
----	----------------------------------	--

19	Line - line distance 20.543	
----	--------------------------------	--

22	Line - line angle 90° 14' 26"	
----	----------------------------------	--

24	Distance 20.692	
----	--------------------	--

25	Point-Line distance 10.277	
----	-------------------------------	--

26	Distance 93.041	0.259
----	--------------------	-------

27	Distance 37.755	4.005
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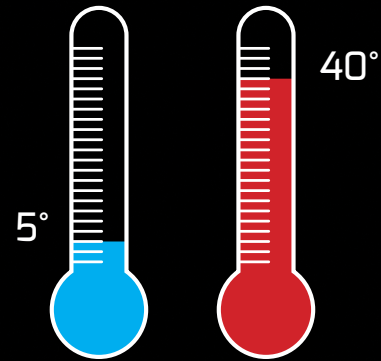
metriOS

ON-BOARD STEP MASTER AND TEMPERATURE SENSORS

Shopfloor environments are not always temperature controlled, so METRIOS is equipped with an on-board Step Master (gage) that gives measurement feedback during the cycle.

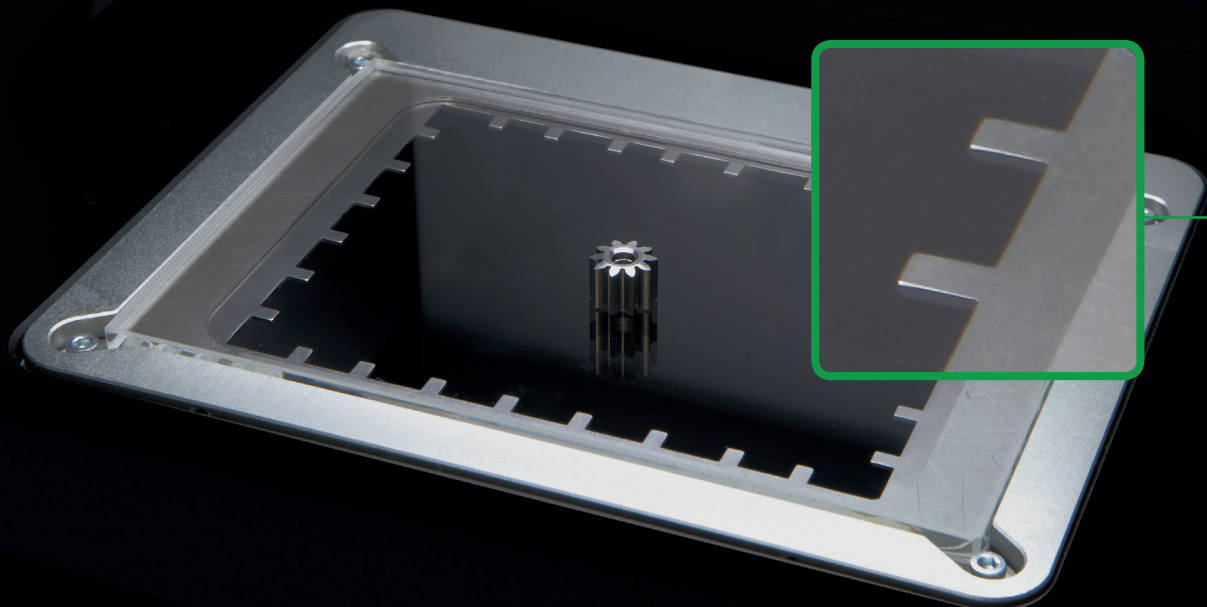
In addition, **3 temperature sensors** ensure all measurements are taken correctly. These sensors make the instrument immune to the typical varying environmental conditions of the shopfloor.

Designed for practical use on the shopfloor, by using the on board step-master to its full advantage, METRIOS allows operators to replace any damaged glass without having to recalibrate with an external master, saving on the typical maintenance costs of optical measuring devices.



Minimum and maximum temperatures on the shopfloor

METRIOS is designed to operate outside the quality room



MAXIMUM BENEFIT ON THE SHOPFLOOR

metriOS

TEMPERATURE
SENSORS



TEMPERATURE
SENSORS

TEMPERATURE
SENSORS

ON-BOARD
STEP MASTER

MAGNIFICATION, RESOLUTION, QUALITY. NO LIMITATION OF USE



METRIOS CAN ZOOM UP TO 100X

Various versions available with a range of fields of view and resolutions. With just one picture METRIOS can capture even the most minute detail.

The software displays a high resolution image of the entire element revealing the level of cleanliness and the presence of any burrs and scratches.

The machine's lens reduces distortion to a minimum at any point on the field of view, ensuring maximum accuracy.

Not just a fast measuring tool, but also a powerful magnifier

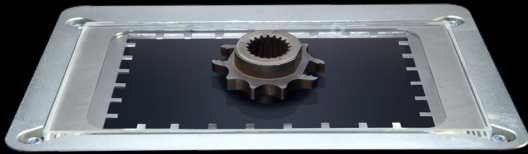
“CROSS” AS CROSS OVER

Models: METRIOS CROSS - METRIOS HD CROSS

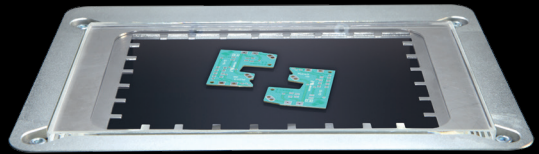
The Cross Range combines high resolution with wide fields of view - ideal for large parts and multi-piece measurements. Metrios Cross offers the highest resolution and automatic focus across the full measuring field, so that even the smallest details and parts requiring a different focus position can be captured.



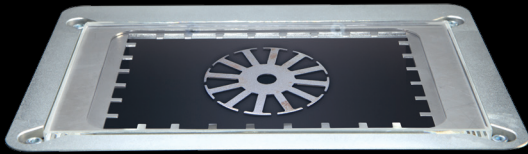
APPLICATIONS



Mechanical parts



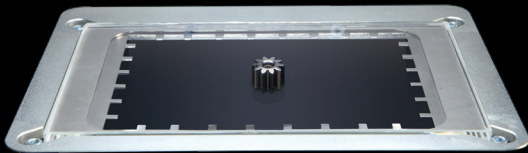
Circuit boards



Punched parts



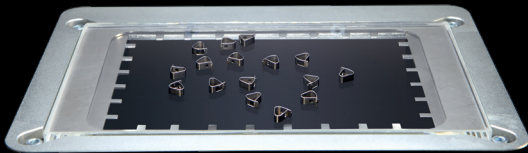
Connectors



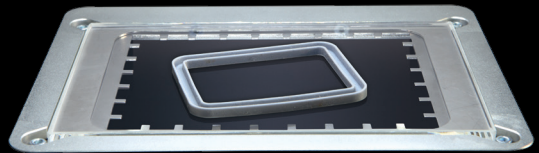
Gear wheels



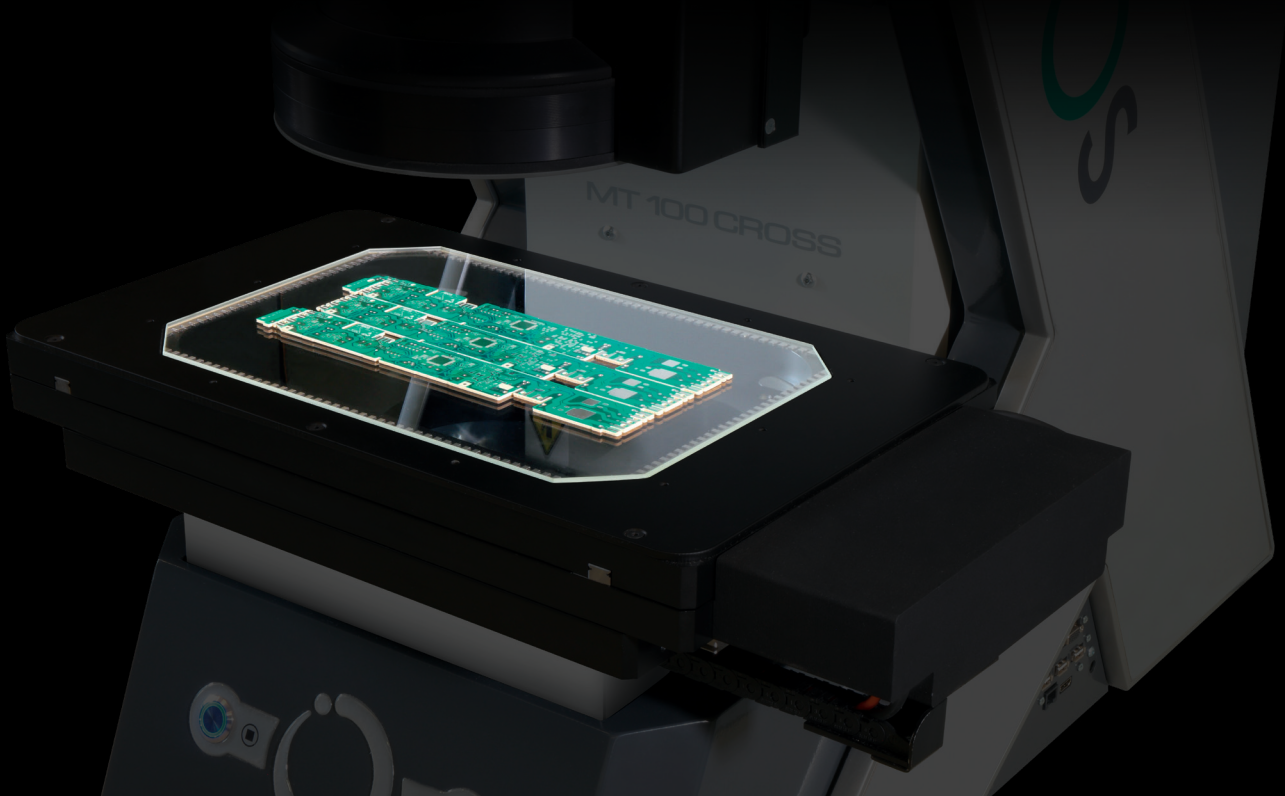
Watch components



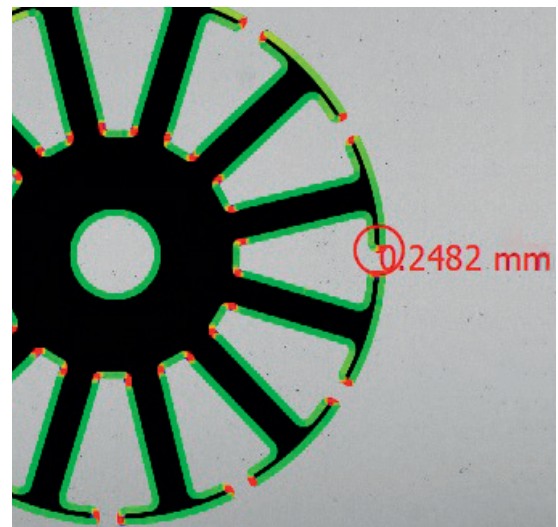
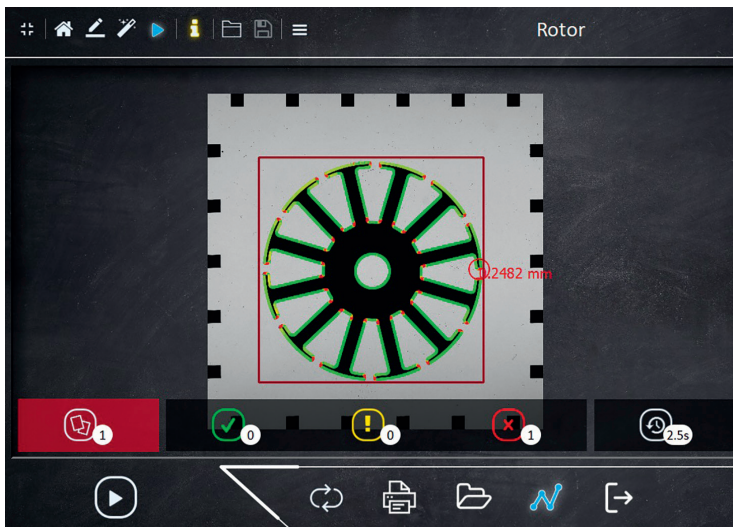
Springs



Seals

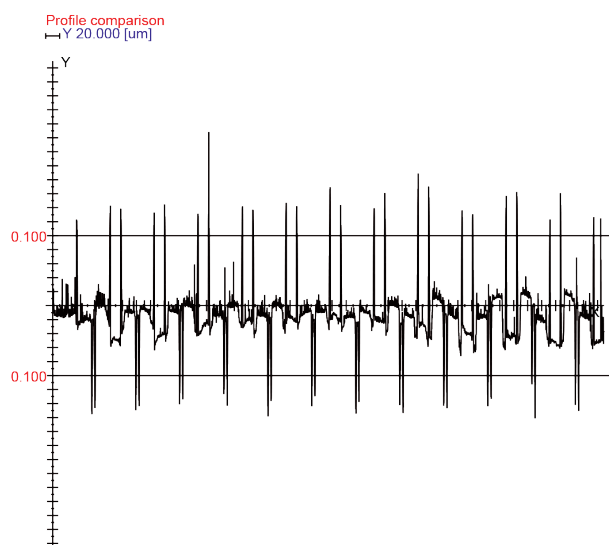
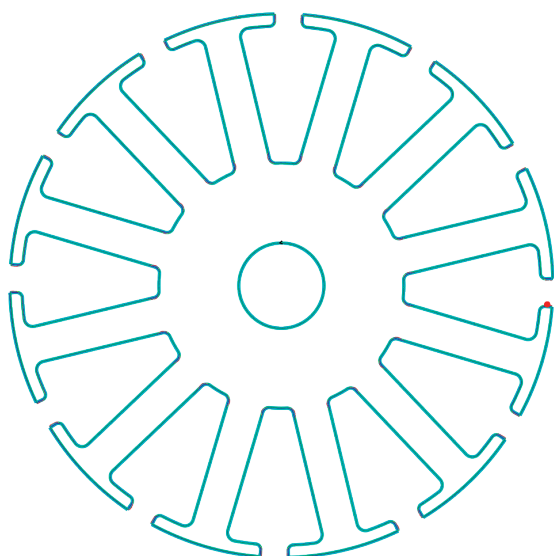


COMPARING THE PROFILE IN A SIMPLE WAY



With the “DXF COMPARISON” function it is possible to compare the real profile with the imported DXF profile. By identifying the points of the real profile, the machine is able to verify whether or not the profile is in tolerance.

GRAP.	Name	Nominal	Measure	Deviation	OVER TOL.	LOWER TOL.	UPPER TOL.
	05 - Profile comparison	0.000	0.248	0.248	0.148	-0.100	0.100



The histogram provides the trend of the detected profile, helping the operator to identify the real profile shape. The profile comparison can be divided in several sectors, allowing a more detailed analysis.

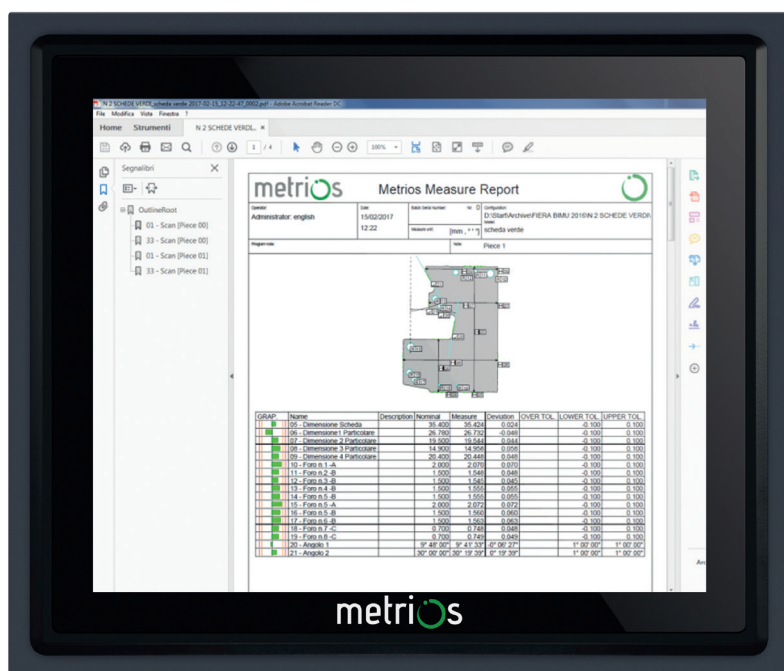
DATA COLLECTION

METRIOS automatically collects data which can be exported in several formats (eg CSV,DFQ), eliminating the risk of human error, saving time and providing an analytical assessment of the production trend.



AUTOMATIC MEASUREMENT TREND

A graph shows the trend of each single measurement, providing the following information: average trend, maximum deviation, mean deviation, CP, CPK.



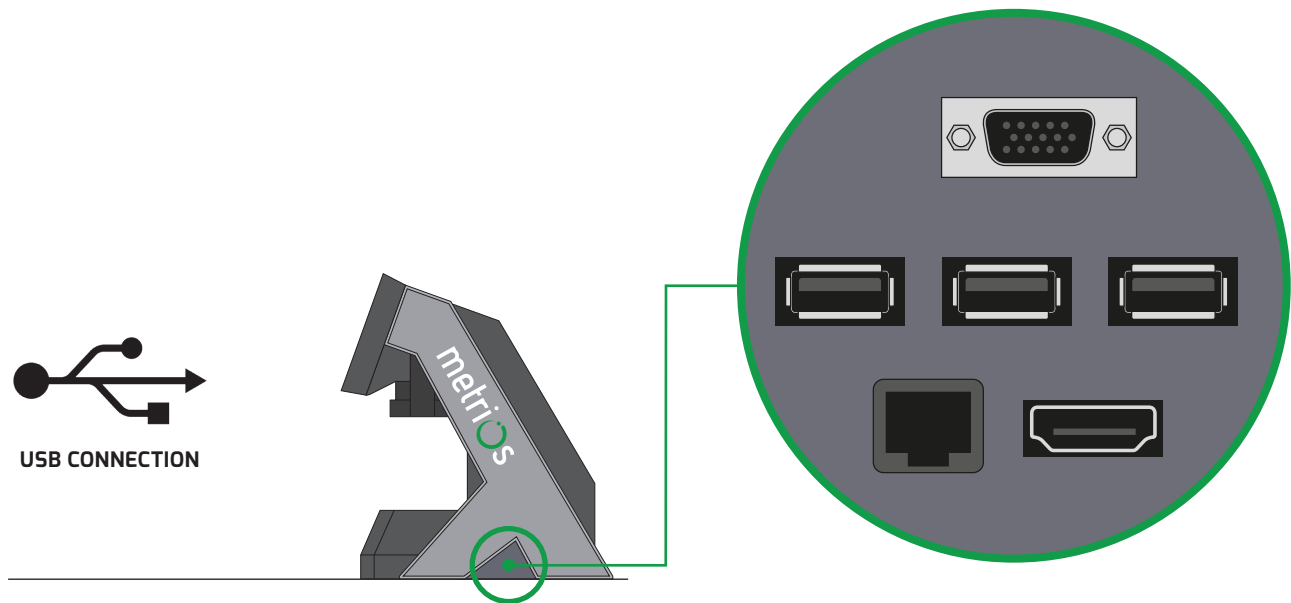
INSTANT MEASUREMENT REPORT

The software can print a complete and customizable report or export it in PDF format. The histogram immediately shows if each single measurement is within tolerance and if there is any deviation from the nominal value.

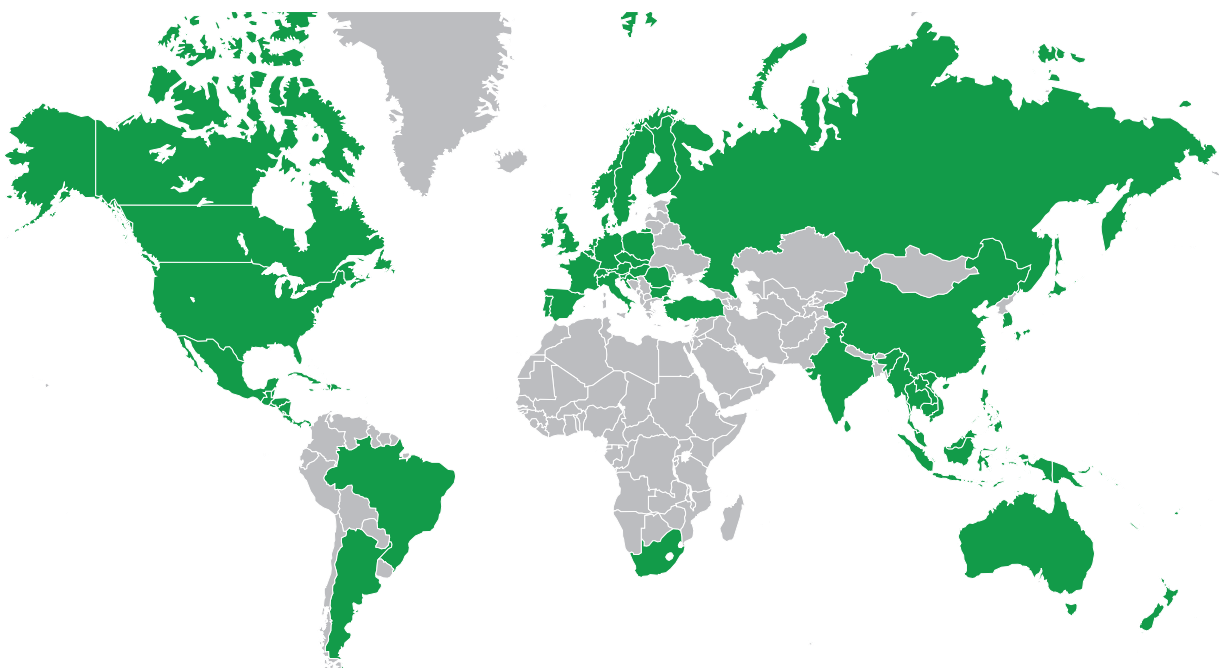
CONNECTABLE EXTERNAL DEVICES

METRIOS can collect data from external devices connected via USB. In this way, measurements that are not typically acquired by an optical measuring tool can be added to the report.

For instance, weight, roughness or depth of blind holes.



MORE THAN 40 TECHNICAL CENTERS IN THE WORLD WITH TRAINED STAFF FOR ASSISTANCE AND CALIBRATION ACCORDING TO ISO 10360-7 STANDARDS



TECHNICAL DATA

MODEL	Field of view	Maximum piece size on Z axis	Maximum weight load	Measurement accuracy ⁽¹⁾	Measurement repeatability ⁽¹⁾	Machine weight
METRIOS	95 x 65 mm	100 mm	3,0 Kg	(5+0.01L [mm]) [μm]	(2+0.01L [mm]) [μm]	110 Kg
METRIOS HD	23 x 23 mm	100 mm	2,0 Kg	(2,5+0.01L [mm]) [μm]	(1,5+0.01L [mm]) [μm]	110 Kg
METRIOS CROSS	265 x 200 mm	80 mm	5,0 Kg	(5+0.01L [mm]) [μm] ⁽²⁾ (7+0.01L [mm]) [μm] ⁽³⁾	(2+0.01L [mm]) [μm] ⁽²⁾ (3+0.01L [mm]) [μm] ⁽³⁾	130 Kg
METRIOS HD CROSS	200 x 100 mm	50 mm	3,0 Kg	(2.5+0.01L [mm]) [μm] ⁽²⁾ (3.5+0.01L [mm]) [μm] ⁽³⁾	(1.5+0.01L [mm]) [μm] ⁽²⁾ (2.5+0.01L [mm]) [μm] ⁽³⁾ Z MEASUREMENT (3+0.01L [mm]) [μm] ⁽⁴⁾	120 Kg

(1) $\pm 2 \sigma$ at temperatures of $+20 \pm 1,0^\circ\text{C}$ on clean and rectified surfaces. L = measured length.

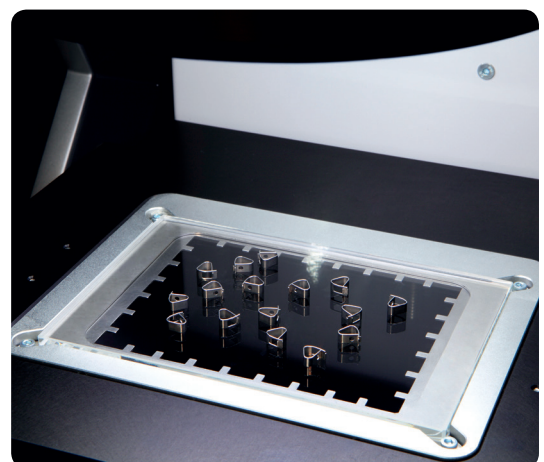
(2) Acquisition on a fixed stage.

(3) Acquisition on a moving stage.

(4) Repeatability can be conditioned by the surface finishing of the part. Maximum measuring range up to 45mm.

THE METRIOS RANGE

METRIOS	High resolution for small and medium components.
METRIOS HD	Highest resolution of the range. Capture the smallest detail on micro-components.
METRIOS CROSS	Sliding stage along X and Y axis, wide working area and high resolution across the entire field of view.
METRIOS HD CROSS	Highest resolution of the range. Sliding stage along X and Y axis



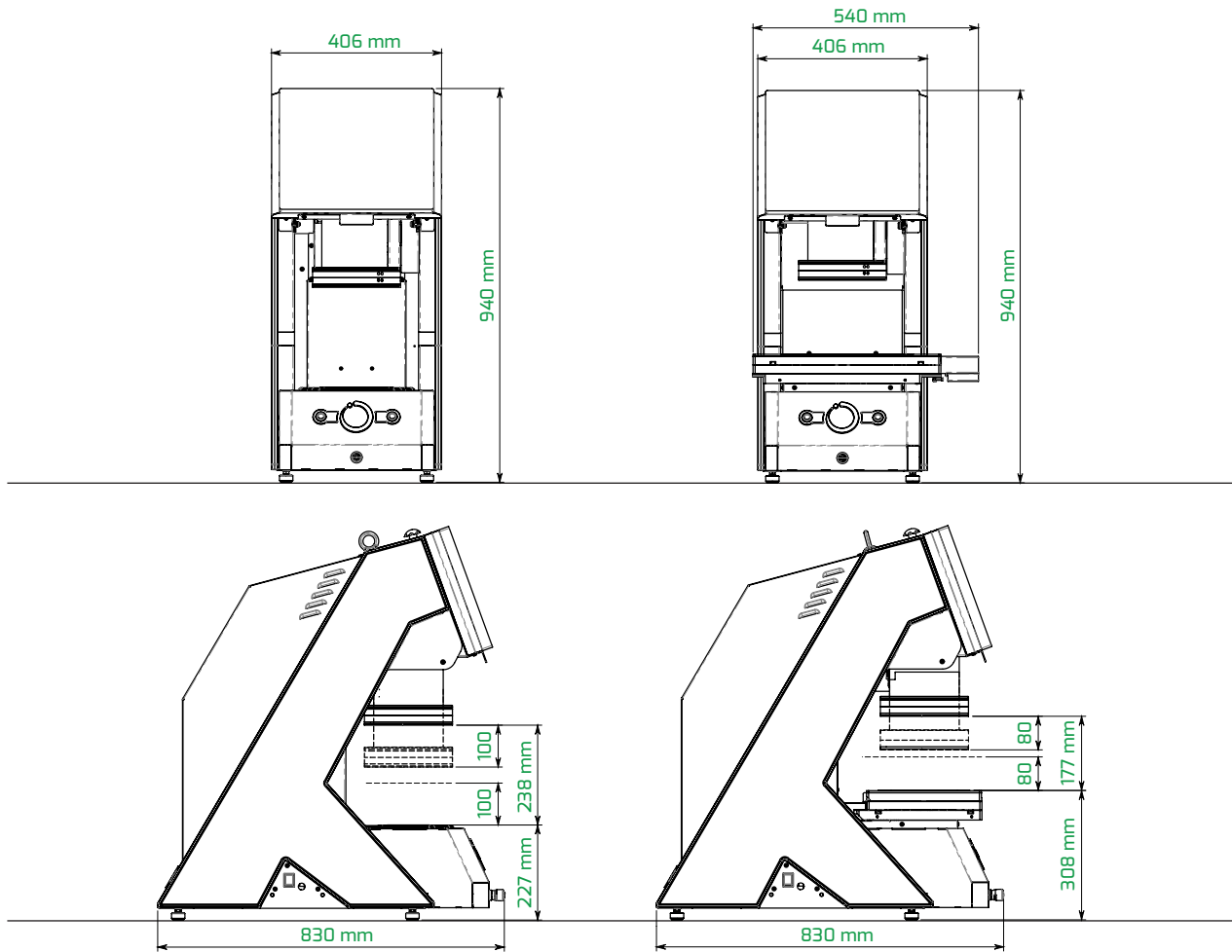
All Metrios models are fitted with new built-in pc 17-inch (power supply 230 Volt 50/60 Hz).

MACHINES DIMENSIONS

METRIOS

METRIOS CROSS

metriOS



WORKSTATION

METRIOS is available as a stand-alone solution, or can be integrated into a workstation to provide operational support.

Industrial multi-touch screen
provides maximum comfort when standing.

Practical work surface
for placing drawings, pieces and extra tools.



Workstation

Second monitor (optional)
The convenience of programming while seated, having full access to the machine.



metrios

CHECK OUT METRIOS
IN ACTION WATCH
THE VIDEO



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