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TECHNICAL SPECIFICATIONS

ICM D2P 5 / LF
ICM D2P 12 XF / XFT
ICM D2P 20 LF / XF / XFT
ICM D2P 71

CONFIDENTIAL

ICM D2P 5 -200
ICM D2P 12 – 200
ICM D2P 20 - 200

ICM D2P 5 (LF) - 400
ICM D2P 12 (LF/XF) - 400
ICM D2P 20 (LF/XF) - 400

ICM D2P 12 XFT-400
ICM D2P 20 XFT-400

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ICM D2P 5 (LF) - 600
ICM D2P 12 (LF/XF) - 600
ICM D2P 20 (LF/XF) - 600

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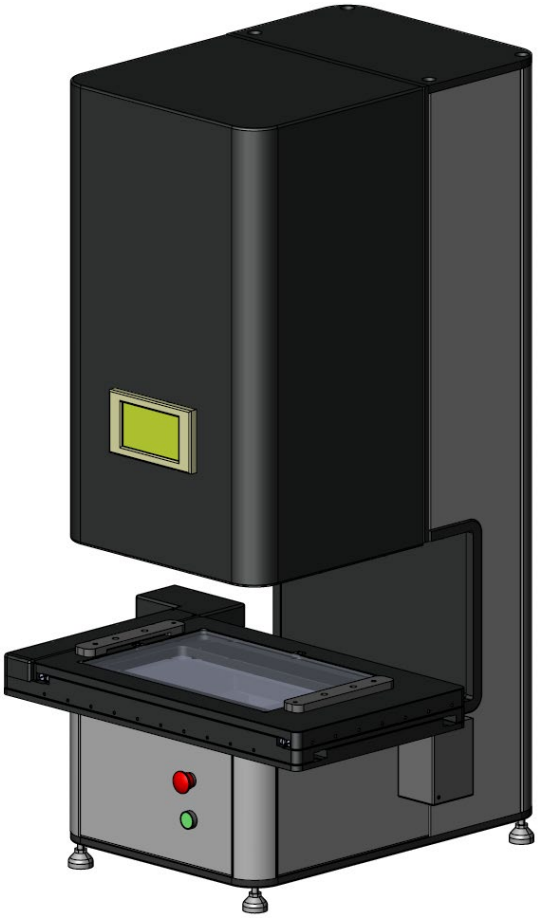

ICM D2P 5 (/LF) - 3020

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INTRODUCTION

ICM D2P, the 2D digital profile projector

- This machine presents all of the tools requested for your 2D metrology process

- The ICM D2P machine is compatible with all kinds of parts (for car, mechanical, electronic, pharmaceutical industries, and so on…), and all supports (metal, plastic, rubber, glass…)

- Suitable for all controls :
    - ✓ First part,
    - ✓ Process,
    - ✓ Laboratory,
    - ✓ At entrance,
    - ✓ At exit,
    - ✓ During production …

- Capability to manage all external measuring systems (caliper, micrometer, and so on..)

- Programming by self-learning,

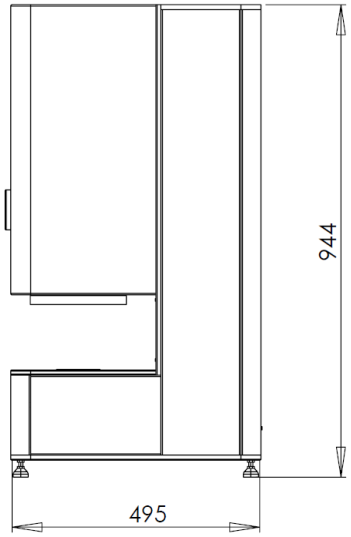
- Automatic control of a unique part or multi-part inspection, at any position.

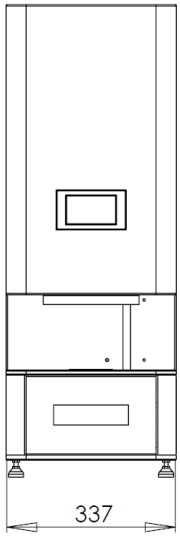
TECHNICAL DESCRIPTION OF THE MACHINE

Mechanical structure: ICM D2P 5 (/LF), ICM D2P 12 (LF/XF), ICM D2P 20 (LF/XF)

A solid aluminum structure allows a side line quality inspection:

- Z motorized axis
- Touch screen



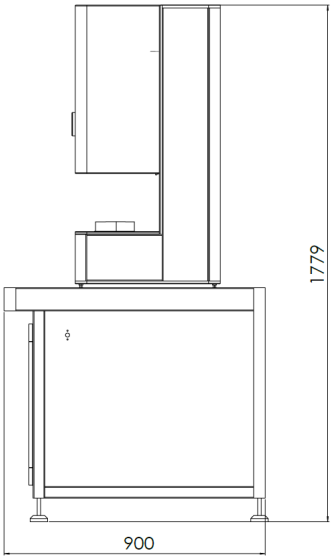


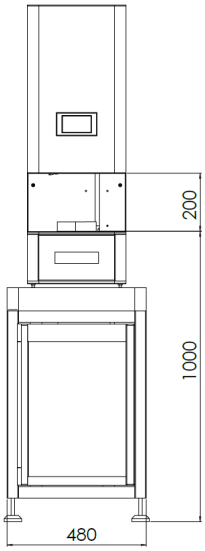
60 kg

Mechanical structure: ICM D2P 12 XFT, ICM D2P 20 XFT

A solid aluminum structure allows a side line quality inspection:

- Z motorized axis
- Touch screen
- Support cabinet included





120 kg

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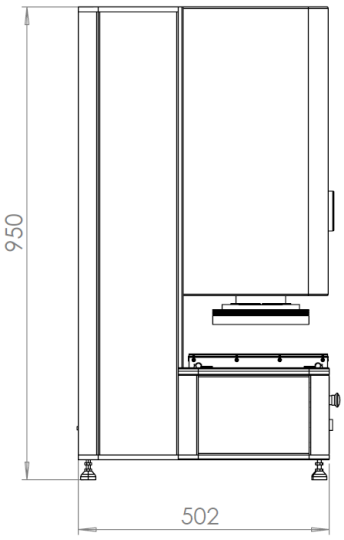
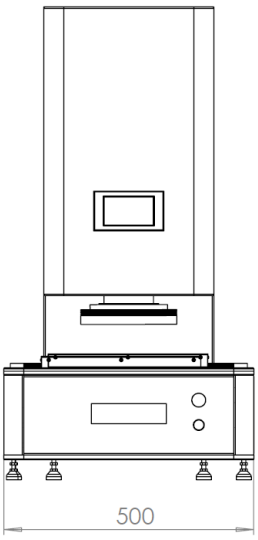
Mechanical structure : ICM D2P 5 (/LF) - 200, ICM D2P 12 (LF/XF) - 200, ICM D2P 20 (LF/XF) - 200

A solid aluminum structure allows a side line quality inspection:

- X motorized axis (Stroke 150 mm)
- High precision linear guideway
- Loading up to 5 kg
- Linear scale resolution: 0.5 µm
- Axis speed: 25 mm/s
- Z motorized axis
- Touch screen



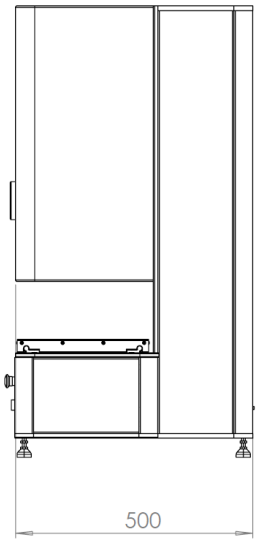


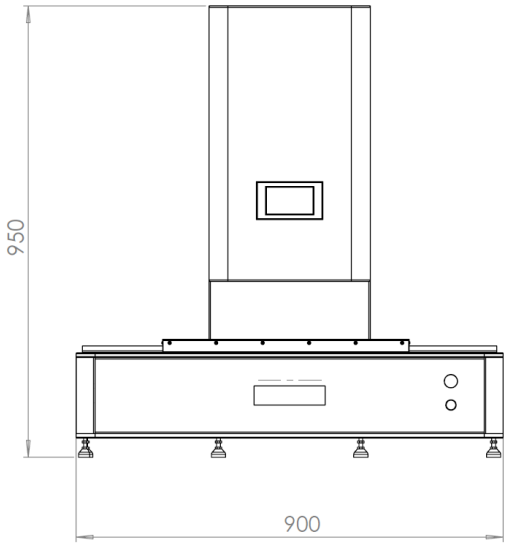
65 kg

Mechanical structure : ICM D2P 5 (/LF) - 400, ICM D2P 12 (LF/XF) - 400, ICM D2P 20 (LF/XF) - 400

A solid aluminum structure allows a side line quality inspection:

- X motorized axis (Stroke 350 mm)
- High precision linear guideway
- Loading up to 5 kg
- Linear scale resolution: 0.5 µm
- Axis speed: 25 mm/s
- Z motorized axis
- Touch screen



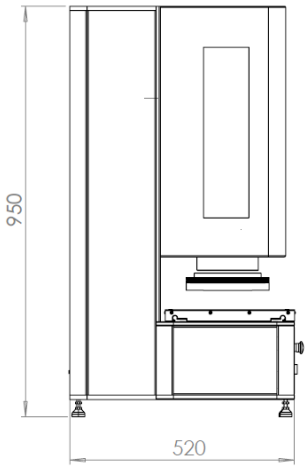


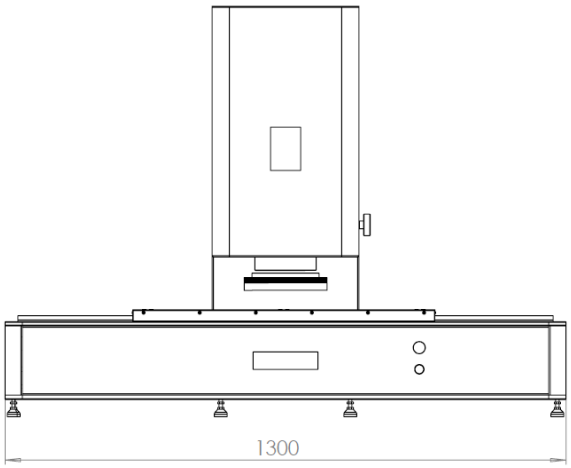
75 kg

Mechanical structure: ICM D2P 5 (/LF) - 600, ICM D2P 12 (LF/XF) - 600, ICM D2P 20 (LF/XF) - 600

A solid aluminum structure allows a side line quality inspection:

- X motorized axis (Stroke 550 mm)
- High precision linear guideway
- Loading up to 5 kg
- Linear scale resolution: 0.5 µm
- Axis speed: 25 mm/s
- Z motorized axis
- Touch screen





85 kg

Mechanical structure (ICM D2P 71)

A solid aluminum structure allows a side line quality inspection:

- Z motorized axis
- Touch screen

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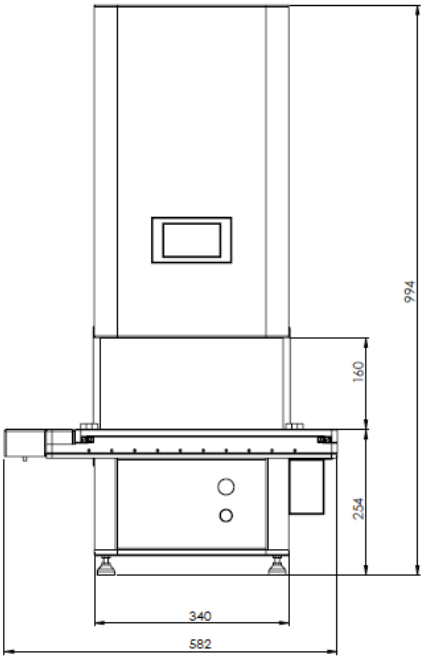
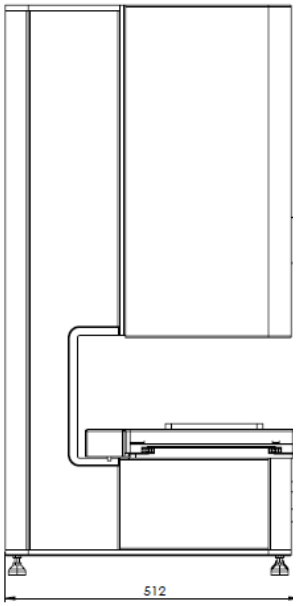
45 kg

Mechanical structure: ICM D2P 5 (/LF) - 3020, ICM D2P 20 LF - 3020

A solid aluminum structure allows a side line quality inspection:

- Open frame aluminum XY stage, crossed movements
- Stroke: 250 x 150 mm
- Crossed rollers guides
- Loading up to 10 kg
- Resolution of the encoders: 0.1 µm
- X, Y, Z speeds: 75 mm/s maximum
- Z motorized axis
- Touch screen





75 kg

Vision (ICM D2P 5 LF - Single magnification)

- 5 MP USB3 digital camera
- Bi-telecentric optical lens for very accurate measures.
- Optical features:

Model	Field of view	Depth of field
ICM D2P 5 LF	69 X 57 mm	45 mm

- Measuring range (by scanning/stitching) :

Model	Measuring range (*)
ICM D2P 5 LF-200	200 x 69 mm
ICM D2P 5 LF-400	400 x 69 mm
ICM D2P 5 LF-600	600 x 69 mm

Model	Measuring range
ICM D2P 5 LF-2020	219 x 207 mm
ICM D2P 5 LF-3020	319 x 207 mm

(*) The camera is rotated by 90°

- Z capacity

ICM model	Maximum workpiece height	Z focus range
Without X axis		
ICM D2P 5 LF	150 mm	80 mm
ICM D2P 5 LF option XH	200 mm (*)	130 mm
With X axis		
ICM D2P 5 LF - 200/400/600	115 mm	50 mm
ICM D2P 5 LF - 200/400/600 option XH	165 mm (*)	100 mm
With XY axes		
ICM D2P 5 – 2020/3020	160 mm	100 mm

(*) With optional 3 in 1 motorized lighting, maximum workpiece height is limited to 150 mm

Vision (ICM D2P 12 or 20 XF / XFT - Single magnification)

- 12 MP USB3 digital camera
- Bi-telecentric optical lens for very accurate measures.
- Optical features:

Model	Field of view	Depth of field
ICM D2P 12	120 X 80 mm	37 mm

- Measuring range (by scanning/stitching) :

Model	Measuring range*
ICM D2P 12-200	200 x 120 mm
ICM D2P 12-400	400 x 120 mm
ICM D2P 12-600	600 x 120 mm

(*) The camera is rotated by 90°

- Z capacity

ICM model	Maximum workpiece height	Z focus range
Without X axis		
ICM D2P 12	150 mm	80 mm
ICM D2P 12 option XH	200 mm	130 mm
With X axis		
ICM D2P 12 - 200/400/600	115 mm	50 mm
ICM D2P 12 - 200/400/600 option XH	165 mm	100 mm

Vision (ICM D2P 71 - Single magnification)

- 71 MP USB3 digital camera
- Bi-telecentric optical lens for very accurate measures.
- Optical features:

Model	Field of view	Depth of field
ICM D2P 71	67 mm x 47 mm	5 mm

- Note that no possible scanning/stitching option for this configuration
- Z capacity

ICM model	Maximum workpiece height	Z focus range
ICM D2P 71	200 mm (*)	65 mm

(*) With optional 3 in 1 motorized lighting, maximum workpiece height is limited to 150 mm

Vision (ICM D2P 5 - Multi magnifications)

- 5 MP USB3 digital camera
- Bi-telecentric optical lens for very accurate measures.
- Motorized bi-telecentric zoom with 4 indexed positions
- Optical features:

Zoom	Field of view	Depth of field	Magnification (***)
Zoom 1	67.5 x 56.5 mm	45 mm	X 3.75
Zoom 2	33.7 x 28.2 mm	11 mm	X 7.5
Zoom 3	16.8 x 14.1 mm	2.8 mm	X 15
Zoom 4	8.4 x 7.1 mm	0.7 mm	X 30

- Measuring range (by scanning/stitching) (**) :

Model	Zoom 1 (*)	Zoom 2	Zoom 3	Zoom 4
ICM D2P 5-200	200 x 67.5 mm	175 x 33.7 mm	160 x 16.8 mm	155 x 8.4 mm
ICM D2P 5-400	400 x 67.5 mm	375 x 33.7 mm	310 x 16.8 mm	155 x 8.4 mm
ICM D2P 5-600	600 x 67.5 mm	575 x 33.7 mm	310 x 16.8 mm	155 x 8.4 mm

- Measuring range (by scanning/stitching):

Modèle	Zoom 1 (*)	Zoom 2 (*)	Zoom 3	Zoom 4
ICM D2P 5-2020	217.5 x 206.5 mm	183.7 x 178.2 mm	166.8 x 164.1 mm	158.4 x 157.1 mm
ICM D2P 5-3020	317.5 x 206.5 mm	283.7 x 178.2 mm	266.8 x 164.1 mm	258.4 x 157.1 mm

(*) Possible on the full range.
(**) The camera is rotated by 90°
(***) Calculated for full image displayed in ICM software on 24'' screen.

- Z capacity

ICM model	Maximum workpiece height	Z focus range
Without X axis		
ICM D2P 5	150 mm	80 mm
ICM D2P 5 option XH	200 mm (*)	130 mm
With X axis		
ICM D2P 5 - 200/400/600	115 mm	50 mm
ICM D2P 5 - 200/400/600 option XH	165 mm (*)	100 mm
With XY axes		
ICM D2P 5 – 2020/3020	160 mm	100 mm

(*) With optional 3 in 1 motorized lighting, maximum workpiece height is limited to 150 mm

Lighting devices

- Programmable lighting devices:

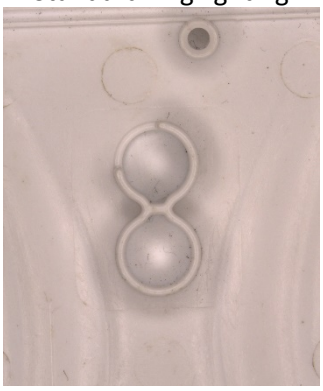
	ICM D2P 5	ICM D2P 12 XF	ICM D2P 12 XFT	ICM D2P 71
Episcopic : ring lighting (white LED)	Standard	NA	NA	Standard
Episcopic : double bar lighting (white LED)	NA	Standard	Standard	NA
Diascopic : collimated lighting (Green LED)	Standard	NA	Standard	Standard
Diascopic : diffuse lighting (Green LED)	NA	Standard	NA	NA
3 in 1 motorized lighting: surface, low angle, dark field	Optional	NA	NA	Optional

- 3 in 1 motorized lighting benefits

The system is particularly useful in the case of parts where the contrast is low, such as plastic and metal workpieces.

White plastic workpiece

Standard ring lighting



3 in 1 motorized lighting

Computer (embedded)

Intel® Core™ i5- Memory: 8 Go, HDD, 500 Go
24” LCD screen
OS Windows® 10 – 64 bits (Windows 7 – 64 bits on demand).
Software: ICM Suite

Opened workstation (option)

Sturdy and robust workstation to protect your equipment in a workshop-like work environment:

- Aluminum profile structure mounted on antivibration pads.
- Hinged front door with assist cylinders on opening / closing, key lockable.
- Wood worktop
- Key lockable storage cabinet in the lower section
- Width x Depth x Height Closed / Opened : 1400 x 900 x 1900 / 2400 mm (*)

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(*) ICM D2P, ICM D2P 200, ICM D2P 400

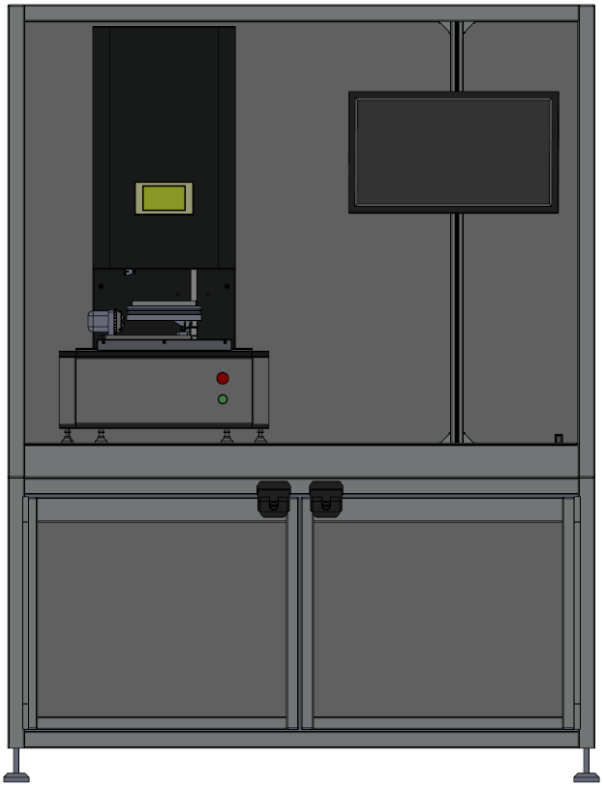
Attention: this furniture is equipped with anti-vibratory pads, this protects the machine from disturbances of small amplitudes generated by the environment. It does not preclude the establishment of an appropriate decoupling system in case of presence of sources of major disturbances (machine tools, press, cranes, passage of vehicles, etc.). In this case, a vibratory

analysis of the environment is recommended to provide the appropriate response. Ayonis will put you in touch with a partner company to carry out this expertise.

Semi Closed workstation (option)

Sturdy and robust workstation to protect your equipment in a workshop-like work environment:

- Aluminum profile structure mounted on antivibration pads.
- Closed top face. Transparent closed side faces. Opened front face.
- Wood worktop
- Key lockable storage cabinet in the lower section
- Width x Depth x Height: 1400 x 900 x 1900 mm (*)



(*) ICM D2P, ICM D2P 200, ICM D2P 400

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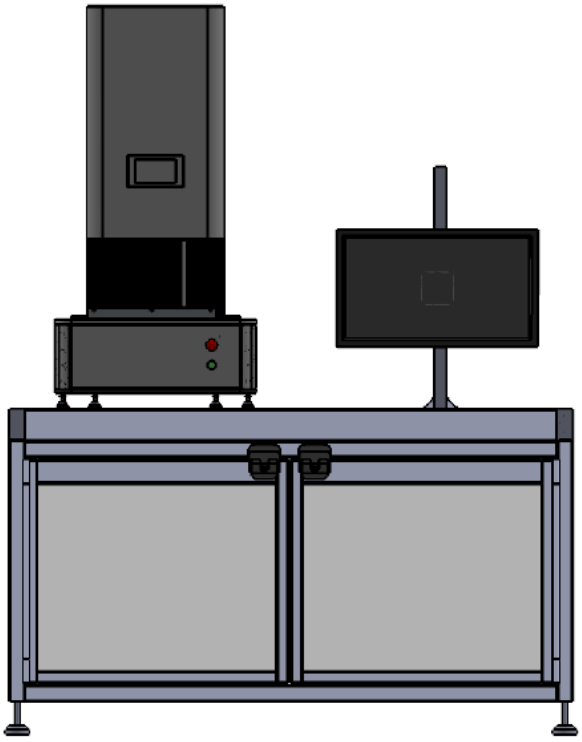
disturbances (machine tools, press, cranes, passage of vehicles, etc.). In this case, a vibratory analysis of the environment is recommended to provide the appropriate response. Ayonis will put you in touch with a partner company to carry out this expertise.

Closed workstation (option)

Sturdy and robust workstation to install your equipment in a laboratory room or “clean” workshop-like work environment:

- Aluminum profile structure mounted on antivibration pads.
- Wood worktop
- Key lockable storage cabinet in the lower section
- Width x Depth: 1400 x 900 mm



(*) ICM D2P, ICM D2P 200, ICM D2P 400

MACHINE PERFORMANCES

Measuring accuracies (ICM D2P 5 - Multi magnifications)

Precision in the field of view:

	Magnifications			
	1	2	3	4
Field of view	67.5 x 56.5 mm	33.7 x 28.2 mm	16.8 x 14.1 mm	8.4 x 7.1 mm
Précision « P »	± 5 µm	± 2.5 µm	± 1.25 µm	± 0.65 µm

Precision in the full measuring range (with stitching) :

XY E2 : (P + 2.5 + 5L/1000) µm (L in mm)

According to the standard ISO 10360-7. Measurements done at 20°C +/-1°C on pin gauge and/or block gauge

Measuring accuracies (ICM D2P 5 LF - Single magnification)

Precision in the field of view:

	Magnification
	1
Field of view	69 x 57 mm
Précision « P »	± 5 µm

Precision in the full measuring range (with stitching) :

XY E2 : (P + 2.5 + 5L/1000) µm (L in mm)

According to the standard ISO 10360-7. Measurements done at 20°C +/-1°C on pin gauge and/or block gauge.

Measuring accuracies (ICM D2P 12 or 20 XF / XFT - Single magnification)

Precision in the field of view :

	Magnification
	1
Field of view	120 x 80 mm
Précision « P »	± 6 µm

Precision in the full measuring range (with stitching) :

XY E2 : (P + 2.5 + 5L/1000) µm (L in mm)

According to the standard ISO 10360-7. Measurements done at 20°C +/-1°C on pin gauge and/or block gauge

Measuring accuracies (ICM D2P 71 - Single magnification)

Precision in the field of view:

	Magnification
	1
Field of view	67 x 47 mm
Précision « P »	± 1.5 µm

No possible scanning/stitching

According to the standard ISO 10360-7. Measurements done at 20°C +/-1°C on pin gauge and/or block gauge

Conditions of use

Supplies: 250 VA, 50 or 60 Hz, 220 or 110 V
Measuring range to secure accuracy: θo ±1°C (θo: ambient temperature and calibration temperature)
Temperature of use: 15 to 35°C

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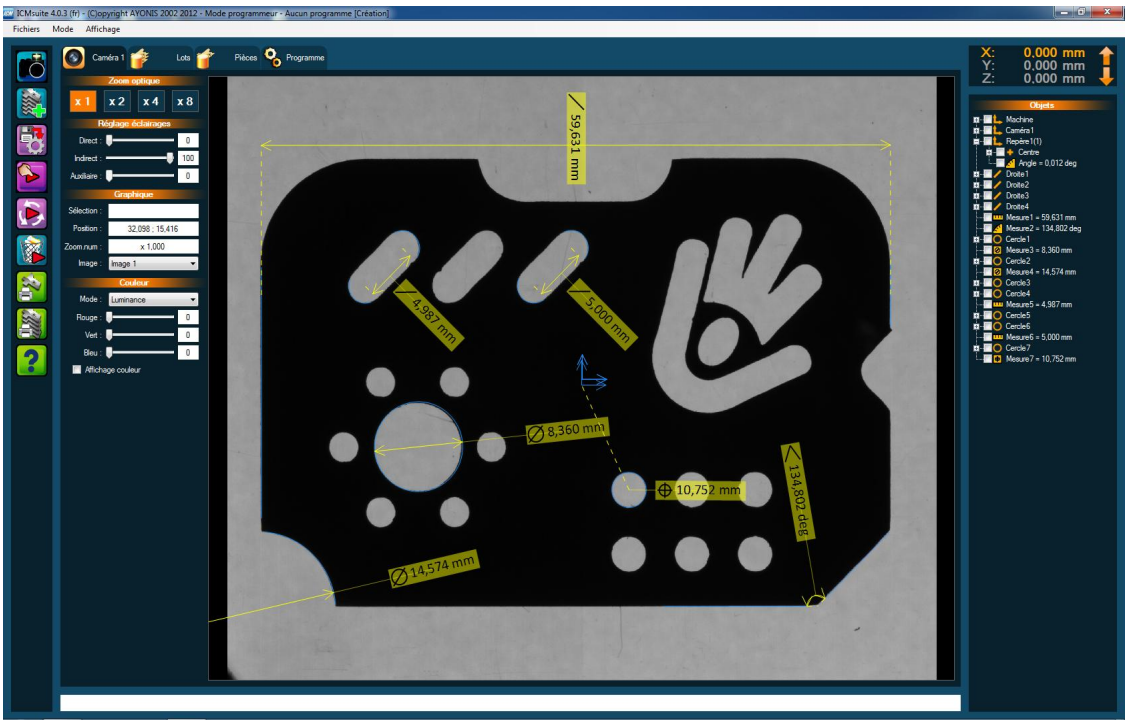
« ICM Suite » SOFTWARE



« ICM Suite » software runs under MS Windows® 10 environment

« ICM Suite» software provides a set of tools for back up, reporting and automatic implementation of inspection plans.

Results of measures may be worked by using control reports, or direct export to Microsoft Excel®, HTML, text, or XML files.

« ICM Suite» software is fitted with a SPC module (traceability and statistical monitoring), allowing display and printing of various histograms, value charts.

- Almost instantaneous checkout time
- Recognition of a part and automatic selection of the dedicated program
- Data acquired from external devices (caliper, micrometer, others ...)
- Lighting devices are managed by software, video scanning and image capture
- Exploitation of theoretical files such as DXF (overlay, Best-Fit, and so on...)
- Recording and statistical analysis of the measures to optimize traceability and quality control

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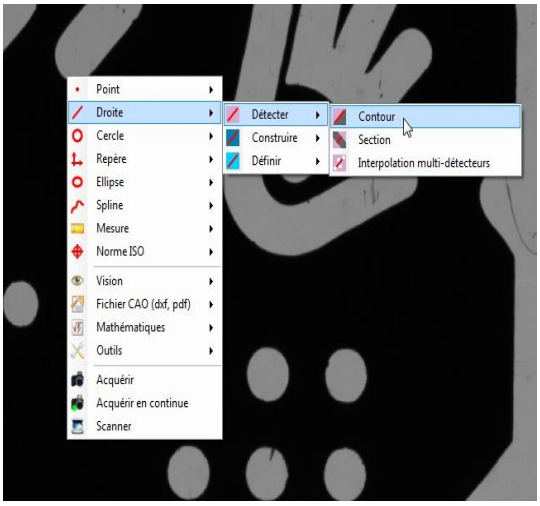
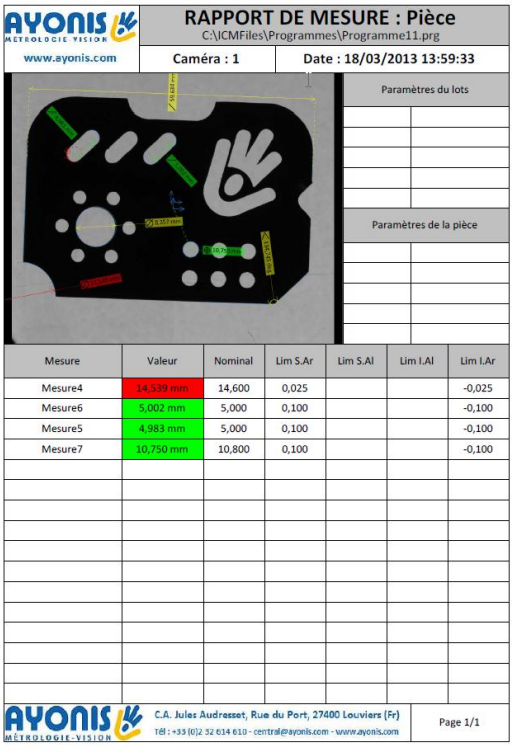
Analytic tools

- Automatic detection of edges and contours
- Automatic new wedging of a part, by vision
- Display of a DXF overlay
- Programming by self-learning
- Plenty of constructing functions (screening, intersection, symmetry)
- Mathematical expressions
- Measuring functions related to objects from DAC source



Report

- Integrated software for reporting
- Customizable reports
- Tolerances management
- Available functions for backup, printing and export of reports
- Data may be exported in Excel®, HTML, XML formats



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RAPPORT DE MESURE : Pièce

C:\ICMFiles\Programmes\Programme11.prg

Caméra : 1 — Date : 18/03/2013 13:59:33

Paramètres du lots

Paramètres de la pièce

Mesure	Valeur	Nominal	Lim S.Ar	Lim S.Al	Lim I.Al	Lim I.Ar
Mesure4	14,539 mm	14,600	0,025			-0,025
Mesure6	5,002 mm	5,000	0,100			-0,100
Mesure5	4,983 mm	5,000	0,100			-0,100
Mesure7	10,750 mm	10,800	0,100			-0,100

AYONIS MÉTROLOGIE-VISION — C.A. Jules Audresset, Rue du Port, 27400 Louviers (Fr) — Tél : +33 (0)2 32 614 610 - central@ayonis.com - www.ayonis.com — Page 1/1

Statistics Module

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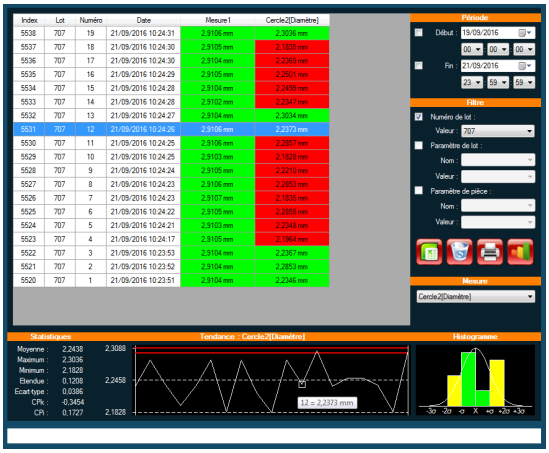
- SPC functions are integrated in the software
- Presence of histograms, and individual value charts
- Display of manufacturing limits, controls, and warning
- Results may be sorted by keywords, dates, and/or time
- Reports and statistical analysis may be printed



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