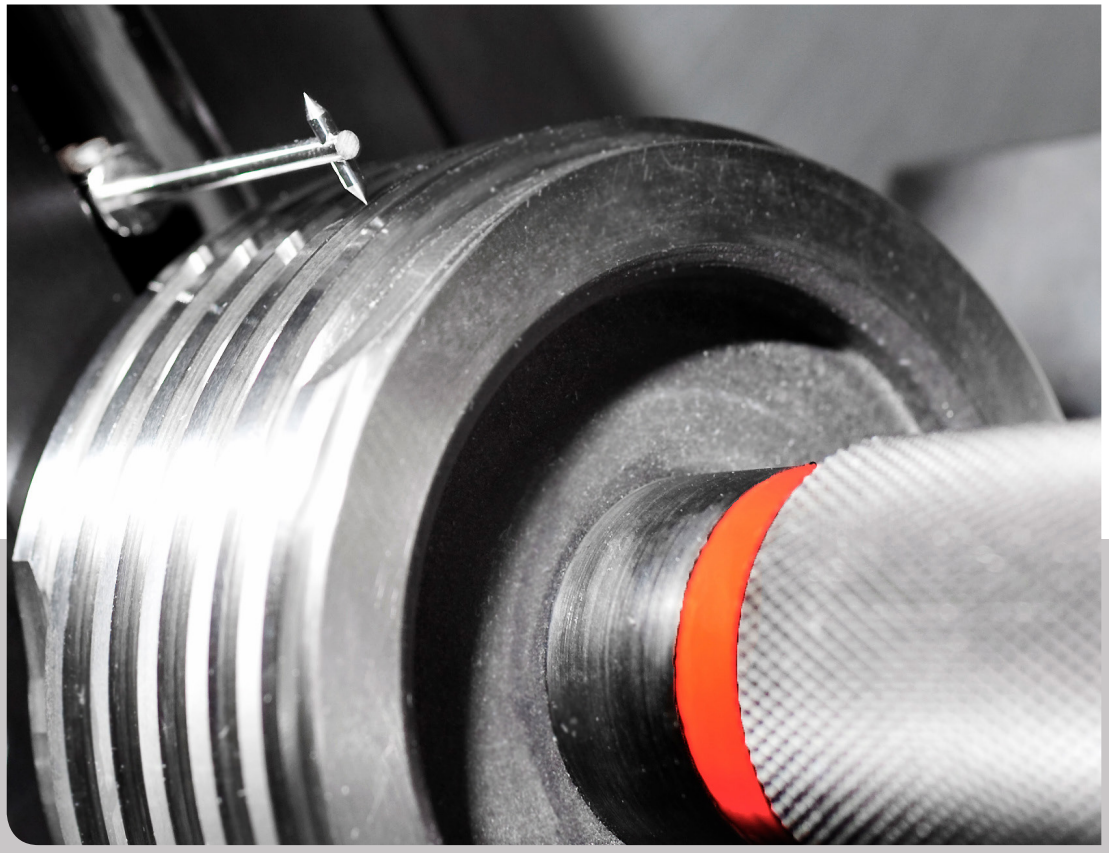
IAC GEOMETRICAL ENGINEERS B.V.



MasterScanner XP

Series 6025 | 6060 | 10025 | 10060 | 16060

PRECISION IN EVERY DETAIL

Smart precision.

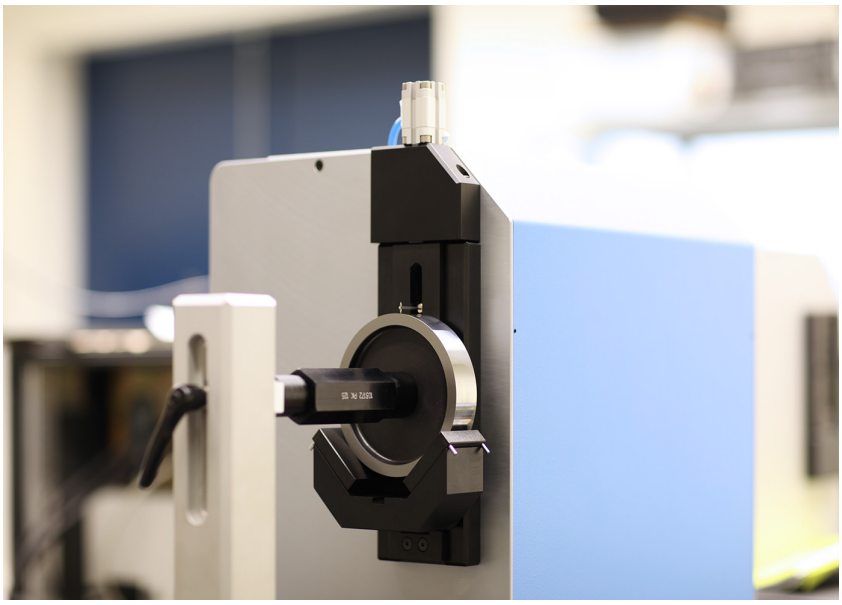
In 1984, IAC invented the 2D Scanning technique. The company became a world-wide manufacturer of advanced measuring instruments and measuring machines for the calibration of thread gauges, and is the creator of custom solutions for a wide range of special applications.

Dynamic Temperature Compensation

Our most successful product since 1995 is the MasterScanner. Many well-known companies around the world use the MasterScanner's high accuracy and precision for the calibration of their thread gauges.

The MasterScanner is the only measuring machine in the world capable of a fully automated calibration, including all thread
parameters of a part or a gauge in just a few minutes, and even compares the results with the dimensional tolerances of most popular standards. The Master-Scanner is in many ISO 17025 accredited labs all around the world.

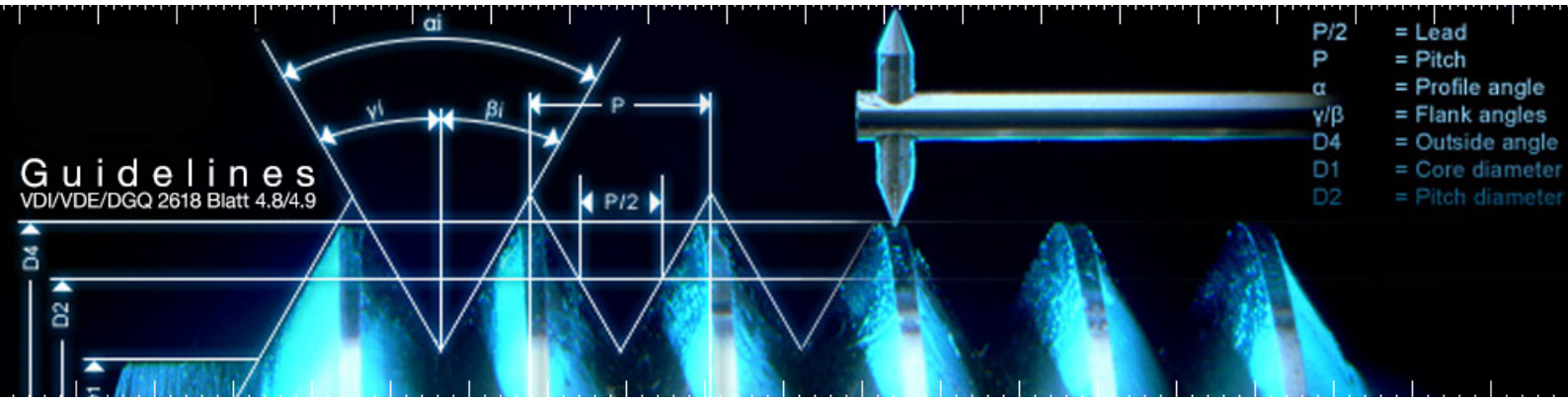
IAC manufactures three series of MasterScanners:
· The XP series has a range from 1 mm OD to 160 mm ID
· The XPL-C series has a range from 1 mm OD to 300 mm ID
· The XPL series is for very large gauges from 1 mm to over 600 mm, including API!



Sample of Master-Scanner Reference List:

BMW, Volkswagen, LMW Schmalkalden, Bosch, Trescal, Somex servis, MG Marposs, Fraisa, China AVIC, OOO Bazis, Endress + Hauser, Curtiss Wright, Spiralock Stanley Black & Decker, Tamburini, Marsh Metrology, Corrodi, Baker Gauges, Piccadilly, Viega, etc.

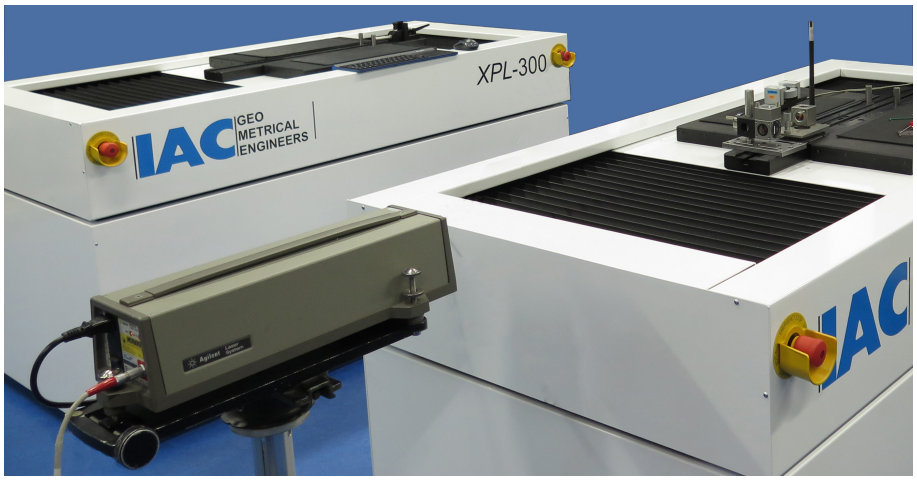
Want unparalleled precision in calibration?
First, forget balls and wires.



The MasterScanner fulfils all industrial requirements of today for the efficient measurement of plain and thread gauges.

The MasterScanner's excellent measurement uncertainty and sophisticated features make it the ideal instrument for **calibration laboratories**. Automated, fast and reliable calibration has been made possible for a wide range of standard or tapered thread gauge plugs, thread ring gauges, plain rings and plugs.

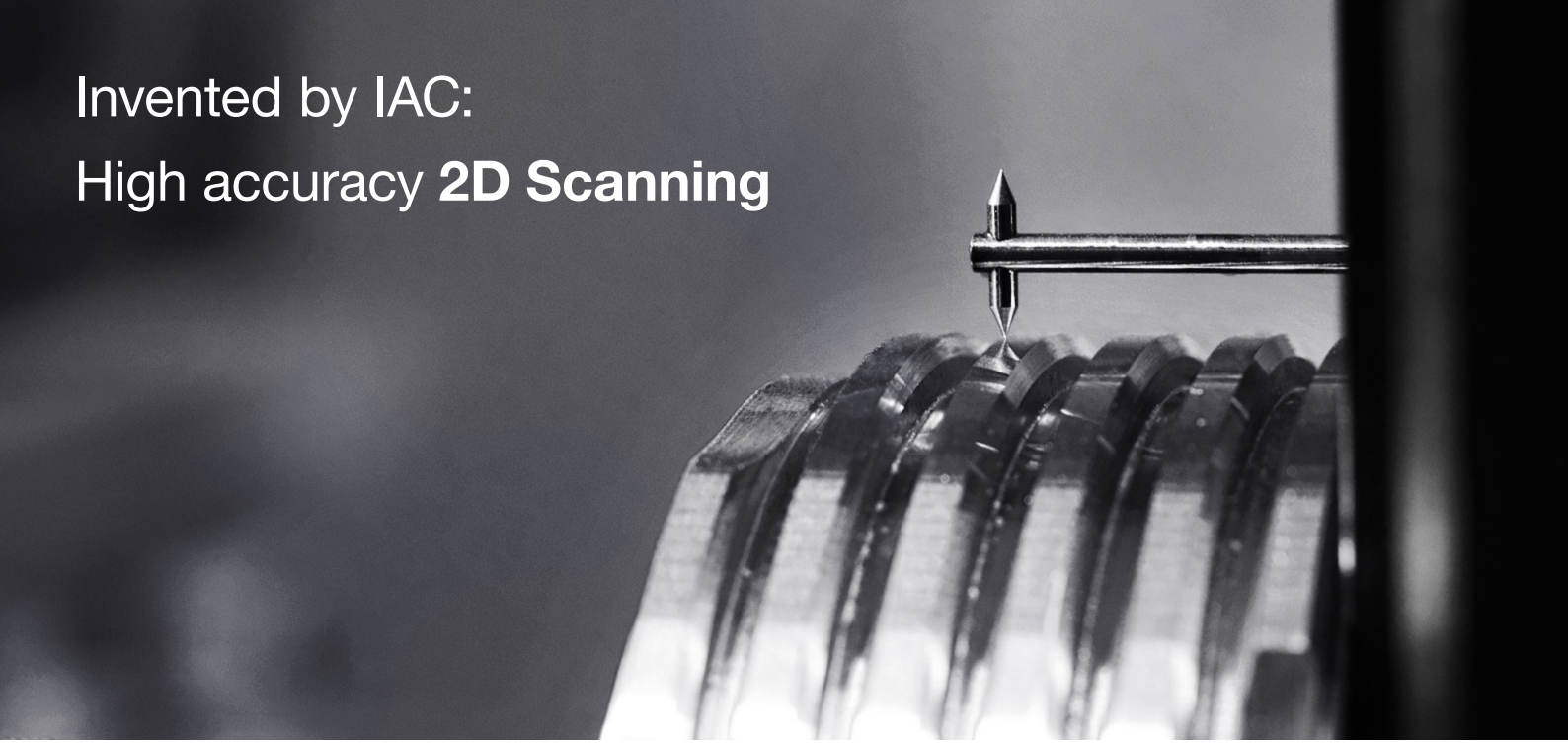
Many thread gauge makers all over the world also apply the scanner for their **production control**. The MasterScanner has the unique capability to present in one automatic cycle, all of the information that is necessary for the optimal setting of the machine tools, so as to minimize bad products and scrap.



All MasterScanners are calibrated by laser interferometer for **highest accuracy and optimal traceability**

Over 1.500.000 calibrations

Because of the long lifetime quality, many MasterScanners have performed over 1.500.000 calibrations, and still **are as accurate as if they were new!**



Invented by IAC:
High accuracy **2D Scanning**

The excellent accuracy is achieved by new patented measurement technology.

The complete 2 dimensional intersection of the surface of the piece with a mathematical plane through the reference axis is composed by the sequential scanning of two opposite contours by a probe with two styli.

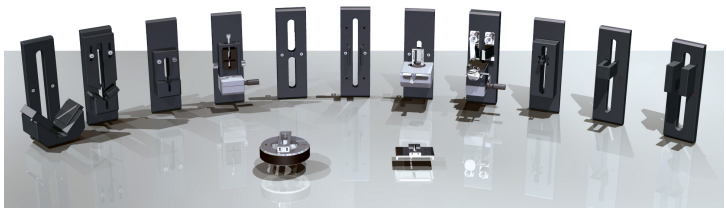
A special feature is that **the actual shape of each of the two styli is automatic mapped multi-directionally for optimal correction of the probing system.** 12000 high resolution measurements are taken per second of scanning, and stored in the memory of the computer. After scanning the first contour, the direction of the measuring force is reversed and the probe scans the opposite side of the gauge. Each measurement point has a resolution of 0,01 µm for each of the two axis, and is stored for data processing.

Direct after finalizing the scanning the MasterScanner calculates and presents the parameters: effective diameter, simple effective diameter, major diameter, minor diameter, pitch, partial flank angles, profile deficiencies, taper, etc.

The **new patented COSIMEX Click-On support** for Cylindrical and Conical Plain and Threaded gauges:

· Both internal and External measurements on one COSIMEX Click-On system.

· High precision centering for thread gauges with steep taper, such as NPTs



Measured dimensions are:

· Effective pitch diameter
· Simple effective pitch diameter
· Effective diameter equivalent
· Major diameter
· Minor diameter
· Pitch
· Accumulated Pitch deviation
· Flank angles
· Partial Flank angles
· Taper
· Profile deficiencies

Compliance is the best testimony.
And speed is essential for success.

The MasterScanner is compliant with all requirements for traceability as stated in ISO-9000 and ISO-17025.

The MasterScanner's internal library (IACLIB) is loaded with many worldwide thread specifications, covering tens of thousands of different threads. Once the technician selects the proper spec, the software automatically applies tolerances to the report, and graphs the measurements against the tolerances. The software includes many fail-safes, preventing the operator from introducing human error into the measurement. All measured contours can be converted to DXF-format for further evaluation and analysis by means of a CAD system like AutoCAD.

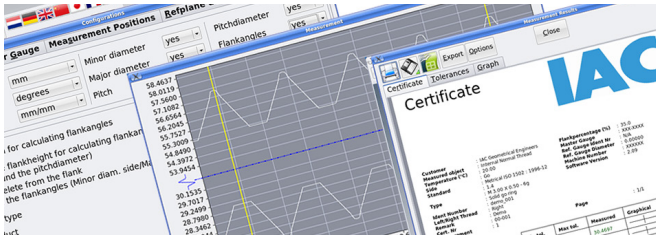
Some of our software features are:

- Real-time Graphical interpretation during scanning
- Measurements are compared with a huge library of International standards
- Easy data export into many widely used formats or custom styled Certificate Templates
- Fast calculations of parameters

IACLIB integrates the following standards into the MasterScanner:

- ANSI/ASME B1.2 Unified
- ANSI/ASME B1.20 NPT
- BS 21 Pipe threads
- BS 919/1 Unified
- BS 919/2 Whitworth
- BS 919/3 ISO Metric
- GB/T 10922
- GB/T 22512.2
- ISO 7/2 Pipe threads
- ISO 228 Pipe threads
- ISO 286 Plain bores and shafts
- ISO 1502 Metric
- ISO 5855-2 MJ tread
- JIS B 0251
- JIS B 0252
- DIN 13 Metric
- GOST 18465-73 Metric
- GOST 18466-73 Metric
- QJ 2761 Chinese MJ thread
- JB/T 10971 Chinese Locking thread
- DIN 2999 Pipe threads
- DIN 7162 Plain rings and plugs
- DIN 40401 Edison

and even more



ISO/IEC 17025 Accreditation

The 2D Scanning method of the IAC MasterScanner complies with ISO/IEC 17025 acceptance standard and is at labs accredited by: RVA, DAkkS, SCES, DANAK, A2LA, GOST, SWEDAC, UKAS, NABL, NATA, ÖKD, SIT.

Availability: MasterScanner XP scan ranges

Model	6025	6060	10025	10060	16060
Range external measurements	1,0 – 50 mm	1,0 – 50 mm	1,0 – 90 mm	1,0 – 90 mm	1,0 – 150 mm
Range internal measurements	2,5 – 60 mm	2,5 – 60 mm	2,5 – 100 mm	2,5 – 100 mm	2,5 – 160 mm
Max. Scan range	25 mm	60 mm	25 mm	60 mm	60 mm
Min. Pitch	0,1 mm	0,1 mm	0,1 mm	0,1 mm	0,1 mm
Weight	150 kg	155 kg	155 kg	160 kg	225 kg

Measurement uncertainty as low as:

Thread ring gauges, parallel or tapered (minor diameter over 10mm, partial flank angles ≥ 27°)					
Minor diameter	2,0 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι
Effective pitch diameter	2,0 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι
Pitch	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι
Flankangles (right and left side)	0°6'0"	0°6'0"	0°6'0"	0°6'0"	0°6'0"
Taper	0,1°	0,1°	0,1°	0,1°	0,1°
Thread ring gauges, parallel or tapered (minor diameter 2,5 to 10 mm, partial flank angles ≥ 27°)					
Minor diameter	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,5 µm + 5.10^{-6}·ι	3,5 µm + 5.10^{-6}·ι
Effective pitch diameter	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,5 µm + 5.10^{-6}·ι	3,5 µm + 5.10^{-6}·ι
Pitch	2,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι
Flankangles (right and left side)	0°6'0"	0°6'0"	0°6'0"	0°6'0"	0°6'0"
Taper	0,1°	0,1°	0,1°	0,1°	0,1°
Thread plug gauges, parallel or tapered (major diameter over 1 mm, partial flank angles ≥ 27°)					
Major diameter	2,0 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι
Effective pitch diameter	2,0 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι
Pitch	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι	1,0 µm + 5.10^{-6}·ι
Flankangles (right and left side)	0°6'0"	0°6'0"	0°6'0"	0°6'0"	0°6'0"
Taper	0,1°	0,1°	0,1°	0,1°	0,1°
Plain gauges, parallel or tapered (diameter over 10 mm)					
Internal diameter ring gauges	1,0 µm + 5.10^{-6}·ι	1,5 µm + 5.10^{-6}·ι	1,5 µm + 5.10^{-6}·ι	2,0 µm + 5.10^{-6}·ι	2,0 µm + 5.10^{-6}·ι
External diameter plug gauges	1,0 µm + 5.10^{-6}·ι	1,5 µm + 5.10^{-6}·ι	1,5 µm + 5.10^{-6}·ι	2,0 µm + 5.10^{-6}·ι	2,0 µm + 5.10^{-6}·ι
Taper	0,1°	0,1°	0,1°	0,1°	0,1°
Plain gauges, parallel or tapered (diameter 1 to 10 mm)					
Internal diameter ring gauges	2,0 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι
External diameter plug gauges	2,0 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	2,5 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι	3,0 µm + 5.10^{-6}·ι
Taper	0,1°	0,1°	0,1°	0,1°	0,1°

IAC utilizes the highest quality measuring systems from Heidenhain

HEIDENHAIN Precision Inside

Technical Data

Transducer system	Opto-electronic HEIDENHAIN scales
Resolution	As from 0,01 µm
Linear bearing	Air bearings on granite
Actuators	Controlled DC actuators
Measuring force system	Computer controlled in 2 directions
Computer	Integrated LINUX computer
Air supply	6 bar / 90 psi, oil and water free
Electric power	220V, 50Hz / 110V, 60Hz

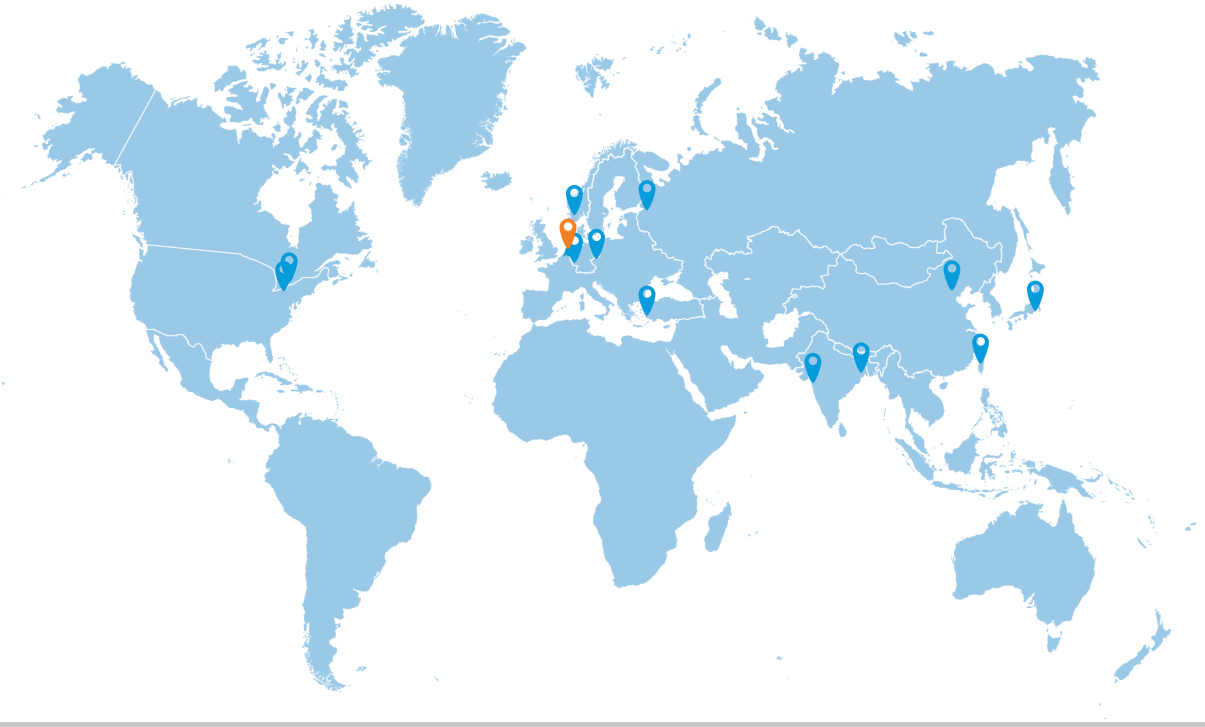
Ask for **more:** The IAC Comparison Table

FEATURES	IAC XP	Conventional methods*
Accreditation to ISO 17025	✔	✔
Plain ring and plug gauges		
Setting rings and plugs	✔	✔
Tapered rings and plugs	✔	With difficulty
Thread ring and plug gauges Parallel & Conical		
Effective diameter	✔	✘
Simple effective diameter (BSW, BS, Unified, JIS etc)	✔	✔
Diameter equivalent	✔	✘
Virtual diameter	✔	✘
Minor diameter	✔	✘
Major diameter	✔	✘
Pitch	✔	With difficulty
Accumulated pitch errors	✔	With difficulty
Partial Flank angles Left and Right	✔	✘
Profile angle	✔	✘
Straightness deviations of flanks	✔	✘
Taper of conical threads	✔	✘
Advanced Thread Tolerance Libraries	✔	✘
Overall Graphical presentation of all measured thread parameters in the tolerance zones	✔	✘
Concentricity of major and minor diameter with reference axis effective diameter	✔	✘
Automatic centering of the gauges	✔	✘
Integrated conversion from internal to external thread and vs. via COSIMEX	in a few seconds	✘
All directional compensation of wear of stylus	✔	✘
Special Applications		
Contour and diameter measurement of ball bearings, ball spindles, etc.	✔	✘
DXF transfer to CAD	✔	✘
Interface by RS232 or LAN Standard Option	Standard	Option
Easy switch between Metrical and Imperial systems	Standard	Option

* e. g. Universal Lenght Measuring Machine, Metroscope, SIP, Mahr, ULM, Helios, Pratt & Whitney, etc.

Precision **Unlimited:**

At your service wherever you are!



We are proud to work with strong partners in several important markets.

Over and above that, we operate worldwide, wherever precision measurement is needed. So, please don't hesitate to contact us, and we will work out what we can do to meet your individual needs.

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