HEXAGON
MANUFACTURING INTELLIGENCE

PRODUCT BROCHURE

AICON DPA SERIES

UNRIVALLED HIGH-END PHOTOGRAMMETRY SYSTEMS

HIGH-QUALITY PHOTOGRAMMETRY MADE EASY

When it comes to shop-floor measurement processes, it's important to have a simple process that's as immune as possible to user error and the hazards of an industrial environment.

That's why the AICON DPA Series photogrammetry systems have been designed to deliver user-friendly measurement and processing in every situation. Relying on just a single handheld camera unit backed by a dedicated software platform, AICON DPA Series systems are among the most portable measurement systems in the world, without compromising on metrology-grade accuracy delivered at productivity-enhancing speed.

AICON DPA Series systems are available in three configurations that allow the user to tailor their experience to the needs of their applications. Each system runs on the same advanced DPA Pilot software platform – the foundation of the leading measurement functionality of the AICON DPA Series.

AICON DPA SERIES
HOW DIGITAL PHOTOGRAMMETRIC ANALYSIS WORKS

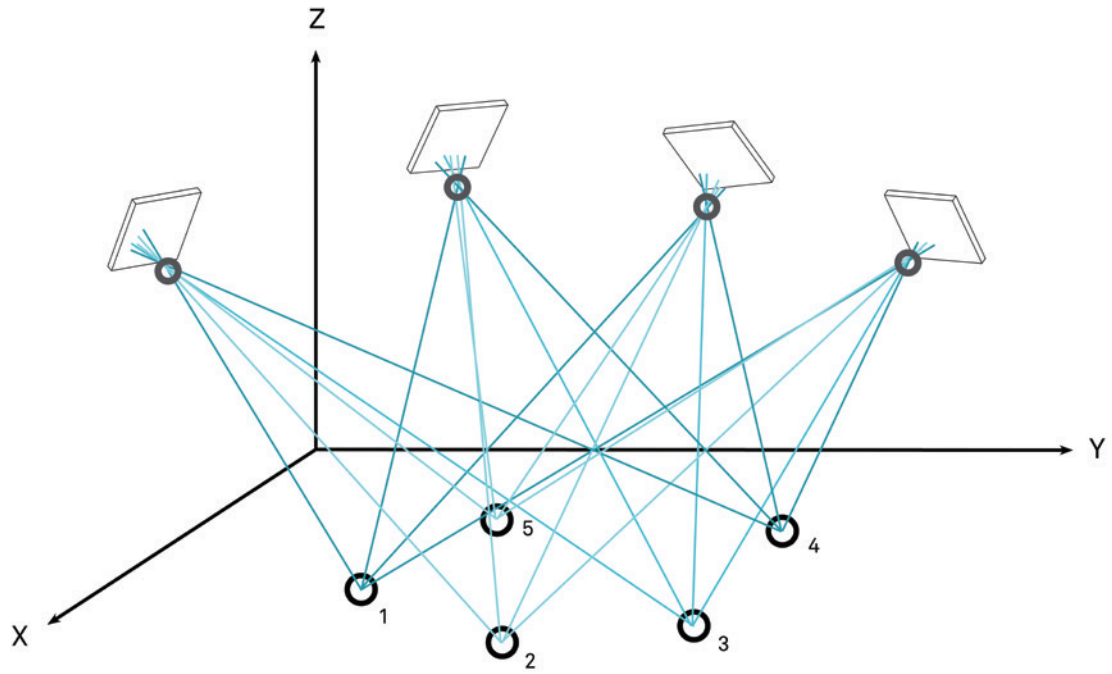
The AICON DPA Series systems are portable 3D measuring tools that use a high-resolution digital camera for data collection. They are based on the principles of **digital photogrammetric analysis**.

To measure a part, it is first signalised with a selection of targets. Coverage of hidden points or features such as holes and edges is ensured with the use of appropriate target adapters. The part is then photographed from several directions.

The images produced are processed either simultaneously with data collection (online processing) or after data collection (offline processing) through a dedicated photogrammetry software tool like DPA Pilot. The software automatically calculates the 3D coordinates of all targeted points.

The calculation is based on the principle of spatial image triangulation and is fully automated. With software that employs an integrated simultaneous calibration procedure, the highest levels of accuracy can be achieved onsite during the measurement process.

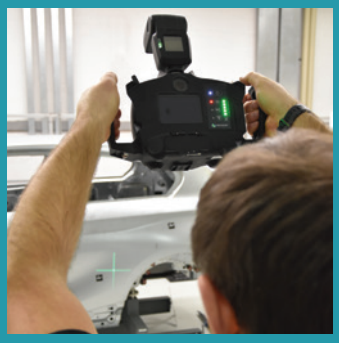
In addition to 3D coordinates, quality photogrammetry software such as DPA Pilot can provide statistical analysis of the results with specific accuracy information about each coordinate. This allows for instant evaluation of the quality of the measurement.



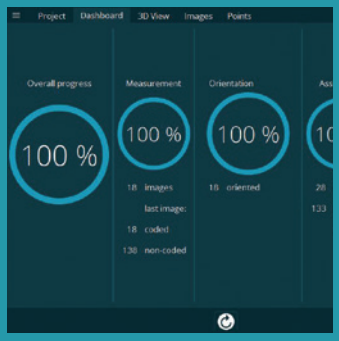
A FULLY AUTOMATIC WORKFLOW

SIGNALISING

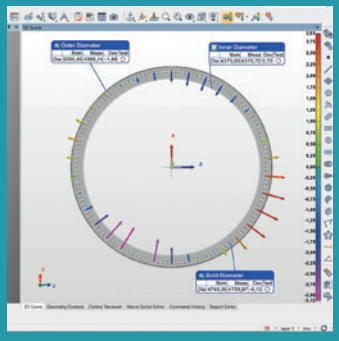
SHOOTING



CALCULATING



REPORTING



AICON DPA SERIES
RANGE AND APPLICATIONS

There are three AICON DPA Series systems available, each with a unique set of features and benefits that allows the AICON DPA Series to cover the needs of users across a variety of industries and applications.

DPA INDUSTRIAL

INDUSTRIAL HIGH-END PHOTOGRAMMETRY

DPA PROFESSIONAL

HIGH-END PHOTOGRAMMETRY

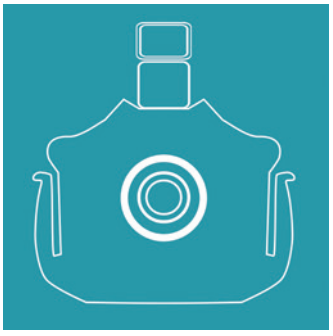
DPA ENTRY

ENTRY-LEVEL PHOTOGRAMMETRY

ROUNDNESS INSPECTION

SHEET-METAL INSPECTION

FIXTURE INSPECTION



DEFORMATION ANALYSIS

TOLERANCE ANALYSIS

MACHINED-PART MEASUREMENT

3D PROCESS ANALYSIS

CAD COMPARISON

PART ALIGNMENT

REFERENCING FOR OTHER MEASUREMENT SYSTEMS

DPA INDUSTRIAL

HIGH-END PHOTOGRAMMETRY DESIGNED FOR THE SHOP FLOOR

DPA Industrial is our top-of-the-line photogrammetry system. It is built on the inclusion of a specially ruggedised digital camera unit – the C1 Camera – which boasts a purpose-built industrial casing designed specifically to meet the needs of the challenging industrial environments in which metrology tools are increasingly being applied.

Whether on the shop floor or in the yard, DPA Industrial is the perfect measurement solution for fast and easy measurement. The entire process is simplified by reducing user interaction to defining field of view and image capture, with all settings and processing handled behind the scenes, powered by the DPA Pilot software platform.

When measurement is brought out of the quality room, special tools that minimise the potential for compromised results are called for. DPA Industrial and the C1 Camera deliver exactly that – high-end industrial metrology with simple handling.

- High-end industrial sensor – 50.6 megapixels
- Accuracy to within 10 microns
- Ruggedised housing for strong protection
- Laser pattern projects field-of-view for easy targeting
- Built-in high-speed WiFi connectivity
- Long-life battery – more than 5000 shots
- Remote-control functionality
- Simplified control schema minimises operating errors during measuring tasks
- Full range of measurement targets, adapters and scale bars
- Modern, easy to use interface to major metrology software packages

DPA PROFESSIONAL

THE STANDARD FOR HIGH-END PHOTOGRAMMETRY

DPA Professional is a high-end photogrammetry system designed for expert metrologists with a strong knowledge of photogrammetric techniques and the ability to take complete control of every aspect of measurement.

Designed to allow specialist users to work with DPA Pilot to achieve best-in-class measurement results, DPA Professional is the ideal solution for experienced high-level operators measuring within clean and safe environments.

- High-end sensor – 50.6 megapixels
- Accuracy to within 10 microns
- Full control of all camera settings directly in the hands of the end-user
- Optional remote-control functionality
- Optional high-speed WiFi connectivity
- Extended range of measurement targets, adapters and scale bars
- Modern, easy-to-use interface to major metrology software packages

DPA ENTRY

ENTRY-LEVEL PHOTOGRAMMETRY

DPA Entry is available to users working in the sort of challenging industrial environments where a standard digital camera represents a more practical investment.

Built on the same DPA Pilot software platform, DPA Entry can deliver excellent measurement results to users well-trained in directing the functionalities of the camera unit.

- Mid-range sensor unit
- Accuracy to within 15 microns
- Full control of all camera settings directly in the hands of the end-user
- Basic range of measurement targets and scale bars
- Modern, easy-to-use interface to major metrology software packages

SPECIFICATIONS

HARDWARE CONFIGURATIONS

DPA INDUSTRIAL

DPA PROFESSIONAL

DPA ENTRY

ACCURACY SPECIFICATIONS

	DPA INDUSTRIAL	DPA PROFESSIONAL	DPA ENTRY
Length measurement accuracy | MPE[1]	15 µm + 15 µm * $Length_{diagonal}$ [m]	15 µm + 15 µm * $Length_{diagonal}$ [m]	25 µm + 25 µm * $Length_{diagonal}$ [m]
Point-based measurement accuracy	2 µm + 5 µm/m (RMS) 3 µm + 7 µm/m (3 sigma)	2 µm + 5 µm/m (RMS) 3 µm + 7 µm/m (3 sigma)	4 µm + 6 µm/m (RMS) 5 µm + 9 µm/m (3 sigma)

[1] MPE (Maximum Permissible Error) of length measurement error, based on VDI/VDE 2634 part 1: defined as maximum permissible deviation of a measured length, which is located between two measuring points, signalised with photogrammetric targets, in the entire measuring volume of the measuring object, regardless of the position and orientation.

SOFTWARE SPECIFICATIONS

	DPA INDUSTRIAL	DPA PROFESSIONAL	DPA ENTRY
Photogrammetric processing	DPA/DPA Pilot	DPA/DPA Pilot	DPA/DPA Pilot
Control software interfaces for post-processing and reporting	AICON 3D Studio, PolyWorks. Optional: SpatialAnalyzer, Geomagic Control X	Optional: AICON 3D Studio, SpatialAnalyzer, PolyWorks, Geomagic Control X	
Automatic on-the-job calibration	Yes	Yes	Yes
Online calculation	Yes	Optional	Not supported
Deformation analysis	Yes	Optional	Optional
Adapter correction	Yes	Optional	Optional
Feature measurement	Yes	Optional	Optional

TECHNICAL SPECIFICATIONS

	DPA INDUSTRIAL	DPA PROFESSIONAL	DPA ENTRY
CAMERA SPECIFICATIONS			
Sensor unit	C1 Camera	Canon EOS 5DS	Canon EOS 6D
Lens	28mm AICON metric wide-angle lens	28 mm AICON metric wide-angle lens	28 mm AICON metric wide-angle lens
Camera resolution	50.6 megapixels (8688 x 5792)	50.6 megapixels (8688 x 5792)	20.2 megapixels (5472 x 3648)
Field of view (FoV)	65 x 46°	65 x 46°	65 x 46°
Illumination	White-light flash	White-light flash	White-light flash
Speed	Up to 5 images per second	Up to 5 images per second	Up to 4 images per second
Viewfinder	Laser pattern, laser safety class 1M Diopter	Diopter	Diopter
Wireless data transfer	Integrated WiFi 802.11n / 2.4 GHz / WPA2/PSK	Optional	Not supported
Power supply	System internal Li-ion battery (more than 5000 shots)	Li-ion battery	Li-ion battery
INTERFACES AND CONNECTIVITY			
Processing unit	High-end notebook	High-end notebook	Notebook
Operating system	Microsoft Windows 10 and Windows 7	Microsoft Windows 10 and Windows 7	Microsoft Windows 10 and Windows 7
Connectivity	WiFi, ethernet via RJ45 connector, removable SD card	Removable storage device (SD or CF card), USB cable; WiFi optional	Removable storage device (SD or CF card), USB cable
Control modes	Manual trigger / remote-control trigger	Manual trigger / remote-control trigger	Manual trigger
GEOMETRIC SPECIFICATIONS			
Dimensions	300 x 100 x 170 mm	255 x 110 x 150 mm	245 x 110 x 150 mm
External dimensions transportation box	570 x 460 x 265 mm	520 x 430 x 250 mm	870 x 230 x 170 mm
Sensor weight	2.8 kg	1.8 kg	1.4 kg
Weight transportation box including system	Approx. 14.5 kg	Approx. 12 kg	Approx. 7.7 kg
Storage	Robust case with trolley	Robust case with trolley	Robust case
TECHNICAL REGULATIONS			
Operating temperature	+5 to +45°C recommended	+5 to +45°C recommended	+5 to +45°C recommended
IP protection class	IP51	Not specified	Not specified
Conformity	CE, RoHS	CE, RoHS	CE, RoHS
Calibration and certification	DAkkS calibrated scale bars, 2 x 1430 mm VDI 2634 page 1 certified system	DAkkS calibrated scale bars, 1 x 1430 mm, 1 x 830 mm VDI 2634 page 1 certified system	Factory-calibrated scale cross 800 VDI 2634 page 1 certified system optional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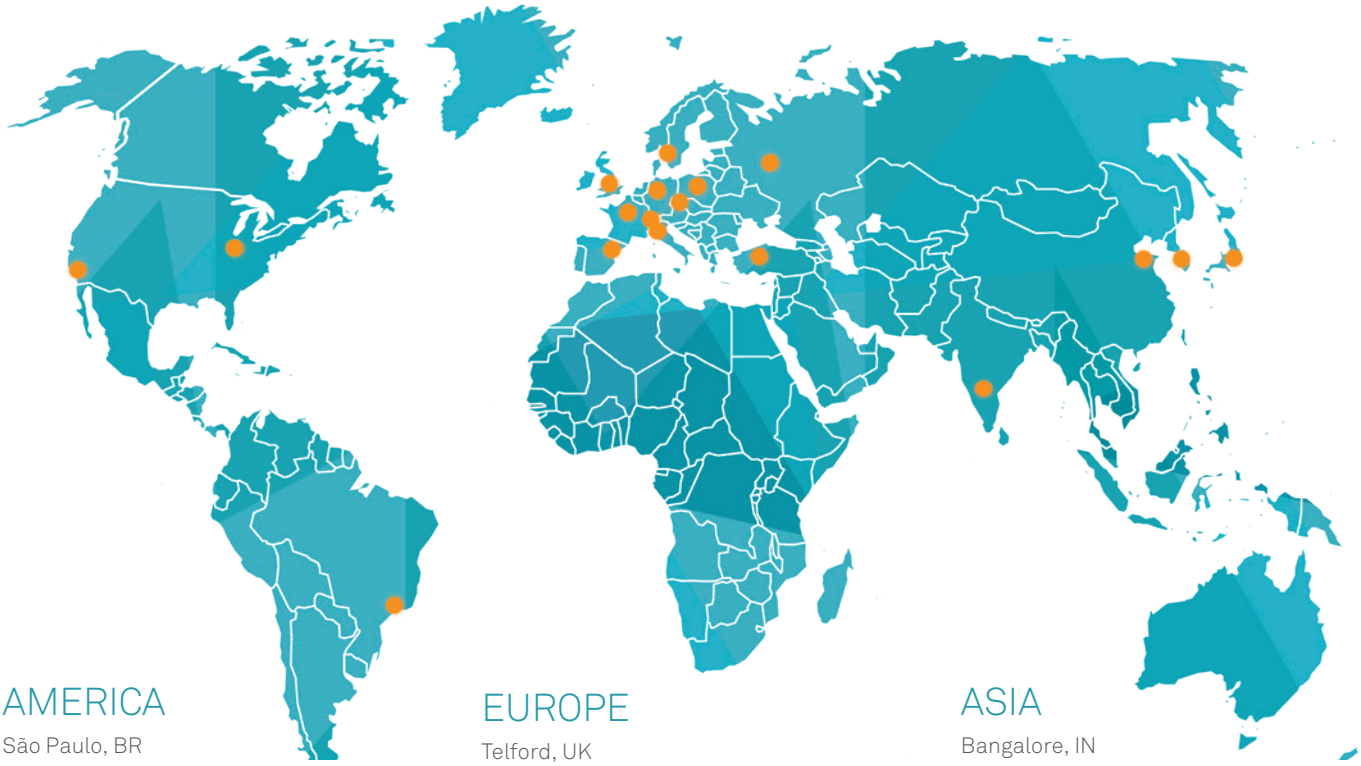
HEXAGON

QUALITY ACROSS THE GLOBE
LEADING TOOLS WITH LEADING SUPPORT

Drawing on decades of research and development experience, the AICON DPA Series from Hexagon Manufacturing Intelligence is built on a long history of outperforming technological innovation. Deriving quality from experience to drive productivity is what keeps Hexagon in front and able to deliver first-class solutions for industries around the world.

The international presence of Hexagon guarantees comprehensive aftersales support and services across the globe. With the largest dedicated service team of any metrology equipment manufacturer and an emphasis on locally delivered solutions, Hexagon is unmatched from service, repair, certification and calibration through operator training and software maintenance and upgrades.

Along with the assurance of ten years of serviceability, owners of Hexagon's AICON DPA Series systems benefit from a full 12-month factory warranty – our guarantee that our technology will always meet the needs of our users.



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Moscow, RU
Braunschweig, DE
Prague, CZ
Istanbul, TR
Krakow, PL

ASIA
Bangalore, IN
Qingdao, CN
Seoul, KR
Atsugi, JP

HEXAGON
MANUFACTURING INTELLIGENCE

Hexagon Manufacturing Intelligence helps industrial manufacturers develop the disruptive technologies of today and the life-changing products of tomorrow. As a leading metrology and manufacturing solution specialist, our expertise in sensing, thinking and acting – the collection, analysis and active use of measurement data – gives our customers the confidence to increase production speed and accelerate productivity while enhancing product quality.

Through a network of local service centres, production facilities and commercial operations across five continents, we are shaping smart change in manufacturing to build a world where quality drives productivity. For more information, visit **HexagonMI.com**.

Hexagon Manufacturing Intelligence is part of Hexagon (Nasdaq Stockholm: HEXA B; **hexagon.com**), a leading global provider of information technologies that drive quality and productivity across geospatial and industrial enterprise applications.

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