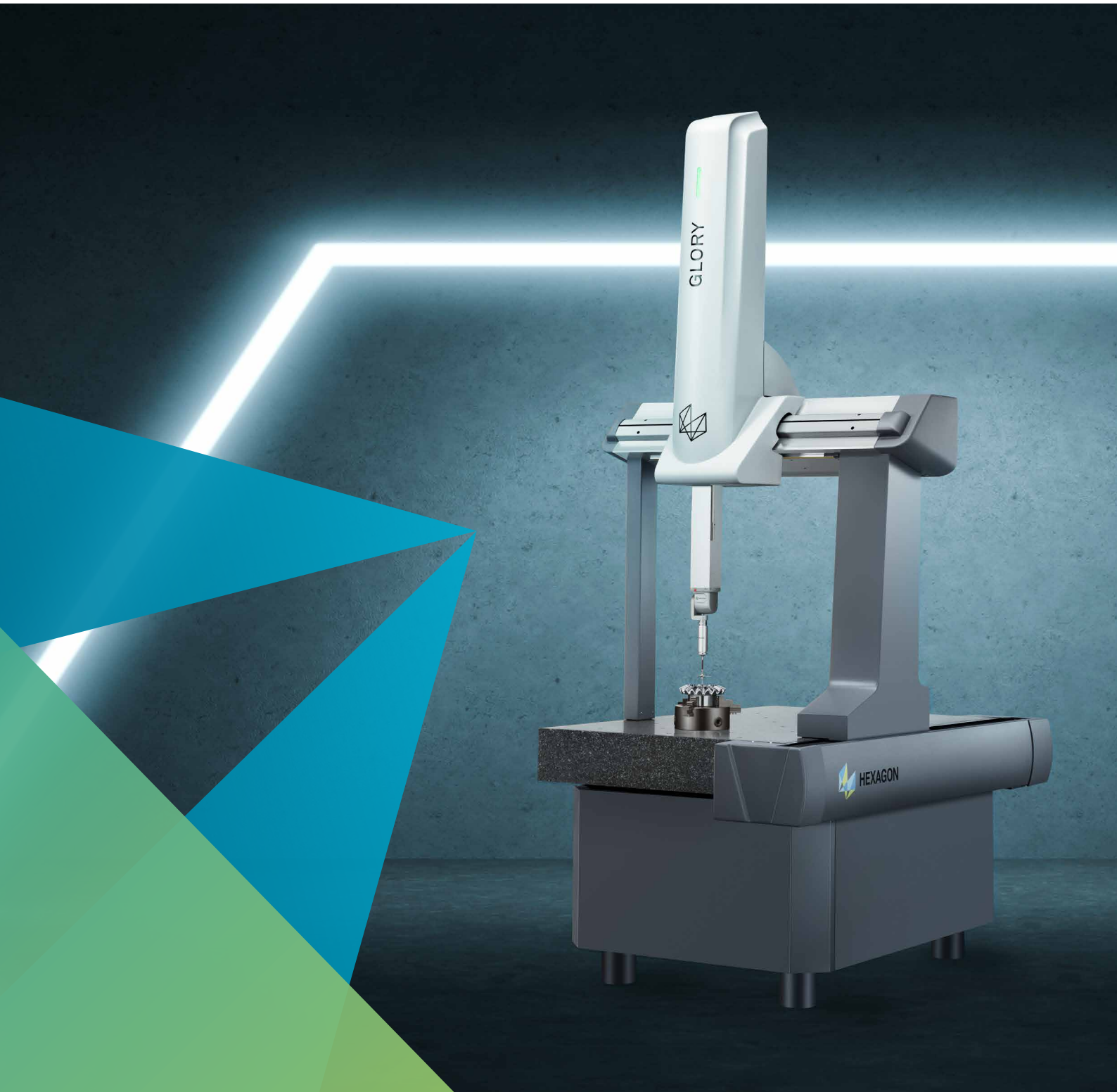
HEXAGON

Brochure

GLORY

A new generation of universal CMMs



Today’s manufacturing industry is developing at a rapid pace, and users are demanding higher and higher quality products. Accurate and efficient quality inspection is key for companies to remain competitive.

GLORY

Meeting diverse user needs

The GLORY bridge coordinate measuring machine (CMM) is a new generation of universal measuring machine built upon Hexagon’s innovative and advanced technologies, user research and close customer collaboration. Its flexible design platform ensures that it can be configured to meet a wide variety of user requirements.

The GLORY CMM is designed to meet the needs of modern manufacturing and is dedicated to providing users with a full range of intelligent manufacturing solutions.

Automotive

Metal castings, injection moulded parts, seat components, drive chain components, suspension system components, lights

Moulds

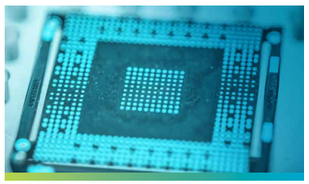
Moulds, mould holders, electrodes, mould blanks, hard plastic parts

Mechanical engineering

Hardware, machined parts, stampings, mirrors, cassettes, gearboxes, shafts, bearings

Aerospace

Drive train components, support structures, housings



Electronics

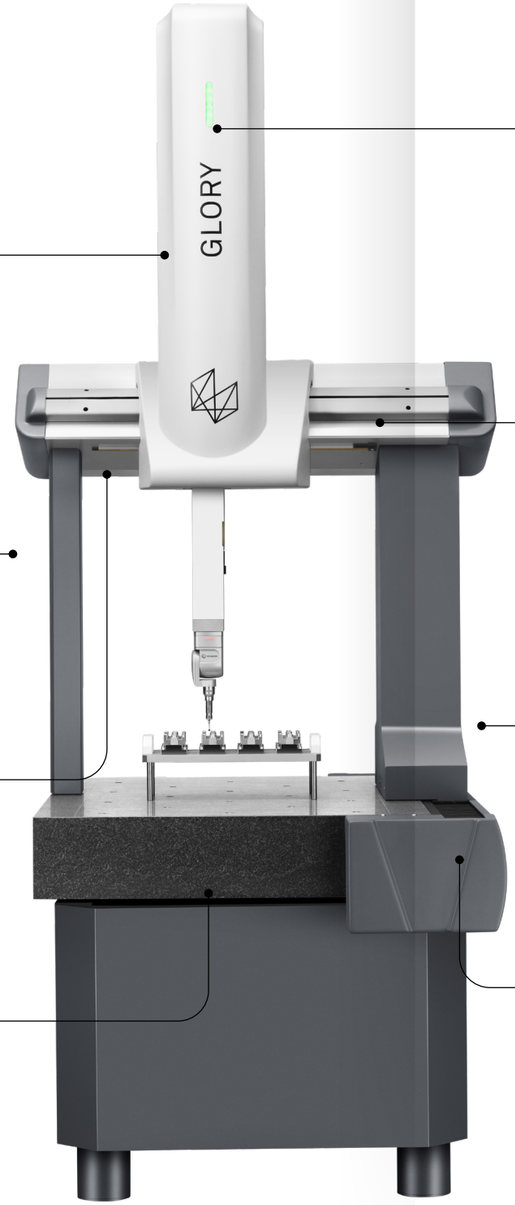
Semiconductors, components, electronic assembly

Medical technology

Implants, medical devices, prostheses

Advanced design for intelligent solutions

GLORY bridge CMMs provide consistent and reliable measurement results, from inspecting manufacturing materials to measuring during machining and assembly. Its unique design and core technology advantages help users shorten and optimise cycle times and make better use of inspection equipment to maximise productivity. The CMM supports the fast changeover of inspection methods to fit the requirements of different parts and features and meet a broader range of measurement applications.



Full carbide aluminium Full carbide aluminium mechanical frame

Surface hardened for extra rigidity. The inherent lightness of aluminium, its good thermal conductivity, its adaptability to temperature changes and its ease of processing provide the optimum material for a universal measuring system.

Patented pneumatic balancing technology

The flexible suspension system avoids interference problems between axial movement and the drive train and ensures high positioning accuracy, smooth running and saves energy.

HEIDENHAIN scales

High-resolution encoder system, excellent measurement stability, repeatability and accuracy. Unaffected by interference, wear-resistant, stable and reliable.

One-piece granite stage

The solid and stable granite table reduces vibration and supports bridge movement. The material selection process is certified by international industry bodies according to strict quality standards.

Message light to keep easy track of the machine's operating status

With the multi-coloured LED signal light integrated into the top of the Z-axis, users can control the status of their work in real time, even from a distance, optimising time and resource management.

TRICISION precision triangular beam bridge design

An optimal structural rigidity ratio provides higher accuracy, long-term stability and improved dynamic performance. The triangular shape is structurally robust and less prone to deformation under stress, allowing for faster operation, a smaller footprint and better thermal stability.

Reinforced timing belts

Reinforced timing belts with built-in steel wire combine flexible engagement and rigid axial drive characteristics to ensure precise positioning and eliminate jitter during high-speed scanning.

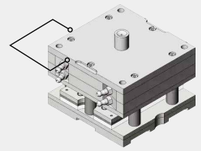
Integral dovetail guide

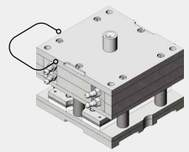
Precision-machined integral dovetail guideways with a closed structure on three sides provide the most robust construction in the industry, avoiding structural deformation caused by split glueing. These ensure stable movement, accuracy, repeatability and long-term stability.

fly2 MODE

Glide smoothly through measurements

The new generation of flight control technology, Fly2, optimises the measurement path to significantly reduce hold-up and idle time during the measurement process, increase measurement efficiency by more than 10%, and boost productivity.





scan PILOT

Navigating unknown path scans

Scanning unknown parts is often complex and timeconsuming. A new generation of scanning navigation technology that significantly improves the accuracy of scanning unknown paths. This delivers excellent performance when scanning unknown contours, complex geometries and abrupt surface changes at high speeds.

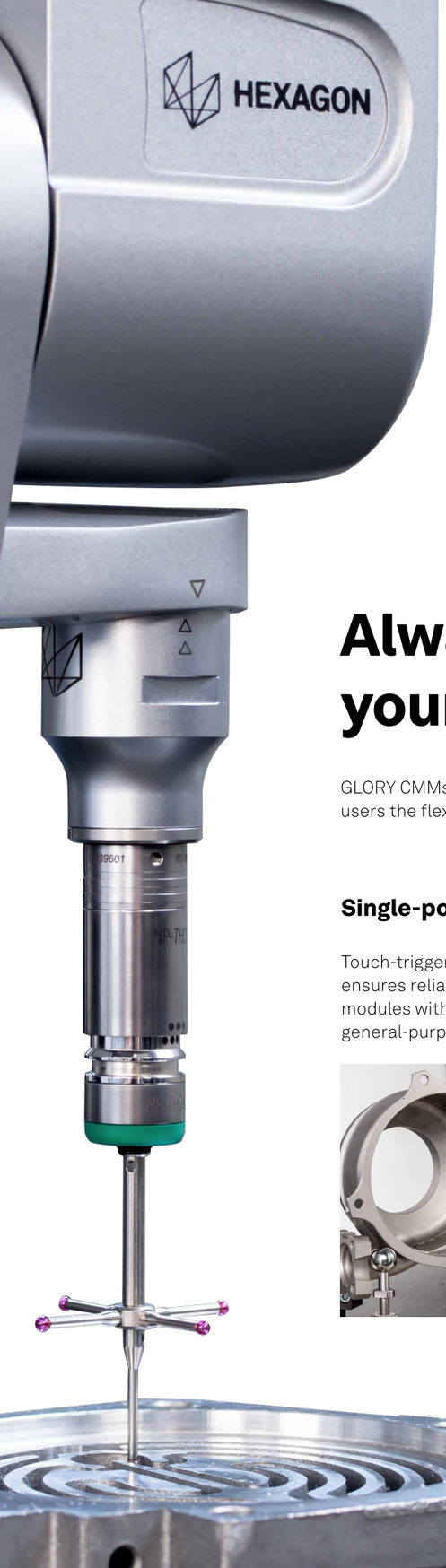
eco MODE eco MODE

Energy efficient, greener, safe and effective

ECO Mode enables automatic power-off when the CMM is idle. And when it needs to stop working for a set period, ECO Mode+ automatically powers down and stops the supply of compressed air to the air bearings, significantly increasing energy efficiency. Once in ECO Mode and ECO Mode+, the CMM will automatically resume operation and perform subsequent procedures without human intervention.

Automation integration

From manual to semi-automatic, semi-automatic to fully automatic, offline to near-line, and near-line to inline, GLORY can be easily integrated into automation systems. It is plugand-play and modular to meet the requirements of all levels of automation.



Always ready to meet your measurement needs

GLORY CMMs come with various tactile and non-contact sensor configurations, giving users the flexibility to choose the best solution for each application.

Single-point touch-trigger probing

Touch-trigger probes are easy to operate, robust and economical. A rugged design ensures reliable use in harsh industrial environments. In addition, exchangeable stylus modules with low to medium trigger forces add flexibility, making this system ideal for general-purpose measurements on complex parts.

Continuous tactile scanning

Scanning probes combine dynamic single-point probing and continuous high-speed scanning of both known and unknown surfaces. With tactile scanning, hundreds of surface data points are captured per second, providing accuracy and reliability while saving the user significant process time. An accompanying changer rack enables the seamless switching of sensor configurations within a measuring program.

Non-contact measurement

The best way to inspect sensitive parts with complex geometries is with non-contact sensors.

Laser scanning sensors can collect hundreds of thousands of data points per second, quickly capture part surfaces and digitise entire freeform surfaces in point clouds, combining accuracy and efficiency to make measurement easier.

The vision sensor has a high-resolution colour camera and built-in LED illumination system to measure microscopic features and sensitive or easily deformed components. With the vision sensor's zoom capabilities, operators can choose between a large field of view to quickly measure multiple features simultaneously or a smaller measurement area to measure individual features with higher accuracy.

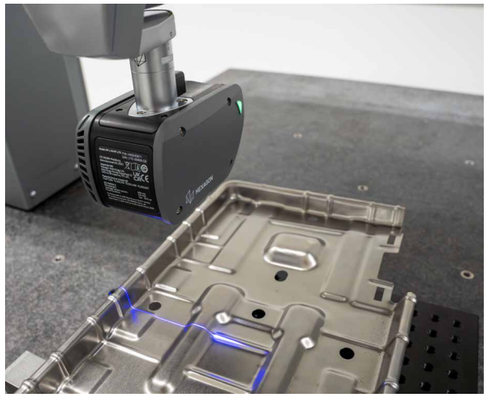
Typical applications

High-precision evaluation of position tolerances

Contact sensors are perfect for checking the form tolerances of components with high measurement repeatability. Their advantages include cost-effectiveness, a robust design and ease of operation while guaranteeing accurate and reliable results.

Highly accurate and efficient inspection of unknown surfaces

The scanning sensors used on GLORY CMMs are ideally suited for measuring unknown shapes and contours on all kinds of parts. High measuring point density ensures excellent accuracy and repeatability.



Measurement of sheet metal parts for feature inspection, profile and surface analysis

The surface or features of sheet metal parts often differ from tolerances in the drawing for various reasons, for example due to the spring off effect. Because of the part's large surface, laser scanning is the ideal way of quickly controlling the accuracy in production step, from a single component to final assembly.

The long laser stripe enables fast data capture. The flexible stand-off helps achieve higher point density scans for better feature evaluation and point resolution. Users can enlarge the stand-off to drive faster surface scans.

Multi-hole measurement of complex geometric components

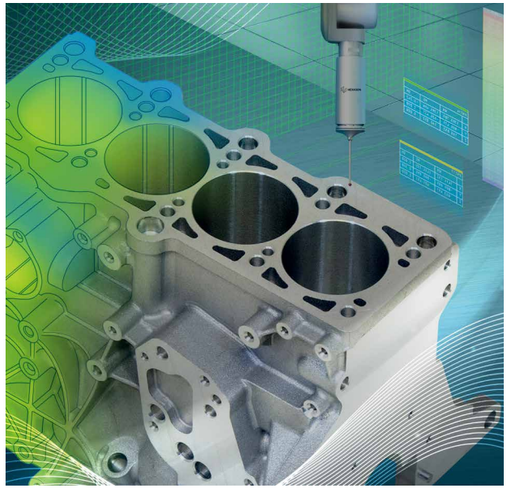
Due to the large number of geometrical features and the Where there are a large number and dense arrangement of lateral features and sensitive surfaces, the GLORY vision sensor enables quick, non-contact measurement of small holes by simultaneously capturing them, preventing deformation or damage to the part and greatly improving inspection efficiency. The HR-R sensor changing rack enables the fully automatic exchange of sensors equipped with Hexagon's TKJ interface. This makes it possible to use multiple sensors for the same part.

PC-DMIS:
Making measurement easy, efficient and effective

GLORY is equipped with the world's leading metrology software. Used by thousands of manufacturers worldwide for a wide range of inspection tasks, PC-DMIS combines sophisticated algorithms with easy operation, enabling users to create and execute measurement procedures with ease. The software's reporting capabilities and compatibility with other measurement software create a unified user experience and deliver easily interpreted measurement results enabling users to collaborate to make more informed decisions.

Create measurement programs to efficiently capture manufacturing quality data

PC-DMIS enables quality engineers and metrology specialists to create complex measurement programs offline before manufacturing the part.



Faster selection and execution of measurement procedures

Applying the user-friendly interface of PC-DMIS, operators can quickly select and execute the correct procedure for a wide range of measurement applications.

Easy cross-departmental communication for integrated decision making

With customisable reports, cloud communication and alerts on mobile, PC-DMIS can communicate measurement results to the right customer workgroups in the right format at any time.

Breaking down information silos with data

Smarter manufacturing requires that inspection equipment is used to its full advantage. Completely understanding quality data from a CMM is key to this. When data is translated into analysable, actionable instructions, CMM users and quality managers can apply it quickly and confidently to maximise uptime, enhance processes and improve productivity. With simple, real-time reporting, this rich information can be shared across all relevant departments throughout the manufacturing process. Ensuring the right people have the right information at the right time breaks down operational silos and helps users make more informed decisions.

eMMA: CAD and structure tree based data management system

eMMA is a CAD and structure tree based system for dimensional planning, measurement data acquisition, product quality data management, comprehensive dimensional analysis and 3D report presentation. eMMA is compatible with data formats from many brands of measurement equipment. It supports quality data generated from probing and optical systems, whether inline or automated, from stationary and portable metrology systems.

eMMA focuses on the moulding and shaping process of sheet metal parts, interior and exterior trims and other products, helping enterprises to achieve structured management of quality data, uniform standards for dimensional judgement, cross-regional and cross-departmental business interaction, and to deeply explore the potential value of quality data to realise the digital transformation of the manufacturing industry.

Q-DAS statistical analysis software

Q-DAS is a professional statistical process control (SPC) solution for the manufacturing industry, with a complete set of tools for effectively implementing Six Sigma manufacturing strategies at all levels of the manufacturing system, including data collection, evaluation and SPC reporting of process quality data. Q-DAS is the basis for structured, user-friendly evaluation and industrial process control.

01 Intuitive graphical interface

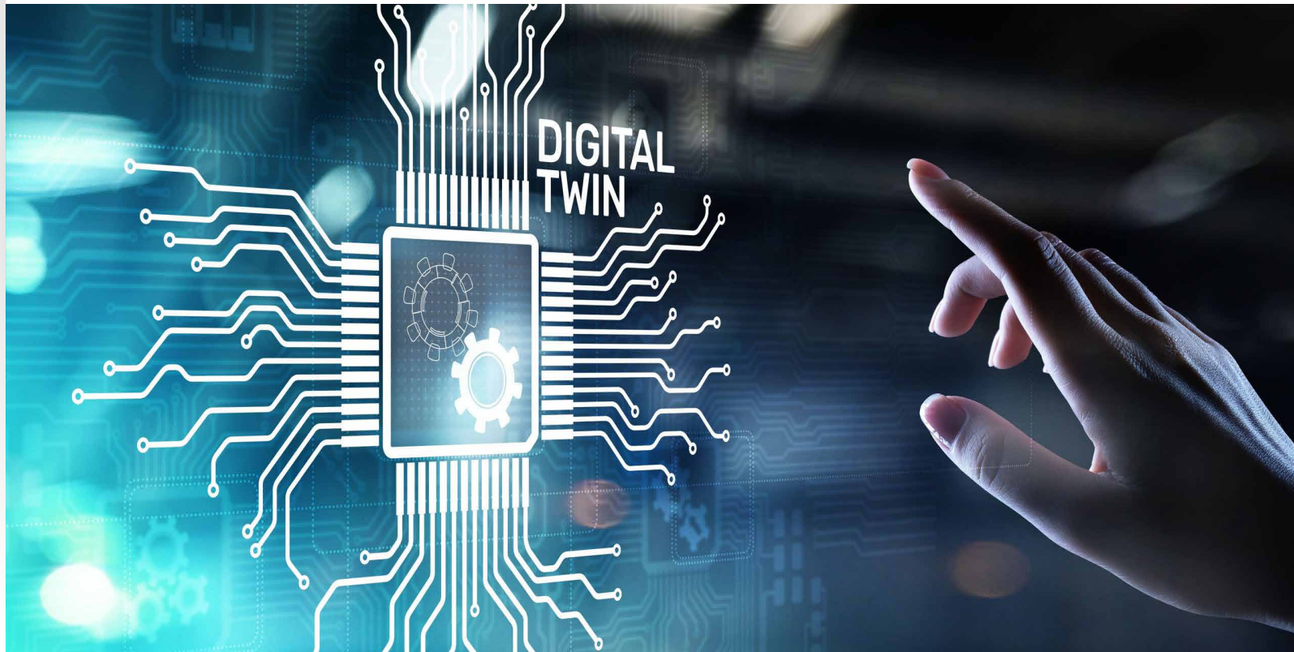
02 Simple one-touch operation

03 Clear management of program resources

Intelligent monitoring system

Real-time information on the status and performance of the CMM is displayed and analysed in a central panel, integrating the machine's motion control data, software measurement data and environmental monitoring data from the CMM's external environment. This information can be accessed from a PC, smartphone or tablet. Customised notifications and instant alarms ensure that operators can remotely monitor unattended operating equipment, optimise overall equipment efficiency through data analysis, and add value to the CMM by helping users to plan their follow-up work.

Hexagon's Intelligent Inspection System focuses on analysing data from the range of installed equipment and the operating environment. It explores correlations, thus enabling the digitisation of the plant and the most effective use of data.



Best way to choose a system

1 | Size

4 Series

04.05.04
400×500×400

5 Series

05.06.05
500×600×500

6 Series

06.08.06
600×800×600

06.10.06
600×1000×600

8 Series

08.10.06
800×1000×600

08.15.06
800×1500×600

10 Series

10.12.08
1000×1200×800

10.15.08
1000×1500×800

10.21.08
1000×2100×800

12 Series

12.15.10
1200×1500×1000

12.22.10
1200×2200×1000

12.30.10
1200×3000×1000

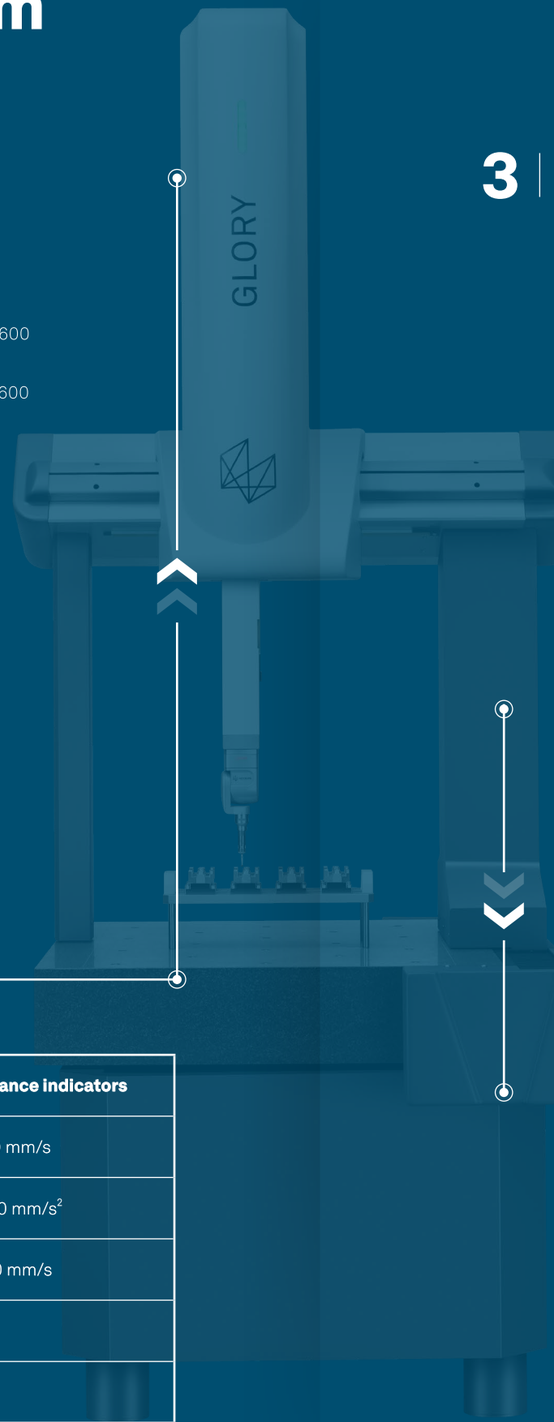
15 Series

15.22.10
1500×2200×1000

15.30.10
1200×3000×1000

15.22.12
1500×2200×1200

15.30.12
1500×3000×1200



2 | Performance

GLORY accuracy indicators		GLORY dynamic performance indicators	
Maximum permissible error in length measurement MPE(E0)	from 1.7+3.3L/1000	Maximum 3D velocity	520 mm/s
Maximum permissible error in length measurement MPE(E150)	from 1.7+3.3L/1000	Maximum 3D acceleration	1730 mm/s^2
Maximum permissible error of repeatability R0	from 1.6	Maximum scan rate	300 mm/s
Maximum permissible error of singleprobe shape PFTU	from 1.7		
Maximum permissible error of scanning probe THP/t	from 2.6/45		

3 | Improving productivity

Single point trigger measurement
HH-MI
HP-TMe
HP-THDe

Tactile continuous scanning
HP-S-X1
HP-S-X3

Non-contact measuring systems
HP-L laser sensor
HP-C vision sensor

4 | Value-added options

ECO Mode and ECO Mode+
Power and gas saving functions

Pulse
Measurement environment monitoring

Automation integration
Plug-and-play hardware and modular management

CMM Care
Measuring machine status and OEE

Active vibration damping
Elevated environmental vibration isolation

SMART quality
Integrated smart quality management platform

5 | Metrology software options

PC-DMIS PRO*
Basic measurement requirements without CAD integration and without measuring part contours

PC-DMIS CAD*
Integration of CAD model data into the measurement process and evaluation of measurement results

PC-DMIS CAD++*
Precision measurement for high-speed scanning, sheet metal measurement, part alignment, etc.

QUINDOS
Powerful analysis tools for complex geometry measurement

HEXAGON

Hexagon is a global leader in digital reality solutions, combining sensor, software and autonomous technologies. We are putting data to work to boost efficiency, productivity, quality and safety across industrial, manufacturing, infrastructure, public sector, and mobility applications.

Our technologies are shaping production and people-related ecosystems to become increasingly connected and autonomous – ensuring a scalable, sustainable future.

Hexagon's Manufacturing Intelligence division provides solutions that use data from design and engineering, production and metrology to make manufacturing smarter. For more information, visit hexagonmi.com.

Learn more about Hexagon (Nasdaq Stockholm: HEXA B) at hexagon.com and follow us @HexagonAB.