HEXAGON
MANUFACTURING INTELLIGENCE

PRODUCT OVERVIEW

SENSORS

FOR COORDINATE MEASURING MACHINES


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BORN FROM EXPIERENCE

Hexagon Manufacturing Intelligence's comprehensive range of probe heads, probes, sensors, styli changers and accessories for Coordinate Measuring Machines represents the latest evolution in sensor technology for coordinate measuring.

It includes a broad array of standard equipment precisely designed and built to achieve fast and accurate measurement. The Hexagon probing systems enhance CMM performance and functionality, featuring:

- State of the art technology
- Precise and reliable operation
- Maximum application flexibility and outstanding usability
- Quick and effective interchangeability
- Extended modularity to configure optimized inspection systems to productivity requirements
- Rugged, heavy-duty construction
- Superior durability for operation in industrial environments

PROBE HEADS

TOUCH TRIGGER PROBES

SCANNING PROBES

LASER SCANNER

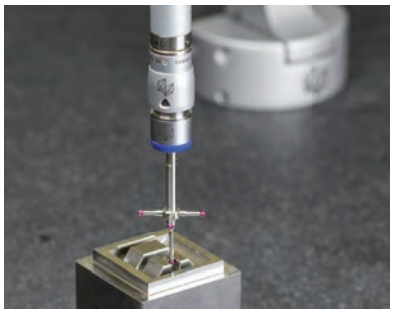
VISION SENSORS

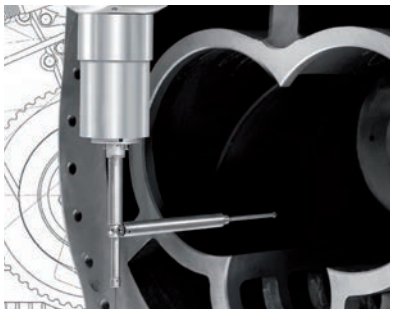
RACKS

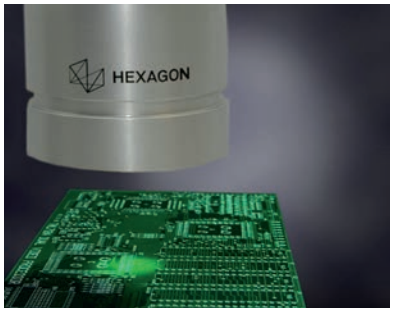
STYLI & ACCESSORIES

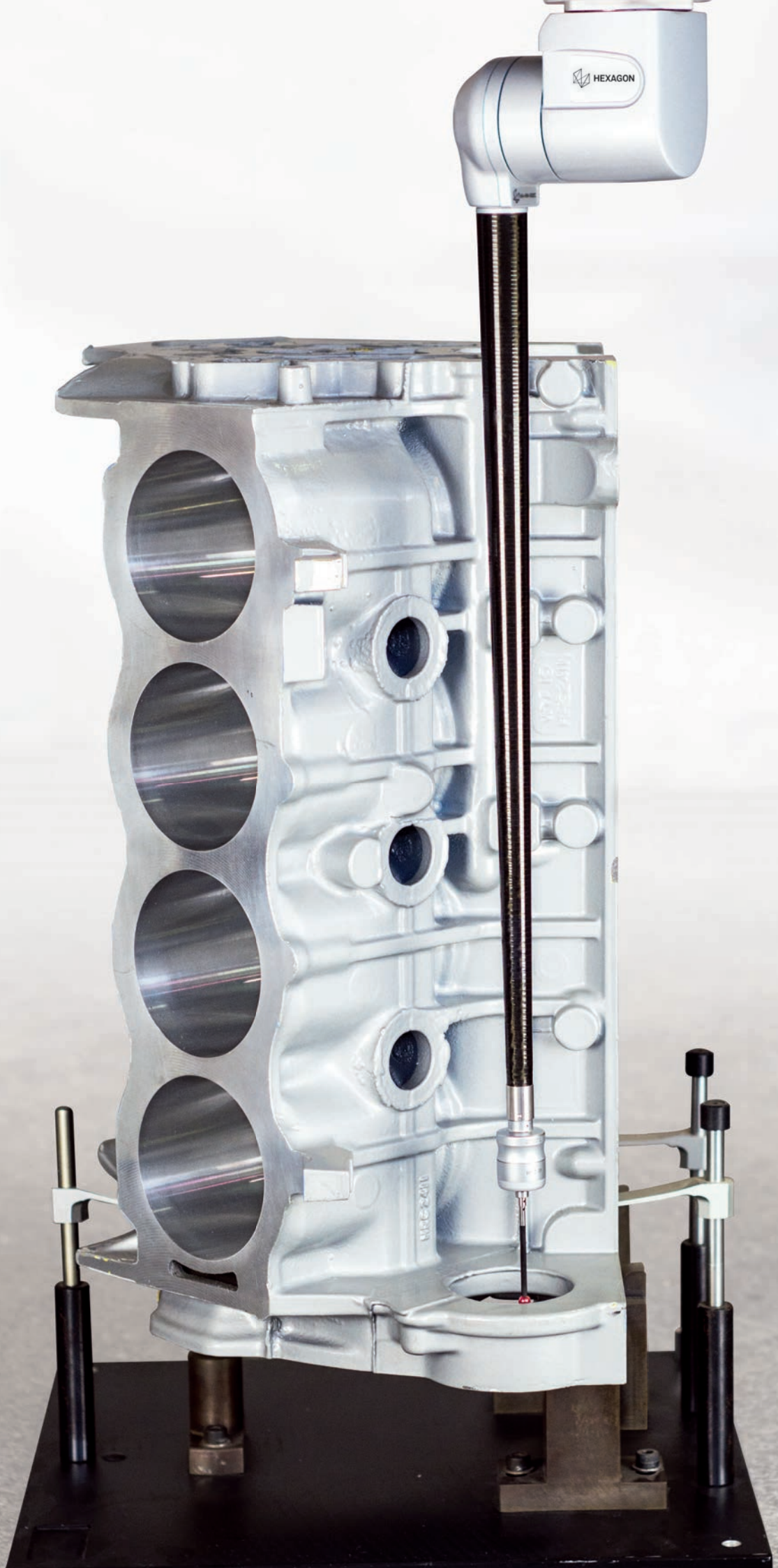
THE MOST FLEXIBLE SENSOR SOLUTIONS ON THE MARKET

The Hexagon probing system line provides the performance, productivity and reliability that only the producer and supplier of the world's widest and most comprehensive range of CMMs can ensure. All key components are engineered, manufactured and assembled by Hexagon and are designed to work together as an integrated product line for maximum application flexibility and enhanced CMM performance.





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THE BEST SOLUTION FOR EVERY APPLICATION

The probe head forms the heart of every coordinate measuring machine. Combined with a sensor, it generates the measurement data during inspection cycles. Manual heads for touch trigger probes provide excellent basic capabilities. The automatic probe heads extend that capability with a kinematic joint for the coupling of scanning probes and laser scanners. Our continuous probe head offers servo wrist flexibility, where styli can be aligned in any direction.

MANUAL PROBE HEADS

- HH-T
- HH-MI

AUTOMATIC INDEXING PROBE HEADS

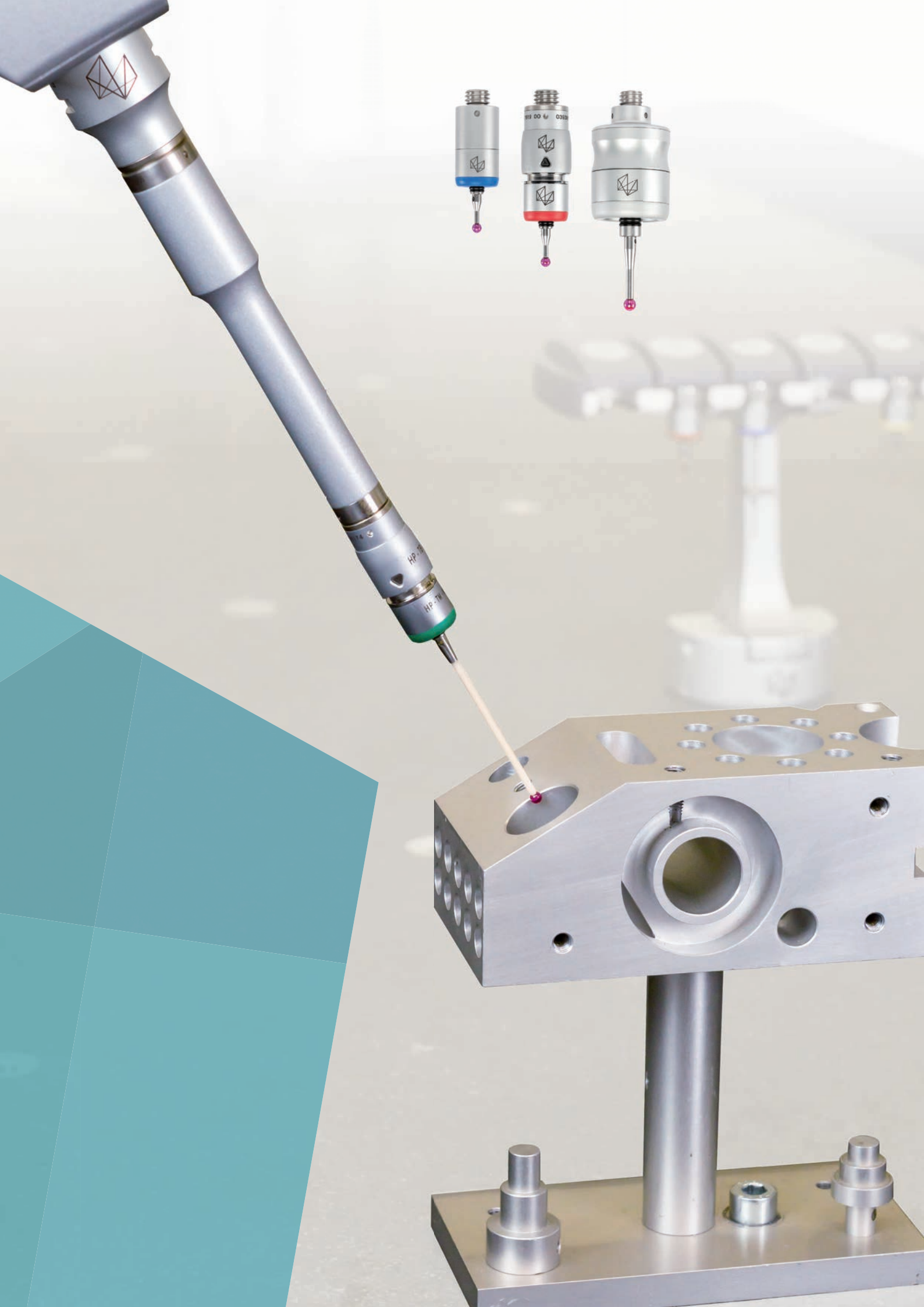
- HH-A
- HH-AS

HEAVY DUTY AUTOMATIC INDEXING PROBE HEADS

- HH-A-H2.5
- HH-AS-H2.5

CONTINUOUS PROBE HEAD

- HH-ACW-43MW



THE BASIS SOLUTION

Hexagon manufactures touch trigger probes for fast and repeatable 3D measurements. They feature long life, accuracy, ease of use, comparatively low cost and excellent access to difficult to reach measuring points.

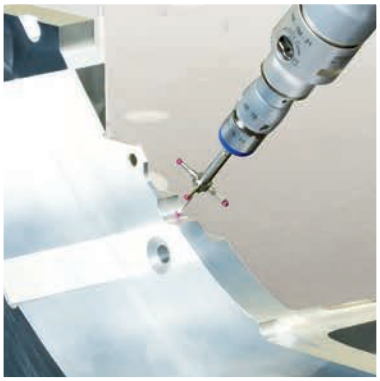
The touch trigger probes are available in four versions with measuring forces ranging between 0.055 N and 0.10 N. Their M8 threaded connections permit direct assembly with nearly all existing manual and motorized probe heads.

TYPICAL TOUCH TRIGGER PROBE APPLICATIONS

- Fast, repeatable 3D-measurements
- Simple but highly accurate surface measurements
- Point measurements, even on portable machines and robots

BENEFITS OF THE HP-T SERIES

- High flexibility due to different trigger forces
- Compact design for measurements in the smallest areas
- Tough enough for every industrial environment
- Automatic Change of the Modules with different trigger forces possible
- Cost effective solution for difficult measurements
- Easy to use

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VARIABLE HIGH-SPEED SCANNING

Scanning at its best – this is what users can expect with the Hexagon scanning probes. With both the smallest of these probes, the HP-S-X1 series, and the larger versions, the HP-S-X3 series and the HP-S-X5, you can perform fast, accurate contour and shape measurements as well as all standard measurements including discrete scanning, self-centering measuring and continuous high-speed scanning.

Fast and precise measurements with highly accurate sensors – that's what the 3D Scanning Probes of the HP-S-X series are made for.

TYPICAL SCANNING SENSOR APPLICATIONS

Shape and profile measurements of simple and complex geometries:

- Gear geometrics (e.g. spur gears, screw wheels, etc.)
- Aerospace components (e.g. turbine blades)
- Optical and mechanical precision measuring parts (e.g. lenses)
- Transmission and engine parts (e.g. cylinder geometrics in engine blocks)
- Free-form surfaces

BENEFITS OF THE HP-S-X SERIES

- Dynamic discrete scanning
- Self-centering measuring
- No pinched axis during measurements
- Sensors protect the Probe Head and causing a Stop if a collision occurs
- Same accuracy, no matter how the workpiece is adjusted
- Perfectly suited for quality and process assurance within production


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FAST – ACCURATE – VERSATILE

The HP-L-10.6 is a laser line scanning sensor which allows rapid collection of high density point cloud data for inspection or reverse engineering – the patented technology delivers the highest quality data, under all environmental conditions, by automatically suppressing outliers caused by false reflections or ambient light.

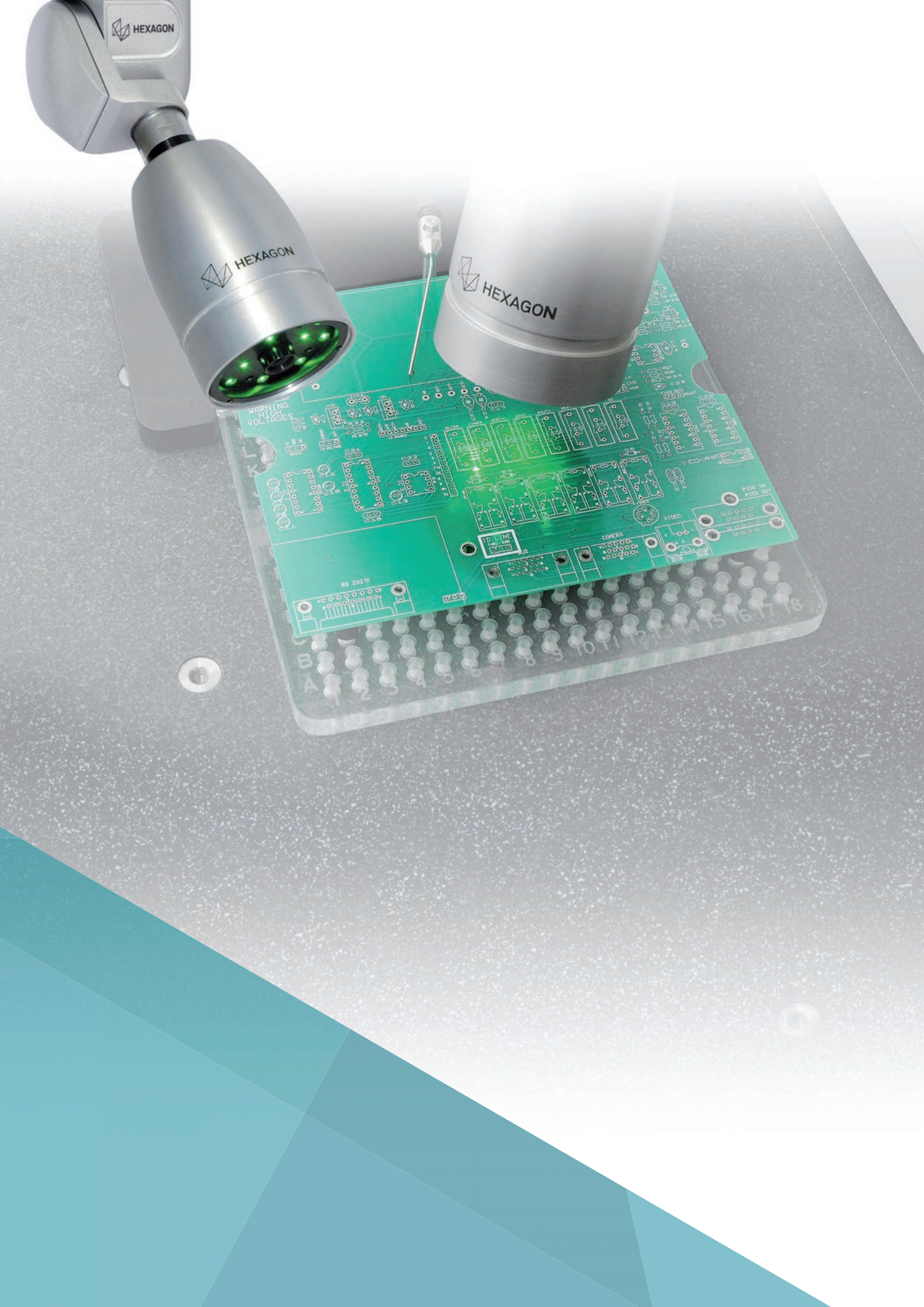
Laser intensity is automatically optimized for every single point in real-time, allowing capture of almost any material and an acceptance angle up to ±60°, whilst the programmable line widths of 24, 60 or 120mm with up to 2001 points per line ensure optimal data coverage on all part sizes.

TYPICAL LASER SCANNER APPLICATIONS

- Free form surface inspection to CAD
- Feature inspection to CAD
- Reverse engineering
- Process development

BENEFITS OF THE HP-L LASER SCANNER

- Highest integrity point clouds
- Programmable 24, 60 or 120mm line length with up to 2001 points per line
- Real time automatic laser power control captures almost any material, surface finish and color combination
- No complicated settings or parameters
- High measuring acceptance angle of ±60°
- Ideal for fragile, flexible and soft parts
- Fully compatible with several probe changers for multi-sensor measurement
- Companion product available for Hexagon Portable arms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WARNING
HIGH
VOLTAGES
RS 232
VIDEO
CAMERA

BRINGING VISION TO YOUR CMM

HP-C-VE is the vision sensor for CMMs. The high-resolution camera gives measurement performance that a tactical probe literally can't touch. Mounted directly on an articulating head, such as a HH-A-T, the sensor can be rotated in any position to inspect 2D features using the onboard camera. This setup effectively replicates the functions of a vision system with a tilt-rotary table.

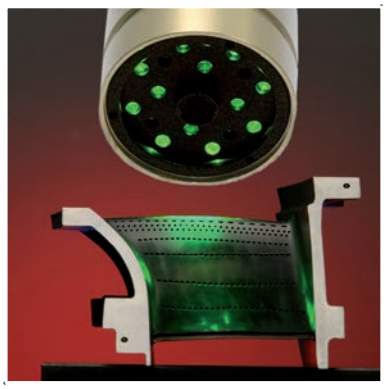
The HP-C-VE is compatible with the Hexagon HR-R probe changer rack , allowing you to swap between the HP-C-VE and other point-to-point and scanning probes.

TYPICAL HP-C-VE APPLICATIONS

- Small features which are difficult to probe with tactile styli
- Soft or easily deformed components
- Printed or deposited patterns
- Printed circuit boards

BENEFITS OF THE VISION SENSOR

- Auto change between the HP-C-VE and other traditional CMM sensors
- HP-C-VE systems have integral software-controlled illumination
- All HP-C-VE cameras can be used with auto change racks
- HP-C-VE provides vision measurement capabilities for large components

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IT ALL WORKS TOGETHER

Hexagon's range of changer racks performs fast and repeatable exchanges of probe, extension and stylus combinations on the CMM probe head

The Hexagon racks allow the automatic multi sensor utilization within a single part program.

TYPICAL PROBE CHANGER APPLICATIONS

- Complicated measurement programs, which need the change of sensors, probes or styli
- Automated measurements

BENEFITS

- Fully automated inspection.
- Different sensor technology in the same part program
- Different styli based on specific features
- Available with all Hexagon sensors

THE BEST SOLUTION FOR EACH APPLICATION

The range of touch trigger and scanning styli from Hexagon is as varied as their applications. Whether ruby ball or cylinder, the contact to the workpiece can be made using various stylus elements. The product range includes, among others, hemispherical styli, cylindrical styli, star styli and custom styli.

Additionally, a wide range of touch trigger probe styli is available in a variety of metals, to fully suit the application. Types include: disc styli, stylus extensions, star styli, hemispherical styli, cylinder styli, parallel styli, adapters,articulations and crosspieces.

Scanning probes offer the ultimate in precision, but only when paired with the best styli and accessories. Hexagon offers a wide range of styli and accessories for scanning probe applications. Whatever type of styli is needed, from ceramic, tungsten carbide or carbon fiber shafts with ruby or diamond tips, turn to Hexagon.

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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.

- COORDINATE MEASURING MACHINES
- 3D LASER SCANNING
- SENSORS
- PORTABLE MEASURING ARMS
- SERVICES
- LASER TRACKERS & STATIONS
- MULTISENSOR & OPTICAL SYSTEMS
- WHITE LIGHT SCANNERS
- METROLOGY SOFTWARE SOLUTIONS
- CAD / CAM
- STATISTICAL PROCESS CONTROL
- AUTOMATED APPLICATIONS
- MICROMETERS, CALIPERS AND GAUGES

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