METROLOGY
SOLUTIONS

R-Series™

FAST AND ACCURATE 3D SCANNING SOLUTIONS FOR AUTOMATED QUALITY CONTROL

WATCH PRODUCT VIDEO

CREAFORM

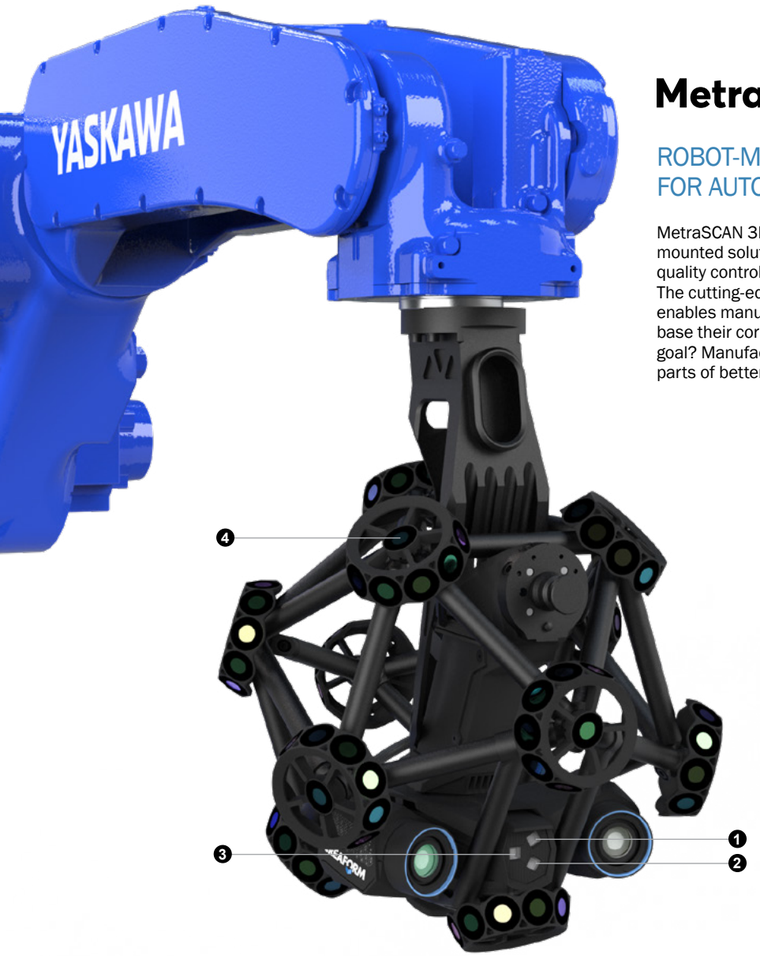
AMETEK®

ASK AN EXPERT

DETECT QUALITY ISSUES FASTER
AND MAKE BETTER DECISIONS

Designed for automated quality control applications, the R-Series™ 3D scanning solutions are perfect for manufacturing companies that want to increase their productivity by measuring more dimensions on more parts without compromising on accuracy. Composed of a robot-mounted optical CMM scanner available for custom integration or in a turnkey solution, the R-Series can solve productivity issues efficiently and guarantee optimal measurement accuracy, speed, versatility, and simplicity, thereby providing increased product quality.

- **ACCURACY OF 0.025 mm (0.0009 in)**
- **SHORT CYCLE TIME**
- **HIGH RESOLUTION**
- **CERTIFIED ISO 17025**
- **REPEATABLE RESULTS**
- **WORLDWIDE SUPPORT**



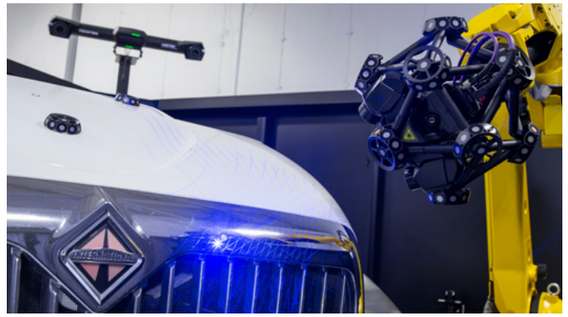
MetraSCAN3D-R™

ROBOT-MOUNTED OPTICAL CMM SCANNERS FOR AUTOMATED QUALITY CONTROL

MetraSCAN 3D-R™ optical CMM scanners are powerful, innovative robot-mounted solutions that can be seamlessly integrated into automated quality control processes for at-line inspections in mass production. The cutting-edge technology, unique to MetraSCAN 3D-R 3D scanners, enables manufacturing companies to detect quality issues faster and base their corrective actions on better statistical analyses. The ultimate goal? Manufacturers can optimize their production process and produce parts of better quality.

1. **High-performance optics**
   Optimal scan quality and high-resolution capability
2. **Blue laser technology**
   Ideal for shiny and reflective surfaces
3. **69 laser lines**
   Fast scanning - Short cycle time
4. **360° target coverage**
   Improved line of sight

TWO SCANNERS UNIQUE SPECIALITIES



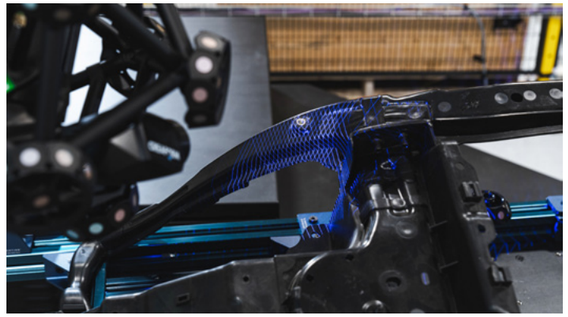
MetraSCAN-R BLACKIElite
BEST 3D SCANNER FOR PARTS WITH A LOT OF SURFACES

The MetraSCAN-R BLACK™IElite takes 3D scanning to the next level. It incorporates 45 laser lines in a large field of view for fast data acquisition times. The MetraSCAN-R BLACKIElite is perfect for components with lots of geometries, varying types of materials and finishes, including big castings, large automotive and heavy industries parts or any other complex components or assemblies.

Light source
45 laser lines

Measurement rate
1,800,000 measurements/s

Scanning area
310 x 350 mm (12.2 x 13.8 in)



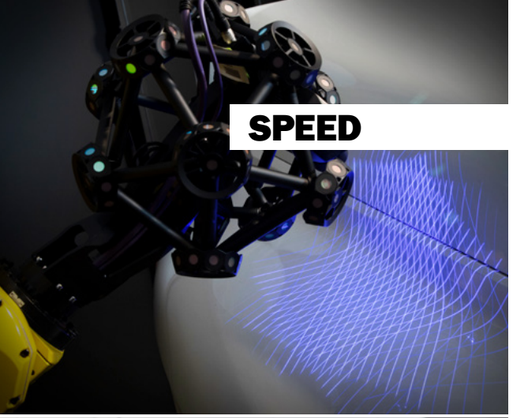
MetraSCAN-R BLACKIElite HD
BEST 3D SCANNER FOR PARTS WITH MANY EDGES, TRIMS, AND BOUNDARIES

Based on the same high-performance technology as the MetraSCAN-R BLACKIElite, the MetraSCAN-R BLACK™IElite HD features increased resolution to even better address the needs of the automotive market. Designed with an optimized field of view, the MetraSCAN-R BLACKIElite HD offers increased performance levels in terms of speed and repeatability for challenging applications, such as 3D measurements on sheet metal parts.

Light source
69 laser lines

Measurement rate
3,000,000 measurements/s

Scanning area
190 x 170 mm (7.5 x 6.7 in)



SPEED

The MetraSCAN 3D-R offers the capability to measure hundreds of parts per day.

High measurement rate
Up to 3,000,000 measurements/second for short cycle times

High-density scanning area
69 laser lines

Fast measurement speed
on surfaces, trims, and geometric features

VERSATILITY

Combining the power of optical and blue laser technologies, the MetraSCAN 3D-R can generate highly efficient 3D scans on shiny surfaces and measure various part sizes and geometries.

Blue laser technology
Ideal for shiny and reflective surfaces

Large part-size range
Perfect for various part sizes and geometries

OPERATIONAL SIMPLICITY

Due to its intuitive, user-friendly working environment, the CUBE-R and MetraSCAN 3D-R are accessible to all operators regardless of their level of expertise or experience.

Accessibility to shop-floor operators
No expertise in robotics or metrology required

Software independence
Compatible with metrology software

Supported robots
Compatible with industrial and collaborative robots

ACCURACY & RESOLUTION

Due to its metrology-grade accuracy, repeatability, and resolution, the MetraSCAN 3D-R delivers high-quality results on surfaces, trims, and geometric features.

Shop-floor accuracy with dynamic referencing
0.025 mm (0.0009 in) in shop-floor conditions, regardless of instabilities, vibrations, and thermal variations

Volumetric accuracy
0.078 mm (0.0031 in)

Reliable acceptance test
Based on VDI/VDE 2634 part 3 standard in an ISO 17025 accredited laboratory

High resolution
0.015 mm (0.0006 in)

High repeatability
On surfaces, trims, geometric features

AUTOMATION

DIGITAL TWIN ENVIRONMENT SOFTWARE MODULE

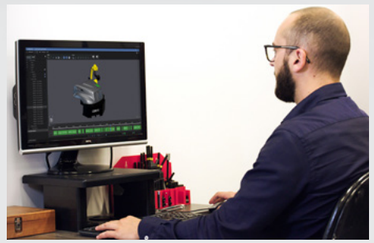
Automation is a reliable and accurate digital twin environment. It is useful for program preparation, scan parameter adjustments (speed, shutter time, and resolution), scan simulations and execution. With its scanning intelligence and dedicated functions, programming robot paths and optimizing the line of sight become easier and faster. Thanks to Automation, automated quality control is now accessible to non-experts, allowing them to solve programming issues and helping them feel confident when working with robotic systems.

Accessibility to non-experts
No expertise in 3D scanning or programming required

Digital twin
Complete environment for project planning, simulation, and execution

Security
Collision detection and avoidance

Maximum flexibility
Compatibility with various cell layouts and robots

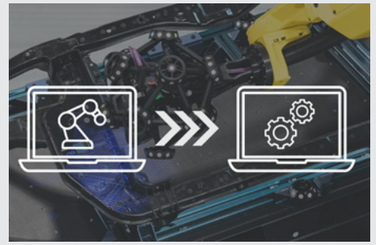


Automation - Plan
Complete module for project preparation, simulation, and validation

More than just robot programming software, Automation - Plan is a complete environment for project preparation. It enables automated quality control professionals to import CAD files, configure scanning parameters (speed, shutter time, and resolution), create robot paths, simulate scans, and export simulations to metrology software.

Automation - Execute
User interface for shop-floor operators

Designed with simplicity for efficient execution, Automation - Execute is the program for work execution. It guides shop-floor operators in carrying out their tasks when measuring parts. Operators can input part parameters, start the measuring program, and change parts when the robot has returned to its home position.



Automation – Process
Parallelization of scanning and data processing

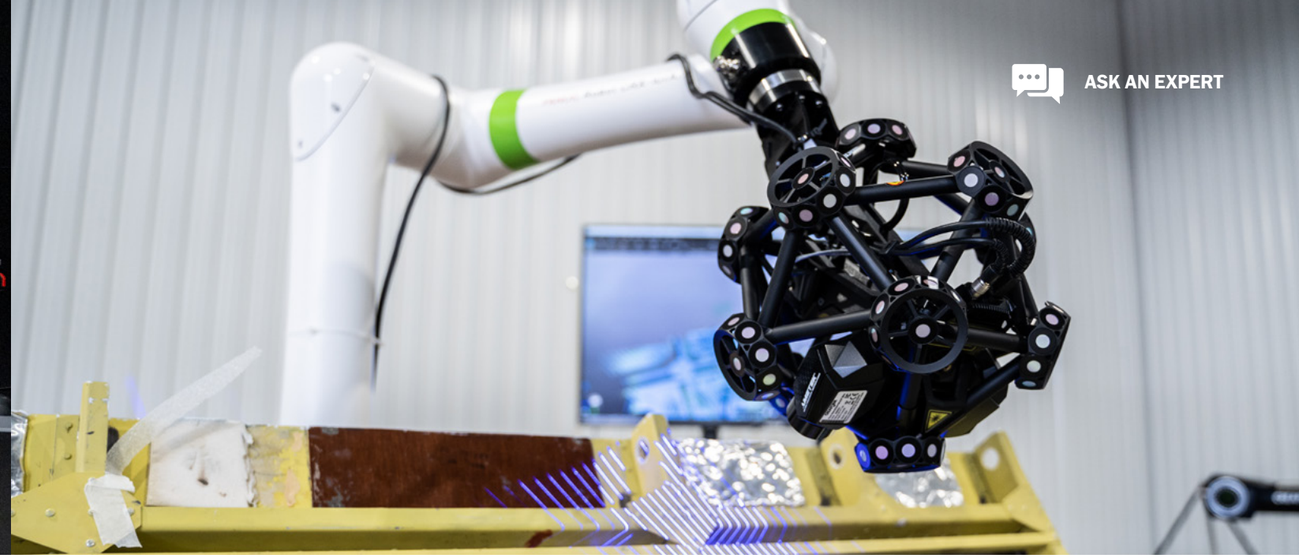
Optimized for performance, Automation – Process eliminates system downtime by parallelizing scanning and data processing. This enables continuous scanning, reduces cycle time by up to 40%, and increases system uptime and throughput.

CREAFORM.OS™ LTS

Offered exclusively for R-Series 3D measurement solutions, Creaform.OS LTS (long-term support) is a specialized edition of Creaform's fully integrated 3D software platform. It enables customers to complete their manufacturing program cycles without the need to upgrade to new software versions.

EXTENDED SOFTWARE SUPPORT

Take advantage of extended software support for each specific Creaform.OS LTS version.



ASK AN EXPERT

CUBE-R®
COMPLETE TURNKEY OR TAILORED SOLUTIONS FOR AUTOMATED QUALITY CONTROL

3D scanning CMM for at-line inspection to quickly locate problematic parts on production lines with short cycle times.

The CUBE-R leverages the power of the MetraSCAN 3D-R in a high-productivity industrial measuring cell that has been designed to be integrated into factories for at-line inspections. Its modular design enables infinite configurations—tailored to your part sizes today and scalable for your needs tomorrow.

Creaform's engineering team can fully customize the CUBE-R, from hardware to software, to meet specific dimensional, robotic, and safety requirements. For fast deployment, the CUBE-R is also available in three standard, turnkey models—M2™, M3™, and M4™—supporting part sizes of up to 2 m (6.5 ft), 3 m (9.8 ft), and 4 m (13.1 ft), respectively.

Thanks to Automation, the interface is easy to use, maximizing automatic inspections and minimizing interactions with the operator. Its design is robust, adapted to industrial environments, and optimized for production floor inspections. Compared to traditional CMMs, the CUBE-R is much faster, providing a gain in productivity and better efficiency.

- **Uncompromising Accuracy in Vibrating Production Environments**
- **Best 3D Scanning on Difficult Surfaces — No Preparation Needed**
- **Turnkey or Tailored Solutions Adapted to Fit Your Reality**
- **Accessible Automation for All Skill Levels**

CUBE-R M2

CUBE-R M3

CUBE-R M4

Custom layouts

Creaform also offers custom layouts of the CUBE-R components built according to the client's specific needs in terms of dimensions, configurations, and security. Whether designed around an industrial or a collaborative robot, all CUBE-R's custom layouts are compatible with the Automation digital twin software module. Creaform's custom layout of a measuring cell always intends to simplify user integration and deployment.

INTEGRATED SOLUTIONS FEATURING THE MetraSCAN 3D-R

3D scanning CMM adaptable to inspection needs, industry specificities, and manufacturing processes. Compatible with robots of any brand and model, it is the perfect solution for robot system integrators.

Collaborative robot

Designed for users taking their first steps into automation, this turnkey solution features the MetraSCAN 3D-R mounted on a collaborative robot (Cobot). It addresses the specific needs of small and medium businesses looking for simple robotic deployment. Ideal for a metrology lab where space is limited, the automated measuring system does not require a safety enclosure, which also makes it a more affordable solution.

- **Easy to install, simple to deploy**
- **Light & compact design**
- **Safe for users**
- **Supported by Automation**

Industrial robot

Free from a rigid measurement setup, the MetraSCAN 3D-R is engineered for industrial automation in shop-floor conditions. The powerful, innovative optical CMM scanner can be mounted onto any industrial robot and addresses all types of integration projects produced in collaboration with system integrators.

- **Any industrial robot**
- **Maximized productivity and throughput**
- **Increased reach (bigger part size range)**
- **Rugged design**

Cobot installation and layout optimization

Creaform also offers its expertise for the installation of cobots and ensures the optimization of custom layouts, from ultra-specific laboratory inspection to fully automated robot-assisted quality control.

ASK AN EXPERT

TECHNICAL SPECIFICATIONS

Innovating technology that provides accuracy, simplicity, versatility as well as real speed to your metrology-grade applications.

		MetraSCAN-R BLACK+|Elite™	MetraSCAN-R BLACK+™|Elite HD™
ACCURACY		0.025 mm (0.0009 in)	
VOLUMETRIC ACCURACY (based on working volume)	9.1 m^3 (320 ft^3)	0.064 mm (0.0025 in)	
	16.6 m^3 (586 ft^3)	0.078 mm (0.0031 in)	
AUTOMATIC VOLUME EXTENSION ACCURACY (1)		0.025mm + 0.015 mm/m (0.0009in + 0.00018in/ft)	
ACCEPTANCE TEST (2)		Based on VDI/VDE 2634 part 3 and ISO 10360	
SETUP ASSISTANCE TOOLS (3)		Included	
MEASUREMENT CAPABILITIES (at a working distance of 0.3 m (1 ft))	Pin	0.750 mm (0.0295 in)	0.500 mm (0.0197 in)
	Hole	1.250 mm (0.0394 in)	0.750 mm (0.0295 in)
	Step	0.025 mm (0.0009 in)	0.015 mm (0.0006 in)
	Wall	0.500 mm (0.0197 in)	0.500 mm (0.0197 in)
MEASUREMENT RESOLUTION		0.025mm (0.0009 in)	0.015mm (0.0006 in)
LIGHT SOURCE (4)		45 blue laser lines	69 blue laser lines
SCANNING AREA		310 x 350 mm (12.2 x 13.8 in)	170 x 190 mm (6.7 x 7.5 in)
WEIGHT		Scanner: 2.91 kg (6.41 lbs) Scanner + Calibration bar: 4.26 kg (9.39 lbs) C-Track: 5.7 kg (12.5 lbs)	

CUBE-R®

	M2™	M3™	M4™
MAX. PART SIZE	2 m (6.5 ft)	3 m (9.8 ft)	4 m (13.1 ft)
DIMENSIONS (LxWxH)	5.2 x 4.3 x 2.9 m (17.1 x 14.1 x 9.5 ft)	5.5 x 4.6 x 2.9 m (18.0 x 15.1 x 9.5 ft)	6.3 x 6.0 x 2.9 m (20.7 x 19.7 x 9.5 ft)
OPENING WIDTH	2.8 m (9.2 ft)	3.1 m (10.2 ft)	4.5 m (14.8 ft)
ROBOT	Yaskawa GP25 or Fanuc M-20iD/25	Yaskawa GP25 or Fanuc M-20iD/25	Yaskawa GP25-12L or Fanuc M-20iD/12L
ROTARY TABLE	N/A	Yes	Yes
MAX. PART WEIGHT	N/A	Up to 2000 kg	Up to 4500 kg

Collaborative robot

ROBOTS	CRX10iA	CRX10iA/L
ROBOTS REACH	1.249 m (4 ft)	1.418 m (4.7 ft)
MAX. PART SIZE RANGE	Up to 1.5 m (4.9 ft)	

(1) The volumetric accuracy performance of the system when using the Automatic Volumetric Extension cannot be superior to the default volumetric accuracy performance for a given model.

(2) Performance tests done in Creaform's ISO/IEC 17025 accredited calibration laboratories.

(3) The Setup Assistance tools enable visual guidances and advanced diagnostics for part and jigs setups.

(4) Laser class: 2M (eye safe).

CREAFORM / AMETEK®

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