

# R-Series ™

FAST AND ACCURATE  
3D SCANNING SOLUTIONS FOR  
AUTOMATED QUALITY CONTROL



WATCH PRODUCT VIDEO

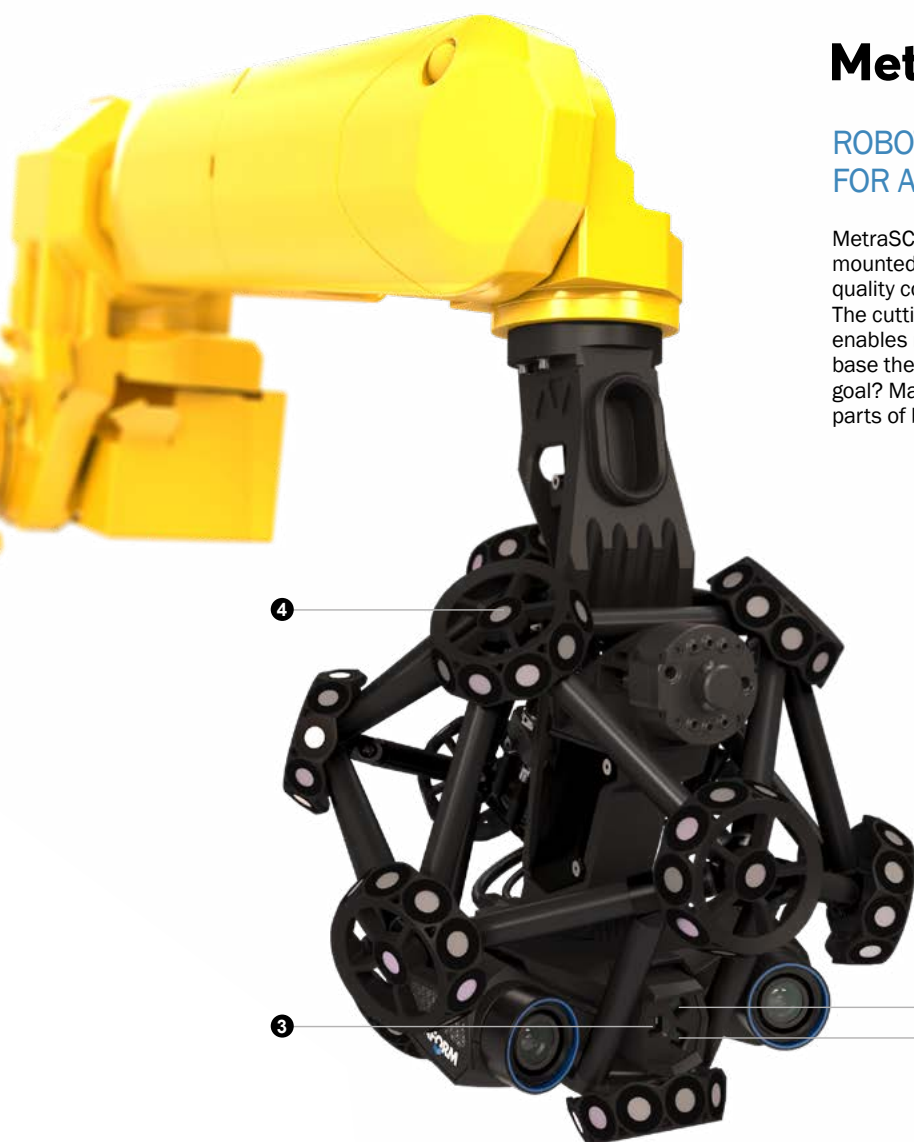
# CREAFORM

AMETEK®

# 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 a 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

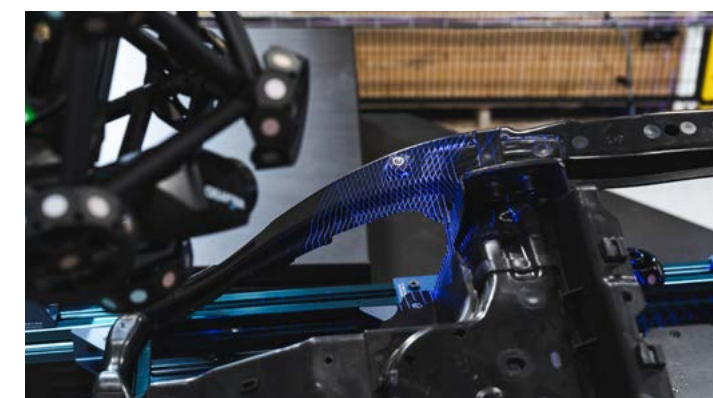
## TWO SCANNERS UNIQUE SPECIALITIES



### 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 a 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 features 69 laser lines, enabling the measurements of hundreds of parts per day. Perfect for at-line inspection in mass production, the MetraSCAN 3D-R brings quality control as close to the part as possible. From easy integration to quick and simple installation, the automated quality control process achieves a higher level with the MetraSCAN 3D-R. The time savings at every step of the process is simply impressive!

### High measurement rate

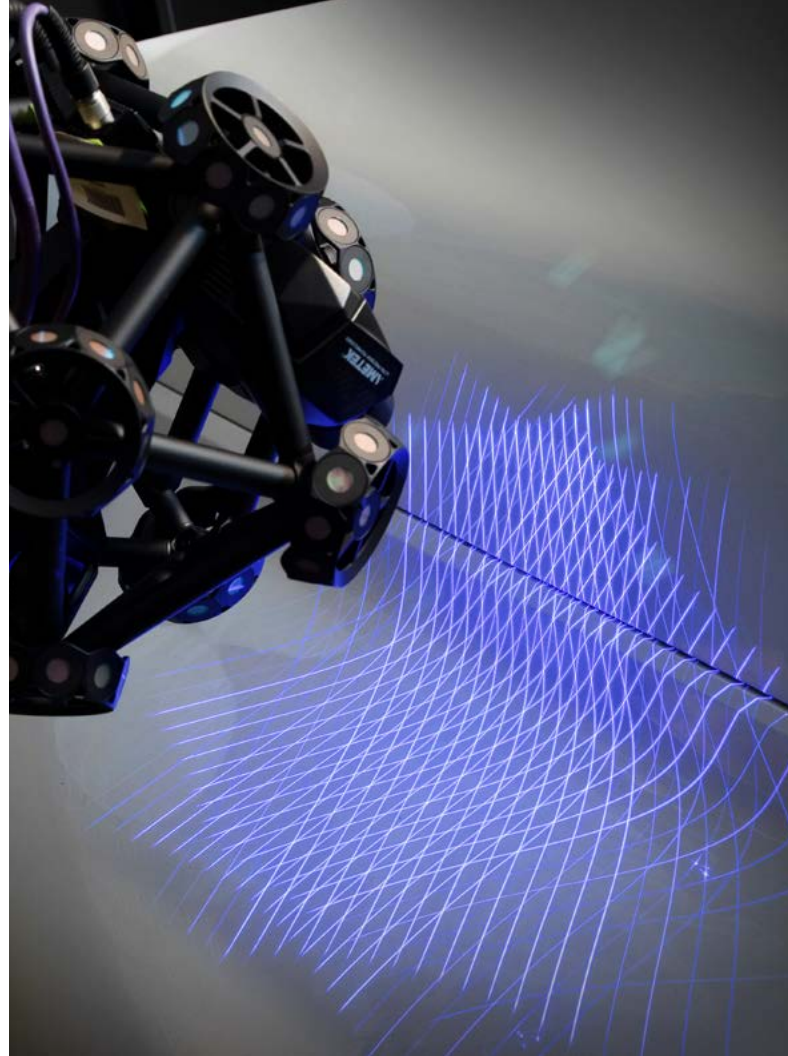
Up to 3,000,000 measurements/second for short cycle times

### 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 has the capability to generate highly efficient 3D scans on shiny surfaces or on objects with variations in reflectivity as well as measure various part sizes and different surface geometries. As the MetraSCAN 3D-R is designed to be mounted onto industrial robots in custom integrations, the CUBE-R leverages its power in a complete turnkey measuring solution. The CUBE-R, which is offered in 16 configurations, and the MetraSCAN 3D-R, which can be integrated into a custom measuring cell built according to client's specific needs, are the solutions for solving quality and productivity issues.

### Blue laser technology

Ideal for shiny and reflective surfaces

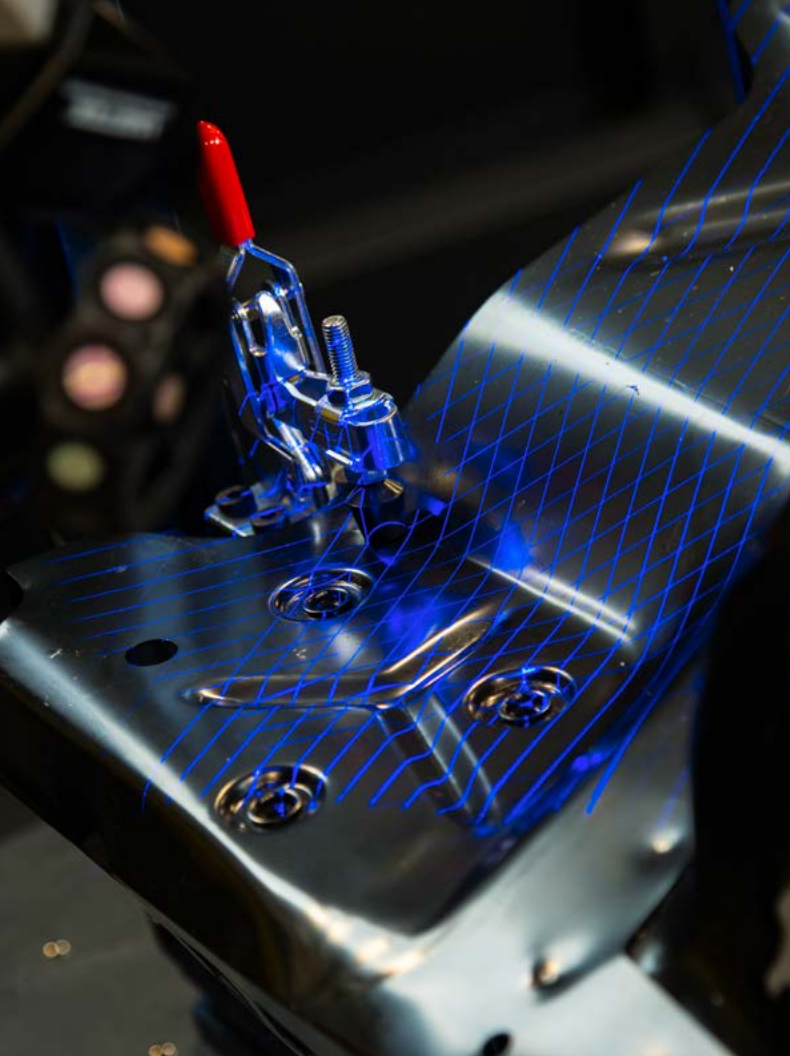
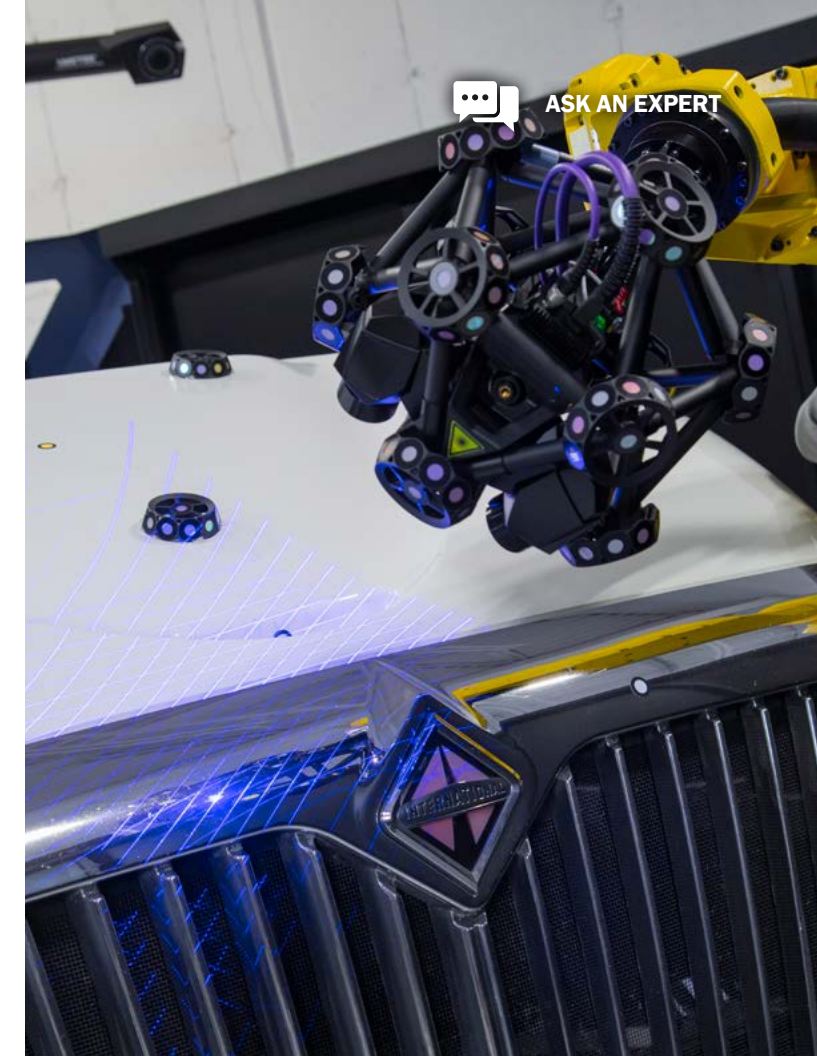
### Large part-size range

Perfect for various part sizes and geometries

### Configurable and customizable portfolio

16 configurations

### Custom integration possible



## ACCURACY & RESOLUTION

Due to its metrology-grade accuracy, repeatability, and resolution, the MetraSCAN 3D-R delivers high-quality results, whether on surfaces, trims, geometric features. The MetraSCAN 3D-R is free from a rigid measurement setup, making it a 3D scanner engineered for industrial automation in shop-floor conditions. Thanks to the C-Track optical tracker that enables dynamic referencing, both the 3D scanner and the part can move during inspection—maintaining part alignment and maximizing both accuracy and measurement reliability.

### 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 a ISO 17025 accredited laboratory

### High resolution

0.015 mm (0.0006 in)

### High repeatability

On surfaces, trims, geometric features



## OPERATIONAL SIMPLICITY

Due to its operational simplicity, compatibility with metrology software, and off-line programming, the MetraSCAN 3D-R is accessible to all, regardless of users' level of expertise or experience. The user interface makes it simple for operators, who are non-experts in robotics or metrology, to measure parts regardless of size, shape, or complexity. Once the measurements are completed, quality control engineers can focus on analyzing and reviewing the results, which are high added-value tasks.

### 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

## VXscan-R™

### DIGITAL TWIN ENVIRONMENT SOFTWARE MODULE

VXscan-R™ is a reliable and accurate digital twin environment. It is useful for program preparation, scan parameters adjustments (speed, shutter time, and scan resolution), scan simulations and execution. With VXscan-R's scanning intelligence and dedicated functions, programming robot paths and optimizing the line of sight become easier and faster. Thanks to VXscan-R, 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 nor programming required

#### Digital twin

Complete environment for project planning, simulation, and execution

#### Security

Collision detection and avoidance

#### Maximum flexibility

With no fixed configurations, VXscan-R is compatible with a variety of different cells layouts and robots.



#### VXscan-R Plan

Complete module for project preparation, simulation, and validation

More than just robot programming software, VXscan-R 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 scan resolution), create robot paths, simulate scans, and export simulations to metrology software.



#### VXscan-R Execute

User interface for shop-floor operators

Designed with simplicity for efficient execution, VXscan-R 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 come back to its home position.

## VXelements LTS™

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



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

## CUBE-R™

### THE COMPLETE TURNKEY SOLUTION FOR AUTOMATED QUALITY CONTROL

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 inspection. Compared to the CMM, the CUBE-R is much faster, providing a gain in productivity and better efficiency. Delivered as a complete turnkey solution, the CUBE-R is an essential system for a manufacturer's transition to Industry 4.0 workflows. Additionally, the CUBE-R minimizes financial risks by modulating investments in automated quality control when compared to expensive and complex fully in-line automated measurement solution deployments.



## THREE EASY STEPS FOR A PERFECT MATCH

### 1 CHOOSE YOUR CONFIGURATION

The first choice for configuring the CUBE-R is the type of safety enclosure and layout. Five options are offered depending on the level of integration required for the measurement cell: completely turnkey or only the main components (3D scanning solution, turntable, VXscan-R), which are usually intended for robot integrators. The footprint available can also guide your decision-making since the rolling door option provides minimal footprint. A custom layout of the CUBE-R components can also provide a flexible option.



CUBE-R – Rolling door



CUBE-R – Light curtain



CUBE-R – Mesh and light curtain



CUBE-R – Module



CUBE-R – Custom layout

### 2 CHOOSE YOUR PAYLOAD

The second choice for configuring the CUBE-R is to select the maximum payload of the turntable, either 500 or 1500 kg (1.102 or 3.306 lbs). Maximum payload includes the part, fixtures and table weight.



### 3 ADD THE OPTIONAL ASSET PROTECTION

The third and last choice for configuring the CUBE-R involves asset protection. Asset protection combines both hardware and software features. Hardware options include a pneumatic tool changer and a swing arm to load calibration artefacts automatically. Software options include robot logic in the controller to verify that all of the calibration artefacts are stored correctly when the 3D scanning occurs. It also uses the C-Track as a vision system to verify if the right part is loaded at the right location. This option also comes with accident coverage for the first year.

## 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
<b>ACCURACY</b> <sup>(1)</sup>	0.025 mm (0.0009 in)	
<b>VOLUMETRIC ACCURACY</b> <sup>(2)</sup> (based on working volume)	9.1 m <sup>3</sup> (320 ft <sup>3</sup> )	0.064 mm (0.0025 in)
	16.6 m <sup>3</sup> (586 ft <sup>3</sup> )	0.078 mm (0.0031 in)
<b>VOLUMETRIC ACCURACY WITH MaxSHOT Next™ Elite</b> <sup>(3)</sup>	0.044 mm + 0.015 mm/m (0.0017 in + 0.00018 in/ft)	
<b>MEASUREMENT RESOLUTION</b>	0.025 mm (0.0009 in)	0.015 mm (0.0006 in)
<b>MESH RESOLUTION</b>	0.100 mm (0.0039 in)	0.050 mm (0.0018 in)
<b>MEASUREMENT RATE</b>	1,800,000 measurements/s	3,000,000 measurements/s
<b>LIGHT SOURCE</b>	45 blue laser lines	69 blue laser lines
<b>LASER CLASS</b>	2M (eye safe)	
<b>SCANNING AREA</b>	310 x 350 mm (12.2 x 13.8 in)	170 x 190 mm (6.7 x 7.5 in)
<b>STAND-OFF DISTANCE</b>	300 mm (11.8 in)	
<b>DEPTH OF FIELD</b>	250 mm (9.8 in)	100 mm (3.9 in)
<b>WEIGHT</b>	Scanner: 2.91 kg (6.41 lbs) Scanner + Calibration bar: 4.26 kg (9.39 lbs) C-Track: 5.7 kg (12.5 lbs)	
<b>INERTIA LIMIT</b>	J6: 0.221 Kg-m <sup>2</sup> (5.24 lb-ft <sup>2</sup> ) J6: 2.250 Kgf-cm-s <sup>2</sup> (1.95 lbf-in-s <sup>2</sup> )	
<b>DIMENSIONS</b> (LxWxH)	Scanner: 289 x 235 x 296 mm (11.4 x 9.3 x 11.7 in) C-Track: 1031 x 181 x 148 mm (40.6 x 7.1 x 5.8 in)	
<b>OPERATING TEMPERATURE RANGE</b>	5–40°C (41–104°F)	
<b>OPERATING HUMIDITY RANGE</b> (non-condensing)	10–90%	
<b>CERTIFICATIONS</b>	EC Compliance (Electromagnetic Compatibility Directive, Low Voltage Directive), compatible with rechargeable batteries (when applicable), IP50, WEEE	
<b>PATENTS</b>	FR 2,838,198, EP (FR, UK, DE, IT) 1,492,995, US 7,487,063, CA 2,529,044	

### CUBE-R™

<b>DIMENSIONS</b> (LxWxH)	Rolling door	4.1 x 4.1 x 3.1 m (13.5 x 13.5 x 10.1 ft)
	Light curtain	5.1 x 4.1 x 3.1 m (16.7 x 13.5 x 10.1 ft)
<b>MAX. PART SIZE</b>	Up to 3 x 1.5 m (9.8 x 4.9 ft)	
<b>MAX. PART WEIGHT</b>	Up to 1,500 kg (3,306.93 lb)	
<b>OPENING WIDTH</b>	3.1 m (10.1 ft)	

(1) MetraSCAN-R BLACK|Elite (ISO 17025 accredited): Based on VDI/VDE 2634 part 3 standard. Probing error performance is assessed with diameter measurement on traceable sphere artefacts.

(2) MetraSCAN-R BLACK|Elite (ISO 17025 accredited): Based on VDI/VDE 2634 part 3 standard. Sphere-spacing error is assessed with traceable length artefacts by measuring these at different locations and orientations within the working volume.

(3) The volumetric accuracy performance of the system when using a MaxSHOT 3D cannot be superior to the default volumetric accuracy performance for a given model.



**WILLRICH PRECISION  
INSTRUMENT**  
*THINK MEASUREMENT... THINK WILLRICH*

Ph 866-945-5742 email:sales@willrich.com