Artec Metrology Kit

up to 2µ optical coordinate measuring system



A professional photogrammetry solution with metrology-grade precision and high-end volumetric accuracy for inspection, reverse engineering, and other industrial measurement applications.

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Artec Metrology Kit



A 3D optical coordinate measuring system for high-precision industrial applications – think deformation analysis, testing, inspection. The Metrology Kit is flexible enough to integrate into your workflow, delivers perfect results both in your workshop and outdoors, and is compatible with major software like Control X and PolyWorks.

The Metrology Kit can operate as a standalone optical measurement solution, or as a referencing tool for even higher 3D scanning accuracy over distance. Using the Metrology Kit plugin, you get the entire 3D scanning + photogrammetry workflow right inside Artec Studio.

Inspection
with up to 2µ accuracy

Using a high-accuracy optical coordinate measuring system makes inspection of objects like aircraft components, ships, and wind turbines a reliable, straightforward process.



A powerful metrology-grade measurement solution

DAkkS-certified 6DoF optical measurement

Complete optical coordinate measuring system with accuracy of up to 2 microns. Camera resolution of up to 30.3 megapixels, a 28-mm wide-angle lens, measurement targets, adapters, and scale bars.

Use it anywhere

The whole kit fits in a rugged, portable case, and with dynamic referencing, you can capture objects in motion – perfect on sites where it's impractical to use traditional measuring machines and other 3D measurement tools.

Compatible with different software

The Artec Metrology Kit is compatible with industry leading software solutions like Geomagic Control X, PolyWorks, and many more.

High precision for full confidence

Get much more precise datasets and confidently perform inspection in use cases where requirements on repeatability are high.

Incorporate photogrammetry data into your own workflow

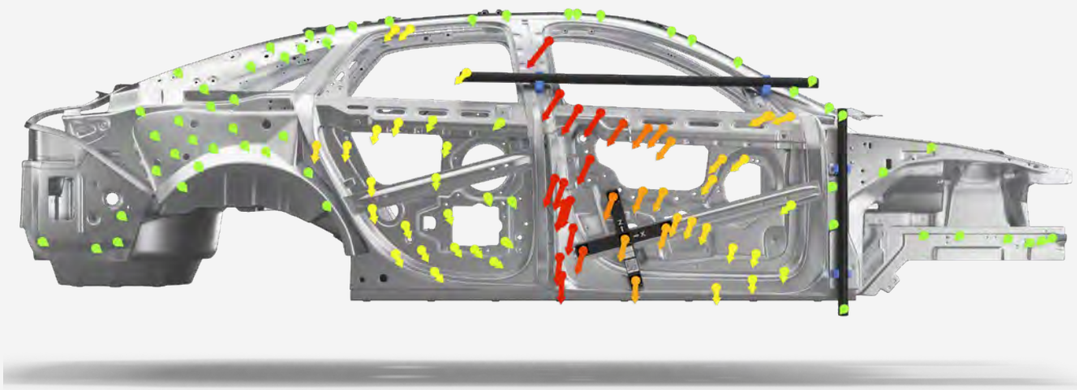
Use the Metrology Kit's data in your own workflow to make comparisons with 3D meshes, CAD entities, and to make highly accurate measurements of distances.

Maintain precision in unstable environments

Accurate measurements fulfilling repeatability requirements can be taken during almost any production step – even where the part is in motion. On a hydraulic ramp, for example.

Deformation analysis

Use this optical measurement solution to analyze the deformation characteristics of materials under different environmental conditions and loads – processes where a short measuring time is crucial. The Metrology Kit is great for analyzing the geometrical changes of things like storage tanks, vehicle components, or design prototypes.



Short measuring time

Work comfortably in demanding testing environments such as climate chambers, where very short acquisition times are crucial, but reliable precision and highly accurate datasets are non-negotiable.

Convenient workflow

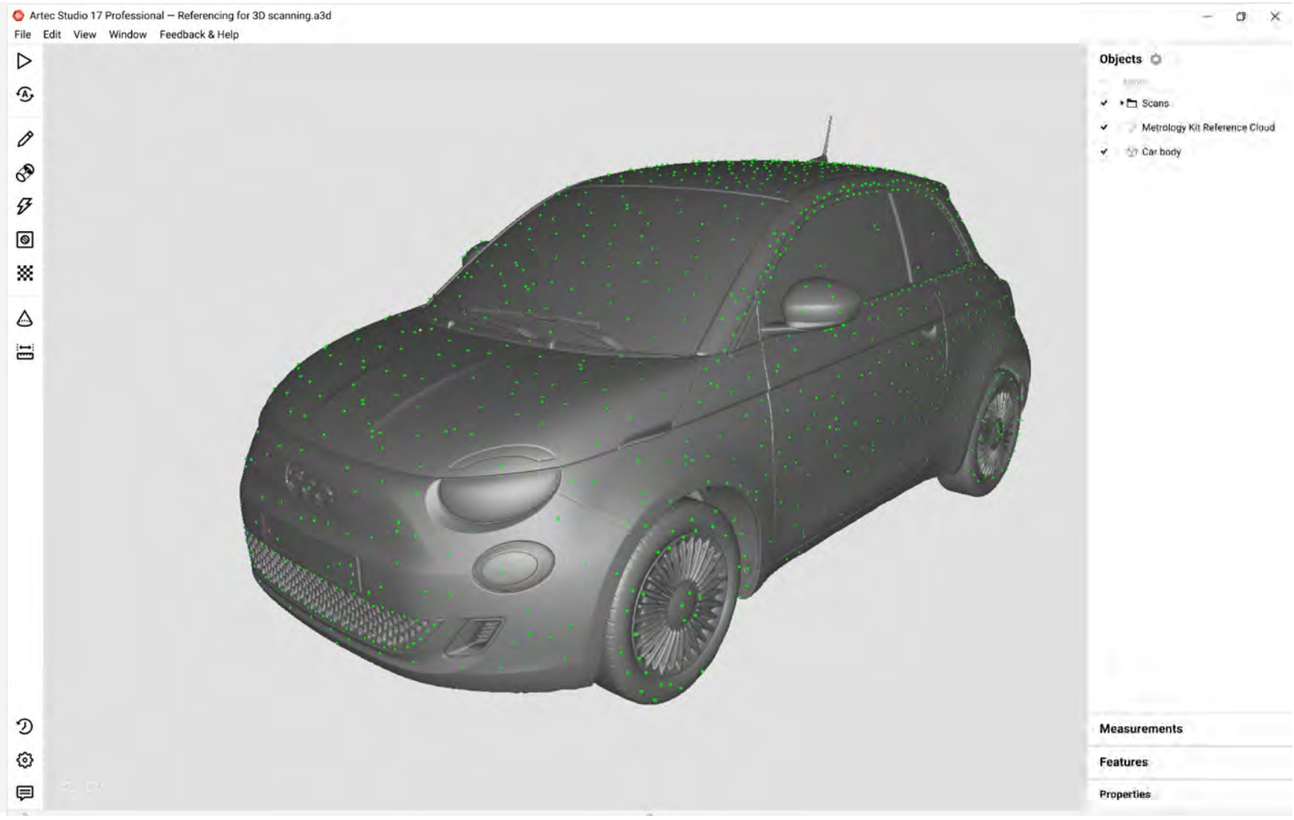
The Metrology Kit's simple workflow is especially important given the large number of measurement points typical in deformation analysis and extreme working conditions like high temperatures and humidity.

Portable and flexible

The Metrology Kit's portability ensures ease of use when working in tight spaces often characteristic of climate chambers.

Referencing for 3D scanning

Combine photogrammetry with Artec Leo for up to 14x higher volumetric accuracy.



Easily combine photogrammetry results from the Artec Metrology Kit with data from one or more Artec 3D scanners and get the high resolution and detail that a 3D scanner for metrology provides, with the pinpoint volumetric accuracy – up to 15 µm/m – of photogrammetry's optical systems. With Artec Leo this means you can achieve up to 3x the volumetric accuracy across a one-meter scan and up to 14x across 15 m.

Industry applications

An ISO-certified German offshore and maritime engineering company often surveys and inspects flanges on offshore sites in the North Sea and Baltic Sea.



The Metrology Kit's portability makes it easy to transport by helicopter. A short measuring time, easy workflow, and dynamic referencing make it the ideal solution for such high-accuracy applications in unstable conditions.

1 hour

Complete measurement covering the flatness and inclination of the flange faces, drill hole diameter, and inner and outer diameter was carried out within 60 minutes.

Automotive industry

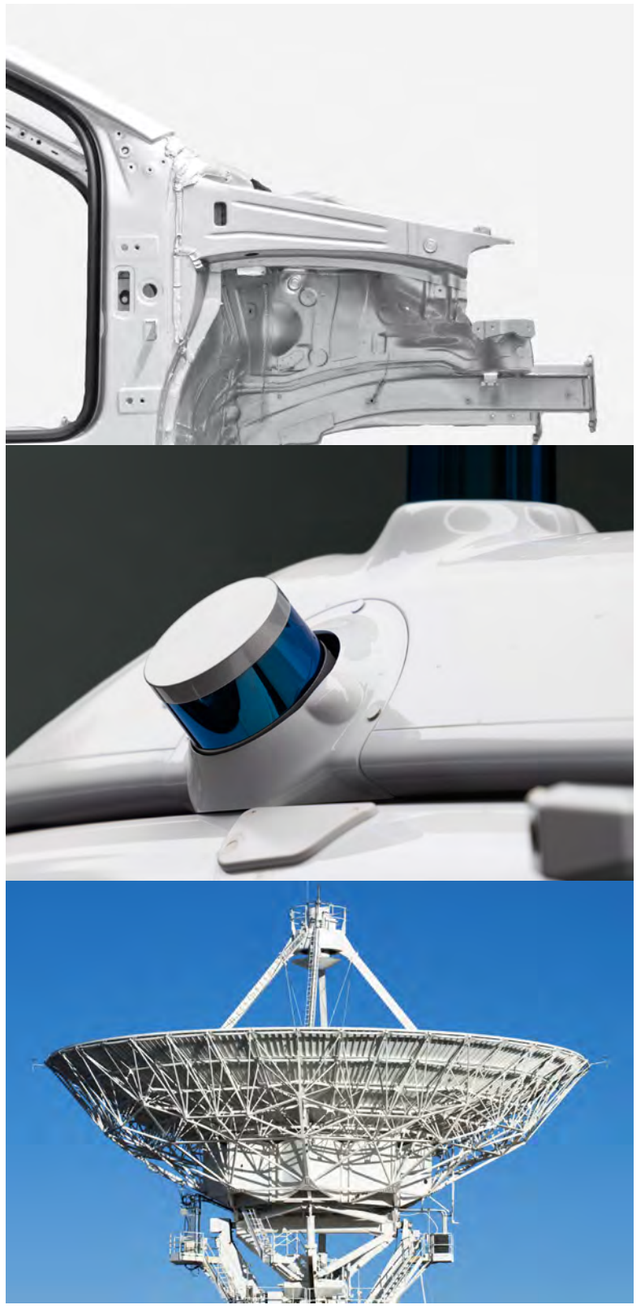
A major car manufacturer in Germany used the Metrology Kit for quality control to analyze the positions of welding studs on every fourth chassis in a production line. The results were used to program the welding robot.

R&D

As part of tests and research for autonomous driving, major car manufacturers use the Metrology Kit to accurately determine the positions of sensors on a car body and correctly place them within the car's coordinate system.

Aerospace

Organizations in astronomy, defense, and space in the UK, Germany, and Japan use the Metrology Kit for high-accuracy applications. Deformation analysis was done on the main and sub panel systems of this large satellite antenna tilted at various angles.



Choose the option that suits your needs

Professional version

US $42,700

- 30.3-megapixel digital camera
- Point-based accuracy (RMS) up to 0.002 mm + 0.005 mm/m
- Length measurement accuracy up to 0.015 mm + 0.015 mm/m
- WiFi connectivity and remote-control options
- Metrology Kit plugin for Artec Studio
- Adjustable camera settings
- Additional measurement targets:
  - Adaptors (for features like holes, edges, etc.)
  - Separated reference cross and scale bar for larger and more complex parts

Entry version

US $27,400

- 20-megapixel digital camera
- Point-based accuracy (RMS) up to 0.004 mm + 0.006 mm/m
- Length measurement accuracy up to 0.025 mm + 0.025 mm/m
- Metrology Kit plugin for Artec Studio
- Adjustable camera settings
- Basic range of measurement accessories: targets and scale bars

Specifications

Accuracy

	Artec Metrology Kit	Professional	Entry
Length measurement accuracy | MPE[1]	0.015 mm + 0.015 mm × $Length_{diagonal}$ [m]	0.025 mm + 0.025 mm × $Length_{diagonal}$ [m]	
Point-based measurement accuracy	0.002 mm + 0.005 mm/m (RMS) 0.003 mm + 0.007 mm/m (3 sigma)	0.004 mm + 0.006 mm/m (RMS) 0.005 mm + 0.009 mm/m (3 sigma)	

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

Volumetric accuracy combined with 3D scanners

Artec Leo/Artec Eva	0.115 mm + 0.015 mm/m	0.125 mm + 0.025 mm/m
Artec Space Spider	0.065 mm + 0.015 mm/m	0.075 mm + 0.025 mm/m

Camera

Sensor unit	Canon EOS R	Canon EOS 6D
Lens	28 mm AICON metric wide-angle lens	28 mm AICON metric wide-angle lens
Camera resolution	30.3 megapixels (6,720 × 4,480)	20.2 megapixels (5,472 × 3,648)
Field of view (FoV)	65 × 46°	65 × 46°
Illumination	White-light flash	White-light flash
Speed	Up to 8 images per second	Up to 4 images per second
Viewfinder	Diopter	Diopter
Wireless data transfer	Optional	Not supported
Power supply	Li-ion battery	Li-ion battery

Packaging

Dimensions	215 × 120 × 140 mm	245 × 110 × 150 mm
External dimensions of transportation box	520 × 430 × 250 mm	870 × 230 × 170 mm
Sensor weight	1.7 kg / 3.7 lb	1.4 kg / 3 lb
Weight of transportation box including system	Approx. 12 kg / 26.5 lb	Approx. 7.7 kg / 17 lb
Storage	Robust case with trolley	Robust case

Other specs

Recommended operating temperature	+5 to +45°C	+5 to +45°C
Conformity	CE, RoHS	CE, RoHS
Calibration and certification	DAkkS certificate for the complete measuring system including scale bars and sensor DAkkS-calibrated scale bars: 1 × 1,430 mm, 1 × 830 mm VDI 2634 page 1 certified system	DAkkS certificate for the complete measuring system including scale bars and sensor Factory-calibrated scale cross 800 Opt. VDI 2634 page 1 certified system