

ScanWorks[®] V4i[™]

3D Scanning Simplified



Scanning parts has never been easier or more affordable. ScanWorks[®] is a revolutionary scanning system that links design processes, CAD/CAM, prototyping and manufacturing. This versatile 3D scanning tool enables reverse engineering, point cloud-to-CAD comparison, 3D visualization and inspection applications. Markets for scanning include: automotive, animation, artefacts, aerospace, apparel, medical, manufacturing and many more.



 **perception**
the focus on process

ScanWorks®



SENSOR SPECIFICATIONS

Dimensions 105 mm x 52 mm x 90 mm
Mass 340 g

Profile density 768 points/line
Update frequency 30 Hz
Scan rate 23040 points/second
Mean point to point resolution 0.057 mm

Stand-off 118 mm
Depth of field 109 mm
Near field width 34 mm
Mid field width 45 mm
Far field width 73 mm

Measurement accuracy¹ 0.0240 mm 2 σ corner test
Feature resolution² 0.0045 mm 2 σ sphere test
Sensor feature repeatability² 0.0050 mm 2 σ sphere test

Safety Class 2M, 660 nm laser
Certifications UL, CSA, CE
Environmental 10°C to 40°C
Protection Sensor IP64 / Enclosure IP31

¹ NIST standard

² OSIS standard

Perceptron is registered to ISO9001:2000 standards
Specifications subject to change without notice



Perceptron is a global public company with offices in the Americas, Europe and Asia and over 25 years of experience in 3D non-contact applications. Producing over 5000 sensors each year, Perceptron has a worldwide base of installations in major manufacturing companies. We are committed to consistently exceed customer's expectations by providing continuous improvement in products, processes and services.

Formed in 1981 to help the automotive industry monitor and control the dimensional quality of automobile bodies and subassemblies, laser-based monitoring technologies have become the core competency of the company. Both in-line and end-of-line process measurement have grown into a group of flexible systems that provide monitoring and quality assurance throughout the entire manufacturing process. Perceptron's products are proven and reliable for improving productivity and quality, and reducing scrap, rework, and costs.

Today's computer power and innovation by software partners in CAD/CAM, inspection, solid modelling, rapid prototyping, reverse engineering and more are taking us to new and exciting places. We are involved with government-sponsored programs, such as NIST, for advanced product and process development. We are an active member of the OSIS group working to create industrial standards for scanning systems. We continue to look for better ways to design, produce, and deliver superior products that help our customers be more competitive in an increasingly global competitive environment.

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SCANWORKS® ADVANTAGES

PRINCIPLE

The ScanWorks® portable scanning system combines the ease-of-use of portable CMM arms with the sophistication of Perceptron's scanning technology. The ScanWorks® V4i sensor uses solid state, non-contact, laser-based technology. Using triangulation, the scanner captures profiles generated by the intersection of a projected laser plane and the target topography. Users can easily control data collection through buttons on the portable CMM. For each profile, the arm position is used to translate the profile data into a common coordinate frame. Once translated, the profile is married with the other profiles to produce digital 3D part topography.

SPEED

A maximum of 768 points along the laser line at a rate of 30Hz provides the user with high-density scan data. This rate of up to 23040 points per second gives a minimum point to point resolution of 42µm.

FIELD OF VIEW

Having a maximum width and depth of field of 73mm and 109mm, respectively, enables users of the ScanWorks® V4i sensor to rapidly capture large, geometrically complex, areas.

RANGEFINDER

An audible tone which changes frequency depending on depth of field and a moving graphical output dynamically aid the user in finding the optimum scanning location with respect to the target surface.

DYNAMIC RANGE

The ScanWorks® V4i sensor's class-leading dynamic range negates the need for harmful white powder sprays and paints. The addition of advanced software filters enables dynamic reflection removal and hardware filters make the sensor impervious to ambient light. The superior optical design gives the user the ability to measure almost any surface finish, including gloss black and chrome.

ACCURACY

Field calibration of the sensor is entirely independent of the hard probe. Within a few minutes, the user can precisely align the sensor to the PCMM co-ordinate frame without having to calibrate the hard probe first. Factory rectification of the V4i sensor ensures measurement accuracy of 24µm 2 σ throughout the entire field of view.

REAL-TIME INTEGRATIONS

Direct integrations with InnovMetric™ PolyWorks®, Geomagic®, Rapidform XO™ and Delcam PowerINSPECT allow the user to scan within a familiar interface. Time consuming file management becomes a thing of the past because the data is captured real-time within your preferred reverse engineering or inspection suite.

USABILITY

The lightweight ergonomic design of the ScanWorks® V4i scanning solution makes easy work of even the most arduous measurement tasks. With the PCMM's hard probe exposed, using a 7-axis PCMM configuration, at the flick of a switch, the user can alternate between non-contact and contact measurement. This feature can be extremely useful when setting up alignments or datum features. A combination of the small triangulation angle of 20°, large depth of field and extremely compact casing design mean collecting data in deep and narrow areas requires much less user interaction than with conventional scanning systems. The machined aluminium casing gives unparalleled sensor stability and durability in the PCMM-based scanner market, making the V4i sensor rugged enough for the most demanding tasks.

PORTABILITY

The ScanWorks® V4i sensor is transported in a wheeled flight case similar in size to a small suitcase. Along with the PCMM and laptop computer, the entire scanning solution easily fits into a family car. Magnetic mounts on the PCMM base ensure a robust setup in a manufacturing environment. When a magnetic surface is not on hand, a range of tripods is available at extra cost.

VERSATILITY

ScanWorks® V4i is suitable for numerous industries and applications, from the factory floor to inspection rooms and laboratories. Industries where ScanWorks® is delivering value and cost savings include: Aerospace, animation, automotive, consumer products, cultural heritage, forging, investment casting, mould & die, plastics, prototyping and stamping.

SUPPORT

Perceptron provides unparalleled service and support to our scanning solution users. With both ISO9001 and QS9000TE certifications and through a network of qualified Value Added Resellers, Perceptron provides a combination of excellent large, medium and small enterprise support on a local level.