

CYRAX 2500 WITH SMARTSCAN TECHNOLOGY

World's most popular 3D Laser Scanner for Surveying, Engineering, and Construction Applications

3D laser scanning captures extraordinarily complete and accurate "as-built" or "as-is" information, quickly and unobtrusively. Today, laser scanning is delivering significant economic, schedule, quality and safety benefits for a wide array of activities. *Cyrax*® 2500's unparalleled versatility and performance have, in turn, made it the world's most popular 3D laser scanning system.

Cyrax 2500, Cyra's patented, second generation laser scanner, provides the best combination of overall productivity and high accuracy (even at long range) available today. It consists of a state-of-the-art, fully addressable, pulsed laser scanner; AC/DC power supply; laptop PC; scanning software; and, standard accessories. Optional accessories and additional software are also available.

Unequaled Performance and Versatility

Cyrax 2500 integrates its inherent accuracy with SmartScan Technology™ – for added scanning control – to let users create highly accurate deliverables while minimizing both field time *and* office processing time for a wide range of applications & project sites.

With a single-point range accuracy of +/- 4mm, angular accuracies of +/- 60 micro-radians, and a beam spot size of only 6mm from 0-50m range, *Cyrax* 2500 is at the head of its class. SmartScan Technology combines the small beam size with fully adjustable scanning density. With this combination, including point-to-point spacing as fine as 0.25mm @50m, *Cyrax* 2500 can capture fine details, accurately determine edge locations, and accurately establish coordinates of targets, even at long range. Other SmartScan Technology advantages include the ability to optimize scan density selectively within a scene; filter certain unwanted data while scanning; automatically identify and model targets; overlay a true color image on scans; and, address a full "dome" field-of-view (360° x 195°) from a single tripod set-up. Many SmartScan Technology features minimize file size (which reduces office processing time) while still achieving the highest quality deliverables.

Easy to Use

A portable *Cyrax* 2500 can be operated by one person. The user simply orients the scanner toward the scene. Then, via a laptop interface, the user selects the desired portion(s) of the scene and optimal scanning density, and clicks SCAN. *Cyrax* 2500 scans the scene automatically in just minutes. A user can even view the point cloud in 3D as it's being captured. "Shrink-wrap", true-color overlay, and intensity color-mapped images provide still more insight into "what's really there." The scanner is then rotated and/or moved around the site as appropriate to capture multiple scenes & views. *Cyrax* 2500 is eye-safe (Class II CFR 1040) and does not interfere with ongoing activities.

Wide Range of Applications

Cyrax 2500's unique capabilities allow organizations to reap the full benefits of 3D laser scanning over an unusually wide range of applications. *Cyrax* 2500 can be used to create as-builts for retrofit projects to accurately locate tie-points and avoid construction interferences; provide timely construction verification; provide easy construction/fabrication mating analysis; allow accurate construction path planning; perform economical as-built and topographic surveys for bridges, roads, terrain, rock faces, rail, tunnels, and buildings; quickly collect detailed forensic evidence; document facilities for regulatory compliance; monitor geometric changes over time, etc.

Full Suite of Software Products

Cyra offers a full suite of software for a variety of user needs. *Cyclone*™-SCAN software is used to operate the scanner and contains numerous field QA features. *Cyclone*-REGISTER includes powerful tools for accurately geo-referencing point clouds to a common coordinate system and for accurately aligning point clouds captured from different scanning positions, with or without targets. *Cyclone*-MODEL provides a complete set of viewing, processing, and export/import functionality. *Cyclone*-SURVEY, a subset of *Cyclone*-MODEL, is ideal for surveyors. A view-only *Cyclone*-VIEWER module is available free of charge. Users can take advantage of point clouds directly in AutoCAD and MicroStation based applications with Cyra's economical *Cyclone* CloudWorx™ software modules. Multiple users can access scan data and models simultaneously for collaborative engineering by using *Cyclone*-SERVER. Combined with the *Cyrax* 2500, these products represent today's most popular 3D laser scanning product solution.



CYRAX® 2500

Product Specifications

GENERAL

INSTRUMENT TYPE High-speed, high-accuracy laser radar scanner

USER INTERFACE Laptop PC

SCANNER DRIVE Servo motor

OPTICAL VIEWER Integrated video camera†

SYSTEM PERFORMANCE

SINGLE POINT ACCURACY

Position ±6mm @ 1.5m - 50m range, 1 Sigma
 Distance ±4mm, 1 Sigma
 Angle ±60 micro-radians

MODELED SURFACE PRECISION* ±2mm
 * Subject to modeling methodology

LASER SCANNER SYSTEM

LASER TYPE Pulsed; proprietary microchip

COLOR Green

SAFETY Class 2 (ref. CFR 1040)

SPOT SIZE ≤ 6mm from 0 - 50 meters†

RANGE

Maximum Up to 100m
 Recommended 1.5m - 50m (5%-100% diffuse reflectivity)

SCAN RATE

1 column/sec @ 1000 pts/column @ full F.O.V.
 2 columns/sec @200 pts/column @ full F.O.V.

SCAN DENSITY

Selectability Independently selectable vertical and horizontal point-to-point measurement spacing†

Vertical 0.25mm minimum point-to-point spacing (@50m)†

Horizontal 0.25mm minimum point-to-point spacing (@50m)†

Scan column 1,000 points/column, max
 Scan row 1,000 points/row, max

FIELD OF VIEW

Vertical 40° max (angle included)
 Horizontal 40° max (angle included)
 Tripod mount 360° horizontal rotation†
 +105°/-90° vertical rotation†

Volume of space addressed (max) 20,000m³/scan (@6mm accuracy)
 160,000m³/scan (@100m range)

SCANNING OPTICS Dual mirror, random access†
 Protected by housing and glass shield

VIDEO TARGETING 480x480 color resolution

ELECTRICAL

POWER SUPPLY AC 90-240VAC; 50 - 60Hz
 DC 12V, nominal

POWER CONSUMPTION 100W

BATTERY Sealed lead acid

BATTERY LIFE 8hrs @ 20°C, with two batteries

ENVIRONMENTAL

OPERATING TEMP. 0°C to 40°C

STORAGE TEMP. -25°C to 65°C

LIGHTING Fully operational between bright sunlight and complete darkness

HUMIDITY Non-condensing atmosphere

SHOCK 50 G's (max to shipping case)

PHYSICAL

	DIMENSIONS	WEIGHT
SCANNER	15.8"D x 13.25"W x 16.9"H including handles	20.5 kg (45 lbs), nominal
POWER SUPPLY UNIT	12.25"D x 11"W x 9.375"H	7.3 kg (16 lbs), nominal AC configuration

STANDARD ACCESSORIES

Transport cases
 Tripod with spiked feet and pan & tilt mount for scan head
 Cables
 Scanner-to-power box
 AC power cord
 Ethernet-to-notebook
 Two batteries
 Battery charger (integrated with Power Supply Unit)
 Cyclone™-SCAN software

HARDWARE OPTIONS

Laptop PC
 Special scan targets and target accessories†
 Tripod with paddle feet
 Wheeled base for tripod w/paddle feet
 Standalone charger
 Service agreements for Cyrax 2500

PC PLATFORMS FOR MODELING

PC SYSTEM	REQUIRED (min)	RECOMMENDED
Processor	500 MHz Pentium II	1 GHz Pentium III
RAM	256 MB	512 MB or more
Hard disk	10 GB	40 GB
Network card	Ethernet <small>(for licensing/communications w/scanner)</small>	Ethernet <small>(for licensing/communications w/scanner)</small>
Video card	SVGA	3-D OpenGL-acceleration
Display	800x600	1024x768 true color
Operating system	Windows NT 4.0 (service pack 6) Windows 2000 (service pack 2) Windows XP Professional	Windows NT 4.0 (service pack 6) Windows 2000 (service pack 2) Windows XP Professional

CYCLONE - SCAN

"Fly-around," pan & zoom, and freely rotate point clouds, true-color or intensity mapped clouds, wire meshes, "shrinkwrap" surfaces, and models in 3D

Real-time 3D visualization while scanning†

Point cloud and 3D model Level of Detail (LOD) for fast visualization

Fast "shrinkwrap" rendering of point clouds to meshes

Decimation of point clouds (nth point)

View point clouds with intensity or true-color mapping

Limit box for efficient viewing and interaction of selected regions

Targeted, single-shot pre-scan ranging†

Scan filtering to optionally exclude data based on:
 Area of interest via rectangular or free-form polygonal areas†
 Region around picked points†
 Range†
 Return intensity†

CYCLONE - SCAN (CONT.)

User-defined quality-of-fit checks

Measure & dimension point clouds and models
 Slope distances
 ΔX, ΔY, ΔZ distances

Atmospheric correction

Create and manage annotations

Create and manage layers

Assign colors & materials to objects

View scanner locations

Environmental lighting

Save/restore views

Save screen image as image file†

Undo/redo support

Automatic identification of Cyra spherical & flat targets†

Scripted, sequential scanning†

Geometry types that can be created automatically using best-fit methods:
 Cyra targets (flat, spherical)†

DIRECT IMPORT FORMATS

ASCII point data

Riegl

Cyclone Object Exchange (COE) format (COE Data Transfer Products)

CGP

DIRECT EXPORT FORMATS

ASCII point data

BMP, JPEG

INDIRECT EXPORT FORMATS

AutoCAD (via COE for AutoCAD plug-in)

MicroStation (via COE for MicroStation plug-in)

PDS (via MicroStation, COE for MicroStation plug-in)

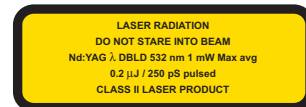
AutoPLANT (via AutoCAD, COE for AutoCAD plug-in)

ORDERING INFORMATION

Contact Cyra Technologies, Inc. or authorized manufacturer's representatives

All specifications and descriptions refer to Cyrax 2500 - US model and are subject to change without notice.

† SmartScan Technology™ feature



▶ www.cyra.com

© Cyra Technologies, Inc
 4550 Norris Canyon Road
 San Ramon, CA 94583
 Tel. 1.925.790.2300

