

PI-3000

TOPCON



3D IMAGE MODELER SOFTWARE



Digital Imaging, Measurement, and 3D Modeling solution

- USE ANY DIGITAL CAMERA – 5 MEGAPIXEL OR HIGHER
- GENERATE TRUE 3D MODELS FOR MEASURING, MAPPING AND INTERPRETATION
- CLEAR, EASY-TO-UNDERSTAND INTERFACE
- PRODUCE MODELS WITH ACCURACIES UP TO 0.4 MM
- CALCULATE A TRUE 3D MODEL AT THE CLICK OF A MOUSE
- SEVERAL ADVANCED FEATURES AVAILABLE FOR MANIPULATING AND HANDLING MODELS AND MODEL DATA

Using a standard digital camera,* Topcon's PI-3000 software can generate true 3D models for a variety of applications: measuring, mapping, and shape/form interpretation.

PI-3000 combines an easy to use interface and advanced mathematical processing for quick and true modeling—accurate 3D models are produced with minimum preparation or specialist knowledge.

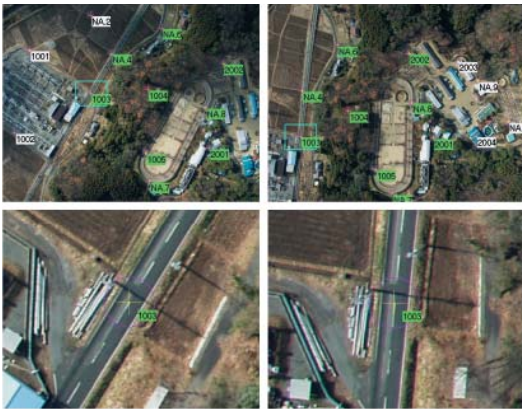
No Special Camera Required

Make use of the digital camera* you already have. Take a minimum of two photos of the object from two positions, ensuring the images partially overlap – there's no maximum photo limit. For most applications it's unnecessary to use a fixed base or other setup conditions, unless you are planning for sub-millimeter accuracies.

Fast and Easy Bundle Adjustment

To create a 3D model, calculate different photos together via the software's bundle adjustment option. Identify and measure common points in both photographs using simple measurement procedures. The process takes minutes.

Based on a minimum of 6 points, the software calculates an adjustment and displays accuracy of the individual points. Add or change points to get the maximum result.



Simply Accurate

PI-3000 software produces models with up to 0.4 mm accuracy for photos taken at a 10 meter distance to the object. The conditions of use are special targets for adjustment points, and optimal camera standpoints. To achieve 0.4 mm accuracy, a camera calibration is required.

Quick and Accurate DSM Calculation

For PI-3000 to automatically calculate Digital Surface Models (DSM's), define the boundaries and break lines around the model. By drawing critical lines of the object and surrounding surface into the picture, the software separates the model from "background noise." With the press of a button it calculates a true 3D surface model suitable for direct measurement. Or for further manipulation, mapping etc., export into any third party handling or CAD software.

* a minimum 5 megapixel camera recommended

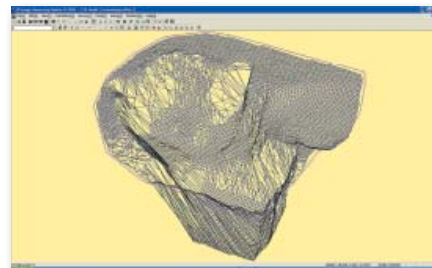
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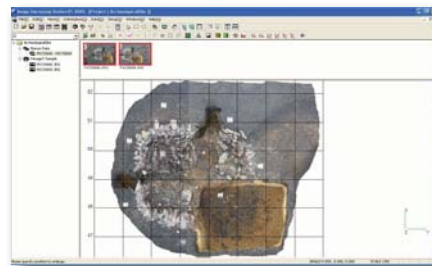
PI-3000 can create any number of model formats, solid or contour line. To render an area, use the bundle adjustment feature to calibrate the photos and define a break line. PI-3000 does the rest, resulting in a digital model.



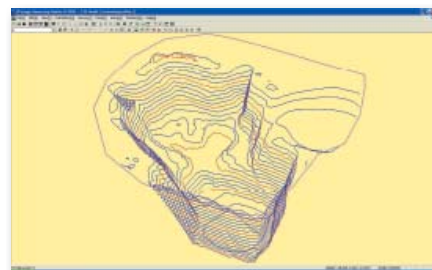
Define Breaklines to identify the critical boundaries of the object, reducing files size by eliminating unneeded objects or noise



Selectable TIN Model interval creates a TIN model structure with as much or as little detail as necessary



Compiles ortho-images from stereo pairs for accurate 2D measuring.



Like TIN models, select the level of contour line detail to optimize visual comprehension while minimizing file size

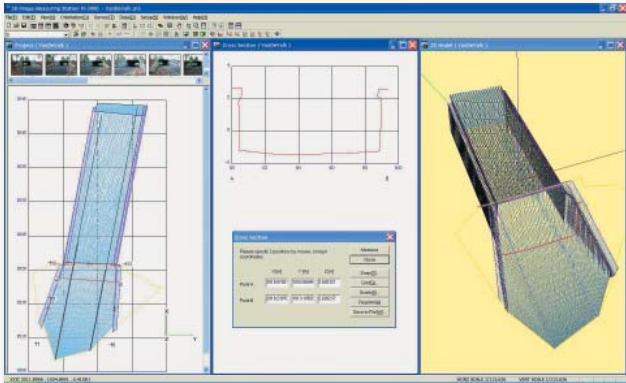


For ultimate presentation and interpretation, PI-3000 can superimpose the original photo over the model.

Advanced Features

In addition to the unique data capturing and 3D modeling functions, PI-3000 has several advanced features for manipulating and handling the models and model data. Advanced features include:

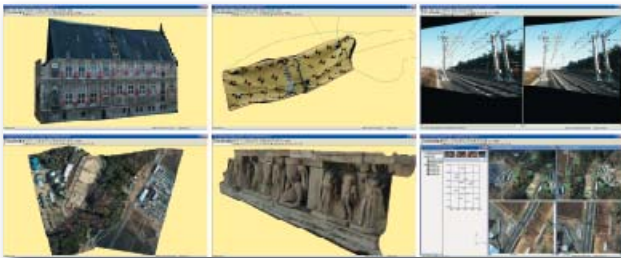
- Calculation and display of model cross sections
- Calculation and display of contour lines
- Area calculations
- Distance measurements, either point to point
- TIN model generation
- Rendering models
- Ortho Images
- A variety of export formats (DXF, Ascii, VRML etc)



Applications

Topcon's PI-3000 has modeling, measurement, mapping and interpretation functionality for a wide variety of applications:

- Close Range Photogrammetric Applications
- Aerial Photogrammetry
- Architecture
- Archeology
- Disaster monitoring/mapping
- Mining
- As built civil and industrial applications
- Accident investigation
- 3D modeling and visualization applications



Hardware Platform and Options

User friendly and easy to implement, PI-3000 operates on standard PC platforms.* Optionally, a 3D monitor that, when used with 3D glasses, can be viewed in true 3D for highly accurate modeling and measurement requirements.

System Components, Options and Requirements

PI-3000 Bundle contains:

- Single User License PI-3000 Software
- Manual
- USB Hardware Lock

Options:

- 3D Monitor and 3D Glasses for optimum measuring

Hardware Requirements:

- Digital Camera with preferred minimum of 5 MegaPixel
- * Personal Computer with:
 - CPU Pentium 4, 2.0 GHz
 - Memory 512 Mb
 - Graphical solution Open GL
 - OS Windows 98, ME, 2000, XP
 - USB or printer port for hardware lock

Package#1 Camera + PI-3000

Create 3D models using a digital camera and PI-3000 software. Measurements and scaling of the object can be done with conventional measurements such as tape measuring, or use an assumed scaled distance.



Package#2 GPT-7000i + Camera + PI-3000

The GPT-7000i total station with on-board Field Orientation software can be used to collect the reflectorless measurements that will be used for scaling of the 3D model. In addition, the Field Orientation software directs you where to stand to take the additional camera images to complete the 3D model.



Package#3 Topcon GPT-9000A + Camera + PI-3000

"Image-based Robotic Reflectorless Scanning" The GPT-9000A, with the longest (2000m) reflectorless EDM in the market today, can be used to collect control points reflectorlessly and with motorized scanning control. Use one image from a camera to load on-board the advanced TopSurv Scanning software, and the GPT-9000A will scan the image based on user defined recording intervals. The measurements are then used in PI-3000 software as control for scaling of the 3D object.



Package#4 Topcon IS + Camera + PI-3000

The ultimate in imaging technologies package! The Topcon IS can be used to collect measurements that will be used as control data in PI-3000 software. The IS (Imaging Station) using Intelligent Scan and motorized reflectorless measurements can collect large amounts of data automatically. This package combines all of the latest imaging technologies from Topcon. The live camera image on the Topcon IS gives you imaging control while in the field.



The Leader in Positioning Technology...

Topcon's positioning products deliver unparalleled site-wide performance and integration. Our history of technological advances and reputation for superior reliability means no other company is positioned to provide a better Total Positioning Solution.

From survey to inspection, with more than 170 dealers worldwide, we provide innovative technology, giving surveyors, civil engineers, contractors, equipment owners, and operators a competitive edge by addressing critical issues: increasing profits, quality craftsmanship, improving productivity, lowering operating costs, and enhancing jobsite safety.

Our goal is full positioning integration from field-to-finish. If you are ready for the next level, it's time to turn to Topcon.

The Leader in Customer Satisfaction...

To ensure that your Topcon instrument maintains its peak performance, the local Topcon dealer has factory trained and certified service technicians available. If service is not available in your area, we offer a repair and return policy that is second to none.

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PI-3000: The Basics

PI-3000 uses stereoscopy to create three-dimensional images. Stereoscopy combines two offset and overlapping images known as stereopairs, to create a stereomodel. Until recently, stereoscopes created the illusion of dimension. Today, stereoscopes combine images using digital algorithms, providing a digital, rotational image suitable for survey and engineering purposes.

Sterepairs consist of two or more photos that must capture the subject in an overlapping fashion. The orientation of the camera determines the dimensional accuracy of the stereomodel; keep the camera at a constant distance and on a parallel line. Even though you can still have a positive outcome, the more severe the deviation from this formula, the less accurate the stereomodel. Measuring the distances from one photo to the next increases accuracy when processing images in the PI-3000 software.



Sterepair



Stereomodel

Align the photos using the object's recognizable features, or by placing control points prior to capturing the photos. Once PI-3000 creates a stereomodel, any background or unwanted areas in the image may be deleted. The stereomodel can be viewed as a stereoscopic image, or exported to any number of formats for further study, or incorporated into other engineering/design/layout programs.

GPT-7000i

GPT-7000i Series Imaging Total Station

- Capture Reality with Revolutionary Technology



Topcon revolutionizes surveying with another World's First Technology. Capture jobsite images with the built-in digital camera.

The GPT-7000i provides:

- The best performance
- Efficient surveying
- Long range EDM
- TFT color graphic display
- New Windows® CE technology
- Add information to the image



Windows CE Advantages

At Topcon we value efficiency and productivity. By adopting the latest Windows® CE technology, Topcon brings the advantages of the GUI (Graphical User Interface) to a Total Station. The large 3.5" TFT color LCD display is large and bright enough to easily view data. The LCD display adjusts automatically in bright lighting, for clear visibility. The touch screen makes using the GPT-7000i a snap.

Your local Authorized Topcon dealer is: