

High-Resolution Satellite Models ProPack

HIGH-RESOLUTION SATELLITE MODELS PROPACK

Extend the functionality of the PCI ProSDK through the High-Resolution Satellite Models ProPack. The High-Resolution Satellite Models ProPack enables flexible use and automation of PCI Geomatics' robust, model-based satellite orthorectification technology.

The High-Resolution Models ProPack includes implementations of rigorous models of sensor geometry and satellite dynamics that are used to orthorectify high-resolution satellite images. These models take into account the platform position, velocity, and orientation, the sensor interior orientation, integration time, and field of view the Earth representation (geoid, ellipsoid, and relief), and the output cartographic projection.

The High-Resolution Models ProPack supports a wide range of high-resolution satellite sensors.

High-Resolution Sensors

- IKONOS GEO
 - Most economical GEO product in Geotiff or HDF format
 - 1-2m accuracy with 10 or more ground control points (GCPs)
- IKONOS GEO Ortho Kit
 - Geo Ortho Kit product in NITF with RPCs or GeoTiff with TXT file
 - Rational function coefficients (IGM or RPC)
 - 10-25m accuracy without GCPs
 - 1-2m accuracy with one or two GCPs
 - Satellite Orbital Math model can be used without rational function coefficients
- QUICKBIRD (basic and ortho ready standard products)

- GeoTiff or NITF with support files (ATT, EPH, GEO, IMD, RPB, TIL)
- ORBVIEW-3
 - Basic Enhanced 1A Product
- SPOT5
 - 1A and 1B Products

The High-Resolution Satellite Models ProPack consists of core PCI Pluggable Functions (PPFs) for evaluating model parameters for orthorectification, plus other PPFs that provide complementary operations as described below.

SOME OF THE INCLUDED COMPLEMENTARY PPFs

Image Import

- CDIKONOS
 - Imports image and satellite path data from Ikonos data distribution files.
- CDQB
 - Imports image and satellite path data from QuickBird data distribution files.
- CDSPOT5
 - Imports image and satellite path data from SPOT5 data distribution files in DIMAP format.
- CDOV
 - Imports image and satellite path data from OrbView data distribution files.

Image Preparation

- QBASMBLE
 - Assembles separately distributed tiles of a single QuickBird image into a single image with valid RPCs in a PCIDSK file.

- STITCH
 - Merges orbit-adjacent IKONOS, Quickbird, ASTER or SPOT images into a single image that has valid ephemeris data.
- ORBITRD
 - Copies orbit data from a textfile to an orbit segment in PCIDSK file.
- ORBITWR
 - Copies orbit data from an orbit segment in a PCIDSK file to a text file.

Ground Control Point (GCP) and Tie Point (TP) Management

- GCPIMPORT
 - Imports GCP data from a GCP segment in a PCIDSK file into an OrthoEngine project file.
- GCPREAD
 - Imports ground control point data from a text file into a GCP segment in a PCIDSK file.
- GCPELEV
 - Obtains elevations for GCPs from a DEM.
- GCPWRIT
 - Exports ground control point data from a GCP segment in a PCIDSK file to a text file.
- GCPEXPORT
 - Exports GCP data from an OrthoEngine project file into a GCP segment in a PCIDSK file.
- GCPPRO
 - Converts input ground control points (GCPs) to the specified output units.
- TPIMPORT
 - Imports tie point data from a text file into an OrthoEngine project file.

- TPEXPORT
 - Exports tie point data from an OrthoEngine project file to a text file.

Digital Elevation Model (DEM) Creation

- VDEMINT
 - Generates a raster DEM from elevation data in vector layers and observes 2D breakline constraints.
- NNINT
 - Generates a raster DEM from spot elevations read from a raster, using natural neighbour interpolation.

DEM and Vector Elevation Reference Transfer

- DEMZREF
 - Transforms raster DEM elevation values from mean sea level to ellipsoidal.
- VECZREF
 - Transforms 3D vector elevation values from mean sea level to ellipsoidal.

Image Normalization

- HOTSPOT
 - Performs a correction for hotspot effects in an image channel.

Adjustment

- SATMODEL
 - Calculates the Toutin's geometric model for one or more satellite images.
- OEMODEL
 - Evaluates a block adjustment for a set of images in a project file and generates math model segments for each image.

- CPMMSEG
 - Evaluates a block adjustment for a set of images in a project file and generates a math model segment for one image.

Orthorectification

- ORTHO
 - Orthorectifies an image using an existing geometric model and, optionally, a digital elevation model.

Image Management

- IMERGE
 - Merges multiple geocoded rasters into a single file.
- REPROJ
 - Reprojects images, bitmap segments and vector layers to a specified projection.
- CLIP
 - Clips layers based on a user defined clip region.
- TILE
 - Creates multiple subset tiles from a single file.
- PYRAMID
 - Build an image pyramid for one or more image layers in a data file.

For more information, contact

PCI Geomatics
50 West Wilmot Street
Richmond Hill, ON L4B 1M5
Canada

Phone: 1 905 764 0614

Fax: 1 905 764 9604

Email: info@pcigeomatics.com

Web: www.pcigeomatics.com