Tetracam Application Software Products – Overview

Tetracam publishes several application software products to cover a range of camera operating environments and image file processing requirements. Some of the applications can work in sequence to automate image capture, file transfer or both. The following describes both the functionality and interoperability of these products.

PixelWrench2 – The basic application package included with all Tetracam camera products. PW2 provides;

- Windows multi-document (MDI) access to image files
- A full interface to cameras operating in native streaming mode
- General image editing tools
- A form for viewing image metadata
- Specialized tools for handling and processing ADC and MCA file sets
- A batch processing tool for handling large sets of image files
- Tools for generating vegetation index and canopy cover images
- An optical calculator for deriving fields of view, spatial resolution etc.

SensorLink – The GPS guided fly to waypoint application. SensorLink runs on Windows machines receiving GPS output into a serial port with the camera connected via the USB streaming interface. SensorLink presents a heading, distance and time to each designated waypoint, triggers an ADC or MCA camera at waypoint acquisition and sends the current GPS sentence to the camera for inclusion in the image file header. SensorLink provides;

- A simple single form interface
- A waypoint file editor. Create and save waypoint files for aerial photo missions
- A serial interface to any GPS receiver emitting NMEA sentences
- Scalable fly to waypoint, head up display graphic
- Ability to define several camera triggering modes
- Camera configuration and control toolbar

GetShot – A small but powerful tool for automating camera image capture and retrieval. GetShot triggers ADC and MCA cameras over the USB streaming interface. GetShot is usually launched via a batchfile run by an operating system scheduled task. Other features include;

- Trigger and retrieve the last image taken, write the file to any valid path
- Optionally erase the camera after file retrieval
- For MCAs: The ability to build fully aligned multi-page and singlepage TIFs from RAW or DCM file sets
- Getshot is also command line or batchfile launch-able with arguments to execute any of its functions

Remote Processor – Another automation tool, RP is commonly used in systems featuring remote cameras. RP will search a designated folder for ADC camera RAW or DCM files and execute color processing and generation of NDVI and SAVI images, then write those images to user designated paths. All the functionality of RP is available from the desktop application window as well as the command line or batch modes.

TifExport – PW2 saves MCA images in a standard multiple page TIF format. Many GIS and other special purpose applications prefer to work with multispectral data in a single page, deep sample TIF format. TifExport is used to convert the multi-page TIF to single page format with each pixel carrying samples from each camera band. TifExport also serves as an image viewer, allowing display of all the separate bands, any combination of three bands as a color image, a histogram window, a metadata panel and a pixel-wise spectral signature panel.

GPS Log Distiller – The Distiller application provides several useful features when working with Tetracam cameras configured as USB mass storage devices (USB disks). Distiller provides controls for setting all important camera operating parameters and creating and editing camera alarm files. Distiller provides a multi-threaded file transfer function for moving image and log files from the camera(s) to hard disk. Distiller also refines the camera produced log files to compact *.GPS files and KML files useable with Google Earth. Log Distiller can be executed from the command line or batchfile to send camera settings files and transfer camera image files to hard disk.

Tetracam Firmware Updater – The firmware updater is a safe and reliable tool for updating (or reverting) camera firmware over the USB streaming interface. It can send both ADC and MCA firmware *.bin files. For the ADC and MCA, only one camera status operation is required with upload fully automated and reported.

BuildTif – BuildTif is the worker DLL called by the MCA multi-page and single page TIF builder functions in GetShot. A DotNET managed DLL, its two public function calls allow any programmer to produce aligned multi-page and single page deep sample TIFs from MCA image file sets.

Interoperability

Tetracam cameras can be configured as “native” mode USB devices requiring a USB stream driver to manage the camera/host interface or as USB mass storage devices that utilize the OS mass storage drivers. The usability of several of the software products depends on the camera configuration. All applications that trigger the camera require native mode.

PW2 – Native mode interface for camera operation, configuration and file retrieval.

GPS Log Distiller – USB diskmode interface for camera configuration and file retrieval.

SensorLink – Native mode interface required for trigger and camera configuration.

GetShot – Native mode interface required to trigger camera and retrieve image files. TIF building functions are independent of camera and operate on files previously stored to disk.

Remote Processor – No camera interface, diskfile operations only.

TifExport – No camera interface, diskfile operations only.

Tetracam Firmware Updater – Native mode interface required for camera status calls and file transfer to camera memory. Updating firmware on USB diskmode cameras requires only that the firmware bin files are placed on the camera CF card(s).

Automation Workflows

ADC cameras running the appropriate firmware feature alarm modes that wake the camera and take a preset number of images at predetermined times. A second alarm mode is available to wake the camera to allow image retrieval. Cameras not running alarm capable firmware can be triggered if already powered on by running GetShot or by use of external controllers connected to the camera external trigger input.

A common requirement for statically mounted cameras is to take one or more pictures at a preset time(s) each day, and make the images available on a file server for further processing, evaluation or archiving. For an alarm capable camera in USB disk mode a typical workflow might be;

1. Internal camera alarm wakes camera at noon for image capture.
2. Internal camera alarm wakes camera at 1:00PM in “conversation” mode.
3. Host computer task scheduler launches GPS Log Distiller via batchfile with an argument to transfer files from the camera to a predefined folder then erase the camera.
4. The same batchfile then launches Remote Processor to open the newest files, color process them, derive NDVI images and write the output to a designated folder.

For a camera operating in native mode, another scenario might be;

1. Host computer task scheduler launches GetShot to trigger the camera and transfer the newest image to a designated folder. Images can accumulate in the camera or be erased each capture cycle.
2. The same batchfile launches Remote Processor to open the newest file, color process it, derive an SAVI image and write the output to a designated folder.

Availability

PixelWrench2 is shipped with all camera products. It is available to anyone using Tetracam cameras or working with Tetracam image files. It is supplied on a CD with camera shipments and is available in a zip file at www.tetracam.com/PW2setup.zip A current installation of PW2 includes GPS Log Distiller, the Firmware Updater and TifExport.

SensorLink, GetShot and Remote Processor are optional software products available from Tetracam. Contact Tetracam or your reseller for current pricing.