

New York Wing CAP Imaging System Checklists and Information

eTrex H Settings

Menu

Mark - used to record a location

Waypoints - user defined points can be used to define a track

Routes - usually defined on a computer and then uploaded

Tracks

Track Log

Clear - clear before each sortie

Setup

Recording = On

Interval = Time

Value = 00:00:02 (2 seconds - 5.6 hours before roll over)

Wrap when full = Yes

Save - save a track log - need not be saved to download to computer

Setup

Time

Time Format = 24 Hour

Time Zone = London

UTC Offset = 00:00

Daylight Savings Time = Off

Units

Position Format = hdd*mm.mmm'

Map Datum = WGS 84

Units = Nautical (aircraft use knots and NM)

Mag Variance = Local (012 degrees W average for NY)

Angle = Degrees

Interface

I/O Format = Garmin (for importing track logs to compute)

System

Mode =- WAAS

Language = English

eTrex 10 Settings

Menu - more items but these are of interest here

Map - to display the map and the time (if properly set)

While on the map page press menu then Setup Map

Data Fields = 1 Large

Change Data fields - set to time of day

Setup

System

Satellite System = WAAS/EGNOS on

Language = English

USB Mode = Garmin

Tracks

Track Log = Record, Do Not Show

Record Method = Time

Recording Interval = 00:00:02 (2 seconds)

Time

Time = 24 hour format

Zone = Europe - Western

Daylight Savings Time = No

Position Format

Format = hddd* mm.mmm'

Map = WGS 84

Satellite - view number of satellites in use

Note: To clear the current track, go to Track Manager on the Menu screen, select Current Track and then delete.

Downloading the track log does not work with RoboGeo. With the eTrex turned on connect it to the PC via the USB cable and download the current track from the device "Garmin". When the eTrex prompts for going to Mass Storage select Yes. Open the Garmin folder and then the GPX folder followed by the Current folder. Copy the Current.gpx file to the desired desktop folder.

To view battery status, press the light button. Press the enter button (joy stick) to exit or wait a few seconds.

New York Wing CAP Imaging System Checklists and Information

Solmeta Geotagger

The Solmeta Geotagger has a cable specific to D200, D90 and D7100. Do not mix them up.

The device is charged using a USB port on a computer or other USB charging device. If the unit's battery gets low it will draw power from the camera.

This device has a built in compass that must be calibrated often. In the CAL setup if it shows OK when enter is pressed it thinks all is good. If it shows a rectangular box it needs to be calibrated.

To power on hold the power button until the test screen lights up.

To power off hold the power button until OFF ? appears and press Enter.

The Menu button will cycle through display modes: longitude, latitude, altitude, direction, UTC to the nearest tenth of a second, date, speed, gradient (angle up/down and left/right), Setup ?.

Setup items:

When Setup ? is displayed press Enter.

The current setting will be displayed for each item as the menu button is pressed.

To reset to factory default press Enter and Menu buttons at the same time and RESET will appear and press Enter to accept.

To change a value press enter until the display flashes and then use the menu button to change.

Press Enter to set the value, display stops flashing, press menu to move to the next setting.

Press power button to exit setup mode.

SET LED Delay: set to ON and 1 minute

SET GPS: set to unlock

SET ALTitude: set to feet

SET TIME: do not change so UTC is shown. Displays UTC time.

Can be used to set local time offset.

SET Date format: set to yyyy.mm.dd

SET Speed: set to N for knots

SET FAT: logging interval set to 1 second

SET 2.4GHZ: set to ON for remote shutter release

SET CH00: remote shutter channel should be 00

If channel is changed on remote set unit to that channel.

UTC TIME: Used to set auto shutter release start and end time and interval. Should show UTC S 00:00:00

SET CLOCK SET: how often does device try to get position data. Set FREquency to 96 hours and CONNnection to 1 minute to save battery.

SET AUTO SET: used to setup how the device behaves if signal is lost when auto mode is enabled after power up. Do not use Auto mode.

SET CAL: calibrate compass

Press enter until a rectangular box with flashing dashes appears.

Calibrate when attached to the camera with the camera turned on. Rotate slowly (about 5-10 seconds per rotation) twice in X, Y, and Z. See setup below.

SET DIRection: Set to TN for true north.

Press enter and MN or TN will flash

Press menu to change to TN

When TN is displayed, not flashing, press enter twice

Point to true north and press enter

Go back to the main direction screen and make sure the TN headings are approximately correct. The double enter is critical and if not done correctly the headings will be reversed.

SET GRAdient: no need to set

SET BEEP: should be set to ON

SET BATtery: displays battery voltage

The remote shutter release can be used to manually trip the shutter. See the SET 2.4GHZ and SET CH000 setup items..

Track log

If some images do not get the location information RoboGeo can be used to update the selected images or the entire collection using the track log as is done with the stand alone GPS units.

The track log is accessed via the USB connection to the device. There is a file created for each date. The file can be copied to a computer or loaded into RoboGeo as a NMEA File. Old logs need to be deleted via the computer connection. The device has 2GB of storage and with 1 second intervals for track points consumes about 400KB per hour.

New York Wing CAP Imaging System Checklists and Information

D90 Settings – D7100 is nearly identical

Lens autofocus switch to AF (left side of lens)
Camera autofocus switch to AF (left side of body near lens)
Lens optical stabilizer switch to ON (left side of lens)
Camera mode switch to Auto with no flash (top left of camera, one click counterclockwise of auto)
Camera focus selector switch to L (on lower right back of camera)
Verify camera is set to proper settings
Turn on
Press Menu
Move to setup menu
Move down to world time
Hit OK button
Verify that the screen says London, UTC 0, correct date, daylight savings time off. **This must match the eTrex GPS see below to set.**
Hit menu button to exit
Note: when the date/time screen is open the camera clock is stopped

To synchronize camera time to GPS
Time to the second on the GPS is on the menu page
On the camera world time menu
Down arrow to date and time
Hit right arrow near OK to move cursor to the field that needs setting
Use up/down arrow to change value
Set the camera to 10-15 seconds ahead of the GPS
Hit OK when the GPS rolls to 1 second prior to the camera value
If you are not taken back to the World Time screen the value was not set
Take a picture of the time on the GPS to be used later if needed for correcting a few seconds
To reset the camera, press and hold the +/- and AF buttons (green dots) for two seconds - date/time will not be changed

Anytime the camera is not on a solid level surface, place the strap around your neck to avoid dropping it on pavement or out a window.

Satechi Remote Shutter Release and Timer

Turn unit on
Use the right/left keys to move the black line under INT
Press the set button (center of left/right, up/down arrows)
Use right/left keys to move to the value to be set
Format is HH:MM:SS
Use up/down keys to set each value
Press the set button to save.
Use the right/left keys to move the black line under N
Press the set key
Use the up/down arrows to set the number of images or set to - - for unlimited
Press the set key to save
To shut off the beep move the black bar under the speaker symbol
Press set
Up/down keys toggle sound on/off - Press set
The large button marked HOLD can be pressed to release the shutter
Press the start/stop button to start or stop the sequence
If the unit is turned off all settings are lost

Vello Remote Shutter Release and Timer

Unit is always on when batteries are installed
Make sure the camera is OFF before connecting
Check to be sure Timer Active and Release are not active
Push the round button below "hold" to trip shutter manually
Press half way for camera to focus and all the way to trip
Press Set and use left/right arrow to move cursor (black line) under No
Use up/down arrows to set number of releases - press Set to save
Double dash is infinite number
Press Set and use left/right arrows to move cursor under INTV
Use up/down arrows to set release interval - press Set to save
Press Start/Stop to start and stop the sequence
If L appears press and hold lock until it goes away
If batteries are removed all settings are lost

New York Wing CAP Imaging System Checklists and Information

Before sortie departure checklist

Note both GPS and camera will be set to **UTC time**

NO daylight savings time

UTC offset = 0

Time zone London

eTrex

Check battery condition - new should run 15 hours, take spares

Clear Track log

Set camera time as close as possible to GPS time

Make sure setup items are as specified

Track recording on

Track interval 2 seconds unless higher resolution needed

2 second track interval will enable 5.6 hours of logging

Clear the track log while outside and satellites acquired just prior to departure - this will avoid log records with no coordinates that may cause issues later

Camera

Check battery condition - take the spare or put two in the multi battery pack

Synchronize the time as close as possible to the GPS

Note at 120 knots a 1 second error is 200 feet

A photo of the time on the GPS can be used later if more precision is required

Verify that SD card is in place and empty

Attach the Nikon GPS

Nikon GPS alone can be used if direction of travel is not needed

The eTrex track log will enable direction of travel

PC software will take care of the camera offset

Do NOT obstruct the focus ring when taking photos

The zoom ring is nearest the camera, focus is outer ring

General

Allow GPS 5 minutes to acquire satellites after power up

Camera may be shut off to save battery if not needed for several minutes

After sortie checklist

eTrex

Clear track log **AFTER** downloaded to computer

Verify turned off

Return to carry case

Camera

Verify all parts returned

Batteries

Lens cap

Accessories

Verify SD card installed and cleared **AFTER** images downloaded to computer

Verify turned off

Return to carry case'

Solmeta Geotagger turn off

Return to carry case

At end of day - whenever equipment will not be used for a few hours

Charge camera batteries

Discard dead AA batteries

Replace used AA batteries

Verify all parts returned to proper location in Pelican case

New York Wing CAP Imaging System Checklists and Information

Dell E5510 Laptop - General

Installed items

Microsoft Windows 7, 32 bit

Microsoft Office 2010, 32 bit

Adobe Reader X

Cute PDF Writer - "print to" to create pdf doc's

AVG Antivirus

RoboGeo - image tagging software

Garmin Map Source - display GPS tracks

FileZilla - ftp client

Google Earth - view images and tracks on a map

Cute PDF Writer is installed as a printer and to create a pdf document simply print to this device.

RoboGeo is image tagging software that will also write meta data to an image file. Images can be imported as specific files or an entire folder. Track logs can be imported to be used to provide latitude, longitude, altitude and the track heading is derived from the log. The default offset for the camera pointing angle is 270 degrees (shooting out the left side of the aircraft) relative to the track over the ground.

With very close synchronization of the camera and GPS time the coordinates from the track log will be displayed for the appropriate image. The software will compute the track over the ground as a reference for the image direction. If the photos are taken out the right window or at some angle other than 270 degrees relative to the ground track, the "preferences" have a setting that will apply this to all images. A standardized configuration file has been loaded and the goal is to have all using the same settings. The one allowable exception is the camera direction but it must be checked for each set of images.

Create a folder on the desktop with a name for the subject of the images. Create a folder in the folder with the same name with the word "processed" on the end and this is where the geo tagged images will be placed. **Always preserve the original images.**

Download the track log from the GPS and "export" it to the image folder for future use. The images will be geo coded based on matching track point times to image times, plus the track direction and camera offset.

The result will not be the utmost in accuracy but should be sufficient for most purposes. A track point every two seconds while traveling at 120 knots is 400 feet.

The "title" must be entered manually for each photo and this is what will appear on the top of the image. Latitude, longitude, altitude and camera direction can be manually entered if GPS data is not available. Cut and paste works for repeating titles.

Garmin Map Source will display the track log on a low resolution map. Products such as DeLorme Street Atlas and Topo can also import the logs if finer map detail is desired. Click Start, Garmin and Map Source to start this program.

An **ftp site** has been set up that can used as needed to upload images. The site is <ftp://nywcap.org> and requires a login and password.

FileZilla has a site called NYW configured with the host, login and password. Click the connect button. A folder should be created for each set of images and the folder name should be short but meaningful. Things like Sortie 10 don't help much. GreatFallsDam tells others something. In some cases a folder with the mission number may be in order and subfolders for the photo subjects. This site can be used so someone at another location can pull down the images and the track log and assist with geo tagging and labeling images if they have the RoboGeo software.

If necessary, the login and password for the ftp site can be provided to our customer. Contact Bill Hughes to arrange this.

BillHughes@rochester.rr.com or 585-738-7148

New York Wing CAP Imaging System Checklists and Information

RoboGeo Specific Steps

Create a folder on computer desktop with a name that is meaningful to others (eg MtMorrisDam)

Within this folder create a second folder with the same name followed by "Processed" (eg MtMorrisDamProcessed)

Copy the images from the camera to the base folder (eg MtMorrisDam). A USB cable can be used or remove the SD card from the camera and insert into the computer to copy them to the folder above.

Attach the eTrex to the computer via the serial cable (port on right rear of Dell laptops) - see notes regarding the difference for the eTrex H and eTrex 10.

Start RoboGeo using the appropriate short cut – right or left window

Go to step 2 and open all images in the folder or selected images

Go to step 3 and import the track log from the GPS

In RoboGeo go to File, Export, Export GPX file and save it to the main folder above (eg MtMorrisDam)

If all photo names remain in black lettering the geo tagging is complete. File names in red are not complete most likely due to time mismatch between image time and a close track point.

The Direction in the grid will be the result of the track segment direction plus the camera offset (270 degrees for shooting out the left window and 90 degrees for the right window).

To change the camera direction relative to the track (which is the GPS track over the ground) click on File, Preferences, expand TrackLogs and click on PhotoDirFromTrackLogOffset. Change the value to the proper value and click Save Value. **Note this will be the value for all processing until RoboGeo is restarted using the left or right window shortcut.**

Fill in the "Title" for each image on the Photos grid. These can be copied and pasted using Ctrl+c and Ctrl+v or using the mouse click to copy and paste.

Go to step 4 and select Write the Location Data to the EXIF Headers to write the meta data. If the customer requests the location data and other information on the image select Do Both of the Above

This will prompt for a folder and choose the sub folder (eg MtMorrisDamProcessed).

A window will open asking if you want to include the north arrow. If all images have a direction a message will tell you this. You can continue or review all images. If an arrow is not correct you can click on the image and the arrow will point to where you clicked.

At this point you should have original images in the base of the new folder plus the track log and the processed images in the one with "Processed" on the end of the folder name.

To produce a KMZ file with embedded images (this is a fully portable file that can be viewed on any PC using Google Earth): In step 4, click on Export to Google Earth. On the popup window click the radio button for KMZ w/images, leave image size at 320x320, altitude at Absolute values, insert a desired Title, and click Create KMZ File. When the next window opens select the location for the file - recommend putting this in the "processed" folder created earlier.

To reset the RoboGeo configuration to our common values: Open RoboGeo then click on File and then Preferences. Click on File at the top of the preferences window and click reset. This will reset all to the RoboGeo defaults. Click on File again and then Open and then Local File. Select the RoboGeoConfigCAP.rcf file which is kept in the desktop folder called RoboGeo Manuals. This file is also posted at <http://nywg.cap.gov/operations> in the imaging section.

Updates to the RoboGeo configuration file are posted at <http://nywg.cap.gov/operations/operations.htm> along with updates to these instructions and check lists.

Notes

eTrex H vs eTrex 10 - The eTrex H can be connected and the track log retrieved using RoboGeo. The eTrex 10 will prompt to connect as a mass storage device. Say yes to this prompt and navigate to the Current.gpx file located in the folder chain of Garmin/GPX/Current.

Correcting for camera time error

If RoboGeo cannot match track log time to image time, it will display those **image names in red font** and they will not be geo tagged

To correct for camera time error

New York Wing CAP Imaging System Checklists and Information

Select all images (click on first one, scroll to last one and hold shift key and click) – only highlighted images will be affected

In the Edit menu choose Edit Time / Manual

The correction is entered as @+ or – seconds of adjustment

60 seconds in a minute, 3600 in an hour, 86,400 in day, 365 days in a year but add a day for any leap days in the error range

RoboGeo will CHANGE the photo time in the images loaded, e.g. changes the meta data

If the track log was already loaded, reload it and verify that the geo tagging was done for all (if all have a direction it was successful)

Using File / Sync Camera Clock will solve the geo tagging problem but does NOT change the meta data, does NOT display the new time on the photo tab in RoboGeo and will NOT stamp the correct time if “stamping location info” on the images

It DOES change the camera offset preference so it will be applied every time images are loaded until the preference is reset to zero, even if RoboGeo is restarted