The Tetracam Checklist

I. **Turn on and Capture**

1. Connect camera to monitor
2. Plug in power cord to monitor
3. Plug in power cord to camera
4. Watch monitor screen. In diagnostic mode, should see all READY and OK statuses. Status light should turn green. Live Preview should start, with date/time/gps/image info displayed along the lower portion of the screen
5. Set capture settings
    a. Press ↵ to enter Menu
    b. Use ↑ ↓ to toggle through selections, press ↵ to select, press [camera] to return to live preview
6. Press [camera] button to start capture
7. To turn off, unplug power cord to camera (from wall/outlet)

II. Transferring Images to Computer

1. Turn on camera and monitor (Section I, Steps 1-4)
2. Plug in small end of USB cord to camera body. Plug in other end of USB to port on PC. 6 new devices/drives should appear on computer (each of the SD cards)
3. Open PixelWrench2 software
    a. If this is the first time you're using the software after installing it on a PC,
        i. Navigate to the program folder (C:/ProgramFiles/Tratracam/PixelWrench2/)
        ii. Right click on the 3 .exe files → Properties → Compatibility → Check the "Run this program as administrator" box.
4. View → Launch GPS Distiller (used to erase/transfer images and change capture settings)
5. Should see "Done. found 6 cameras" at top of window
6. From here, erase or transfer images to desired folder
    a. Example convention : C:/Users/dirsadmin/Desktop/tetracam/YYYYMMDD

Exposure Procedure

1. Set the scene
    a. Place both calibration targets (light and dark) side by side, with half of each in shade. Make sure it's within the length of the camera power cord.
2. Capture an image
    a. Steps 1-6 of Section I. Plug in power cord to camera, press camera button to capture an image.
    b. Hold camera at shoulder height, facing downward at the ground. Try to make sure both targets, shaded and sunlit, are in the field of view.
3. Transfer image to PC
    a. Plug in small end of USB cord to camera body. Plug in other end of USB to port on PC. 6 new devices/drives should appear on computer (each of the SD cards)
    b. Open PixelWrench2 software
    c. View → Launch GPS Distiller (used to erase/transfer images and change capture settings)
    d. SAVE as multipage tif
        i. View → Index Tools → MCA tab
        ii. Save proprietary raw format as multipage tifs
        iii. Click Save RWS sets as "Multipage Tifs"
        iv. Select folder with RWS files (*Desktop/tetracam/YYYYMMDD/exposure*)
        v. Click "OK"
        vi. Images will be converted, keeping name convention within folder
    e. Copy tif from exposure folder into *Desktop/workspace/SpectralFactory/spectral/data/TTCXXXX.tif*
4. Check Histogram
    a. Open Eclipse application
    b. In SpectralDataFactory.py change filename (line 24) in test harness to tif name
    c. Run (press green play button in Eclipse)
    d. Eight windows will appear with image histograms. Close current window to view the next. Look at each histogram.
    e. If there is clipping and crushing, change the exposure time:
        i. Launch GPS Distiller
        ii. Select master camera (TTCSNAP8)
        iii. Enter Exposure time, in microseconds (ie. 4000)
        iv. Click "Save Settings". Other cameras will have exposure computed based on the master
        v. Repeat all steps in this section

IV. Converting Formats

1. Open PixelWrench2 software
2. View → Index Tools → MCA tab
3. Save proprietary raw format as multipage tifs
    a. Click Save RWS sets as “Multipage Tifs”
    b. Select folder with RWS files (YYYYMMDD)
    c. Click “OK”
    d. Images will be converted, keeping name convention within folder
4. Save 3-band composites as standard image files
    a. Assign cameras to R,G,B bands
        - Frame 0 - master (NIR, 880nm)
        - Frame 1 - slave, B
        - Frame 2 - slave, G
        - Frame 3 - slave R
        - Frames 4,5 - slaves, other NIR
    b. Select image extension desired from dropdown menu (TIF, PNG, etc)
    c. Click “Batch > RGB”
    d. Select input folder with multipage tifs. Click “OK”
    e. Select output folder to store 3-band composites (creating new folder is recommended). Click “OK”
    f. Green bar indicates status of the conversion
5. Geometric calibration file
    a. Click “Open MCA”
    b. Select “250132Global.mca” (from green Tetracam disk inside pelican case), Click Open

Disconnecting Camera from Computer

1. Close all PixelWrench windows
2. Unplug power to camera (from wall/outlet)
3. Unplug USB cord, monitor cords
4. Pack everything inside pelican case

For help, contact:
Carl Salvaggio, salvaggio@cis.rit.edu
Victoria Scholl, vms3476@rit.edu
Elizabeth Bondi, exb7900@rit.edu