Utah Bat Monitoring Protocol

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Acoustic Field Set-Up Protocol:
Binary Acoustic Equipment and Recording

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1. Device Setup
    a. Battery connection
        i. Wire the battery monitoring box (charge controller) (Figure 1).
            1. Connect the positive and negative wires from the battery alligator clips (make sure battery is disconnected). The monitoring box has a picture of a battery with "+" and "-" symbols connect wiring accordingly. Next connect the recorder device power plug to the monitor port with a picture of a device and the corresponding "+" and "-" symbols. Attach the alligator clips to the corresponding battery terminals. If the device is wired correctly the digital display on the battery monitor will illuminate. If display fails to illuminate repeat this wiring step.
    b. Recorder/Receiver connection (Figure 2)
        i. Connect the FR125 (field recorder) to the Crystal Fontz LCD display screen via the USB port on the back of the FR125 (either port will work).
        ii. Connect the FR125 (field recorder) to the AR125 (acoustic receiver) with the supplied USB cable. The port on the AR125 is located on the back on the device and the USB port on the FR125 is adjacent to the LCD display screen port.
        iii. Connect the power source (via the charge controller) to the FR125 (field recorder). The power port is on the opposite side of the unit from the USB ports. The AR125 draws power through the FR125 which is connected to the battery via the charge controller. A green light should illuminate next to the power port on the FR125 indicating power is being received by the FR125.
2. Device Configuration
    a. After the steps above are followed, the LCD display screen should illuminate and boot-up (may take up to a minute). The **Main Menu** will appear. To navigate through the

menu use the up, down, left and right arrows. To select an option use the enter ☑ key to escape from an option use the ☒ key.

i. Arrow down to the **Time** option and Select ☑.
   1. Select ☑ **Date.** Enter current date in the format Month:Day:Year. ☑ when finished.
   2. Select ☑ **Time**. Enter current time based on 2400 clock. ☑ when finished.
   3. Select ☑ **Save**.
   4. Return ☒ to the **Main Menu**

ii. Select ☑ **Status**.
   1. Select ☑ **State**
      a. Select ☑ Running
   2. Select ☑**PwrSave**
      a. Select ☑ On
   3. Select ☑ **Mode**
      a. Select ☑ Trig
   4. Select ☑ **Input**
      a. Select ☑ USB
   5. Select ☑ **Format**
      a. Select ☑ wav
   6. Select ☑ **File Name**
      a. File name should consist of the protocol site number (1 thru 65), period number (A for June timeframe, B for July timeframe, or C for August timeframe) and within period repeat for double samples (1 or 2). For example 1A2 is site 1 period 1 (June-ish) within period visit 2. A site that does not require two within period visits is named for the site and period number only 1A refers to site 1 period 1 (June-ish).
   7. Do Not Select **Comment**
   8. Select ☑ **TStamp**
      a. Select ☑ On
   9. Return ☒ to the **Main Menu**

iii. Select ☑ **Settings**.
   1. Select ☑ **Vol**
      a. Set to 80 (this setting is for earphones only it will not impact recording levels).
   2. Select ☑ **Gain**
      a. Set to 25 (this setting is for earphones only it will not impact recording levels).
   3. Select ☑ **Thresh**
      a. Set to 18.0 (snapshot trigger threshold).
   4. Select ☑ **TE**
      a. Set to 10.0 (detector time expansion).
   5. Select ☑ **Dur**
      a. Set to 15.0 (snapshot duration).
   6. Select ☑ **Idle**
      a. Set to 3.0 (idle time out duration before end).
   7. Select ☑ **Delay**

a. Set to 0.0 (minimum delay between snapshots).

8. Select ☑ **Low F**
    a. Set to 5.0 (low frequency cutoff).
9. Select ☑ **High F**
    a. Set to 90.0 (high frequency cutoff).
10. Return ☒ to the **Main Menu**

iv. Select ☑ **Program 1**.
1. Select ☑ **Enable**, Switch to On (enables the recorder to run/record at preset start time and end time)
2. Select ☑ **Start Time**; enter desired start time (Utah Monitoring Protocol starts at 2100).
3. Select ☑ **Stop Time**; enter desired end time (Utah Monitoring Protocol ends at 0100).
4. Return ☒ to the **Main Menu**

v. Do Not Select **Program 2** unless you want to have the device record during another set of pre-determined times. Follow the same steps as in **Program 1** to set. Utah Monitoring Protocol calls for recordings between 2100 and 0100.

vi. Do Not Select **File Xfer.** Function only used to transfer files from the key pad to a secondary storage device. Under the Utah Monitoring Protocol we will not use this function.

vii. Do Not Select **Show Log.** This shows the status of the hard drive

viii. Select ☑ **Power**
1. Set to Reboot
2. Wait for FR125 to Reboot. This could take up to a minute.

b. Unplug LCD Crystal Fontz display screen (after the Reboot process has completed) from the USB port on the back of the FR125.

c. Plug in a Thumb Drive (at least 2MB) to the now empty USB port the LCD display screen was plugged into on the FR125 (Figure 3). Data is now being recorded according to the **Program 1** that was set.

3. Field Set-Up/Device Orientation
    a. Place AR125 on a tripod or rubber band-it to a stake (Figure 4). Aim the recorder at an angle between 90° (Figure 5) and 180° from the ground to catch a majority of passing bats (location dependent). This protocol recommends a 180° angle because it better enables the device to record high-flying bats not easily caught in mist nets.
    b.
    c. Place FR125, charge controller, and as much of the cords as possible into a container (small mammals will chew through the cords though most often only if the device is left out for more than one night; consider using cord protectors). Backpacks have been provided (Figure 7). Other options are fine too; a cooler was suggested with the plug removed for the cords.
4. Device Dismantling
    a. Disconnect the AR125 from the FR125 by unplugging the connecting USB cable
    b. Remove thumb drive
    c. Disconnect the battery
    d. Upload data to local device. Send copies of data to Joel Diamond via established protocols.

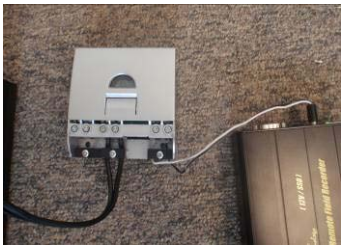

Figure 1. Battery monitoring box (charge controller) wire connection.

Figure 2. Initial acoustic set-up with LCD display screen attached.

Figure 3. Final acoustic set-up with thumb drive attached.

Figure 4. Rubber-banding AR125 to stake works well (Petterssons device shown).

Figure 5. AR125 on tripod at 90° angle.

Figure 6. Example of weatherproof housing for the AR125.

Figure 7. Final field set-up using the stake method with backpack.