

# Quick Sheet for Operating the E-Sampler Smoke Particulate Monitor and Airsis Satellite Telemetry System

## BEFORE GOING TO THE FIELD

### Equipment List

- E-Sampler Smoke Particulate Monitor
- Tripod
- Weatherproof power supply/battery charger
- Gel cell battery
- PM<sub>2.5</sub> sharp cut cyclone
- TSP inlet (weather cap)
- Airsis telemetry system
  - Power cord
  - Serial communication cable
  - Mounting hardware
- Two-connection extension cord (if using line power)
- Laptop (if downloading data)
- Met One serial communication cable (if downloading data)
- Miscellaneous tools.

### Charging Batteries

Charge the batteries for at least 1 day before use.

- E-Sampler –
  - Connect the plug from the weatherproof power supply/battery charger to the appropriate connector on the bottom of the E-Sampler.
  - Connect the power supply to line power. Charge the E-Sampler power supply for at least 24 hours.

### OR

- Charge the gel cell battery with a plug-in charger for 12-volt gel cells.
- Charge the telemetry system by plugging the power cord from the system to line power.

## SITING THE E-SAMPLER AND TELEMETRY SYSTEM

The E-Sampler and its telemetry system should be placed in an open area away from obstructions such as trees or buildings, and away from external pollution sources (road dust, industrial pollution, and so forth). The telemetry antenna must have a clear view of the sky to transmit data.

## SETUP IN THE FIELD

- Remove the three pins from the tripod and unfold the legs until they are fully extended. Replace the pins in the holes in the leg flanges.
- Attach the E-Sampler to the tripod by sliding the slot on the back of the E-Sampler over the mounting tab on the tripod.
- Attach the bottom of the E-Sampler to the tripod by sliding the ¼-inch bolt through the bottom flange and through the tripod. Hand tighten the nut on the bolt.

- Attach the PM<sub>2.5</sub> sharp cut cyclone to the inlet of the E-Sampler.
- Attach the TSP inlet (weather cap) to the PM<sub>2.5</sub> sharp cut cyclone.
- Attach the power supply/battery charger to the tripod.
- Attach the connector from the power supply to the bottom of the E-Sampler.
- Attach the telemetry system to the tripod, using the supplied hardware.
- Plug the communication cable from telemetry system to the appropriate connector on the bottom of the E-Sampler.
- Attach the power cord from the power supply and telemetry system to the extension cord and plug in the extension cord to line power.

### OR if using the gel cell battery –

- Inside the E-Sampler, remove the battery cover plate.
- Connect the two-prong connector of the internal battery cable to the E-Sampler circuit board.
- Attach the RED (+) and BLACK (-) wires of the battery cable to the battery terminals.

## CHECKING SETTINGS ON THE E-SAMPLER

The MENU/SELECT, ESC, left, right, up, and down arrows are used to traverse the screens on the E-Sampler. The blank white buttons under the screen are used to save or exit settings. Settings on the E-Sampler should have been set already. The instrument stores these settings.

### Verifying SETUP settings:

- From the Main Screen:

```
08-JUL-2001 08:23:41
CONC:      UNIT OFF
FLOW:      0.0 LPM
TURN ON
```

- Press the **MENU/SELECT** button.

```
OPERATE
>SETUP
CALIBRATE
ALARM LOG
```

- Use the arrow buttons to move the cursor to **SETUP**. Press **MENU/SELECT**.

```
>CLOCK
AVERAGE PERIOD
CONCENTRATION
SAMPLING MODE
```

```
ALARM CONTACT
RH HEATER CONTROL
ZERO MODE
SPAN MODE
BAUD RATE
STATION ID
ENGR UNITS
```

- Use the up and down arrow buttons to move the cursor to the desired setting and press **MENU/SELECT**. Adjust the following settings:

**CLOCK** – Set to **GMT time**

AVERAGE PERIOD – Set to 60 MIN.

CONCENTRATION – Set to AUTO; DAC to 1.0 V; K-FAC to 1.00.

SAMPLING MODE – Set to CONTINUOUS.

ALARM CONTACT – Does not apply.

RH HEATER CONTROL – Set RH SETPOINT to 50%.

ZERO MODE – Set ZERO MODE to AUTO; ZERO PERIOD to 24 HR.

SPAN MODE – Set SPAN MODE to AUTO; SPAN PERIOD to 24 HR; RESTORE DEFAULT to NO.

**BAUD RATE** – Set **BAUD RATE** to **9600**.

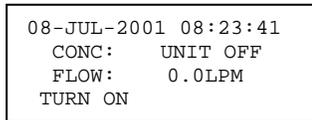
STATION ID – Does not apply.

ENGR UNITS – Set to METRIC.

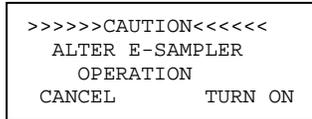
- Press the **ESC** button twice to get to the main screen.

**STARTING A RUN**

- From the main screen, press the **white button** under TURN ON.



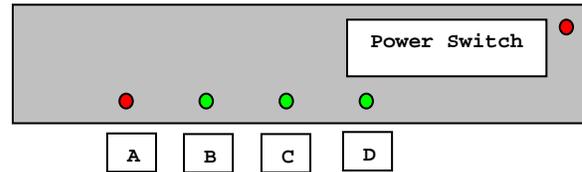
- Press the **white button** under TURN ON.



The E-Sampler will go through a ZERO and SPAN check and then begin to sample. After several minutes the screen will go blank to conserve power. Press the **ESC** button to turn the display back on.

**STARTING THE SATELLITE TELEMETRY SYSTEM AND VERIFYING COMMUNICATIONS**

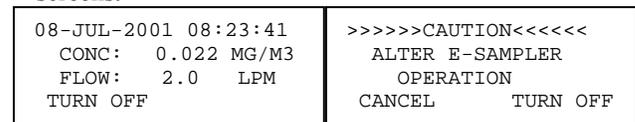
- Open the telemetry system and turn the system on.
- The left light will illuminate red.
- The following diagram shows the various states of the telemetry system and corresponds to the LED indicators located inside the telemetry system. LED indicators verify that the telemetry system has power, the modem is receiving information from the E-Sampler, and the antenna on top of the telemetry system is “seeing” satellites.



- A. Modem initialized light is on.
- B. Serial Data measurement Digital 0 from E-Sampler light is on.
- C. Serial Data measurement Digital 1 from E-Sampler light is on.
- D. Light is ON when satellite is in view and OFF between satellite passes. (If this green LED light does not turn on within 30 minutes, move the telemetry system to a higher unobstructed position.)

**STOPPING THE E-SAMPLER**

- To stop the E-Sampler, press the **ESC** button to turn the display back on.
- Press the **white button** under TURN OFF on the next two screens.



**TRANSFERRING DATA FROM THE E-SAMPLER TO A LAPTOP USING HYPERTERMINAL**

- Disconnect the telemetry system serial communication cable from the E-Sampler.
- Connect the Met One serial communication cable to the appropriate connector on the bottom of the E-Sampler and to the serial connector on the laptop.
- On the laptop, click the HyperTerminal icon. “Connected” should display on the bottom of the screen.
- On the top menu bar, click “Transfer>Capture Text.”
- On the laptop, press the return key several times. The “>” symbol should appear on the screen.
- Press the number “2” button. Data should begin to scroll across the screen.
- When data stops scrolling, click on “Transfer > Capture Text > Stop.”
- Close the HyperTerminal program.

**Remove the gel cell battery before shipping or moving the E-Sampler.**

**WEB SITES AND PHONE NUMBERS**

Missoula T & D Center

<http://www.fs.fed.us/t-d>

(Username: t-d, Password: t-d)

Phone: Andy Trent 406-329-3912

Mary Ann Davies 406-329-3981

Met One Instruments, Inc.

<http://www.metone.com>

Phone: 541-471-7111

Airsis Telemetry System

<http://www.airsis.com>

Phone: Jim Drewett 858-586-0933