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Doc. No. P-ALC 201 Version 1	Approved By: Margaret Schwartz, Lab Director	Date Effective: 3/1/2012

## 1.0 Purpose and Scope

- 1.1. The purpose of this procedure is to describe the process used by Vermont Forensic Laboratory staff for the initial power-up of the DataMaster DMT infrared breath alcohol analysis instruments designated for use as evidentiary breath testing devices. The goal is to ensure the hardware and software are in proper working order prior to calibration and certification. Once an instrument is calibrated and certified it may be used for in-house testing or installed at a police agency for field use.
- 1.2. The scope of this procedure is applicable for new and repaired instruments. Any instrument which is new or has had repairs affecting the analytical portion of the instrument will be powered-up by trained laboratory staff before being Calibrated, Certified and Installed in any location for evidentiary testing.

## 2.0 Responsibility

- 2.1. It is the responsibility of staff performing this task to follow the procedure as written, to note any omissions, errors or unclear instructions in the procedure and bring them to the attention of the Alcohol Program Supervisor.
- 2.2. This procedure will be reviewed periodically by Alcohol Program staff using this procedure. Revisions of the procedure will be made when a need is identified.

## 3.0 Precautions

- 3.1. Appropriate caution must be taken to avoid electrical shock when working with or using any electrically charged equipment.
- 3.2. Once the Power-Up procedure is complete, the instrument must be Calibrated (P-ALC 202) and Certified (P-ALC 203) prior to Installation (P-ALC 204) into any location for evidentiary testing.

## 4.0 Procedure Steps

### 4.1. Materials and supplies are located in Room 164.

- 4.1.1. DataMaster DMT Instrument.

### 4.2. Setup Instrument

- 4.2.1. Plug the power cord into an outlet and keyboard into a USB port on back of the instrument.
- 4.2.2. Insert the breath tube and its power plug into their corresponding ports.

### 4.3. Instrument Internal Check

- 4.3.1. Open the instrument cover and visually check that the general conditions are clean and there is nothing loose. Correct as needed.
  - 4.3.2. Inspect the tubing for kinks, damage and tightness of connections including the tubing located inside the simulator tower and the main body of the instrument. Check wiring for properly seated connections and cable tie attachments where appropriate. Check that all screws are present and snug; this will require the removal of the side pieces to allow access. Correct as needed.
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- 4.3.3. Ensure that tubing connections are zip-tied or tie-wrapped as necessary.
- 4.3.4. Ensure that the one-way valve on the exhaust port is vertical and tie-wrap in place.
- 4.3.5. Inspect the filter wheel movement. Using one finger, gently turn the filter wheel. Ensure that the stepper motor is moving in concert with the filter wheel and the quartz wheel is not interfering with the filter wheel movement.
- 4.3.6. If anything looks questionable, seek technical support.
- 4.3.7. Turn the instrument on.

#### **4.4. Instrument Software Setup**

- 4.4.1. The instrument should come from the manufacturer with the most current version of field ready software installed. To check the version of software, a technician can perform a Diagnostic check or can look in the Setup menu under Settings.
- 4.4.2. Access the TECH screen. Scroll through all of the filters to ensure the filter wheel is activating properly.

#### **4.5. Detector Setup per National Patent Analytical Systems, Inc. (NPAS).**

- 4.5.1. Manually manipulate the detector position to get the detector voltage as low as possible.
- 4.5.2. Determine the type of detector in the instrument and adjust the bias voltage per current NPAS instructions.
- 4.5.3. Adjust the cooler and lamp voltage settings so that the detector voltage displayed is approximately 0.000V +/-0.100V. Note the initial noise of the detector voltage once unit has had a minute to adjust to the adjusted voltages. The manufacture's specification for noise tolerance is +/-0.003 V on a detector over a 10 sec. interval.
- 4.5.4. Save the voltage settings.
- 4.5.5. Allow the instrument to stabilize for at least 1.5 hours.
- 4.5.6. After the stabilization is complete, return to the technician screen and recheck the noise level of the detector.
- 4.5.7. If necessary, readjust the detector voltage to read 0.000V with a tolerance of +/- 0.100V.

#### **4.6. Set RFI Sensitivity.**

- 4.6.1. While still in the TECH screen, press SET in the RF Sensitivity box to automatically set the RF sensitivity level.
- 4.6.2. Confirm the setting by keying a handheld radio near the instrument the instrument should beep when RF is detected. Adjust sensitivity as needed using the + or – sensitivity buttons.
- 4.6.3. Press SAVE to save the settings.

#### **4.7. Set Volume.**

- 4.7.1. Using the large syringe, push 1.5L of air into the breath tube. Monitor the volume of air displayed on the TECH screen.
  - 4.7.2. The instrument should read 1.5L +/- 0.2L. If the instrument is out of range, adjust the distance between the “T” fittings on the breath exhaust tubing.
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4.7.3. Retest as needed until the volume reads appropriately.

**4.8. Once all the TECH settings are correct, re-save every setting. Exit the TECH screen.**

**4.9. Close the instrument.**

4.9.1. Put Torx T10 security screws on the top four holes.

4.9.2. Attach the stylus to the DMT, using a security screw in the center right screw hole nearest the simulator tower.

4.9.3. Attach the keyboard to the top of the instrument using sticky back Velcro.

4.9.4. Wrap a small piece of Velcro around the top of the stylus and affix the other side to the front of the instrument so the stylus can rest on the front of the unit.

## **5.0 Emergency or High Priority Situations**

**5.1.** The Laboratory Director or Alcohol Program Supervisor may designate any DataMaster DMT Power-Up to be a high priority and request Power-Up as soon as possible.

## **6.0 Quality Criteria and Corrective Action**

**6.1.** If any of the hardware components do not meet the acceptable conditions as outlined in this procedure, corrective action must be taken. The action taken will vary depending on the specific problem.

**6.2.** The standard approach to correct a problem is to consult the in-house service manual or ask for technical support from the Alcohol Program Supervisor. Correct the problem and document the event on a Technical Support Inquiry worksheet (F-ALC 202). File this form in the instrument's folder in Room 164 and also file an electronic copy in the instrument DMT folder on the VFL intranet.

**6.3.** If an instrument is new from the manufacturer and it fails Power-Up, the unit should be returned to NPAS for repair. This procedure will be repeated when the problem is resolved.

## **7.0 Backup Procedures**

**7.1.** If a problem is encountered that cannot be resolved by Alcohol Program staff, the instrument manufacturer, National Patent Analytical Systems, Inc. will be contacted for technical support.

**7.2.** If an agency's instrument cannot be Powered-Up in a timely manner, a replacement instrument will be given to that site.

## **8.0 References**

**8.1.** DataMaster DMT Field Service Manual.

**8.2.** DataMaster DMT Calibration Procedure (P-ALC 202).

**8.3.** DataMaster DMT Certification Procedure (P-ALC 203).

**8.4.** DataMaster DMT Installation Procedure (P-ALC 204).

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**8.5. Technical Service Inquiry (F-ALC 202)**

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