

# WARRANTY CLAUSE

METROSONICS, INC. warrants each new instrument manufactured and sold to be free from defects in material, workmanship and construction, except for batteries which may be contained therein, and that when used in accordance with this owner's manual will perform to applicable specifications for a period of one year after original delivery.

If examination by METROSONICS, INC. discloses that the product has been defective, then our obligation is limited to repair or replacement, at our option, of the defective unit or its components.

METROSONICS, INC. is not responsible for products which have been subject to misuse, alteration, accident or for repairs not performed by METROSONICS, INC.

Instruments must be returned properly packed with transportation charges prepaid to METROSONICS, INC.; return transportation charges will be F.O.B. factory. No parts shall be returned unless a return authorization number is received, which will be furnished by request.

The foregoing warranty constitutes METROSONICS, INC. sole liability, and is in lieu of any other warranty, of merchantability or fitness. METROSONICS, INC. shall not be responsible for any incidental or consequential damages arising from any breach of warranty.

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# Chapter 1

## INTRODUCTION

The db-3080 offers a noise dosimeter, integrating sound level meter, peak sound level meter and time history monitor in one instrument. It is ideal for many applications including noise surveys, hearing conservation programs, machinery noise evaluations, community noise studies and occupational noise analysis.

This unique microprocessor based instrument measures and stores  $L_{av}$  at 2 threshold levels,  $L_{max}$ ,  $L_{peak}$ , TWA, dose, projected dose and test duration. It also datalogs time history and amplitude distribution data. If desired, the db-3080 can store separate test statistics for individual surveys. The test results can be viewed on the LCD display, or printed directly to a parallel or serial printer. In addition to the above information, the reports include time of occurrence for  $L_{max}$  and  $L_{pk}$ , as well as pre and post test calibration. All data is conveniently time stamped so it is easy to correlate events.

Pocket sized, the db-3080 can be hand-held, stationed on site, or worn by a worker. Its watertight construction allows complete immersion in water for short periods of time, making it ideal for outdoor use or when measurements must be taken in adverse conditions.

Although it performs sophisticated measurements, the db-3080 is easy to set up and operate. Simply press the appropriate button(s) on the clearly labeled keypad to take measurements, review data on the instrument display, print test results, select new test settings, etc. The db-3080 also has a security feature, which allows you to place the unit in secure mode to prevent use by unauthorized personnel.

The db-3080 can be programmed with or without a computer. For fast programming using a single form on your computer, use the Programming Software or the optional Metrosoft Software package. For convenient field programming without a computer, the instrument keypad may be used.

Programming Software (ms-3080P) is provided free of charge with the db-3080. The Programming Software allows you to set up the db-3080 for your specific testing needs (see Chapter 4 for details).

ms-3080 Metrosoft Software is also available for use with the db-3080. This optional software includes many additional features such as data retrieval and storage, database searching, creating graphs and reports, and more.

**NOTE:** If you have purchased ms-3080 Metrosoft, references in this manual to the Programming Software also apply to ms-3080 Metrosoft. See your ms-3080 Metrosoft manual for detailed instructions on using this software.

### **IMPORTANT!**

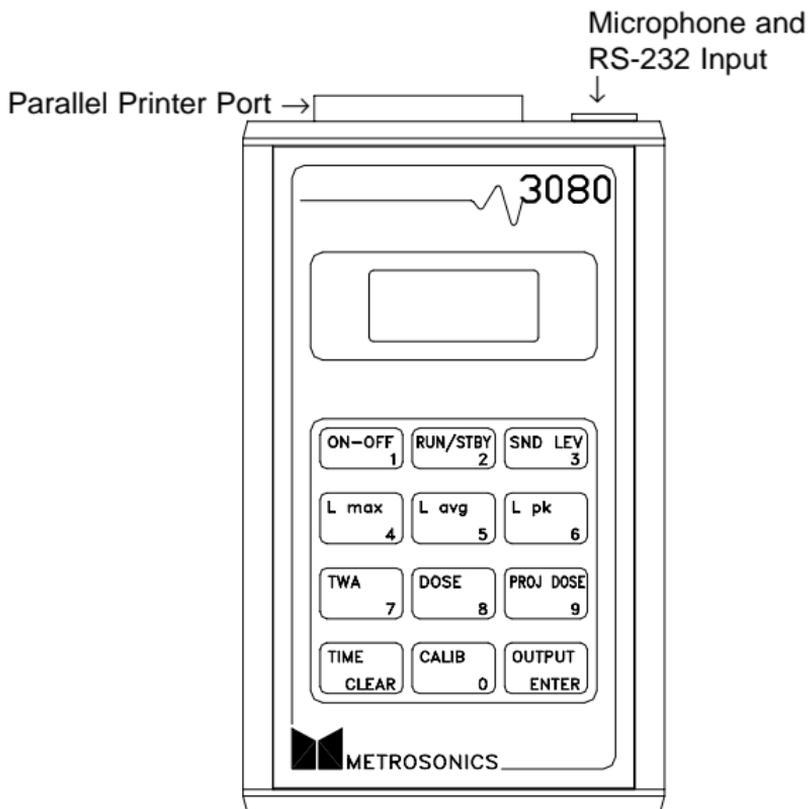
Register your db-3080 and ms-3080P Programming Software **NOW**. Either fill out the Warranty Card included with the db-3080, or see “Warranty Registration” in Chapter 4 for quick instructions on using the on-line Warranty Card to register your products.

**SEE ALL OF OUR PRODUCTS  
ON THE WEB AT:  
[www.metrosonics.com](http://www.metrosonics.com)**

# Chapter 2

## GETTING STARTED

Refer to the following diagram for push button control, and for connecting the microphone, RS-232 serial printer cable and parallel printer cable.



## GENERAL

The db-3080 operates in either display mode, programming mode or calibrate mode. Once the unit is programmed, it retains the setup information in memory, even when power is off. Therefore, reprogramming is unnecessary unless a change is desired.

## BATTERY

The db-3080 is powered by a single 9 volt alkaline battery (NEDA 1604A). Typical battery life of the db-3080 is 40 hours (at 25°C).

When the battery becomes low and cannot power the db-3080 for 8 hours of operation, the display will begin to flash. If the battery voltage drops too low for proper operation, the db-3080 displays **LOW BATTERY** and shuts down all circuits except data memory, programming information and the time clock. All information will be maintained for approximately 30 days, but prompt replacement of the battery is recommended.

If the battery completely loses power or is removed for more than 20 seconds, all logged data may be lost and the time clock will need to be reset.

**NOTE:** The db-3080 draws power from the battery in order to maintain the clock and store data in memory.

**NOTE:** If the unit will not be used for an extended period of time, the battery should be removed. A new battery should be installed when the unit is used again.

## **Battery Replacement**

The procedure for replacing the battery is very simple and can easily be performed within seconds. The db-3080 will maintain its programming information and logged data during battery replacement, provided that the replacement procedure **DOES NOT** take more than 20 seconds.

The db-3080 **MUST** be turned off before removing the bottom end-cap. If the db-3080 is on when the battery is removed, all logged data will be lost.

Follow these instructions for battery replacement (be sure you have a fresh battery ready before beginning this procedure):

1. Turn the db-3080 off by pressing the ON/OFF button.
2. With the label side of the unit facing up, remove the bottom end-cap using a flat head screwdriver to turn the screw.
3. Tilt the unit towards you and the old battery will slide out.

4. Slide the fresh battery, terminals first, into the battery compartment with the + and - terminals matching the diagram on the back label of the unit. **The battery must be installed in less than 20 seconds to prevent possible data loss.**
5. Replace the end-cap in its original position and tighten the screw. If the end-cap is not seated correctly or the screw is not tightened correctly, the db-3080 will **NOT** be watertight.

## CONNECTING THE MICROPHONE

Before you begin to display or record data, you will need to connect the microphone to the db-3080. You will also need to calibrate the microphone to assure accurate readings (see "Calibration" in next section).

The db-3080 automatically senses the presence of the microphone. Any time the unit is turned on and the microphone is not connected, the message "MIC ERROR" will be displayed. Removing the microphone while recording is in progress will interrupt the recording session.

Follow these instructions to connect the microphone to the db-3080:

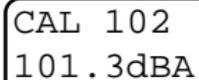
1. Hold the db-3080 with the display facing you.
2. Line up the small black button on the microphone's 5 pin connector with the indentation in the outside ring of the connector hole on the db-3080, and then press the connector into the hole so that it is secure.
3. To disconnect the microphone, press the small black button, and then pull the 5-pin connector straight out of the input hole.

## CALIBRATION & POST CALIBRATION

The microphone needs to be calibrated to assure accurate readings. We recommend calibrating the microphone before and after each recording session for complete records and data integrity. We recommend using Metrosonics cl-304 Acoustical Calibrator to calibrate the microphone.

Follow these instructions for pre and post test calibration with Metrosonics cl-304 Calibrator:

1. Connect the microphone to the db-3080.
2. Turn the db-3080 on by pressing the ON/OFF button.
3. Turn the calibrator on by pressing and releasing the button on the bottom of the calibrator.
4. Insert the microphone into the hole on the top of a cl-304 calibrator.
5. Press the CALIB button to enter Calibration Mode. A screen similar to following will be displayed:



CAL 102  
101.3dBA

This screen indicates that you are in calibration mode, and shows the calibration point (typically 102.0dB) and the present sound level.

6. Press the ENTER button to calibrate the unit. The message CAL COMPLETE will be displayed and then the unit will return to displaying present sound level readings.

**NOTE:** If you wish to exit the calibrate mode, without performing a calibration, simply press any button other than ENTER or RUN-STBY.

7. Turn off the calibrator by pressing the button on the bottom of the calibrator again.
8. Remove the microphone from the calibrator by pulling it straight out of the hole.
9. For post test calibration, repeat steps 1 through 8 above, after the test is complete. The post test calibration information, including date and time, will be stored in memory.

**NOTE:** A calibration is not actually performed on the recorded data when post test calibrating. This is simply a verification step to insure data integrity.

**NOTE:** The unit **MUST** be in display mode and **CAN-NOT** be calibrated while logging.

## db-3080 SETUP

The db-3080 comes to you factory programmed for common test conditions, allowing immediate operation. The applicable settings (response rate, filter, exchange rate, thresholds, ceiling, dose criterion level and dose criterion length) are set for current OSHA settings.

You can change test settings as desired. This can be accomplished with or without a computer. For fast programming using a single form on your computer, use the Programming Software or the optional Metrosoft Software. For convenient field programming without a computer, the instrument keypad may be used. See "Programming" in Chapter 3, or Chapter 4 (Programming Software) for instructions. Once reprogrammed, the db-3080 will retain the new information and the factory defaults will no longer be used.

**NOTE:** If you want the data to have the correct date and time, you **MUST** program the date and time. The unit will maintain the real time clock provided that the battery is not removed for more than 20 seconds and does not completely lose power.

## **Default Settings**

The following is a list of the db-3080 default settings programmed at Metrosonics factory:

Dose Criterion Length: 8 hours

Dose Criterion Level: 90 dB

Dose Units: %

Thresholds: 80 and 90 dB

Ceiling: 115 dB

Exchange Rate: 5 dB

Date: 01/01/96

Time: 00:00:00

Filter Weight: A

Response Rate: Slow

Secure Code: 1234

Baud Rate: 9600

Header: Blank (may only be programmed using the Programming Software or the optional ms-3080 Metrosoft Software)

Scheduled Run: Off

User ID: Blank

Calibration Level: 102 dB

Display Statistics For: Present Test

Clock Synchronization: Yes

### Time History:

Interval: 1 minute

Auto Stop: No

Statistics to Save: Lav, Lmax, Lpk

Apply Cutoff #1 to Lav: Yes

Save Ln's: Yes (10%, 99.9%)

### Amplitude Distribution:

Save Amplitude Distribution: Yes

Amplitude Distribution Ln Values: 0%, 10%,  
50%, 99.9%

## REAL TIME CLOCK

The date and time are NOT programmed into the db-3080 at the factory. If you want to record data with real time stamp, you **MUST** program the correct date and time. Since the db-3080 retains all programming information, including the real time clock setting, this step only needs to be done once. See "Programming" in Chapter 3 for instructions.

**NOTE:** If the battery completely loses power or is removed for more than 20 seconds, you will need to reprogram the db-3080 to reset the real time clock.

## **Chapter 3**

# **db-3080 OPERATION**

The instructions in this chapter assume you have reviewed Chapter 2 in this manual. If you have not reviewed Chapter 2, you should do so at this time.

These instructions also assume that you have followed the instructions in Chapter 2 and have installed a battery, plugged in the microphone and performed the calibration procedure. If you have not done this yet, you should do so at this time.

Refer to the db-3080 diagram at the beginning of Chapter 2 as needed when following the instructions in this chapter.

## TURN THE db-3080 ON & OFF

1. Press the ON/OFF button. The db-3080 will turn on and display the programmed parameters, followed by the present sound level.

The programmed parameters are shown in the following format:

|        |
|--------|
| S/5/90 |
| 80/90  |

The first line shows programmed response rate/exchange rate/dose criterion level. In this example:

S = Slow response

5 = 5dB exchange rate

90 = 90dB dose criterion level.

The second line shows the programmed threshold level #1/threshold level #2. In this example:

80 = 80dB threshold level #1

90 = 90dB threshold level #2

The present sound level is shown in the following format:

|      |     |
|------|-----|
| SND  | LEV |
| 92.4 | dB  |

2. Press the ON/OFF button again to turn off the db-3080.

**NOTE:** The unit **CANNOT** be turned off while datalogging. This is to prevent accidentally terminating a test. See "Start and Stop Logging" later in this section.

## START & STOP LOGGING

1. Turn the db-3080 on.
2. While viewing the present sound level, press the RUN-STBY button to start datalogging.
3. Press the RUN-STBY button again to stop datalogging. The unit will display "STANDBY" for a few seconds to indicate that it is not logging.
4. If you wish to begin another test, simply press the RUN-STBY button again and the db-3080 will begin logging the next test.

While datalogging, the db-3080 samples the present sound level and maintains a set of summary noise statistics, a time history of noise exposure, and an amplitude distribution of sound data.

The db-3080 maintains the following summary statistics for each test run:

- Test starting and ending date and time
- Test elapsed time
- Pre- and post-test calibration date and time
- Lav with no threshold, with the first threshold, and with the second threshold
- SEL (only saved with a 3 dB exchange rate)
- 8-hour TWA with no threshold, with the first threshold, and with the second threshold

- Lmax with date and time of occurrence
- Lpk with date and time of occurrence
- Total time above the ceiling level
- Dose and projected dose with the first cutoff and with the second cutoff

While datalogging, the db-3080 periodically stores “time history” data in its internal memory. You choose how often time history statistics will be stored (by selecting a time history interval), and which statistics to save (any combination of Lav, Lmax, Lpk and two Ln’s). Selection of these parameters is described in the “Programming” section later in this chapter.

You also have the option of setting up the db-3080 to maintain a distribution of the noise exposure while datalogging. The db-3080 will keep track of the total samples recorded at each decibel level, to 1dB resolution. Setting up the db-3080 to record amplitude distribution data is described in the “Programming” section later in this chapter.

Datalogging may be started manually by pressing the RUN-STBY button, or, by pre-setting a scheduled run (described in the “Programming” section later in this chapter). Each time logging is stopped and then restarted, a new test (set of data) begins.

The db-3080 begins datalogging using clock synchronization (if enabled), unless Auto Stop is enabled. Clock synchronization allows using Microsoft to combine data from multiple tests into a single time history graph.

When clock synchronization is disabled, datalogging starts immediately.

When clock synchronization is enabled, datalogging starts at the beginning of the next time history interval, so there may be a delay before datalogging actually starts. For example, if you have programmed a time history interval of 1 second, datalogging will begin right away (at the beginning of the next second). When using a time history interval of 15 minutes, datalogging will begin at the beginning of the next 15 minute interval (i.e. if you initiate datalogging at 9:35:00, the db-3080 will standby until 9:45:00 and then begin datalogging). The db-3080 will display the remaining seconds until datalogging will start.

While datalogging, the db-3080 periodically displays "LOGGING" or "Schd Run" to differentiate between a manual recording session and a scheduled run.

Auto Stop is a unique feature of the db-3080. With this feature, you manually start a test, and then the db-3080 will automatically stop datalogging after one time history interval (from 1 second to 1 hour) has been recorded. This is useful when moving from site to site taking survey data. Setting up the db-3080 for Auto Stop is described in the "Programming" section later in this chapter.

If the db-3080 is set up for a scheduled run, the scheduled run will be maintained unless scheduled run mode is disabled. This is true even if you over-ride the scheduled run and begin datalogging manually by pressing the RUN-STBY button.

For example, the db-3080 is set up to record a scheduled run from 8am to 5pm. At 12pm you press the RUN-STBY button to stop datalogging, and at 1pm you press the RUN-STBY button again to resume datalogging. The db-3080 will still automatically stop datalogging at 5pm. Also, if datalogging is manually started before the scheduled run begins (8am in this example), the db-3080 will still stop datalogging at the scheduled run stop time (5pm in this example).

## VIEW TEST RESULTS

In addition to viewing the present sound level, the db-3080 can display the following information:

- Lavg
- Lavg with first threshold
- Lavg with second threshold
- SEL (Single Exposure Level)  
(only with 3 dB exchange rate)
- Lmax
- Lpk
- TWA
- TWA with first threshold
- TWA with second threshold
- Dose with first threshold
- Dose with second threshold
- Projected dose with first threshold
- Projected dose with second threshold
- Elapsed time of the test
- Present date and time
- Number of tests logged
- Battery voltage

To enter display mode, simply turn the unit on, OR press the SND LEV button.

Press the following buttons to view data while in display mode:

| <u>Button</u> | <u>Purpose</u>  |
|---------------|---|
| SND LEV       | Display present sound level   |
| Lmax          | Display maximum sound level for the test  |
| Lavg          | Press repeatedly to view Lavg with no threshold, Lavg with first threshold and Lavg with second threshold |
| Lpk           | Display Lpk for the test  |
| TWA           | Press repeatedly to display TWA with no threshold, TWA with first threshold and TWA with second threshold |
| DOSE          | Press repeatedly to display Dose with first threshold and Dose with second threshold                      |
| PROJ DOSE     | Press repeatedly to display Projected Dose with first threshold and Projected Dose with second threshold  |

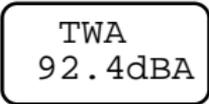
Button

Purpose

TIME

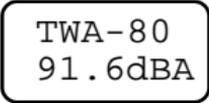
Press repeatedly to display elapsed time of test, present date and time, number of tests logged and the present battery voltage

**NOTE:** When viewing data with thresholds, the threshold level is displayed on the top line of the display, next to the statistic name. For example, when viewing TWA with no threshold, the display will be in the following format:



TWA  
92.4dBA

When viewing TWA with a threshold of 80 dB, the display will be in the following format:



TWA-80  
91.6dBA

**NOTE:** If logging is in progress, test statistics will be updated in real time and current readings will be displayed. If logging has been stopped, displayed test statistics will be for the entire test, or optionally, for all tests combined.

# PROGRAMMING

The db-3080 can be programmed from the keypad or with the Programming Software (see Chapter 4 for details on using the Programming Software).

The following is a list of programmable choices:

| <u>Parameter</u>               | <u>Choices</u>  |
|--------------------------------|---|
| Printer Baud Rate              | 300, 600, 1200, 2400, 4800, 9600 or 19200 baud                  |
| User ID                        | Any 6 digits  |
| Show Dose in Pa <sup>2</sup> h | Yes or No (selectable only with 3 dB exchange rate)             |
| Display Statistics For...      | Present (test) or Combined (tests)                              |
| Scheduled Run Status           | Off, 1 Run, 2 Runs, 3 Runs or Daily                             |
| Scheduled Runs #1, 2 & 3:      |   |
| Start                          | Any valid date (MM/DD/YY) and time (HR:MN:SC in 24 hour format) |
| End                            | Any valid date (MM/DD/YY) and time (HR:MN:SC in 24 hour format) |

| <u>Parameter</u>            | <u>Choices</u>   |
|-----------------------------|--|
| Daily Scheduled Run:        |  |
| Start                       | Any valid time (HR:MN:SC in 24 hour format)  |
| End                         | Any valid time (HR:MN:SC in 24 hour format)  |
| Monday                      | m (Monday) or - (off)  |
| Tuesday                     | t (Tuesday) or - (off)   |
| Wednesday                   | w (Wednesday) or - (off)   |
| Thursday                    | r (Thursday) or - (off)  |
| Friday                      | f (Friday) or - (off)  |
| Saturday                    | s (Saturday) or - (off)  |
| Sunday                      | u (Sunday) or - (off)  |
| Time History Statistics     | Lav only, Lmax only, Lpk only, Lav & Lmax, Lav & Lpk, Lmax & Lpk, Lav, Lmax & Lpk, or none |
| Time History Lav            | Thres #1, No Thres   |
| Save Time History Ln's      | Yes or No  |
| Time History Ln Values (2)  | Any value from 0 to 99.9%  |
| Save Amplitude Distribution | Yes or No  |

| <u>Parameter</u>                        | <u>Choices</u>                                      |
|---|---|
| Amplitude Distribution<br>Ln Values (4) | Any value from 0 to 99.9%                           |
| Time History Interval                   |   |
| Slow Response:                          | 0:00:01 to 01:00:00                                 |
| Fast Response:                          | 00:00:01 to 00:15:00                                |
| Auto Stop                               | Yes or No   |
| Secure Code                             | Any 4 digits (0 through 9)                          |
| Date                                    | Any date in the format<br>MM/DD/YY                  |
| Time                                    | Any time in the format<br>HR:MN:SC (24 hour format) |
| Day of Week                             | Mon, Tue, Wed, Thu, Fri,<br>Sat or Sun              |
| Ceiling Level                           | Any value from 60 to 140 dB                         |
| Dose Criterion Level                    | Any value from 60 to 100 dB                         |
| Dose Criterion Length                   | 4, 6, 8, 10, 12, 16 or 18 hours                     |
| Thresholds (Cutoffs)                    | Two thresholds - any value<br>from 60 to 140 dB     |
| Exchange Rate                           | 3, 4, 5 or 6 dB                                     |
| Filter                                  | A or C weighting                                    |

| <u>Parameter</u>        | <u>Choices</u>                                       |
|-------------------------|--|
| Response Rate           | Slow (16 samples/second) or Fast (64 samples/second) |
| Calibrator Output Level | Any value from 80 to 130 dB                          |
| Clock Synchronization   | Yes, No  |

Press the following buttons to program the db-3080 from the keypad:

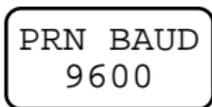
| <u>Button(s)</u> | <u>Purpose</u>   |
|------------------|--|
| TIME & OUTPUT    | Enter/Exit Programming Mode  |
| TIME             | Scroll through items to be programmed                                    |
| CALIB            | Scroll through a list and select the desired choice                      |
| ENTER            | Save new programming information (must be pressed after each selection)  |
| 0 through 9      | Type desired programming information for items that do not offer choices |

## Step by Step Programming Instructions

Follow these steps to program the db-3080:

1. Turn the db-3080 on by pressing the ON/OFF button. The unit will be in Display Mode.
2. Press the TIME and OUTPUT buttons simultaneously and the db-3080 will enter Programming Mode. The message PROGRAM MODE will be displayed momentarily, followed by the first programming screen. This screen allows selecting the baud rate for printing reports directly to a serial printer:

Example:



The bottom line shows the baud rate currently programmed.

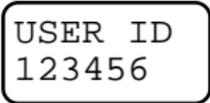
If you do not wish to change the baud rate, proceed to step 3.

If do you wish to reprogram the baud rate, press the CALIB button to scroll through the baud rate choices and select either 300, 600, 1200, 2400, 4800, 9600 or 19200 baud. While the desired baud rate is displayed, press the ENTER button.

**IMPORTANT:** If printing to a serial printer, the db-3080 MUST be programmed for the same baud rate as the printer.

3. Press the TIME button and the next programming screen will be displayed, which allows setting the User ID to any 6-digit number:

Example:



USER ID  
123456

The bottom line shows the current setting for the User ID (if any).

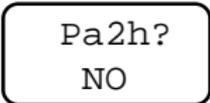
If you do not wish to change the User ID, proceed to step 4.

If do you wish to reprogram the User ID, type the desired 6 digit ID using the digits 0-9 and then press the ENTER button.

4. If the db-3080 is programmed for an exchange rate other than 3 dB, skip to step 5.

If the db-3080 is programmed for a 3 dB exchange rate, press the TIME button and the next programming screen will be displayed, which allows choosing to view dose and projected dose in Pa<sup>2</sup>h (Pascal Squared Hours) instead of in %:

Example:



Pa2h?  
NO

The bottom line shows the current setting for displaying dose and projected dose.

If you do not wish to change this setting, proceed to step 5.

If do you wish to change the units for displaying dose, press the CALIB button to choose *Yes* (show dose in Pa<sup>2</sup>h) or *No* (show dose in %) and then press the ENTER button.

**NOTE:** Noise exposure is automatically computed in % dose unless you set up the db-3080 to compute noise exposure in Pa<sup>2</sup>h (Pascal Squared Hours). If you wish to compute dose in Pa<sup>2</sup>h you **MUST** first set the exchange rate to 3dB.

5. Press the TIME button and the next programming screen will be displayed, which allows choosing whether summary statistics (Lav, Lmax, etc) will be displayed for the present test (most recent) or for all tests combined:

Example:



DISPLAY  
PRESENT

The bottom line shows the current setting for displaying recorded statistics.

If you do not wish to change this setting, proceed to step 6.

If do you wish to change the setting, press the CALIB button to select either *Present* or *Combined* and then press the ENTER button.

**NOTE:** The choice made in this screen does not change the way the db-3080 records test data, but only controls which information it displays.

6. Press the TIME button and the next programming screen will be displayed, which allows setting up the db-3080 to automatically start and stop datalogging at a pre-set date and time (this is called a “scheduled run”):

Example:

|          |
|----------|
| Schd Run |
| Off      |

The bottom line shows the current status of scheduled run.

You may pre-set one, two or three scheduled runs, or a daily scheduled run. For one, two or three scheduled runs, you choose the dates and times you wish recording to start and end. For daily scheduled runs, you choose which days of the week you wish to record data.

If you do not wish to change this setting, proceed to step 7.

If do you wish to change the status of scheduled run, follow these steps:

- 6a. Press the CALIB button to choose *Off*, *1 Run*, *2 Runs*, *3 Runs* or *Daily*, and then press the ENTER button.
- 6b. If you have set scheduled run to *Off*, proceed to step 7.
- 6c. 1, 2 or 3 Scheduled Runs:
  1. Press the TIME button, type the start date for scheduled run #1, and then press the ENTER button.
  2. Press the TIME button, type the start time for scheduled run #1, and then press the ENTER button.
  3. Press the TIME button, type the end date for scheduled run #1 and then press the ENTER button.
  4. Press the TIME button, type the end time for scheduled run #1 and then press the ENTER button.
  5. Repeat steps 1 through 4 to set up scheduled runs #2 and #3, if needed.

6d. Daily Scheduled Run:

1. Press the TIME button, type the start time for each daily scheduled run and then press the ENTER button.
2. Press the TIME button, type the end time for each daily scheduled run and then press the ENTER button.
3. Press the TIME button. Press the CALIB button to select whether or not you wish to record on Mondays. Choose *M* for yes or - for no. Then press the ENTER button.
4. Repeat step 3 to select additional days of the week.

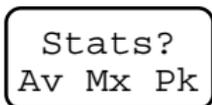
**NOTE:** Scheduled run setup cannot be changed while datalogging.

**NOTE:** Auto Stop and Scheduled Run cannot be enabled at the same time. If a scheduled run is enabled, the Auto Stop setting will be ignored.

**IMPORTANT:** If data has not been cleared from the db-3080 the programming screens covered in steps 7 through 25 of these instructions will be skipped (see CLEAR DATA later in this chapter).

7. Press the TIME button and the next programming screen will be displayed, which allows choosing which statistics the db-3080 will save for each time history interval:

Example:



The bottom line shows the currently selected time history statistics.

If you do not wish to change this setting, proceed to step 8.

If do you wish to reprogram the statistics to save for each time history interval, press the CALIB button to scroll through choices and select the desired combination of Lav, Lmax and Lpk and then press the ENTER button. Two dashes (--) indicate a statistic will not be saved.

Fewer statistics saved requires less memory, thereby offering longer logging sessions. Be aware, however, that the battery life of the db-3080 (about 40 hours) may limit the maximum logging time.

8. Press the TIME button and the next programming screen will be displayed, which allows specifying whether or not the first threshold level should be applied to the time history Lav:

Example:

T.H.Lavg  
Thres #1

The bottom line shows the setting for applying the programming threshold level to the Lav.

If you do not wish to change this setting, proceed to step 9.

If you do wish to change this setting, press the CALIB button to choose either *No thres* or *Thres #1*, and then press the ENTER button.

If you do not want sound levels that are less than the first threshold level to be included in the calculation of Lav, select *Thres #1*. If you do want sound levels that are less than the first threshold to be included in the Lav, select *No Thres*.

OSHA requires using a 90 dB threshold with Lav.

9. Press the TIME button and the next programming screen will be displayed, which allows setting up the db-3080 to save two Ln's for each time history interval:

Example:

Save Ln  
Yes

The bottom line shows the current setting for saving time history Ln's.

If you do not wish to change this setting, proceed to step 10.

If do you wish to change the setting for saving time history Ln's, press the CALIB button to choose either *Yes* (the db-3080 will save two Ln's for each time history interval) or *No* (the db-3080 will not save time history Ln's), and then press the ENTER button.

If you have entered *No*, proceed to step 10. If you have chosen to save Ln's, follow these steps:

9a. Press the TIME button, type the desired level for Ln(1), from 0.0% to 99.9%, and then press the ENTER button.

9b. Press the TIME button, type the desired level for Ln(2), from 0.0% to 99.9% and then press the ENTER button.

**NOTE:** Fewer statistics saved require less memory, thereby offering longer logging sessions. Be aware, however, that the battery life of the db-3080 (about 40 hours) may limit the maximum logging time.

10. Press the TIME button and the next programming screen will be displayed, which allows setting up the db-3080 to save an amplitude distribution of all recorded sound data, stored in 1dB steps:

Example:

Save Dst  
Yes

The bottom line shows the current selection for saving amplitude distribution data.

If you do not wish to change this setting, proceed to step 11.

If you do wish to change the setting for saving amplitude distribution data, press the CALIB button to choose either *Yes* (the db-3080 will save amplitude distribution data) or *No* (the db-3080 will not save amplitude distribution data) and then press the ENTER button.

If you have entered *No*, proceed to step 11. If you have chosen to save amplitude distribution data, follow these steps:

- 10a. Press the TIME button, type the desired level for Ln(1), from 0.0% to 99.9%, and then press the ENTER button.
- 10b. Repeat step 10a to set the desired levels for Ln(2), Ln(3) and Ln(4).

The db-3080 calculates four Ln's from the amplitude distribution data, and presents these statistics in the amplitude distribution report.

Saving amplitude distribution data limits the maximum number of separate tests the db-3080 can store. When not saving amplitude distribution data, the db-3080 will record a maximum of 196 separate tests. When amplitude distribution data is saved up to 31 separate tests can be stored.

11. Press the TIME button and the next programming screen will be displayed, which allows setting the time history interval. This is the rate at which the db-3080 will store time history data (Lav, Lmax, Lpk and/or Ln's):

Example:

|                      |
|----------------------|
| Interval<br>00:01:00 |
|----------------------|

The bottom line shows the currently selected time history interval, in hours, minutes and seconds (hh:mm:ss).

If you do not wish to change this setting, proceed to step 12.

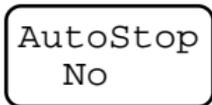
If do you wish to reset the time history interval, type the new interval and then press the ENTER button.

If using a slow response, the time history interval can be any value from 1 second to 1 hour. If using a fast response, the time history can be any value from 1 second to 15 minutes.

A shorter time history interval provides more detailed time history data, which will appear in your reports. A longer time history interval requires less memory, thereby offering longer logging sessions. Be aware, however, that the battery life of the db-3080 (about 40 hours) may limit the maximum logging time.

12. Press the TIME button and the next programming screen will be displayed, from which you enable or disable the “Auto Stop” mode of the db-3080:

Example:



The bottom line shows the currently setting for Auto Stop mode.

When Auto Stop is enabled, the db-3080 will automatically stop datalogging as soon as one time history data is recorded. This is useful for taking noise surveys. When Auto Stop is turned off, once datalogging has started, the db-3080 will continue to log data until it is manually stopped or a scheduled run ends.

If you do not wish to change this setting, proceed to step 13.

If do you wish to change the setting for Auto Stop mode, press the CALIB button to select either Yes or No, and then press the ENTER button.

**NOTE:** Auto Stop and Scheduled Run cannot be enabled at the same time. If a scheduled run is enabled, the Auto Stop setting will be ignored.

13. Press the TIME button and the next programming screen will be displayed, which allows setting the secure code that will be used to enable/disable Secure Mode:



If you do not wish to change the secure code, proceed to step 14.

If do you wish to reprogram (i.e. change) the secure code, follow these steps:

13a. Type the secure code presently programmed. The secure code is a 4-digit code from 0000 to 9999. The factory default code is 1234.

If an incorrect code is typed, the message INVALID CODE is displayed. You will be unable to enter a new code until the correct old code is typed.

- 13b. If the correct code was entered, the following screen will appear, allowing you to enter a new 4-digit code:

SET CODE  
----

Type the new code. This can be any number from 0000 to 9999. When the fourth digit is entered, the display will flash indicating that the new code has been programmed.

14. Press the TIME button and the next programming screen will be displayed, which allows resetting the date:

Example:

SET DATE  
06/21/96

The bottom line shows the date currently programmed.

If you do not wish to change the date, proceed to step 15.

If do you wish to reprogram the date, type the new date and then press the ENTER button. You must enter the month, day and year.

15. Press the TIME button and the next programming screen will be displayed, which allows resetting the time:

Example:

SET TIME  
13:03:34

The bottom line shows the time currently programmed.

If you do not wish to change the time, proceed to step 16.

If do you wish to reprogram the time, type the new time and then press the ENTER button. You must enter the hours, minutes and seconds.

**NOTE:** Military time is used to distinguish AM and PM.

16. Press the TIME button and the next programming screen will be displayed, from which you set the present day of the week (Monday through Sunday):

Example:

SET DAY  
TUE

The bottom line shows the currently selected day of the week.

If you do not wish to change this setting, proceed to step 17.

If do you wish to select a new day of the week, press the CALIB button to choose either *Mon, Tue, Wed, Thu, Fri, Sat* or *Sun*, and then press the ENTER button.

**NOTE:** The day of the week must be set correctly for the daily scheduled run feature to function properly.

17. Press the TIME button and the next programming screen will be displayed, which allows setting the ceiling level:

Example:

|                  |
|------------------|
| CEILING<br>115dB |
|------------------|

The bottom line shows the currently selected ceiling level.

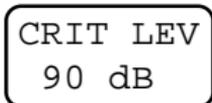
If you do not wish to change this setting, proceed to step 18.

If do you wish to reprogram the ceiling level, type the new ceiling level and then press the ENTER button. You may enter any level from 60 to 140 dB.

While datalogging, the db-3080 keeps track of the total amount of time the noise exposure is above the pre-set ceiling. This makes it possible to quickly determine if a possible violation existed. For example, OSHA does not permit unprotected workers to be exposed to sound levels, measured with a Slow response, above 115dB. If 115dB is selected as the ceiling level, the db-3080 will record the total amount of time the sound level was above 115dB, and this information will appear in your summary report.

18. Press the TIME button and the next programming screen will appear, which allows selecting the dose criterion level:

Example:



CRIT LEV  
90 dB

The bottom line shows the criterion level currently programmed.

If you do not wish to change the criterion level, proceed to step 19.

If do you wish to reprogram the criterion level, type the new criterion level and then press the ENTER button. You may enter any level from 60 to 100 dB.

19. Press the TIME button and the next programming screen will be displayed, which allows selecting the dose criterion length, in hours:

Example:

DOSE PRD  
8 hours

The bottom line shows the currently programmed dose criterion length.

If you do not wish to change this setting, proceed to step 20.

If do you wish to reset the dose criterion length, press the CALIB button to choose 4, 6, 8, 10, 12, 16 or 18 hours, and then press the ENTER button.

The dose criterion length allows setting up the db-3080 to calculate dose based on a permissible exposure duration (length) set by a regulatory agency. For any workshift length, OSHA requires a criterion length of 8 hours.

20. Press the TIME button and the next programming screen will be displayed, which allows selecting the first threshold level:

Example:

THRES 1  
80 dB

The bottom line shows the first threshold level currently programmed.

If you do not wish to reset the first threshold level, proceed to step 21.

If do you wish to reset the first threshold level, type the new threshold level and then press the ENTER button. You may enter any level from 60 to 140 dB.

21. Press the TIME button and the next programming screen will be displayed, which allows selecting the second threshold level:

Example:

|         |
|---------|
| THRES 2 |
| 90 dB   |

The bottom line shows the second threshold level currently programmed.

If you do not wish to reset the second threshold level, proceed to step 22.

If do you wish to reset the second threshold level, type the new threshold level and then press the ENTER button. You may enter any level from 60 to 140 dB.

22. Press the TIME button and the next programming screen will be displayed, which allows selecting the exchange rate:

Example:

|          |
|----------|
| EXCHANGE |
| 5 dB     |

The bottom line shows the exchange rate currently programmed.

If you do not wish to reset the exchange rate, proceed to step 23.

If do you wish to reset the exchange rate, press the CALIB button to scroll to the desired exchange rate and then press the ENTER button. You may select 3, 4, 5 or 6 dB.

OSHA requires an exchange rate of 5 dB.

23. Press the TIME button and the next programming screen will be displayed, which allows selecting the filter weighting:

Example:

|          |
|----------|
| FILTER   |
| A WEIGHT |

The bottom line shows the filter weight currently programmed.

If you do not wish to reset the filter weight, proceed to step 24.

If do you wish to reset the filter weight, press the CALIB button to select A or C, and then press the ENTER button.

24. Press the TIME button and the next programming screen will be displayed, which allows selecting the response rate:

Example:

RESPONSE  
SLOW

The bottom line shows the response rate currently programmed, which will be either Slow or Fast.

If you do not wish to reset the response rate, proceed to step 25.

If do you wish to reset the response rate, press the CALIB button to select *Fast* or *Slow*, and then press the ENTER button.

25. Press the TIME button and the next programming screen will be displayed, which allows selecting the nominal output of the acoustical calibrator you will be using to calibrate the microphone:

Example:

CAL PT.  
102dB

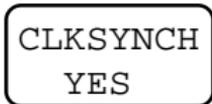
The bottom line shows the calibration level currently programmed.

If you do not wish to change this setting, proceed to step 26.

If do you wish to reset the calibration level, type the new calibration level (from 80 to 130 dB) and then press the ENTER button. The Metrosonics cl-304 Acoustical Calibrator has a nominal output of 102 dB.

26. Press the TIME button and the next programming screen will be displayed, which lets you enable/disable clock synchronization:

Example:



The bottom line shows the current setting for clock synchronization.

If you do not wish to change this setting, proceed to step 27.

If do you wish to change the setting, press the CALIB button to select *Yes* or *No*, and then press the ENTER button.

Clock synchronization allows using Metrosoft to combine data from multiple tests into a single time history graph.

When clock synchronization is disabled, datalogging starts immediately.

When clock synchronization is enabled, datalogging starts at the beginning of the next time history interval, so there may be a delay before datalogging actually starts. For example, if you have programmed a time history interval of 1 second, datalogging will begin right away (at the beginning of the next second). When using a time history interval of 15 minutes, datalogging will begin at the beginning of the next 15 minute interval (i.e. if you initiate datalogging at 9:35:00, the db-3080 will standby by until 9:45:00 and then begin datalogging). The db-3080 will display the remaining seconds until datalogging will start.

27. Press the TIME and OUTPUT buttons simultaneously to exit Programming Mode and return to Display Mode OR press the TIME button to cycle through the programming choices again.

**NOTE:** You may exit from Programming Mode at any time by pressing the TIME and OUTPUT buttons simultaneously.

## OUTPUT REPORTS

After recording is complete, you can output reports directly from the db-3080 to a serial or parallel printer.

You may choose from the following report types:

- **Summary:**  
Shows statistics recorded over the entire test. These included Lav, TWA, Lmax, Lpk, time over ceiling, dose and projected dose.
- **Amplitude Distribution:**  
The distribution of the noise exposure over the entire test, in 1 dB increments. This report also gives four Ln's and a table of average sound levels computed using different exchange rates and thresholds.
- **Tabular:**  
Gives a history of noise exposure over time, in columnar format.

When printing reports, you must also choose one of the following:

- **Last Test:**  
Prints the selected report for the most recent test only.
- **All Tests:**  
Prints the selected report for each test, starting with the most recent, in reverse chronological order.
- **Combined:**  
Combines the summary or amplitude distribution statistics from all tests into one report. This choice does not apply to the tabular time history report.

Follow these steps to output a report:

1. Turn the db-3080 and your printer on.
2. Connect the db-3080 to the printer. If using a parallel printer, connect the parallel printer cable to the db-3080 parallel port. If using a serial printer, remove the microphone and connect the RS-232 printer cable to the db-3080 by plugging it into the 5-pin connector.
3. Connect the other end of the cable to the port of the printer you will be using.

4. While the db-3080 is in Display Mode, press the OUTPUT button and the following screen will be displayed:

Example

RPT TYPE  
SUMMARY

Press the CALIB button to scroll through choices and select either a *Summary*, *Amp. Dist.* or *Tabular* report.

5. Press the ENTER button and the following screen will appear:

OUTPUT  
LAST TST

You can output a report of data for the most recent test (last test), for each individual test (all tests), or for all tests combined.

To make your selection, press the CALIB button to select either *Last Tst*, *All Tsts* or *Combined*. While the desired selection is displayed, press the ENTER button and the report will be printed.

6. If desired, you may press the ON/OFF button to abort printing in process.

**NOTE:** If both a parallel and serial printer are connected, the report is automatically sent to the parallel printer.

**IMPORTANT:** If printing to a serial printer, the db-3080 **MUST** be programmed to the same baud rate as the printer (see "Programming the db-3080" earlier in this chapter for information on setting the baud rate).

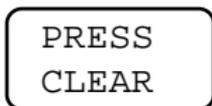
## CLEAR DATA

Clearing data erases ALL recorded data from the db-3080.

**NOTE:** The unit MUST be in Standby (not datalogging) to clear data.

Follow these instructions to clear the data:

1. Turn the db-3080 on.
2. While the unit is in Display Mode, press the CLEAR and SND LEV buttons simultaneously. The following screen will be displayed:



3. Press the CLEAR button. The message "DATA CLEARED" will appear to indicate that the data has been cleared, and then the db-3080 will return to displaying present sound level readings.

**NOTE:** If desired, you may press any button other than CLEAR to abort clearing data.

## SECURE MODE

Secure Mode can ONLY be enabled when the db-3080 is recording or when a scheduled run is programmed.

The db-3080 offers two levels of Secure Mode, one more restrictive than the other.

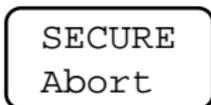
In Level 1 Secure Mode, datalogging in progress or a programmed scheduled run cannot be interrupted, and the db-3080 cannot be placed into Programming Mode. All other buttons respond normally, so the user can display data and perform all functions except for programming and stopping logging.

In Level 2 Secure Mode, the user cannot access any function including starting/stopping logging, displaying data and programming. When a button is pressed, the message “db-3080 SECURED” flashes momentarily and then the screen goes blank. This mode also acts as a battery life enhancer, since less battery power is required when the display is off.

To use Secure Mode you must know the 4-digit secure code that was programmed into the db-3080.

To enable Secure Mode:

1. Turn the db-3080 on, and begin recording or program a scheduled run.
2. Press the TIME and Lpk buttons simultaneously and the following screen will be displayed:



Press the CALIB button to choose either *Abort*, *Level 1* or *Level 2*, and then press the ENTER button. Select *Abort* if you do not wish to place the db-3080 in secure mode.

3. After you select *Level 1* or *Level 2*, the following screen will be displayed for 5 seconds:



Type the 4-digit secure code within 5 seconds. When the correct code is typed in, the db-3080 will enter Secure Mode, and the message “db-3080 SECURED” will be displayed for a moment. If using Level 2 Secure Mode, the screen will then go blank.

If you enter an incorrect secure code, the db-3080 will ignore the command and return to displaying the present sound level.

To disable Secure Mode:

1. Press the TIME and Lpk buttons simultaneously and the following screen will be displayed:



2. Type the 4-digit secure code within 5 seconds. When the correct code is typed in, the db-3080 will exit Secure Mode, and the message "SECURE DISABLED" will be displayed for a moment and then the db-3080 will display the present sound level.

If an incorrect secure code is entered, the db-3080 will ignore the command and remain in Secure Mode.

**NOTE:** The factory default secure code is 1234.

**NOTE:** If you use the Programming Software or ms-3080 Metrosoft to program the db-3080, clear data, or retrieve recorded data, Secure Mode will automatically be exited.

## **Chapter 4**

# **PROGRAMMING SOFTWARE**

The ms-3080P Programming Software allows you to program the db-3080 with your own test settings using a single form on your computer.

As an option ms-3080 Metrosoft Software is available. In addition to programming the db-3080, this enhanced software program allows you to store datafiles on disk, search your database, create graphs and reports, performs projection studies, and more! Call Metrosonics Sales Department for more information (716) 334-7300.

The Programming Software contains a sample datafile, which allows you to see the database, report generation and graphing capabilities offered in ms-3080 Metrosoft. See "ms-3080 Metrosoft Features" later in this chapter for more information.

## **INSTALLING THE PROGRAMMING SOFTWARE**

1. Boot MS-DOS Version 3.0 or higher.
2. Insert the Programming Software Installation Disk into the A: (or B:) drive.
3. Type A:INSTALL (or B:INSTALL) and press <ENTER>.
4. Respond to the prompts and the Programming Software will be installed in the assigned directory on your hard drive.

## **STARTING THE PROGRAMMING SOFTWARE**

1. Change to the directory containing the Programming Software (the default directory name is MS3080P).
2. Type the following command:

M<Enter>

The Metrosonics Logo will appear followed by the Main Menu. If you press any key while the logo is on the screen, the Main Menu will appear faster.

## **USING THE PROGRAMMING SOFTWARE**

- Choices are made in the Main Menu by using the ↑ and ↓ keys to highlight the desired option and pressing <Enter>, OR by typing the key letter for the desired option
- Functions are performed within a form by pressing functions keys F1 through F10
- Press Ctrl with F10 to return to the Main Menu from any screen
- The bottom line of each screen provides user prompts and error messages

### **On-Line Help**

- Press F1 to view on-line help pertaining to the field or menu choice the cursor is on
- Press F1 a second time for an explanation of the form or menu currently being viewed
- Press Esc to remove the help window

### **Filling in Forms**

Use the following instructions to fill in a form:

- Press ↓ or <Enter> to move to the next field
- Press ↑ to move to the previous field
- Press the space bar or F2 to view a list of choices for a field
- Type information for fields that do not offer choices when F2 or the space bar is pressed

## SETTING UP THE PROGRAMMING SOFTWARE FOR YOUR COMPUTER

Press C (Configure Microsoft) in the Main Menu, and the Configure Microsoft Form will appear.

This form allows you to set up the Programming Software for the type of computer system you have. This step **MUST** be performed the first time you use the Programming Software to make sure that the software knows what kind of hardware set up you have.

Since the software saves the setup until you change it, you do not have to repeat this step unless a change is desired.

The following fields in the Configure Microsoft Form **must** be correctly filled in before you can use the Programming Software to program the db-3080:

- Logger Communications Port
- Logger Baud Rate (Typically 9600)
- Disk Drive For Recorded Data
- Directory
- Monitor Type

**NOTE:** For more information on any of these fields, use the on-line help.

The remaining fields are only needed for retrieving and viewing datafiles. These fields must be properly selected to view the sample datafile included with the Programming Software.

Once the Configure Metrosoft Form is filled in correctly, press F3 to save the changes.

**NOTE:** If you press F10 and exit the Configure Metrosoft Form without saving the setup, the software will remember your changes until you exit the program. Once you exit the Programming Software, the Configure Metrosoft Form will automatically revert to the last saved setup.

## **WARRANTY REGISTRATION**

Register your db-3080 Noise Monitor and ms-3080P Programming Software. Simply follow this set of quick instructions to use our on-line warranty card:

1. From the Configure Metrosoft Form, press F4 (Register Warranty) and the Warranty Registration Form will appear.
2. Fill in the fields with the appropriate information.
3. When the form is complete, press F3 (Print Warranty Form) to print the form, and then mail it to: Metrosonics, Inc., P.O. Box 23075, Rochester, NY 14692.

## VERIFY COMMUNICATION

Before programming the db-3080, we recommend that you verify that the computer is properly hooked up and communicating with the db-3080.

Follow these steps to verify communication with the db-3080:

1. Check your Configure Metrosoft Form to make sure that the Programming Software is set up for the correct logger communications port and baud rate.
2. Press E (Verify Logger Communication) in the Main Menu. Instructions will appear on your screen.
3. Connect the RS-232 cable from the db-3080 to the computer's serial port.
4. Turn on the db-3080.
5. Press <Enter>.

If the computer is properly communicating with the db-3080, the message "Communication Established" will appear.

If communication fails, a message will appear on the screen, with a list of instructions. If you get this message, check each item on the list and try communicating again.

**NOTE:** The RS-232 cable may have a two-position slide switch at the 25-pin serial connector. If so, the switch must be correctly positioned to communicate with the db-3080. If unable to communicate, move the switch to the other position.

## **PROGRAMMING THE db-3080**

The db-3080 comes to you factory programmed for common default settings. You may use the Programming Software to create your own settings for recording data.

Follow these steps to program the db-3080 using the Programming Software:

1. Press D (db-3080 Setup) in the Main Menu and the db-3080 Setup Form will appear.
2. Fill in the form as desired.
3. Connect the db-3080 to the computer's serial port and turn the db-3080 on.
4. Press F5 to program the db-3080 with the current setup.

**IMPORTANT:** The Programming Software will automatically set the real time clock of the db-3080 to the time set at your computer. Make sure that your computer's clock is at the correct time before programming the db-3080.

**NOTE:** Use the on-line help for more information on each field in the db-3080 Setup Form.

**NOTE:** See "db-3080 Setup" in Chapter 2 for default settings, and "Programming" in Chapter 3 for programmable choices.

## **Saving Setup Files**

After filling in the db-3080 Setup Form, you may save the setup on disk for future use. The files created are called Logger Setup Files. This allows you to recall specific test setups and quickly program additional db-3080's in precisely the same way. Valuable time is saved because you don't have to remember the settings or recreate them every time you need to program a db-3080. You can create as many Logger Setup Files as you require and recall them as needed.

To save a Logger Setup File:

1. Fill in the db-3080 Setup Form as needed. Be sure to fill in the "Save Filename" field, as this determines the name of the Logger Setup File.
2. Press F3 (Save Setup).

To retrieve/delete a saved Logger Setup File:

1. From the db-3080 Setup Form, press F4 (Retrieve/Delete Setup) and a listing of saved Logger Setup Files will appear.

2. Press ↑ or ↓ to highlight the desired file.
3. Press F3 to retrieve the file or press F4 to delete the file.

## **ms-3080 METROSOFT FEATURES**

The Programming Software comes with a sample datafile, which allows you to try some of the powerful features that are available ONLY with ms-3080 Metrosoft. These include database searching, and creating graphs and reports. To view the sample datafile, press V (View Stored Test Data) in the Main Menu, and then follow the instructions on the screen. Please take a moment to try these features and see how much time you can save by letting us do your data analysis for you.

ms-3080 also allows you to retrieve data from the db-3080 and store it in a database. This function is labeled as "Get/View Test Data From Logger" in the Main Menu. The Programming Software does NOT have the capability to perform data retrieval, and will give a message indicating this if you try to access this function.

For more information on ms-3080 Metrosoft, please call Metrosonics Sales Department at (716) 334-7300.

# Chapter 5

## SPECIFICATIONS

### ANALOG CIRCUITS

**Input:** Rugged 1/4" miniature microphone on a 1 meter detachable cable

**Frequency Response:** A or C weighted

**Averaging Response:** Fast or Slow

**Detector Type:** True RMS

**Amplitude Range (SND LVL, Lavg, Lmax):** 40 to 140 dB

**Peak Measurement Range (Lpk, C weighted):** 28 dB starting at 115 dB

### DIGITAL CIRCUITS

**Dynamic Range:** 100 dB

**Amplitude Resolution:** 0.1 dB

**Dose Resolution:** .01%

**Sampling Rate:**

Slow: 16 samples/second

Fast: 64 samples/second

## **OPERATING CONTROLS**

**Keypad:** Sealed membrane keypad allows touch-control of all operational and display modes

**Access Code:** Four key entry sequence restricts keypad access to authorized personnel

## **RUN-STBY**

Standby mode inhibits acquisition of data during calibration, prior to test or during test.

## **DISPLAY MODE**

**Display:** 16-character alphanumeric LCD

**SND LEV:** Present Slow or Fast, A or C weighted sound level (dB)

**Lmax:** Maximum sound level sampled during test

**Lav:** Average sound level sampled during test

**SEL:** Single Exposure Level (3 dB exchange rate only)

**Lpk:** Maximum C weighted peak pressure during test

**TWA:** Time weighted average (8 hour)

**Dose:** Percent noise dose (may be displayed in Pa<sup>2</sup>h if the exchange rate is set to 3 dB)

**Proj. Dose:** Expected 8-hour noise dose if environment does not change. Based on present dose and elapsed time.

**Time:** Clock time and elapsed time in hours, minutes and seconds

**Battery Voltage:** Present battery voltage to 0.1V

## **DATA STORAGE**

**Maximum data saved:** Over 57,000 time history intervals with 1 statistic saved

**Summary Statistics Saved for Each Test:** Test start date and time, elapsed time, test end date and time, pre- and post-calibration date and time, Lav with no threshold, with first threshold and with second threshold, SEL (only with a 3 dB exchange rate), 8-hour TWA with no threshold, with first threshold and with second threshold, Lmax with date and time, Lpk with date and time, Dose with first threshold and with second threshold, Projected Dose with first threshold and with second threshold, time above ceiling.

## **REPORTS**

**Output:** Print directly from the db-3080 to a serial or parallel printer.

**Summary Report:** Overall statistics for each test or for all tests combined.

**Time History Report:** 80-column tabular report listing all time history periods recorded during each test.

**Amplitude Distribution Report:** 80-column report of amplitude distribution data for each test or for all tests combined.

## **APPLICABLE STANDARDS**

Complies with applicable Type 2 portions of ANSI S1.4, ANSI 1.25, IEC 651 and IEC 804. Also complies with OSHA Hearing Conservation Amendment, August 1981.

## **INTRINSIC SAFETY**

**UL Listed:** Class I, Groups A, B, C & D, Class II, Groups E, F & G, Class III

**C-UL Listed:** Exia, Class I, Groups A, B, C & D, Class II, Groups E, F & G, Class III

## **ENVIRONMENTAL**

**Operating Temperature:** -20 to +60°C (-4 to +140°F)

### **Humidity:**

Short Term: Complete immersion, except microphone

Long Term: To 95% R.H., non-condensing

**Display Operating Temperature:** 0 to +50°C (+32 to +122°F)

## **POWER**

**Operational:** Typically 40 hours at 25°C

**Data Retention:** One month

**Battery:** 9V Alkaline

## **PHYSICAL**

**Case:** Anodized aluminum extrusion with gasketed watertight seals

**Size:** 3.0 x 5.2 x 1.0 inches (7.6 x 13.2 x 2.5 cm)

**Weight:** 15 oz. (0.45 kg)

*Specifications subject to change without notice.*

## Chapter 6

# ACCESSORIES

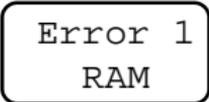
- ba-004:** Replacement Batteries
- \*ca-3025:** Microphone Extension Cable, 25 ft.
- \*ca-3095:** Microphone Extension Cable, 95 ft.
- ca-3070:** Parallel Printer Cable
- ca-428:** Printer Cable (for db-428 printer)
- ca-701:** RS-232 Printer Cable
- cc-303:** Briefcase
- cc-304:** Carrying Case
- cc-304H:** Heavy Duty Carrying Case
- cc-306:** Transit Case
- cl-304:** Acoustical Calibrator
- dp-428:** Compact Battery Operated Printer
- \*mk-3100P:** 1/4" Boom Microphone
- \*mk-3100R:** 1/4" Microphone
- ms-206:** Clothing Clip
- ms-207:** Tripod
- ms-307:** SLM Bracket
- sc-307:** Storage Case
- ws-307:** Foam Microphone Shield

\* These accessories are approved for use in hazardous atmospheres.

# Chapter 7

## TROUBLE SHOOTING

If the battery is removed and replaced when the db-3080 is on, the following error message may appear:

A rectangular box with rounded corners and a thin black border. Inside the box, the text "Error 1" is on the top line and "RAM" is on the bottom line, both centered.

Error 1  
RAM

If this occurs, remove the battery and wait 5 minutes. Then, install a fresh battery and turn the db-3080 back on.

## **Chapter 8**

# **SERVICE INFORMATION**

In the event the db-3080 needs repair service, call or fax Metrosonics Service Department at:

Tel: (716) 334-7300

Fax: (716) 334-2635

The Service Department will try to determine the cause of the apparent malfunction and provide necessary support to correct the problem.

In some cases, apparent problems (or misunderstandings) can be corrected over the phone. Therefore, before returning the db-3080 to the factory for service, discuss all problems with the Service Department. An RMA number is required for all returned equipment.

# Chapter 9

## SERIAL PRINTER REQUIREMENTS

There are only six communication requirements for any serial printer to work with the db-3080 Noise Monitor:

1. Serial RS-232 communications using at least the transmit (TX, pin 2), receive (RX, pin 3), and common ground (GND, pin 7) lines.
2. Accept X-on/X-off software handshaking to control the flow of characters. X-on/X-off is also known as DC1/DC3 or control-S/control-Q.
3. Accept a baud rate of either 300, 600, 1200, 2400, 4800, 9600 or 19200 baud.
4. Data format: 10 bits (1 start bit, 8 data bits, 1 stop bit, with no parity).
5. Accept the standard ASCII character set.
6. Support 24 column or 80 column printouts.

If all six of these requirements are met, a serial printer will function properly with the db-3080.

# Appendix A

## DEFINITIONS OF NOISE TERMS

### **Response Rate**

Instruments used to measure sound level have selectable response time constants, which were originally established to describe the dynamic response characteristics of analog sound level meters. The most commonly used time constants are: Slow (1 second) and Fast (.125 second). Typical occupational and environmental noise regulations require a Slow response rate.

### **Filter (A-Weighted and C-Weighted)**

The db-3080 has two types of selectable filters: an A-weighted filter that simulates how the ear perceives noise at low levels, and a C-weighted filter that simulates how the ear perceives noise at high levels. Typical occupational noise regulations require an A-weighted filter.

### **Dose Criterion Level (Permissible Exposure Level)**

The dose criterion level is the average sound level at which the dose criterion length (in hours) represents 100% of an allowable exposure for a given regulation. OSHA requires a dose criterion level of 90 dB.

## **Dose Criterion Length**

The dose criterion length is the permissible exposure duration (in hours) for a given regulation. Regulations currently in practice require a dose criterion length of 8 hours.

## **Exchange Rate (Doubling Rate)**

Regulatory limits on unprotected exposure are commonly stated in terms of the maximum permissible exposure time (criterion length) at a specified sound level (criterion level). For example, OSHA specifies 8 hours at 90 dBA.

The exchange rate is the increase in sound level for which the permissible exposure time is halved, OR the decrease in sound level for which the permissible exposure time is doubled.

For example, OSHA regulations stipulate that an unprotected worker may be exposed to noise levels of 90 dB for 8 hours. Since OSHA's exchange rate is 5 dB, for every 5 dB the noise exposure increases the permissible exposure time is cut in half, and for every 5 dB the noise exposure decreases the permissible exposure time is doubled. Thus, a worker could be exposed to a noise level of 95 dB for only 4 hours.

Other exchange rates in use include 3 (ISO), 4 (DOD) and 6 dB.

## **Threshold Level (Cutoff Level)**

All sound levels at or above the threshold level are averaged into the calculations relating to noise exposure. All sound levels below the threshold level are not included. For example, if an 80 dB threshold is selected, all samples of sound levels equal to or greater than 80 dB will be included in the calculations for noise exposure. This is an arbitrary procedure used by OSHA and other regulations. OSHA requires dual threshold levels of both 80 and 90 dB.

## **Ceiling**

The maximum allowable sound level an unprotected worker may be exposed to. For example, OSHA does not permit unprotected workers to be exposed to sound levels, measured with a Slow response, above 115 dB.

## **Lav (Average Level)**

Lav is the average sound level (in dB) computed for a chosen averaging time duration. Lav with a 3 dB exchange rate is referred to as Leq (equivalent sound level).

## **TWA (Time Weighted Average)**

The TWA is the level (in dB) at which exposure for the criterion length would produce a noise dose equal to that obtained for a shift length of arbitrary duration. In other words, it is a conversion of the actual noise dose to an equivalent exposure sound level for 8 hours.

For example, if a worker accumulated 100% noise dose in 16 hours with a continuous exposure of 85 dBA, the corresponding TWA for 8 hours of exposure would be 90 dBA.

### **Lmax (Maximum Level)**

Lmax is the maximum sound level observed during a measurement interval with a particular response setting (Slow or Fast). OSHA specifies that an Lmax measured with a Slow setting must not exceed 115 dBA.

### **Lpk (Peak Level)**

Lpk is the highest instantaneous sound pressure level observed during a measurement interval. Under OSHA regulations, unprotected workers may not be exposed to peak sound levels greater than 140 dB.

### **8 Hour Dose**

This is the actual dose (as a percentage) accumulated for the actual work shift length based on a regulation's defined criterion level and criterion length.

## **8 Hour Projected Dose**

This is a computed estimation (as a percentage) of what the projected dose would be for an 8 hour work shift. Such estimations are useful in preliminary workplace surveys. For example: a worker's exposure may be monitored for 1 hour and a dose of 40% is obtained. If the assumption is made that for the remaining 7 hours of the shift the worker will continue to experience the same noise exposure, the instrument will compute an estimated 8 hour projected dose of 320%.

## **SEL (Sound Exposure Level)**

SEL, also known as Lax, is the energy average of an event normalized to a one second period. In other words, SEL is numerically equal to the Leq of the event with a factor added based on the duration of the event. If an event is five seconds long, and the sound level is constant at 90 dB(A), then SEL is 97 dB(A). SEL is only defined when using a 3 dB exchange rate. Specifically:

$$\text{SEL} = \text{Leq} + 10 \log t$$