WARRANTY CLAUSE

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

Instruments must be returned properly packed with transportation charges prepaid to METROSONICS; 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. sole liability, and is in lieu of any other warranty, of merchantibility or fitness. METROSONICS 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-3070 offers both a noise dosimeter and integrating sound level meter 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.

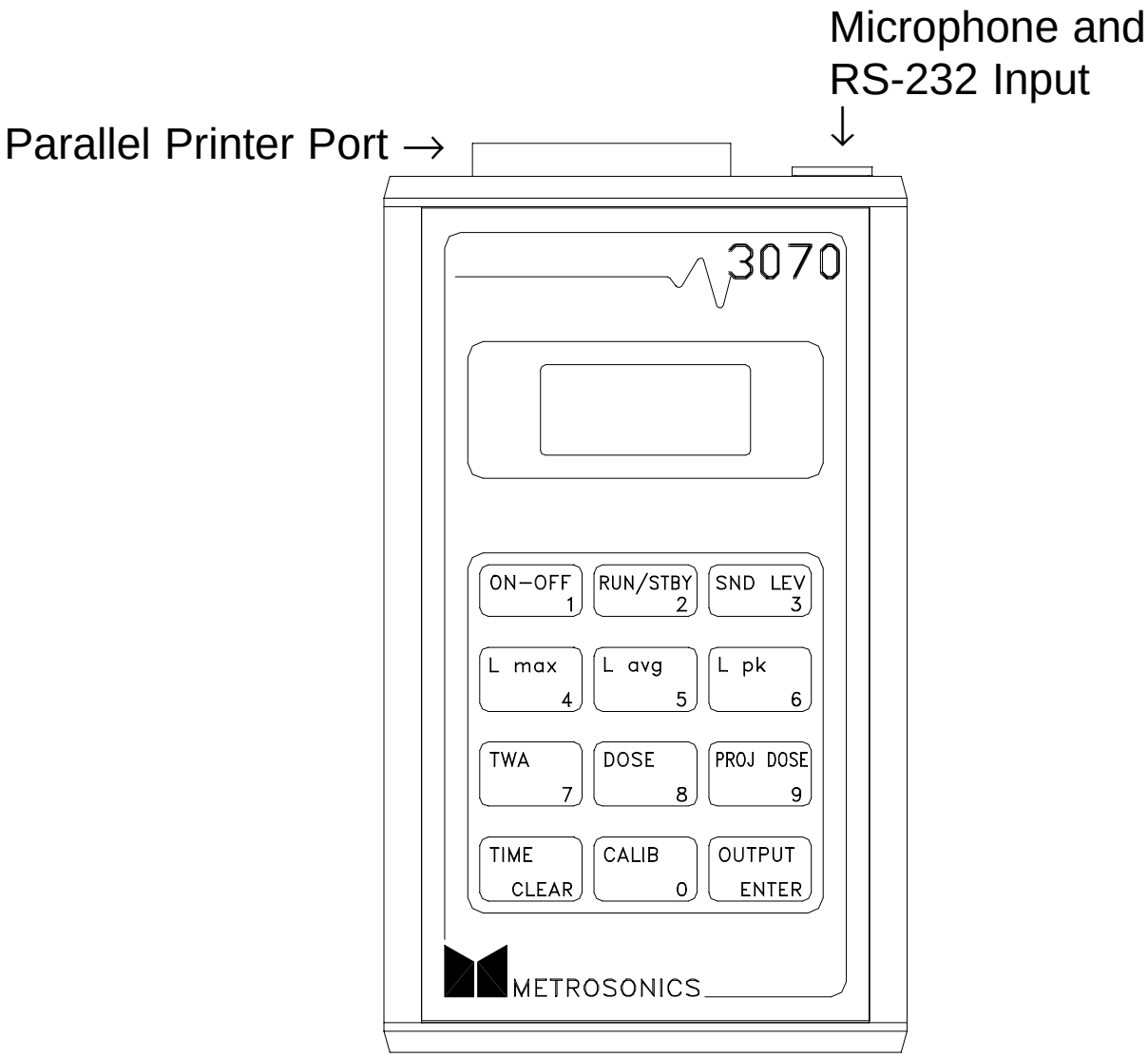
This unique microprocessor based instrument measures and stores Lav at 2 threshold levels, Lmax with time of occurrence, Lpeak with time of occurrence, TWA, dose, projected dose, total time above ceiling and test duration. If desired, the db-3070 can store separate test statistics for individual surveys. 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 pre and post test calibration. All data is conveniently time stamped so it is easy to correlate events.

Pocket sized, the db-3070 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-3070 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-3070 also has a security feature, which allows you to place the unit in secure mode to prevent use by unauthorized personnel.

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-3070 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-3070 is powered by a single 9 volt alkaline battery (NEDA 1604A). Typical battery life of the db-3070 is 40 hours (at 25°C).

When the battery becomes low and cannot power the db-3070 for 8 hours of operation, the display will begin to flash. If the battery voltage drops too low for proper operation, the db-3070 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-3070 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-3070 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-3070 **MUST** be turned off before removing the bottom end-cap. If the db-3070 is turned on when the battery is removed, all logged data may be lost.

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

1. Turn the db-3070 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-3070 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-3070. You will also need to calibrate the microphone to assure accurate readings (see "Calibration" in next section).

The db-3070 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-3070:

1. Hold the db-3070 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-3070, 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.

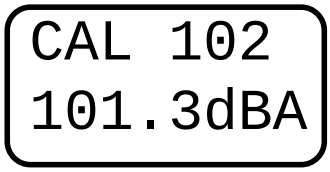
CALIBRATION & POST CALIBRATION

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.

To calibrate the microphone, you will need the Metrosonics cl-304 Acoustical Calibrator.

Follow these instructions for pre and post test calibration:

1. Connect the microphone to the db-3070 Noise Monitor.
2. Insert the microphone into the hole on the top of a cl-304 calibrator.
3. Turn the db-3070 on by pressing the ON/OFF button.
4. Turn the calibrator on by pressing and releasing the button on the bottom of the calibrator.
5. Press the CALIB Button to enter Calibration Mode. A screen similar to following will be displayed:



This screen indicates that you are in calibration mode, 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 calibration, repeat steps 1 through 8 above, after the test is complete. The post calibration information, including date and time, will be stored in memory.

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

NOTE: The unit MUST be in display mode and CANNOT be calibrated while logging.

db-3070 SETUP

The db-3070 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. See "Programming the db-3070" in Chapter 3 for instructions. Once reprogrammed, the db-3070 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 stamp, 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-3070 default settings programmed at Metrosonics factory:

Criterion Level: 90 dB
Threshold 1: 80 dB
Threshold 2: 90 dB
Exchange Rate: 5 dB
Pa^2h: No
Date: 01/01/95
Time: 00:00:00
Storage Mode: Single
Filter Weight: A
Response Rate: Slow
Secure Code: 956
Baud Rate: 9600

REAL TIME CLOCK

The date and time are NOT programmed into the db-3070 at the factory. If you want to record data with real time stamp, you **MUST** program the date and time. Since the db-3070 retains all programming information, including the real time clock setting, this step only needs to be done once. See "Programming the db-3070" 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-3070 to reset the real time clock.

Chapter 3
db-3070 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.

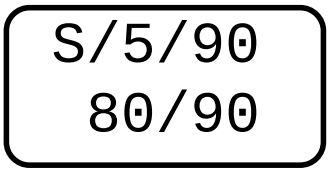
These instructions also assume that you have followed the instructions in Chapter 2 and you have installed a battery, plugged in the microphone and performed the calibration procedure. If you have not done this yet, you should do so at this time.

Refer to the db-3070 diagram at the beginning of Chapter 2 as needed when following the instructions in this chapter.

TURN THE db-3070 ON & OFF

1. Press the ON/OFF button. The db-3070 will turn on and display the programmed parameters, followed by the present sound level.

   The programmed parameters are shown in the following format:



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

   S = Slow response
   5 = 5dB exchange rate
   90 = 90dB criterion level.

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

   80 = 80dB threshold level 1
   90 = 90dB threshold level 2

The present sound level readings are shown in the following format:

2. Press the ON/OFF button again to turn off the db-3070.

   NOTE: The unit may **NOT** be turned off when it is datalogging. This is to prevent accidentally terminating a test. See "Start and Stop Datalogging" later in this section.

START & STOP LOGGING

1. Turn the db-3070 on.
2. While viewing the present readings, press the RUN-STBY button to start datalogging. The unit will display "RUN" for a few seconds to indicate that logging is in process.
3. Press the RUN-STBY button again to terminate logging. The unit will display "STANDBY" for a few seconds to indicate that it is NOT logging.

Standby

The db-3070 can record up to 7 tests with the standard memory and up to 248 tests with the expanded memory option. When the RUN-STBY button is pressed to stop logging, the db-3070 is actually in a standby mode. If you wish to begin another test, simply press the RUN-STBY button again and the db-3070 will begin logging the next test.

NOTE: The db-3070 may be programmed to save all tests recorded in one datafile, or to save each test recorded in a separate datafile. See "Programming the db-3070" later in this chapter for information on this programming choice.

VIEW TEST RESULTS

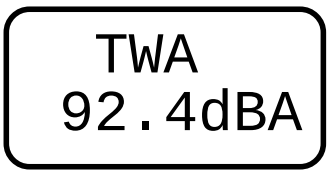
To enter display mode, simply turn the unit on, OR press the SND LEV button.

Use the following keypresses to view data while in display mode:

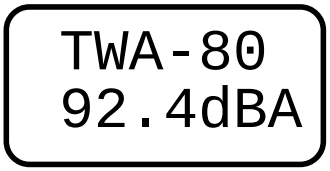
Keypress	Item(s) Displayed
SND LEV	• present sound level • battery voltage
Lmax	• maximum sound level for the test • Lmax time of occurrence
Lavg	• Lavg with no threshold • Lavg with first threshold • Lavg with second threshold
Lpk	• Lpk for the test • Lpk time of occurrence • Total time above ceiling
TWA	• TWA with no threshold • TWA with first threshold • TWA with second threshold

Keypress	Purpose
DOSE	• Dose with first threshold • Dose with second threshold
PROJ DOSE	• Projected Dose with first threshold • Projected Dose with second threshold
TIME	• elapsed time of test • present date and time • number of tests logged/number of test interruptions

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



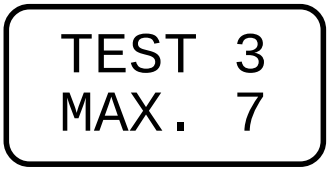
When viewing TWA with a threshold of 80 dB, the display will be in the following format:



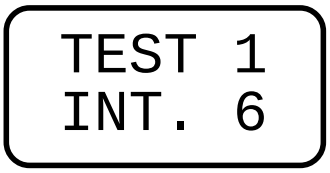
NOTE: If logging is in progress, the test statistics will be updated in real time and the current readings will be displayed. If logging has been stopped, the displayed test statistics will be for the entire test.

NOTE: If the db-3070 was programmed to save each test in a separate datafile, the test statistics for the most recently recorded test will be displayed. You can view test statistics from prior tests on the printed reports.

NOTE: When viewing the number of tests logged/ number of test interruptions, if data is being recorded in multiple test mode, the db-3070 displays the number of tests logged and the maximum number of tests that can be logged. This screen is in the following format:



If data is being recorded in single test mode, the db-3070 displays the number of tests logged and the number test interruptions (how many times the test was stopped). This screen is in the following format:



NOTE: When recording in single test mode, the number of tests logged will always be 1.

PROGRAMMING

The following is a list of programmable parameters and the choices available:

Parameter	Choices
Criterion Level	Any value from 60 to 100 dB
Thresholds 1 & 2	Any value from 40 to 140 dB
Exchange Rate	3, 4, 5 or 6
Pa^2h	Yes or no (applicable only if the exchange rate is set to 3 dB)
Date	Any date in the format: MM/DD/YY
Time	Any time in the format: HR/MN/SC (24 hour format)
Storage Mode	Single or Multiple
Filter	A or C Weight
Response	Slow (16 samples/sec) or Fast (64 samples/sec)

Parameter	Choices
Secure Code	Any 3 digits (0 through 9)
Baud Rate	300, 600, 1200, 2400, 4800 or 9600

Use the following keypresses to program the db-3070:

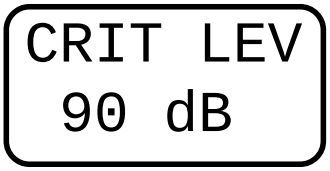
Keypress	Purpose
TIME & OUTPUT	Enter/Exit Programming Mode
TIME	Scroll through items to be programmed
CALIB	Scroll through list and select desired choice
ENTER	Save new programming information (must be pressed after each selection)
0 through 9	Type desired programming information for items that do not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

Step by Step Programming Instructions

Follow these steps to program the db-3070:

1. Turn the db-3070 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-3070 will enter Programming Mode. The message PROGRAM MODE will be displayed followed by the first programming screen, which allows selection of criterion level:

Example:



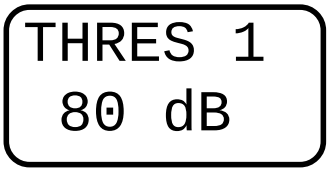
The bottom line shows the criterion level currently programmed.

If you do NOT wish to change the criterion level, proceed to step 3.

If 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.

3. Press the TIME button and the next programming screen will be displayed, which allows selection of the first threshold level:

Example:



The bottom line shows the first threshold level currently programmed.

If you do NOT wish to change the first threshold level, proceed to step 4.

If you wish to reprogram the first threshold level, type the new threshold level and then press the ENTER button. You may enter any level from 40 to 140 dB.

4. Press the TIME button and the next programming screen will be displayed, which allows selection of the second threshold level:

Example:

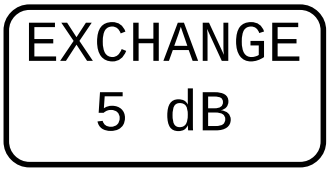
The bottom line shows the second threshold level currently programmed.

If you do NOT wish to change the second threshold level, proceed to step 5.

If you wish to reprogram the second threshold level, type the new threshold level and then press the ENTER button. You may enter any level from 40 to 140 dB.

5. Press the TIME button and the next programming screen will be displayed, which allows selection of the exchange rate:

Example:



The bottom line shows the exchange rate currently programmed.

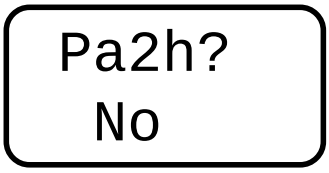
If you do NOT wish to change the exchange rate, proceed to step 6.

If you wish to reprogram the exchange rate, press the CALIB button to scroll through the choices and select the new exchange rate. While the desired exchange rate is displayed, press the ENTER button. You may select 3, 4, 5 or 6 dB.

6. If the db-3070 is programmed for an exchange rate other than 3 dB, skip to step 7.

   If the db-3070 is programmed for a 3 dB exchange rate, press the TIME button and next programming screen will be displayed, which allows choosing to view dose and projected dose in Pa2h instead of in percent (%). This only applies when the db-3070 is programmed with a 3 dB exchange rate.

Example:



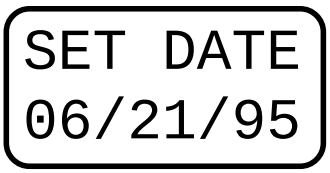
The bottom line shows the current setting for displaying dose and projected dose.

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

If you wish to change the way dose and projected dose are displayed, press the CALIB button to choose Yes (display dose and projected dose in Pa2h) or No (display dose and projected dose in %), and then press the ENTER button.

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

Example:



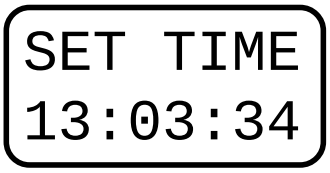
The bottom line shows the date currently programmed.

If you do NOT wish to change the date, proceed to step 8.

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

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

Example:



The bottom line shows the time currently programmed.

If you do NOT wish to change the time, proceed to step 9.

If 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.

9. Press the TIME button and the next programming screen will be displayed, which allows selecting the storage mode:

Example:

The bottom line shows the storage mode currently programmed, which will be either "single" or "multiple".

If you do NOT wish to change the storage mode, proceed to step 10.

If you wish to reprogram the storage mode, press the CALIB button to select between multiple and single. While the desired storage mode is displayed, press the ENTER button.

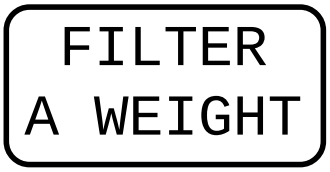
During a recording session, each time logging is started and stopped a new test is started. You can choose to save all tests from the recording

session in one datafile, OR you can save each test from the recording session as an individual datafile.

When the storage mode is set to single, data from all tests will be combined and stored in one datafile. In other words, the new data is simply added on the existing data. When the storage mode is set to multiple, the db-3070 will save each test as an individual datafile, and the summary information for each test will be stored separately. In addition, a separate report can be generated for each individual test.

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

Example:



The bottom line shows the filter weight currently programmed, which will be either "A" or "C".

If you do NOT wish to change the filter weight, proceed to step 11.

If you wish to reprogram the filter weight, press the CALIB button to select between A and C. While the desired filter weight is displayed, press the ENTER button.

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

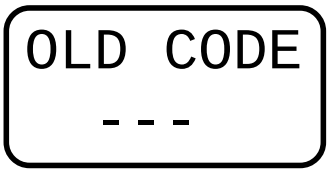
Example:

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

If you do NOT wish to change the response rate, proceed to step 12.

If you wish to reprogram the response rate, press the CALIB button to select between Fast and Slow. While the desired response rate is displayed, press the ENTER button.

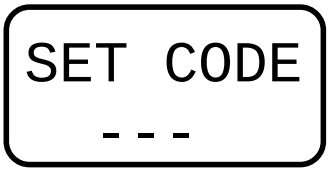
12. Press the TIME button and the next programming screen will be displayed, which allows selecting the security code that will be used to enable/ disable Secure Mode:



If you do NOT wish to change the secure code, proceed to step 13.

If you wish to reprogram the secure code, type the secure code presently programmed.

If the correct code has been entered, the following screen will appear:



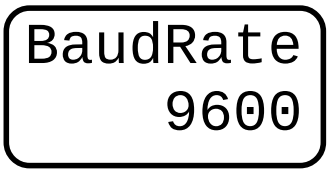
Type the new code. The code can be any 3 digits.

If an incorrect code is entered, the message INVALID CODE is displayed. You will NOT be able to change the code until the correct code is entered.

NOTE: The factory default code is 956.

13. Press the TIME button and the next programming screen will be displayed, which allows selecting the baud rate for using 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 14.

If 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 or 9600 baud. While the desired baud rate is displayed, press the ENTER button.

IMPORTANT: If printing to a serial printer, the db-3070 MUST be programmed for the same baud rate as the printer (see "Programming the db-3070" earlier in this chapter for information on setting the baud rate). Since data MUST be cleared before the unit can be reprogrammed, make sure the correct baud rate is selected BEFORE recording data.

14. 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 at any time by pressing the TIME and OUTPUT buttons simultaneously.

OUTPUT REPORTS

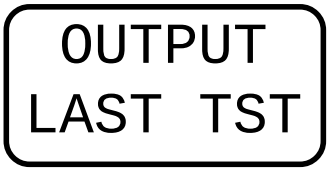
After recording is complete, you can output reports directly from the db-3070 to a serial or parallel printer. You can print a report of the following:

- Last Test
  Gives the overall statistics for the most recent test
- All Tests
  Gives the overall statistics for each test recorded
- Summary
  Gives combined overall statistics from all tests in one report

Follow these steps to output reports:

1. Turn the db-3070 and your printer on.
2. Connect the db-3070 to the printer. If using a parallel printer, connect the parallel printer cable to the db-3070 parallel port. If using a serial printer, remove the microphone and connect the RS-232 printer cable to the db-3070 by plugging it into the 5-pin connector hole.

3. Connect the other end of the cable to the port of the printer you will be using.
4. While the db-3070 is in Display Mode, press the OUTPUT button and the following screen will be displayed:



5. You can output overall statistics from the most recent test, all tests or a summary of all tests combined. To make your selection, press the CALIB button to select either "last tst", "all tsts" or "summary". While the desired selection is displayed, press the ENTER button and the test 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-3070 MUST be programmed for the same baud rate as the printer (see "Programming the db-3070" earlier in this chapter for information on setting the baud rate).

NOTE: When outputting to a parallel printer, the reports are 80 column. When outputting to a serial printer, reports are 24 column.

CLEAR DATA

Clearing data erases ALL recorded data from the db-3070.

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

Follow these instructions to clear the data:

1. Turn the db-3070 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-3070 returns 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 unit is recording. Once the db-3070 is in secure mode, you CANNOT access any function or change any parameters. When keys are pressed, the message "RUN" is displayed momentarily and then the screen goes blank.

To enable/disable Secure Mode:

1. Turn the db-3070 on and begin recording.
2. Press the TIME and LPK buttons simultaneously and the following screen will be displayed for 2 seconds:

3. Enter the 3 digit secure code within 2 seconds. If the correct code has been entered, the unit will enter secure mode. The message "RUN SECURED" will be displayed and then the screen will blank.

   If an incorrect code is entered, the unit will ignore the command and return to displaying present sound level readings.

4. To disable Secure Mode, enter the 3 digit code. If the correct code is entered, Secure Mode will be disabled and the unit will display present sound level readings. If an incorrect code is entered, the unit will ignore the keypresses and remain in secure mode.

NOTE: The factory default secure code is 956.

Chapter 4
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

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

Access Code: Three 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

Battery Voltage: Status of installed battery

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

Lmax: Maximum sound level sampled during test with time of occurrence

Lavg: Average sound level sampled during test

Lpk: Maximum C weighted peak pressure during test with time of occurrence

Time above ceiling: Total time sound level was above 115 dB.

TWA: Time weighted average (8 hour)

Dose: Current percent noise dose

Proj. Dose: Expected 8-hour noise dose if environment does not change. Based on current dose and elapsed time.
Time: Clock time or elapsed time in hours, minutes and seconds

USER PROGRAMMABLE PARAMETERS
Filter Response: A or C weighted
Response Rate: Fast or Slow
Exchange Rate: 3, 4, 5 or 6 dB
Criterion Sound Level (Lc): 60 to 100 dB
Threshold Sound Level (Lt): 40 to 140 dB
Ceiling Level: Fixed at 115 dB
Current Date & Time: Month, Day, Year; Hours, minutes, seconds
Printer Baud Rate: 300, 600, 1200, 2400, 4800, 9600, 19200
Display Dose in Pa^2h: yes or no
Secure Code: Any 3 digits
Storage Mode: single or multiple

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.

ENVIRONMENTAL

Operating Temperature: 10 to 60°C (14 to 140°F)
Humidity:
Short Term: Complete immersion, except microphone
Long Term: To 95% R.H., non-condensing

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 5
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 6
STORAGE

If the db-3070 will not be used for an extended period of time, it is recommended that the battery be removed and a new battery installed when the unit is to be used again.

Chapter 7
REPAIR INFORMATION

In the event the db-3070 needs repair service, call or fax Metrosonics Repair Department at:

Tel: (716) 334-7300
Fax: (716) 334-2635

The Repair 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-3070 to the factory for service, discuss all problems with the Repair Department. An RMA number is required for all returned equipment.

Chapter 8
SERIAL PRINTER REQUIREMENTS

There are only six communication requirements for any serial printer to work with the db-3070 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 or 9600 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-3070.

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. Two most commonly used time constants which are in common use 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-3070 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.

The db-3070 will calculate the % Dose based on 8 hours at the criterion level selected.

Dose Criterion Length

The dose criterion length is the permissible exposure duration (in hours) for a given regulation. Since regulations currently in practice require a dose criterion length of 8 hours, the db-3070 always uses 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%.

Pascal Squared Hours (Pa^2h)

This is a measure of sound exposure accumulated during the measurement period, given in Pa^2h rather than % dose. Pa^2h is defined as the time integral of squared instantaneous A-frequency weighted sound pressure over a specified duration, for example the duration of a working day.

8 Hour Pa^2h

This is an estimated measure of sound exposure that would be accumulated over an 8 hour work shift, if the pattern of exposure to noise remains unchanged. This measure is useful for estimating the potential full shift sound exposure of workers based on a short duration measurement.