

R8085

# REED INSTRUMENTS

## Noise Dosimeter



## Instruction Manual

**REED Instruments**

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## Introduction

Thank you for purchasing your REED R8085 Noise Dosimeter. Please read the following instructions carefully before using your instrument. By following the steps outlined in this manual your meter will provide years of reliable service.

## Product Quality

This product has been manufactured in an ISO9001 facility and has been calibrated during the manufacturing process to meet stated product specifications. If a certificate of calibration is required please contact the nearest authorized REED distributor or authorized Service Center. Please note an additional fee for this service will apply.

## Safety

Never attempt to repair or modify your instrument. Dismantling your product, other than for the purpose of replacing batteries, may cause damage that will not be covered under the manufacturer's warranty. Servicing should only be provided by an authorized service center.

## Features

- Noise Dosimeter, Sound Level Meter and Data Logger
- High accuracy of  $\pm 1.0\text{dB}$  meets Type 2 standards
- Designed to meet noise survey requirements in compliance with OSHA and CCOHS regulations
- Personal sound exposure meets IEC 61252, ANSI S1.25
- A & C frequency weighting
- Fast & Slow time weighting
- Lightweight and compact design
- Adjustable Criterion Level, Exchange Rate and Threshold
- USB interface with Windows® compatible software to retrieve stored data (sold separately)
- Easy-to-read backlit LCD display
- Data hold and Min/Max hold
- Tripod mount for long-term monitoring
- Low battery indicator and auto shut off

## Specifications

|                                    |                                                                                                                                                                                      |
|------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Measurement Type:                  | Sound Pressure Level: dB<br>Personal Noise Exposure: %Dose                                                                                                                           |
| Measuring Range(s):                | 35 to 130dB<br>Low: 35 to 80dB<br>High: 80 to 130dB<br>Auto: 35 to 130dB<br>Dose: 70 to 130dB                                                                                        |
| Dynamic Range:                     | 50dB (in each range)                                                                                                                                                                 |
| Accuracy:                          | 31.5Hz $\pm 3.0$ dB, 63Hz $\pm 2.0$ dB, 125Hz $\pm 1.5$ dB,<br>250Hz $\pm 1.5$ dB, 500Hz $\pm 1.5$ dB, 1kHz $\pm 1.0$ dB,<br>2kHz $\pm 2.0$ dB, 4kHz $\pm 3.0$ dB, 8kHz $\pm 5.0$ dB |
| Resolution:                        | 0.1dB                                                                                                                                                                                |
| Response Time:                     | Approx. 1 second                                                                                                                                                                     |
| Frequency Range:                   | 31.5Hz to 8kHz                                                                                                                                                                       |
| Frequency Weighting:               | A, C                                                                                                                                                                                 |
| Time Weighting:                    | Fast/Slow (125mS and 1 second)                                                                                                                                                       |
| Microphone:                        | 0.5" (12.7mm) electret condenser                                                                                                                                                     |
| Display:                           | 4-digit LCD                                                                                                                                                                          |
| Backlit Display:                   | Yes                                                                                                                                                                                  |
| Data Hold:                         | Yes                                                                                                                                                                                  |
| Min:                               | Yes                                                                                                                                                                                  |
| Max:                               | Yes                                                                                                                                                                                  |
| Alarm Indicators:                  | Over (visual on-screen)                                                                                                                                                              |
| Datalogging Capabilities:          | Yes                                                                                                                                                                                  |
| Real-Time Clock and<br>Date Stamp: | Yes                                                                                                                                                                                  |
| Selectable Sampling Rate:          | Yes (1, 2, 5, 10, 30, 60, 120, 300,<br>600, 1800, 3600 seconds)                                                                                                                      |

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|                            |                                                                                                                                       |
|----------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| Selectable Dose            |                                                                                                                                       |
| Measurement Rate:          | Yes (0, 1, 5, 10, 15, 30 minutes/<br>1, 2, 4, 8, 10, 12, 24 hours)                                                                    |
| Auto Shut-off:             | Yes (after 10 minutes/off)                                                                                                            |
| Tripod Mountable:          | Yes                                                                                                                                   |
| Low Battery Indicator:     | Yes                                                                                                                                   |
| Power Supply:              | 3 x AAA batteries                                                                                                                     |
| Output:                    | Yes, RS-232/USB (optional)                                                                                                            |
| PC Connectivity:           | USB Cable (R8085-USB, optional)                                                                                                       |
| Software:                  | PC Software (R8085-PC, optional)                                                                                                      |
| Software OS Compatability: | Windows XP/Vista/7/8/10                                                                                                               |
| Product Certifications:    | CE, IEC61252, ANSI S1.25 for Noise Dose<br>and Sound Exposure Meters,<br>IEC 61672 Class 2/ANSI S1.4 Type S<br>for Sound Level Meters |
| Operating Temperature:     | 32 to 122°F (0 to 50°C)                                                                                                               |
| Storage Temperature:       | 14 to 140°F (-10 to 60°C)                                                                                                             |
| Operating Humidity Range:  | <85%                                                                                                                                  |
| Dimensions:                | 4.2 x 2.3 x 1.0" (107 x 58 x 25mm)                                                                                                    |
| Weight:                    | 4.3oz (122g)                                                                                                                          |

## Comparison of Frequency Weightings and Tolerance Limits

| Frequency<br>Hz | A Weighting<br>Characteristics | C Weighting<br>Characteristics | Tolerance<br>(IEC 61672<br>class 2) |
|-----------------|--------------------------------|--------------------------------|-------------------------------------|
| 31.5            | -39.4dB                        | -3dB                           | ±3.0dB                              |
| 63              | -26.2dB                        | -0.8dB                         | ±2.0dB                              |
| 125             | -16.1dB                        | -0.2dB                         | ±1.5dB                              |
| 250             | -8.6dB                         | 0dB                            | ±1.5dB                              |
| 500             | -3.2dB                         | 0dB                            | ±1.5dB                              |
| 1K              | 0dB                            | 0dB                            | ±1.0dB                              |
| 2K              | +1.2dB                         | -0.2dB                         | ±2.0dB                              |
| 4K              | +1dB                           | -0.8dB                         | ±3.0dB                              |
| 8K              | -1.1dB                         | -3dB                           | ±5.0dB                              |

## Time Weightings (Fast & Slow) Characteristics

| Time Weighting<br>Characteristics | Max Response<br>Reference<br>continuous Signal | Tolerance<br>(IEC 61672 class 2) |
|-----------------------------------|------------------------------------------------|----------------------------------|
| F (Fast)                          | -1.0dB                                         | ±1.0dB                           |
| S (Slow)                          | -4.1dB                                         | ±1.0dB                           |

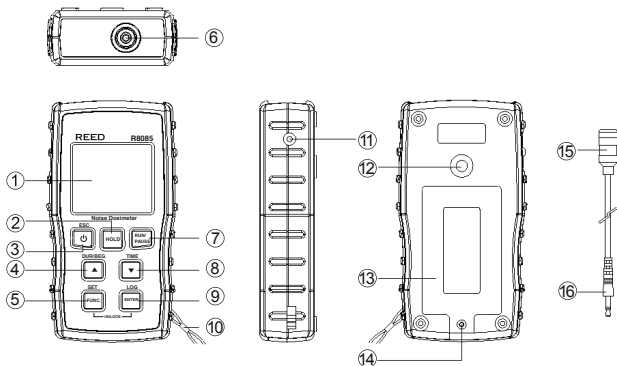
## Included

- Dosimeter
- Microphone with Clip
- Batteries
- Wrist Strap
- Carrying Case

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# Instrument Description



- |                                                    |                                 |
|----------------------------------------------------|---------------------------------|
| 1. LCD Display                                     | 9. ENTER/LOG Button             |
| 2. HOLD Button                                     | 10. Wrist Strap Anchoring Point |
| 3. Power/ESC/Backlight Button                      | 11. RS-232 Output Jack          |
| 4. Up/Duration/Begin/Fast/<br>Slow/dB Range Button | 12. Tripod Mounting Screw       |
| 5. FUNCTION/SET Button                             | 13. Battery Cover               |
| 6. Microphone Input Jack                           | 14. Battery Cover Screw         |
| 7. RUN/PAUSE Button                                | 15. Microphone                  |
| 8. Down/A/C/TIME Check Button                      | 16. Microphone Plug             |

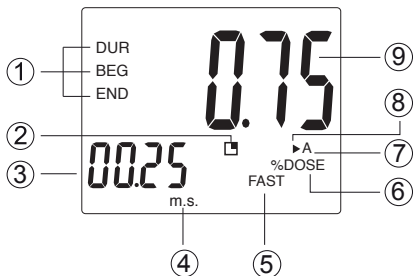
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# Display Description

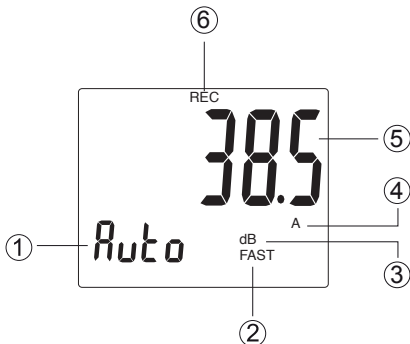
## %DOSE

1. Test Duration, Start (BEG), Stop (END) Indicators
2. Locked Keypad Indicator
3. Test Duration Time Value
4. Time Stamp
5. Time Weighting Indicator
6. Unit of Measure
7. Frequency Weighting Indicator
8. Recording Status Indicator
9. %DOSE Measurement



## Sound Pressure Level (SPL)

1. dB Range Indicator
2. Time Weighting Indicator
3. Unit of Measure
4. Frequency Weighting Indicator
5. Sound Level Measurement
6. Max/Min Recording Indicator



# Operating Instructions

## Power On/Off

Turn the meter on by pressing the POWER button. To turn the meter off, press and hold the POWER button for 2 seconds.

## Sound Pressure Level (FAST/SLOW, dBA/dBC, "L" / "H")

1. At start up, the meter's default settings are "Auto Range", "A Frequency Weighting" and "Fast Time Weighting".
2. To select desired Response Time (FAST/SLOW): Press **FUNC.** button, when SPL appears on LCD, hold the ▲ to toggle between FAST/SLOW. If the sound source consists of short bursts, set the response to FAST(125ms). To measure average sound level, select SLOW (1 second).

**Note:** OSHA's noise standard (specifically, 29 CFR 1910.95) uses SLOW.

3. Press and hold the ▼ button to select the Frequency weighting. Select "A" Weighting for a general noise sound level, or "C" Weighting for measuring high level noise. "C" Weighting is a standard weighting of the audible frequencies commonly used for the measurement of Peak Sound Pressure Level. If the "C" Weighted level is much higher than the "A" Weighted level, then there will be a large amount of low-frequency noise.

**Note:** OSHA's noise standard (specifically, 29 CFR 1910.95) uses "dBA".

4. Press the ▲ button to scroll through the three dB range types. There are two manual dB ranges to select from and an auto range. The manual ranges are described as follows:  
Low (as indicated by "L"): 30 to 80dB range  
High (as indicated by "H"): 80 to 130dB range
5. The meter can be held comfortably in one hand, placed in a pocket or positioned on a tripod for long-term monitoring.
6. Attach the microphone with the provided clip to an area where it will be exposed to sound levels (i.e. shirt collar).

**Note:** Set the cable in a way that does not hinder the working movements of the user. Direct contact with strong winds or blowing air on the microphone may cause measurement errors.

## Setup Mode

1. Press and hold the **FUNC.** button for 2 seconds to enter Setup Mode.
2. Press the **FUNC.** button continuously to scroll through the following parameters.
3. Once the appropriate parameter has been selected follow the associated instructions below.

**Note:** The meter automatically exits out of the Setup mode if no key is pressed within 7 seconds.

| Parameter | Description                          |
|-----------|--------------------------------------|
| dAtE      | Set the time and date                |
| SP-t      | Set the data logging sampling rate   |
| PoFF      | Enable or disable the auto-power off |
| SEt LC    | Set Criterion level in dB            |
| SEt LT    | Set Threshold in dB                  |
| SEt ER    | Set Exchange rate in dB              |
| SPC       | Check Memory space                   |
| CLrE      | Clear Stored Data                    |

**Note:** At any time, you can press the **ESC** button to exit the Setup mode and resume normal operation. The internal clock will keep accurate time when the meter is powered off. When new batteries are installed the clock will have to be reset.

### Setting the Time and Date (dAtE)

1. Press the **ENTER** button when the dAtE parameter appears on the LCD.
2. Use the **▲** and **▼** buttons to adjust the year as indicated by "YY".
3. Press the **ENTER** button to confirm selection.
4. Repeat steps 2 and 3 for month, day, hour, minute and seconds as indicated by (mm./dd/h./m./s).
5. After each value has been selected and confirmed, it will automatically skip to the next parameter.

## ***Setting the Data Logging Sampling Rate (SP-t)***

Follow steps 1 and 2 when "SP-t" appears on the LCD.

1. Use the ▲ and ▼ buttons to adjust the sampling rate between 0, 1, 2, 5, 10, 30, 60, 120, 300, 600, 1800, and 3600 seconds.
2. Press the **ENTER** button to confirm selection and skip to next parameter.

## ***Enabling/Disabling Auto Power OFF (PoFF)***

Follow steps 1 and 2 when "PoFF" appears on the LCD.

1. Use the ▲ and ▼ buttons to select between ON (enabled) or OFF (disabled). With the Auto Power OFF feature enabled, the meter will automatically switch OFF after 10 minutes of inactivity to preserve battery life.
2. Press the **ENTER** button to confirm selection and skip to next parameter.

## ***Setting the Criterion Level in dB (SEt LC)***

Follow steps 1 and 2 when "SEt LC" appears on the LCD.

1. Use the ▲ and ▼ buttons to adjust the criterion level between 80, 84, 85, and 90dB.

**Note:** OSHA's noise standard (specifically, 29 CFR 1910.95) uses 90dBA.

2. Press the **ENTER** button to confirm selection and skip to next parameter.

## ***Setting the Threshold in dB (SEt LT)***

Follow steps 1 and 2 when "SEt LT" appears on the LCD.

1. Use the ▲ and ▼ buttons to adjust the threshold which can be set anywhere between 70 and 90dB.

**Note:** OSHA's noise standard (specifically, 29 CFR 1910.95) uses 80dBA.

2. Press the **ENTER** button to confirm selection and skip to next parameter.

## *Setting the Exchange Rate in dB (SEt ER)*

Follow steps 1 and 2 when "SEt ER" appears on the LCD.

1. Use the ▲ and ▼ buttons to adjust the threshold which can be set between 3, 4, 5 and 6dB.

**Note:** OSHA's noise standard (specifically, 29 CFR 1910.95) uses 5dB.

2. Press the **ENTER** button to confirm selection and skip to next parameter.

## *Checking Memory Space (SPC)*

When "SPC" appears on the LCD, the upper part of the display will indicate the remaining datapoints available to record.

## *Clearing Stored Data (CLrE)*

Follow steps 1 through 5 when "CLrE" appears on the LCD.

1. Use the ▲ and ▼ buttons to select between Yes (Clear data) or No (Abort).
2. Press the **ENTER** button to confirm selection.

**Note:** If "No" is selected, the meter will skip to the next parameter.

3. If "Yes" is selected, press the **ENTER** button again to re-confirm.
4. The meter will clear all stored data and automatically skip to the next parameter when complete.
5. When all parameters have been set up, press the **ESC** button to exit the Setup mode and resume normal operation.

## *What is Dose Noise Exposure?*

The unit of measure, %DOSE, is used to quantify noise exposure that is measured during an employee's work shift. 100% dose is the maximum allowable noise exposure in accordance with OSHA, CCOHS, MSHA, DOD, ACGIH, and ISO standards. Most standards specify what specific Criterion Level, Exchange Rate, Response Time, and Frequency weighting the dosimeter should be set up with in order to meet these specific standards.

According to OSHA's noise standard, specifically, 29 CFR 1910.95, the dosimeter must be set up to record noise exposure using the following criteria:

*continued...*

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- Exchange rate: 5dB
- Frequency weighting: A
- Response: Slow
- Criterion level: 90dBA (Hearing Conservation) or 90dBA (Administrative and Engineering Controls)
- Threshold: 80dBA (Hearing Conservation) or 90dBA (Administrative and Engineering Controls)

The Dosimeter allows for testing to begin immediately which is referred to as a Test Duration (DUR) or with programmable beginning and end times (BEG & END). Both modes are described in the following 2 sections.

### **%DOSE Testing Notes:**

- Never shout into the microphone as this will affect the test results.
- Clip the microphone near the user's ear (i.e. shirt collar). It must not make contact with any objects during recording. If wind is affecting results, can consider REED-WB.
- Place meter in pocket or on belt.
- For best results, test over the course of several days and average the %DOSE.

### **Noise Exposure (%DOSE) - Test Duration Mode**

For a final accumulated dose reading, no Software required for this.  
By default: will not data log for dB or %DOSE.

To data log, see **Data Logging dB (Automatic vs Manual)**.

Checklist prior to measuring %Dose:

- Select Response Time (FAST or SLOW) by pressing **FUNC.** button until SPL appears on LCD, and then holding ▲ button.
- Ensure set up of Parameters: Criterion Level (Lc), Exchange Rate (ER), and Threshold Level (Lt) (see Set Up).
- If data logging, set Sample Rate (see SP-t IN Set Up). For Automatic Data Logging Mode, choose any Sample Rate. For Manual Data Logging Mode, use Sample Rate of 0.
- If data logging, ensure sufficient memory is available (see SPC in Setup Mode).

*continued...*

To initiate Dose Measurement:

1. Press the **FUNC.** button to enter the %DOSE mode. By default, the meter will be set to test duration (DUR).
2. Press and hold the ▼ button to set the duration time of recording.
3. Use the ▲ and ▼ buttons to select between the following duration times:

|           |          |            |            |            |
|-----------|----------|------------|------------|------------|
| 24Hr      | 12Hr     | 10Hr       | 8Hr        | 4Hr        |
| 2Hr       | 1Hr      | 30 minutes | 15 minutes | 10 minutes |
| 5 minutes | 1 minute |            |            |            |

4. Press the **ENTER** button to confirm selection and return to the main screen.
5. If you wish to data log dB as well, enable “LOGGER” at this time by holding **LOG** button for 2 Seconds.
6. Press the **RUN/PAUSE** button to begin measuring accumulated noise exposure.

**Note:** When recording begins or is restarted, all buttons are locked (except the Backlight button).

7. The elapsed duration timer will start automatically and "DUR" will Flash on the LCD display, confirming that test duration has begun.
8. To pause a recording, first unlock the keypad by pressing the **FUNC.** and **ENTER** buttons simultaneously and then press the **RUN/PAUSE** button. The pause icon **II** will appear confirming testing is now paused (both the DUR and LOGGER icons will stop flashing).
9. Press the **RUN/PAUSE** button again to resume testing.
10. When the duration time is reached, "DUR" will stop flashing and the final accumulated noise exposure value is displayed.
11. To erase the previous accumulated %DOSE value and start a new duration test, press the **FUNC.** and **ENTER** buttons simultaneously.
12. Press the **FUNC.** button to resume normal operation.
13. To disable data logging for dB, press and hold the **LOG** button for 2 seconds. “LOGGER” will then disappear from the top right corner.

## Noise Exposure (%DOSE) - Programmable Time Mode

By default: will record %DOSE Testing at specific "begin" and "end" times.  
By default: will not data log for dB.

To data log, see **Data Logging dB (Automatic vs Manual)**.

Software required (R8085-PC).

Checklist prior to measuring %Dose:

- Select Response Time (FAST or SLOW) by pressing **FUNC.** button until SPL appears on LCD, and then holding ▲ button.
- Ensure these Parameters have been (see Setup Up). Set the time and date (dAtE), Criterion Level (Lc), Exchange Rate (ER), and Threshold Level (Lt).
- If data logging dB, set a Sample Rate (see SP-t in Setup Mode). Automatic Data Logging Mode is recommended.
- Ensure sufficient memory is available (see SPC in Setup Mode).

To initiate Dose Measurement:

1. Press the **FUNC.** button to enter the %DOSE mode. By default, the meter will be set to test duration (DUR).
2. Press and hold the ▲ button to switch to programmable mode as indicated by "BEG" on the LCD.
3. Press and hold the ▼ button to set the recording start time.
4. Use the ▲ and ▼ buttons to adjust the current date as indicated by "dd".
5. Press the **FUNC.** button to confirm selection and switch to the hourdigit as indicated by "h".
6. Use the ▲ and ▼ buttons until the desired number value is reached.
7. Press the **FUNC.** button to confirm selection and switch to the minutes digit as indicated by "m".
8. Use the ▲ and ▼ buttons until the desired number value is reached.
9. Press the **ENTER** button to save your selection and move to therecording end time parameter (indicated by "END" on LCD).
10. Repeat steps 4 through 8 to set the recording end time.
11. Press the **ENTER** button to save your selection and return to the main screen.

*continued...*

12. To data log dB, hold **LOG** button for 2 seconds to enter Automatic Data Logging Mode for SPL recordings as indicated by "LOGGER" on the LCD.
  13. Press the **RUN/PAUSE** button to activate the programmed start and end times.
- Note:** Once the programmed start time is reached, all buttons will lock (except Backlight) and the meter will start measuring automatically.
14. When started, "DUR" will flash on the LCD display confirming programmed testing has begun while "LOGGER" will flash every time a SPL reading is stored at the user selected sampling rate.
  15. To pause a recording, first unlock the keypad by pressing the **FUNC.** and **ENTER** buttons simultaneously and then press the **RUN/PAUSE** button. The pause icon **||** will appear confirming testing is now paused (both the DUR and LOGGER icons will stop flashing).
  16. Press the **RUN/PAUSE** button again to resume testing.
  17. When the end time is reached, both the DUR and LOGGER icons will stop flashing and the final accumulated noise exposure value is displayed.
  18. To end the current session, first unlock the keypad (by pressing the **FUNC.** and **ENTER** buttons simultaneously). Afterwards, press and hold the **ENTER** button for 2 seconds.
  19. Press the **FUNC.** button to resume normal operation.
  20. To disable data logging for dB, press and hold the **LOG** button for 2 seconds. "LOGGER" will then disappear from the top right corner.

## Data Logging dB (Automatic vs Manual)

### *Sound Pressure Level (SPL) Data Recording Modes*

**Manual Data Logging:** Manually log readings into the internal memory.

**Automatic Data Logging:** Setup the meter parameters in order to automatically log data into the internal memory.

**Note:** The meter can store up to 16,000 data points and will indicate "FULL" on the LCD display when this amount is exceeded.

## ***SPL Manual Data Logging Mode***

In manual mode the **LOG** button is pressed to manually log a reading into the internal memory at any time. In order to setup the meter for manual data logging, follow steps 1 through 4 below.

1. Set the data logging sampling rate to "0" seconds.
2. Press and hold the **LOG** button to enter manual data logging mode.
3. Press the **LOG** button to save a reading to memory. "LOGGER" will flash each time a data point is stored.
4. To exit manual data logging mode, press and hold the **LOG** button for 2 seconds to resume normal operation.

## ***SPL Automatic Data Logging Mode***

In automatic mode, the desired data logging sampling rate is set to 1, 2, 5, 10, 30, 60, 120, 300, 600, 1800 or 3600 seconds prior to recording. In order to setup the meter for automatic data logging, follow steps 1 through 5 below.

1. Press and hold the **LOG** button to enter automatic data logging mode.
2. The "LOGGER" will flash every time a reading is stored at the user selected sampling rate.
3. To pause the data logging session press the **LOG** button and LOGGER will stop flashing.
4. To resume press the **LOG** button again.
5. To end the current data logging session, press and hold the **LOG** button for 2 seconds to resume normal operation.

## ***Verify Set Time, Date and Sampling Rate***

During normal operation press the **TIME** button to display the year, month, day, hour, minutes, and selected sampling rate.

## Calibration Procedure

In order to calibrate the R8085, an external calibrator that can provide a 94.0dB signal is required (REED R8090). If the meter has been exposed to extreme conditions or has not been used in a long period of time the meter should be calibrated by following steps 1 through 12 below.

1. Power on the meter.
2. Press the **FUNC.** button to ensure you are in SPL mode.
3. Select "80 - 100dB" (Hi) range.
4. Select "FAST" time weighting.
5. Select "A" weighting.
6. Insert Microphone into the sound calibrator's microphone adapter.
7. Power on the sound calibrator (R8090).

**Note:** If the measured value is not within "94  $\pm$ 0.2" dB, adjust the meter's calibration by entering calibration mode.

8. Press and hold the **HOLD** and **RUN/PAUSE** buttons simultaneously for approx. 3 seconds to enter calibration mode.
9. When in calibration mode, the current sound level measurement will appear on the lower and upper part of the LCD display.
10. Press the **▲** and **▼** buttons to adjust the upper display until it matches the output of the calibrator (94.0dB).
11. Once the calibration is complete, press **ENTER** button to save the calibration value into the memory which will flash confirming it has been saved.
12. Press the **FUNC.** button to exit the calibration mode and resume normal operation.

## Data Stream Output

Using Terminal application, a data stream can be viewed from the RS-232 output, Connect the RS-232/USB cable between the product and terminal/PC and use the following setting to view the data stream.

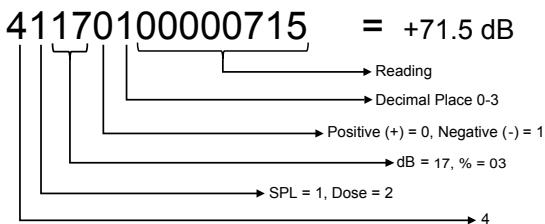
Terminal Settings:

- Bits per second: 9600
- Parity: None
- Data bits: 8
- Stop bits: 1

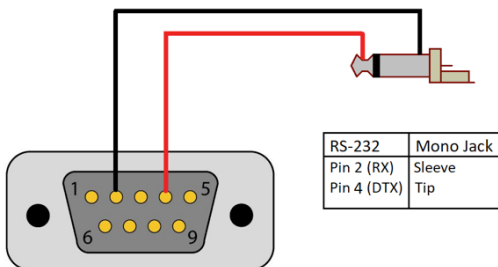
*continued...*

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### 3.5mm Terminal to RS-232 Serial Connection



### Battery Replacement

When the low battery icon  appears on the LCD, the batteries must be replaced.

1. Remove the Phillips screw located on the back of the meter.
2. Remove the battery cover.
3. Replace the 3 x "AAA" batteries.
4. Secure the battery cover and tighten the screw.

## Applications

- Personal Accumulated Noise Exposure
- Preventative Maintenance
- Industrial Machinery/Equipment
- Construction Sites
- Ensuring Safe Working Conditions
- Public Venues / Concerts
- Code Enforcement
- Traffic
- Appliance Noise Testing
- Recording of Acoustic Levels for Environmental Impact Studies

## Accessories and Replacement Parts

- **R8085-PC** PC Software for Noise Dosimeter
- **R8085-USB** USB Cable for Noise Dosimeter
- **R8085-MIC** Replacement Microphone and Clip
- **CA-52A** Small Soft Carrying Case
- **R8888** Medium Hard Carrying Case
- **R8090** Sound Level Calibrator
- **R1500** Tripod

Don't see your part listed here? For a complete list of all accessories and replacement parts visit your product page on [www.reedinstruments.com](http://www.reedinstruments.com).

## Appendix A: USA Regulations - OSHA Regulation Conversion Charts

| OSHA Permissible Noise Exposures<br>Duration per day, hours | Sound level dBA,<br>slow response |
|-------------------------------------------------------------|-----------------------------------|
| 8                                                           | 90                                |
| 6                                                           | 92                                |
| 4                                                           | 95                                |
| 3                                                           | 97                                |
| 2                                                           | 100                               |
| 1.5                                                         | 102                               |
| 1                                                           | 105                               |
| 0.5                                                         | 110                               |
| 0.25 or less                                                | 115                               |
| Source: 29 CFR 1910 Table G-16                              |                                   |

For up-to-date information, please visit  
[https://www.osha.gov/dts/osta/otm/new\\_noise/#standards](https://www.osha.gov/dts/osta/otm/new_noise/#standards)

## Appendix B: Canada Regulations - Occupational Health and Safety Regulations, Occupational Exposure Limits

**Table 1A**  
**Noise Exposure Limits when Criterion Level = 90dB(A)**

| 3dB(A)<br>Exchange Rate | Maximum Permitted<br>Daily Duration (hours) | 5dB(A)<br>Exchange Rate |
|-------------------------|---------------------------------------------|-------------------------|
| Allowable Level dB(A)   |                                             | Allowable Level dB(A)   |
| 90                      | 8                                           | 90                      |
| 93                      | 4                                           | 95                      |
| 96                      | 2                                           | 100                     |
| 99                      | 1                                           | 105                     |
| 102                     | 0.5                                         | 110                     |
| 105                     | 0.25                                        | 115                     |

**Table 1B**  
**Noise Exposure Limits when Criterion Level = 85dB(A)**

| 3dB(A)<br>Exchange Rate | Maximum Permitted<br>Daily Duration (hours) | 5 dB(A)<br>Exchange Rate |
|-------------------------|---------------------------------------------|--------------------------|
| Allowable Level dB(A)   |                                             | Allowable Level dB(A)    |
| 85                      | 8                                           | 85                       |
| 88                      | 4                                           | 90                       |
| 91                      | 2                                           | 95                       |
| 94                      | 1                                           | 100                      |
| 97                      | 0.5                                         | 105                      |
| 100                     | 0.25                                        | 110                      |

## Appendix C: Noise Exposure Limits, by Canadian Jurisdiction

| Jurisdiction<br>(federal, provincial,<br>territorial) | Continuous Noise                                          |                          |
|-------------------------------------------------------|-----------------------------------------------------------|--------------------------|
|                                                       | Maximum Permitted<br>Exposure Level for<br>8 Hours: dB(A) | Exchange Rate<br>dB(A) + |
| Canada (Federal)                                      | 87                                                        | 3                        |
| British Columbia                                      | 85                                                        | 3                        |
| Alberta                                               | 85                                                        | 3                        |
| Saskatchewan                                          | 85                                                        | 3                        |
| Ontario                                               | 85                                                        | 3                        |
| Quebec                                                | 90                                                        | 5                        |
| New Brunswick                                         | 85                                                        | 3                        |
| Nova Scotia                                           | 85                                                        | 3                        |
| Prince Edward Island                                  | 85                                                        | 3                        |
| Newfoundland and<br>Labrador                          | 85                                                        | 3                        |
| Northwest Territories                                 | 85**                                                      | ***                      |
| Nunavut                                               | 85**                                                      | ***                      |
| Yukon Territories                                     | 85                                                        | 3                        |

\*\* In Nunavut and Northwest Territories, the Occupational Health and Safety Regulations reference a staged action plan based on the dBA exposure level (80, 85, and 90).

\*\*\* In both territories, the Mining Health and Safety Regulations reference 3dBA. Please contact Northwest Territories and/or Nunavut for further information.

For up-to-date information, please visit

[https://www.ccohs.ca/oshanswers/phys\\_agents/noise\\_measurement.html](https://www.ccohs.ca/oshanswers/phys_agents/noise_measurement.html)

## Appendix D: Regulations Conversion from "Percent Noise Exposure" or "DOSE" to "8-Hour Time-Weighted Average Sound Level" (TWA)

| Dose or Percent                                      | TWA (dBA) | Dose or Percent | TWA (dBA) |
|------------------------------------------------------|-----------|-----------------|-----------|
| 10                                                   | 73.4      | 70              | 87.4      |
| 15                                                   | 76.3      | 75              | 87.9      |
| 20                                                   | 78.4      | 80              | 88.4      |
| 25                                                   | 80.0      | 85              | 88.8      |
| 30                                                   | 81.3      | 90              | 89.2      |
| 35                                                   | 82.4      | 95              | 89.6      |
| 40                                                   | 83.4      | 100             | 90.0      |
| 45                                                   | 84.2      | 105             | 90.4      |
| 50                                                   | 85.0      | 110             | 90.7      |
| 55                                                   | 85.7      | 115             | 91.1      |
| 60                                                   | 86.3      | 120             | 91.3      |
| 65                                                   | 86.9      | 125             | 91.6      |
| <b>Note:</b> 5-dB exchange rate and 90-dBA Criterion |           |                 |           |

## Product Care

To keep your instrument in good working order we recommend the following:

- Store your product in a clean, dry place.
- Change the battery as needed.
- If your instrument isn't being used for a period of one month or longer please remove the battery.
- Clean your product and accessories with biodegradable cleaner. Do not spray the cleaner directly on the instrument. Use on external parts only.

## Product Warranty

REED Instruments guarantees this instrument to be free of defects in material or workmanship for a period of one (1) year from date of shipment. During the warranty period, REED Instruments will repair or replace, at no charge, products or parts of a product that proves to be defective because of improper material or workmanship, under normal use and maintenance. REED Instruments total liability is limited to repair or replacement of the product. REED Instruments shall not be liable for damages to goods, property, or persons due to improper use or through attempts to utilize the instrument under conditions which exceed the designed capabilities. In order to begin the warranty service process, please contact us by phone at 1-877-849-2127 or by email at [info@reedinstruments.com](mailto:info@reedinstruments.com) to discuss the claim and determine the appropriate steps to process the warranty.

## Product Disposal and Recycling



Please follow local laws and regulations when disposing or recycling your instrument. Your product contains electronic components and must be disposed of separately from standard waste products.

## Product Support

If you have any questions on your product, please contact your authorized REED distributor or REED Instruments Customer Service by phone at 1-877-849-2127 or by email at [info@reedinstruments.com](mailto:info@reedinstruments.com).

Please visit [www.REEDInstruments.com](http://www.REEDInstruments.com) for the most up-to-date manuals, datasheets, product guides and software.

*Product specifications subject to change without notice.*

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