REED

Model SD-4023

Data Logging Sound Level Meter

Instruction Manual

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Features

- High accuracy of ±1.4 dB meets Type 2 standards
- Triple range measurement (50dB dynamic range)
- A & C frequency weighting
- Fast & Slow time weighting
- Real time data logger with integral SD memory card
- User selectable sampling rate from 1 to 3600 seconds
- Large, easy-to-read backlit LCD display
- Peak hold, Data hold and Min/Max hold
- Optional PC software features live tracking via USB connection
- Tripod mount for long-term monitoring
- Low battery indicator and auto shut off
- Includes batteries

Specifications

Measuring Range:	30 to 130 dB
Resolution:	0.1 dB
Accuracy:	31.5Hz ± 3.5 dB; 63 Hz ± 2.5 dB; 125 Hz ± 2.0 dB; 250 Hz ± 1.9 dB; 500 Hz ± 1.9 dB; 1 kHz ± 1.4 dB; 2 kHz ± 2.6 dB; 4 kHz ± 3.6 dB; 8 kHz ± 5.6 dB
Frequency Weighting:	A: Human Ear Listening; C: FLAT Response
Time Weighting:	Fast: 200ms; Slow: 500ms
Frequency Range:	31.5 to 8,000Hz
Auto Sampling Time:	1, 2, 5, 10, 30, 60, 120, 300, 600, 1800, 3600 seconds
Memory Card:	SD memory card, 1 GB to 16 GB
Data Output:	USB/RS232 PC computer interface
AC Output:	0.5Vrms corresponding to each range step
Output Impedance:	600Ω
Power Supply:	6 x 1.5V UM3/AA batteries
Dimensions:	Meter: 245 x 68 x 45mm (9.65 x 2.68 x 1.77”); Microphone: 12.7mm (0.5”) dia.
Weight:	489g (1.08 lb)
Optional Accessories:	4G SD Card (SD-4GB) Sound calibrator (R8090) Wind shield ball (SB-01) USB cable (USB-01) Power adapter (AP-9VA-110V) Data Acquisition Software (SW-U801-WIN) Soft carrying case (CA-05A) Tripod (R1500)

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Frequency Hz	A Weighting	C Weighting	Tolerance
31.5	-39.4 dB	-3 dB	±3.5 dB
63	-26.2 dB	-0.8 dB	±2.5 dB
125	-16.1 dB	-0.2 dB	±2.0 dB
250	-8.6 dB	0 dB	±1.9 dB
500	-3.2 dB	0 dB	±1.9 dB
1K	0 dB	0 dB	±1.4 dB
2K	1.2 dB	-0.2 dB	±2.6 dB
4K	1 dB	-0.8 dB	±3.6 dB
8K	-1.1 dB	-3 dB	±5.6 dB

Fast Time Weighting Max Response: -1.0 dB
Fast Time Weighting Tolerance: +1 dB/ -2 dB
Slow Time Weighting Max Response: -4.1 dB
Slow Time Weighting Tolerance: ±2 dB

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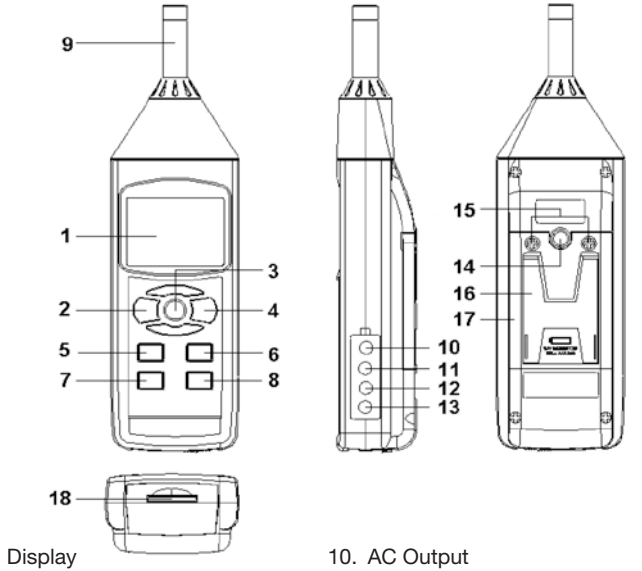
Instrument Description



1. Display
2. Power, ESC, & Backlight Button
3. Hold & Next Button
4. REC & Enter Button
5. Range, Up, & Time Check Button
6. A/C, Down, & Sampling Time Check Button
7. Fast/Slow & Set Button
8. Peak Hold & Logger Button
9. Microphone
10. AC Output
11. Calibration VR
12. USB/RS232 Output
13. AC/DC 9V Power Adapter Input Socket
14. Tripod Fix Nut
15. Battery Cover Screws
16. Stand
17. Battery compartment/Cover
18. SD card slot

Operating Instructions

Turn the meter on by pressing the Power button. Press and hold the Power button to turn the meter off.

Function Selection

1. The meter's function defaults are set to "Auto Range, "A Frequency Weighting", and Fast Time Weighting". The screen will display "A. Fast Auto".
2. Switch between "A" or "C" Frequency Weighting by pressing the "A/C Button".
3. Determine proper measuring range by pressing the Range Button. Press the Range Button to scroll through the Four range types. There are three manual ranges (range 1, range 2, range 3) and auto range in this sequence:

   Range 1: 30 - 80 dB range
   Range 2: 50 - 100 dB range
   Range 3: 80 - 130 dB range
4. Select the Time Weighting (Fast or Slow) by pressing the Time Weighting Button. The screen will display either "FAST" or "SLOW", depending on your selection.

Data Hold

While taking a measurement, press the Hold Button once and the measured value will hold on the screen, and a HOLD symbol will appear. Press the Hold Button once again will release the data hold function.

Data Record (Max., Min. reading)

The data record function records the maximum and minimum readings. Press the REC Button once to start the Data Record function and a “REC” symbol will appear on the display. With the “REC” symbol on the display:

1. Press the REC Button once, and a ”REC. MAX.” symbol along with the maximum value will appear on the display. To delete the maximum value, press the Hold Button once and the display will show a “REC.” symbol only and execute the memory function continuously.
2. Press the REC Button again, and a “REC. MIN.” symbol along with the minimum value will appear on the display. To delete the minimum value, press the Hold Button once, and the display will show a “REC.” symbol only and execute the memory function continuously.
3. To exit the memory record function, press the REC button for 2 seconds. The display will revert to the current reading.

Backlight ON/OFF

After powering the meter ON, the LCD Backlight will turn on automatically. While taking measurements, press the Backlight Button and the LCD Backlight will turn off. Press the Backlight Button once again to turn the LCD Backlight back ON.

Datalogger

Preparation Before Executing the Datalogger Function:

1. Insert the optional SD card into the SD card socket.
2. Before you use an SD card with this meter for the first time, it is recommend to format the SD card. See Advanced Settings section of this manual for instructions.
3. If this is the first time the meter is used you need to adjust the clock. See Advanced Settings section of this manual for instructions.

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4. Now you need to set the decimal format. The numerical data structure downloaded to the SD card is defaulted used the "." as the decimal, for example "20.6" "1000.53". But in certain countries the "," is used as the decimal point, for example "20, 6" "1000,53". See Advanced Settings section of this manual for instructions on how to change the Decimal Character.

Auto Datalogger (Set sampling time ≥1 second)

1. Start Datalogging; press the REC Button, and the "REC" symbol will appear on the LCD screen, then press the Logger Button, the "REC" symbol will flash while the measuring data and time information is being saved in memory. To set the sampling time, and to toggle the beeper sound on or off, refer to the Advanced Settings section of this manual.
2. Pause the Datalogging; while Datalogging, if press the Logger Button once. While paused, the "REC" symbol will stop flashing. Press the Logger Button again to resume Datalogging, and the "REC" symbol will begin to flash again.
3. Stop Datalogging; while the Datalogger function is paused, press the REC Button for 2 seconds. The "REC" symbol will disappear indicating the Datalogging function has stopped.

Manual Datalogger (Set sampling time = 0 seconds)

1. Set sampling time is to 0 second; Press the REC Button, and the "REC" symbol will appear on the LCD screen. Press the Logger Button, and the "REC" symbol will flash once and one Beep will sound, at the same time the measuring data along the time information will be saved in memory. The lower Display will show the Position (record) number, which is saved as well.
2. To Change the Position Number; press the Down Button and the lower position number will flash on the display. Press the Up or Down Buttons to set the Position Number (1 to 99) to help identify the measurement location. The lower Display will show P x (x = 1 to 99). After the position number is selected, press the Enter button to confirm.

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3. Stop Datalogging; press the REC Button for 2 seconds, and the "REC" symbol will disappear indicating the Datalogging function has stopped.

Checking the Time

During normal functions (not Datalogging), press the Time Check Button and the lower LCD display will show the Year, Month/Date, Hour/Minute.

Check Sampling Time Information

During normal functions (not Datalogging), press the Sampling Button and the lower LCD display will show the Sampling Time Information.

SD Card Data Structure

1. The first time the SD card is used in the meter, the SD card will generate a folder: "SLA01".
2. The first time you use the Datalogger, in the folder "SLA01", a new file name "SLA01001.xls" will be created. The Datalogger will use this file until the Data has reached to 30,000 rows. The meter will then will generate a new file with a subsequent number, for example "SLA01002.xls".
3. The folder SLA01 can hold "99.xls" files. When that number has been reached, the meter will then will generate a new folder with a subsequent number, for example "SLA02". Max number of "SLA--" folders is 10.

Data Transfer from SD card to Computer (EXCEL Software)

1. After Datalogging, remove the SD card from the SD card slot.
2. Plug in the SD card into the Computer's SD card slot or insert the SD card into the optional SD card adapter and connect to your Computer. Turn your computer on and a folder will appear on your desktop representing you SD card.
3. Open "Microsoft EXCEL". Download the EXCEL files from the SD Card to the computer by opening up the SD folder and selecting the desired EXCEL files, and drag-and-drop them onto your Computer. Open the files with EXCEL (File – Open).
4. The EXCEL file will have the following column headers in this order: Place (Position Number), Date (Year/Month/Day), Time (in 24h clock), Value, and Unit.

Advanced Settings

During normal functions (not Datalogging), press and hold the SET Button for 2 seconds to enter the "Advanced Setting" mode. Press the Next Button scroll through eight main functions, shown on the lower display:

dAtE Set clock time (Year/Month/Date, Hour/Minute/Second)

dEC Set SD card Decimal character

PoFF Auto power OFF management

bEEP Set beeper sound ON/OFF

SP-t Set sampling time (Hour/Minute/Second)

Sd F SD memory card Format

While in the "Advanced Setting" function, press the Esc Button to exit and to return to normal functioning.

Set Clock Time

1. When the lower display shows “dAtE”, press the Enter Button. Use the Up and Down Buttons to adjust the Year. After the desired value is set, press the Enter Button to adjust the Month, Date, Hour, Minute, and Second values.
2. After all the time values have been set the screen will jump to “SD card Decimal character” setting screen.

Note: After the time value is set, the internal clock will run even when the power is off, if the battery is under normal conditions.

Setting the Decimal Point on the SD Card

1. When the lower display shows “dEC”, use the Up or Down Buttons to toggle between “bASIC” (“.” Decimal Point) or “Euro” (“,” Decimal Point).
2. After the Decimal point character has been selected, press the Enter Button to save the setting as the default.

Auto Power OFF Management

1. When the lower display shows “PoFF”, use the Up or Down Buttons to select the value “yES” (Enable Auto Power Off) or “no” (Disable Auto Power Off.
2. After selecting “yES” or “no”, press the Enter Button to save the setting as the default.

Set Beeper Sound ON/OFF

1. When the lower display shows “bEEP”, use the Up or Down Buttons to select “yES” (Beeper Sound is ON) or “no” (Beeper Sound is OFF).
2. After selecting “yES” or “no”, press the Enter Button to save the setting as the default.

Set Sampling Time

1. When the lower display shows “SP-t”, use the Up or Down Buttons to adjust the value to either 0, 1, 2, 5, 10, 30,60, 120, 300, 600, 1800, or 3600 seconds.
2. After the Sampling value is selected, press the press the Enter Button to save the setting as the default.

SD Memory Card Format

Please Note: Formatting the SD card erases all data from that SD card.

1. When the lower display shows “Sd F”, use the Up or Down Buttons to select “yES” (format the SD card) or “no” (do not format the SD card).
2. To format your SD card, select “yES” and press the Enter Button. The Display will show “yES Enter”, to confirm. Press the Enter Button to confirm.

PC Serial Interface

The instrument features an PC output via 3.5 mm terminal. The connector output is a 16 digit data stream which can be utilized to the user's specific application. An USB RS232 lead with the following connection will be required to link the instrument with the PC serial input.

Meter (3.5mm Jack Plug)	PC (9W "D" Connector)
Center Pin	Pin 2
Ground/Shield	Pin 5

The 16 digit data stream will be displayed in the following format:
D15 D14 D13 D12 D11 D10 D9 D8 D7 D6 D5 D4 D3 D2 D1 D0

D0	End Word
D1 to D4	Upper Display reading, D1= LSD, D4= MSB
D5 to D8	D5=? D6=? D7=? D8=?
D9	Decimal Point (DP) for display 0 = No DP, 1 = 1 DP, 2 = 2 DP, 3 = 3 DP
D10	D10 = 0
D11	D11 = 0
D12	D12 = 0
D13	D13 = 0
D14	D14 = 0
D15	Start Word

System Reset

If an error occurs, press the Reset Button with a Pin. If the Reset Button does not fix the error, please send in the unit to our Calibration Lab for repair. E-mail info@reedinstruments.com for more information.

Battery Replacement

1. When the left corner of LCD display shows  , it is necessary to replace the battery
2. Loosen the screws of the Battery Cover and remove
3. Remove the batteries and replace with six DC 1.5 V batteries (UM3, AA, Alkaline/heavy duty)
4. Make sure the battery cover is properly secured after changing the battery

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