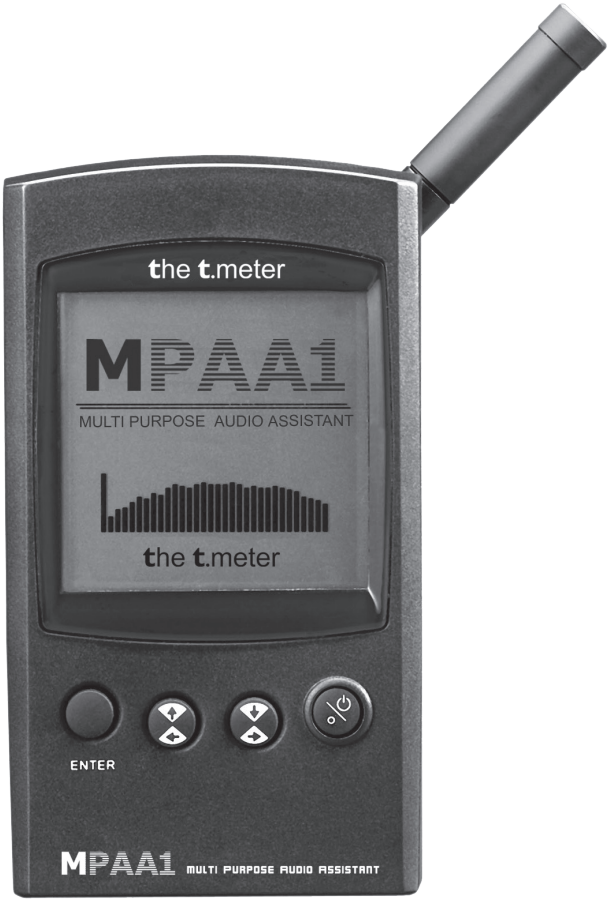
Multi Purpose Audio Assistant

MPAA1

USER'S MANUAL



the t.meter

SAFETY PRECAUTIONS

Improper operation and handling of this unit may lead to malfunction. Please read the following precautions before operating.

1. To prevent damage, avoid operating MPAA1 under these conditions:
   A. Temperatures below 0 degrees C (32 F) or above 40 degrees C (104 F)
   B. Strong magnetic waves in nearby areas
   C. Static electricity
   D .High humidity
   E. Sudden temperature changes
   F. Large amount of dust in area of operation
2. Avoid placing heavy objects on top of MPAA1
3. DO NOT tear apart MPAA1
4. Never insert foreign objects into measurement microphone, connectors, or other openings.
5. If MPAA1 is damaged in any way, immediately turn off the power and contact your reseller. DO NOT continue using the unit.
6. Avoid spilling any liquid on or into MPAA1. If spilling or dampening occurs, turn power off immediately and contact your reseller. DO NOT continue using the unit.

⚠ WARNING! Always use AA SIZE 1.5V DC alkaline battery or 6 volt DC with 500mA AC power adaptor to power MPAA1 to avoid voiding manufacturer product warranty. The t. meter is not responsible for any damage caused by using other power supply. When using AC power adaptor, it is essential for user to only use the included adaptor to ensure the accuracy of all measurements.

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V1.1 jun. 28, 2005

INTRODUCTION

Hello! Thank you for purchasing MPAA1, Personal Audio Assistant! A super-accurate audio analyzer that nestles in the palm of your hand, giving you all the tools you need to set up any sound system: With 31-band real time spectrum analysis, SPL and dBu/dBV/ line voltage measurement, EQ setting and phase checking, it is very sound engineer's best partner. This personal audio assistant is battery powered (4 AA size) to allow for ultimate portability. Compared to all other audio analyzers, it is far more portable while insists the same level of accuracy. With MPAA1, conquer all acoustic environments with precision and ease.

The T .Meter understands the importance of sound reproduction management. As a professional, naturally you care a lot about the sound quality. With an audio tool like MPAA1, you are given a ruler to obtain proper measurements of sound to assure quality sound that every best professional sound engineers dream of. This is an extremely precise means for you to gather all the useful data to sharpen your decision in making any necessary adjustment, change or modification required for any system setup and/or arrangement.

The T .Meter also realizes that you guys out there want useful audio tool with easy and convenient operation: MPAA1 is designed exactly with that kind of concept. Its functions can easily be accessed through both of its jog control and function button in the front. So, turn on your new audio assistant and let the adventure begin. We are confident you will find this MPAA1 really pays off!

To help you get familiar with your MPAA1, this manual includes instructions on each function from the main menu and the sub-menus. Let them guide you and get you familiar with this handy device.

FEATURES

- Personal Audio Assistant
- Palm Size Audio Analyzer
- 31-band Real Time Spectrum Analyzer
- Built-in calibrated measurement microphone
- Sound Pressure Level Meter from 30dB~130dB
- Line signal measurement display in dBu, dBV, or Voltage
- A, C weighting or flat
- 3 level range selection for dB SPL and line signal
- Line signal measuring range:
  dBu = -50 ~ +40dBu
  dBV= -52 ~ +38dBV
  Volts = 5mV ~ +80V
- Maximum level display
- Peak hold display
- 4 standard response time: 35ms, 125ms (F), 250ms (M), 1sec (S)
- 10 memories for measurement and 6 for average calculation
- 31-band EQ setting level display (boost/cut)
- 160 x 160 graphic display with back light and contrast adjustment
- Phase checker
- Calibration through sound level calibrator (eg: B & K Type 4231)
- Noise generator with pink noise, 1K Hz and polarity test signal, balanced output
- Low power consumption over 4 hours continuous operation with 4 AA size alkaline batteries (Adapter power supply operation available: When power is from adapter, it automatically cuts off battery power)
- 3 power mode: (1) Power saving mode: Auto Off— when none of the buttons has been pressed for 15 minutes (2) Manual Off (3) Off
- XLR input and output sockets
- RS232 communication port, for simultaneous operation through laptop or PC
- One CD-ROM with audio test signals and software for PC

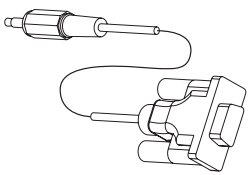
MENU MAP

Press the ENTER button or jog control to enter the main menu and sub menus:

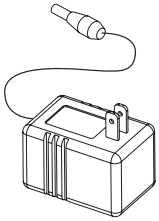
Main Menu	Sub-Menu	S2 Menu	S3 Menu	S4	S5	S6
VALUE	(Just-measured or being recalled)					
SPL/LINE	SPL LINE dBu LINE dBV LINE Volt ESC					
MEMORY	STORE	1~10 & ESC	YES (NO)			
	RECALL	1~10, A~F & ESC				
	AVERAGE	1~10, ALL, AVG & ESC	RUN(ESC)	STORE ESC	A~F	YES (NO)
	EQ SETTING ESC	(31 bands display in graphic and digit) ESC				
SETTING	WEIGHTING	FLAT A C ESC				
	LEVEL RANGE	30~90 dB SPL (-50~+10dBu / -52~+8dBV / 5m~2Volt) 50~110 dB SPL (-35~+25dBu / -37~+23dBV / 14m~14Volt) 70~130 dB SPL (-20~+40dBu / -22~+38dBV / 77.5m~80Volt) ESC				
	MAX LEVEL	RESET ESC				
	PEAK HOLD	ON OFF ESC				
	RESP TIME	35 ms 125 ms (F) 250 ms (M) 1 sec (S) ESC				
	CALIBRATION ESC	(Press ENTER to go back)				
PHASE CHECK	+ (In phase) — (Out of phase) ? (Can not detect)	(Press ENTER to go back)				
GENERATOR	OFF PINK NOISE POLARITY 1K Hz ESC					
POWER	AUTO OFF MANUAL OFF OFF ESC					
ESC						

INSIDE THE GIFT BOX

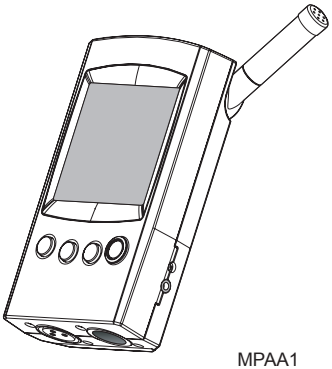
1x MPAA1
4x AA Size Batteries
1x AC Power Adaptor
1x PC Serial Interface Cable
1x Leather Case
1x CD-ROM including 26 audio testing signals and software for operation with PC
1x User's Manual



PC Serial Interface Cable

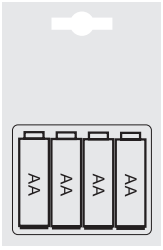


AC Power Adaptor

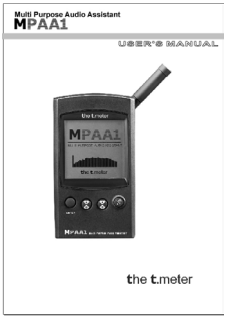


MPAA1

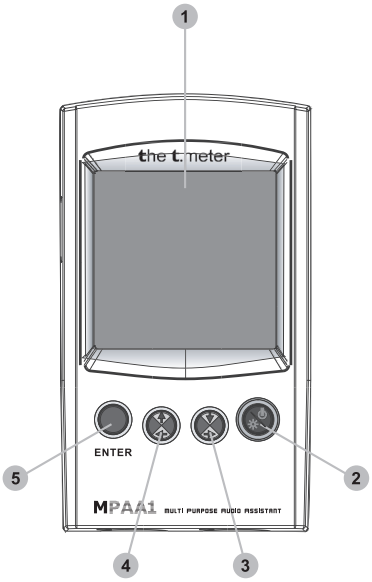
CD-ROM



AA Size Batteries



User's Manual



MEET YOUR NEW BEST FRIEND MPAA1

MPAA1 comes with the following button, control and connections:

1. LCD Display

160x160 graphic LCD screen provides clear and large display.

2. Power On button

Press this button for 2 seconds to turn on the power. After the power is on, user can also activate (or turn off) the backlight for LCD display with this button. Before turning on the power, please make sure the POWER LUCK switch in the back is set at the "ON "position.

3. Right / Down button

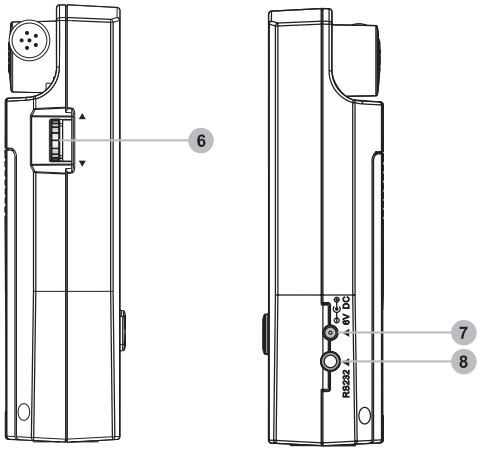
Press this button to move the high-lightened text down or to the right in the function menu.

4. Left / Up button

Press this button to move the high-lightened text up or to the left in the function menu.

5. Enter button

Press this button to move from Real Time Spectrum Analyzer (RTA) display to FUNCTION MENU. After moving the cursor to a desired function in the menu by RIGHT/DOWN and LEFT/UP buttons, press this button to start or activate that function.



6. Jog Control

Jog control, on the left-hand side of this unit, provides access to most of the functions in MPAA1. Scroll up and down the main and sub-menus with it, and press the jog control to get into the main menu or sub menu. Then scroll it to high-lighten a function or item you want, press it to activate or execute the function. Of course, you can also use the three function buttons (the above-mentioned button 3~5) to execute.

Scroll it to move cursor and press it to execute or activate the high-lightened function.

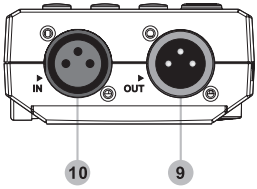
7. 6V DC Power Input

Via this input user may connect power adaptor to MPAA1. The power of the battery would be replaced immediately as soon as the adaptor power is being plugged in.

⚠ ATTENTION: Always use the adapter included in this gift box to ensure measurement accuracy and avoid damaging MPAA1.

8. PC Serial Interface port

3.5Ø mini jack allows user to connect MPAA1 to PC with the D-SUB 9-PIN female connector via the PC serial port for simultaneous operation with PC. Please see SIMUTANEOUS OPERATION with PC for more inforamtion.



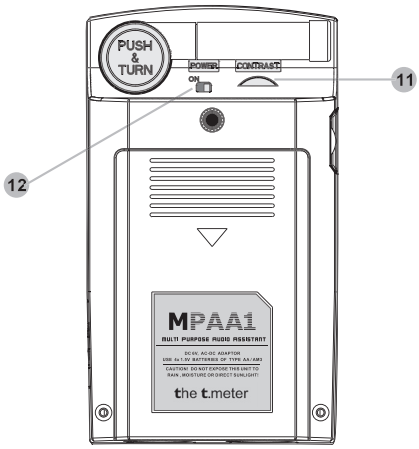
9. Line output XLR male socket

Through this XLR male connector user can send out the three built-in audio test signals: pink noise,1k Hz tone and polarity signal. The output level is balanced -10dBu under 6DV power supply.

10. Line input XLR female socket

This port allows you to send balanced line level input to MPAA1 via an XLR jack. This signal input allows you to measure line level in dBu, dBV or AC voltage for balanced, unbalanced signal, or to check the phase of the input signal.

Do not send in DC voltage via this connector into MPAA1, it will cause permanent damage to the unit.

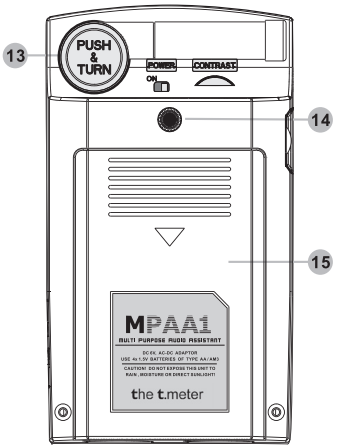


11. Contrast control

By adjusting this control user can get better resolution from LCD when needed.

12. Power luck

Set this switch at the “ON” position before turn on MPAA1. Set it at other side to prevent battery from losing power by accidentally pressing the POWER ON switch in the front. It is recommended to set this switch off when you will not be using MPAA1 for a long time.



13. Measurement Microphone

Turn this accurate built-in Omni-directional mic to operation position (stands 45 degree) by pressing it's axis base in the first place. Always press the axis base before relocating the mic. Do not turn the mic without first pressing the axis base; it may damage the microphone and cause malfunction in MPAA1.

14. Stand Mount

A stand mount locates in the back for connection of a tripod or any other stand that has a standard #6~20 connecting screw, often found on camera tripods.

15. Battery Holder

MPAA1 needs four AA batteries for operation. Alkaline battery is recommended for maximum operation duration. Under normal operation, without turning on back light and using noise generator, MPAA1 has over four hours of continuous operation with alkaline battery.

GETTING STARTED

(1) Open the battery cover and insert four AA batteries, or simply plug in the 6-volt DC power adaptor to the power input. When adapter is plugged in, the battery power will be replaced by the adaptor.

⚠ ATTENTION: Use only the adapter included in this gift box to ensure the measurement accuracy and avoid demaging MPAA1. If you want to use the adaptor, make sure to turn off the (battery) power first to prevent MPAA1 from restarting again. Suddenly unplug the adaptor power may casue crash down for system; you may restore MPAA1 by resetting the power lock.

(2) Position the mic for operation by pressing the axis base of the built-in mic and turning it all the way up until the mic stands 45 degree if you want to measure sound pressure level or acoustic power.

(3) Set the POWER LOCK in the back to the “ON” position.

(4) Press the power on button in the front for two seconds to turn on the power

(5) A startup screen will show for about 10 seconds, then the real time spectrum analyzer with 31-band will appear on the screen. Three types of display: Level ange, weighting type, and max level, are constantly shown at the top of the screen in RTA mode.

(6) If you need backlight for your operation, simply press the power on button to activate it; press again to turn the backlight off.

(7) Use the ENTER, UP/RIGHT and DOWN/LEFT buttons to read out the level of each 31-band frequency and all frequency in real time or to navigate through the main and sub-menus. Press the ENTER button to enter the main menu and select a function by using the UP/RIGHT and DOWN/LEFT buttons, then press ENTER again to activate the high-lightened function or enter into the sub-menus. User may also use the jog control to complete all the functuions.

OPERATION TIPS:

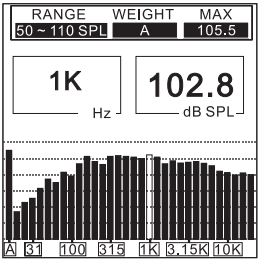
1. All the function can be activated by operating ENTER, LEFT/UP and DOWN/RIGHT buttons, or by the jog control. It is recommended to use these three buttons when taking low SPL measurement.
2. Press ENTER button when the ESC (Escape) is high-lightened in most of the function menus would allow you to exit the main menus or the sub-menus.
3. Press and hold the ENTER button or jog control for 2 seconds in most of the function menus to return to the real time spectrum analyzer.
4. Press the jog control or ENTER button for 2 seconds to jump to SPL / Line level meter (enlarged readout) in RTA mode.
5. Always turn off the power by going to the POWER menu and select OFF if you wish to save the measurement data and function setting into the memory of MPAA1.
6. Always prepare extra batteries or external 6V DC power to ensure the accuracy of the measurement. It is not recommended to continue using MPAA1 for any measurement when the battery is low.
7. When the result is above the level range, the measurement is still accurate unless CLIPPING has appeared in the LEVEL box during the measurement. When clipping shows, reset the level range.
8. Turn on backlight only when the level range is set at 70~130 dB SPL or -20~+40dBu. A noise would occur when turing on the backlight which may affect the result of the measurement in the lower range.

⚠ ATTENTION: When the battery is low, a blinking battery icon “BATTERY LOW”will appear at the WEIGHT box and last for 3 minutes on the screen to remind user of replacing the batteries. Low quality batteries may casue direct shut down without any warning. An enlarged, blinking battery icon will again appear in the center of the LCD screen if user restarts the MPAA1 without replacing the battery or with insufficient battery power.

ACOUSTIC ANALYSIS FUNCTIONS

The following section illustrates how to use MPAA1 to measure SPL level, and many others useful information for acoustic analysis.

RTA (Real Time Analyzer)



Analyze the audio received through the built-in omni-directional mic by dividing the audio spectrum into 31-band, 1/3 octaves, and displaying a bar graph that shows the dB level of each band of sound from 20Hz to 20KHz in four different response time (35ms, 125ms, 250ms, and 1sec) and in three weighting types (A weighting, C weighting and Flat).

Procedures

1 Approximately 10 seconds after turning on the power, the real time analyzer, with active 31-band center frequency graphic meter, will appear lively on the LCD screen.

2 Go to the SPL/LINE menu and select SPL. Then press ENTER button for two seconds to return to RTA display.

3 Go to SETTING menu to set up appropriate WEIGHTING type, LEVEL RANGE, RESPONSE TIME, or set the maximum or PEAK HOLD display on (or off), then press ENTER for two seconds to go back to RTA display.

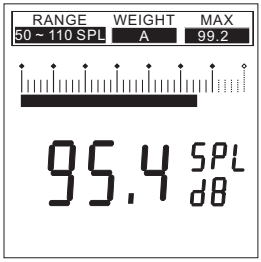
4 Now press ENTER button to freeze measurement data. Press ENTER button again upon the high-lightened VALUE to view the value of the each center frequency.

5 Use the LEFT/UP and RIGHT/DOWN buttons or simply scroll the JOG control to go through all frequencies and each center frequency of the 31 bands and see the level of dB SPL in real time. The default readout is the ALL FREQUENCY level.

Right under that shows you two things: the numbers in left column tells you the frequency while the numbers in right column immediately displays the level.

The graphic shown means user has set the level range at 50~110 SPL, A weighting. And the max level during the time of measurement is 105.5 dB . Also, user is reading at 1K Hz, which has a dB SPL of 102.8. If you would like to store the measurement data into the momory of MPAA1, go to the STORE menu. This is only available when measuring the SPL. (User can also save the measured spectrum data into one of the ten memories. Please refer to MEMORY/STORE for more information.)

SPL (Sound Pressure Level)



Measure the loudness of the ambient sound level in units of dB SPL. This is a true RMS-measurement, using standard display time average, and standard A, C, and Flat weighting network.

Procedures

1 Go to the SPL/LINE menu and set the measurement unit at SPL.

2 Go to the SETTING/LEVEL RANGE menu and choose an appropriate range. The selected range will also show under the topic of "RANGE".

3 Go to the SETTING/WEIGHTING menu and set a desired weighting. (For more information, please refer to WEIGHTING). The selected weighting will display under the topic of "WEIGHT".

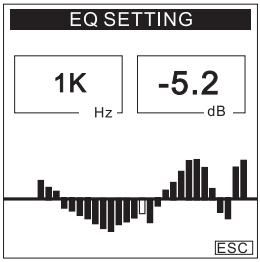
4 Go to the SETTING/RESP TIME menu and select an appropriate response time for the measurement. Normally it is set at 125ms(M).

5 Go to the SETTING/MAX LEVEL menu and reset the maximum level reading (at the right top corner) if it is needed.

6 Go back to RTA display and press "ENTER" button (or the jog control) for two seconds to enter SPL meter.

Graphic shown means a all frequency level of 95.4 dB SPL, under the level range of 50~110SPL, A weighting is being read.

EQ SETTING



Essential for every sound engineer and his graphic equalizer, EQ setting will vary from one acoustic space to another. The ultimate goal is to create an ideally flat response for the system and eliminate every possible feedback. With STORE, AVERAGE and EQ SETTING functions, MPAA1 will help you accomplish the task and achieve the goal in no time.

Procedures

1 Run MPAA1 in RTA mode.

2 Play back pink noise from the included CD or from the MPAA1 GENERATOR tool through the system.

3 Pick up two or more significant locations/spots among the audience, then do the measurement and save the RTA curve into the memory of MPAA1.

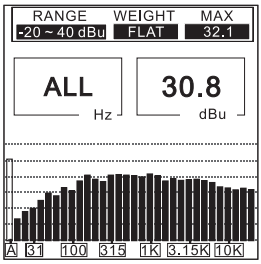
4 Go to the MEMORY/AVERAGE menu, select the memory measured from those locations, and do

the average calculation.

5 Go to the MEMORY/EQ SETTING menu, you can find out how much dB you need to boost or cut in each center frequency by scrolling jog control or the UP/DOWN buttons. Example shown means user should cut -5.2 dB at 1K Hz.

⚠ ATTENTION: The average RTA curve is limited by the temperatures and the size of the crowds at the time you did the measurement.

LINE VOLTAGE MEASUREMENT



Measure the line voltage level in units of dBu, dBV, and voltage, using standard response time, and standard A, C, and flat weighting network (Under normal condition, please set it at Flat). MPAA1 can only measure AC voltage; if user measure DC voltage with MPAA1, it may damage MPAA1 and hence void the warranty.

Procedures

1 Go to the SPL/LINE menu and set the measurement unit at dBu, dBV, or voltage.

2 Go to the SETTING/LEVEL RANGE menu and choose an appropriate range. The selected range will also show under the topic of “RANGE”.

3 Go to the SETTING/WEIGHTING menu and set a desired weighting. (For more information, please refer to WEIGHTING). The selected range will also show under the topic of “WEIGHT”. Normally, “FLAT” is used to measure line voltage.

4 Go to the SETTING/RESP TIME menu and select an appropriate response time for the measurement.

5 Go to the SETTING/MAX LEVEL menu and reset the maximum level reading (at the right top corner) if it is needed.

6 Go back to RTA display, you can read out the level for each frequency or all frequency. Press “ENTER” button (or the jog control) for two seconds to enter line voltage level meter if only all frequency readout (and a fairly larger one) is needed (master level).

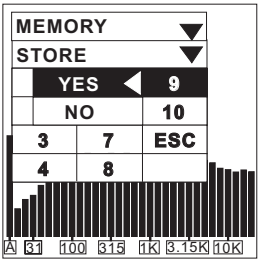
⚠ ATTENTION:

1. If the level is lower than 127mV when measuring voltage, MPAA1 will show it in mV. If it is higher than 127mV, the data will be shown in voltage instead. For example, 120mV will read like 120.0mV, and 200mV will be shown as 0.2V.
2. The measurement for line voltage can not be saved into the memory of MPAA1.

MEMORY

The sub menus of MEMORY includes STORE, RECALL, AVERAGE, EQ SETTING.

STORE



User can save up to 10 set of measured data, as well as 6 other averaged one, into the memory of MPAA1 for further analysis or uploading.

Procedures (after RTA measurement is complete)

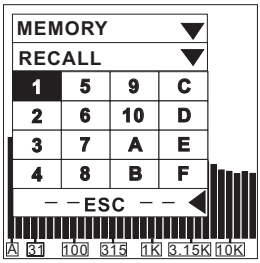
1 Go to the MEMORY menu and select STORE.

2 Select a number from 1~10, and press YES.

3 When cursor automatically moves to ESC, it means MPAA1 has finished saving the data. The previous saved data, at the same time, will be over-written.

⚠ ATTENTION: This function is only available when in RTA mode.

RECALL



User can recall all the data saved in the memory of MPAA1, to make comparison or and see the difference between (among) the measurement.

Procedures

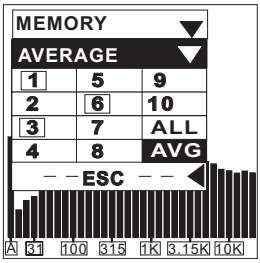
1 Go to the MEMORY menu and select RECALL.

2 Select the already-saved data from 1~10 or A~F, and press YES.

3 Each value will be displayed the way you will see in VALUE, in 31-band center frequency plus a all frequency value.

4 When you see a flashing ESC in the Hz column, press ENTER to return to the MEMORY menu.

AVERAGE



User can choose from memory 1~10 to do the average calculations, which is essential for EQ setting.

Procedures

1 Go to the MEMORY menu and select AVERAGE.

2 Select the data with any combination from memory 1~10 by moving the cursor to that number and press the ENTER button, or simply choose ALL if you want to do the average calculation for all ten of them. If you want to undo the selection, move the cursor to the selected number and press ENTER again.

3 The selected number would appear with a square around it for identification.

4 Press AVG when finishing selecting the memory, then a list of memory selected will be shown for confirmation.

5 Press RUN and MPAA1 will automactically do the average calculation, or press ESC to return to cancel.

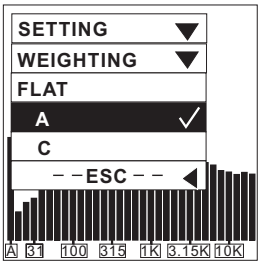
6 After you run the average calculation, select from A~F and press YES to save the result into that memory when COMPLETE is shown on the screen. The previous saved data, at the same time, will be over-written. MPAA1 will automatically go to EQ SETTING menu as soon as calculation is doned. Example shown means the user has selected memory 1, 3 and 6 for average calculation.

⚠ ATTENTION: Selecting memories with different weighting setting to proceed average function is not recommended. MPAA1 will ignore the peak value when doing average, even though the peak value has been activated.

SETTING

The sub menus of SETTING includes WEIGHTING, LEVEL RANGE, MAX LEVEL, PEAK HOLD, RESPONSE TIME, and CALIBRATION.

WEIGHTING



A sound level meter must be designed so that it hears the sound level very much the same way humans do. Generally, the sensitivity of human hearing is restricted to the frequency range of 20Hz to 20KHz. The human ear, however, is most sensitive to sound in the range of 500Hz to 8,000Hz. The ear becomes progressively less sensitive to sound above or below this range. To account for this characteristic of human hearing, sound pressure level meters incorporate a filtering of acoustic signals according to frequency. This filtering (weighting type) is devised to correspond to the varying sensitivity of the human ear to sound over the audible frequency range. MPAA1 comes with both A-weighting and C-weighting standardized by ANSI, American National Standards Institute, by far the most frequently used. While A-weighting can be used for measuring lower sound level, C-weighting is used for higher sound level. And A-weighting is the most frequently used type of weighting.

User can set the weighting for measurement in dBu, dBV or voltage.

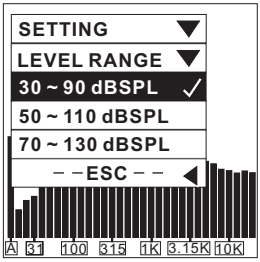
Procedures

1 Go to the SETTING/WEIGHTING menu.

2 Select an appropriate weighting for the measurement and press YES.

3 Or press ESC to return.

LEVEL RANGE



MPAA1 has three different ranges for measurement in SPL, dBu, dBV and voltage.

SPL : 30~90, 50~110, 70~130

dBu : -50~+10, -35~+25, -20~+40

dBV: -52~+8, -37~+23, -22~+38

Voltage: 5m~2.45V, 14m~14V

77.5m~80V

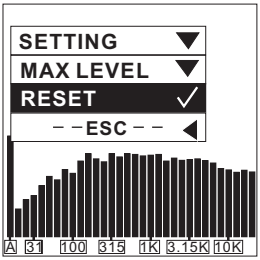
Procedures

1 Go to the SETTING/LEVEL RANGE menu

2 Select an appropriate range for the measurement and press ENTER button

3 Or press ESC to return

MAX LEVEL



Maximum level will always be measured and shown constantly on the LCD screen. It is recommended to reset the max level before each new measurement.

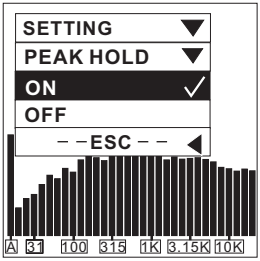
Procedures

1 Go to the SETTING/MAX LEVEL menu

2 High-lighten RESET and press ENTER button to restart a new max level measurement and display. The menu will automatically return to the SETTING sub menu. Or press ESC to return if it you do not intend to reset.

3 A new max level display will be shown in the MAX column three seconds after returning to the RTA operation

PEAK HOLD



Peak hold of the selected unit being measured could also be shown constantly on the LCD screen. It tells you the peak value of each frequency and all frequency in RTA mode.

Procedures

1 Go to the SETTING/PEAK HOLD menu

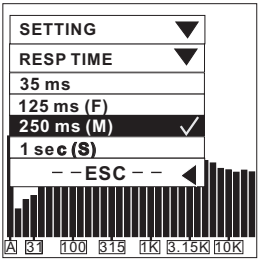
2 High-lightened ON to activate peak hold display

3 High-lightened OFF to cancel peak hold display

4 Or press ESC to return

⚠ ATTENTION: When saving the memory with "PEAK HOLD" on, the peak level can only be seen when user recall that memory when the "PEAK HOLD" setting is on. By setting the PEAK HOLD off, user may see the level in each frequency and all frequency instead of the peak value.

RESPONSE TIME



For different kinds of measuring purpose, different setting of response time is needed for the measurement.

35 ms: Extremely Fast (for explosive sound)

125 ms(F): Fast

250 ms(M): Middle

1 sec(S): Slow

Procedures

1 Go to the SETTING/RESP TIME menu and select an appropriate response time and press ENTER button

2 Or press ESC to return

CALIBRATION

Under normal operation, you may never need to calibrate your MPAA1. By using sound level calibrator with 1/2" diameter adapter that sends out 1K Hz tone, anyone can do calibration for MPAA1 and regain accurate sound pressure level measurement. Calibration should be done as long as strange measurement data appears or abnormal operation occurs. User can use a B&K TYPE 4231 sound level calibrator to do the calibration.

Procedures

1 Go to SETTING/PEAK HOLD and set it at OFF.

2 Go to SETTING/RESP TIME and set it at 250ms(M).

3 Place a sound level calibrator with a microphone connector of 1/2" diameter tightly to the microphone of MPAA1.

4 Go to the SETTING/CALIBRATION menu and activate the function.

5 Adjust the level measured from the SPL calibrator by pressing UP/DOWN buttons till it reaches that of the sound level calibrator. Pressing the UP button each time will increase the value by 0.1dB; pressing the DOWN button each time will decrease by 0.1 dB. You need to keep adjusting untill the readout of the MPAA1 is indentical with the one of the standard SPL clibrator.

6 Press the ENTER button to exit to complete the calibration to return to RTA display.

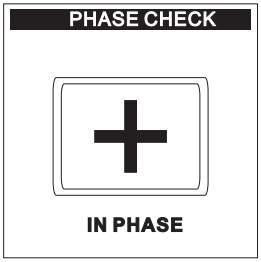
⚠ ATTENTION:

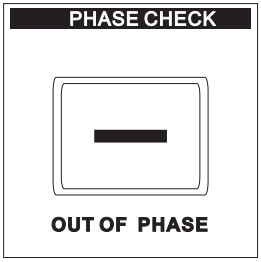
(1) Under normal operation, you may never need to calibrate your MPAA1.

(2) If you want to cancel calibration functon, just press the ENTER button to exit before making any adjustment.

(3) If you want to restore the default setting, simply use the UP/DOWN buttons to adjust the OFFSET value untill it reads 0.0 dB, and then press the ENTER button to complete setting.

PHASE CHECK





Measure the phase of an electrical signal or speaker wiring in order to find out if signal phase or the speaker wiring is correct. Polarity signal is usually needed for checking the speak wiring.

Procedures

For electrical signal

1 Go to the SPL/LINE and select dBu

2 Go to the SETTING/LEVEL RANGE menu and select an appropriate range for phase checking

3 Send the electrical signal to the female XLR input jack

4 A big "+" means the signal is in phase

5 A big "-" mans the signal is out of phase

6 A big "?" means that the signal level is lower than the current level range setting of the MPAA1, therefore can not be detected by MPAA1 For speaker wiring

1 Go to the SETTING/LEVEL RANGE menu and select the high (70~130dB) range for phase checking. (The low range 30~90dB is not recommended for phase checking because the environment noise is normally louder and very much likely will affect the result.)

2 Go to the GENERATOR menu then select POLARITY (or play the included CD to send out polarity signal through that speaker).

3 Stand one meter away in front of the speaker that plays out the polarity signal, and go to the PHASE CHECK menu and activate it.

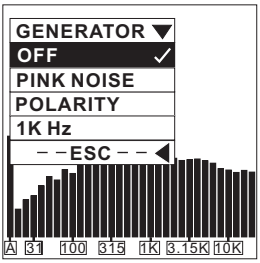
4 A big "+" means the speaker is in phase, and the wiring is correct.

5 A big "-" means the speaker is out of phase, and the wiring of the sopeaker is not correct.

6 A big "?" or a screen swfiting between "+" and "-" means the sound pressure level is not strong enough to be detected.

⚠ ATTENTION: Make sure the sound pressure level of the polarity signal from the system is louder than the envirnoment noise, otherwise MPAA1 will not be able to detect the phase of the speaker.

GENERATOR



MPAA1 can send out pink noise, polarity signal, and 1K Hz tone, via the XLR-Male connector, to an external system at -10 dBu(balanced).

Pink noise: mostly used for acoustic environment adjusting. For example: sound system equalization.

Polarity: often used to check the phase of a signal or speaker wiring.

1K Hz tone: a widely used among the professionals for audio signal testing

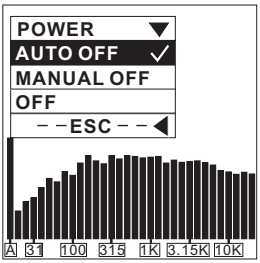
Procedures

1 Connect MPAA1 to your system via the XLR-male connector

2 Go to the GENERATOR menu and high-lighten one of the signal to activate it

3 Press ESC to return or press OFF to cancel

POWER OFF



There are three kinds of setting to turn off MPAA1.

Procedures

1 Go to the POWER menu

2 Select AUTO OFF, and MPAA1 will automatically shut down itself and turn off its power 15 minutes after the last operation.

3 Select MANUAL OFF, MPAA1 will not automatically shut down itself under any circumstance, unless batteries are dead.

4 Select OFF, MPAA1 will immediately shut down itself and turn off its power. It is necessary for user to turn off the power this way if they wish to save the measurement data into the memory of MPAA1.

SIMULTANEOUS OPERATION WITH PC

The advantage of simultaneous operation with PC is remote control, which is particularly useful when the measurement needs to be taken in a space that requires absolutely no presence of any individual. By connecting MPAA1 to the PC, user may also proceed with data saving and printing. The software, supported by Windows 98 and above, can be found in the included CD, which also contains 26 testing signals.

⚠ ATTENTION: When engaging simultaneous operation with PC, only the mouse and its keys are functional, and it's recommended to use the adapter instead of battery. Also, please position MPAA1 well before engaging remote control.

Procedures for installation and simultaneous operation

1 Turn on the PC and insert the CD
2 Find setup.exe and double clip it to begin installation by following the instruction
3 Go to start menu and select MPAA1 ON LINE, the window of MPAA1 ON LINE SOFTWARE would appear on the screen
4 Connect MPAA1 to PC via RS232 cable through the serial port and then turn on MPAA1
5 Go to FILE, select ON LINE to activate simultaneous operation. If you cannot execute ON LINE, please go to OPTION/PORT, select a COM number and run TEST. The software will then automatically detect the current serial port connecting to MPAA1 and save the setting. The data previously saved in MPAA1 will immediately be uploaded and the indication at the right bottom corner will change from Off Line to On Line. If no data is saved in the memory of MPAA1, it will show a primitive level of 85dB for each frequency and all frequency, in FLAT with a level range of 30~90 dB SPL.
6 As soon as uploading is finished, you may begin to operate MPAA1 by moving the cursor of the mouse and clip the MENU on the PC screen to enter into each menu and sub-menus.
7 Now that MPAA1 is operating simultaneously with the PC. The function being activated will show both on MPAA1 and on PC.
8 Go to FILE and clip on OFF LINE if you need to disable ON LINE operation

Once the procedures are done, you should be able to proceed with the following functions:

PRINT

1 Go to FILE, select Print, and a printer selection window will appear
2 Select a printer from the list
3 Select all data or one of the 16 memories
4 Select the quality level (Draft, Low quality, Medium quality, or High quality)
5 Clip on Print, and the printer window will disappear as soon as the transmission is complete

⚠ ATTENTIONS: Along with the 31-band value of the selected memory and the EQ SETTING value, the name of the file, date of printing, LEVEL RANGE, WEIGHTING, and maximum level will also be printed on the data sheet.

SAVE FILE

1 Go to FILE, select Save File
2 Select an desired directory or a new destination, and give a name to that file
3 Clip on SAVE to save the file, and all 16 memories will be saved under that one file name

(BACK) LIGHT

Clip on LIGHT to activate the back light for MPAA1, clip again to turn it off.

PEAK HOLD

1 Clip on ON to view the peak value of each frequency and all frequency. The level can be found either from the bar meter or in the memory chart.

2 Clip on OFF to view the RTA value of each frequency and all frequency

MEMORY (from the memory chart)

Clip on one of the memory number (1~10 or A~F, the number of selected memory would be marked) in the memory chart to view the level in each frequency and all frequency. User can clip on the bar-meter in the spectrum to see a specific frequency for readout or view them in the RTA Value column.

ATTENTIONS: User may rename every memory by double clipping the number of the memory in the memory chart.

The following functions, along with PORT, are not accessible during on line.

OPEN FILE

1 Go to FILE, select Open File

2 Locate the file previously saved in your PC and double clip it

3 The data is now available for further operation

MEMORY (from the menu)

AVERAGE

1 Go to MEMORY / AVERAGE and activate average function

2 Choose by clipping memory 1~10 for average calculation. The original setting of each memory level range will display next to its number.

3 Clip on AVG to run the calculation

4 Select a memory from A~F, and clip on Save to save the result (the old one will be over-written), or clip on Cancel to exit. User can view the result (either in graphic or in text) immediately both in result box or in the memory chart, with level range displayed at the top.

EQ SETTING

1 Select a memory (1~10 or A~F) with which you would like to adjust the EQ

2 Go to MEMORY and activate EQ setting function

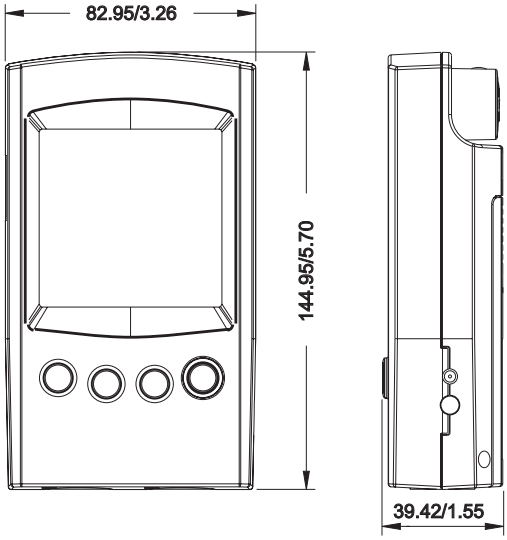
3 Move the cursor and clip on each bar meter to find out how much dB you need to cut or boost for each center frequency

CLEAR

1 Go to MEMORY / CLEAR

2 Select one memory, 1~10 or A~F, from the sub-menu, and the memory will be deleted immediately; select “All” if you need to delete all the memories that are presently loaded into PC

DIMENSIONS



Dimensions are showen in mm / inches.

Input/Output:	
Microphone	Built-in miniature omni direction condenser microphone
Line	XLR jacks for line input and output
Data Port	3.5mm mini stereo phone jack for RS232
Display :	160X160 LCD screen with contrast adjustment and back light
SPL, dBu, dBV, Voltage	Barograph and digit display
RTA	31-band, 0.5dB resolution Center frequencies ISO standard from 20Hz to 20KHz
Measurement Range:	
SPL (Microphone input)	30 to 130 dB SPL
dBu (Line input)	-50 to +40 dBu
dBV (Line Input)	-52 to +38 dBV
Volatge (Line Input)	5 mV to 80 V
Setting	
Weighting	A, C or Flat
Peak hold	ON/OFF
Maximum level display	RESET
Response time	35 ms, 125 ms, 250 ms, 1 sec

Other function	
Memory	10 RTA+ 6 average calculation
Average calculation	For 10 RTA
EQ setting value display	31-band
Phase checker	Through polarity signal
Transimission	Simultaneous operation with PC or laptop through RS-232
Noise generator(Based on 6VDC power source)	
Pink noise	Balanced output, -10dBu
1K Hz Signal	Balanced output, -10dBu
Polarity Signal	Balanced output, -10dBu
Power Source	4XAA battery (battery life: 4hrs with alkaline battery) or external 6 VDC adapter
Dimensions(H*W*D)	144.95X82.95X39.42mm (5.7"X3.26"X1.55")
Weight(w/battery)	340 g (0.74lbs)

26 AUDIO TEST SIGNALS

The following is the list of the audio test signals on the CD included in the MPAA1 gift box:

1. Pink noise -10 dBu, 60 seconds
2. Polarity testing signal
3. White noise -10dBu, 60 seconds
4. 250Hz sine signal -10 dBu, 30 seconds
5. 500Hz sine signal -10 dBu, 30 seconds
6. 1KHz sine signal -10 dBu, 30 seconds
7. 2KHz sine signal -10 dBu, 30 seconds
8. 5KHz sine signal -10 dBu, 30 seconds
9. 10KHz sine signal -10 dBu, 30 seconds
10. 12.5KHz sine signal -10 dBu, 30 seconds
11. Sweep frequency up 20Hz~20KHz, -10 dBu, 5 seconds for each frequency: 20Hz, 25Hz, 31.5Hz, 40Hz, 50Hz, 63Hz, 80Hz, 100Hz, 125Hz, 160Hz, 200Hz, 250Hz, 315Hz, 400Hz, 500Hz, 630Hz, 800Hz, 1KHz, 1.25KHz, 1.6KHz, 2KHz, 2.5KHz, 3.15KHz, 4KHz, 5KHz, 6.3KHz, 8KHz, 10KHz, 12.5KHz, 16KHz, 20KHz
12. Channel test -10 dBu, at 1KHz, left channel
13. Channel test -10 dBu, at 1KHz, right channel
14. Sweep frequency up 20Hz~20KHz, -20 dBu, 5 seconds for each frequency
15. In phase, 0 dB, at 250Hz, 30 seconds
16. Out of phase, 0 dB, at 250Hz, 30 seconds
17. Digital blank, 60 seconds
18. SMPTE/EBL, time code, 30 seconds
19. High E
20. Low B
21. Low G
22. Low D
23. Low A
24. Low E
25. Frequency sweep up, 20Hz~20KHz, 0 dB
26. Frequency sweep down, 20KHz~20Hz, 0 dB

the t.meter