user manual

Compact Mobile2

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AER The Acoustic People®

Compact Mobile2

user manual

1. Einleitung

Welcome to AER!

Thank you for purchasing the **Compact Mobile2**.

The **Compact Mobile2** is a professional, compact and powerful amplifier, specially designed for the amplification of acoustic instruments, but equally suitable for electric instruments and voice, furthermore you can add a playback-signal to your performance. The internal battery allows you to operate your **Compact Mobile2** up to 4 hours without connecting the amp to the mains.

All AER-systems are subtly dynamically controlled which ensures absolute reliability in full load operation despite strikingly small sizes and little weight.

Read on and have fun using your **Compact Mobile2**!

2. Safety instructions

The following guidelines shall help minimize the risk of injury through fire or electric shock.

1. Carefully read these safety notes before you use the device!

2. Keep these safety notes in a safe place.

3. Pay attention to all warnings, instructions and additional texts on the unit.

4. Do not install or use your device in close proximity to water or if you are wet yourself.

5. Use your device in a safe place where nobody can step on cables or trip over and damage them.

6. Always pull the mains plug before cleaning your device. Use only a dry cloth for cleaning. Avoid the use of detergents and do not let any liquids seep into the unit.

7. Never install your device close to units with strong electromagnetic fields such as large mains transformers, revolving machines, neon illumination etc. Do not lay signal cables parallel to power current cables.

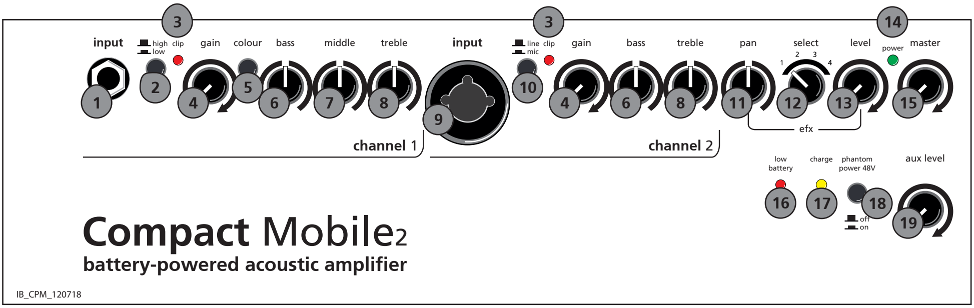
8. There are no user-serviceable components inside the unit. To avoid the risk of an electric shock, the unit must not be opened. All maintenance, adjustment and repair works should be carried out by qualified staff only. Any unauthorized tampering will void the 2-year warranty.

9. In keeping with the EMV regulations screened cables with correctly fitted connectors must be used for all signal connections.

10. Always use an earthed power supply with the correct mains voltage. If you are in doubt about the power outlets ground, have it checked by a qualified technician.

11. Cable up your device only when it is powered off.

3. Controls and connections



3.1 Front side

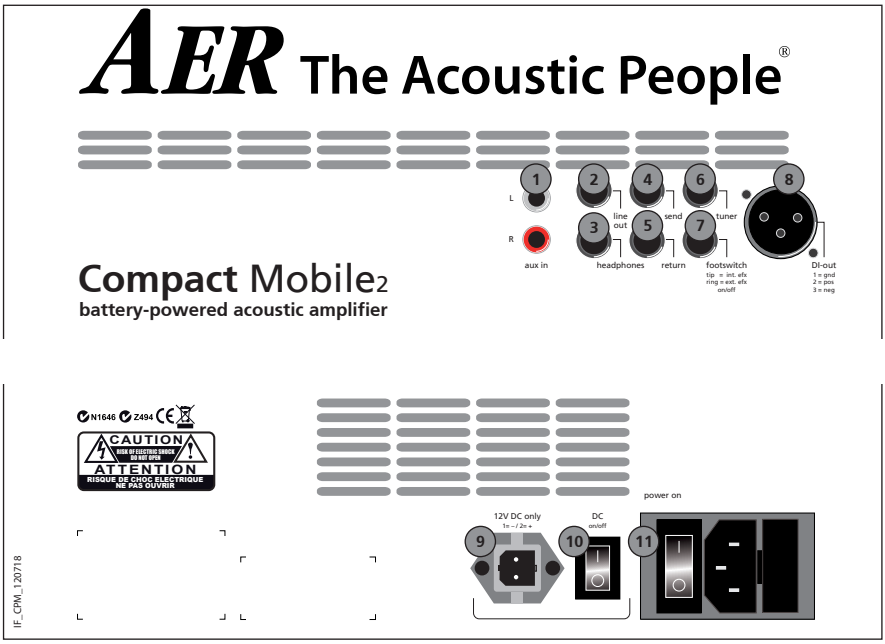
1)	**input (ch. 1)**	signal input, socket for 6,3 mm mono jackplug	
2)	**high/low**	input sensitivity switch, attenuator = off = on	
3)	**clip**	overload indicator	
4)	**gain**	input level control	
5)	**colour**	tone colour filter activation switch = not active = active	
6)	**bass**	bass frequency level control	
7)	**middle**	middle frequency level control	**channels 1 + 2**
8)	**treble**	treble frequency level control	
9)	**input (ch. 2)**	signal input, combo-socket for 6,3 mm mono jackplug and XLR-connectors	
10)	**line/mic**	signal source selector switch: = **line** (only via jackplug) for instruments (pickup) and other line level sources = **mic** (only via XLR-connector) for microphones	

11)	**pan**	effect signal distribution control	
12)	**select**	effect select switch	
13)	**level**	level control internal effect	**efx**

14)	**power**	on/off status indicator	
15)	**master**	master level control	**mains & master**

16)	**low battery**	battery status indicator	
17)	**charge**	battery charge indicator	**battery control**

18)	**phantom power 48V**	48V phantom power switch for microphone = off = on
19)	**aux level**	aux-signal level control



3.2 Rear side

1) aux in: stereo input for additional signal sources, e.g. CD-player, Cinch/RCA-sockets (white = left channel, red = right channel)

2) line out: The **line out** supplies a pre-amp signal taken after tone-control, effects and **master** for forwarding to other appliances.

3) headphones: This output enables you to connect **stereo** headphones and mutes the loudspeaker.

!!!Warning: Only use headphones with stereo jackplugs in this output socket!!!

4) send: Send is an output to connect to an external effect device and in conjunction with **return** (input) forms a loop here designed as external effect loop. The effect can be switched on or off via footswitch.

5) return: Return as part of the effect loop operates as signal input from an external effect device (from output of the effect device). The effect can be switched on or off via footswitch. **Return** on its own can also be used as **quasi auxiliary signal input** (-10 dbV).

6) tuner: The **tuner** output supplies a pre-master signal (-9 dbV) to connect an external tuner to the **Compact Mobile2**.

7) footswitch: Connection socket for a double-footswitch (on-/off-switch, tip = internal effect/ring = external effect on/off).

8) DI-out: Preamp-output with symmetrical signal, after tone-control, **pre master**, without effects.

9) 12V DC only: Connection socket for an optional 12V-cable to an external battery.

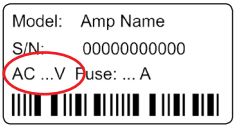
10) DC on/off: On/off-switch for the connection socket **(9)**.

11) power on: Combined mains switch with mains socket and fuse holder.

4. Starting up

4.1 Cabling and switching on

Before connecting to mains, please ensure that your local mains voltage is suitable for the voltage of the device (e.g. 120V in the USA, 230V in Europe). The relevant specs and safety symbols are printed on the rear side of the unit.



Connect all cables according to your application and switch the amplifier on. The green **power** control LED indicates operational readiness.

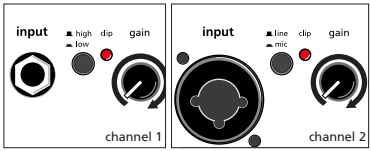
4.2 Level adjustment

Note: Level adjustment

By setting the level correctly we mean the signal level in one or several devices in a signal chain is neither too high nor too low. This applies equally to all circuits in a complete circuit design (EQs, preamps etc.)

Consequently, care must be taken that no part of the circuit is overloaded or that distortion is unintentionally added to the signal.

We have carefully designed the circuit to achieve this objective whilst also providing controls for „manual" intervention.



First ensure, that the **master** level control is zeroed (over to far left), so that when you are setting the sound level, the signal passes through the electronics only and does not reach the loudspeaker. By pressing the **high-/low-** (attn.) resp. **line-/mic-**switches you can adapt the amplifier to your signal sources (guitar pickups, microphone etc).

Turn the **gain** control clockwise until the red **clip** indicator flashes momentarily when playing with a strong attack. Thus you make sure that your signal source (e.g. instrument) provides the input-stage of the amplifier with the necessary input.

The **clip**-LED indicates an overload. A short flicker is of no danger to AER devices. During operation a short flicker can be accepted, to be on the safe side you should reduce the **gain** slightly to achieve an optimal and distortion-free performance.

Finally set the desired overall volume level with the **master** level control.

5. Functional characteristics

5.1 Equalization

Note:

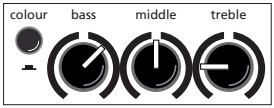
The active equalization of the **CompactMobile2** effects the signal adjustment. If you spot an intensified flickering of the **clip** indicator, level the signal level with the **gain** control (**s. 4.2 Level adjustment**).

The triple-/dual-band equalizer of your **CompactMobile2** provides you with an active and high quality sound interaction tool that supports the natural tone of instruments and voice whilst simultaneously offering you the possibility of a controlled accentuation.

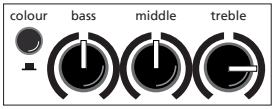
With all controls in mid position the filters are set to produce a very pleasing and natural sound impression that you can „colour up" by using the **colour** filter with the effect of lowering the mids and lifting the trebles. The tone becomes more open and light and is especially suited for fingerpicking techniques.

The equalization can support or soften the effect of the **colour** filter and allows a differentiated mids-accentuation.

A: with colour-filter (switch pressed)
reduce **treble** to soften possible sharpness



B: without colour-filter (switch not pressed)
boost **treble** to brighten the sound



5.2 Effects

The **CompactMobile2** has a built-in (internal) digital effects processor, with the **select**-switch you can choose between 4 different effects:

1 = reverb 1 (short)
2 = reverb 2 (long)
3 = delay (320 ms)
4 = chorus

The **efx-level-control** determines the intensity of the internal effects (left stop = no effect).

Furthermore an additional effects unit (external effect) may be connected to the **CompactMobile2**. For this purpose use the **send** and **return** sockets on the rear side of the amplifier (**send goes to input, return to the output of the external effects device)**. The intensity of the effect is adjusted at the external effects unit.

With the **efx-pan** control the different effects are blended with the original signal. The **efx-pan** works as follows:

left stop:	**internal effect on channel 1** **external effect on channel 2**
mid position:	**internal effects on channel 1 + 2** **external effects on channel 1 + 2**
right stop:	**internal effects on channel 2** **external effects on channel 1**

5.3 Footswitch

A standard double-footswitch (on-/off-switch) can be plugged into the **footswitch**-socket on the rear side of the amplifier via stereo cable. By this footswitch the internal and external effects can be switched on and off.

P.S. For questions or suggestions contact us: tachauch@aer-amps.com

5.4 Phantom power

Microphones requiring **48V phantom power** can be connected to the **XLR-socket** of **channel 2** directly. Factory-provided phantom power is activated but, if required, may be deactivated by an internal jumper.

In contrary **9V phantom power**, if required, can additionally be activated in **channel 1** by an internal jumper.

Please note: For both alterations the device must be opened, therefore only qualified service personnel may carry out the modifications concerning the de-/activating of phantom power.

General Note: Use of 48V or 24V phantom power

(Phantom power = remote supply, here: powering an audio device via the connected audio line)

Turn on the phantom power only if the unit connected to an XLR socket that is designed to handle it!

In general, suitable units are e.g. condenser microphones, active DI-boxes and other special audio devices, whose power supply is drawn from the phantom power. Such devices are also labelled accordingly; please heed the permissible power consumption (max.10mA).

High-quality dynamic microphones with a balanced signal need no phantom power, but can handle it anyway.

Other devices, which have not been designed explicitly for phantom power operation, can suffer from considerable malfunctions and damage may result as well.

Examples of devices that may be damaged by incorrect application of phantom power include:

Low-cost dynamic microphones with a mono jackplug (unbalanced signal) that were fitted afterwards with an XLR connector.

Audio devices with a balanced XLR output (e.g. DI-boxes, effects devices, instrument preamps with a DI output etc.) which are not protected against phantom power applied to their XLR output. (The DI connectors on AER products are protected against applied phantom power.)

Other audio devices (such as preamps, effects pedals etc.) whose unbalanced line output was replaced by an XLR socket.

If in doubt please consult the manufacturer of the device you are using.

5.5 Battery operation and care

The battery in your **CompactMobile2** is a high-end leakproof and maintenance-free lead-gel-battery. It's high capacity will be available for a long time if you follow some precautionary measures.

1. Charging

To charge the battery, plug your AER **CompactMobile2** to the mains and switch it on. If you do not want to use the amplifier during the charging process, turn **gain**- and **master**-control to minimum volume (as far left as possible).

The charging of the batteries will be indicated by the yellow **charge**-LED. The battery is fully charged when the **charge**-LED is off. Charging time depends on various factors and can vary according to the battery's charging state at the beginning of the process.

A partly discharged battery will be charged completely after a few hours whereas the charging process of a completely discharged battery can last more than 24 hours. The average charging-time of a continually discharged battery will take about 8 to 14 hours. By constantly controlling the battery's voltage, the intelligent charge control electronics prevents the battery from overcharge.

2. Operation

A completely charged battery allows 2 to 4 hours of playing independent of mains supply, depending on volume and dynamics. Low volume will enable you to play up to 8 hours. The **low-battery**-LED indicates that the battery is almost empty.

As soon as the minimal allowed battery voltage has been reached, the charge control electronics will automatically switch the AER **CompactMobile2** off, in order to avoid deep-discharge. After the amplifier has been switched off by the charge control electronics it can only be operated when connected to the mains. A discharged battery should be charged as soon as possible. Storage in discharged condition may damage the battery.

3. Storage and self-discharge

If your AER **CompactMobile2** is stored or not used over a long period, the battery should be fully charged in order to keep it's capacity. Being switched off for a long time with discharged battery may damage the battery irreparably by natural self-discharge. During normal use, the charge control electronics can protect the battery from deep-discharge, but it cannot prevent the electronical process of self-discharge in the battery itself.

Always store your AER **CompactMobile2** with charged battery. A fully charged lead-gel-battery will still be 60% charged after one year of storage whilst a discharged battery might be damaged even after a few weeks.

4. Temperature Dependency

Please note that the battery's capacity (and thus playing time) depends on the surrounding temperature. Playing outside in winter will reduce playing time by 20 to 30% compared to playing in heated rooms or outside in summer. This is a normal reaction and not a sign of a defective battery.

5. Battery Life Expectancy

The producer of the batteries used in the AER **CompactMobile2** declares a life period of approximately 5 years at intended use.

6. Warranty

Batteries are items that wear out through the ordinary course of use, thus they are excluded from statuary two-year liability. If a defect has not been caused by AER manufacture, warranty will expire after 6 months.

7. Battery Exchange

The exchange of worn out batteries should be carried out by a specialist or by AER Service as both amplifier and new battery could be severely damaged through improper connecting or assembly. Improper connection may cause explosion or electric shock.

6. Technical specifications Compact Mobile2 – page 1

Inputs

channel 1
High impedance, unbalanced instrument or line input
Mono jack socket, ¼" (6.35 mm)
Min. input voltage: 22 mV (–33 dBV)
Max. input voltage: 5 V (+14 dBV)
Input impedance: 2.2 MΩ || 350 pF
Equivalent input noise voltage (A-weighted): 1.5 µV (– 117 dBV)
High/low (attenuator) switch: –10 dB
Phantom power: Optional (see notes), 9 V DC / max. 100 mA, on ring of input jack, short circuit protected

clip indicator
Headroom: min. 6 dB

channel 2
Switchable line / microphone input
Combo socket, XLR + jack ¼" (6.35 mm)

line mode (via jack input only)
High impedance, unbalanced instrument or line input
Min. input voltage: 27 mV (–31 dBV)
Max. input voltage: 7 V (+17 dBV)
Input impedance: 2.2 MΩ || 350 pF
Equivalent input noise voltage (A-weighted): 2.4 µV (– 113 dBV)

mic mode
Microphone input, XLR (balanced), stereo jack (balanced), or mono jack (unbalanced)
1 / sleeve = ground,
2 / tip = positive (+),
3 / ring = negative (–)
Min. input voltage: 3.3 mV (–50 dBV)
with low-gain option: 5.8 mV (–45 dBV)
Max. input voltage: 1 V (0 dBV)
with low-gain option: 1.8 V (+5 dBV)
(see notes)
Input impedance (balanced): 1.2 kΩ
Input impedance (unbalanced): 2.7 kΩ
Voice filter:
–10 dB at 270 Hz referred to 10 kHz
Equivalent input noise voltage (A-weighted): 0.9 µV (–121 dBV)
Phantom power: XLR only, 48 V, switchable, R = 6.8 kΩ per terminal, max. 10 mA total, short-circuit protected

clip indicator
Headroom: min. 6 dB

aux in
Auxiliary stereo input, e.g. for CD player
Cinch (RCA) sockets, L / R
Level adjustable by **aux level**
Min. input voltage: 100 mV (–20 dBV)
Max. input voltage: 3.5 V (+11 dBV)
Input impedance: 22 kΩ

return
Input from external parallel effect loop, or supplementary input
Mono jack, ¼" (6.35 mm)
Min. input voltage: 320 mV (–10 dBV)
Max. input voltage: 5 V (+14 dBV)
Input impedance: 20 kΩ
(but 5 kΩ while external effect is switched OFF by footswitch)

Outputs

line out
Line output after **master**, with **aux in** and effects
Mono jack, ¼" (6.35 mm)
Output voltage: 700 mV (–3 dBV)
Output impedance: 100 Ω
Min. load impedance: 2 kΩ
Residual noise (A-weighted): 4.5 µV (–107 dBV)

headphones
Headphones output
Stereo jack socket, ¼" (6.35 mm), L/R connected
When plugged in, internal speaker is muted.
Output power at rated conditions: 2 x 8 mW / 32 Ω
Max. output power: 2 x 100 mW / 1000 Ω
Output impedance: 470 Ω (common for L/R)
Min. load impedance: not limited
Note: *Suitable for stereo headphones with stereo jack only. Not functional with mono jacks.*

send
Output for external parallel effect loop, before **master**, after tone controls
Mono jack, ¼" (6.35 mm)
Output voltage (**efx pan** fully clockwise): 900 mV (–1 dBV)
Output impedance: 47 Ω
Min. load impedance: 2 kΩ

tuner
Tuner output, after tone controls, before effects and master
Mono jack, ¼" (6.35 mm)
Output voltage: 225 mV (–13 dBV)
Output impedance: 47 Ω
Min. load impedance: 2 kΩ

DI-out
Balanced, non-isolated XLR output, after tone controls, without **aux in** and effects
1 = ground,
2 = positive (+),
3 = negative (–)
Output voltage (differential): 93 mV (–21 dBV)
Output impedance: 47 Ω, each terminal to ground
Min. load impedance (differential): 1 kΩ

Footswitch connector

footswitch
Connector for a dual footswitch
Stereo jack, ¼" (6.35 mm)
Tip = internal effect on/off
Ring = external effect on/off
Sleeve = common (ground)
Function: Switch ON = effect OFF

Tone controls

Channel 1	**colour**	–3 dB at 700 Hz +10 dB at 8 kHz
	bass	±8 dB at 100 Hz (shelf type)
	middle	±6 dB at 800 Hz
	treble	±8 dB at 10 kHz (shelf type)
Channel 2	**bass**	±8 dB at 100 Hz (shelf type)
	treble	±11 dB at 10 kHz (shelf type)

Effects

Internal effects	Digital effect processor	
	1	Reverb (short predelay)
	2	Reverb (long predelay)
	3	Delay (320ms, repetitive)
	4	Chorus
External effects	Parallel effect loop, see **send** and **return**	

efx pan
Blends both internal and external effects between channels 1 and 2, with reverse direction of rotation for the external effects.

6. Technical specifications Compact Mobile2 – page 2

Power		
Power amp	60 W / 4 Ω (1% THD) Monolithic IC with DMOS output Dynamic range (A-weighted): 94 dB	
Mains power	Mains voltage (depending on model): 100, 120, 230, or 240 V AC, 50–60 Hz Power consumption: max. 240 W Power consumption (only charging): 45 W	
Mains fuse	Size: 5 x 20 mm Rating: For 230 and 240 V models: T 1 A L / 250 V For 100 and 120 V models: T 2 A L / 250 V	
Internal battery	**Type and rating**	2 rechargeable sealed lead-acid batteries, each 6 V / 12 Ah
	Operating time	ca. 3 – 4 h depending on volume
	Recharge time	100% full charge: ca. 16 h 90% full charge: ca. 12 h Without output load.
	Important *Charge batteries soon when empty.* *Never store with empty batteries!* *Recharge once a year when not in use.* The power switch must be ON in order to charge the battery.	
12 V DC connector	Input for operating the Compact mobile from an external 12 V battery Max. current consumption: 10 A 1 = minus (–) 2 = plus (+) **Note:** *This input can not be used to charge the external battery from the Compact mobile or to charge the internal battery from an external power source.*	

General	
Distortion	THD + N < 0.1% at 6 W / 4 Ω
Analog signal processing	Subsonic filter, adaptive peak limiter
Limiter threshold	50 W / 4 Ω
Speaker system	8" (200 mm) dual cone full-range speaker, bass reflex enclosure
Cabinet	12 mm (0.47") birch plywood
Finish	Waterbased acrylic, black spatter finish

Dimensions and weight	
Dimensions	320 mm (12.8") high 326 mm (12.9") wide 282 mm (11.1") deep
Weight	13 kg (28.7 lbs)

NOTES

Rated conditions:
Nominal input voltage: 50 mV at input of channel 1.
Test signal: 1 kHz sine unless stated otherwise.
Signal voltages stated as RMS values.
0 dBV corresponds to 1 V RMS.
Gain of channel under test fully clockwise.
Tone controls in center position, **colour** off.
Master adjusted such that the rated output power is obtained (requires that the limiter is disabled).
To avoid having to disable the limiter, **master** can be adjusted such the rated output voltage at **line out** is obtained instead.

Output voltages refer to rated conditions as stated above.

Min. input voltage: Input voltage required for rated output power (limiter disabled) with **gain** and **master** fully clockwise

Max. input voltage: Input voltage that does not cause more than 1% THD+N, suitable control settings provided

THD + N: Total harmonic distortion + noise, with input and output levels 10 dB below rated conditions.

Equivalent input noise voltage: Noise voltage at speaker output divided by gain of amplifier. **gain** of input under test fully clockwise, **master** fully clockwise, gain of unused inputs minimal. Input shorted, B = 22 Hz … 22 kHz

Residual noise: Noise of an output when its level control is set to minimum.

Dynamic range (power amp): Ratio of rated output voltage to residual noise voltage (**master** fully anticlockwise).

Options: The following options are available by internal jumper settings.
1) Gain of microphone input can be reduced, resulting in more headroom.
2) 9 V phantom power for channel 1 can be activated.
Caution: *Install only if required. Phantom power may damage external equipment. Read the operating instructions.*

Specifications and appearance subject to change without notice.

TD20121011

7. Circuit diagram Compact Mobile2