Ultimo Installation Guide

EISA AWARD Best Product 2023-2024
IN-CAR SUBWOOFER
Morel Ultimo PowerSlim

Powerslim

PS104D
PS124D

Dear Customer,

Thank you for selecting Morel's Ultimo to satisfy your demanding car audio standards.

The award winning Ultimo series was engineered with a combination of tight, controlled musicality and life-like deep bass reproduction,

Consistent with Morel's philosophy, this handcrafted subwoofer will satisfy those who like to "crank it up".

The Ultimo represents an extraordinary combination of audiophile bass quality, high power handling and ease of installation.

Choosing the correct enclosure

Enclosure selection depends both on the environment and on the desired performance. The power input and size of the vehicle play an important role in correctly installing the subwoofer, as does the preferred bass experience.

The Ultimo Titanium series subwoofers are designed to work optimally in both ported and sealed enclosures however, each of these enclosure types will produce a slightly different sounding result.

As a rule of thumb, the bigger the enclosure, the lower the bass frequency response will be but it will have less control and definition. On the contrary, as the enclosure volume gets smaller, the bass frequency response is higher, but the bass reproduction is faster and tighter. For those of you who are looking to get optimal SQ results, we highly suggest using sealed enclosures; for those who are seeking high SPL, we suggest using ported enclosures. The table below specifies the required volume range needed for the Ultimo Titanium series to produce best results in both sealed and ported enclosures.

Sealed enclosures

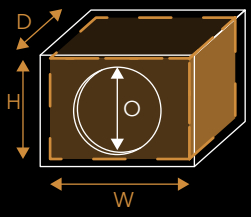
These completely sealed enclosures are not affected by air pressure changes inside the enclosure due to cone movement. Acoustic suspension and cone movement linearity are improved, resulting in lower distortion and higher power levels. The drawbacks of the sealed enclosures are lower efficiency due to powerful obsorption inside the enclosure, and reduced transient response at lower frequencies. In conclusion, sealed enclosures provide powerful bass resproduction and excellent dynamics with extremely low distortion.

Ported (Bass reflex) enclosures

Ported enclosures have a circular or rectangular tube or duct leading to an opening in the enclosure structure. If tuned properly, a ported enclosure enables greater bass extension from a smaller enclosure, as well as better power handling, efficiency, control and faster bass reproduction.

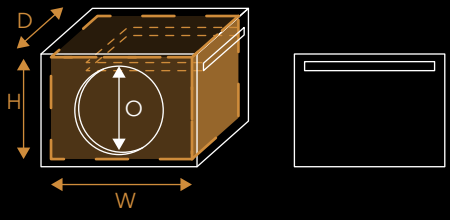
Morel's recommended enclosure volumes for sealed enclosures

MODEL	VOLUME NET	INTERNAL DIMENSIONS	MOUNTING CUT	DISPLACEMENT
PS104D	14L (0.5 cuft)	W 343 mm (13.5″) H 343 mm (13.5″) D 127 mm (5″)	231.5 mm (9.1″)	0.02 cuft (0.6L)
PS124D	22.6L (0.6 cuft)	W 420 mm (16.5″) H 420 mm (16.5″) D 178 mm (7″)	268.6 mm (10.6″)	0.03 cuft (0.9L)



Morel's recommended enclosure volumes for ported enclosures

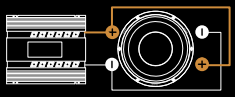
MODEL	VOLUME NET	INTERNAL DIMENSIONS	MOUNTING CUT	DISPLACEMENT
PS104D	22.7L (0.8 cuft)	W 368 mm (14.5″) H 368 mm (14.5″) D 127 mm (5″)	231.5 mm (9.1″)	0.02 cuft (0.6L)
PS124D	39.6L (1.4 cuft)	W 680mm (26.75″) H 680mm (26.75″) D 178 mm (7″)	268.6 mm (10.6″)	0.03 cuft (0.9L)



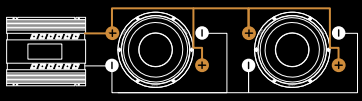
Connecting the Ultimo subwoofer

Voice coil wired in parallel (1-3 woofers)

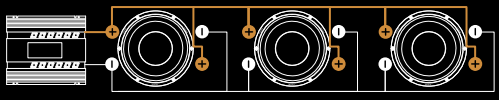
2 Ω Load



1 Ω Load

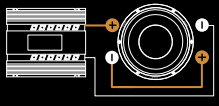


0.7 Ω Load

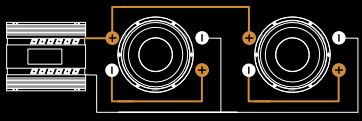


Voice coil wired in series (1-3 woofers)

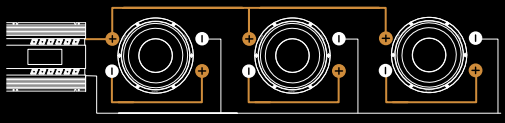
8 Ω Load



4 Ω Load

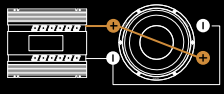


2.7 Ω Load

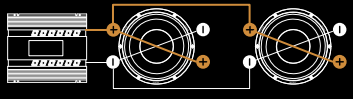


Voice coil wired single (1-3 woofers)

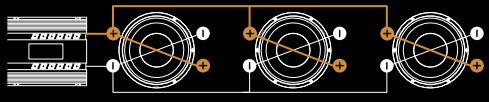
2 Ω Load



1 Ω Load



0.7 Ω Load



Tuning recommendation

Once the proper enclosure has been constructed, please follow these tips to optimize the performance of your new Ultimo subwoofer. It is always suggested to consult your Authorized Morel Dealer for more specific guidance, if necessary.

1. Set your gain level control to ensure stable amplifier operation without distortion or saturation to prevent subwoofer damage.

2. Adjust the cut-off frequency according to the enclosure design and subwoofer specifications to ensure optimal performance.

3. Electronic acoustic corrective filters (e.g. equalizer) are not required, as long as the subwoofer enclosure is designed properly.

4. After listening to the subwoofer you may choose to invert the phase. Doing so will affect the acoustic performance of the subwoofer. It is recommended to listen in both configurations in order to determine your preferred mode.

5. Before adjusting your sound system further, it is suggested to move the subwoofer enclosure to different locations in the car trunk. Placing the enclosure in different locations may provide the solution you seek.

Specifications

PS104D	WIRED IN PARALLEL	WIRED SINGLE	WIRED IN SERIES
Overall Dimensions	10″	10″	10″
Power Handling Wrms	600	600	600
Max. Trans. Pwr Handling Wrms	1800	1800	1800
Sensitivity (2.83 V/1M) dB	82	82	79
Frequency response Hz	20-400	20-400	20-400
Resonance Freq. Fs Hz	29.1	30.5	29.6
Voice Coil Diameter mm (inch)	51(2)	51(2)	51(2)
Voice Coil Height mm (inch)	30 (1.2)	30 (1.2)	30 (1.2)
Voice Coil Type/Former	Aluminium	Aluminium	Aluminium
Voice Coil Wire	Hexatech™ Aluminium	Hexatech™ Aluminium	Hexatech™ Aluminium
DC Resistance (ohm)	1.6	6	3
Voice Coil Induct. @1 kHz (mH)	0.5	1.9	0.5
Magnet System	Double Magnet EVC	Double Magnet EVC	Double Magnet EVC
HE-Magnetic Gap Height mm (inch)	8 (0.3)	8 (0.3)	8 (0.3)
BL Product/BXL	8.1	16.1	8
Max. Linear Ex./Xmax mm (inch)	±8mm (0.31)	±8mm (0.31)	±8mm (0.31)
Electrical Q Factor QES	0.9	0.9	1.8
QTS	0.7	0.8	1.2
QMS	3.6	4.2	4
Moving Mass MMS - gr/os	203 (7.2)	207.1 (7.3)	204.6 (7.2)
Equiv. Can Air Load VAS - L (cu.ft^3)	25(0.9)	22 (0.8)	24 (0.8)
Effective Piston Area SD sq.cm (sq.inch)	346.4 (53.7)	346.4 (53.7)	346.4 (53.7)
Cone Type	Flat Honeycomb	Flat Honeycomb	Flat Honeycomb
Cone Material	4 Layers Carbon	4 Layers Carbon	4 Layers Carbon
Unit Diameter mm(inch)	262.6 (10.3)		**262.6 (10.3)**
Mounting Depth mm (inch)	79.6 (3.1)		**79.6 (3.1)**
Mounting Cutout	231.5 (9.1)		**231.5 (9.1)**
Net Weight gr	4720	4720	4720

PS124D	WIRED IN PARALLEL	WIRED SINGLE	WIRED IN SERIES
Overall Dimensions	12″	12″	12″
Power Handling Wrms	700	700	500 x 2
Max. Trans. Pwr Handling Wrms	2100	2100	1000 x 2
Sensitivity (2.83 V/1M) dB	83	80	83
Frequency response Hz	20-500	20-500	20-500
Resonance Freq. Fs Hz	24	24	24
Voice Coil Diameter mm (inch)	51(2)	51(2)	51(2)
Voice Coil Height mm (inch)	30 (1.2)	30 (1.2)	30 (1.2)
Voice Coil Type/Former	Aluminium	Aluminium	Aluminium
Voice Coil Wire	Hexatech™ Aluminium	Hexatech™ Aluminium	Hexatech™ Aluminium
DC Resistance (ohm)	1.6	3.1	6.3
Voice Coil Induct. @1 kHz (mH)	0.6	0.6	2.5
Magnet System	Double Magnet EVC	Double Magnet EVC	Double Magnet EVC
HE-Magnetic Gap Height mm (inch)	8 (0.3)	8 (0.3)	8 (0.3)
BL Product/BXL	9.1	9	18.3
Max. Linear Ex./Xmax mm (inch)	±8mm (0.31)	±8mm (0.31)	±8mm (0.31)
Electrical Q Factor QES	0.7	1.5	0.7
QTS	0.6	1	0.6
QMS	3.6	3.7	3.7
Moving Mass MMS - gr/os	252.1 (8.9)	254.7 (9)	252.1 (8.9)
Equiv. Can Air Load VAS - L (cu.ft^3)	49.4 (1.7)	47.8 (1.7)	48 (1.7)
Effective Piston Area SD sq.cm (sq.inch)	452.4 (70.1)	452.4 (70.1)	452.4 (70.1)
Cone Type	Flat Honeycomb	Flat Honeycomb	Flat Honeycomb
Cone Material	4 Layers Carbon	4 Layers Carbon	4 Layers Carbon
Unit Diameter mm(inch)	305 (12)	305 (12)	305 (12)
Mounting Depth mm (inch)	86 (3.4)	86 (3.4)	86 (3.4)
Mounting Cutout	268.6 (10.6)	268.6 (10.6)	268.6 (10.6)
Net Weight gr	5500	5500	5500

*All specifications are measured using 14.4VDC

Morel is constantly developing new technology and processes to improve its products. Morel reserves the right to modify specifications or change product design without notice.

Wishing you many years of sound enjoyment!

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