

DALI SUB K-14 F

WHITEPAPER



IN ADMIRATION OF MUSIC

INTRODUCTION

At DALI we love movies just as much as we love music. We live for the passage in the movie where the bass filled score drives us to the edge of the seat, the deep precise boom of a gunshot report or the low rumbling of the truck driving between high buildings. To bring these scenes to life the bass sound has to be impressive, but more importantly, realistic. Timing and coherency with the rest of the sound stage is paramount, which is why DALI's sound principals are always applied

to our speaker design, even when designing subwoofers.

Big movies deserve big sound, and in particular, big bass. Enter the DALI SUB K-14 F. This potent subwoofer delivers on all points on the subwoofer checklist, delivering room filling deep bass and great looks, despite its relative large size.

With an impressive 14" long stroke aluminium clad woofer, an amplifier that delivers 500 Watts of peak power

and a down firing bass port that helps the front firing woofers integrate optimally with room, the DALI SUB K-14 F is a subwoofer that means business. Perfect for a surround setup and well suited for a large room stereo setup, the DALI SUB K-14 F is a true performer.

We are extremely pleased to welcome the DALI SUB K-14 F to our comprehensive subwoofer lineup. In the coming pages you will find a more detailed rundown of the SUB K-14 F.



CABINET



Any risk of port noise derived from the down-firing bass vent itself is seriously reduced by its convex tapered design. The vent has undergone extensive testing, measuring and listening when it comes to dimensions and placement, in order to optimize interaction with the cabinet and woofer.

Cleverly designed, the SUB K-14 F is a big subwoofer, but with a non intrusive design. The 14" woofer reaches almost to the edge of the elegant looking high gloss front baffle, giving the appearance of a large woofer and small cabinet. Built from solid MDF, the 430 x 395 x 425 mm cabinet abides to the tough DALI specifications, and gives the woofer an impressive 44 litres to work within.

The cabinet enclosure comes in two finishes: the Black Ash finish is matched with a black high gloss front baffle, and the White Silk Matte finish is fronted by a white high gloss baffle.

The entire cabinet is effectively decoupled from the floor by means of a sleek aluminium base. Almost appearing to hover above the floor, the distance of 50 mm eliminates any

potential turbulence from the space between the cabinet and the floor itself. Still, the proximity to the floor ensures that the benefit of having a downward-firing port is maintained; a higher efficiency and more freedom in positioning.

WOOFER



One of the inherent abilities of pure aluminium is an extreme rigidity, measuring a Young's modulus of 69 GPa. In comparison the typical paper cone material measures 4 GPa.

The SUB K-14 F incorporates a 14" woofer with a deep black coloured aluminium cone. Chosen for its stiff, yet lightweight properties, the aluminium cone ensures a greater transient response than you would normally expect from a subwoofer in this category. Very much in line with DALI's philosophy in building speakers, the ability to start and stop very quickly enables easy integration with the front speakers.

Designed to be a closed cone you will find no dust cap. Instead it is an integrated part of the cone itself. This is also a contributing factor in ensuring a piston-like behaviour. Consequently, distortion is kept to an absolute minimum – especially in the low frequency area which is where the subwoofer operates.

The motor of the woofer is built around an 'oversized' ferrite magnet, and optimised for maximum flux within the

voice coil gap. This carefully designed magnet system enabled the project team to reach a high B/L product to enable the SUB K-14 F to render the finer low frequency details of music, but also at a higher sound pressure level. The measured BxL value of 17 N/A is a good indication of the level of control and precision that was reached, and rarely to be found in this category at all. Numerous listening sessions has truly convinced us that this was indeed the right way to go.



Carefully designed by DALI the 14" woofer is optimized to work perfectly within the cabinet and together with the amplifier to deliver punchy, but well timed bass.

The 30 mm long, 4 layer voice coil is built for long excursions. It is vented to ensure air cooling to the system and to the coil itself, keeping the temperature down, which creates a stable bass response.

Also, the pole piece is vented for maximum cooling. The venting here has another purpose though; it reduces internal compression in the motor system, which ensures free movement of the cone without any over-/underpressure affecting the performance.

Adhering to the low-loss sound design principle, the surround of the woofer is built to allow long and linear excursion. The oversized suspension is designed to allow both weak and strong transients to turn into undistorted acoustic signals.



The 30mm long, 4 layer voice coil work together with the very powerful magnet to produce no less than 17 N/A of BxL.

AMPLIFIER

Making sure there is enough power to move the large woofer, the 450 watts RMS integrated amplifier has the stamina to keep pushing and the headroom to draw out that little extra when needed. Constructed for lasting effect, it is powered by a switch mode power supply (SWPS) that helps keep the module at a low working temperature. For that reason there is no external heat sink on the SUB K-14 F.

Knowing that the SUB K-14 F will find itself working for hours on end, we wanted to secure the amplifier against overheating. The built in PTC ensures that even if the SUB K-14 F should become overheated, it will automatically shut down until the

temperature is back at operating level and then turn back on.

The Class-D amplifier takes an analogue signal, and with an eye on performance and to keep the signal clear and undistorted, an analogue filter is applied. This filter is tuned to maximize the use of the woofer and thereby the output from the SUB K-14 F.

To improve sound reproduction and to avoid excessive distortion at extreme output sound pressure levels, a power limiter has been incorporated in the amplifier signal path.

The integrated limiter works by constantly comparing the incoming audio signal to a threshold defining

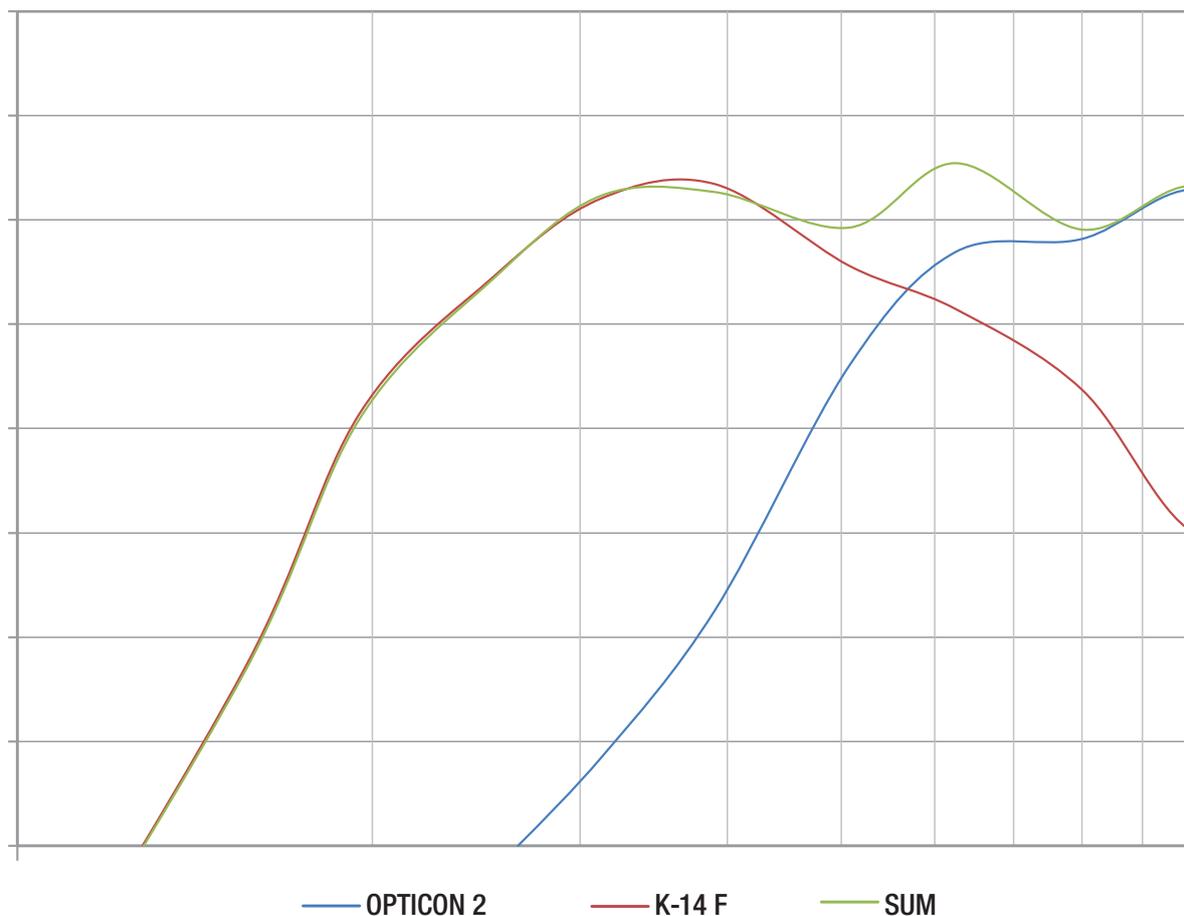
the maximum amplifier output power. If the incoming signal, at a certain volume setting, is about to exceed the maximum amplifier output power the level is automatically limited without introducing audible level differences or pumping artefacts. This is done to avoid clipping of the audio signal that will cause distortion and to prevent the amplifier from being damaged. The limiter is only functional at extreme sound pressure levels.

Fitted with controls for gain, cut-off frequency, and phase, the DALI SUB K-14 F will adapt to most front speaker and room acoustics. And, with a choice of LFE and LINE level inputs, it can be connected to almost any amplifier, receiver or processor.



The switch mode power supply (SWPS) ensures a low working temperature eliminating the need for an external heat sink.

APPLICATION



Integrating perfectly with the front speakers the SUB K-14 F extends the natural performance of the speaker downwards adding nothing but bass.

DALI SUB K-14 F is designed to deliver big and powerful bass. This makes it a perfect companion for any surround setup. The precision and power enables it to accompany everything from a ZENSOR setup, OPTICON, or even up to a RUBICON setup, no matter if they are

configured for stereo or surround sound.

Available in Black Ash and Silk Matte White, the SUB K-14 F will integrate almost seamlessly into any room configuration. The design, technology and construction of this subwoofer

also makes it a perfect upgrade for any other speaker brand.

The SUB K-14 F takes movie or stereo bass to a new level, integrating well-timed and powerful bass with almost any speaker configuration.

DALI SUB K-14 F	
Frequency Range [+/- 3] dB [Hz]	29 - 160
Input Impedance [kohm]	10
Maximum SPL [dB]	115
Crossover Frequencies [Hz]	40 – 120 (variable low-pass)
Low Frequency Driver(s)	1 x 14" long stroke
Enclosure Type	Bass reflex
Bass Reflex Tuning Frequency [Hz]	34
Connection Input(s)	RCA Stereo, (low-pass filtered) LFE (Mono)
Recommended Placement	Floor, near wall or corner
Magnetic Shielding	No
Max. Amplifier Power Output [RMS Watts]	500
Continous IEC Power Output [RMS Watts]	450
Max. Power Consumption [Watts]	650
Dimensions (H x W x D) [mm]	448 x 396 x 428
Dimensions (H x W x D) [inches]	17.7 x 15.6 x 16.9
Weight [kg/lb]	26.4 / 58.2

All technical specifications are subject to change without notice.