

SPECIFICATIONS

FR4X6WA01/02 1¾" x 2½" oval neodymium, alu-cone fullranges, 4/8 ohm

The small oval transducers FR4X6WA01 (4 ohm) and FR4X6WA02 (8 ohm) were designed especially for high quality multimedia and lifestyle speakers, and for personal audio products, where sound reproduction without compromises is required. Will additionally work well as a midrange/treble transducer in small speaker products in combination with for instance a small subwoofer unit.

FEATURES

- True full-range design with on-axis output beyond 20kHz
- Dual neodymium magnet structure for high efficiency and almost ideal magnetical shielding
- Copper cap on center pole to reduce voice coil inductance and to minimize variations in voice coil inductance as a function of voice coil position
- Black anodized alu cone for better heat transfer
- Vented polymer chassis for lower air flow speed reducing audible distortion
- Vented voice coil former for reduced distortion and compression
- Heavy-duty black fiber glass voice coil bobbin to reduce mechanical losses resulting in better dynamic performance and low-level details
- Large motor with 16 mm voice coil diameter for better control and power handling
- Low-loss suspension (high Qm) for better reproduction of details and dynamics
- Black motor parts for better heat transfer to the surrounding air
- Conex spider for better durability under extreme conditions
- Gold plated terminals to ensure long-term trouble free connection



NOMINAL SPECIFICATIONS

Notes	Parameter	FR4X6WA01		FR4X6WA02		Unit
		Before burn-in	After burn-in	Before burn-in	After burn-in	
	Nominal size	1¾ x 2½		1¾ x 2½		[inch.]
	Nominal impedance	4		8		[ohm]
	Recommended max. upper frequency limit	full range		full range		[kHz]
1, 4	Sensitivity, 2.83V/1m	85		82		[dB]
2, 4	Power handling, short term, IEC 268-5, no additional filtering	35		35		[W]
2, 4	Power handling, long term, IEC 268-5, no additional filtering	15		15		[W]
2, 4	Power handling, continuous, IEC 268-5, no additional filtering	5		5		[W]
	Effective radiating area, S _d	15		15		[cm ²]
3, 4, 6	Resonance frequency (free air, no baffle), F _s	173		179		[Hz]
	Moving mass, incl. air (free air, no baffle), M _{MS}	1.4		1.3		[g]
3, 4	Force factor, B _{xl}	2.1		2.7		[N/A]
3, 4, 6	Suspension compliance, C _{ms}	0.6		0.6		[mm/N]
3, 4, 6	Equivalent air volume, V _{as}	0.19		0.19		[lit.]
3, 4, 6	Mechanical resistance, R _{MS}	0.3		0.3		[Ns/m]
3, 4, 6	Mechanical Q, Q _{MS}	5.1		4.9		[-]
3, 4, 6	Electrical Q, Q _{ES}	1.04		1.24		[-]
3, 4, 6	Total Q, Q _{TS}	0.86		0.99		[-]
4	Voice coil resistance, R _{DC}	3.0		6.0		[ohm]
5	Voice coil inductance, L _e (measured at 10 kHz)					[mH]
	Voice coil inside diameter	16		16		[mm]
	Voice coil winding height	6		6		[mm]
	Air gap height	2		2		[mm]
	Theoretical linear motor stroke, X _{max}	±2		±2		[mm]
	Magnet weight					[g]
	Total unit net weight excl. packaging					[kg]
3, 4, 5	K _{rm}					[mohm]
3, 4, 5	E _{rm}					[-]
3, 4, 5	K _{xm}					[mH]
3, 4, 5	E _{xm}					[-]

Note 1 Measured in infinite baffle.

Note 2 Tested in free air (no cabinet).

Note 3 Measured using a semi-constant current source, nominal level 2 mA.

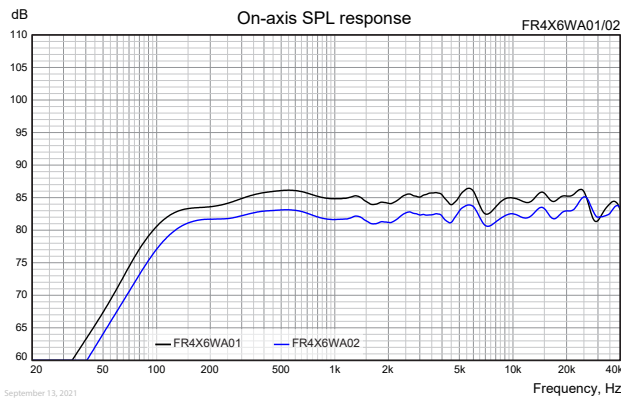
Note 4 Measured at 25 deg. C

Note 5 It is generally a rough simplification to assume that loudspeaker transducer voice coils exhibit the characteristics of an inductor. Instead it is a far more accurate approach to use the more advanced model often referred to as the "Wright empirical model", also used in LEAP-4 as the TSL model (www.linearx.com), involving parameters K_{rm}, E_{rm}, K_{xm}, and E_{xm}. This more accurate transducer model is described in a technical paper [here at our web site](#).

Note 6 After-burn-in specifications are measured 12 hours after exiting the transducer by a continuous sine wave for 2 hours. The sine wave frequency set at the transducer F_s, at level 3.0/4.25 VRMS (4/8 ohm version). The unit is not burned in before shipping.

SPECIFICATIONS

FR4X6WA01/02 1 3/4" x 2 1/2" oval neodymium, alu-cone fullranges, 4/8 ohm



Important!
Please observe that graphs on the left side of this page and the below text files for download are actual measurements of the drivers measured in infinite baffle and without any enclosure. Measuring the drivers in a finite baffle (like the baffle of most speaker cabinets) and in any size of enclosure will lead to different response curves.



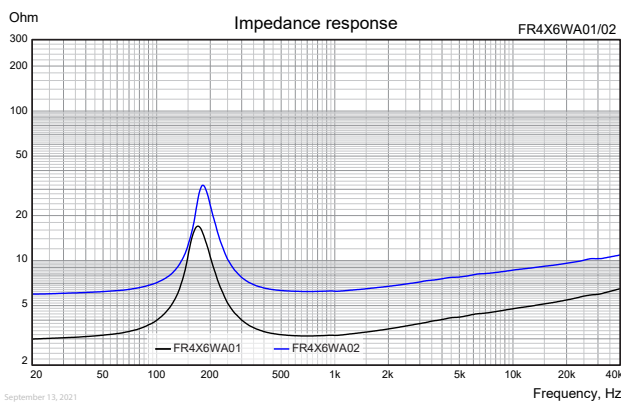
Download FR4X6WA01 on-axis SPL response as .txt file



Download FR4X6WA02 on-axis SPL response as .txt file

Measuring conditions, SPL

Driver mounting: Flush in infinite baffle, back side open (no cabinet)
Microphone distance: 1.0 m
Input signal: 2.83 VRMS stepped sine wave
Smoothing: 1/6 oct.



Measuring conditions, impedance

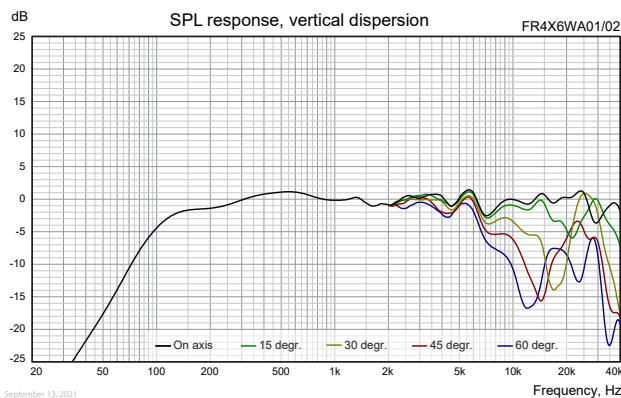
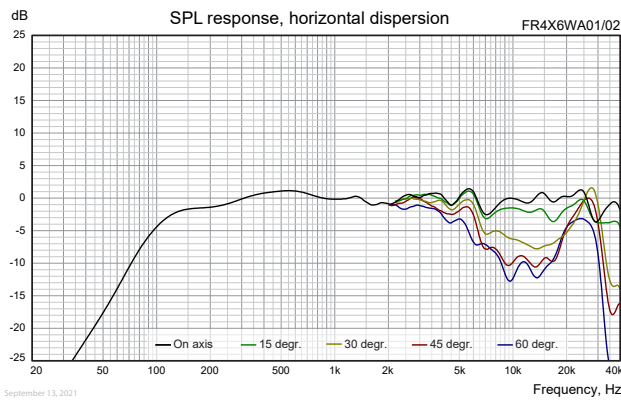
Driver mounting: Free air, no baffle, back side open (no cabinet)
Input signal: Stepped sine wave, semi-current-drive, nominal current 2 mA
Smoothing: None



Download FR4X6WA01 impedance response as .txt file



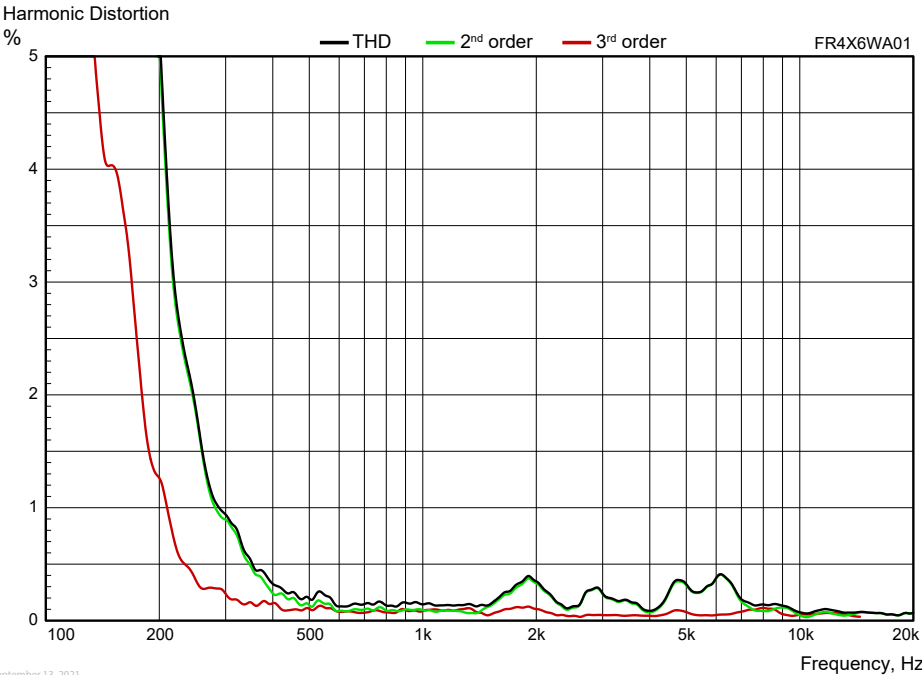
Download FR4X6WA02 impedance response as .txt file



SPECIFICATIONS

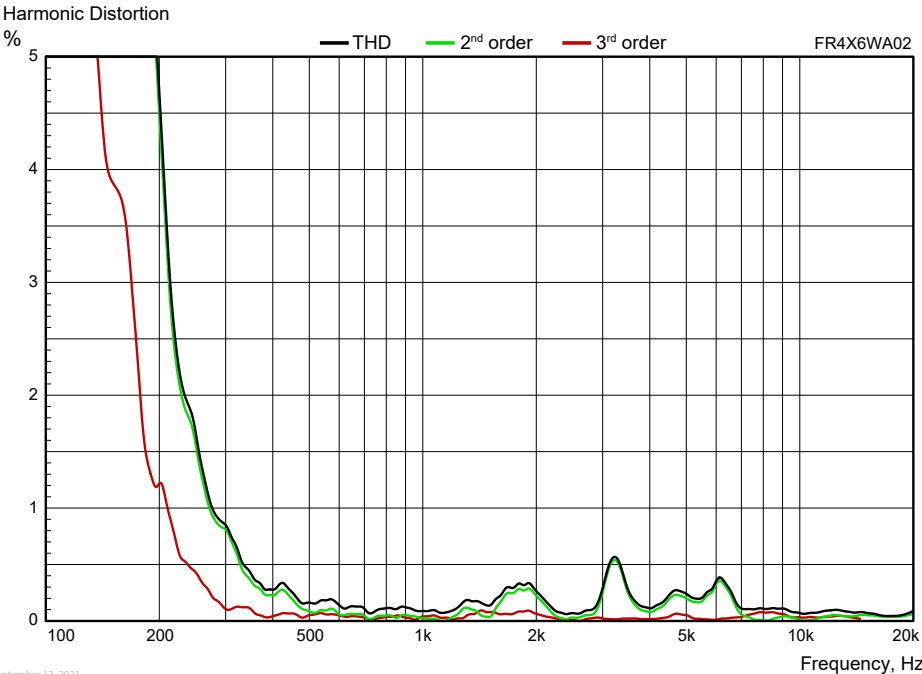
FR4X6WA01/02 1 3/4" x 2 1/2" oval neodymium, alu-cone fullranges, 4/8 ohm

HARMONIC DISTORTION



September 13, 2021

Measuring conditions, harmonic distortion
Driver mounting: In sealed, heavily stuffed enclosure, internal volume 1 lit.
Microphone distance: 0.5 m
Input signal: Stepped sine wave, 2.45 VRMS
Smoothing: 1/6 oct.



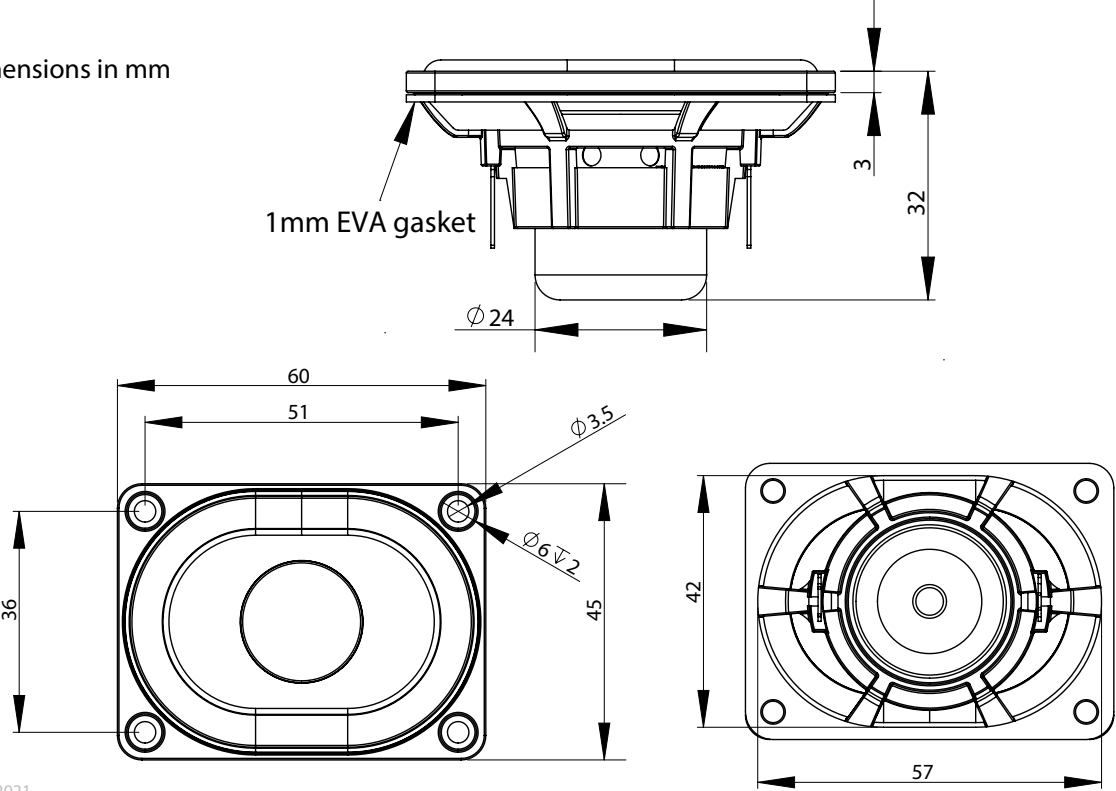
September 13, 2021

SPECIFICATIONS

FR4X6WA01/02 1 3/4" x 2 1/2" oval neodymium, alu-cone fullranges, 4/8 ohm

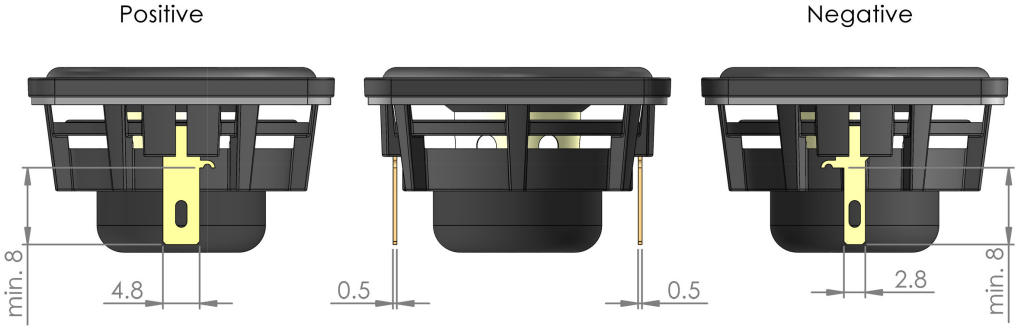
OUTLINE DRAWING (nominal dimensions)

Dimensions in mm



September 14, 2021

CONNECTIONS



PACKAGING AND ORDERING INFORMATION

Part no. FR4X6WA01-01	4 ohm, packed in pairs
Part no. FR4X6WA01-02	4 ohm, packed in bulk (industrial) packaging
Part no. FR4X6WA02-01	8 ohm, packed in pairs
Part no. FR4X6WA02-02	8 ohm, packed in bulk (industrial) packaging

Latest update: September 16, 2021