

MF2 Multi-Field Magnetic Speakers

Hardware Reference



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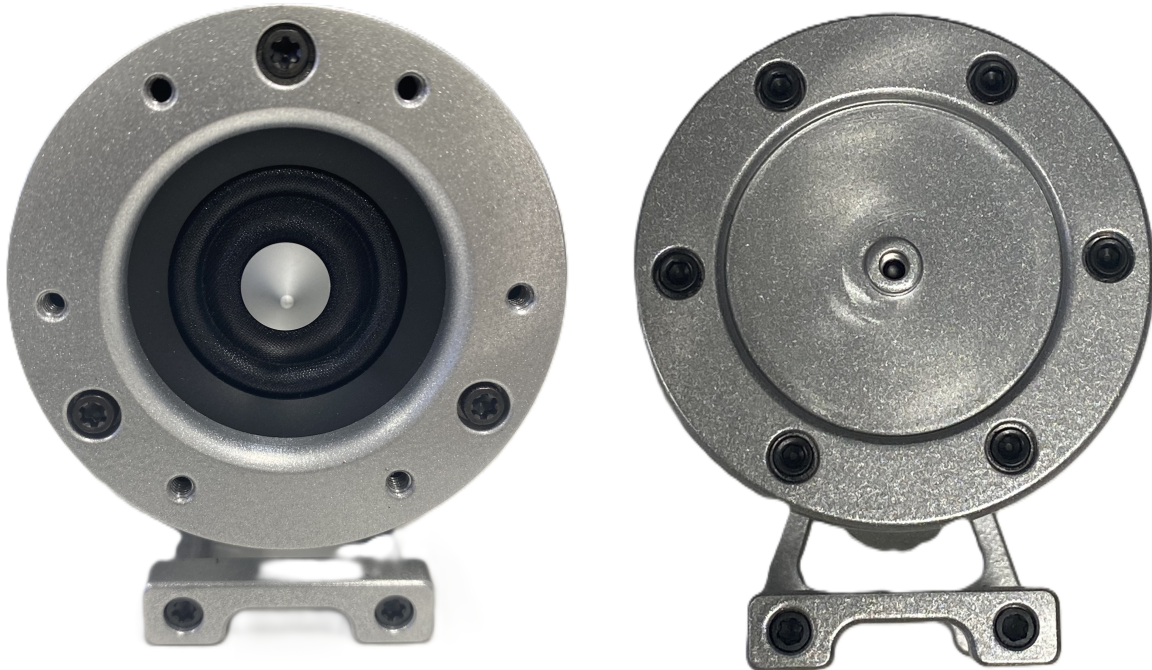
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MF2 Multi-Field Magnetic Speakers



Overview

TDT Multi-Field Magnetic Speakers offer high output and fidelity over a wide bandwidth and deliver more power at lower frequencies than our electrostatic speakers. They are well-suited for laboratory species with lower frequency hearing and for noise exposure studies.

A detachable tip allows them to be configured for either free-field or closed-field use. The closed-field configuration uses an internal parabolic cone designed to maximize output and minimize distortion. The tip is tapered to hold 1/8" O.D. PVC tubing. The mono speaker comes with two 10 cm tubes and the dual speaker set comes with four 10 cm tubes.

Speakers feature a rugged aluminum housing and a built-in, 8-32 threaded hole for standard laboratory mounting hardware. The mono speaker includes an aluminum stand and the dual speaker set includes a variety of aluminum mount/base fittings for easier positioning.

Each MF2 kit also includes a USB drive containing several speaker-specific closed field and free field calibration curves (TCF files) made during final testing at TDT. These files are used with the BioSigRZ software and demonstrate that the speaker is calibratable. When using the MF2 speakers, TDT recommends using speaker-specific TCF files made in your lab in place of the generic speaker curves provided in the BioSigRZ installation (stored by default in `C:\TDT\BioSigRZ\TCF\`).

The speakers can be driven directly from the RZ6, iMn and iQn iCon modules, or using TDT's SA1 or SA8 stereo amplifiers.

Part Numbers:

MF2-M - Mono, single speaker

MF2-S - Stereo, two speakers

MF2-SPK - Standalone free field speaker with no kit

Multi-Field Configurations

The MF2 speaker consists of the free-field speaker, a closed-field adapter that can be held in place with screws, and a line filter for closed-field use. An RCA to BNC adapter, an RCA (male) to RCA (male) cable, and a speaker stand are also provided in the kit.

Using the MF2 for Free Field Operation

The MF2 main speaker component can be used for free-field sound production. The speaker can be connected to the source via an RCA connector located on the back of the MF2 housing. If using the stereo amplifier built into the RZ6, simply connect the supplied RCA cable from the MF2 to one of the output BNC connectors on the RZ6 using the supplied RCA to BNC adapter. The iMn and iQn have RCA ports for direct connection with no adapter.

Caution

When the speaker is configured for free field use, be careful to avoid touching the exposed speaker membrane.

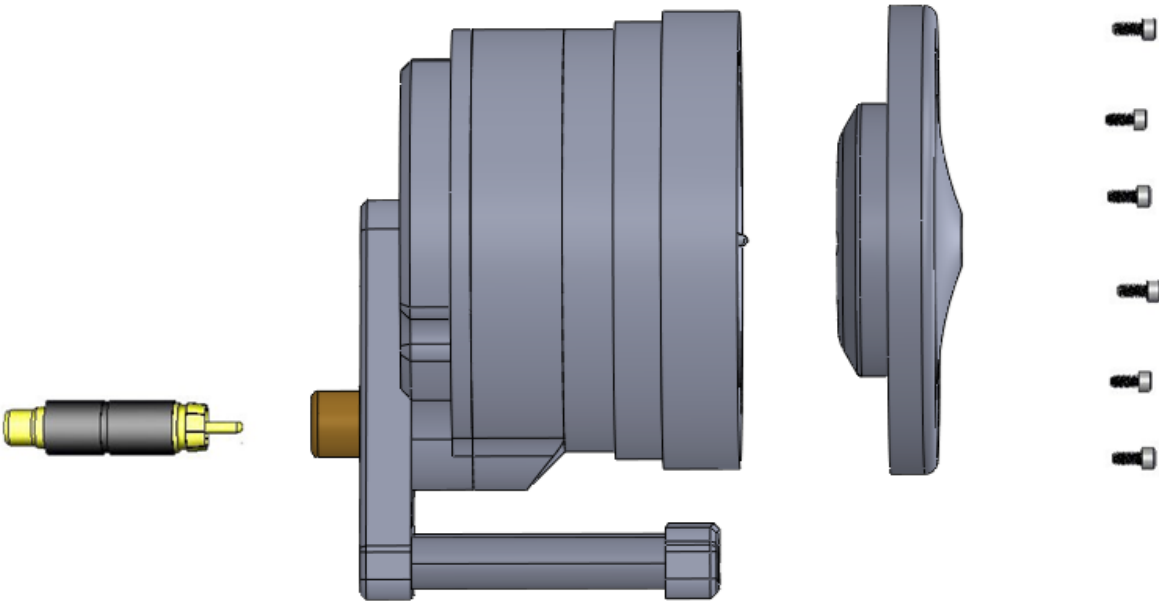
Configuring the MF2 for Closed Field Operation

For closed-field operation, the Closed Field adapter is attached to the face of the speaker using six hex screws (included with the speaker kit) and snugged down with the included hex tool.

The speaker can be connected to the source via an RCA connector located on the back of the MF2 housing. If using the stereo amplifier built into the RZ6, simply connect the supplied RCA cable from the MF2 to one of the output BNC connectors on the RZ6 using the supplied RCA to BNC adapters.

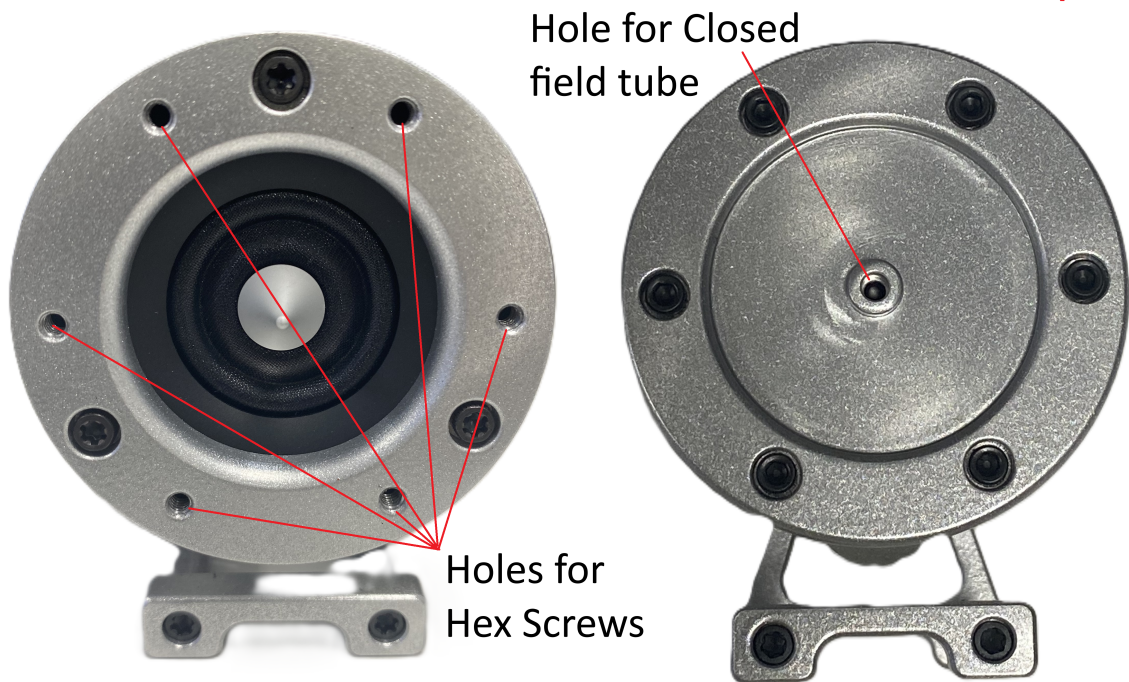
Important

When using the MF2 in the closed-field configuration the supplied CF line filter must be installed between the BNC to RCA adapter and the RCA cable, or between the RCA cable and the MF2. This filter minimizes distortion at lower frequencies in the closed-field.



To configure the MF2 for closed-field:

1. a) Ensure black o-ring is in place on back of CF adapter.
 b) Attach the CF Adapter to the front of the speaker using six of the provided 1/4 x 4-40 hex screws.
 c) You will see single or double hash marks on the side of the MF2 speaker and corresponding single or double marks on the side of the CF Adapter. When you screw the CF Adapter in place, be sure that the hash marks align for best results when you calibrate the speakers.



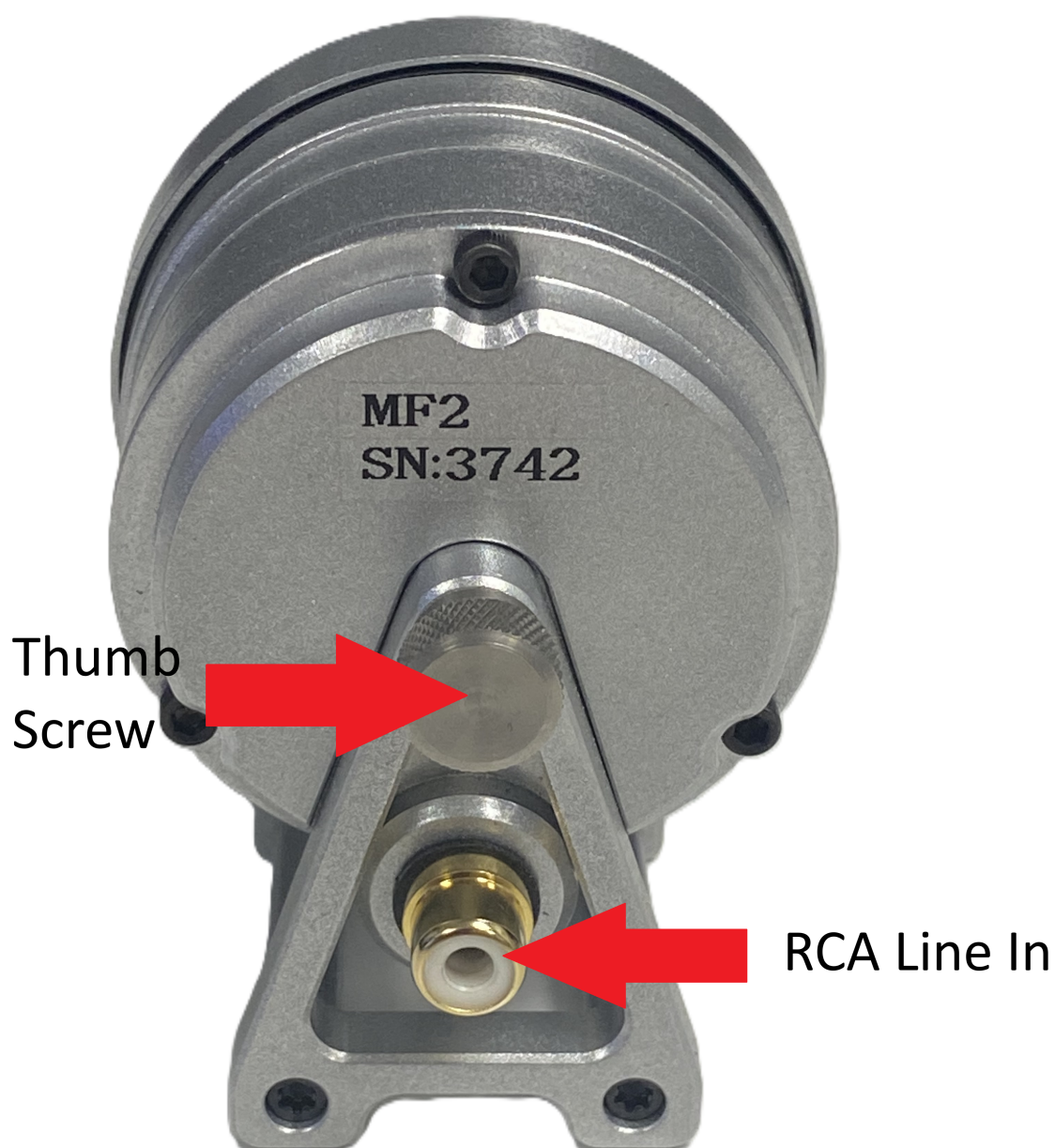
2. Attach the clear tubing to the front of the CF Adapter.
3. Attach a BNC to RCA adapter to the BNC amplifier port of your source device.
4. Attach the CF filter to the RCA cable.



CF Filter For Closed Field Configuration Only

If desired, attach the provided stand to the speaker using a thumbscrew.

- Connect the MF2 to the amplifier using the RCA cable (with CF filter attached).



Back of Speaker with Stand

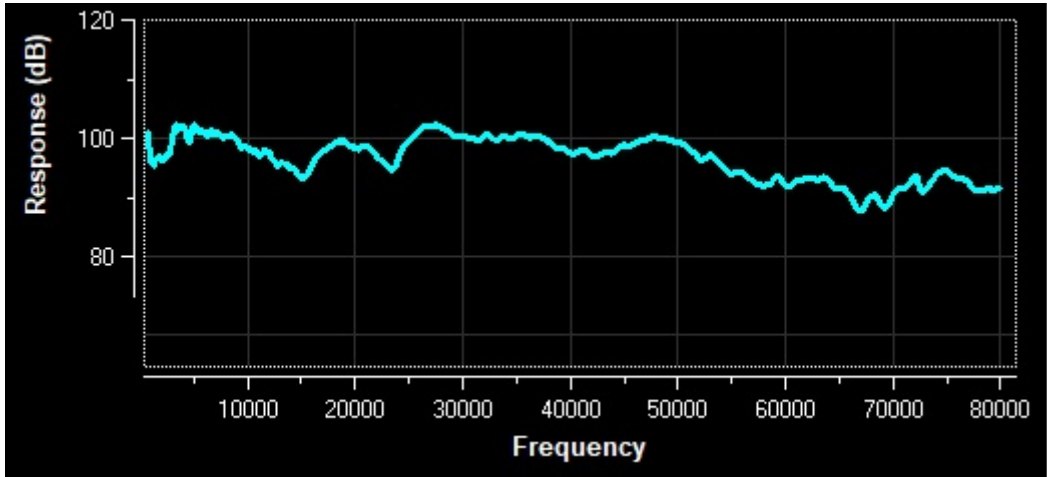
Closed-Field Speaker Design Considerations

For closed-field experiments, the provided PVC tubing will transfer the signal best when it is kept straight. Note that the speaker performance is dependent on the coupling system used and the ear of the subject. All speaker configurations should be calibrated to your specific configuration. Technical specifications measured under specific controlled conditions are provided for comparison purposes. If using BioSigRZ software, see the [ABR Guide](#) or [DPOAE Guide](#) for calibration tips.

MF2 Technical Specifications

Weight	Free Field: ~185.4g Closed Field: ~232.4g
Outside Diameter	5.71 cm
Depth	Free Field: 4.4 cm w/Tube Tip: 5.1 cm
Typical Output (± 1 V peak input)	Free Field: 90 dB SPL at 10 cm Closed Field: 100 dB SPL in 0.1 cc coupler
Frequency Range	Free Field: 90 db SPL, 1 kHz - 80 kHz Closed Field: 90 dB SPL, 1 kHz - 65 kHz
THD	$\leq 1\%$ from 1 kHz to 65 kHz
Impedance	4 Ohms
Max driving power	75 W (for third party amps)

Free Field MF2 Typical Response at 10 cm using ± 1 V input



Closed Field MF2 Typical Response at 10 cm using ± 1 V input and earpiece coupler

