

# MR Confon Starter f MKII+ User Guide

Version R05 July 2017



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*MR Confon Starter f MKII+ User Guide*

Revision Number	Date	Who	Description
R01	06/06/2017	D POLYMENOPOULOS; S ELLIOTT	First Issue
R02	21/06/2017	D POLYMENOPOULOS	Amended
R03	26/06/2017	S ELLIOTT	Corrections to description of headphones.
R04	26/06/2017	S ELLIOTT	Added comment about HP VS 02 and HP SC 03 headphones
R05	21/07/2017	D POLYMENOPOULOS S ELLIOTT	Updated HP US 03 photo and added comment about HP M 01 w headphones.

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## Introduction

Thank you for purchasing the MR Confon *Starter f MKII+* MRI Audio System. The equipment delivers high-fidelity acoustic stimuli for fMRI while also attenuating scanner noise. Innovative electrodynamic driver technology uses the magnetic field of the MRI scanner to drive the headphone membranes. This results in powerful speakers with an excellent frequency response across a wide dynamic range.

The package integrates perfectly with AudioFile<sup>1</sup>, a novel USB sound processor with automated synchronous triggering capabilities, to give you the controls you need for rigorous multimodal EEG/fMRI studies.

## Symbols

This manual contains international MR symbols as well as symbols to aid in general handling and installation of the equipment.

	MR SAFE: These items can go into the MRI room. No displacement with any field strength of any MRI scanner.
	MR-CONDITIONAL: These items must only go into the MRI room if specified installation and usage instructions are followed.
	MR UNSAFE: Never take these items into the MRI room. <b>SERIOUS DANGER FROM THE MAGNETIC FIELD EXISTS WITH THESE ITEMS.</b>
	WARNING: General warning regarding handling and installation.

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<sup>1</sup> Sold separately – see: <http://www.crsLtd.com/audiofile> for more information

## Starter f MKII+ Components

Your Starter f MKII+ package is shipped with the following components:



Headphone(s) and/or earphones with integrated BNC cables.

Package contents will vary based on configuration ordered.



Memory foam cushions



RF Filter elements (BLP 1.9+)



BNC connectors



Amplifier and power supply



Technologist Microphone



Desktop Monitor Speakers



Stereo filter/Transformer box



Analogue to Digital Converter



2 x 5 m and 2.5 m, red and white BNC cables (Nos. 1 - 3 / Nos. 3 - 6)



Stereo audio cable (No. 7)



Speaker cable (No. 8)




TOSLINK optical cable (No. 9)



XLR to BNC adapter [Headphone cable] (No. 10)

## Headphones and earphones

 Your MR Confon Starter f MKII+ package includes one or more pairs of headphones, and/or insert earphones. The package contents will vary depending on the configuration that has been ordered. Please refer to the Contents List and Despatch Note to confirm which options have been supplied. Note that, except for the range of HP PI US piezoelectric headphones, all other headphones with electrodynamic drivers only work inside the bore of the MRI scanner. Also, different versions of the headphones are provided for use with GE, Philips and Siemens MRI scanners. Usually there is one design for GE and Philips, and a separate design for use with Siemens MRI scanners.

### Model HP PI US 03

The universal HP PI US 03 ultra-slim headphone design accommodates most adult participants in any head coil and on any MRI platform. HP PI US headphones use piezoelectric technology, which allows them to work both inside and outside the MRI room.



Figure 1 : Model HP PI US 03



Figure 2 : Model HP PI US 03 (Detail)

### Model HP AT 01

The HP AT 01 insert earphones are designed to be used in the tightest head coils. In this novel hybrid design, the electrodynamic drivers are placed just outside the head coil, and deliver sound through very short, detachable 300 mm air tubes. For optimum participant comfort, the earphones are shipped with ear plugs, foam ear pieces as well as additional angled tips.

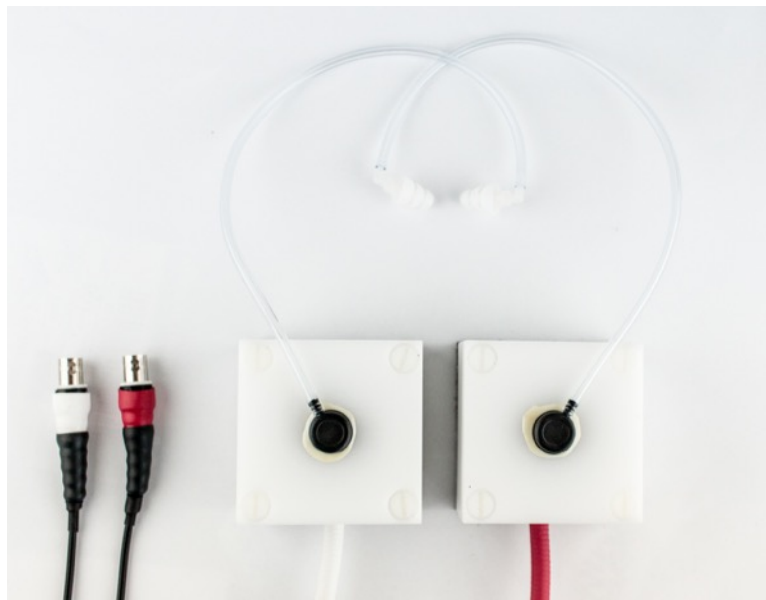


Figure 3 : Model HP AT 01 insert earphones with 300 mm air tubes and ear plugs

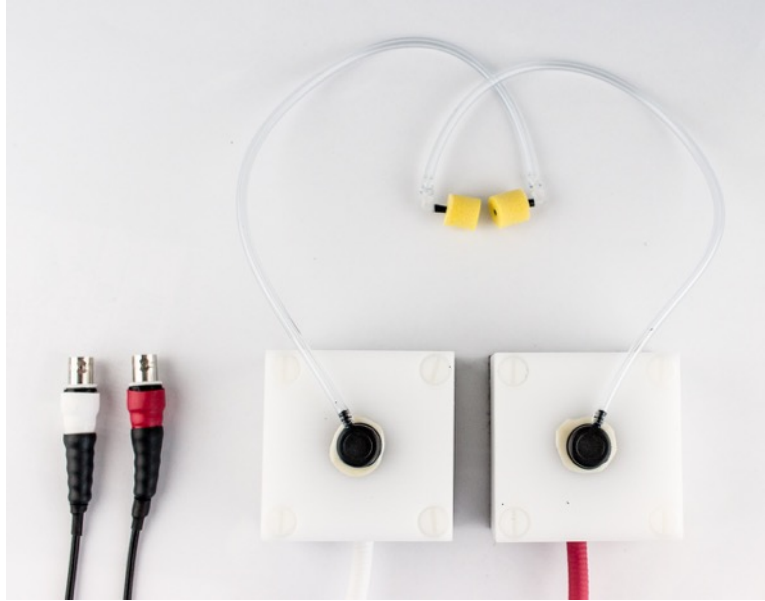


Figure 4 : HP AT 01 insert earphones with 300 mm air tubes and foam ear pieces

HP AT 01 headphones are supplied with two pairs of 300 mm air tubes. One pair has foam ear tips attached and the other has earplugs attached.

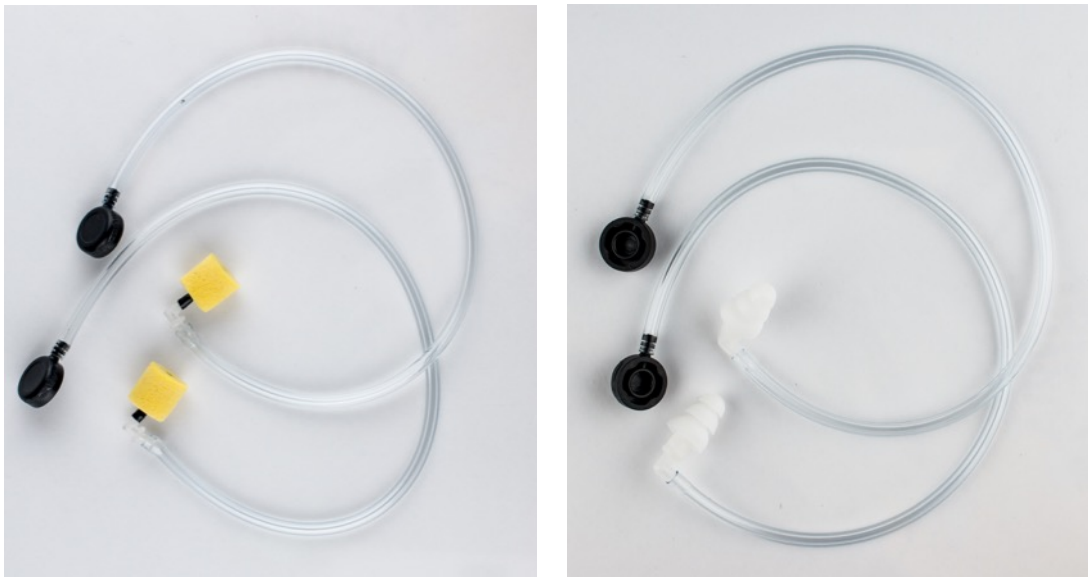


Figure 5 : HP AT 01 air tubes

Sometimes longer air tubes are necessary to place the electrodynamic drivers further away from the head coil. 3-meter air tube extension cables and additional earphone tips with angle piece are also included in the package.





*Figure 6 : 3m air tube extension and angle pieces*

The HP AT 01 insert earphones are provided with ear defenders for passive gradient noise suppression. Ear defenders are designed to work with all types of head coils. They should be placed over the participant's ears and the air tubes as shown in Figure 8.



*Figure 7 : Ear defenders provided with HP AT 01 earphones*



Figure 8 : Ear defenders covering foam ear tip

### HP AT 01 Accessories

Each HP AT 01 set includes extra ear plugs and foam tips:



Figure 9 : Two packs of 6 x SHURE ear plugs



Figure 10 : One pack of 50 x 3M foam ear tips

These parts are intended for single use and should be replaced for each participant. Further plugs and tips should be ordered from your local supplier.

### **Model HP VS 03; Model HP SC 03**

HP VS 03 headphones are designed for use with GE, Philips and modern Siemens MRI scanners (e.g. Siemens 3T Prisma platform). HP SC 03 headphones are the equivalent version for older Siemens MRI scanners (e.g. Siemens Avanto, Symphony, Sonata, Trio).

The VS 03 and SC 03 designs are mechanically and visually the same, but the SC 03 version for older Siemens MRI scanners has an extra compensation element. VS 03 / SC 03 headphones feature a powerful electrodynamic speaker system. They are slip-resistant, achieve 30 dB of passive gradient noise suppression and have reduced contact pressure which makes them more comfortable to wear. Please note that they only work inside the bore of the MRI scanner.



Figure 11: Model HP VS 03 / SC 03 (Front)

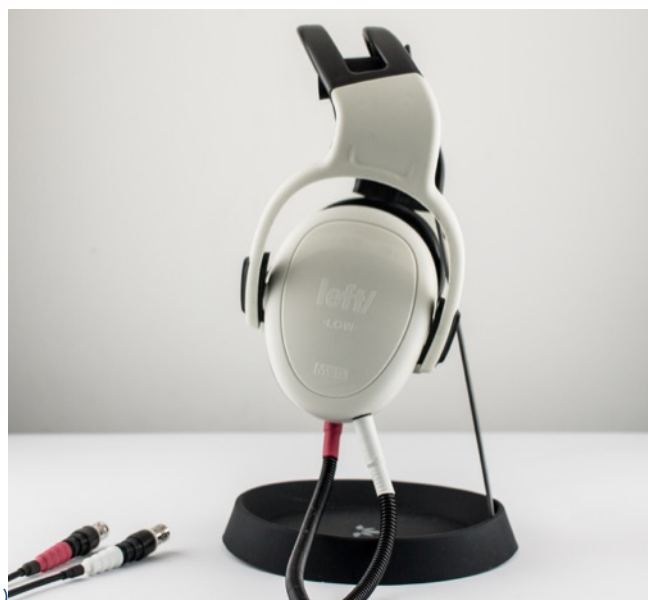


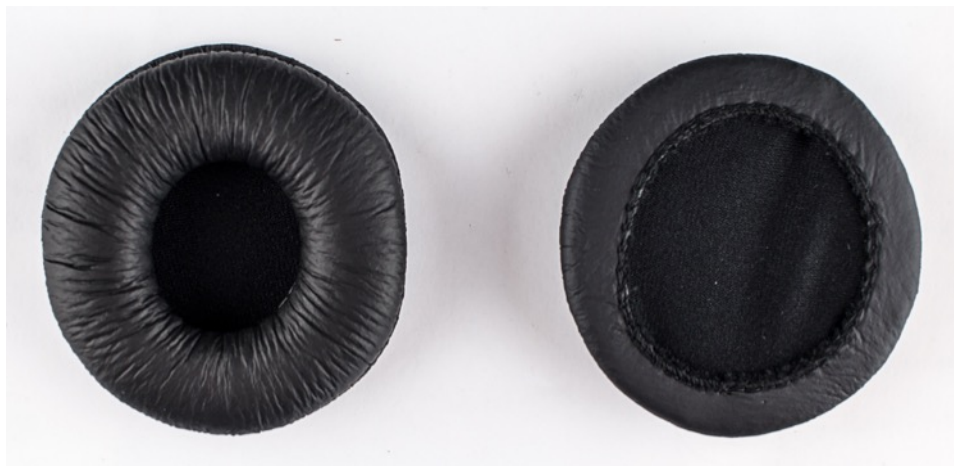
Figure 12 : Model HP VS 03 / SC 03 (Side)

**Model HP M 01w**



*Figure 13 : Model HP M 01 w*

The HP M 01w features the same electrodynamic system driver found in the HP SI 01 and HP SC 01. These compact, small form headphones are designed for use with children, NHP and other participants with small ears.



*Figure 14 : Model HP M 01 w covers*

A spare pair of HP M 01 w headphone covers is included. The covers themselves are not designed to suppress scanner gradient noise and must be used with the HP M 01 w headphones.

## Summary of available headphones and earphones

MR Confon headphones and earphones are available in a variety of shapes, sizes and cable routing arrangements to suit different head coil designs and MRI scanners.

*Table 1 : MR Confon Headphones and earphones*

Headphone	Features	Size	Headcoil
HP SI 01	Standard headphone with excellent passive gradient noise dampening and powerful electrodynamic speaker system.	32 mm thick. Dimensions: outer 85 x 105 mm, inner 45 x 65 mm.	Available for GE, Philips and modern Siemens (e.g. Prisma) scanners. Compatible with 8 and 12 channel head coils.
HP SIE 01	Special version of HP SI 01 with additional piezo drivers. Can be used inside or outside the scanner.	32 mm thick.	See HP SI 01.
HP SC 01	Special version of HP SI 01 with additional compensation element optimized for use with older Siemens scanners.	32 mm thick.	For older Siemens scanners and larger volume head coils (i.e. not 32/64 channel).
HP SC 02	Same features as HP SC 01, but 6 mm slimmer and with special foam cushion set.	26 mm thick.	Compatible with older Siemens scanners with 8 and 12 channel head coils.
HP SC 03	Headphones with excellent fitting accuracy. Slip-free, with minimal contact pressure for the participant. More than 30 dB passive gradient noise suppression over the entire EPI frequency range (500 Hz to 8000 Hz).	Dimensions: outer 80 x 105 mm; inner: 45 x 70 mm	Optimised for older Siemens MRI scanners with 12 and 20 channel coils.

HP VS 01	Smaller version of HP SI 01.	20 mm thick.	Optimised for GE and Philips 32-channel head coils. Also for use with 8 channel head coil and thick foam cushion.
HP VS 02	Smaller version of HP SI 01 with tilted cable management.	14mm thick.	Optimised for GE and Philips head & neck coils.
HP VS 03	As HP SC 03.	As HP SC 03.	Designed for use with all GE and Philips head coils, and modern Siemens MRI (e.g. Prisma) with 20 channel head coil.

HP PI US	Thin on-ear piezoelectric headphone for use in modern multi-channel head coils with a diameter down to 190 mm.	Dimensions: outer 80 x 105 mm; inner: 45 x 70 mm	Works with any head coil. Works inside and outside the MRI scanner bore.
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HP M 01	Small headphone, optimized for use with small ears. Same electrodynamic driver system as HP SI 01.	Dimensions: outer 60 mm; inner 25 mm.	Available for Siemens, Philips and GE scanners.
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HP AT 01	In-ear air-tube headphones compatible with all head coils. External headphone drivers deliver 130 dB SPL through detachable air-tube with optimized length for a frequency response of up to 12 kHz.	Various different earplugs available. Ear defenders offer high passive dampening.	Works with any head coil. Headphone drivers must be located in the MRI scanner bore.
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## Amplifier



The Starter f MKII+ amplifier is MR Unsafe and should not be installed in the MRI room.

The Starter f MKII+ amplifier can drive headphones, external speakers, and supports an optional headcoil-mounted noise-cancelling microphone. It has a digital I/O interface for direct integration with the MRI scanner.



Figure 15 : Starter f MKII+ Amplifier

The amplifier is shipped with its own power supply and region-specific plug as shown in Figure 16. Plug the power cable into the rear of the amplifier. For the location of the *Power In Port*, see *The Amplifier* on page 35 of the *Starter f MKII+ Amplifier Quick Reference Sheet*.



Figure 17 : Power for Starter f MKII+ Amplifier



## BNC Connectors



BNC connectors are MR-Conditional because they contain ferromagnetic material.



Connectors must be securely fastened, while any connectors not used should be removed from the MRI room.

As each MRI scanner installation is slightly different, the following BNC connectors are supplied to aid BNC cable connection in the MRI and Technologist rooms.

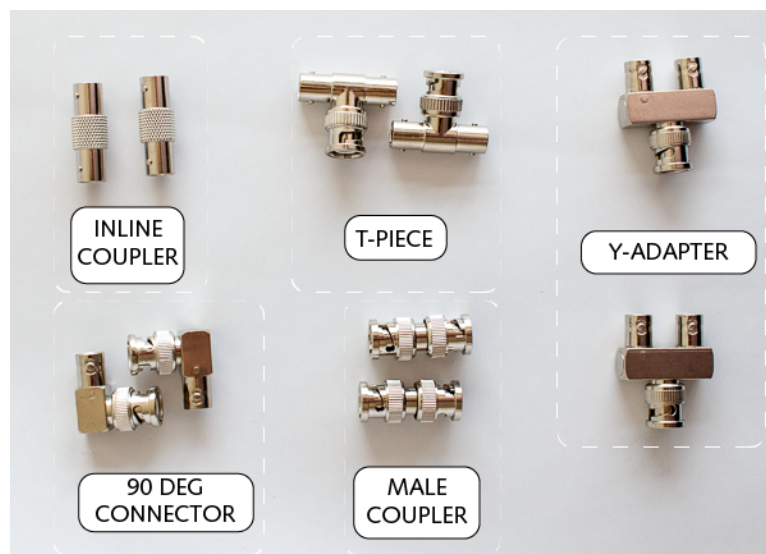


Figure 18 : BNC Connectors

In brief:

- Inline couplers connect two male BNC cables
- Male couplers connect two female BNC cables
- T-piece and Y connectors split the BNC cable signal
- 90 Degree connectors are used to rotate the filter setup

## RF Filter Elements



The filter elements are MR-Conditional because they are made from BNC connectors which contain ferromagnetic material.



BNC connectors that do not make up the filter elements should be removed from the MRI room. All filter elements in the MRI room must be securely fastened. Please note that you may not need to use all the supplied BNC connectors that are included in the package. It is strongly advised that the filter elements are fitted with the least possible number of BNC connectors.

The left and right filter elements are mounted inside the MRI room, at the RF Filter Panel. The filter elements are supplied pre-assembled and connect to the headphone's left and right channel inputs.



Figure 19: Filter Elements

For more information about filter elements and how to connect them to your MR Confon headphones, see *Filter Elements* on page 33 of the *MRI Room Assembly*.

## Technologist Microphone



The Technologist microphone is MR Unsafe and should not be installed inside the MRI room.

The Technologist microphone connects directly to the Starter f MKII+ amplifier and is used to inform and direct participants during a scanning session.



Figure 20 : Technologist Microphone

For more information on how to connect the Technologist microphone to the Starter f MKII+ amplifier, see *Connecting the Technologist Microphone* on page 29 of *Control Room Assembly*.

## Filter Box



The Filter Box is MR Unsafe and should not be installed inside the MRI room.


The Filter Box should be installed in the control room, as close as possible to the RF Filter Panel. It can be mounted permanently on a wall, using the integrated wall bracket.



Figure 21 : Filter Box

For more information about connecting the Filter Box, see *Connecting to the Filter Box* on page 26 of *Control Room Assembly*.

### Desktop Monitor Speakers

 The Desktop Monitor Speakers are MR Unsafe and should not be installed inside the MRI room.


A pair of high-quality desktop speakers are included with the package. They connect directly to the amplifier and allow the audio delivered to the headphones to be monitored by the Technologist.



Figure 22 : Desktop Speakers

For more information about connecting the Desktop Monitor Speakers to the amplifier, see *Connecting the Desktop Monitor Speakers* on page 27 of *Control Room Assembly*.

## Analogue to Digital Converter

 The Analogue to Digital Converter is MR Unsafe and should not be installed inside the MRI room.

The Analogue to Digital Converter takes analogue signals from audio sources such as computers, iPhones, iPads, CD, DVD and other media players, and turns them into digital/optical signals to send to the amplifier. If you are connecting to an audio source capable of producing S/PDIF digital audio (such as the AudioFile), this converter is not necessary.



Figure 23 : Analogue to Digital Converter

The Analogue to Digital Audio Converter is supplied with its own external PSU and TOSLINK (optical) cable. For more information about connecting the converter to the amplifier, see *Analogue Audio Setup* on page 30 of *Control Room Assembly*.

## Cables

BNC cables are colour coded using white connectors for the left audio channel and red for the right audio channel.



Cables 1-10 are MR Unsafe. They should not be installed inside the MRI room.



Cables 1-6 are interchangeable, as long the same length/colour is always used for the left (white) and right (red) channels.

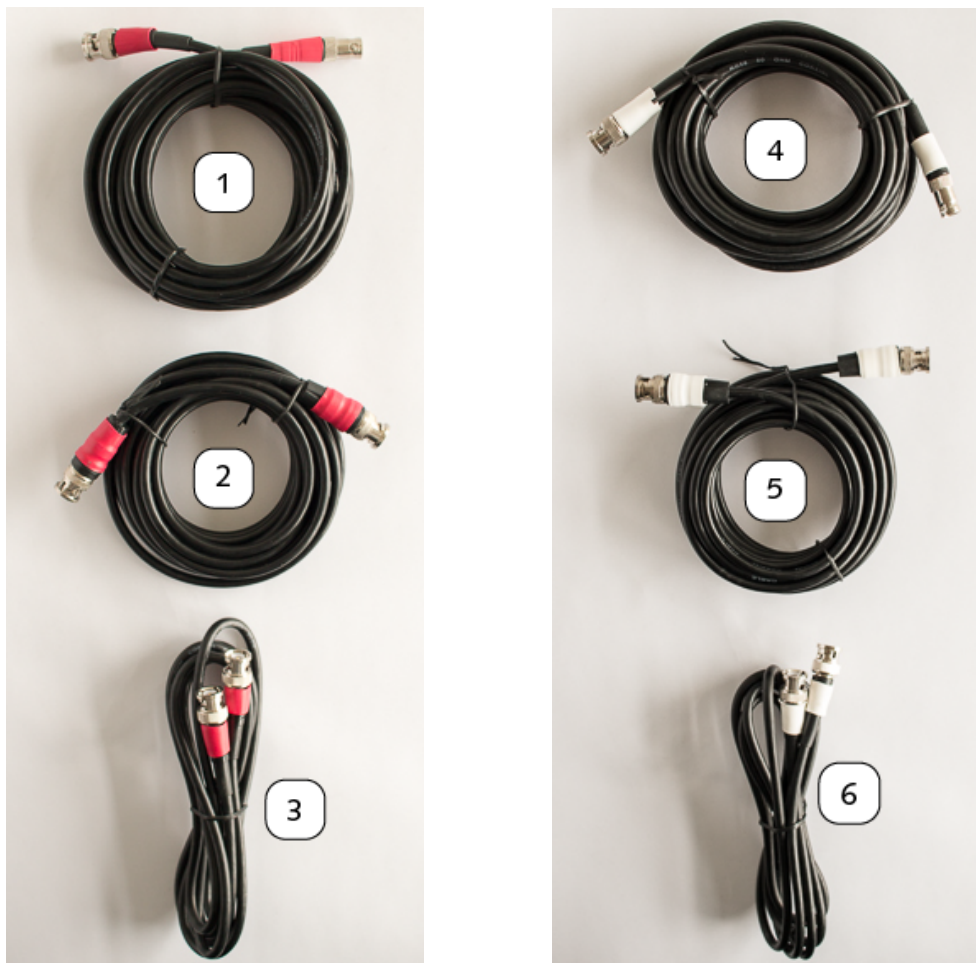


Figure 24 : Red and White Cables

Cables 1 and 2 are 5 meters (approx. 16.4 ft) long, while Cable 3 is 2.5 meters (approx. 8.2 ft) long. Cables 4 and 5 are 5 meters (approx. 16.4 ft) long, while Cable 6 is 2.5 meters (approx. 8.2 ft) long. Cable 7 connects conventional analogue audio sources to the Analogue to Digital Converter (for example: computers, cell phones and media players).



Figure 25: Stereo Audio Cable

Cable 8 connects the desktop monitor speakers to the amplifier.



Figure 26 : Speaker Cable

Cable 9 is an optical cable that connects the Analogue to Digital Converter to the amplifier or, if a digital audio source is used, the audio source and the amplifier.



Figure 27 : Optical Cable

Cable 10 is the headphone cable and is the first part of the cable setup that connects the amplifier to the headphones.

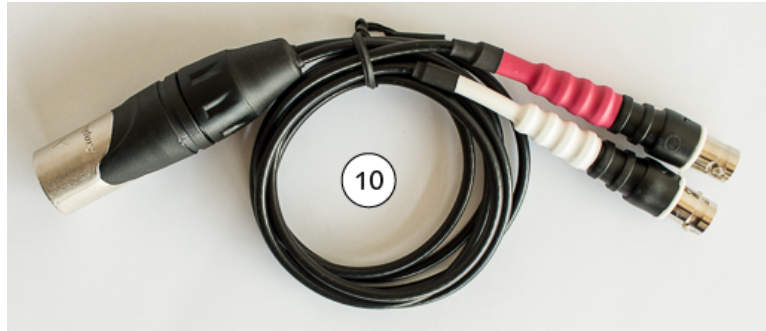


Figure 28 : Headphone Cable

### Memory Foam Cushions



Memory foam cushions are MR Safe and are used inside the head coil.

Where space permits, the soft cushions should be inserted between the head and contact points of the coil to provide better noise suppression, reduce bone conduction and improve participant comfort.







*Figure 29 : 5 Piece Siemens Memory Foam Cushions*

## Control Room Assembly

### Starter f MKII+ Amplifier Setup

The amplifier does not need any assembly and is ready to run. Set the amplifier at the desired location, connect the power cable and turn it on. When choosing a location for the amplifier, take into consideration:

- Distance from the RF Filter Panel is limited by the length of the BNC cables.
- Space should accommodate desktop monitor speakers and the Technologist microphone.



Figure 30 : Starter f MKII+ Amplifier

### Connect Headphone Cable

Connect Cable 10, the headphone cable, to the PAT HP (Patient Headphone) port at the rear of the amplifier as shown in Figure 31.



Figure 31 : Connect Headphone Cable

Select Cables 1 and 4. Connect them to the headphone Cable 10 as shown in Figure 32.

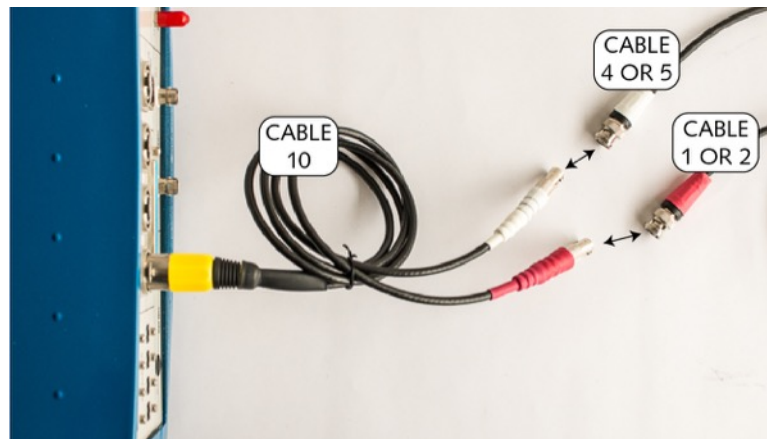


Figure 32 : Connecting to the amplifier

### Connecting to the Filter Box



Make sure you are connecting the Cables to the correct side of the Filter Box.

Connect a Cable 1 and 4 to the side of the Filter Box labelled “Isolated Input from Audio Amplifier” as shown in Figure 33.

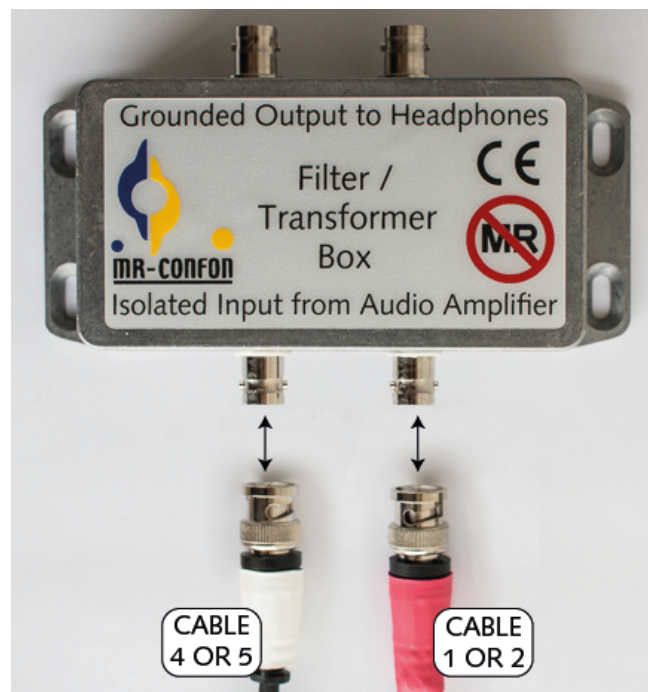


Figure 33 : Connecting to the Filter Box

Use Cables 3 and 6 to connect the Filter Box to the RF Filter Panel as shown in Figure 34. If the RF Filter Panel does not already have a pair of unused bulkhead

BNC connectors installed, then arrange for the Panel to be modified with the set of BNC bulkhead connectors that are included in the package.

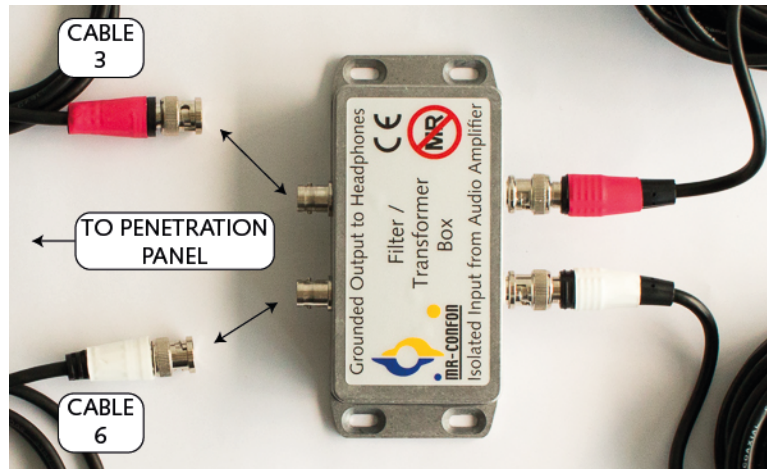


Figure 34: Connecting the Filter Box to the Penetration Panel

### Connecting the Desktop Monitor Speakers

The Desktop Monitor Speakers are powered by the amplifier and do not require a separate power supply. Connect Cable 8, the speaker cable to the *Stim Mon* port of the amplifier. Push down on the plastic flaps to insert the wires into their respective connectors.

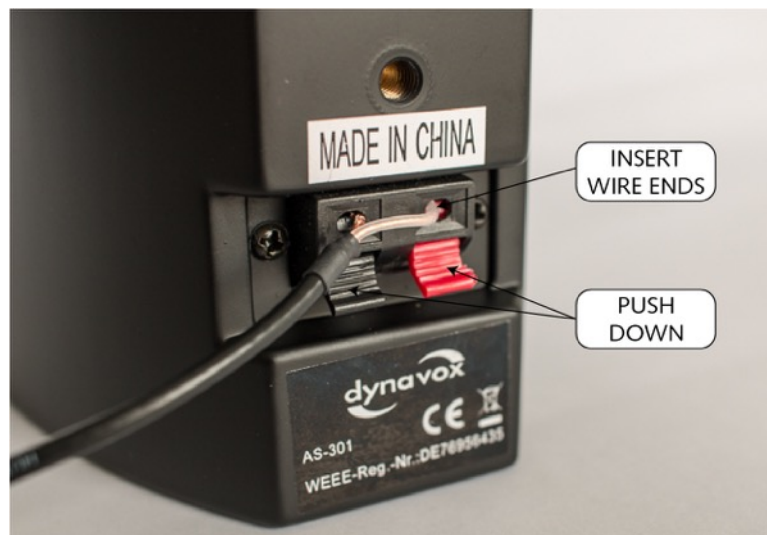


Figure 35 : Rear Speaker Detail



Figure 36 : Rear Speaker installed on the Starter f MKII+ amplifier

The final connection layout will look like Figure 36 (the second speaker not included for clarity).

### Connecting the Technologist Microphone

The Technologist Microphone connects to the amplifier's *Desk Mic* port.



Figure 37: Installing the Technologist microphone

### Connecting Patient Microphone (optional)

If the optional bi-directional microphone has been ordered, it will connect to the input labelled IN 4.



Figure 38 : Installing Optional Feedback Microphone

## Analogue Audio Setup

If you want to connect an analogue audio source to the Starter f MKII+ amplifier, you will need to use the supplied Analogue to Digital Converter.

Use the Cable 7 to connect your analogue audio source to the Analogue to Digital Converter and the Cable 9 to connect the Analogue to Digital Converter to the amplifier.

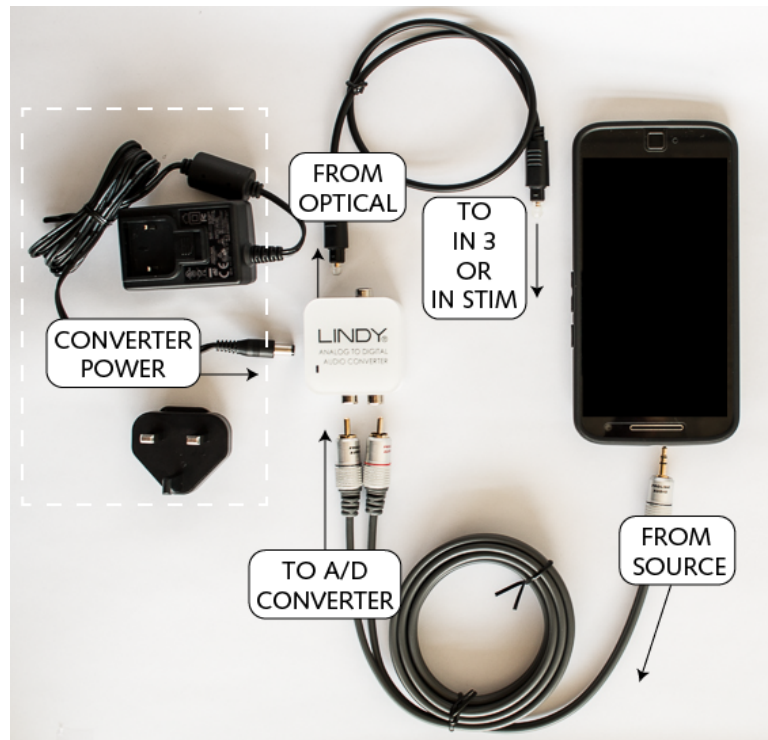


Figure 39 : Alternate Audio Setup

The output from Analogue to Digital Converter connects amplifier input IN 3 or IN STIM optical port, depending on the amplifier mode. For more information on the amplifier mode, see *Changing the Amplifier Mode* on page 38 of *Getting Started*.

## AudioFile Setup

Should it be necessary to connect the AudioFile USB sound processor to your amplifier, you may do so at this point. If not, please skip this section.



Figure 40 : The AudioFile

AudioFile supports two different modes of operation.

- AudioFile Mode: Buffered playback of WAV encoded stereo audio files
- USB Audio Mode: Real time streaming of audio directly from a suitable host computer

AudioFile is shipped with *AudioFile mode* active. You can read more about *AudioFile mode* and its timing capabilities in the separate *AudioFile User Manual*.

*AudioFile mode* requires other specialised equipment to be installed which generates TTL-compatible triggers and track selection codes. As this manual only concerns the installation of AudioFile, it will simply be necessary to make sure that all the components have been successfully connected.

To test AudioFile without triggering equipment, it needs to be booted into *USB Audio mode*. In this mode, AudioFile is automatically recognized by your computer as USB sound card and can play an audio stored locally on the computer.



To boot AudioFile into *USB Audio* mode, insert the AudioFile SD card in your computer's SD slot and open the *Config.xml* file in the card's *Firmware* folder using the Windows Notepad utility. In the *Config.xml* file, locate the "Entry DeviceType" option. By default this is set to AUDIOFILE. Replace the "AUDIOFILE" option with "USB Audio" as indicated in the comment in the file.

```
#DeviceType Is Either "AUDIOFILE" Or "USB Audio"  
<Entry DeviceType="AUDIOFILE"/>
```

Save the *Config.xml* file, then eject the SD card from the computer.

Return the SD card to AudioFile and connect the device to your computer using the USB cable supplied the AudioFile package. The device will boot in USB Audio mode. Use the Cable 9 to connect AudioFile to the amplifier as shown in Figure 41.

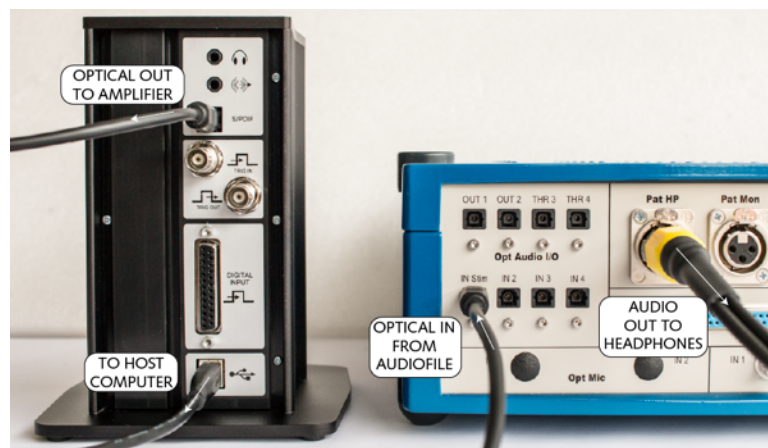


Figure 41 : Installing AudioFile

Note: Connect AudioFile to the *IN Stim* port or *IN 3* port, depending on the amplifier operating mode. For more information on the amplifier mode, see *Changing the Amplifier Mode* on page 38 of *Getting Started*.

## MRI Room Assembly



Follow the steps in this section to install the headphones.

Use only MR Safe components in the MRI Room.

### Headphones and earphones



The red BNC connector corresponds to right audio channel, while the white BNC connector corresponds to the left audio channel.



Figure 42 : BNC Connectors

### Filter Elements



Filter elements are MR-conditional, meaning that they are safe when installed properly in the MRI room. Make sure the filter elements are securely fastened amongst themselves and onto the bulkhead BNC connectors mounted on the RF Filter Panel.

Attach the headphone BNC connectors to the male coupler of the filter elements. If the filter elements have been disassembled, they can be reassembled as shown in Figure 43 or Figure 44.

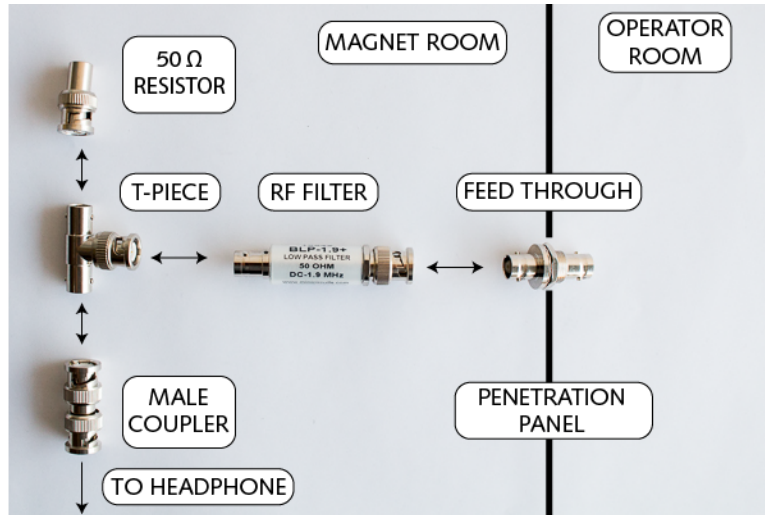


Figure 43 : Filter Elements (Disassembled)

Depending on the configuration of the MRI room, the Filter Elements can be rearranged with the help of extra BNC connectors. The RF filter is bi-directional, facilitating rearrangement of the RF filter element.

For example, adding a 90 degree connector to the RF filter element will create design shown in Figure 44.

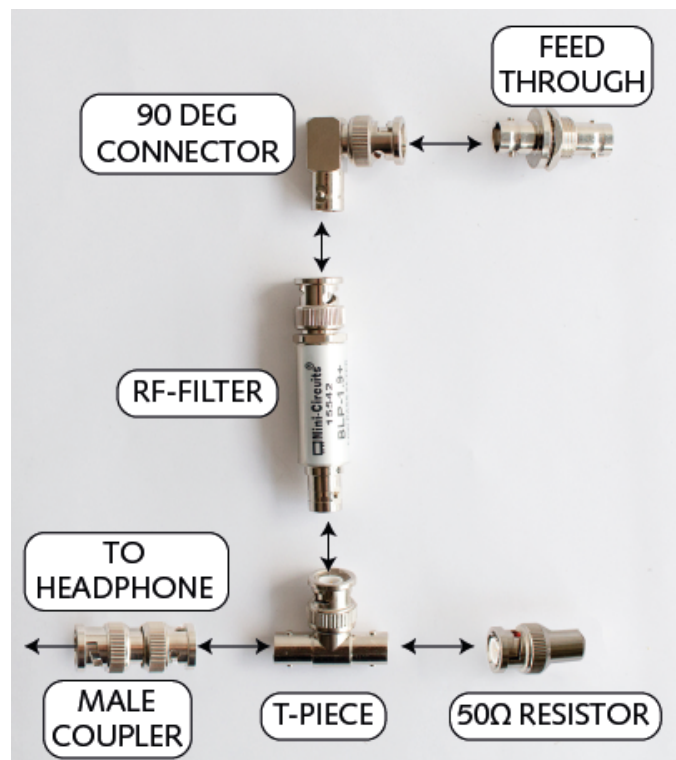


Figure 44 : Alternate Filter Element Assembly

These filter elements can now be attached to the RF Filter Panel at a 90 degree angle, allowing for a less obtrusive connection.

## Starter f MKII+ Amplifier Quick Reference Sheet

### The Amplifier

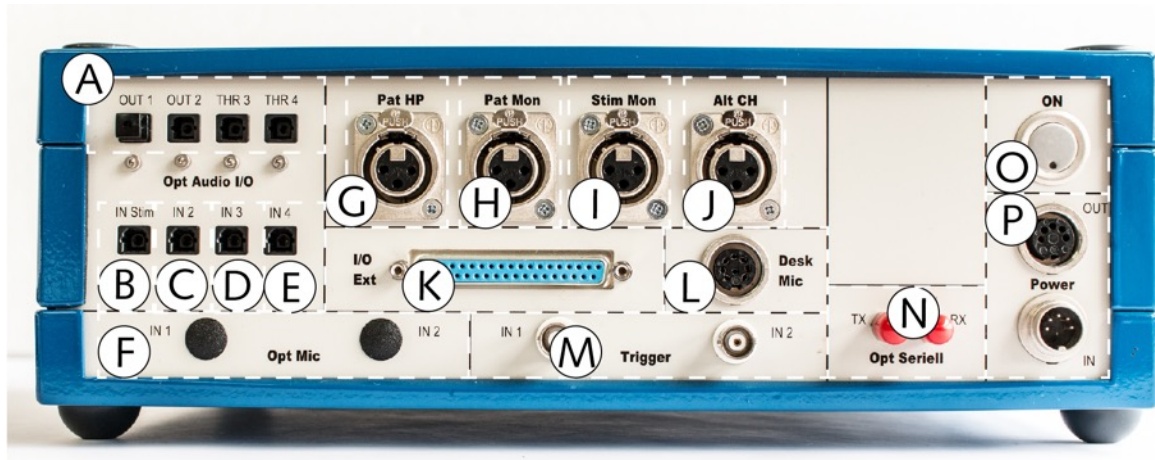


Figure 45 : The amplifier (rear panel)

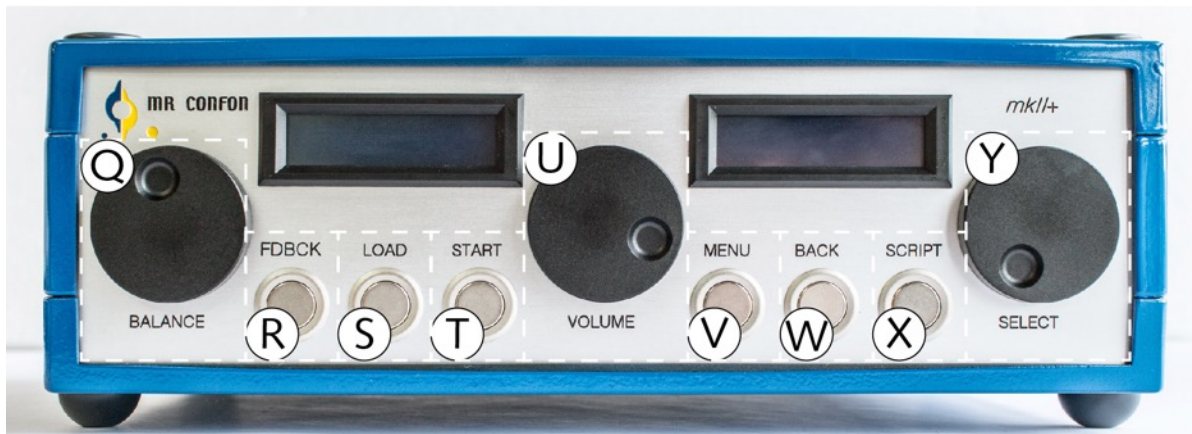


Figure 46 : The amplifier (front panel)

The Starter f MKII+ amplifier features a variety of buttons, dials and connection ports. Two LCD displays provide report the current status of the device.

**Rear panel interface:**

A: Optical Outputs

B: fMRI mode In

C: Port not used.

D: Entertainment Mode In

E: Subject Microphone Input

F: Port not used

G: Subject Headphones

H: Patient Monitor Speaker (For use with subject feedback microphone)

I: Technologist Monitor Speaker

J: Port not used

K: Parallel Port (only used for firmware updates)

L: Technologist Microphone

M: Trigger Input/Output

N: Serial Input/Output

O: Power (ON/OFF)

P: Power (IN/OUT)

**Front panel interface:**

Q: Balance Dial (left/right audio channel)

R: Subject Feedback Microphone

S: Button not used

T: Switch between Entertainment and fMRI modes

U: Volume Dial

V: Button not used

W: Button not used

X: Button not used

## Technologist Microphone

The Technologist microphone features two communications buttons – a *Talk* and a *Second Channel* button.

While the *Talk* button is pressed, the Technologist can communicate with the participant. During this time, all other audio sources are muted.

The *Second Channel* button is currently not used.



Figure 47 : The Technologist Microphone

## Getting Started

Press the On/Off button at the rear of the amplifier to turn on the Amplifier and Technologist Microphone.

## Changing the Amplifier Mode

The amplifier has two modes of operation:

Entertainment Mode: includes various features to enhance audio, like dynamic compression, remote volume control, priority input and trigger dependent functions. When in Entertainment mode, the right LCD indicates the source (SRC) as SPDIF 3. This corresponds to IN 3 on the rear of the amplifier.

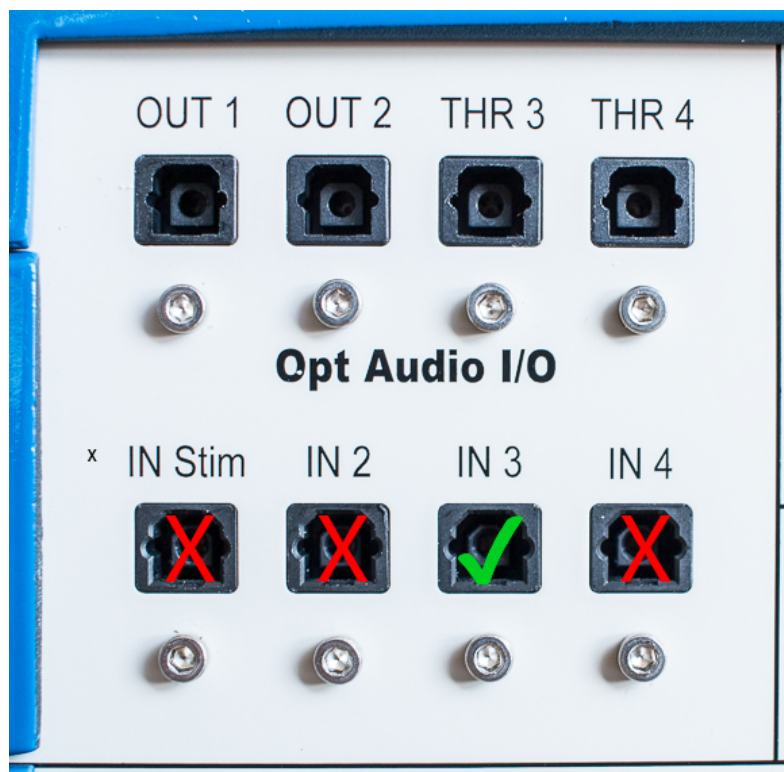


Figure 48 : Entertainment Mode connection detail

fMRI Mode: In this mode, the Entertainment Mode features are disabled and the right LCD indicates the source (SRC) as IN STIM. This corresponds to the IN STIM on the rear of the amplifier.

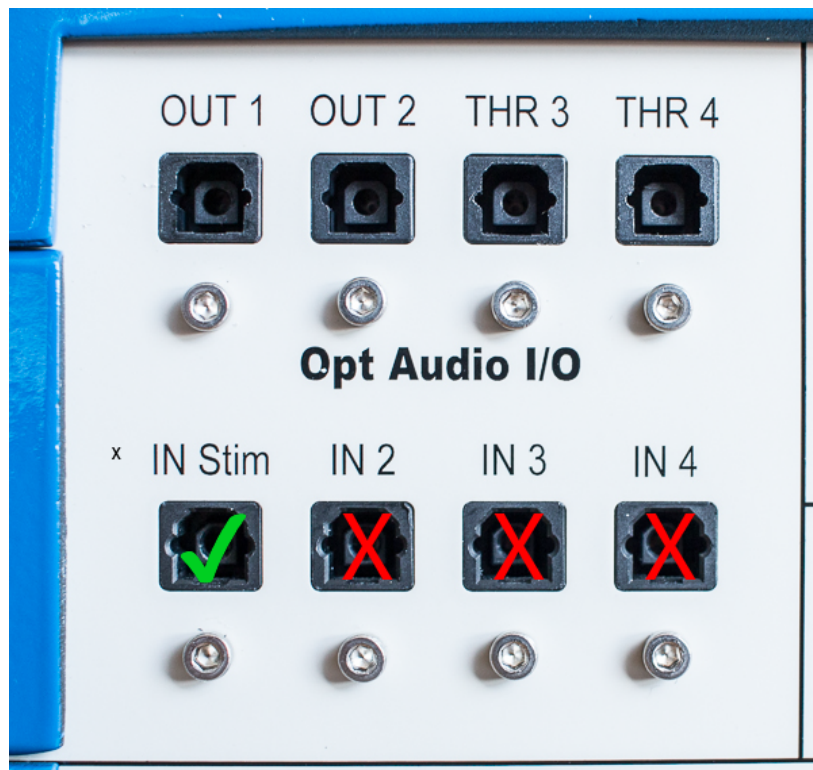


Figure 49 : fMRI Mode connection detail

To switch between these two modes, press the Start button. Don't forget to connect the optical cable to the correct optical input as indicated by each mode.

### Adjusting the Volume on the Headphones

By default, the volume dial adjusts the sound on the patient headphones. While adjusting the volume dial, the "MUSIC-VOL" level displayed on the left LCD ranges from MUTE to +24.



### **Adjusting the Balance on the Headphones**

By default, the balance dial adjusts the balance on the patient headphones. While adjusting the balance dial, the “MUSIC-VOL” level on the left-hand LCD ranges from MUTE L to MUTE R (Mute Left to Mute Right).

### **Adjusting the Volume of the Standard Microphone**

The volume is adjusted by pressing down on the “Talk” button of the Technologist microphone while at the same time adjusting the volume dial. The available volume level ranges from Mute to +24. Positive values (for example +12) indicate either very high volume or a low input level.

### **Adjusting the Volume of the optional Participant Microphone**

Where applicable, the Participant Microphone levels are adjusted by pressing the FDBCK button. Notice that on the right LCD the SRC indication is now SPDIF 4L. This corresponds to the IN 4 in the optical input – make sure the optional Participant Microphone is connected to IN 4.

### **Adjusting the Desktop Speaker Volume**

Push the volume dial once and the left LCD changes from “MUSIC-VOL” to “MUSIC-MONVL” on the first line and from “Balance” to “SUBJ-MONVL” on the second line.

MUSIC-MONVL is the Technologist speaker volume and can be adjusted by the volume dial.

SUBJ-MONVL is the Desktop Monitor speaker volume and can be adjusted by the Balance dial.

### **Adjusting the Balance of the Desktop Speakers**

Adjusting the balance of the Desktop Monitor speakers in *Stim Mon* or *Pat Mon* ports is not currently supported.

### **Normal Operation Mode**

After three seconds, the amplifier automatically reverts to its normal operation of adjusting the participant headphones when the volume dial used. To adjust the Technologist or Desktop Monitor speakers again, simply push the volume dial once and adjust volume/balance dials as required.

## Safety Warnings

### Life support applications



The Starter f MKII+ package should NOT be used in situations where failure of the device would constitute a hazard. It is designed for research applications only, and like any other regular electronic device could fail at any time, without warning.

### Magnetic fields



Do not take MR Unsafe parts into the MRI room.

### Servicing



DO NOT ATTEMPT TO DISMANTLE any part of the *Starter f MKII+* package. It contains no user serviceable components, refer all servicing to Cambridge Research Systems.

### Cleaning

Clean external components with damp cloth only. Do NOT allow fluids to enter any of the components. Do not sterilise in an autoclave.

## **Dimensions**

Starter f MKII+ Amplifier:

Width 32.5 cm (approx. 12.8 in)

Height: 11.4 cm (approx. 4.5 in)

Length: 27 cm (approx. 10.6 in)

Weight: 3.75 kg (approx. 8.27 lbs)

## **Safety Conformance**

EN60601-1 Ed 3

Type B Equipment

Class 1

## **Contact**

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