

# Sd-10 Configuration & Installation

Before the **Sd-10** can be used, you will need to load your SoundFiles onto a MMC/Sd flash card, attach a power supply, an amplifier and speakers (or amplified speakers), and (optionally) a switch to start the **Sd-10**. Selecting the operating mode will tell the **Sd-10** how you would like your SoundFiles to be played.

## MMC/Sd Card:

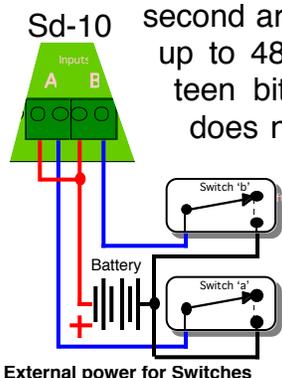
Any 3.3 volt Multi Media Card (MMC) or Secure Digital (Sd) flash memory card can be used with the **Sd-10**. Starting with version 1.16 of the **Sd-10** firmware, Sd HC cards are also supported. These will be available with capacities up to 2048 GBytes. As of this writing, Sd cards are available in sizes up to eight GBytes. These hold about 2000 typical Mp3 songs for about four days of continuous audio playback. The **Sd-10** supports up to 255 SoundFiles in most operating modes. Some modes support up to 32,767 SoundFiles.

The flash card should be formatted 'FAT' or 'FAT32' (it will probably come that way). The order in which the SoundFiles are placed onto the card is the order in which the **Sd-10** will play them. You can load Mp3 and .wav files onto the card using a flash card writer attached to a PC or Mac.

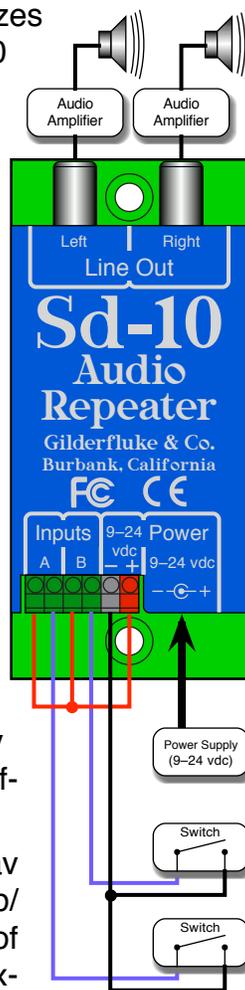
For the **Sd-10s** to recognize a SoundFile, its FileName must start with an alphanumeric character, and it must have the extension of either '.wav' or '.Mp3'. If a SoundFile meets these criteria, the **Sd-10** will attempt to play it. If the **Sd-10** can't play a SoundFile for any reason, it will give up after about three seconds.

The **Sd-10** will play just about all Mp3 or .wav file formats. Mp3 bit rates up through 320 Kb/second are supported. .wav files of up to 48 Kbytes/second and sixteen bit are supported. If a file

does not play, it is most often caused by which has a large (more than 2 MBytes) 'id3' tag at its front. These typically hold the album cover artwork for files downloaded from iTunes and similar sources. Since a **Sd-**



**Sd-10** can't use album artwork, it simply takes up additional storage space, delays the time it takes a sound to start playing, and (in the worst case), will keep a sound from playing at all. Most audio programs (including iTunes) have an option to eliminate 'id3' tags.



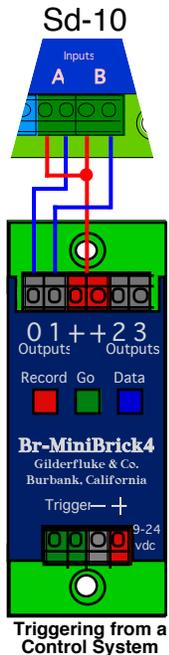
## Line Level Outputs:

The **Sd-10** features line level outputs. To use the line level outputs, just run a pair of RCA cables to your amplifier (or amplified speakers), just as you would if you were connecting a CD player. The line level outputs are robust enough to drive headphones and small speakers directly.

## Trigger Inputs:

The trigger inputs can be used with any switch. This can be a pushbutton, motion detector, IR beam, step mat, a digital signal from a control system, or anything else that will give you a 'powered switch closure'. The trigger inputs are non-polarized (they don't care which terminal is positive or negative) and opto-isolated. You must feed a DC voltage into them. Just touching a pair of leads from a nine volt transistor radio battery is a good test of the inputs. As shown at the middle of the page, you can 'borrow' some of the power that is running the **Sd-10** using the adjacent screw terminals, or use a separate isolated supply (as shown at left). The power supply is shown as a battery, but can be any power supply from 9 to 24 vdc.

Not surprisingly, all Gilderfluke & Co. control systems are easy to attach to a **Sd-10**. A **Br-miniBrick4** is shown, but all of our systems are wired in exactly the same way. The common posi-



tive is run to one side of both **Sd-10** inputs, and the control system outputs are wired right to the **Sd-10** inputs.

The 'Input' LEDs that are next to the two **Sd-10** inputs will light when each input is active.

### Power Supply:

The **Sd-10** will run on any voltage from 9 through 24

vdc. The **Sd-10** draws about 50 milliamperes when playing (no load on the outputs).

The power supply can be attached through the 2.1 mm power jack, or the screw terminals. They are connected. Power Supply voltages higher than 24 vdc can cause the **Sd-10** to run hotter than intended, and may eventually lead to failure.

## Sd-10 Configuration

The **Sd-10** is configured using a four position dipswitch. The cover of the **Sd-10** must be snapped off to reach this dipswitch. A ball point pen or any other pointy object can be used to flip the switches once the cover has been removed. Do not use a knife or other sharp object, as it might damage the switch.

Mode Name	Mode #	Triggers	Input 'A'	Input 'B'	DipSwitches 1 thru 3	Options
Looping SoundFiles with Mutes	0	0	Ramps to Muted	Ramps to -24dB	off/off/off	
Single trigger with Reshuffle	1	1	Play All SoundFiles	Reshuffle	on/off/off	4
Single trigger with Reshuffle	1 NoStep	1	Play All SoundFiles	Reshuffle	off/on/off	4
Two Playlists, Last SoundFile Loops between Triggered SoundFiles	2	2	Play 1st Half SoundFiles	2nd Half SoundFiles (except Last SoundFile)	on/on/off	4
Two Playlists, Last SoundFile Loops between Triggered SoundFiles	2 NoStep	2	Play 1st Half SoundFiles	2nd Half SoundFiles (except Last SoundFile)	off/off/on	4
Two Triggers, SoundFiles 3 thru Last Loop between Triggered SoundsFiles	3	2	Plays 1st SoundFile	Plays 2nd SoundFile	on/off/on	4
Two Triggers, SoundFiles 3 thru Last Loop between Triggered SoundsFiles	3 NoStep	2	Plays 1st SoundFile	Plays 2nd SoundFile	off/on/on	4
Store Caster/Safety Messages/Music On Hold	4	0	Mutes All Audio	Ramps to -24dB	on/on/on	
<b>Option #4</b>	<b>DipSw. #4 = Off:</b> SoundFiles played sequentially			<b>DipSw. #4 = On:</b> Selected sounds played randomly		

### Operating Modes:

The first three DipSwitches are used to set the mode of operation for the **Sd-10**. The 'on'/'off' after each 'mode' show which of the first three dipswitches need to be turned 'on' or 'off' to select that mode. As an example; to select 'mode 3', you would turn 'on' switches one and three. Switch two would be turned 'off'.

In some cases when the operating mode is switched, you may need to cycle power to the **Sd-10** to assure it operates as expected.

**If you need your SoundFiles(s) to just loop: use mode 0.**

**DipSwitches one though three = off/off/off**

**If you just need to trigger one or more SoundFiles: use mode 1 or 1 (NoStep).**

**DipSwitches 1 through 3 = on/off/off or off/on/off**

**Mode 0 / off/off/off** Loops with Mutes: Loop all of the SoundFiles on the **Sd-10**, starting at PowerUp. Input 'a' will ramp the audio to a fully muted level when activated. The 'b' input ramps the audio to a 'half muted' (lower) volume which is -24 dB from the normal volume level. The **Sd-10** will support up to 32,768 SoundFiles while in this mode.

**Mode 1 / on/off/off** Single trigger with reshuffle: Input 'a' plays ALL of the SoundFiles on the **Sd-10** (SoundFiles 1 through ??). Input 'b' reshuffles the 'PlayList' triggered by the 'a' input.

**Mode 1 (NoStep) / off/on/off** As above, but once a sound is triggered, another sound can't be triggered until the first has stopped. It can't be 'Stepped On'.

**Mode 2 / on/on/off** Two PlayLists, with looping background SoundFile: This mode divides all of the SoundFiles into two evenly sized 'PlayLists'. Input 'a' triggers SoundFiles from the first half, and input 'b' triggers SoundFiles from the second half. The **Sd-10** will loop the last SoundFile on the card whenever it isn't playing a triggered SoundFile. The first 'PlayList' starts at the first SoundFile. The background looping SoundFile will start playing as soon as the **Sd-10** is powered up. There must be at least three SoundFiles on the **Sd-10** for this mode. If there is an even number of SoundFiles on the **Sd-10**, then the second PlayList (triggered by the 'b' input) will have one less SoundFile than the first PlayList (triggered by 'a' input).

If you need the two PlayLists that this mode provides, but don't need the background looping file: Just make sure that the last SoundFile on the flash card is completely silent. In this way, it will loop away in the background without disturbing anyone.

**Mode 2 (NoStep) / off/off/on** As above, but once a sound is triggered, another sound can't be started until the first has ended. While the triggered sounds are protected from another SoundFile starting, the background SoundFile can be stepped on by any trigger to play a SoundFile from the 'a' or 'b' inputs.

**Mode 3 / on/off/on** Trigger SoundFiles one or two, with a background SoundFile PlayList. Input 'a' plays the first SoundFile. Input 'b' plays the second SoundFile. If not playing either of these SoundFiles, then SoundFiles 3 through ?? will be played. If the 'Random' switch (DipSwitch #4) is 'on', the back-

ground SoundFiles will be played in a Random order. There must be at least three SoundFiles on the **Sd-10** for this mode. This mode is 'Steppable'.

**Mode 3 (NoStep) / off/on/on** As above, but once a sound is triggered, another sound can't be triggered until the first has stopped. While the triggered sounds are protected from another SoundFile starting, the background SoundFile can be stepped on by any trigger to play a SoundFile from the 'a' or 'b' inputs.

**Mode 4 / on/on/on** 'StoreCaster' and 'Music-On-Hold' mode. From PowerUp, all but the first SoundFile will play in a loop. Between each of these SoundFiles, it will play the first SoundFile. This allows the first SoundFile to be used as an advertisement or safety announcement. There must be at least two SoundFiles on the **Sd-10** for this mode. Input 'a' ramps the audio down to full mute when activated. Input 'b' ramps the audio down -24 dB from full volume when activated.

#### **Sequential/Random:**

**DipSwitch #4** tells the **Sd-10** to play in sequential order (order in which the SoundFiles were loaded onto the flash card) when DipSwitch #4 is 'off', or in random order when DipSwitch #4 is 'on'. When playing in random order, a flag is set for each SoundFile. It will randomly pick the next SoundFile to play, and reset this flag until it runs out of SoundFiles which haven't yet been played. It will then reshuffle the SoundFiles. This means that the same SoundFile won't be played a second time until after the next reshuffle happens. The only time the same SoundFile can play two times in a row is if a reshuffle happens and the next file which is chosen at random happens to be the same SoundFile. It can happen, but probably won't often. Any of the command modes which 'reshuffle' the SoundFiles will reset all the SoundFile flags. If playing 'randomly', then any SoundFile in the PlayList can be played after a reshuffle. If playing sequentially, it will start playing with the first SoundFile in the PlayList after a reshuffle.

## Sd-10 Installation:

The **Sd-10** can be mounted using two screws on 2-1/4" centers; 2-3/4" Augat 'Snap-Track' (which itself can be DIN rail mounted); using DIN rail adapters; or just Velcro'd down. In many applications, the **Sd-10** can be attached on (or in) the amplified speakers it is feeding or attached right to the back of the amplifier. The **Sd-10** must not be mounted where it might get wet, or suffer from extremes of temperature.

## Advanced Users:

If an input which triggers a SoundFile to start playing is held 'active', then the SoundFile will loop on itself as long as the input remains active. When the input 'opens', the SoundFile will complete playing normally.

## Seamless Looping:

For 'seamless' looping, use .wav encoding. Mp3 encoded SoundFiles need a fraction of a second to get the audio rolling, and so will not loop as seamlessly.

## Using Two Inputs to Randomly Access SoundFiles:

With only two trigger inputs, random access to individual SoundFiles can't be done with the **Sd-10** alone. If being run from a control system (PLC, fire system, or any Gilderfluke Control system), SoundFiles can be randomly accessed by giving multiple pulses to the **Sd-10**. You would typically choose a mode that allows the SoundFiles to be 'reshuffled' and leave the 'random' switch 'off'. An example of this is mode '1'. The 'b' trigger input reshuffles the PlayList. Additional pulses (typically at 15 Hz) to the 'a' input step the **Sd-10** forward to select and play the desired SoundFile.

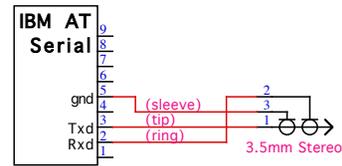
## Hardware options:

1. **Sd-RS/232** RS-232 serial port (user installable)
2. **Sd-IR/Rx** Internal IR receiver for use with **IR-Tx**. The **Sd-10** must be ordered with 'IR' firmware to support this option.

## Optional RS-232 Serial Ports:

An optional RS-232 serial port is available on the **Sd-10** (revision 1.3 or later). It runs at a fixed rate of 9600 baud, n, 8, 1.

Adapters to attach this port to a PC or Mac are available from Gilderfluke & Company.



It can also be controlled from a Gilderfluke & Co. **Br-SDC/09** (a null modem cable must be used to flip pins #2 and #3 when used with a **Br-SDC/09**).

When the **Sd-10** boots or a new MMC/Sd card is inserted, the **Sd-10** will list all the SoundFiles that are found. When any SoundFile is played, the name and info about the file are displayed through the serial port (there is approximately one second delay after a SoundFile starts before this info is displayed). As a SoundFile plays, the **Sd-10** reports the number of seconds (in ASCII Hex) into the SoundFile it is.

## Using the Optional Serial Port to Select and Play SoundFiles:

To select and play a SoundFile through the serial port, send the **Sd-10** an ASCII 'p' character, followed by a two digit ASCII Hex number of the SoundFile you want to be played. Example: to play SoundFile 1, send 'p01'. For SoundFile 25, send 'p19'.

## Using the Optional Serial Port to Adjust Audio Playback Levels:

*This command requires **Sd-10** Firmware v1.21 or later.* To set the 'normal' audio playback level through the serial port, send the **Sd-10** an ASCII <Control>+'V' character (0x16), followed by a two digit ASCII Hex number of the level you want to use. Valid levels are '00' to 'FF'. Example: to set playback level to 80h, send '<0x16>'80'.

The volume control through the serial port is highly logarithmic. Once set, the **Sd-10** will scale all the 'mute' and 'duck' functions to the value you have set as the 'normal' playback level.

## Special Orders:

If none of the standard operating modes available on the **Sd-10** meet your needs, we can modify the existing modes, or put in a new mode to suit your special needs. You can also use an **Sd-25**, which has more operating modes. A no-charge factory option includes a line level output if you don't need the **Sd-25's** powerful Class-D amplifier.

## FCC and CE Compliance:

**Sd-10s** which are revision 1.3 or later have been tested to comply with FCC and CE requirements. Revisions earlier than this may have passed testing, but were not certified at the time of manufacture.

Because **Sd-10s** are low voltage DC devices, neither UL or CE require safety testing.

For fireproofing or additional radio frequency interference shielding, **Sd-10s** can be mounted in a fire rated metallic case. Typically, this would be a NEMA-rated electrical enclosure or 19" electrical rack.

## FCC Instruction to User:

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

This equipment has been verified to comply with the limits for a class B computing device, pursuant to FCC Rules. In order to maintain compliance with FCC regulations, shielded cables must be used with this equipment. Operation with non-approved equipment or unshielded cables is likely to result in interference to radio and TV reception. The user is cautioned that changes and modifications made to the equipment without the approval of manufacturer could void the user's authority to operate this equipment.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference and (2) this device must accept any interference received, including interference that may cause undesired operation.

This Class B digital apparatus meets all requirements of the Canadian Interference-Causing Equipment Regulations.

Cet appareil numerique de la classe B respecte toutes les exigences du Reglement sur le materiel brouilleur du Canada.

# EC DECLARATION OF CONFORMITY

Friday, August 17, 2012

Application of Council Directives:

EMC Directive, 89/336/EEC

Manufacturer's Name:

Gilderfluke & Co., Inc.

Manufacturer's Address:

205 South Flower St., Burbank, California 91502 USA

Importer's Name:

\_\_\_\_\_

Importer's Address:

\_\_\_\_\_

Type of Equipment:

Professional Audio

Equipment Class:

Commercial and Light Industrial

Model:

Sd-10

Conforms to the following Standards:

EN 55103-1: 1996 and EN 55103-2: 1996

Year of Manufacture:

2006

I the undersigned, hereby declare that the equipment specified above conforms to the above directive(s) and standard(s).

Place: Burbank, California

Signature: (signed) \_\_\_\_\_

Date: August 1, 2006

Full Name: Doug Mobley

Position: CEO