



Clever Little Box

# LB-5A Digital Audio Store

## Installation & Operating Instructions



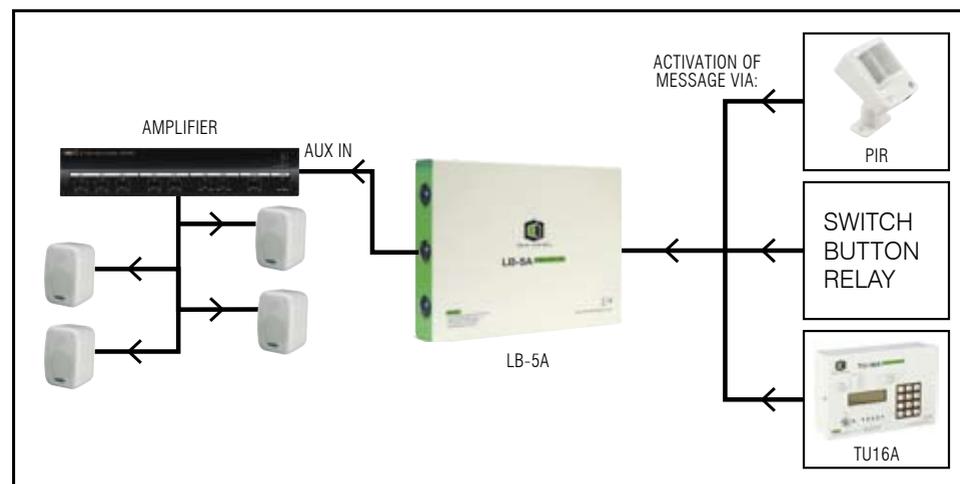
[www.cleverlittlebox.com](http://www.cleverlittlebox.com)

www.cie-group.com  
Designed and built in the UK.

This latest generation of the LB family incorporates the latest MP3 technology to store and replay recorded voice messages, music or tones for security/safety, retail, museum/leisure and advertising applications.

Files are stored on an internal USB memory stick with an 8 hour memory capacity allowing material to be changed or replaced easily.

The 5 channels can be individually accessed or activated by voltage-free NO or NC contacts, buttons, switches, PIR devices, or via the TU-16A Timer. A pulsed activation will allow just one loop of the required recording; however, if the activation contact remains, the recording will play continually until disengaged.



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The digital audio store unit uses MPEG-1 Audio Layer 3, more commonly referred to as MP3, digital audio encoding/decoding format to store and play audio information. It uses a USB memory stick as the physical storage media and is non-volatile, which means it does not require any backup supply or battery. This removable memory stick must be pre-loaded with MP3 files and then plugged into the socket located on the circuit board. The unit comes supplied with a memory stick containing sample messages, chimes, alarms and background music.



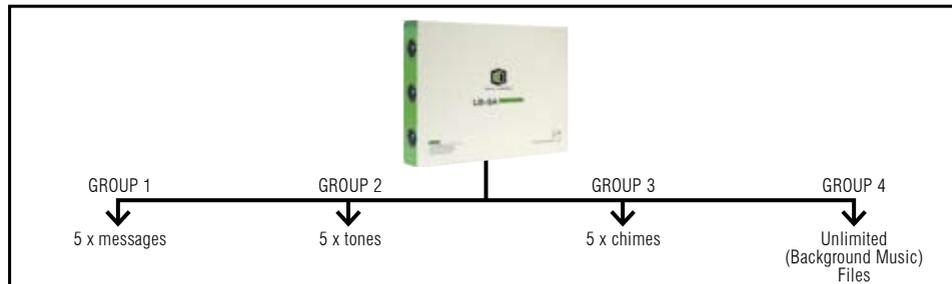
These audio files are organised into four distinct groups; the first three can each contain up to five files, but the fourth group (background music) has no practical limit to the amount of files it can store. These groups have been given descriptive names so as to help organise and ease access to the data. The files and their groups have a hierarchical priority structure and an adjustable interval timer is available on the second file in group 1.

The files in the first three groups are triggered by means of a simple contact closure applied to the relevant screw terminals on the main circuit board. Files in the fourth group are played in a random manner automatically when the background music facility is activated.

The quality of the audio output is dependent on the bit rate of the audio files used; low bit rates are suitable for speech, whereas higher bit rates are suitable for high quality music (commercial CD quality).

Audio output is at line level either via stereo phono connectors or a balanced mono signal by means of screw terminals. A stereo 3.5mm headphone jack socket is provided to allow monitoring of the unit's output.

The unit is housed in a durable metal case and is powered by a 12v DC 'plug top' power supply (supplied).



## Important: Please read first!

Before installing and using this equipment please read all the information in these instructions carefully as the manufacturer will not assume any responsibility for any damage to the unit, or consequential loss, arising from its incorrect installation or use.

### Please also note the following points:

- Only use the supplied power supply with the unit, if you want to use a different power source please contact our Technical Department for guidance.
- The installation and all connections must be carried out by a competent installer.
- All external wiring to this unit must follow good wiring practice and meet any wiring standards that apply to the installation.
- This equipment is designed for internal use only, do not expose to rain or moisture.
- The equipment must only be operated within the environmental temperature range detailed in the Technical Specifications section.
- Do not use solvents or abrasive cleaners on the metal case of the unit as they may well damage its finish.
- Failure to observe any of the above points could invalidate the equipment's warranty.

If you are unsure about any of the above or have any related questions, please contact our Technical Department as follows:

### CIE-Group Technical Support

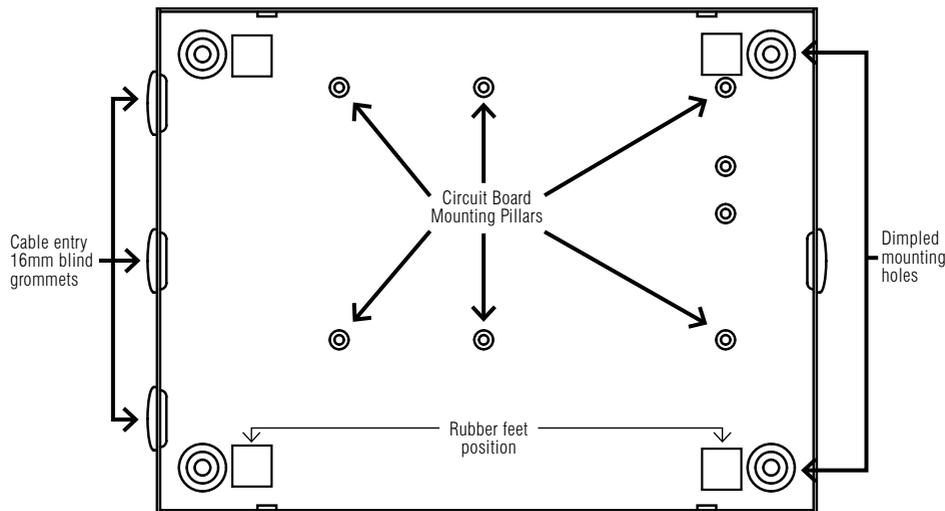
**T:** +44 (0)115 977 0075

**E:** [service@cie-ltd.co.uk](mailto:service@cie-ltd.co.uk)

# Installation procedure:

## • Important:

- Please read the Important Notes section at the beginning of these instructions before installing this device.
- Do not connect power to the device until all the installation wiring and all the connections have been completed.



The LB-5A is supplied in a painted metal enclosure that can be used as a free-standing unit or secured to a flat surface by means of the four dimpled mounting holes located in the corners of the base of the unit. To gain access to the unit, unscrew the four lid retaining screws and remove the lid.

## • Permanent Fixing:

Important note: When permanently fixing the unit to a surface the circuit board must first be removed from the base by unscrewing the six mounting screws which will give full access to the mounting holes. Attempting to secure the unit with the circuit board still in place could lead to inadvertent damage to the unit and invalidate the warranty.

## • Free-standing:

If the unit is to be free standing, it is strongly advised that the four low-profile rubber feet (supplied) be attached to the underside of the unit close to the dimpled mounting holes. This will help prevent the unit sliding about and also stop any surface on which it is placed being marked.

## • Wiring:

All connecting cables should enter the unit via the black 16mm 'blind' grommets located in the sides of the unit. These blind grommets are designed to be pierced by a suitable tool to allow the cables to pass through them. These grommets should always be removed from the case before attempting to make any form of hole in them which will prevent damaging the circuit board and any existing wiring.

**Safety note:** To prevent injury, extreme care must always be exercised when using any sharp or pointed implement to pierce these grommets. Alternatively, the blind grommet can be removed and replaced with a standard 16mm 'open' grommet or any other form of suitable cable entry device if deemed more appropriate (e.g. M16 cable glands, etc).

**Note:** It is strongly advised that the unit installation is fully functionally tested using the supplied memory stick before replacing any of the files with new ones. If you have any concerns regarding the installation of this unit please contact our technical department.

## • Basic Operation:

The simplest application of the LB-5A is when configured as a basic 5 message store which is triggered by remote switches (contact closures).

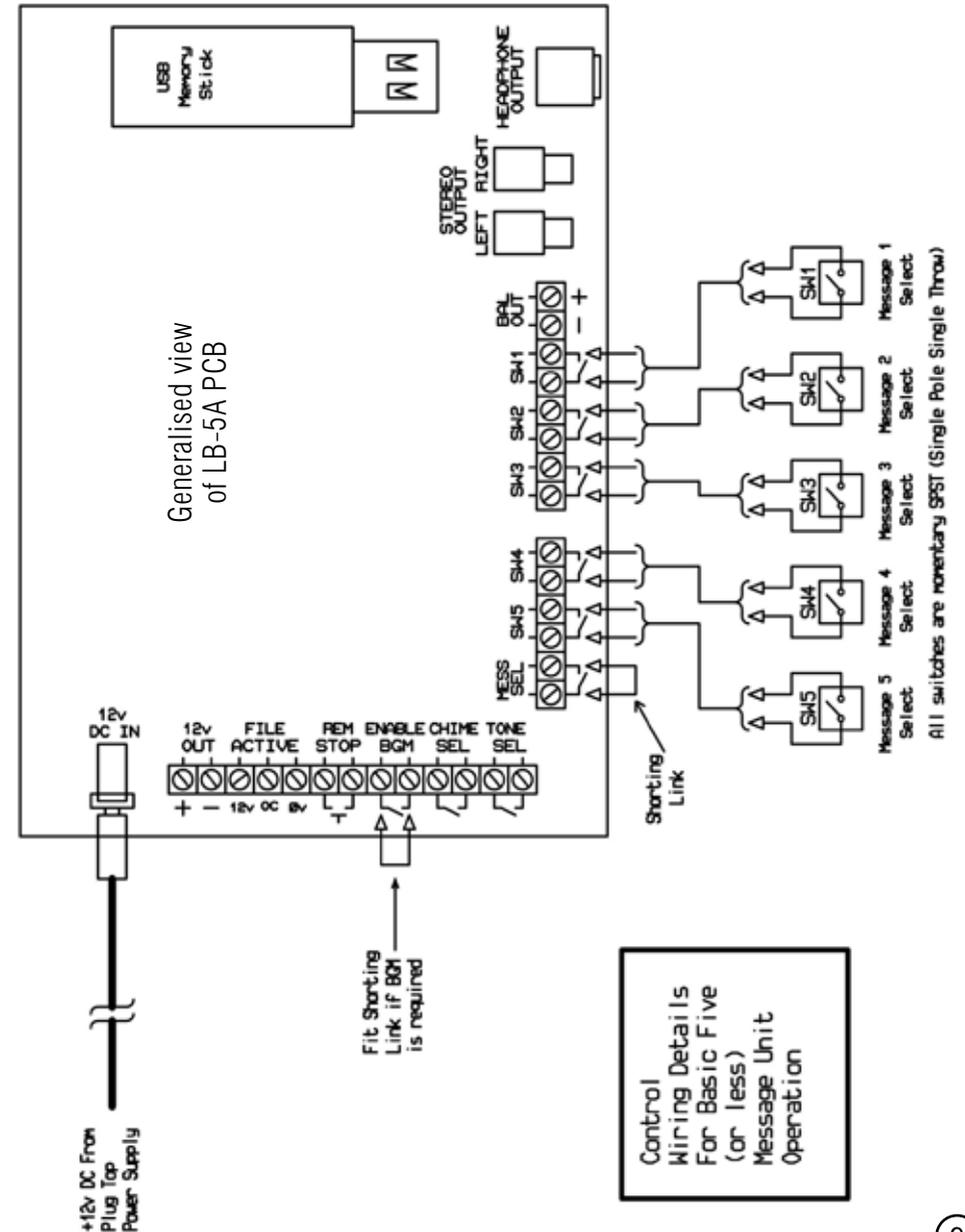
It is assumed that the section 'Installation Procedure' has been followed and the unit is ready to be wired. A single pole switch will be required for each message that is to be played and they need to be connected to the appropriate contacts on the circuit board (SW1 to SW5). The gauge and type of wire is not critical but it must be suitable for the environment in which it is to be used i.e. you should follow good wiring practice and conform to any local or legislative regulations. Because in this configuration only the five audio files in the message bank are being used (i.e. the other banks aren't required) a shorting link should be placed across the 'Message Select' terminals on the circuit board. (If the other banks were to be used this link would need to be replaced by a switching arrangement as described in the 'Full Operation' section on page 10).

The audio output can then be connected to an amplifier using the appropriate connections, which can be either the stereo phono sockets or the balanced mono terminals. For more information about which of these outputs to use and appropriate wiring, please see the section 'Audio Outputs' on page 22.

The USB memory stick with the required messages should now be fitted into its socket on the main circuit board. For details about how to load audio files onto the memory stick, please refer to the section 'Loading audio files onto the memory stick'. If the final messages are not available during the installation of the unit the system can be tested using the supplied memory stick on page 20, which has been pre-loaded with test messages, alarms and chimes in all of the fifteen positions, plus some sample background music.

Finally, the plug top power supply should be connected to the unit by means of the DC power socket located at the top left of the circuit board. Power can now be applied to the unit by switching on the power supply at the mains outlet, and after a brief setting up period of approximately 30 seconds, indicated by LED activity on the circuit board and the memory stick, the unit is ready for use.

A diagram showing the configuration described above is shown overleaf.





# File Grouping & Hierarchy:



The audio files on this unit are organised into four distinct groups; the first three can each contain up to five files, but the fourth group (background music) has no practical file limit. These groups have been given descriptive names so as to help organise and ease access to the data.

The files and their groups have a hierarchical priority structure as shown in the table below:

Group	Name	No of Files	Priority Level	Internal Hierarchy
Group 1	Messages	5	1	Yes
Group 2	Tones	5	2	No
Group 3	Chimes	5	2	No
Group 4	BGM	256	3	No

Group 1 has priority over all the other groups and will automatically override their output. It also has its own internal file hierarchy whereby one message may override a lower message in the group, i.e. message 1 has the highest priority and message 5 has the lowest.

Groups 2 and 3 have priority over Group 4.

There is no set limit to the size (duration) of any file, it is dependant purely on the USB memory stick capacity. For example, using 128Kb/s, a 500Mb stick could store approximately 8 hours whereas a 1Gb stick could store approximately 16 hours. Obviously, if a higher bit rate is used (higher quality) the time will be reduced accordingly.

Group 4 is intended for background music (BGM) and could contain the contents of several music CDs. All files (tracks) are played continuously and in a random order. Activation of this BGM facility is by means of a contact closure or shorting link, removing the contact closure or link disables the facility. Activation of any file in any of the other groups will automatically override the output from this group.

The playing of any file can be stopped by applying a contact closure to the remote stop contacts on the internal board.

# File Activation Output:



Whenever a file from the first three groups is playing, a 'File Active' output (open collector NPN transistor) is switched on. This can be used to control or activate other equipment directly or indirectly by using an external relay.

The relay can be powered by the unit directly if it is a low current 12v type (i.e. it consumes less than 100mA); however, if a different voltage type is required, up to maximum of 30v, then it must be powered externally by a separate power supply, again it must not consume more than 100mA. A clamping diode, a 1N4004 or similar type, should always be fitted across the terminals of the relay coil.

Diagrams showing the two types of wiring configurations are shown below:

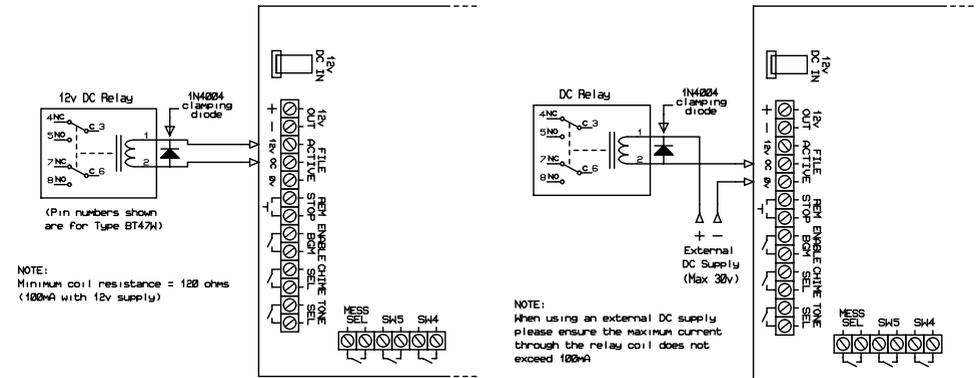


Diagram showing the connections for an external relay to control other circuitry whenever any of the 15 channels are activated (utilising existing 12v supply)

Diagram showing the connections for an external relay to control other circuitry whenever any of the 15 channels are activated (utilising external DC supply)

# File activation using PIRs:

## • File activation using PIRs:

In addition to activating any specific file within the first three groups by a simple contact closure, it is also possible to activate any of the files within Groups 1 & 2 by means of an opening contact.

A typical device that uses an opening contact is a Passive Infra Red (PIR) detector commonly used in alarm systems. This change in operation is achieved by setting internally configurable jumpers, JP1 to JP5, on the circuit board.



A 12v DC supply is available from screw terminals on the unit to power the PIRs. Please note, if it is intended to use more than three PIRs it is advised that a higher current mains power adaptor be used rather than the one provided. Please contact CIE-Group Technical Support for details.

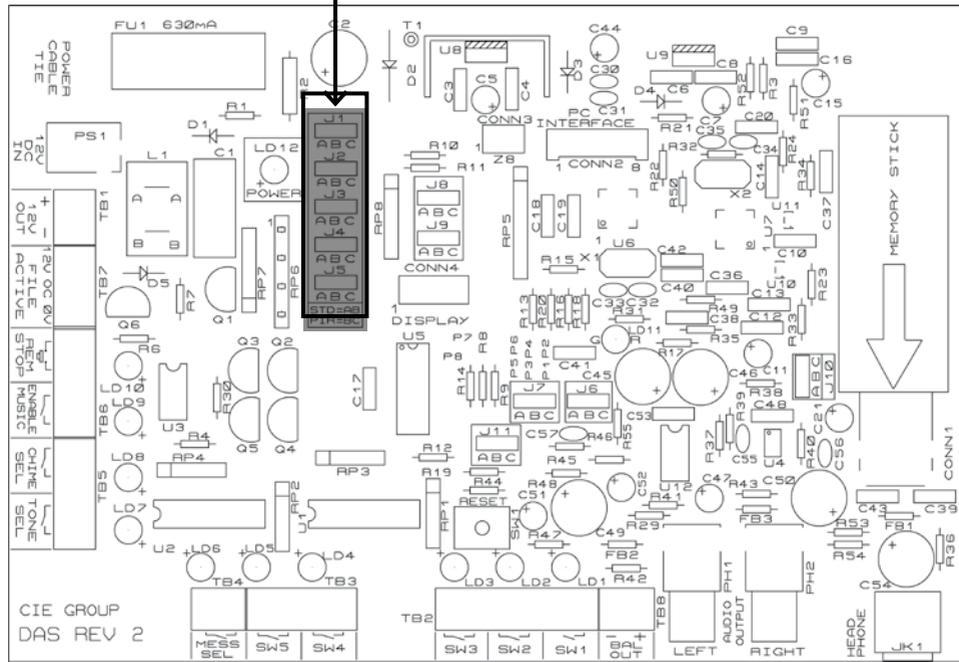
The table below shows the appropriate jumper settings:

**Table 1 – Switch Activation Settings, whether triggering is by Normally Open (N/O) or Normally Closed (N/C) contacts**

Jumper	Jumper Position A and B	Jumper Position B and C
JP1	Switch 1 activated by a contact closure	Switch 1 activated by an opening contact
JP2	Switch 2 activated by a contact closure	Switch 2 activated by an opening contact
JP3	Switch 3 activated by a contact closure	Switch 3 activated by an opening contact
JP4	Switch 4 activated by a contact closure	Switch 4 activated by an opening contact
JP5	Switch 5 activated by a contact closure	Switch 5 activated by an opening contact

**Note:** PIRs are usually configured to have opening contacts when triggered

J1 ~ J5 Activation  
Select N/O or N/C  
Jumpers (Table 1)



Please bear in mind that the changing of the type of contact activation on any of the inputs will affect that input's operation on all Groups i.e. 1, 2 and 3.

# Additional Functions:

## • Repeat Interval Timer:

The LB-5A is equipped with an adjustable interval timer which operates on the second file in Group 1. When activated, the timer causes the file to be played at a preset interval of every one, two or three minutes. Activation of the timer and interval period is by setting the internal jumpers J8 and J9 as per the table below.

Table 2 – File 2 Repeat Interval Timer settings		
Interval	J8	J9
Off	A to B	A to B
1 min	B to C	A to B
2 mins	A to B	B to C
3 mins	B to C	B to C

**Note:** SW2 must remain activated

### Please note:

- The activation terminals (SW2) must remain shorted by means of a contact closure or shorting link for the timer to operate.
- The corresponding files in banks 2 and 3 (Tone2.mp3 and Chim2.mpg) will be unavailable while the timer is in operation.

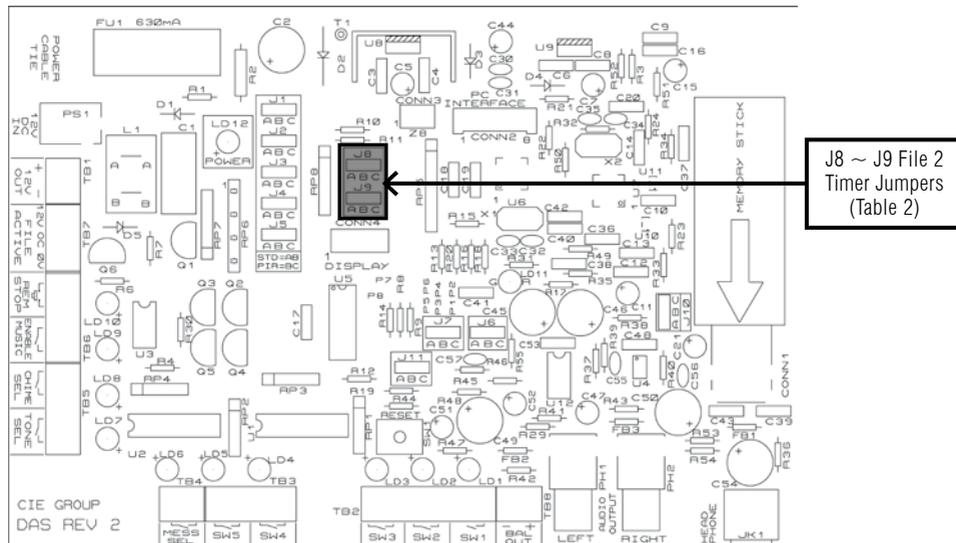
## • LB-5A Looping and One-shot operation:

The LB-5A supports 'looping' (i.e. an audio file will be played continuously) as long as the contact closure triggering the playing is maintained across its corresponding terminals. When the contact closure is removed the file will be played to the end and then stop as normal.

### Please note:

- This facility is only available within banks 1 and 2 (messages and tones)
- Any files of lower priority will be unavailable during this looping operation
- The looping file will be overridden by the playing of a file of higher priority

Bank 3 (chimes) doesn't support looping and is only 'one-shot' (i.e. the file will only be played once, even if the activating contact closure is maintained). To play the file again the contact closure must first be broken and then re-made.



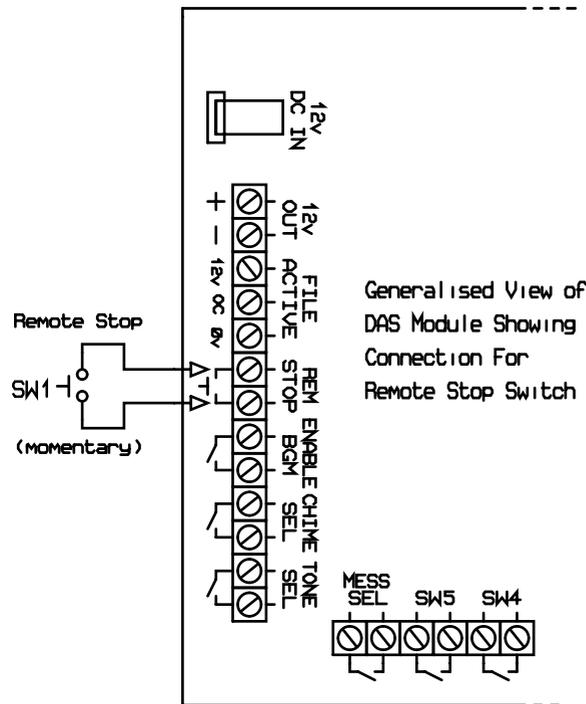
## Additional Functions:



### • Remote Stop:

In certain situations it may be necessary to stop the currently active file from playing, for example, in canceling a tone or to allow a higher priority signal to use the audio system to which the unit is connected.

This can be achieved by means of a simple momentary contact closure (switch) connected to the 'Remote Stop' screw terminals located on the internal board. The diagram below shows the basic wiring arrangement.



## Background Music:



The LB-5A has the ability to play background music whenever any of the audio files in any of the higher groups are not active (playing). This is because the background music, which is Group 4, has the lowest priority of any of the groups. Please see the section on File Grouping and Hierarchy (page 12) for more details.

This facility is not activated by default and requires a contact closure to be placed across the 'Enable Music' terminals on the main circuit board. This can be achieved by wiring in a suitably positioned switch, or if the facility is required to operate continually, a simple shorting link can be placed across the terminals.

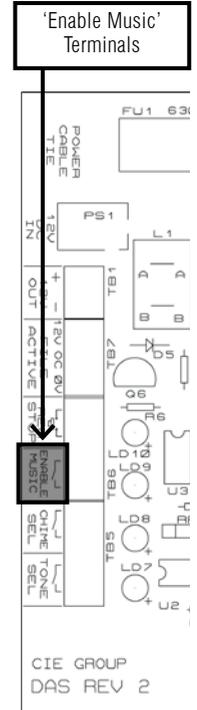
If any of the files in the higher groups are activated the background music will be muted while the file is playing and return when it has finished.

The audio files (tracks) that are to be used for the background music must be loaded into a subfolder named 'Music' on the memory stick. This subfolder should be located directly off the root folder of the stick. Please see the section 'Loading the audio files onto the memory stick' (page 20) for more details.

The audio files themselves can be of any suitable type, the only requirement is that they are MP3 files (i.e. they have the .mp3 extension). They don't have to be re-named or be of any particular size. There is no practical limit to the number of files you can load, the usual limiting factor is the actual capacity (memory size) of the memory stick used. The tracks will be played in a random order.

### In summary:

- The background music (BGM) facility has to be enabled as described
- It will be overridden by files in higher groups
- The music files must be placed in the 'Music' subfolder
- They must be MP3 type files (not .wav, .wma, .flac, etc.)
- They don't have to be re-named or be of any particular size
- There is no practical limit to the number of files you can load
- They will be played in a random order



## • Loading audio files onto the LB-5A memory stick:

Any size of USB memory stick can be used with the unit but it must be formatted to a FAT 32 file system (the usual file system used on this type of device).

Any file preparation is best carried out on a PC using a suitable application such as Windows Explorer on Windows-based computers and Finder on Apple Mac computers.

It is recommended that the files to be used on the unit are copied onto the memory stick first and then, if necessary, renamed in accordance with the requirements listed below. This allows the source files to retain their original names which will possibly be more meaningful to the operator if required again in the future.

### The files loaded onto the memory stick must adhere to the following guidelines:

- All message-type files i.e. those files to be used in the 'Message', 'Tone' and 'Chime' banks **MUST** be located in the root directory of the memory stick, **NOT** in any sub-directories.
- They must be of an MP3 file type i.e. have a .mp3 file extension.
- All speech message type files should have a half second (500mS) silence at the start of the file to prevent any loss of conveyed information due to processing activity.
- The background music files (BGM) must be located in a sub-directory (folder) off the root directory and must be named 'MUSIC'. The naming structure of the audio files is not critical apart from the fact that they must have the .mp3 extension.
- All the files in the root directory (the message, tone, and chime bank files) must be named in accordance with the table opposite...

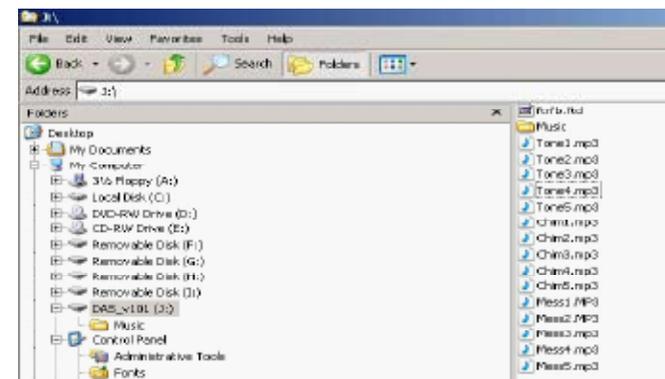


**Important:** Please ensure you have the appropriate rights or licensing arrangements to play the music particularly if it is to be used in a public or 'broadcast' environment. CIE-Group cannot be held responsible for any infringement of copyright or licensing laws.

File to be played:	Should be named:	Activated By:
Message 1	Mess1.mp3	Message select & switch #1
Message 2	Mess2.mp3	Message select & switch #2
Message 3	Mess3.mp3	Message select & switch #3
Message 4	Mess4.mp3	Message select & switch #4
Message 5	Mess5.mp3	Message select & switch #5
Tone 1	Tone1.mp3	Tone select & switch #1
Tone 2	Tone2.mp3	Tone select & switch #2
Tone 3	Tone3.mp3	Tone select & switch #3
Tone 4	Tone4.mp3	Tone select & switch #4
Tone 5	Tone5.mp3	Tone select & switch #5
Chime 1	Chim1.mp3	Chime select & switch #1
Chime 2	Chim2.mp3	Chime select & switch #2
Chime 3	Chim3.mp3	Chime select & switch #3
Chime 4	Chim4.mp3	Chime select & switch #4
Chime 5	Chim5.mp3	Chime select & switch #5

An example of how the file structure on the memory stick should look when viewed within Windows Explorer is shown below:

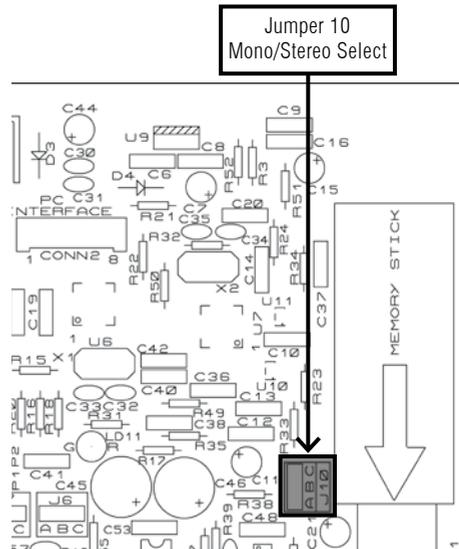
**Note:** If the firmware update file 'ftrfb.ftd' was included on the original supplied memory stick this should be copied onto any other sticks that are to be used with the LB-5A unit



The LB-5A has three audio outputs, each designed to suit different requirements; unbalanced stereo, balanced mono and a headphone monitor.

## • Stereo Output:

For ease of connection the stereo output is via two phono sockets (the left and right channels), mounted on the main circuit board. The signals are unbalanced (standard), requiring good quality audio grade co-axial cables to connect them to other equipment. The output signals are at line level (775mV RMS) and should be connected into the auxiliary or similarly configured input on the amplifier or mixer with which it is to be used. If required, it is possible by means of the Jumper J10 located on the circuit board, to configure these outputs to mono, allowing only a single connection to the amplifier or alternatively to use each output to feed separate amplifiers.



## • Balanced Mono Output:

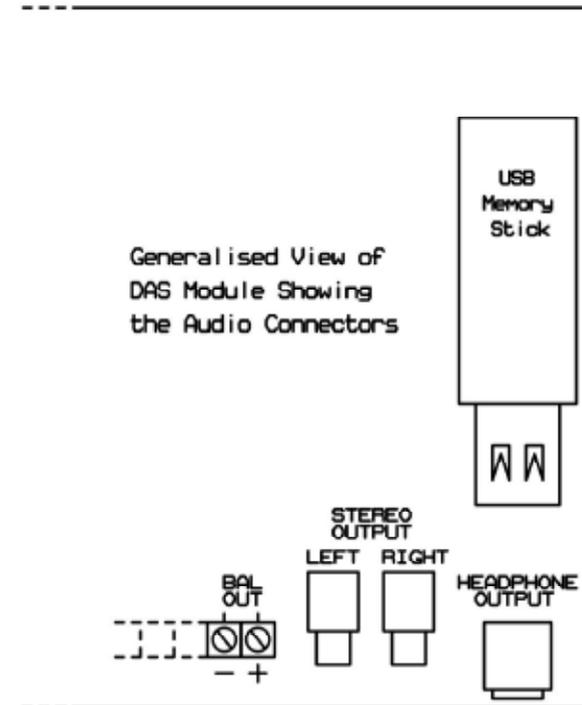
The balanced mono output is designed to feed industrial public address systems requiring a single mono signal and is via two screw terminals mounted on the circuit board. This output uses a balanced configuration providing good noise immunity to the signal and wiring in what can be electrically noisy environments. Connection should be via good quality twin core and screen cable with the two cores being connected to the two screw terminals.

Being balanced it is not critical which wire goes to which terminal, but it is good practice to note which colour goes to the positive terminal and which one goes to the negative, this ensures correct termination of the cable at the other end. The screen of the cable should only be connected at the amplifier end, thus preventing any currents flowing through it, which might in turn induce noise into the signal wires. The output signal is at line level (775mV RMS).

## • Headphone Output:

The headphone monitor output is via a 3.5mm stereo jack socket located at the bottom right of the circuit board. If a standard stereo headset is connected to this socket, the output (and hence correct operation of the unit) can be monitored locally before connecting it to the main amplification system. This would typically be done during installation or after installing a new memory stick.

A diagram showing the location of the audio output connectors is shown below:



## Specifications:



## Contact:



Specification:	Value:	Comment:
Directly accessible audio files	Total 15	Split into three banks of five
Background music files	Limited only by memory stick size	Played randomly
Audio file format	MP3	MPEG1 audio layer 3
MP3 bit rate	Up to 320 Kbs	Any standard MP3 bitrate
Min contact closure time	< 300mS	-
Wiring termination type	PCB screw terminals	-
USB Memory Stick capacity	32Gb maximum	Supplied with 1Gb
USB Memory stick format	FAT 16, FAT 32	-
Audio outputs	Phono sockets	Unbalanced stereo / mono
	Screw terminals	Balanced mono
	3.5mm stereo jack	Headphone monitoring
Audio output level	Line level (775mV RMS)	All excl. headphone
Audio frequency response	30Hz ~ 18KHz $\pm$ 3dB	Affected by bit rate
Audio output impedance	Less than 1K $\Omega$	-
Power supply input	12v DC $\pm$ 15% @ 300mA	Unit supplied with plug top power supply fitted with 2.1mm DC Power Jack
PIR supply output	12v DC $\pm$ 15% @ 100mA	The supplied PSU will power up to 3 PIRs
Power consumption	2.5W typical	5.5W maximum
Operating Environmental Temperature	10°C ~ 35°C	-
Case dimensions	210 x 160 x 42 mm	Excl power supply
Case material	Painted mild steel	-
Weight	1kg	-

As part of our product improvement policy CIE-Group reserve the right to alter the above specification without prior notice.

### • Technical Assistance and Contact Details:

#### For technical assistance or further information please contact:

Technical Support  
CIE-Group  
Widdowson Close  
Blenheim Industrial Estate  
Bulwell  
Nottingham, UK  
NG6 8WB

**Tel:** +44 (0)115 9770075

**Fax:** +44 (0)115 9770081

**Email:** [service@cie-ltd.co.uk](mailto:service@cie-ltd.co.uk)

**Web:** [www.cleverlittlebox.com](http://www.cleverlittlebox.com)

### • Declaration and Conformity:

 EMC Directive - CIE-Group Limited declares that this equipment is in compliance with the essential requirements and other relevant provisions of Electromagnetic Compatibility (EMC) Directive 89/336/EEC as amended by 91/31/EEC and 93/68/EEC and the Low Voltage Directive 2006/95/EC

Declarations of Conformity for this product are available for downloading by visiting the following site: <http://service.cie-ltd.co.uk>



WEEE Directive - Information on Disposal of Waste Electrical & Electronic Equipment 2002/96/EC

The symbol on this product and/or accompanying documents means that used electrical and electronic products should not be mixed with general domestic waste. For proper treatment, recovery and recycling please take these products to designated collection points for disposal.

Penalties may be applicable for incorrect disposal depending on the national legislation.



RoHS Compliance - Restriction of Hazardous Substances (2002/95/EC)

CIE-Group has taken due care to ensure that this product contains no hazardous substances as specified in the RoHS Directive

## • What are MP3 files?

MP3 – stands for ‘MPEG-1 Audio Layer-3’ and is one of the most popular compressed digital audio file formats and they have become an almost universal way to store music files on both computers and portable devices. An MP3 file is a compressed version of a digital audio recording, such as a track from a CD. The original song data is ‘encoded’ using a variety of techniques that reduce the size of the resulting file whilst preserving much of the (perceptible) sound quality of the original

Digitised audio is governed by bit-rate, or the amount of song data that is transferred per second to the device that is playing the song. A digital audio recording using the ‘Redbook’ audio CD standard uses 1.4 million bits of data per second. This is the amount of information necessary to play a virtually identical digitised version of the original analogue music.

The MP3 format reduces this bit-rate by a factor of ten or more, while retaining much of the essential qualities of the audio. The secret to this is analysing the frequency of the sounds contained in the CD track.

Any audio recording is likely to contain various noises, incidental or otherwise, that are of a frequency we cannot perceive. Likewise, any multi-track audio recording is likely to have portions where one track drowns out others due to its volume at that point. MP3 encoders analyse the frequency pattern of an audio file and filter out sections of the file which would be difficult or impossible for us to hear.

Essentially, the MP3 format reduces the size of audio files by ‘biasing’ them for human hearing, stripping them down to the essential, easily audible frequencies which would be all we would generally hear anyway. The resulting file is then compressed using more traditional software methods.

We can levy some control over the sound quality of an MP3 by adjusting the sampling frequency (typically 44kHz) and bit rate (64kb/s - 196kb/s, and in some cases as high as 320kb/s) when the MP3 audio file is originally being encoded, which can dramatically impact on the end result. Though just as vinyl records are considered superior to the Compact Disk, CDs are superior to most MP3 recordings; though choosing the right encoding settings narrows the gap significantly.

## • The Settings:

Creating MP3 audio files requires the use of a ‘ripping’ program; software that can encode your conventional audio files into the much more compact MP3 format. While Windows XP technically provides this ability with recent versions of Windows Media Player, it is strongly suggested that you will find it much easier using freely available third party software.

MP3 encoding software can be either downloaded for free or purchased online from many web sites. Some of the free versions have a limited number of options and features.

Any modern computer fitted with a sound card and speakers and loaded with suitable software can create good quality MP3 files.

Good MP3 encoders give the user total control over creating MP3 files, with the many settings and functions available with the software. But these functions and setting of the software could be confusing at first. Read the documentation that accompanies the software; take a tutorial offered by the publisher (if offered) or simply go through the software to familiarise yourself with the different functions to overcome your confusion and better use the software

### • Bit and sampling rates:

Few things affect MP3 audio quality as much as its recorded bit rate. Bit rate is the measure of kilobits per second (Kbps) used to store the audio. More kilobits per second equates to higher-quality audio. This also means more space is required for recording and storage of an MP3 file. The standard bit rate of a CD you buy at the store is about 1,411Kbps and the standard bit rate for MP3 recordings is 128Kbps, although some software allows you to record at higher or lower bit rates.

Don't be confused with the sampling rate and bit rate. The sampling rate is measured in Kilo Hertz (KHz). This is the number of times per second that the original sound source was sampled during recording. CD-quality audio is recorded in stereo at a sampling rate of 44.1KHz. No matter what bit rate you use to record audio, it will never sound better than the original source. A 44.1KHz stereo recording converted to MP3 format at a bit rate of 128Kbps will always sound better than a 24KHz mono recording converted at the same (or even a higher) bit rate.

### • Creating or 'Ripping' the MP3 files:

Recording and ripping software creates a WAV file on your PC, which must then be converted to MP3 format. A WAV file is basically a direct copy of the original audio data and therefore takes up about as much space as the original recording, but the format has many advantages. The benefit is that the WAV to MP3 conversion takes up less space on your hard drive. Through your MP3 software you can tweak the WAV file so the converted MP3 sounds better. It is possible to boost the overall volume of a weak-sounding WAV file so the resulting MP3 file is louder or you can apply a filter that removes background hiss, resulting in a better quality file. Making changes like this when ripping directly to MP3 format is much harder, as you can't really tweak the file, and it requires a lot of tedious trial and error to get the sound right. Good rippers can translate the original digital data directly into an MP3 file or you can convert files into WMA or other audio formats.

### • The Encoding Software:

There are many MP3 encoders available on the Internet. You can easily find links to their sites by using a search engine such as Google and entering a phrase such as 'MP3 ripping software' or 'MP3 encoders'. You can also read the reviews of the more popular encoders in PC magazines or on dedicated MP3 sites. Always familiarise your self with the software you choose and get to know the available functions, features and read the documentation that accompany the software. Most of the MP3 encoders contain comprehensive help files; use these files if you get stuck.

# Appendix A: Jumpers & Connectors

**Table 1** – Switch Activation Settings, whether triggering is by Normally Open (N/O) or Normally Closed (N/C) contacts

Jumper	Jumper Position A and B	Jumper Position B and C
JP1	Switch 1 activated by a contact closure	Switch 1 activated by an opening contact
JP2	Switch 2 activated by a contact closure	Switch 2 activated by an opening contact
JP3	Switch 3 activated by a contact closure	Switch 3 activated by an opening contact
JP4	Switch 4 activated by a contact closure	Switch 4 activated by an opening contact
JP5	Switch 5 activated by a contact closure	Switch 5 activated by an opening contact

**Note:** PIRs are usually configured to have opening contacts when triggered

**Table 2** – File 2 Repeat Interval Timer settings

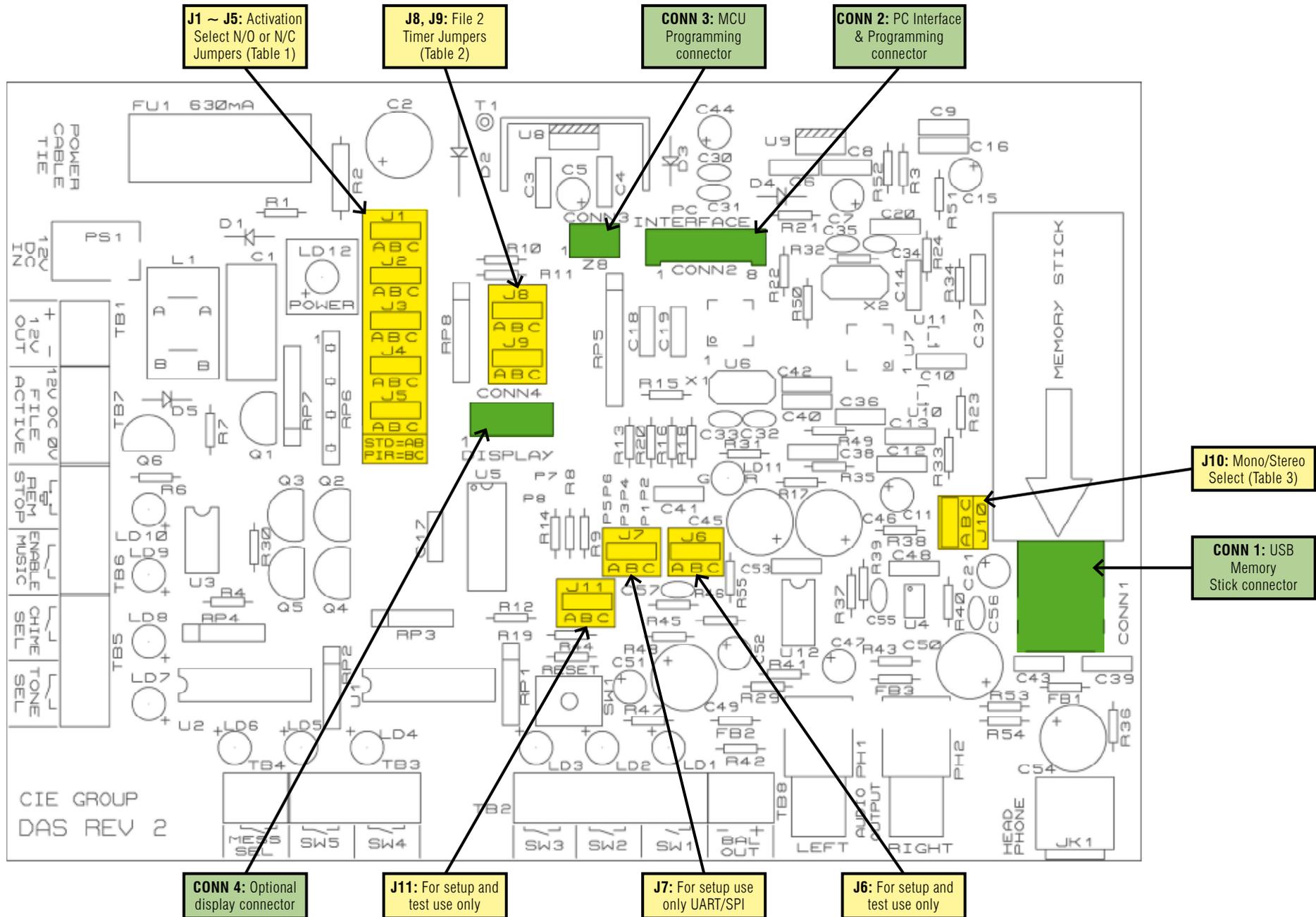
Interval	J8	J9
Off	A to B	A to B
1 min	B to C	A to B
2 mins	A to B	B to C
3 mins	B to C	B to C

**Note:** SW2 must remain activated

**Table 3** – J10 Audio Output Mono / Stereo select

Position A and B	Stereo
Position B and C	Mono

# Appendix A: Jumpers & Connectors



# Appendix B: Terminals & Indicators

