

**SOUND**  **DEVICES**



# 722

High Resolution Digital Audio Recorder  
User Guide and Technical Information  
firmware rev. 2.67

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## Book Descriptions:

# 722 sound devices manual

Please check your inbox, and if you can't find it, check your spam folder to make sure it didn't end up there. Please also check your spam folder. The supercompact 722 records and plays back audio to and from its internal hard drive or CompactFlash medium, making field recording simple and fast. It writes and reads uncompressed PCM audio at 16 or 24 bits with sample rates between 32 kHz and 192 kHz. It also writes and reads data compressed FLAC and audio compressed MP2 and MP3 files. Designed specifically for high bandwidth, high bit rate digital recording, these preamps set a new standard for frequency response linearity, low distortion performance, and low noise. No other recorder on the market matches its size and feature set. In addition, its learning curve is quite short—powerful does not mean complicated. While the 722 is a very capable recorder by itself, it truly excels when used in conjunction with an outboard audio mixer such as Sound Devices' own 302 or 442. Its two internal recording media hard drive and CompactFlash and external FireWire storage are highly reliable, industry standard, and easily obtainable. The removable, rechargeable battery is a standard Sony-compatible Li-ion camcorder cell. The 722 interconnects with Windows and Mac OS computers for convenient data transfer and backup. No part of this publication may be reproduced, stored in a retrieval system, or transmitted in any form or by any means, electronic, mechanical, photocopying, recording, or otherwise, without the expressed written permission of SOUND DEVICES, LLC. SOUND DEVICES is not responsible for any use of this information. Macintosh is a registered trademark of Apple Computer. Other product and company names mentioned herein may be the trademarks of their respective owners. Before recording, familiarity with the product is essential. Several settings should be verified or set based on individual recording needs. [http://advcontato.com/zeturin/www/admin/mod\\_galeria\\_eventos/arquivos/c7250-manual.xml](http://advcontato.com/zeturin/www/admin/mod_galeria_eventos/arquivos/c7250-manual.xml)

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The metal tabs on the mount line up with the electrical contacts on the battery. From the factory, the battery may not have a charge, so external DC may be needed for initial operation and charging. Connect the included AC to DC power adapter to the DC input plug to power and charge the removable Li-ion battery. To power down the unit the power button must be held for one second. The single layer menu structure allows for very quick navigation and selection of functions. To enter the setup menu press the front panel key. Once in the setup menu, the following conventions are shared for navigating among selections and to select specific parameters. Use it to escape out of the setup menus. Its push-to-select function duplicates the check mark in most menus. Each of the 722's two inputs can be assigned to the two tracks A, B. Sixteen possible routing combinations are shown on the front panel with four blue LEDs. Illuminated LEDs indicate input-to-track assignment. The 722 has four often-used presets for quick setup of input-to-track routing combinations. Note the routing combinations on the blue LEDs with each successive press. Sequential presses of the input key will eventually cycle to the custom routing option see Input to Track Routing, pg. 18. From the custom input routing menu any input can be assigned to any track, including multiple inputs assigned to a single track. Enter the setup menu to verify recording settings. Sample rate and bit depth are displayed on the LCD panel. The 722 is a record-priority box. Pressing the record key cancels all functions—except file operations—and immediately starts recording a new file. When record is pressed, the red record LED illuminates to confirm record mode. The filename in the LCD display shows the currently recorded file. Push the stop 150 ms key to end recording. Press the key to begin

file playback from the beginning of the file. The default playback directory is the volume being recorded. <http://gokcebilgisayar.com/userfiles/c7055-manual.xml>

Use the fastforward key or rewind key to step through files in the folder, or press the stop key to exit playback mode. Reports have come to our attention of isolated problems when hotplugging IEEE 1394 FireWire devices. Hotplugging refers to making connections when one or more of the devices—including the computer—is on. When hotplugging, there are rare occurrences where either the FireWire device or the FireWire port on the host computer is rendered permanently inoperable. From our experience, any FireWire connection which carries power is susceptible to this type of damage. Use the appropriate FireWire cable, either 6pin to 4pin or 6pin to 6pin, for interconnection. Files on the 722 can be treated as if they are local files, including renaming files, copying, and playing directly from the 722 storage medium. No drivers are required with operating systems meeting the specifications. The 722 will enter FireWire transfer, indicated by FIREWIRE CONNECTION on the LCD display. All functions of the 722 are stopped while the 722 is connected to a computer through FireWire. On Mac OS platforms, drag the drive icons to the trash. On Windows platforms, use the “Disconnect External Media” icon in the system tray. In Mac OS, drag the disk icon from the desktop to the trash or hit e. In Windows OS, highlight the disk icon, rightclick, and select “eject”. It is best practice to “eject” the 722 volume from the computer to maintain file integrity see FireWire File Transfer . This allows the unit to be placed in a production bag along with field mixers and wireless transmitters and receivers. When flashing, indicates that digital input is selected but no valid digital clock signal is present. Normal mic input range is from 25 dB to 70 dB, low gain mic range is from 10 dB to 55 dB, line input range is from 6 dB to 18 dB. For linelevel inputs, this control can be defeated and gain can be setup menucontrolled.

If the LCD display shows “locked” when the pot is turned, gain control of the linelevel input is menucontrolled. When inputs are linked as a stereo pair, Input 1 Gain controls the gain of both inputs. When inputs are linked as a stereo pair, Input 2 Gain controls lefttoright balance. When in menu mode, used to move up through the menu selections. Frequency, tone level, and routing are controlled in the Setup Menu. When in the Setup Menu use the TONE key to enter Setup Menu options and select parameters when the check mark appears in the upper right hand corner of the LCD. A solid blue LED indicates an input is routed to a track. Hold down the INPUT key and press one of the two indicated soft keys to mute inputs. Pressing the STOP key and the INPUT select key cycles through the In the custom routing menu any input can be routed to any track. See Metering ballistics are selected in the setup menu. Press and hold to power down. Flashes when external power is connected and battery is charging; solid when battery is fully charged. Flashes when the removable battery or external DC is in a lowvoltage state. The 722 is a recordpriority device, pressing this key starts recording and discontinues all other functions, except file operations. Pressing key while recording can set a cue marker or start a new file, as selected in the setup menu. In Record Pause mode the STOP key will pause the recording, pressing it twice will finalize the recording. In playback mode, a single press pauses playback playpause, allowing audio scrubbing with the FF and REW keys. Another press of the key enters playstop mode where the FF and REW keys select files for playback from the current directory. One more press of the key exits playback mode. In the setup menu the stop key is also used to exit from any menu, returning to the main display. Hold the key and turn the Rotary Switch to adjust the brightness of LEDs. In menu mode, functions as the cancel key.

<http://www.diamondsinthemaking.com/content/02-maxima-repair-manual>

Playpause indicated by flashing Atime on LCD. Fast forward rate increases the longer the key is held. In playstop mode indicated by flashing filename on LCD selects the next file in the record folder either daily folder or main folder. If pressed immediately after recording is stopped, the most recently recorded file is played back. Playpause indicated by flashing Atime on LCD. Reverse

playback rate increases the longer the key is held. In playstop mode indicated by flashing filename on LCD selects the previous file in the record folder either daily folder or main folder. Any available drive, folder, and valid audio file will appear in the file listings. Selected drive is shown in white type. Press and hold to toggle between available drives. If only one drive is present, press and hold is disabled. When lit, the headphone circuit is overloading. Reduce headphone level. In link mode the channel 1 potentiometer controls gain, channel 2 potentiometer controls left to right balance. Flashing indicates media problem. IN internal hard drive, CF CompactFlash, EX external FireWire drive. Highpass only operates when the input is set to microphone level. Phantom can be applied to microphone or line level signals menu selected. If constantly lit, the microphone input is being "hit" with too high of a signal. Turn down the input sensitivity until limiting occurs infrequently. Also used to indicate that an input is muted. Button lock prevents unintentional changing of settings or record status. The 722 displays any button lock options enabled. The Record key is kept active so the user can initiate recording after entering this mode and enter cue markers. To stop recording in this mode, you must disengage the panel lock and hit the stop key. External power overrides internal power when present. In playback stop mode, flashing file name indicates that the fast forward and rewind keys can be used to step through files in the current playback directory.

<http://flordeyebenes.com/images/bose-141-speakers-manual.pdf>

Sources and selection order are user selectable in the setup menus. Numbers show time in hours and minutes based on the presently selected number of record tracks, sample frequency, bit rate, and file type. An asterisk next to any of the available drives indicates that it is selected as a destination for recorded audio. Flashes in playback pause mode. This display can be set to reverse or flash during recording. Flashes in playback pause mode. The Atime and the 24Hour Time Counter display can be exchanged if a large 24Hour Time Counter display is needed. This information is written as the creation and modification date for generated audio files. In playback, shows the file bit depth. In playback, shows the file sample rate. Numbers show time in hours and minutes based on the presently selected of number of record tracks, sample frequency, bit rate, and file type. Numbers show time in hours and minutes based on the presently selected number of record tracks, sample frequency, bit rate, and file type. Highlighted drive descriptor indicates drive selected for record monitoring, playback or file directory display. The Atime and the 24Hour Time Counter display can be exchanged if a large 24Hour Time Counter display is needed. See 24Hour Time Counter for details. Markers set by pressing the record key option must be selected in setup menu. In playback mode, displays cue points numerically as they are reached in a file. Active balanced analog microphone or line level input for input 1. Transformer balanced two channel AES3 input 1 and 2. Input type set with switch above. Active balanced analog microphone or line level input for input 2. Can drive headphones from 8 to 1000 ohm impedances to required levels. Tip left, ring right, sleeve ground. NOTE the 722 is capable of producing ear dam aging levels in headphones. Signal source is identical to the Master Output Bus. Tip left, ring right, sleeve ground. Supports sample rates up to 200 kHz.

<http://floreswindows.com/images/bose-1401-manual.pdf>

Also used to attach external FAT32 formatted FireWire drives to the 722 for direct recording and copying. Word clock and machine transport are over C. Link. DC ground at both pins 1 and 2 is at the same potential as chassis and signal ground. Word input accepts sample rates between 32 kHz and 192 kHz. Word clock output is the rate that box is running. There is no sample rate conversion utility in the 722. In record and playback modes, rotate to select headphone monitor source; push action is user selectable. Useful for securing the recorder to a fixed object with a compatible computer lock. Numerous capacities, from 1500 mAh to 7000 mAh are accommodated. With the pin pushed in, slide the L or M Series battery to the right to release the battery. Inputs are selectable between analog or

digital sources. Analog inputs are connected with the balanced XLR connectors; digital inputs can be connected to either XLR Input 1 AES3 or the BNC input AES3id. Each input pair accepts analog or digital audio. The XLR input signal is selected with slide switch above the connector. The BNC input signal type is set in the menu settings Input1,2Source. For most situations This option shuts down all circuitry associated with the inputs to reduce power draw and extend battery runtime during playback. When an input pair is disabled, the digital input LEDs associated with the pair will flash. These inputs accept balanced or unbalanced micor linelevel inputs. When at miclevel, gain is controlled by the front panel potentiometers. Gain for the line level inputs can be controlled by the front panel potentiometers or menu settings. Line input gain is controlled in 0.1 dB steps. Using linelevel inputs with microphones is useful in high SPL environments such as concert recording. Make certain to turn off phantom power with line level output devices susceptible to damage from DC.

If the inputs are in line level mode, phantom power will not activate from the shortcut keys and must be activated from the menus. Phantom power is linked when the inputs are linked. See Input Linking In normal operation, with proper gain settings, the limiters should rarely engage. When activated, these The front panel LIM LED shows that the limiter is engaged. Limiter activity is The input limiters are active only with miclevel inputs. The limiters are engaged by factory default. The gain control adjusts an analog gain stage and functions similarly to the input trim on a mixing console or standalone microphone preamplifier. Gain is controllable over two ranges, normal and low. The normal range controls input gain from 24.3 dB to 67.4 dB of gain. The fade to off options allow for faderlike control of your gain. Normal fades to off provides a gain range of off or 0 to 67.4 dB and low fades to off pro When the highpass is engaged on an input, its frontpanel LED illuminates to indicate it is active . The first pole of the highpass circuit is an analog filter at 40 Hz, 6 dB per octave and is part of the microphone preamplifier circuit. Additional poles of highpass filtering are done in DSP. The highpass is selected for each input independently. Press and hold the LCD backlight key and press the menu key for channel 1 highpass. Press and hold the LCD backlight key and press the HDD key to toggle channel 2 highpass. The high pass filters are linked when the inputs are linked. See Input Linking When set for front panel control in the user menu, LineInput1Gain and LineInput2Gain controls in the user menu are lined out and not ac When linked, the channel 1 front panel potentiometer controls the signal level of both inputs, and the channel 2 pot controls the lefttoright balance of the pair. When the inputs are linked, their peak limiters are linked, as well. Input 1 is for Mid signal, input 2 for Side signal.

Engagging and disengagging phantom power or the high pass filters on input one will force the same func Engaging or disengaging phantom power or the high pass filter on input two causes no effect on input one. To record discrete M and S signals, do not link for MS, but monitor the MS signal in headphones. There is no level control for AES inputs. If the LED is flashing, digital input is selected but a no valid digital clock is being received. The 722 will auto detect the type of digital signal and adjust accordingly. Like AES3 signals, this is two channel input. There is no level control for AES3id inputs. To use analog sources while using the AES3id signal as a digital clock source, select analog in the input source menu selection. This lock is indicated by a highlighted block on the main LCD display to the right of the bit depth and sample rate indicators. Recording bit depth is independent of the external digital source. Loss of digital signal will cause the 722 to revert to its internally set sample rate, even while recording. The portion of the file recorded after the loss of signal may not play back properly. Once recording has begun, unused digital inputs are muted, digital signals that appear on them after the record key has been pressed will not be recorded or affect the sample rate of the 722. If the 722 detects a digital signal on the BNC inputs and locks to that signal, a digital signal applied to the XLR input will be ignored until the first digital signal is removed. Delay time per input is selectable in tenths of a millisecond 0.1 msec steps. The Rotary Switch and menu arrows are accelerated. The more you press or spin, the faster the time setting will increase or decrease.

Delay is not set until the Rotary The amount of delay available is dependent on the sampling frequency in use. For example, digital wireless mics that have a processing delay in their outputs. In addition, all digital conversion stages have delay.

The input matrix allows any input to be routed to any recording track. Multiple inputs can be routed to a single track to create monomixed recordings. A solid blue LED indicates an input is assigned to a record track. The last three preset selections are CustomRoute options. Press the EDIT soft key to enter the custom routing menu. Custom In the menu, highlighted input and track combination are displayed in white text. The two inputs are shown on the left; the two record tracks are shown on the right. Assigned tracks are noted on the screen by the addition of an arrow pointing to the record track. The LED routing matrix will also show a flashing blue LED for the currently selected inputtotrack combination. This feature can be used to quickly mute microphones while maintaining their respective track assignments. Blank tracks in polyphonic files take up the same amount of storage space as tracks that are assigned. The 722 LCD calculates available recording time based on the sampling rate, bit depth, number of tracks set for recording and the selected storage media available capacity. See the Calculating Recording Time later in this guide to estimate record time. Sampling rates are selected among common rates from 32 kHz to 192 kHz. Additionally, nonstandard sampling rates can be applied when the 722 is word clocked from an external source clock sources between 32 kHz and 192 kHz. When recording offspeed sampling rates files will be stamped with the rate closest to an internally generated frequency. Sampling frequency determines the audio bandwidth, or frequency response, that can be represented by the digital signal. Bit depth correlates to the maximum dynamic range that can be represented by the digital signal. Larger bit depths accommodate more dynamic range. To obtain 16 bit recording the 722 can be set to dither 24 bit digital signals to 16 bit. The 722 uses a proprietary pseudorandom dither routine for accurate bit rate reduction.

Dither can be defeated in the user menu. Without dither, 24 bit audio is truncated to 16 bit, meaning the least significant 8 bits are discarded. The 722 does not perform sample rate conversion or bit depth changes. File conversion must be done in another environment, such as an audio workstation. Alternatively, a realtime analog transfer is often performed instead of sample rate conversion. The 722 uses a highlystable crystal to generate its internal word clock frequencies. The 722 can clock external devices from its word clock and accept external clock sources for recording. Generally, the device with the analogtodigital converter is designated as the word clock master. As a word clock master the 722 generates word clock whether or not audio is sent. If, for example, you are using a wireless receiver with a digital output, it may not have an external word clock input, and will be the word clock master. Loss of the word clock signal during recording can cause the 722 to revert back to its internally set sampling frequency. If this occurs, the portion of the file recorded after the loss of word clock may not play back at the proper speed. For reliability, set the 722 to the same sample frequency as the word clock source. Loss of the word clock signal in this case will likely cause a glitch in the file, but the file may still be usable. The master recorder and the slave unit will share sample accurate start and stop record times. Multiple units can be daisy chained together to record many tracks. The C. Link protocol links carries the following data This will ensure that all files generated are compatible. There is no file name synchronization with multiple unit linking. This makes it possible for units to get out of synchronization if a unit other than the master is set to record or stop. Using the master unit will assure that all machines begin and end recording together. It must be the master wordclock source for all C.Link slaves.

Under no circumstances should analog or digital telephone lines be connected to either jack. Serious damage could result. The audio source for each output is selected in the setup menu. This allow uninterrupted input audio at the output. The output level is a nominally 0 dBu at 20 dBFS. The level of the line output can be attenuated in the setup menu by up to 40 dB in 1 dB increments.

Attenuation is done as an output pair. Sources assigned to the Digital Output Bus are exclusive and do not affect the assignments to the Analog Output Bus or headphone assignments. The same signal sources available for the Analog Output Bus are available for Digital Output Bus see chart above. In either case the SCMS bit is not set. The last thing I want is to spend more time in front of a computer screen, so I've put off going down the totally digital route for sound recording for as long as possible. But in March 2005 my hand was forced when my portable DAT machine started to chew up tapes to be honest I've never really liked DAT technology anyway. I took the plunge, and after much research I spent quite a lot of back pay on a Sound Devices 722 recorder. Since April 2005 I have had the opportunity to put over 1500 tracks through it, in circumstances ranging from very wet tropical rainforest to subzero snowy Northumberland. They have built up a reputation for making highquality rugged portable recording equipment, notably their field mixers. The 2track 722 and 4track 744, the latter with Time Code, are their first foray into digital recording systems. If you buy either, I think it is fair to say that like a computer you are buying an unfinished product. They are subject to continuous development and improvement via downloaded firmware, which on purchase in April 2005 was version 1.24, and at the time of writing is now 1.60 for the 722. There is a support service on the website, where users can post details of problems or niggles, and the company does indeed respond.

Each firmware upgrade is easy, and it takes no more than 5 minutes to download a small file and upgrade the system. I haven't tried standing on it but I'm sure I could. The front panel is uppermost when over the shoulder, featuring all the transport buttons and an LCD screen, the latter dominated by a large time display. The LCD and transport buttons have a switchable backlight. Other buttons on the front panel provide access to setup menu parameters, input track assignment and reference tone. To the left of the LCD, two rotary pots control input gain. In MS mode, CH2 pot controls width. When operating at line level from a mixer, the input gain can be fixed to a user defined level. Record function REC overrides all other functions, disabling other transport buttons. A recent upgrade has solved a problem that I experienced, whereby I inadvertently pressed the track assignment button and started recording in mono instead of stereo for a few tracks that is no longer possible. On the right side panel is the Menu Select switch. This provides rapid scroll for menu selection and setup parameters. The rear panel houses an unprotected Compact Flash CF card slot and the Liion battery. I've said before how much I miss watching the spools going round on a reeltoreel recorder, but one look at the glorious display of multicoloured LEDs on the front of the 722 and I am happy again. These indicate a variety of selected functions including mic powering, filtering, mic and headphone limiter, disc activity, track assignment and of course metering of record and playback levels. The LEDs have adjustable brightness, so that they can even be read in full sunlight. And if your torch battery goes, as happened to me in the rainforest at night, I assure you that by turning the LEDs up full and holding the tone key down, you can even use this recorder to find your way back to the car.

To avoid unnecessary illumination or reduce power consumption, the LEDs and the panel backlight can be disabled by selecting stealth mode. These presets are instantly recalled via Quick Setup. The directory structure can be set up in several ways. I use the system by which day folders are created very handy for wildlife recording by providing direct association with my written daily diary notes. Indeed I archive my recordings under these day directories. The mic preamps are exceptionally quiet and can be used at full gain with acceptable results. It takes about 4 seconds to go from cold start power off to record, compared with 0.5 seconds on a Nagra open spool and about 9 seconds on a DAT machine. A preroll buffer is user variable from 1 to 10 seconds, and I really don't know how I lived without it, particularly with my love of nestsite recording I'll never miss a feeding visit again. A rather difficult feature of the gain control is that much of the useful gain range is in the final few degrees of rotation. It feels almost logarithmic in its response, and a more linear feel would be preferable for wildlife work. This is not a problem when working at fixed line level through a mixer.

The unit uses standard camcorder batteries; the supplied 1500mAh Liion battery just lasts a typical mornings work, but P48V mic powering and writing direct to HDD significantly increase consumption so I now use a 3700mAh battery. When static I use external 12V or incar powering. The Liion battery charges on the recorder when it is connected to an external supply. At present there is no direct access to the CF card, so CF files need to be transferred to the HDD or, as I do, read separately via a card reader. I understand that direct access to an external HDD is a planned development. It is expensive but it offers very high quality, a wide range of features and as much futureproofing as one can expect.

The beginner might be overwhelmed by the infinite and intricate variety of setup options but the experienced recordist will enjoy using the 722. Go to the website to read further details and the full operation manual. Energiser 3700mAh Liion camcorder battery c. 35 Internet I like Size, build quality, low input noise, CF or HDD recording, 24bit and up to 192kHz recording, preroll buffer, connectivity, upgradeability, and of course that glorious LED display! I have only experienced two system problems in the field, both in the extreme conditions of tropical rainforest a total lockup when selecting 24bit requiring a scary but nondestructive HDD repair and a sticky REC button. If you have found the information on the site useful and informative, please consider becoming a member of the society, or if you dont wish to be come a members, please make a donation. Thank you. If you continue to use our website you agree to our use of cookies. I Agree WSRS Cookie Policy. Click here to reset your password. Our retail showroom will also remain closed during this time until further notice. We have recently increased the size of our team and are processing orders as quickly and as safely as possible and appreciate your patience during these times. This has resulted in both extended delays on package deliveries, and inaccurate or delayed tracking information once packages are handed onto the courier service. The StarTrack customer service team may not be aware of this issue and may provide inaccurate information. Unfortunately, these issues are out of our control. This service does not relate to Videoguys Australias internal order processing. We can not refund the shipping cost if the delays are caused by StarTrack's service. The PickUp option will remain unavailable until further notice. Due to this inconvenience, Videoguys Australia is providing free shipping to our Metropolitan Melbourne customers.

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