

BEL BDE2400/BDE3200

OPERATOR MANUAL

Bel BDE2400 / BDE3200

INTRODUCTION

Congratulations on your purchase of the Bel BDE Delay/Line Sampler. You now have either the BDE2400--which can retain up to 24 seconds of sampled sounds at 18kHz bandwidth, or the BDE3200 which can retain up to 32 seconds of sampled sounds at 15kHz.

The units are identical apart from the fact that the BDE2400 clocks (reads) the memory cards slightly faster than the BDE3200, giving a higher bandwidth but at the same time shortening the memory. Both versions can work at half speed--doubling the sample time but also halving the bandwidth (ie giving the BDE2400 48 seconds at 9kHz and the BDE3200 an amazing 64 seconds at 7.5kHz).

DESCRIPTION

The BDE is rather like a sophisticated tape recorder which does not use tape. It is able to set up up to 99 memories or windows--each of which can be as short as 2 milliseconds or as long as the whole memory of the unit. Once set up, the windows can be pitch shifted and sequenced.

In tape recorder terms it is just like recording a piece of music or several pieces of music on a piece of tape equal in playing time to the length of the BDE memory. Once recorded, the recording could be copied up to 99 times; each of the copies may then be edited to the required length--some are also varispeeeded--and then they are all edited together. Once

assembled in the correct order and at the required pitch the memories can be played continuously or in sequence one at a time, triggered internally or from an external signal.

APPLICATIONS

This method of setting up 99 windows allows use of the unit to completely rearrange sentences or melody lines. By storing sampled sounds and sequences to disk you can compile your own library of sounds. This system of storage and retrieval can also be used in broadcast applications for speedy location of sound effects etc.

Sampled sounds can be played on a **MIDI** keyboard. It is possible to load in to the BDE 32 separate sounds and switch between them from the MIDI keyboard. This enables a very wide variety of sounds to be played from one instrument. Use of floppy disk makes the number of sounds possible infinite.

In addition to sound sampling, the BDE can also be used as a conventional delay line. Careful use of the feedback control allows you to set up multiple repeats. There are modulation controls which enable flanging and phasing effects.

When used in the studio, the BDE really comes into its own; it can be used for special effects such as reverse sounds and repeats; spinning in choruses and backing vocals and replacing original percussive sounds with better ones. Replacing sounds is done by using the original recorded sound to trigger the BDE.

Special applications include A/V post production where because of its ability to edit within samples, the BDE may be used to put gaps between speech, (or take them out), to improve lip-syncing. In a situation where a specific amount of music is required, eg jingles, a window may be set up of the required length and moved around within the memory to find an appropriate sample.

Happy sampling.

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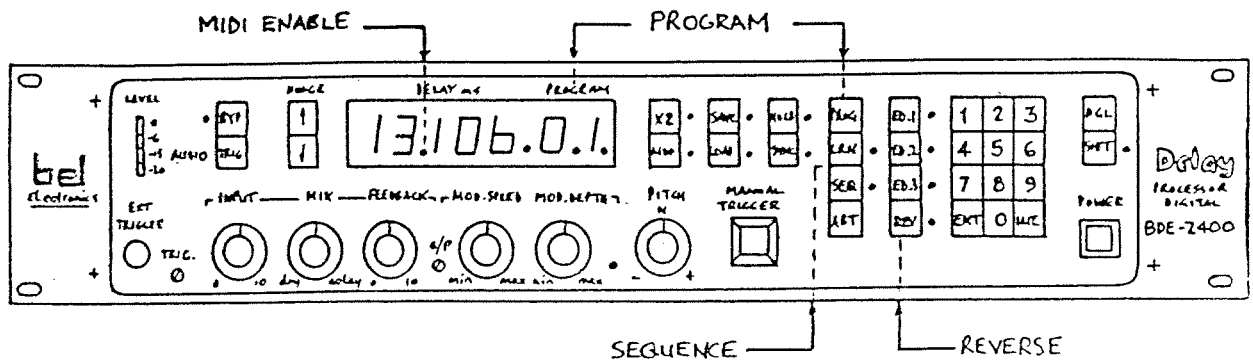
BEL BDE 2400/3200 OPERATION INFORMATION

The BEL BD and BDE Series of digital delay processors offer facilities for all your delay/sampling needs from the original BD80 (2 to 8s) to the new BDE3200 (8 to 32s) programmable processor with optional disk storage and remote control. They are high quality digital delays with an expandable memory--loop edit facility--synchronised record and playback (sampling)--keyboard control--echo--and flanging.

The BDE range of professional audio processors embodies the latest digital technology to enable users to sculpt sounds and create modern effects. The BEL BDE range can be used as conventional delay lines with the ability to store and replay sounds as well as a very sophisticated sound sampling device. A feature of the delay is that it permits sections of recorded sound to be lifted from a recording and re-inserted at will. The BDE2400 has 24 seconds of memory available at 18kHz (BDE3200 32s @ 15kHz) which means that sounds sampled and held in the unit's memory can be replayed with no loss of audio quality.

Artistically the BDE Series takes the musician and producer into a new realm of performance. Now sounds can be sampled individually, assembled, edited, reversed, sequenced and pitch shifted. Samples can also be played on a MIDI keyboard and saved to disk via the optional disk interface.

* THIS UNIT IS FITTED WITH UPDATED SOFTWARE — PROGRAM AND MIDI ARE OPERATIONAL CHANGES. 'FINE-PITCH' IS AN ADDITIONAL FEATURE.



1. ENTER PROG MODE: Depress PROG; display shows the word PROG. Key In new number required and depress ENT. The program number will change to the one entered and automatically EXIT Prog Mode. Display will show Points (ED1 or ED2) set for that program.

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Enter 'Prog' Mode again, this time do not enter a number but use the nudge \uparrow \downarrow keys to increment or decrement the prog. numbers. Depress ABORT or PROG to exit this prog. mode.

2. In the pitch mode the numbers can also be 'nuded' up or down using the nudge keys. Depress keys \uparrow or \downarrow i.e. nudge with keys \uparrow or \downarrow . The 'Display' will show each new number and when the key is released, the last set pitch number will be displayed for 1 sec. The display will then revert to 'Pitch'. If no new pitch number is required or to exit pitch mode, depress SHFT + 0 again or abort.

PITCH NUMBERS (60 = concert pitch)

Variable in semitones: 48 - 84 play (-1 octave to + 2 octaves)
60 - 65 record (+ $\frac{1}{2}$ octave)

FINE-PITCH (Part Semitone Change)

Depress SHFT + \uparrow or \downarrow in the pitch mode to obtain parts (.02) of a semitone change. Fine-pitch number limits are as follows: (0 - 100)
0 = (-1 semitone), 50 = (semitone pitch set), 100 = (+1 semitone)



The display will show fine-pitch numbers as they change and when the key is released, the number set will be displayed for 1 sec. If a number is entered other than 50, then the green LED on the right of the program number on the display will be on. (This gives a visual indication of a FINE-PITCH set). Depress IME in the pitch mode to display FINE-PITCH number of current program set.

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3. MIDI

The samples recorded can be played on a keyboard for connecting a MIDI synthesiser to the 'MIDI in' DIN socket on the rear panel.

The MIDI keyboard is only enabled when the EDIT points (ED1, ED2 or ED3) are displayed. This is visually indicated by a LED 'ON' decimal point on the display. (See 'ADVANCED USER' Section Front Panel DWG. for position).

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Depress SYNC. When a key is pressed the set program will loop until the key is released.

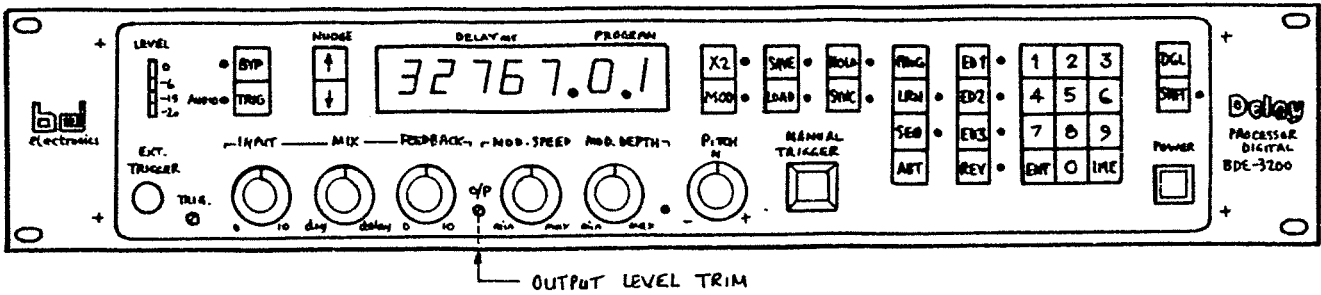


FIG A

When the power is switched on, the display will show the following information:

First, model/software number 2400 or 3200, and then maximum audio memory fitted. It will then reset to show ED2 = 2ms on Program 1.

This sequence is to initialise the computer and clear random data from the audio memory.

IMPORTANT: If the remote control is to be used, connect BEFORE power on.

The following is a description of controls and key functions and is in two parts: (1) General user guide

(2) Advanced user guide

GENERAL USER GUIDE

Connections INPUT and OUTPUT:

INPUT--electronically balanced PIN 3 +
PIN 2 - } To unbalance connect
PIN 1 EARTH } PIN 2 to EARTH

DIRECT OUTPUT--unbalanced PIN 3 +
PIN 2/1 EARTH

DELAY OUTPUT--electronically balanced PIN 3 + } To unbalance connect PIN
PIN 2 - } 2 to EARTH for in-phase
PIN 1 EARTH } and PIN 3 to EARTH for
out of phase.

MIX OUTPUT--As delay output

INPUT LEVEL CONTROL/LEVEL INDICATOR

This control is used in conjunction with the level indicator to set the optimum level for the delay circuitry. The level should be set on Green (-6) for normal program with occasional peaks showing on Red (0dB). (When using feedback for echo effects or flanging this control may have to be re-adjusted due to the peaks created by the feedback circuit).

On level setting it is important to set the right level carefully as a too low input level (Yellow -20) will degrade signal/noise ratio, and too high a level will cause distortion.

OUTPUT LEVEL

This is set by a preset trim control and can be adjusted using a special trim tool or a small screwdriver. It should be initially set so that the input level is equal to the output level. Thus by switching to Bypass the signal levels are

approximately the same. Levels above or below this may be obtained by varying the control.

BYPASS SWITCH & LED INDICATOR

Bypasses the delay circuit (unity gain).

MIX CONTROL

This control mixes varying amounts of Dry and Delayed signal for echo and flanging effects.

FEEDBACK CONTROL

This control sends all or part of the delayed signal back to the input mix circuit to give decaying echo effects, flange tunneling effects and multiple repeats. When the delayed feedback signal level is the same as the input signal a form of 'Hold' will be obtained. Careful input and feedback setting will cause a signal to re-circulate after the input signal is removed.

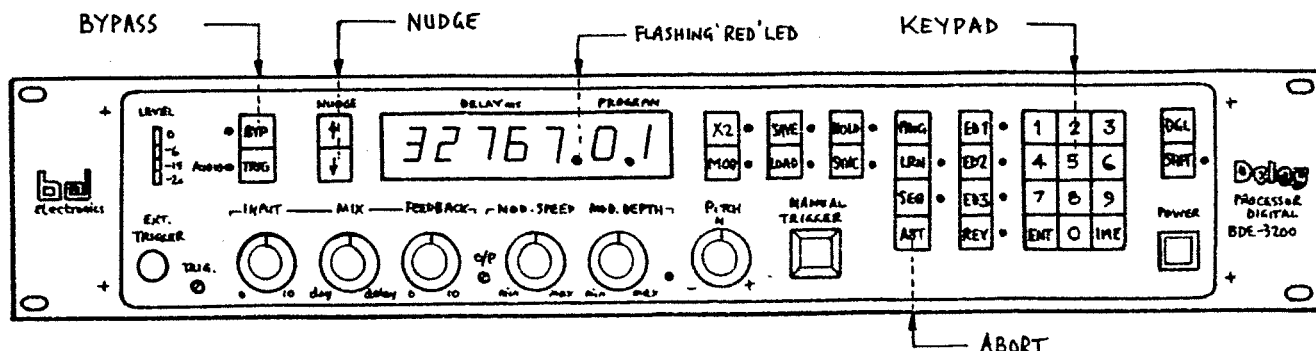


FIGURE 1

DELAY SETTING/ENTRY

The audio memory is accessed by a numeric keypad; the smallest entry is 2ms.

To enter a delay setting: 'Key in' a setting, say 6000ms (6 seconds) and depress IME for an immediate entry or ENT for the new setting to be entered after the original setting has elapsed. (The difference between IME and ENT is explained later.)

The Red LED (see FIG 1) shows the length of delay set by flashing every 6000ms.

EXAMPLE to explain IME and ENT:

Delay now set at 6000ms; 'Key In' a new setting of 1000ms and depress IME. The flashing LED will immediately start flashing every 1000ms. Key In 6000ms and again depress IME (LED flashes every 6000ms). 'Key In' new setting of 1000ms and depress ENT. This time the flashing LED will only start flashing at 1000ms intervals AFTER current 6000ms has elapsed. This shows the basic difference between ENT and IME and either may be used for entry.

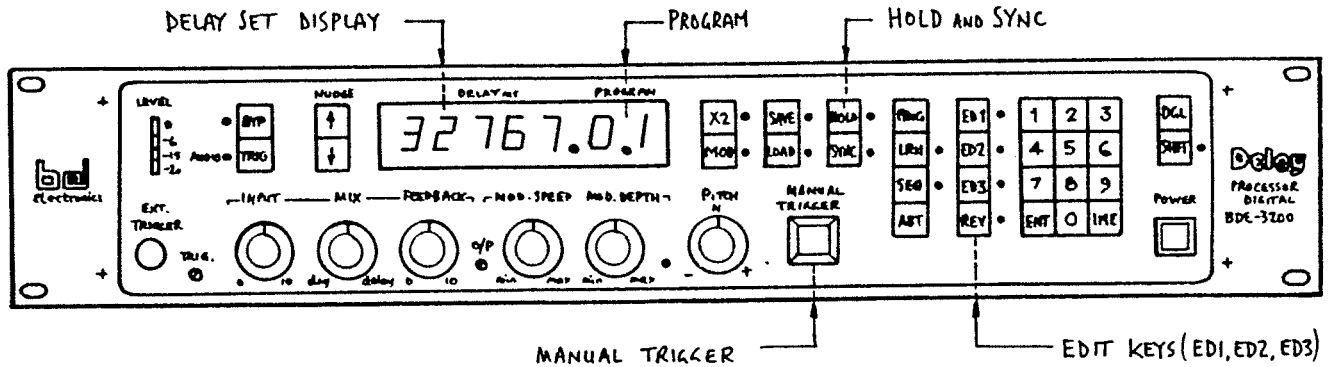
NB: When using ENT the display momentarily blinks to show entry has been effected.

If an incorrect number is 'Keyed In', depress ABORT and start again.

NUDGE KEYS ↑ and ↓

The nudge keys can be used to 'edge' the selected delay up or down in 1ms or 25 microsecond increments (for 25 microsecond increment use, see DEGLITCH-[MANUAL] section). These can be single increments or if depressed for longer than 1 sec will automatically increment.

Figure 2



RECORD & PLAYBACK (SAMPLING)

RECORD

Key In the length of time required for recording, say 6000ms. Depress the SYNC key and after the 6000ms loop has elapsed the flashing LED will stay on; for LED to stay on immediately, depress IME.

Depress MAN TRIGGER to start the recording. The LED will go off and will come on again when the 6000ms has been recorded (depress IME to abort the recording before the 6000ms has elapsed).

Depress the HOLD key to store the recorded program.

PLAYBACK

Depress the MAN TRIGGER again and this time the recorded program will be replayed, stopping when the LED comes on 6000ms later.

EXAMPLE of re-triggered playback: Depress the manual trigger and then depress again before the 6000ms has elapsed. The exact moment the trigger is depressed the playback will begin again at the record start point. If the manual trigger is depressed say every second, the playback will not be allowed to play through.

* For SINGLE TRIGGER playback see Advanced User Section (Page 15)

the 6000ms recording. Only 1 second (1000ms) of playback will be played, until the manual trigger is not depressed again for 6000ms.

For a continuous Loop of recording, depress SYNC again (off position).

EDITING OF RECORDED PROGRAM

There are 3 edit keys--ED1/ED2 and ED3:

Depressing ED1 gives access to the front or start of the recording--the display will change to show the start point (0ms). By Keying In a new start point you EDIT the front.

Depressing ED2 gives access to the back or end of the recording--the display will again change, this time to show the end point (6000ms). Key In a new end point to edit the back.

NB: ED2 must always be greater than ED1 (minimum difference 2ms).

EXAMPLE Using ED1 and ED2: Loop the 6000ms recorded program (SYNC off--ED2 selected). Key In 5000ms and depress ENT. 1000ms have now been trimmed from the end of the recording.

Depress ED1 and Key In 3000ms, depress ENT. 3000ms have now been trimmed from the start of the recording.

The overall looped recording will now be 2000ms.

NB: The nudge keys can also be used in conjunction with ED1 and ED2 keys for fine trim.

Depressing ED3 gives access to a fixed length WINDOW, the start and end of which is set by ED1 and ED2. The display will show the start point. The WINDOW of set length can then be moved through the recording either by 'Keying In' or 'nudging'.

EXAMPLE: Set ED1 at 3000ms (start). Depress ED2 and 'Key In' 4000ms and ENT. The fixed window for ED3 is now set at 1000ms (3000ms to 4000ms). Depress ED3 and 'Key In' 4000ms and ENT (new start point). ED2 will automatically move to 5000ms (maintaining the 1000ms window); by nudging ↑ or ↓ the window can be moved in 1ms increments. ED1 and ED2 will always maintain the 1000ms window set.

FIGURE 3.

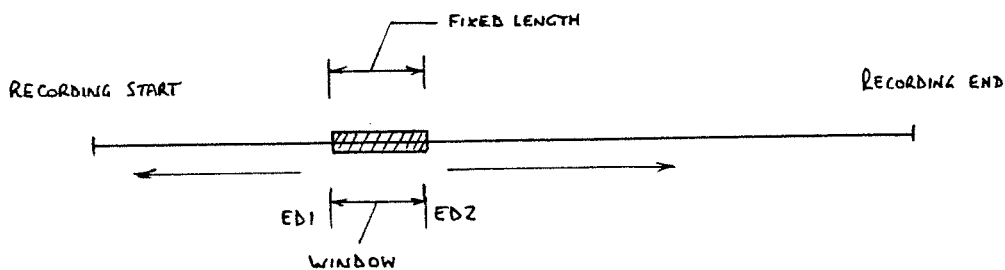
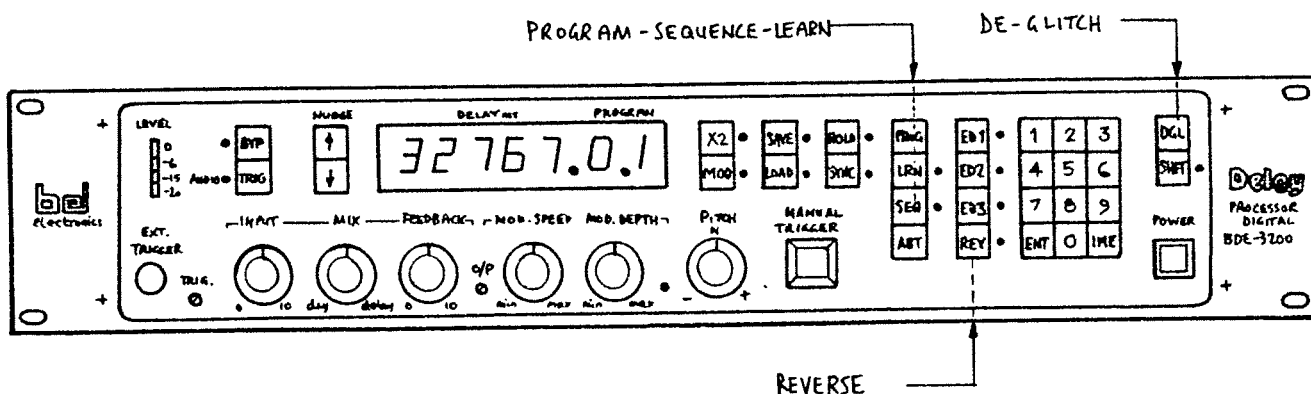


FIGURE 4.



REVERSE RECORD AND PLAYBACK

Depressing the reverse key prior to recording will enable the audio program to be recorded in reverse. During playback, depressing REVERSE will reverse the current program.

PROGRAMMING

There are 99 programs set as follows:

PROG 0 to 89 are user programmable for ED1, ED2 and Pitch, and are volatile (data lost on power down).

PROG 90 to 98 are user programmable as above but are non-volatile (battery back-up for data retention on power down.)

PROG 99 is set at the maximum audio memory fitted and is usually for checking full audio memory. IT CAN BE MODIFIED AS PER PROG 90 to 98 (on power-up again it will revert to maximum memory automatically.)

On power-up, PROG 1 is displayed; to access other programs proceed as follows:
ENTER PROG MODE: Depress PROG; display shows the word PROG. Key In new number required and depress ENT. The program number will change to the one entered and the word PROG will return to the display. If no new program number is to be entered then depress PROG again or Abort. This will exit the program mode ready for editing of program, recording of new program etc.

Next set up programs 1, 2 and 3 with different edit points ready for SEQUENCE explanation. (See advanced user section for Program Copy and Program Nudge explanation).

SEQUENCE

This allows set programs to be sequenced in any order. To enter SEQ LEARN mode, depress LRN key. (This is to allow the computer to learn the sequence of programs you require.) The display will show the word LEARN. Now Key In the program numbers required.

EXAMPLE: 1 ENT , 2 ENT , 3 ENT .

The computer has now learnt the sequence required and to exit Sequence Learn mode depress LRN key again or Abort. To start the sequence: depress the SEQ key. If in the loop mode (SYNC off) the SEQ set will now loop through the 3 programs 1-2-3-1-2-3 etc. As each program is sequenced the display shows ED1, ED2 or ED3 points (whichever is selected) and program number.

The sequence can also be triggered manually using the SYNC and MAN TRIGGER (see PLAYBACK earlier). To stop the sequence when in loop mode or to exit sequence mode, depress SEQ key again or ABORT. (Sequence will stop on program currently displayed). See advanced user section for SEQ Memories, SEQ Nudge, SEQ Editing and SEQ Copy.

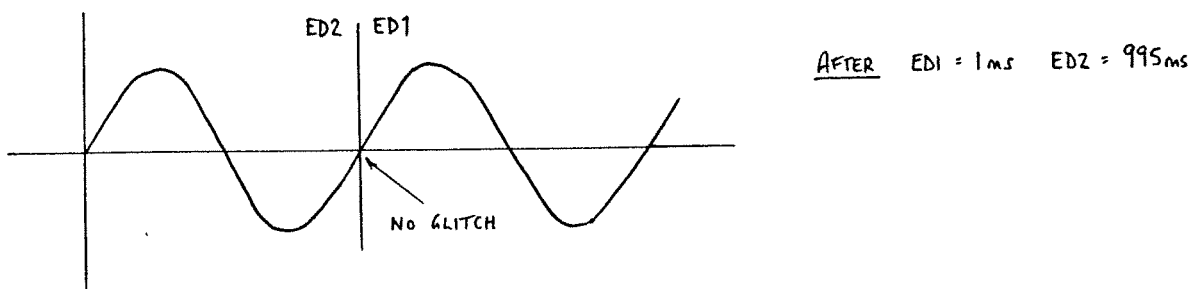
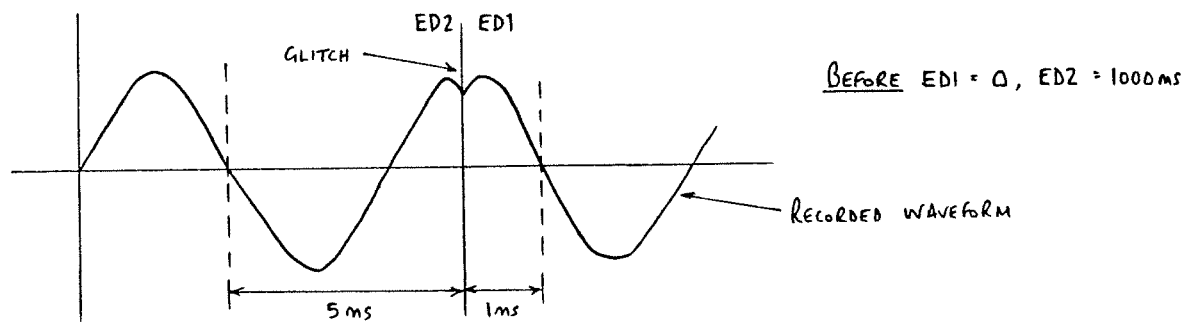
DEGLITCH (Automatic)

When this key is depressed on a set program the computer will scan the start and end of the recorded program over a maximum 64ms length to find an ideal splice point. It will then update the display for ED1 and ED2 to show new program length (0 to 64ms trimmed from original). If the computer takes longer than 2s to make a splice then the audio program over the 64ms length is not ideally suited to splice and the computer will splice at the next best point. To attempt a splice on an unsuitable audio program for the 'automatic' deglitch, use MANUAL DEGLITCH--see advanced user section.

NB: (1) during the deglitch mode the display will show/stop on random numbers or blank out--this is normal.

(2) any number of attempts can be made by depressing the DGL key. On each attempt a maximum of 64ms is trimmed.

DEGLITCH Diagram (Auto)



6ms HAS BEEN TRIMMED FROM THE LENGTH OF THE SAMPLE.

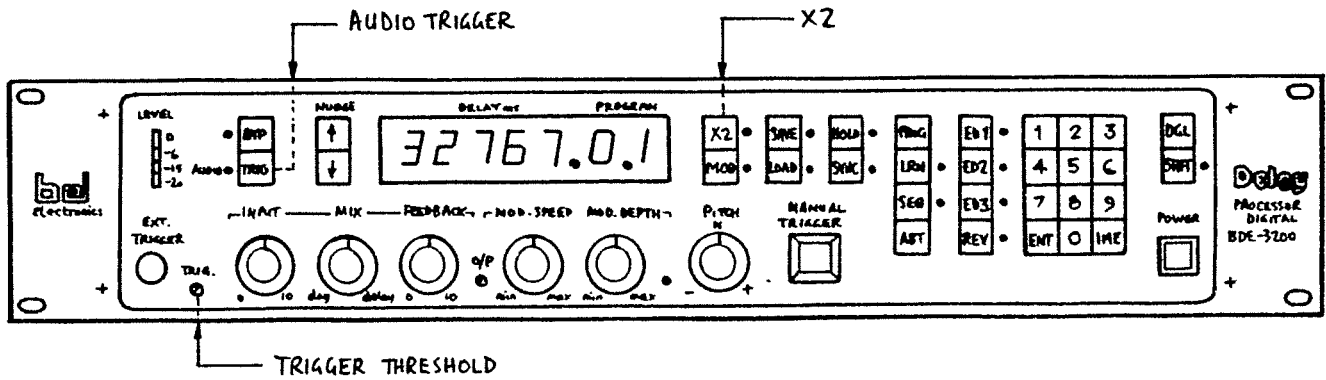


FIGURE 5

AUDIO TRIGGER

The recorded audio program/sequence can be triggered by an internal or external source. The SYNC must be depressed prior to using the audio trigger. With audio at the input to the unit, depress the (audio) TRIG key. This audio will now trigger and re-trigger the recorded audio with the dynamics of the audio input. (If no triggering occurs, adjust threshold preset control.)

This mode can be used for Record and Playback. For record, careful setting of the threshold preset will enable a very fast start to the recording when recording the audio at the input of the unit.

For triggering from an external source--connect to the EXT TRIGGER socket on the front panel (mono jack). This disconnects the internal feed and connects the external trigger to the audio trigger circuit.

NB: Manual Trigger will override the audio trigger.

X2 (DOUBLES DELAY LENGTH AT HALF BANDWIDTH) Depressing this key will double the maximum or set delay length but will also halve the bandwidth.

Notes: (1) The display does not update to this mode. Therefore the displayed length has to be doubled to give actual length of delay.

(2) In the playback mode this will give a -1 octave pitch change.

(3) For additional PITCH changing at full bandwidth see advanced user section.

MODULATION (SPEED, DEPTH AND PITCH)

When the MOD key is depressed the calibrated XTAL clock is disconnected and an uncalibrated variable clock is connected, allowing a maximum 20% variation in the delay length.

SPEED controls the rate of modulation (shown by yellow LED)

DEPTH controls the amount of modulation.

(minimum to maximum gives a subtle to deep effect.)

These controls allow delay to be modulated for vibrato, chorus, ADT or flanging effects.

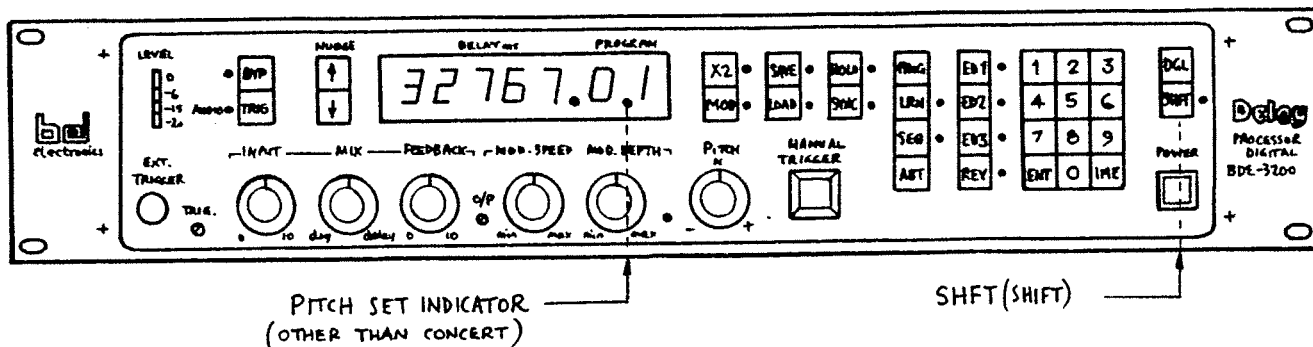
PITCH--this control is used only in the playback mode, but is accessed by the MOD key. It allows a minimum +/-1 semitone variation of pitch for fine tuning. The centre 'click' position is very close to the calibrated XTAL pitch and a variation of pitch is obtained by clockwise adjustment for +1 semitone and anti-clockwise for -1 semitone.

NOTE: This control can be used for fine tuning of recorded program or sequence in conjunction with the additional pitch changing mode in the advanced user section.

Familiarise yourself with all the keys and controls in the general section before proceeding to the advanced user section.

ADVANCED USER SECTION

FIGURE 6



In these modes the SHFT (shift) key has to be depressed and held while other keys are depressed. (This is shown as +, ie SHFT + 0).

QUICK RECORD and PLAYBACK

These modes allow Recording/Playback in real time for the length required.

NB: This mode always starts recording/playback at ED1 point so CHECK before starting that ED1 is at the point you wish to start recording/playback.

To enter QUICK RECORD MODE firstly depress SYNC and check HOLD is OFF. Depress SHFT + LRN; the display now shows 'RECD' (if you forget to depress SYNC the display will prompt SYNC?). The computer is now awaiting a start record trigger (Manual only). Depress the manual trigger and hold, in real time, for the length of recording required. (The display will blank out during this time.) The recording will automatically stop close to the maximum memory fitted if the manual trigger is held down longer than this. When the manual trigger is released the display will show length of recording. To STORE the recorded audio program depress HOLD.

To Enter QUICK PLAYBACK MODE, depress SYNC and then SHFT + LRN. The display will now show PLAY; the computer is now awaiting a Start playback trigger (manual only). Depress manual trigger as above.

When the manual trigger is released the display will again show PLAY. Further Playback can be made without re-entering the mode. To exit quick playback for editing etc depress SHFT + LRN again or ABORT. The display will now show length of playback selected (ED2).

SINGLE TRIGGER PLAYBACK

Depress SHFT + IME to enter mode and SHFT + IME again to exit mode.

PROGRAM

Using the SHFT key, further program modes are as follows:-

(1) PROGRAM NUDGE (ascending only) SHFT + PROG; (keep SHFT depressed and Nudge with PROG key.)

(2) PROGRAM COPY allows a program to be copied and assigned to another program number. The same program (ED1, ED2 + Deglitch) can then be given different pitches (as per MIDI keyboard control.) Depress SHFT + 4; the display will now prompt for a new program number. (The copy program). Key In new program number and depress ENT. The display will now revert to current program. If you now select the program number entered it will be an exact copy of the current program.

(3) Program Reset (Volatile). This resets all 90 programs (0 to 89) to ED1=0, ED2=2ms. Depress SHFT + 3.

PITCH

To enter 'Keyed' Pitch change mode depress SHFT + 0 (display will now show the word PITCH). To enter a new pitch (record 60 to 65, playback 48 to 84). 'Key In' number required and depress ENT. If a number other than 60 (concert pitch) is entered, then the green LED between the PROG number on the display will be on. (This gives a visual indication of pitch change.) The display will also revert to the word PITCH again. To check pitch number of current program depress ENT. (The current program pitch will be displayed for 2s). Other

pitch numbers can be entered by 'Keying In' the number required and depressing ENT. The pitch can also be 'nudged' up or down using the nudge keys. Depress Keys ↑ or ↓ _____ ie (nudge with keys ↑ or ↓). If no new pitch number is required or to exit pitch mode, depress SHFT + 0 again or ABORT.

PITCH NUMBERS (60 = concert pitch)

Variable in semitones: 48 to 84 play (-1 octave to +2 octaves)
60 to 65 record (+½ octave.)

NB: (1) for part semitone adjustment depress MOD key and fine tune with PITCH control.

(2) To resume concert pitch on a program when NOT in PITCH mode, select program and depress ABORT.

(3) The LAST pitch number set on a program is memorised.

SEQUENCE

SEQ NUDGE: This allows programs in a sequence to be accessed one at a time for program checking, single shot use, or for single program checking of sequence set. Depress SHFT + SEQ (forward only). Keep SHFT depressed and nudge with SEQ key.

DISPLAY CURRENT SEQUENCE MEMORY & ENTER NEW ONE

Four sequences are memorised: 0-1-2-3. Depress SHFT + ED1 (display now shows current memory 0 to 3). If no new sequence number is required depress ABORT to exit. If a new sequence number is required, 'Key In' new number (0-1-2-3) and depress ENT. Display reverts back to program ED1 or ED2 display. (New sequence number is now current.) To check, depress SHFT + ED1; display shows new sequence number--depress ABORT to exit.

COPY CURRENT SEQUENCE TO ANOTHER SEQUENCE NUMBER

Depress SHFT + 5 (current sequence number is displayed.) Key In new sequence number to be a copy of the current, and depress ENT.

NB: The COPY sequence number is now current. To check, depress SHFT + ED1 (display will show copy sequence number). Depress ABORT to exit.

SEQUENCE EDITING

(a) Delete a sequence program in the sequence pattern:

Firstly nudge through the sequence so that the current program is the one to be deleted (or stop sequence on program to be deleted.) Depress SHFT + ED2-- display now shows the NEXT program in the set sequence.

(b) Enter a sequence program number in the sequence pattern. Firstly nudge through the sequence so that the current program is the program BEFORE the program to be entered. Depress SHFT + ED3; the display will prompt for a program number (the new program to be entered.) Key In Program number and depress ENT; NEW sequence program number is now displayed and current.

MANUAL DEGLITCH For fine trimming of difficult splice

Select ED1; depress SHFT and nudge with ↑ or ↓ (each nudge is approximately 30 microseconds.)

Procedure: Nudge using ↑ or ↓ WITHOUT SHFT to get close to the best splice point and then fine trim by using SHFT and Nudge keys.

MEMORY LOCK

This can be used for protecting samples recorded above a preset maximum position in the audio memory. Firstly 'Key In' a memory length BELOW the proposed new maximum memory to be set. To enter LOCK Mode, depress SHFT + 1; display now shows current maximum memory. 'Key In' new maximum memory and

depress ENT. The memory below the new maximum memory set can still be accessed and used, but now without the worry of erasing or overrecording samples above the set maximum.

To exit LOCK mode, depress SHFT + 2; The new maximum automatically reverts to maximum memory fitted.

MIDI

The samples recorded can be played on a keyboard by connecting a MIDI synthesiser to the MIDI in DIN socket on the rear panel.

Depress SYNC. When a key is pressed the set program will loop until the key is released.

PITCH BEND will bend the recorded sound and by selecting channels 1 to 32 on the synthesiser (if applicable) programs 1 to 32 on the BDE can be accessed.

GENERAL NOTES

(1) Other software additions will become available. Contact your dealer for details.

(2) Refer to disk interface manual (supplied with optional disk interface) for operation of SAVE and LOAD keys.

COMPUTER FUNCTION KEYS

EDIT MODES FRONT--ED1

BACK--ED2

WINDOW--ED3 (Set ED1 and ED2) displays ED1

QUICK RECORD--SYNC/SHIFT + LRM + depress MAN. TRIG in real time

STORE RECORDING--HOLD

QUICK PLAYBACK--SHFT + LRM + depress MAN. TRIG as above

EXIT ABOVE--SHFT + LRM or ABORT

PROGRAM MODE--PROG

CHANGE PROGRAM NUMBER--NUMBER/ENT

EXIT PROGRAM MODE--PROG or ABORT

PROGRAM NUDGE--SHFT + PROG

PROGRAM COPY--SHFT + 4/NUMBER/ENT

PITCH CHANGE MODE--SHFT + 0

CHANGE PITCH--NUMBER/ENT (Record 60 to 65, Playback 48 to 84)

PITCH NUDGE-----↑ or ↓

DISPLAY PITCH NUMBER--ENT

EXIT PITCH MODE--SHFT + 0 or ABORT

SEQ LEARN MODE--LRM

ENTER PROGRAM NUMBERS--Number/ENT

CANCEL SET SEQUENCE--ABORT

EXIT LEARN MODE--LRM

SEQ START MODE--SEQ

EXIT SEQ START MODE--SEQ or ABORT

SEQ NUDGE--SHFT + SEQ

DISPLAY CURRENT SEQUENCE NUMBER--SHFT + ED1/0-1-2-3/ABORT

DELETE SEQUENCE PROGRAM NUMBER--SHFT + ED2 (current program number is deleted)

ENTER A NEW PROGRAM IN THE SEQUENCE--SHFT + ED3/ Number/ENT (enters program after current one)

ENTER SINGLE TRIGGER PLAYBACK MODE SHFT + IME

EXIT SINGLE TRIGGER PLAYBACK MODE SHFT + IME AGAIN

SEQUENCE COPY--SHFT + 5 / Number / ENT (copies current sequence number to another number)

REVERSE RECORD/PLAY--REV

DEGLITCH--DGL (auto)

DEGLITCH (Manual)--SHFT = ↑ or ↓ (ED1 or ED2)

RESET VOLATILE MEMORY TO 0-2ms -- SHFT + 3

ABORT AUDIO MEMORY--SHFT + ABORT

ENTER MEMORY LOCK--SHFT + 1 (Number/ENT)

EXIT MEMORY LOCK--SHFT + 2

PROGRAMS--90 to 98 non-volatile

COMPUTER RESET (equivalent to POWER ON) X2 and ↑ together, and then release.

ENTER QUICK PLAY MODE

[HOLD] / [SHFT] + [LRN]

Depress "Manual Trigger" for length of sample required

Exit Quick Play Mode

[SHFT] + [LRN] or [ABORT]

SINGLE TRIGGER PLAYBACK

Depress

[SHFT] + [IME] to enter mode
and again to exit

PROGRAM

Enter Program Mode

[PROG]

Change Program Number

[NO] / [ENT] or [IME]

Exit Program Mode

[PROG] or [ABORT]

Program Nudge (ascending only)

[SHFT] + [PROG]

Keep [SHFT] key pressed and nudge with [PROG] key

Copy current program to another [SHFT] + [4] / [NO] / [ENTER] or [IME]

PITCH CHANGE

Enter Pitch Mode

[SHFT] + [O]

Change Pitch (see below)

[NO] / [ENTER] or [IME]

Nudge Pitch (in semitones ±)

[↑] or [↓]

Display Pitch No (current)

[ENTER]

Exit Pitch Mode

[SHFT] + [O] or [ABORT]

Pitch Numbers 60 = Concert Pitch

Variable in semitones:

48 - 84 PLAY (- 1 octave to + 2 octaves)

60 - 65 RECORD (+ ½ octave)

NOTES: (a) for part semitone adjustment press [MOD] key and adjust manual pitch fine control (playback only)

(b) to resume concert pitch when not in pitch mode [ABORT]

(c) the last pitch number set on a Program is memorised

PROGRAM SEQUENCE

(having firstly set Programmes required
Pitch and Length)

- (a) Enter LEARN SEQ Mode (learn pattern of programs) [LRN]
 Enter PROG Numbers [No] / [ENT]
 Cancel SEQ set [ABORT]
 Exit LEARN SEQ Mode [LRN]
- (b) Enter SEQ start mode [SEQ]
 Exit SEQ start mode [SEQ]
 (SEQ will stop on current program)
- The following are SEQ related but are used separately to
LEARN and START SEQ
- (c) SEQ nudge [SHFT] + [SEQ]
 (keep SHFT key pressed and nudge with SEQ key)
- (d) Display current SEQ No (four SEQ patterns are memorised
 0 - 1 - 2 - 3) [SHFT] + [ED1]
 If no new SEQ number is required [ABORT]
 If new SEQ number is required [NO] / [ENTER]
- (e) Delete a SEQ Program number in the SEQ pattern -
Nudge through SEQ so that the current SEQ number
is the one to be deleted - then press [SHFT] + [ED2]
- (f) Enter a SEQ Program No in the SEQ pattern (nudge through
 SEQ pattern so that the program number displayed is that
 number BEFORE the program number to be entered.)
 Enter new SEQ Program number [SHFT] + [ED3] / [No] / [ENT]
 (new SEQ program number is then
 displayed)
- (g) Copy a set SEQ number to another [SHFT] + [5] / [No] / [ENT]
 (current SEQ to be copied is
 displayed)
 (New SEQ number then displayed)

REVERSE RECORDING MODE

This can only be used in normal Record
(not Quick Record)

Press REV key prior to recording
(when played normally the sample will
be reversed)

REV

REVERSE PLAYBACK MODE

This can only be used in normal playback
(not Quick Playback)

Press REV key for Reverse play



REV

DEGLITCH


DGL Loop Mode only

- (a) Manual (fine trim of EDIT points for best splice)

Select ED1 for Front Trim

SHFT +  or 

Select ED2 for Back Trim

SHFT +  or 

- (b) Automatic

Computer monitors both ED1 and ED2 over
a 64ms max length to find best splice


DGL

Each attempt trims a maximum of 64ms from loop length


(Display is updated (ED1 and ED2) to show new sample length)

OTHERS

- (a) Reset all volatile programmes to ED1 = 0
ED2 = 2ms

SHFT + 


- (b) ABORT all Audio Memory

SHFT + 

Lock Mode


For protecting samples above a preset max memory firstly -
Enter a memory length below max memory to be preset

- (c) Enter LOCK Mode

SHFT + 

(displays current max audio memory)


Enter new max audio memory

No / 

(numbers cannot now be entered above set max)

the memory above the new max memory cannot be accessed

Exit LOCK MODE

SHFT + 

automatically reverts to max memory fitted

(d) ENTER / MAX Audio memory fitted PROG / 99 / ENT
 EXIT / MAX Audio memory fitted PROG or ABORT

(e) PROGRAMS 90 - 98 are non-volatile

(f) Computer ' Reset ' only to be used if Computer
 ' Locks ' as it is the equivalent to a POWER ON AGAIN

x2 + ↑

INPUT

Balanced (to unbalance link pins 1 and 2 - 3 is hot)

DIRECT O/P

unbalanced pin 3 hot

DELAY O/P

as MIX O/P

MIX O/P

Balanced (to unbalance link pins 1 and 2 - 3 is hot)