



Model 7120

Delay Synchroniser

Revised February 2002

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BEL 7120 Delay synchroniser

INTRODUCTION

The BEL 7120 is a stereo analogue audio delay system. The unit was designed to resynchronise audio to video following processes such as standards conversion, video F/X, video synchronisation, satellite transmission etc.

The BEL 7120 provides 0-5.2 Sec. of stereo audio delay (0-128 frames PAL / 0-156 frames NTSC). There is a factory option of 10.4 sec. delay. Frequently used delay parameters can be stored in eight memories. Inadvertent operation of the keys can be avoided by invoking the key 'lock' function. An LCD display is used to show delay, increment value, programme number, bypass, lock and input level. The delay may be adjusted in steps of 1 sample, 1mSec, fields or frames. The field and frame step values change to reflect the PAL or NSTC selection. Bypass can be selected by means of the front panel. An electromechanical bypass will automatically engage in the event of a power failure.

Four GPI inputs associated with program memories are provided.

Operation and front panel keys

Six controls are located on the front panel these are:-

BYP

This key is used to connect the input directly to the output bypassing the delay mechanism. Press the switch once to enter the bypass mode and again to return to the delay mode. The word Byp is displayed on the lower line of the LCD display when the unit is in the bypass mode.

LOCK

When the unit is 'locked' all the front panel switches, except LOCK, are inoperative. To release the switches press and hold the LOCK key for a period in excess of three seconds. A momentary press of the LOCK key will lock the unit again.

SET

This key is used in conjunction with the nudge keys to access the set up menus and to change values and parameters within the menu. See below for details.

PROG

This key will allow up to eight frequently used settings to be stored and recovered from a non volatile memory.

To memorise settings simply press the PROG switch until the required program number appears on the display. Any adjustment carried out will now be associated with that program number.

Nudge up/down \wedge \vee

These are the nudge up and down keys. When the default display is visible operating these keys will adjust the delay value. The nudge keys are also used to change values within the set up menus.

Default display

On power-up the LCD will show model number, software version and model description for a few seconds before resetting to the default display. The default LCD display will show input levels, the selected delay, the program memory and if selected bypass and lock:



The input level indication is in the form of a pair of horizontal bars. A short vertical line at the right hand end of the bars indicates the clipping point for the A/D converters. This level corresponds to +15dB on the analogue input to the unit, with input gain set to 0dB.

Set up menu description

Pressing the SET key enters the set up pages. Pressing the SET key again will select the next menu item. The value of the item selected can be changed by the use of the nudge keys. A ten second timer is running while the set up pages are visible which will cause the unit to return to the default display if no values are changed in that time.

Page 1

The first page allows the video mode (PAL or NTSC) to be selected. A second line allows the increment mode to be selected. (press SET). The unit can increment in samples (21µs), milli seconds fields or frames. To return to the upper line press the BYP key.

Page 2

The second page will permit adjustment of the input and output analogue gain. The input levels after gain adjustment are displayed whilst the input gain is selected. Adjusting the input gain settings will affect the headroom that the unit will provide.

GPI Inputs

Four GPI inputs are available each of which is associated with a program memory. A transient ground applied to one of these inputs will force the 7120 to change to the appropriate program memory. GPI input 1 to memory 1 etc. If several GPI inputs are grounded simultaneously they will be serviced in a priority order, 1 being the highest priority. A current of approximately 0.5mA is sourced by each GPI input.

Connections

The rear panel of the BEL 7120 has 4 XLR connectors, 9 pin 'D' connector and a combined IEC inlet, fuseholder and switch.

From the right these are:

Mains power IEC 3Pin (90-260VAC 50/60Hz)

Fuse Ratings are 2 amp (A/S)

Power switch

GPI connector

9 Pin 'D' female

Pin 1 Memory program 1

Pin 2 Memory program 2

Pin 3 Memory program 3

Pin 4 Memory program 4

Pin 5/6 and 9 GND

Pin 7/8 Reserved (do not connect)

Audio connectors

Left and right audio outputs 3 Pin XLR male balanced Pin 2 hot.

(To unbalance connect pin 3 to pin 1 on the cable connector).

Left and right audio inputs 3 Pin XLR female balanced Pin 2 hot.

(To unbalance connect pin 3 to pin 1 on the cable connector).

Mounting

If mounted in an enclosure that does not include forced air cooling, allow 1U of space above and below the unit.

EMC compliance

The BEL 7120 was designed and tested to comply with the EMC directive numbers EN55103, EN55022 when used as directed.

Specification

Delay	0 -5.2 sec (0-10.4 sec factory option)
Delay increments	1 sample, 1 msec, 1 field, 1 frame
TV system	PAL or NTSC
Frequency response	20Hz - 20kHz \pm 1dB
Input dynamic range	120dB
Signal to noise ratio	-95dB r.m.s. 20 -20kHz
Distortion	less than 0.015% at 1kHz
Conversion accuracy	A/D 24 bit Delta Sigma 64 x oversampled D/A 24 bit 8 x oversampled
Sampling rate	48kHz
Inputs	Electronically balanced 25k Ω
Outputs	Electronically balanced 50 Ω

Troubleshooting

The Bel 7120 is designed and constructed to ensure a long and fault free life, but if a problem does occur the following guidelines are provided.

The unit is constructed using 1 main printed circuit board and 3 sub assemblies.

The 3 sub assembly printed circuit boards are:-

1. Analogue audio I/O EMC suppression
2. The front panel interface
3. The LCD interface

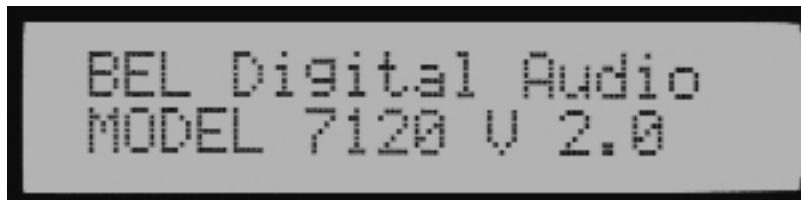
The main printed circuit board includes the analogue to digital and digital to analogue, digital control, memory and power supply circuitry.

Fault	Causes	Action
'Dead' unit	Power supply fault	Check fuses in the IEC and supply connector
Only LCD backlight on	Power supply fault	Check power supply voltages
Power on message, then unresponsive	CMOS RAM corruption	Reset memory to factory preset values by pressing the 'set' key while 'logon message' on LCD is showing & 'set' key again to confirm
No audio output	Various	Check an audio input is present
Distorted output	Headroom	Check audio input is not greater than +15dB. Check input/output level settings

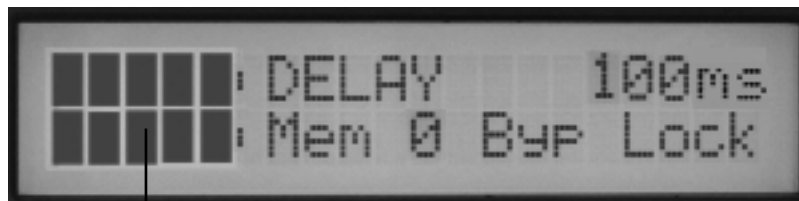
If the outline fault finding suggestions above are unsuccessful, contact your BEL distributor, or the main BEL distributor, who will advise you and arrange for the unit to be repaired or provide replacement PCB's.

LCD screens

'LOGON' message

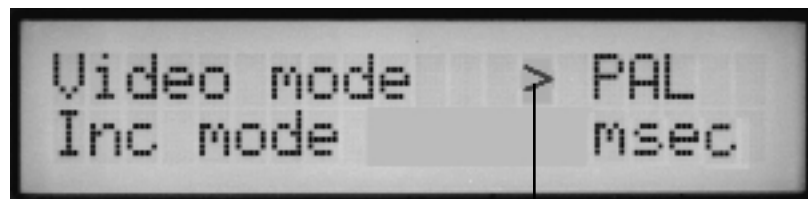


'DEFAULT' (with BYP & LOCK & signal input present)



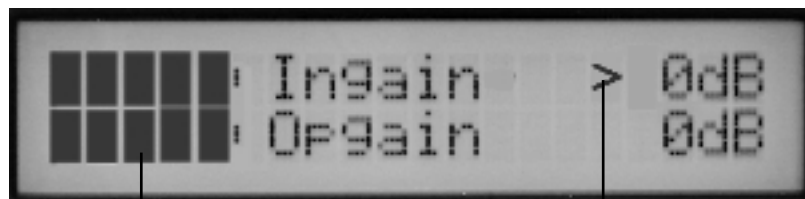
signal present indication

'VIDEO MODE' & 'DELAY INCREMENT'
(video set to PAL, increment set to MS)



cursor

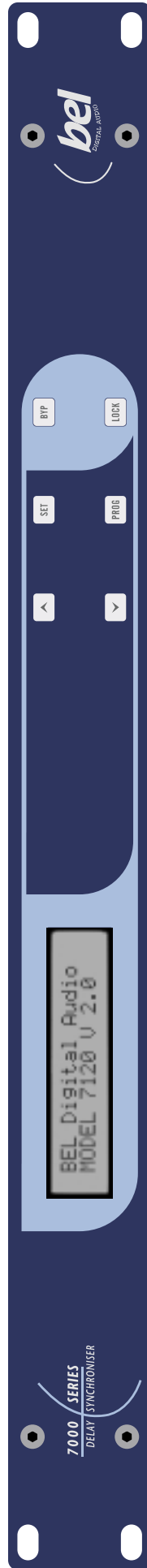
'INPUT/OUTPUT LEVEL SET' (with signal present)



signal present indication

cursor

Front view of unit



Rear view of unit

