TECH FILE

Preliminary Technical Service Manual

# MODEL 140

## Type II Noise Reduction

dbx Professional Products
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dbx®

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# User/Operator Description

## INTRODUCTION

The dbx Model 140 simultaneous encode/decode broadcast noise reduction system is a two-channel compressor/expander providing a minimum of 30 dB broadband audio noise reduction with a 10 dB increase in a system headroom. The two channels feature independent encode and decode circuitry.

In the record mode, the system compresses the input signal by a 2:1 ratio, linear in decibels over a 100 decibel range. Upon playback, the circuitry produces an exact mirror image 1:2 expansion of the encoded signal.

True RMS level sensing insures perfect encode/decode tracking for accurate transient response irrespective of phase shifts in the transmission or storage medium. There is no audible breathing, pumping or other coloration of the sound with this encode/decode system, and there are no pilot tones or routine calibration procedures necessary for its use.

The dbx system eliminates tape hiss in recording and prevents the noise build-up normally encountered in transferring information from one recorded medium to another; it does not remove noise present in the original signal. The dbx 140 noise reduction system is built to professional standards using the latest advances in circuit design and technology and is fully warranted (parts and labor) for two years.

## APPLICATION

For recording live announce or studio productions on cartridges, the dbx Model 140 noise reduction system completely eliminates the tape hiss which usually accompanies the recording process. This allows spots or other program content originating on cartridges (historically the noisiest link in the broadcast chain) to approach the sound quality of live broadcasting.

When used for transfer of program material to cartridge from other recorded sources, the dbx encoding prevents any additional noise build up beyond that contained in the original material.

The result of dbx encoding is to minimize the audible quality differences between cart playback and live announce or between one cart and another. dbx encoding also minimizes the effect of "automated sound" and allows a fully automated station to approach live sound quality.

Non-cartridge-related broadcast uses for the dbx 140 system include improving the signal-to-noise ratio of reel-to-reel studio recorders, eliminating hiss from TV audio tracks and cleaning up noisy full-frequency land lines or microwave links from the studio to the transmitter. A modest investment in dbx 140 noise reduction units can protect a much larger investment by prolonging the useful life of major studio equipment and installations that might not otherwise meet contemporary performance standards.

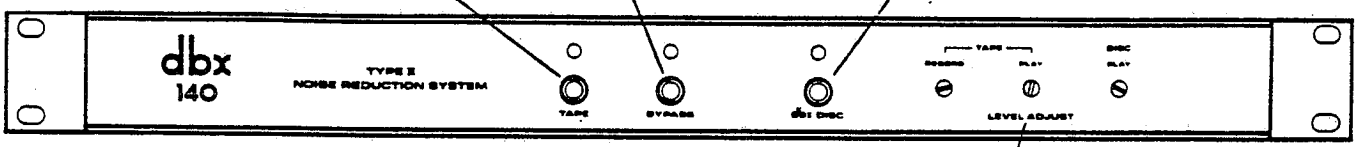
The dbx 140 may also be used as a playback-only device to decode dbx encoded discs or tapes for broadcast.

# FRONT PANEL LAYOUT

When depressed, noise reduction circuitry is hardwire bypassed, allowing audio signal to pass directly through the 140 without processing, even if AC power is off.

When depressed, audio signals going to the tape machine or transmission line are dbx encoded. Audio signals coming from the tape machine or transmission line are decoded.

When depressed, audio signals coming from console outputs are decoded according to dbx disc curve. Encoded signal is fed directly to the tape machine or transmission line outputs.




Trim adjustments to match 140 operation to the levels with which it will operate. These trims are for operating convenience and will not effect the encode/decode linearity in any way.

## HOW TO USE THE FUNCTION SELECT BUTTONS ON YOUR 140 (PUSH ONLY ONE BUTTON AT A TIME)

| WHAT YOU PUSH | | | WHAT YOU GET |
|---|---|---|---|
| TAPE | BYPASS | dbx DISC | |
| ■ | | | dbx ENCODED PROGRAM<br>Program coming FROM CONSOLE OUTPUTS will be encoded and sent TO RECORDER INPUTS. |
| ■ | | | dbx DECODED PROGRAM<br>Program coming FROM RECORDER OUTPUTS will be decoded. and sent TO CONSOLE OUTPUTS. |
| | ■ | | NO SIGNAL PROCESSING FROM RECORDER<br>Program coming FROM CONSOLE OUTPUTS will be sent directly TO RECORDER INPUTS, and program coming FROM RECORDER OUTPUTS will be sent directly TO CONSOLE INPUTS with no encoding or decoding |
| | | ■ | dbx DISC/SOURCE DECODING<br>Program coming FROM CONSOLE OUTPUTS will be internally connected to the terminals labelled FROM RECORDER OUTPUTS, then decoded and fed TO CONSOLE INPUTS. The encoded dbx disc program fed FROM CONSOLE OUTPUTS will also be fed TO RECORDER INPUTS, in encoded form. |

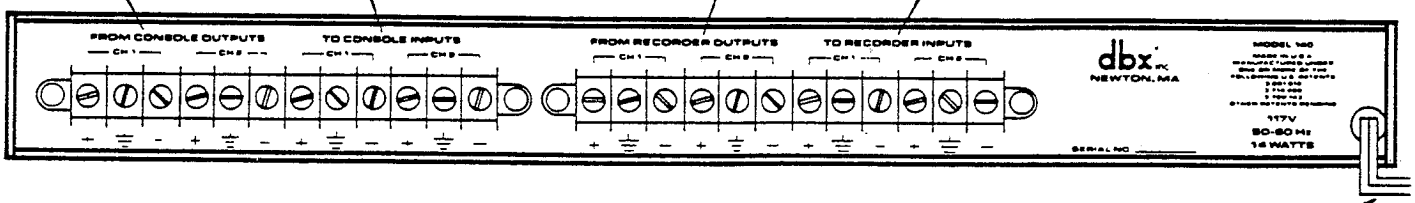
# REAR PANEL LAYOUT

Connect audio output (line level) from mixing console to these terminals.

Connect audio input (line level) of the mixing console to these terminals.

Connect audio output (line level) from tape machine or transmission line to these terminals.

Connect audio input (line level) of the tape machine or transmission line to these terminals.




AC Line Cord connects the 140 to 117 VAC, 50 or 60 HZ AC power source only. Models for use with other sources are available outside the continental United States. Contact factory for information.

NOTE: The 140 is not equipped with a power ON/OFF switch but is designed instead to be connected to the master switched AC outlet of your audio system. Since the 140 draws very little AC power, it can be plugged into an unswitched AC outlet and left ON all the time.

## TYPICAL SIGNAL CONNECTIONS - INPUT AND OUTPUT

### Input Connections (FROM CONSOLE OUTPUTS, FROM RECORDER OUTPUTS)

For balanced or floating lines, connect the signal leads to the (+) and (-) terminals, and the shield to the chassis ground (⏚) terminal. For unbalanced lines, connect the signal high lead to the (+) terminal and jumper the (-) and chassis ground (⏚) together for connection of the shield. When using an unbalanced connection, reversing the (+) and (-) input terminals will cause the output signal to be 180° out of phase (reverse polarity) relative to the input signal. The Model 140 input impedance is 75,000 ohms when connected in the balanced configuration but is 54,000 ohms when connected in the unbalanced configuration.

### Output Connections (TO CONSOLE INPUTS, TO RECORDER INPUTS)

The output of the dbx 140 is designed to feed balanced or unbalanced 600 ohm or greater loads. The output stage is single ended so that in normal operation the (-) signal output terminal is internally connected to the (⏚) terminal. When the system bypass is engaged, the signal inputs are directly connected to the signal outputs. For maximum hum rejection, avoid common grounding at the input and output (avoid "double-grounding"). One grounding method that usually works is to ground the shield at the 140's output (⏚) terminal and also ground it at the input of the following device. Do not connect the shield at the 140's input (⏚) terminal. Leave the input shield connected only to the output of device feeding the 140.

## SETTING THE LEVEL ADJUST CONTROLS

The dbx Model 140 is factory calibrated for nominal input and output levels of 1 Volt. The three screwdriver adjustable LEVEL ADJUST controls on the front panel are provided to maintain similar input and output levels in encode and decode modes and to optimize level matching between the dbx 140 and the rest of your system for the best headroom and lowest noise. Each control adjusts two channels simultaneously so proper stereo balance is maintained.

Before making adjustments, make sure your tape machine or transmission line is adjusted or aligned according to the manufacturer's specifications. Connect the 140 to your system using inputs and outputs as shown.

### RECORD Level Adjustment

1. Depress BYPASS button on 140.

2. Run a 1 KHz tone through your console so that the meters indicating the console output levels to the 140 read at nominal operating levels (0 VU).

3. Adjust tape recorder input gain so that the tape recorder meters read 0 VU.

4. Depress TAPE button. Adjust 140 RECORD LEVEL ADJUST, if necessary, so that tape recorder meters again read 0 VU.

### PLAY Level Adjustment

1. Depress BYPASS button on 140.

2. Using the 1 KHz tone on the appropriate alignment tape, adjust your tape recorder output gain so that the meters indicating the recorder output levels to the 140 read at nominal operating levels (0 VU).

3. Adjust console input gain so that the meters indicating the output levels from the 140 read 0 VU.

4. Depress TAPE button. Adjust the 140 PLAY LEVEL ADJUST, if necessary, so that console meters indicating the output levels from the 140 again read 0 VU.

### DISC Level Adjustment

1. If 140 is connected to a tape recorder, put recorder in SOURCE mode. (Make sure that tape recorder acts as a unity gain device when in SOURCE mode.) If you are not using the tape recorder, connect the appropriate terminals of the 140's FROM RECORDER OUTPUTS and TO RECORDER OUTPUTS together.

2. Depress BYPASS button.

3. Using the 1 KHz tone from the appropriate test record, set the console "send" gain so that the console meters indicating the console output levels to the 140 read nominal operating level (0 VU).

4. Adjust console "receive" gain so that the console meters indicating output levels from the 140 read 0 VU.

5. Depress the DISC button. Adjust the DISC LEVEL ADJUST so that the console meters indicating the output levels from the 140 again read 0 VU.

When the 140 is adjusted in the above manner, it will act as a unity gain device for a 1 KHz tone at nominal operating levels, whether it is bypassed or is encoding or decoding.

CONVERTING THE 140 TO TRANSFORMER BALANCED OUTPUTS

The dbx Model 140 has unbalanced outputs with +24 dBm drive capability. If you wish to have transformer balanced outputs, the 140's circuit board has been designed to accept transformer number JE-123-SLPC (or alternatively JE-123-SPC) manufactured by and available from Jensen Transformers of North Hollywood, California. Four transformers are necessary.

The procedure for installing these transformers is as follows:

1. Remove the screws securing the sides to the front and back extrusions (four screws per side).

2. Slide the top and bottom plates out of the extrusions.

3. Locate the transformer positions marked T2 through T5 on the circuit board.

4. There are two jumpers associated with each transformer position. Cut out and discard these jumpers labelled Y1 through Y8.

5. Insert the eight-pin transformers into locations T2 through T5 on the circuit board. The transformers are electrically symmetrical so they will function properly in either of the two possible orientations. Solder into place.

6. Slide top and bottom covers back into the extrusion.

7. Replace the screws holding the sides to the extrusions (four screws per side).

SPECIFICATIONS

| | |
|---|---|
| Input Impedance | 75 kohm balanced<br>54 kohm single ended |
| Output Impedance | Low, designed to drive 600 ohm or greater |
| Input Level | +24 dBm maximum |
| Output Level | +24 dBm maximum into 600 ohm |
| Distortion | <.5% THD 30 Hz to 100 Hz<br><.1% THD 100 Hz to 20 kHz (measured with encode output connected directly to decode input) |
| Equivalent Input Noise | Unweighted, 20 kHz bandwidth,--85 dBm |
| Frequency Response | ±.5 dB 40 Hz to 20 kHz,--1 dB @ 30 Hz (encode/decode, typical program material tracking) |
| Slew Rate | >10 V/$\mu$ sec. |
| Effective Noise Reduction | 30 dB plus 10 dB of headroom |
| Dynamic Range (peak signal to A weighted background noise) | 110 dB |
| Optional Output Transformer | Jensen #JE 123-S-PC or JE 123-S-LPC |
| Dimensions | 1 3/4"H x 19"W x 12 1/2"D<br>(4.4 cm x 48.3 cm x 31.8 cm) |
| Power Line | 117 VAC, 50-60 Hz |
| Power Consumption | 15 W |
| Warranty | dbx products are covered under a limited warranty (parts and labor) for two years from date of original purchase. |

# Test Procedures

# CHANNEL BALANCING
# FOR THE dbx 140 AND 180
# NOISE-REDUCTION UNITS

Temporarily disconnect your unit from its ac power supply, in order to remove the top cover safely. To do this, first remove all the screws holding the rack ears on (both rack ears must be off). Then firmly slide off the top cover, moving it toward the back. On many units the fit of this cover is quite snug, so gentle tapping with a rubber hammer may be necessary. When the cover is off, plug the unit back into its ac jack and let it warm up for 5-10 minutes.

This procedure requires a 1-kHz tone at 0 dBV (1 V rms).

ENCODER In and Out (Note: "From Console Outputs" is the Input, "To Recorder Inputs" is the Output)

1) Put 1 kHz at 1 V rms into both channels. Level-match Channel 2, using your unit's front-panel Record trim pot (R121). That is, turn the pot until the unit puts out 1 kHz at the same level as the input: 1 V rms. Channel 2 is now at unity gain.

2) Then take the cover off the unit, being sure to stay away from the power supply and transformer. Locate trim pot R68 and turn it to match Channel 1 to Channel 2.

DECODER In and Out (Note: "From Recorder Outputs" is the Input, "To Console Inputs" is the Output)

1) Again put 1 kHz at 1 V rms into both channels. Level-match Channel 2, using the unit's front-panel Play trim pot (R173). That is, turn the pot until the unit puts out 1 kHz at the same level as the input: 1 V rms. Channel 2 is now at unity gain.

2) Then locate trim pot R169 inside the unit and turn it to match Channel 1 to Channel 2.

Model 140/180

TEST PROCEDURE ADDENDUM

The following should replace the Frequency Response Test (section 8) for the 140 and 180 as outlined beolw:

Model 140

8a) Encoder section Level-match 1kHz at EXACTLY 1.000Vrms. The response should be within the ranges listed below: (using DVM)

| Freq.(Hz) | Output (Vrms) |
|---|---|
| 32 | 1.297 to 1.455 |
| 50 | 1.098 to 1.232 |
| 100 | 0.999 to 1.121 |
| 400 | 0.979 to 1.099 |
| 2k | 0.835 to 0.937 |
| 10k | 0.656 to 0.736 |
| 20k | 1.366 to 1.533 |

b) Decoder Section. Again, Level-match 1kHz to EXACTLY 1Vrms and check that the response is within the ranges below:

| Freq. (Hz) | Output (Vrms) |
|---|---|
| 32 | 0.444 to 0.498 |
| 50 | 0.705 to 0.792 |
| 100 | 0.869 to 0.975 |
| 400 | 0.888 to 0.997 |
| 2k | 1.206 to 1.354 |
| 10k | 2.00 to 2.24 |
| 20k | 0.473 to 0.530 |

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Model 180

8a) As above, Level-match @ 1kHz = 1.000Vrms... (ENCODE section)

| Freq.(Hz) | Output (Vrms) |
|---|---|
| 32 | 0.892 to 1.001 |
| 50 | 0.778 to 0.873 |
| 100 | 0.699 to 0.784 |
| 400 | 0.767 to 0.861 |
| 2k | 0.975 to 1.094 |
| 10k | 0.571 to 0.640 |
| 20k | 0.491 to 0.551 |

b) DECODE section...

| Freq.(Hz) | Output (Vrms) |
|---|---|
| 32 | 1.142 to 1.281 |
| 50 | 1.471 to 1.650 |
| 100 | 1.764 to 1.979 |
| 400 | 1.473 to 1.613 |
| 2k | 0.884 to 0.992 |
| 10k | 2.65 to 2.98 |
| 20k | 3.69 to 4.13 |

| Freq. (Hz) | Level (dBV) | Reference Mode | DUT Mode | Channel | Mode |
|---|---|---|---|---|---|
| | | | | | |
| ---- | ---- | BYP | *** | ---- | --- |
| | | | | | |
| --- | --- | BYP | BYP | --- | --- |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| | | | | | |
| 100Hz | 0dBV | BYP | TAPE | ---- | Ba<br>Ba |
| | | | | | |
| | | | | | |

1. TEST EQUIPMENT CALIBRATION
   Calibrate test equipment according to the Test Equipment Calibration Procedure.

2. LED/SWITCH TEST
   a) Apply power to the DUT and depress the TAPE, BYP and DISC switches in turn. Check that only the appropriate LED lights.

   b) If the switches bind, lubricate them.

3. POWER SUPPLY ADJUST

   a) Connect the COMMON probe from the DVM to the RH side of R13 (ground) and the + probe to the RH side of R8. Adjust R5 for a reading between -14.990 and -15.010VDC.

   b) Connect the DVM + lead to the RH side of R7 and check for a reading between +14.50 and +15.50 VDC.

   c) Connect the DVM to the RH side of R15 and check for a reading between +19.30 and +20.70VDC.

   d) Connect the DVM to the RH side of R18 and check for a reading between -19.30 and -20.70VDC.

4. RMS SYMMETRY ADJUST

   a) With the oscillator and switches set as shown, connect the scope probe across the RMS capacitors listed below. Be sure that the tip of the probe is on the + cap lead and the ground clip is on the other lead (the system ground is not sufficient).

   b) For the RMS cap on each channel, adjust the respective trimpot for equal peaks on the waveform. Do this carefully so as to obtain as symmetrical a waveform as possible.

| RMS Cap. | Trimpot |
|---|---|
| C34 | R45 |
| C65 | R96 |
| C96 | R146 |
| C126 | R200 |

| | q. (Hz) | T. (dBV) | erence | ode | nannel | |
|---|---|---|---|---|---|---|
| 6. VCA SYMMETRY ADJUST | | | | | | |
| a) Set the oscillator and switches as shown and adjust R121 (front panel) for 0dBV output. | 100Hz | 0dBV | BYP | TAPE | 2 | EN |
| b) Switch to Channel 1 and adjust R68 for 0dBV output. | | | | | 1 | |
| c) Set the Distortion Meter for 200Hz and adjust R59 for minimum distortion. The reading should be 0.032% or less. | | | | | | |
| d) Switch to Channel 2 and adjust R110 for minimum distortion. The reading should be 0.032% or less. | | | | | 2 | |
| e) Switch the TA to PLAY and adjust R173 (front panel) for a 0dBV output. | | | | | | DEC |
| f) Switch to Channel 1 and adjust R169 for a 0dBV output. Then adjust R152 for minimum distortion. The reading should be 0.032% or less. | | | | | 1 | |
| g) Switch back to channel 2 and adjust R205 for minimum distortion. The reading should be 0.032% or less. | | | | | 2 | |
| 7. LOG SLOPE ADJUST | | | | | | |
| a) Set the oscillator and switches as shown, and the Distortion Filter to 2kHz. | 1000 | -20 | BYP | TAPE | 2 | |
| b) Connect the resistor sub box between the +15V supply and the R215/R216 junction. Adjust the sub box for an output between +1 and -1dBV, and then adjust R214 for minimum distortion. The reading should be 0.1% or less. | | | | | | |
| c) Switch to Channel 1 and connect the sub box from +15V to the R162/R163 junction. Adjust the sub box for an output between +1 and -1dBV. Adjust R161 for minimum distortion. The reading should be 0.1% or less. | | | | | 1 | |
| d) Set the switches as shown and connect the sub box between the -15V supply and the R61/R62 junction. Adjust the sub box for an output between +1 and -1 dBV. Then adjust R60 for minimum distortion. The reading should be 0.1% or less. | | | | | | D |

| | Freq. (Hz) | Level (dBV) | Reference | | | |
|---|---|---|---|---|---|---|
| 7. LOG SLOPE ADJUST (cont.) | | | | | | |
| e) Set the TA to Channel 2, and connect the sub box from the -15V supply to the R112/R113 junction. Adjust the sub box for an output between +1 and -1dBV. Then adjust R111 for minimum distortion. The reading should be 0.1% or less. | 1000 | -20 | BYP | TAPE | 2 | ENC |
| f) Disconnect the sub box and set the oscillator to 100Hz, 0dBV and the Distortion filter to 200Hz. Check the distortion on both channels. The readings should be 0.032% or less. | 100 | 0dBV | | | 1,2 | |
| g) Set the TA to ENCODE and check the distortion in REC mode. The readings for both channels should be 0.032% or less. | | | | | | DEC |
| 8. TRACKING TEST | | | | | | |
| a) Set the oscillator and switches as shown, and adjust R173 (front panel) for 0dB output. | 1000 | 0dBV | | | 2 | |
| b) Switch to Channel 1 and adjust R169 for a 0dB output. This adjustment must be done to a tolerence of ±0.1dB. Now recheck that both channels are within 0.1dB of each other. | | | | | 1 | |
| c) Rotate R173 over its entire range and check that the output swings from -10 to +10dB and then reset it for 0dB output. | | | | | | |
| d) Switch the TA to ENCODE Channel 2, and adjust R121 (front panel) over its entire travel. Check that the output swings from -8 to +8dB. Now set the output to 0dBV. | | | | | 2 | ENC |
| e) Switch to Channel 1 and adjust R68 for 0dBV output ±0.1dB. Recheck that both channels are within 0.1dB of each other. | | | | | | |
| f) Set the TA to Back-to-Back mode and check the outputs of channels 1 and 2 at the following levels. The outputs should be within the ranges shown: | | | | | | |

| Osc Level (dBV) | Output (dBV) |
|---|---|
| 0 | Level matched |
| -10 | -11 to -9 |
| -20 | -21 to -19 |
| -30 | -31 to -29 |
| -40 | -41 to -39 |
| -50 | 51 to -49 |
| -60 | -61 to -59 |

| | Freq. (Hz) | Level (dBV) | Reference | DUT Mode | Channel | Notes |
|---|---|---|---|---|---|---|
| 8. FREQUENCY RESPONSE TEST | | | | | | |
| a) Set the switches as shown and check the outputs of both channels at the frequencies listed below. The levels should be within the ranges shown: | **** | 0dBV | BYP | TAPE | 1,2 | E |
| b) Switch the TA to DECODE and check that the outputs of both channels are within the ranges listed below: | | | | | | D |
| c) Set the DUT and the TA into DISC mode, and adjust R174 (front panel) for a 0dBV output. Check that both channel outputs are the same. | 1000 | 0dBV | BYP | DISC | 1,2 | D |
| d) Set the oscillator to 20Hz and check that both channels have outputs between -23.5 and -18.5dBV. | | | | | | |
| 9. 10kHz DISTORTION TEST | | | | | | |
| a) Set the oscillator and switches as shown, and set the distortion meter to 30kHz. The reading should be 0.1% or less. | 10k | | | TAPE | 1 | Ba |
| b) Reduce the oscillator level to -30dB and look at the waveform on the scope. Check for any crossover distortion in the waveform. | | | | | | |
| c) Repeat steps (a) and (b) for Channel 2. | | | | | | |

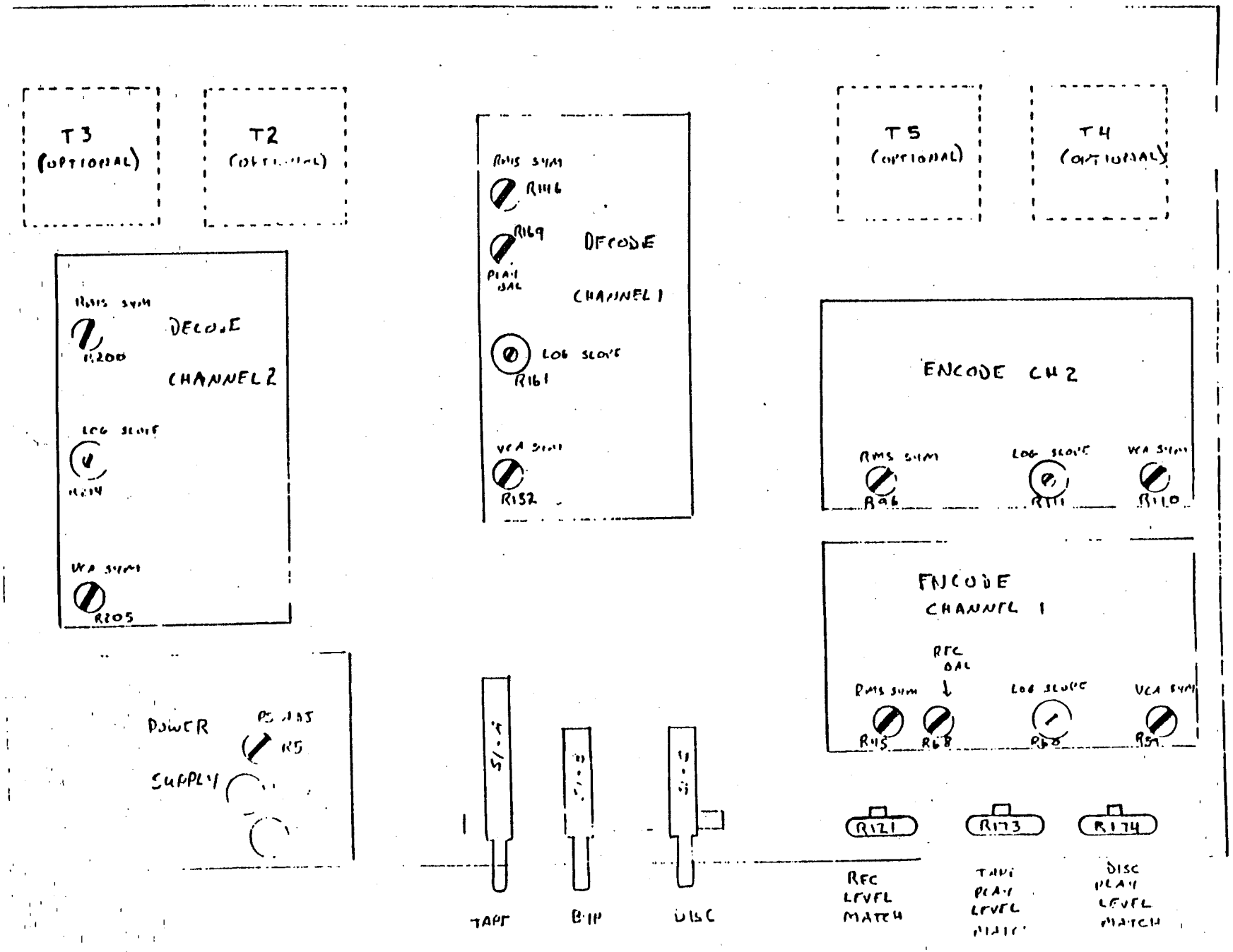
| Freq. (Hz) | Output (dBV) |
|---|---|
| 1000 | Level-matched |
| 10k | -4.0 to -2.0 |
| 100 | -0.5 to +1.5 |
| 20 | +3.5 to +5.5 |
| 20k | +2.5 to +4.5 |

| Freq. (Hz) | Output (dBV) |
|---|---|
| 20k | -7.5 to -5.5 |
| 20 | -16.5 to -14.0 |
| 100 | -1.5 to +0.5 |
| 1000 | Level matched |
| 10k | +5.5 to +7.5 |

| | Osc. Freq. (Hz) | Osc. Level (dBV) | Reference Mode | | | |
|---|---|---|---|---|---|---|
| 10. CLIPPING TEST | | | | | | |
| a) Set the oscillator and switches as shown, and increase the oscillator level until the waveform begins to clip as observed on the scope. Measure the output level on the DVM. The level should reach 12.6 VRMS before clipping occurs. | 1000 | *** | BYP | TAPE | 1 | DEC |
| b) Repeat step (a) for channel 2. | | | | | 2 | |
| 11. TONEBURST TEST | | | | | | |
| a) Connect the Toneburst generator to the Reference unit and connect the ref. unit to the DUT. Set the Toneburst generator to 1000Hz, 8 cycle on, 128 cycle off. | ---- | ---- | REC | TAPE | 2 | DE: |
| b) Look at the waveform on the oscilloscope and check that there is no more than 10% overshoot on the first cycle, and none at all for the remaining cycles including the end of the waveform. | | | | | | |
| c) Repeat step (b) for Channel 1. | | | | | 1 | |
| d) Switch the Reference unit to BYP and the TA to BACK-TO-BACK. Repeat step (b). | | | BYP | | | BA<br>B. |
| e) Repeat step (d) for Channel 2. | | | | | 2 | |
| 12. NOISE TEST | | | | | | |
| Disconnect the Toneburst generator from the Ref. unit and short the input to the Ref. unit. Check that the output is -70dB or lower (typically -85). | | | BYP | | | |
| b) Repeat for Channel 1. | | | | | 1 | |
| NOTE: The noise figure for the Model 140 is better then -85dBV with the covers and side panels in place. The above figure is relaxed to take into account their abscence. | | | | | | |
| 13. FINAL DISTORTION CHECK. | | | | | | |
| a) Set the oscillator and switches as shown, and adjust R121 for a 0dBV output. Check that the distortion is 0.032% or less, with the Distortion filter set to 200Hz. | 100 | 0dBV | | | | ENCC |

| | (Hz) | (dBV) | | | | |
|---|---|---|---|---|---|---|
| 13. FINAL DISTORTION C ECK (cont.) | | | | | | |
| b) Switch to Channel 2 and repeat step (a) | 100 | 0dBV | BYP | TAPE | 2 | EN |
| c) Switch the TA to DECODE and adjust R173 for a 0dBV output. Repeat step (a). | | | | | | DE |
| d) Repeat Step (c) for Channel 1. | | | | | 1 | |
| e) Reset the oscillator and adjust R173 for a 0dBV output. Check that the outputs of both channels are within 0.1dB of each other. | 1000 | | | | 1,2 | |
| d) Switch to ENCODE and adjust R121 for a 0dBV output. Check that the two outputs are within 0.1dB of each other. | | | | | | EN |

MODEL 140


T3 (OPTIONAL)
T2 (OPTIONAL)
T5 (OPTIONAL)
T4 (OPTIONAL)
RMS SYM
R116
R169
PEAK BAL
DECODE
CHANNEL 1
LOG SLOPE
R161
VCA SYM
R152
RMS SYM
R200
DECODE
CHANNEL 2
LOG SLOPE
R214
WA SYM
R205
ENCODE CH 2
RMS SYM
R96
LOG SLOPE
R111
WA SYM
R110
ENCODE
CHANNEL 1
REC BAL
RMS SYM
R115
R68
LOG SLOPE
P60
VCA SYM
R57
POWER
SUPPLY
R5
R121
R173
R174
REC LEVEL MATCH
TAPE PEAK LEVEL MATCH
DISC PEAK LEVEL MATCH
TAPE
BIP
DISC

# Schematics, Assembly Drawings, Parts List

| dbx Inc. Waltham, Mass. | PACKING & SHIPPING ASSY | 40A | USED ON | DRAWING NUMBER PL 580080 | REV. 00 | SHEET 2 OF 2 |
|---|---|---|---|---|---|---|

| ITEM NO. | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QUANTITY G1 | G2 | G3 |
|---|---|---|---|---|---|---|
| 1 | | MAIN ASSEMBLY | 400095 | 1 | | |
| 2 | | | | | | |
| 3 | | MANUAL | 600217 | 1 | | |
| 4 | | WARRANTY CARD | 600038 | 1 | | |
| 5 | | | | | | |
| 6 | | | | | | |
| 7 | | | | | | |
| 8 | | BOX | 390113 | 1 | | |
| 9 | | PLASTIC BAG 18 x 30 | 390044 | 1 | | |
| 10 | | END CAP | 390114 | 2 | | |
| 11 | | | | | | |
| 12 | | | | | | |
| 13 | | | | | | |
| 14 | | | | | | |
| 15 | | | | | | |
| 16 | | | | | | |
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| 20 | | | | | | |

PL 580080

dbx In | PACKING & SHIPPING ASSEMBLY | USED ON 14C DD1 | PL 580082 | REV. 00 | SHEET 2 OF 2

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 1 | | MAIN ASSEMBLY | 400095 | 1 | |
| 2 | | | | | |
| 3 | | MANUAL | 600217 | 1 | |
| 4 | | WARRANTY CARD | 600038 | 1 | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | OUTER BOX | 390146 | 1 | |
| 8 | | END CAP | 390180 | 2 | |
| 9 | | | | | |
| 10 | | PLASTIC BAG, 12" X 24 | 390119 | 1 | |
| 11 | | | | | |
| 12 | | TAPE, MASKING, 1/2" WIDE | 310514 | A/R | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |

UDA Inc. MODEL 140A(EU)

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 1 | | P.C. ASSEMBLY | 460250 | 1 | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | EXTRUSION FRONT | 290709 | 1 | △ |
| 5 | | OVERLAY FRONT | 210238 | 1 | △ |
| 6 | | EXTRUSION, OVERLAY SUB-ASS'Y | 380222 | 1 | ⌂ |
| 7 | | | | | |
| 8 | | BRACKET, RACK MOUNT SIDE | 290412 | □ 1 | ∝ 1 |
| 9 | | COVER, 16.937" X 5.968", RM-18-2 | 290411 | 2 | ∝ |
| 10 | | | | | |
| 11 | | SCREW, PHMS, X-REC, 4-40 X 1/4 | 311023 | 6 | |
| 12 | | WASHER INT TOOTH #4 | 311642 | 6 | |
| 13 | | | | | |
| 14 | | SCREW #6-32 X 5/8 | 311046 | 4 | ⌂ |
| 15 | | WASHER INT TOOTH #6 | 311643 | □ 2 | ⌂ 4 |
| 16 | | HEX NUT #6-32 | 311665 | □ 2 | ⌂ 4 |
| 17 | | SCREW, TAPPING #6X5/8 LG. BLK OXD | 310100 | 4 | ∝ 4 |
| 18 | | BUTTON SWITCH, CHROME | 310322 | 2 | |
| 19 | | TRANSFORMER, POWER | 230027 | 1 | ▱ |
| 20 | | LINECORD | 320133 | 1 | |

PL 400155

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 21 | | CONNECTOR INSULATED | 280089 | 3 | |
| 22 | | TERMINAL STRIP, 12 POSITION | 280233 | 2 | ⌂ |
| 23 | | DIODE, XC-4850-G, GREEN WITH TABS | 140141 | 2 | |
| 24 | | LED HOLDER 2 PIECE | 310365 | 2 | △ |
| 25 | | CABLE TIE | 310124 | A/R | |
| 26 | | FOAM TAPE 1/8" THK X 16" LG. | 310683 | 4 | |
| 27 | | UL CAUTION LABEL | 210168 | 2 | ∝ |
| 28 | | STRAIN RELIEF | 310137 | 1 | |
| 29 | | SCREW, MACH. PAN HD # 6-32 X 1/2 LG. | 311045 | 2 | ⊏ |
| 30 | | | | | |
| 31 | | WASHER FLAT # 6 | 311608 | 2 | ⊏ |
| 32 | | | | | |
| 33 | | GROMMET RUBBER 1/8 I.D, 3/16 O.D | 310625 | 2 | ⊏ |
| 34 | | | | | |
| 35 | | | | | |
| 36 | | | | | |
| 37 | | | | | |
| 38 | | | | | |
| 39 | | | | | |
| 40 | | | | | |

dbx Inc | ASSEMBLY | (140A/EU) | PL 580083 | 01 | 2 OF 2

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY |
|---|---|---|---|---|
| 1 | | MAIN ASSEMBLY | 400155 | 1 |
| 2 | | | | |
| 3 | | MANUAL | 600217 | 1 |
| 4 | | | | |
| 5 | | | | |
| 6 | | | | |
| 7 | | OUTER BOX | 390146 | 1 |
| 8 | | END CAP | 390180 | 2 |
| 9 | | | | |
| 10 | | PLASTIC BAG, 12" X 24 | 390119 | 1 |
| 11 | | | | |
| 12 | | TAPE, MASKING, 1/2" WIDE | 310514 | A/R |
| 13 | | | | |
| 14 | | | | |
| 15 | | | | |
| 16 | | | | |
| 17 | | | | |
| 18 | | | | |
| 19 | | | | |
| 20 | | | | |

PL 580083

| lbx Inc. MAIN ASSEMBLY | USED ON 140A(DO) | PL 400095 | REV. 03 | SHEET 2 OF 3 |
|---|---|---|---|---|

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 1 | | P.C. ASSEMBLY | 460250 | 1 | |
| 2 | | | | | |
| 3 | | | | | |
| 4 | | EXTRUSION FRONT | 290709 | 1 | △ |
| 5 | | OVERLAY FRONT | 210238 | 1 | △ |
| 6 | | EXTRUSION REAR | 290710 | 1 | ⌂ |
| 7 | | OVERLAY REAR | 290712 | 1 | ⌂ |
| 8 | | BRACKET, RACK MOUNT SIDE | 290412 | ▱ 1 | ∞ 1 |
| 9 | | COVER, 16.937" X 5.968", RM-18-2 | 290411 | 2 | ∞ |
| 10 | | | | | |
| 11 | | SCREW, PHMS, X-REC, 4-40 X 1/4 | 311023 | 6 | |
| 12 | | WASHER INT TOOTH #4 | 311642 | 6 | |
| 13 | | | | | |
| 14 | | SCREW #6-32 X 5/8 | 311046 | 4 | ⌂ |
| 15 | | WASHER INT TOOTH #6 | 311643 | ▱ 2 | ⌂ 4 |
| 16 | | HEX NUT #6-32 | 311665 | ▱ 2 | ⌂ 4 |
| 17 | | SCREW, TAPPING #6 x 5/8 LG BLK OXD | 310100 | 4 | ∞ 4 |
| 18 | | BUTTON SWITCH, CHROME | 310322 | 2 | |
| 19 | | TRANSFORMER, POWER | 230027 | 1 | ▱ |
| 20 | | LINECORD | 320087 | 1 | |

dbx Inc. MAIN ASSEMBLY | USE ON 140A(DO) | PL 400095 | REV. 03 | SHEET 3 OF 3

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 21 | | CONNECTOR INSULATED | 280089 | 2 | |
| 22 | | TERMINAL STRIP, 12 POSITION | 280233 | 2 | ⌂ |
| 23 | | DIODE, XC-4850-G, GREEN WITH TABS | 140141 | 2 | |
| 24 | | LED HOLDER 2 PIECE | 310365 | 2 | △ |
| 25 | | CABLE TIE | 310124 | A/R | |
| 26 | | FOAM TAPE 1/8" THK X 16" LG. | 310683 | 4 | |
| 27 | | UL CAUTION LABEL | 210168 | 2 | ∞ |
| 28 | | | | | |
| 29 | | SCREW, MACH. PAN HD # 6-32 X 1/2 LG. | 311045 | 2 | ▱ |
| 30 | | | | | |
| 31 | | WASHER FLAT # 6 | 311608 | 2 | ▱ |
| 32 | | | | | |
| 33 | | GROMMET RUBBER 1/8 I.D., 3/16 O.D. | 310625 | 2 | ▱ |
| 34 | | | | | |
| 35 | | | | | |
| 36 | | | | | |
| 37 | | | | | |
| 38 | | | | | |
| 39 | | | | | |
| 40. | | | | | |

dbx Inc.

EXTRUSION, OVERLAY SUB-ASS'Y MODEL 140A(EU)

| USED ON | |
|---|---|
| 140...(EU) | |

PL 380222

REV 00

SHEET 2 OF 2

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 1 | | REAR EXTRUSION | 290710 | 1 | |
| 2 | | REAR OVERLAY | 290712 | 1 | |
| 3 | | LABEL 240VAC | 210084 | 1 | |
| 4 | | | | | |
| 5 | | | | | |
| 6 | | | | | |
| 7 | | | | | |
| 8 | | | | | |
| 9 | | | | | |
| 10 | | | | | |
| 11 | | | | | |
| 12 | | | | | |
| 13 | | | | | |
| 14 | | | | | |
| 15 | | | | | |
| 16 | | | | | |
| 17 | | | | | |
| 18 | | | | | |
| 19 | | | | | |
| 20 | | | | | |

PL 380222

dbx In | SIMULTANEOUS NOISE REDUCTION | USED ON: 1 DA (EU),(DO) | PL 360250 | REV. 07 | SHEET 2 OF 7

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY |
|---|---|---|---|---|
| 1 | | P.C BOARD | 260458 | 1 |
| 2 | | | | |
| 3 | | | | |
| 4 | | | | |
| 5 | R1, 4, 39, 42, 101, 104, | RESISTOR, 1K, 1/4W, 1% | 011001 | 8 |
| 6 | R139, 142 | | | |
| 7 | R2, 5, 40, 43, 102, 105, | 30K1, 1/4W, 1% | 013012 | 8 |
| 8 | R140, 143 | | | |
| 9 | R3, 6, 41, 44, 103, 106, | 23K2, 1/4W, 1% | 012322 | 8 |
| 10 | R141, 144 | | | |
| 11 | R7, 107 | 35K7, 1/4W, 1% | 013572 | 2 |
| 12 | R8, 108 | 121K, 1/4W, 1% | 011213 | 2 |
| 13 | R9, 22, 46, 59, 109, 122, | 10K, 1/4W, 1% | 011002 | 8 |
| 14 | R146, 159 | | | |
| 15 | R10, 21, 23, 26, 45, 58, 60, 63, | 33K2, 1/4W, 1% | 013322 | 16 |
| 16 | R110, 121, 123, 126, 145, 158, 160, 163 | | | |
| 17 | R11, 50, 150 | POT TRIM 5K, VERTICAL MOUNT | 070286 * | 3 |
| 18 | R12, 51, 112, 151 | RESISTOR, 6K98, 1/4W, 1% | 016981 | 4 |
| 19 | R13, 52, 113, 152 | 47R5, 1/4W, 1% | 014759 | 4 |
| 20 | R14, 47, 114, 147 | 51, 1/4W, 5% | 054510 | 4 |

PL 360250 | * ALTERNATE PART #070029

dbx Inc. SIMULTANEOUS NOISE REDUCTION | USED ON 1 DA (EU),(DO) | PL 360250 | REV. 07 | SHEET 3 OF 7.

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 21 | R15,48,115,148 | RESISTOR, 180K, 1/4W, 5% | 054184 | 4 | |
| 22 | R16,34,49,71,116,134 | POT TRIM 50K, HORIZONTAL MOUNT | 070068 | 8 | |
| 23 | R149,171 | | | | |
| 24 | R17,55,117,155 | RESISTOR, 3K9 , 1/4W, 5% | 054392 | 4 | |
| 25 | R18,54,118,154 | 10K , 1/4W, 5% | 054103 | 4 | |
| 26 | R19,56,119,156 | 33K , 1/4W, 5% | 054333 | 4 | |
| 27 | R20,57,120,157 | 39 , 1/4W, 5% | 054390 | 4 | |
| 28 | | | | | |
| 29 | R24,61,124,161 | 90K9 , 1/4W, 1% | 019092 | 4 | |
| 30 | R25,62,125,162 | 4K75 , 1/4W, 1% | 014751 | 4 | |
| 31 | | | | | |
| 32 | R27,64,127,164 | 6K81 , 1/4W, 1% | 016811 | 4 | |
| 33 | R28,65,128,165 | 165K , 1/4W, 1% | 011653 | 4 | |
| 34 | R29,66,129,166 | 13K7 , 1/4W, 1% | 011372 | 4 | |
| 35 | R30,67,130,167 | 22M , 1/4W, 5% | 054226 | 4 | |
| 36 | R31,68,131,168 | 20 , 1/4W, 5% | 054200 | 4 | |
| 37 | R32,69,132,169 | 39K, 1/4W, 5% | 054393 | 4 | |
| 38 | R33,70,76,133,170 | 20K , 1/4W, 5% | 054203 | 5 | |
| 39 | R35,72,135,172 | 1K , 1/4W, 5% | 054102 | 4 | |
| 40 | R36,73,136,173 | 604K, 1/4W, 1% | 016043 | 4 | |

dbx Inc. | SIMULTANEOUS NOISE REDUCTION | USED ON 1 DA (EU), (DO) | PL 360250 | REV. 07 | SHEET 4 OF 7

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY |
|---|---|---|---|---|
| 41 | R37, 74, 137, 174 | RESISTOR, 10, 1/4W, 5% | 054100 | 4 |
| 42 | R38, 75, 138, 175 | SELECT RESISTOR, 2M2, NOM. | SELECT PER 168002 | 4 |
| 43 | R53, 153 | RESISTOR, 20K, 1/4W, 1% | 012002 | 2 |
| 44 | R78 — R100 | NOT USED | | |
| 45 | R176 | RESISTOR, 2K4, 1/4W, 5% | 054242 | 1 |
| 46 | R77, 177 | RESISTOR, 1K8, 1/4W, 5% | 054182 | 2 |
| 47 | R111 | POT, TRIM, 5K, HORIZ. MOUNT | 070143 | 1 |
| 48 | | | | |
| 49 | | | | |
| 50 | | | | |
| 51 | C1, 2, 15, 16, 28, 29, 41, | CAPACITOR, 100P, CD, S2L ±5% | 121259 | 14 |
| 52 | C101, 102, 115, 116, 128, 129, 141 | | | |
| 53 | C3, 6, 30, 33, 103, | 220P, PP ±5% MAX | 125126 | 8 |
| 54 | C106, 130, 133 | | | |
| 55 | C4, 7, 31, 34, 104, 107, | 33P, CD, NPO ±5% | 121175 | 8 |
| 56 | C131, 134 | | | |
| 57 | C5, 10, 13, 14, 22, 25, 27, 32, | 1/50V, RAD, EL ±20% | 127084 | 30 |
| 58 | C37, 38, 40, 48, 51, 53, 105, 110, | | | |
| 59 | C113, 114, 122, 125, 127, 132, 137, | | | |
| 60 | C138, 140, 148, 151, 153, 178, 179 | | | |

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 61 | C11, 42, 111, 142 | CAPACITOR, 10N, MY ±5% | 123025 | 4 | |
| 62 | C12, 35, 112, 135 | 300N, MY, ±5% | 123196 | 4 | |
| 63 | | | | | |
| 64 | | | | | |
| 65 | C8, 9, 17, 18, 43, 44, | 100N, MY ±5% | 123149 | 12 | |
| 66 | C108, 109, 117, 118, 143, 144 | | | | |
| 67 | C19, 20, 45, 46, 119, 120 | 3N3, MY ±5% | 123350 | 8 | |
| 68 | C145, 146 | | | | |
| 69 | C21, 47, 121, 147 | 330P, PP ±2.5% | 125173 | 4 | |
| 70 | | | | | |
| 71 | C23, 49, 123, 149 | 22N, MY ±5% | 123050 | 4 | |
| 72 | C26, 52, 126, 152 | 10 , RAD, EL | SELECT PER 166005 | 4 | |
| 73 | C36, 136 | 200P, PP ±2.5% | 125121 | 2 | |
| 74 | C39, C54 — C100 | NOT USED | | | |
| 75 | C139, C154 — C165, 170, 171 | NOT USED | | | |
| 76 | C172, 173, 176, 177 | 10N, CD, Y5E ±20% | 121533 | 4 | |
| 77 | C168, 169 | 1000/35V, RAD, EL $^{-10\%}_{+50\%}$ | 127523 | 2 | |
| 78 | C174, 175 | 10/25V, RAD, EL $^{+50\%}_{-10\%}$ | 127198 | 2 | |
| 79 | C24, 50, 124, 150 | 2N2, PP, ±2.5% | 125802 | 4 | |
| 80 | C166, 167 | 10N, CD, 100V ±20%, Z5U | 121530 | 2 | |

dbx Inc

SIMULTANEOUS NOISE REDUCTION

USED ON 1.0A (EU),(DO)

PL 360250

REV. 07



| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY |
|---|---|---|---|---|
| 81 | | | | |
| 82 | | | | |
| 83 | | | | |
| 84 | CR1, 2, 3, 4 | DIODE, IN4003GP | 140022 | 4 |
| 85 | CR5, 6 | DIODE, IN5818 | 140206 | 2 |
| 86 | | | | |
| 87 | | LEAD CONNECTOR, LED | 310472 | 2 |
| 88 | | | | |
| 89 | IC1, 3, 5, 7 | IC, LOW DISTORTION | 146732 | 4 |
| 90 | IC2, 4, 6, 8 | IC, RMS | 146742 | 4 |
| 91 | | | | |
| 92 | | | | |
| 93 | OA1, 3, 5, 7 | OP, AMP LF353 | 146241 | 4 |
| 94 | OA2, 4, 6, 8 | OP, AMP NE5532 | 146282 | 4 |
| 95 | | | | |
| 96 | | | | |
| 97 | | | | |
| 98 | T2, 3, 4, 5 | NOT USED CUSTOMER OPTION, JENSEN | JE-123-5 | 4 |
| 99 | | | | |
| 100 | | | | |

dbx Inc | SIMULTANEOUS NOISE REDUCTION | USED ON 1-DA (EU),(DO) | PL 360250 | REV. 07 | SHEET 7 OF 7

| ITEM | REF. DESIGNATION | DESCRIPTION | PART NUMBER | QTY | |
|---|---|---|---|---|---|
| 101 | VR1 | VOLTAGE REG. 7815CU | 146366 | 1 | |
| 102 | VR2 | " 7805CU | 146356 | 1 | |
| 103 | VR3 | " 7915CU | 146367 | 1 | |
| 104 | VR4 | " 7905CU | 146355 | 1 | |
| 105 | | | | | |
| 106 | | | | | |
| 107 | S1, S2 | SWITCH 8PDT | 250053 | 2 | |
| 108 | | | | | |
| 109 | Y1 — Y13 | JUMPER, ZERO-OHM | 110085 | 13 | |
| 110 | | JUMPER, TWISTED PAIR | 320231 | 2 | |
| 111 | | WIRE-WRAP WIRE, 24AWG, 4.75 LG | 320232 | 24 | |
| 112 | | HEAT SINK, TALL | 310450 | 2 | |
| 113 | | SCREW PAN HD X-REC 4-40 X 5/16 LG. | 311024 | 4 | |
| 114 | | HEX NUT 4-40 | 311664 | 4 | |
| 115 | | WASHER, INT TOOTH #4 | 311642 | 4 | |
| 116 | | WASHER, NYLON, SHOULDER | 310443 | 2 | |
| 117 | | INSULATOR | 310417 | 2 | |
| 118 | | | | | |
| 119 | | | | | |
| 120 | | SWAGE SPACER, 4-40 x 1/8 LG. | 310022 | 5 | |

NOTES:
UNLESS OTHERWISE SPECIFIED:
1. ALL RESISTORS ARE EXPRESSED IN OHMS AND ARE ¼ W 5%.
2. ALL POLARIZED CAPACITORS ARE LOW LEAKAGE ELECTROLYTIC - RADIAL TYPE.
3. ALL CAPACITORS ARE EXPRESSED IN MICROFARADS.
4. Δ SELECT PER 16400X.
5. ⊞ INDICATES HEATSINK ON DEVICE.
6. ⊛ QA 2,5,8 AND 11 ARE SELECTED PER 16-0024. REF. SUB-ASSEMBLY NO. 340162.
7. □ QA 3,6,9 AND 12 ARE SELECTED PER 16-0023. REF. SUB-ASSEMBLY NO. 280163.

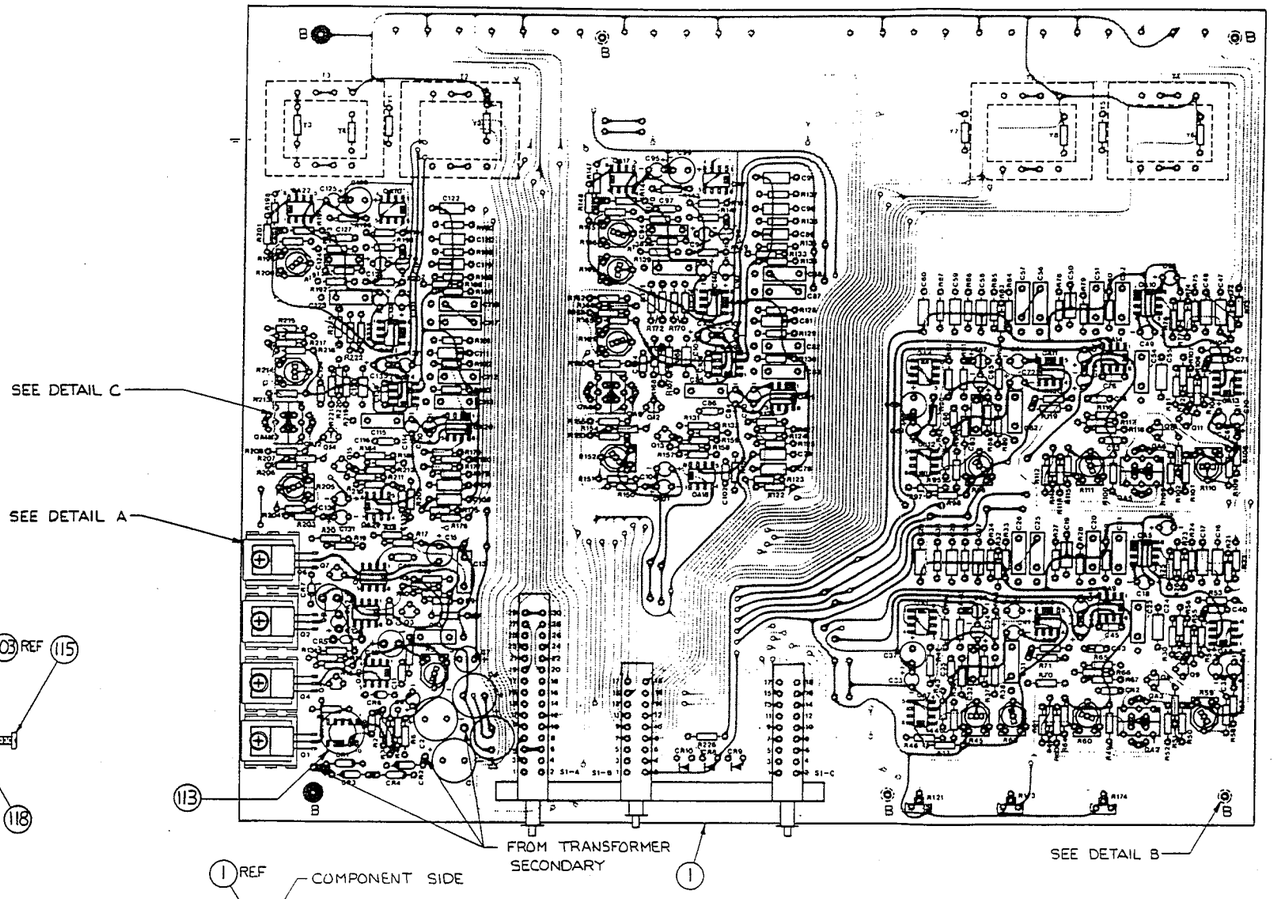
| REF DESIGNATION | NOT USED | LAST |
|---|---|---|
| R1 | | |
| R2 | | |
| QAR2 | | |
| R15 | | |
| QAR5 | | |
| C1 | | |
| C10 | | |
| QAR8 | | |
| C100 | | |
| R224 | R112 | |

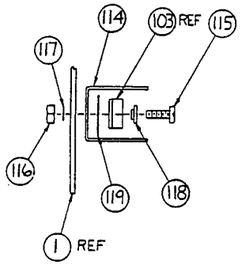
| USED ON | |
|---|---|
| | |

dbx inc. Newton, Mass.

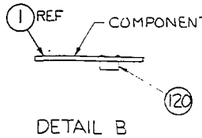
SIMULTANEOUS NOISE REDUCTION TYPE II

SIZE E | NUMBER 340190 | REV 02

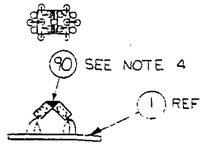



DETAIL A
TYP 4 PLACES
Q1,Q2,Q4 & Q6




DETAIL B
TYP 6 PLACES
MARKED B




DETAIL C
TYP 4 PLACES
QA2 & QA3, QA5 & QA6,
QA8 & QA9, AND QA11 & QA12

NOTES:

1. REFERENCE PARTS LIST NO. 360250.
2. PREBEND TRANSISTOR LEADS WHERE TRANSISTOR PADS ARE NOT USED.
3.
4. TRANSISTOR PAIRS QA2 & 3, QA5 & 6, QA8 & 9, AND QA11 & 12 TO BE PUSHED TOGETHER AND APPLY A SMALL AMOUNT OF CONFORMAL COATING (ITEM 90) TO TOPS OF PAIRS TO ENSURE A GOOD MECHANICAL BOND.

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| 01 | PER ECO 6931 | 11/25/80 | |



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND/OR MILLIMETERS (mm)
TOLERANCE ON INCHES
XX ± .015 XXX ± .005
TOLERANCE ON MILLIMETERS (mm)
(XX) ± .38 (mm) (.XXX) ± .15 (mm)
ANGLES ± 1/2°
FRACTIONS ± 1/32
APPROVED FOR PRODUCTION TOOLING

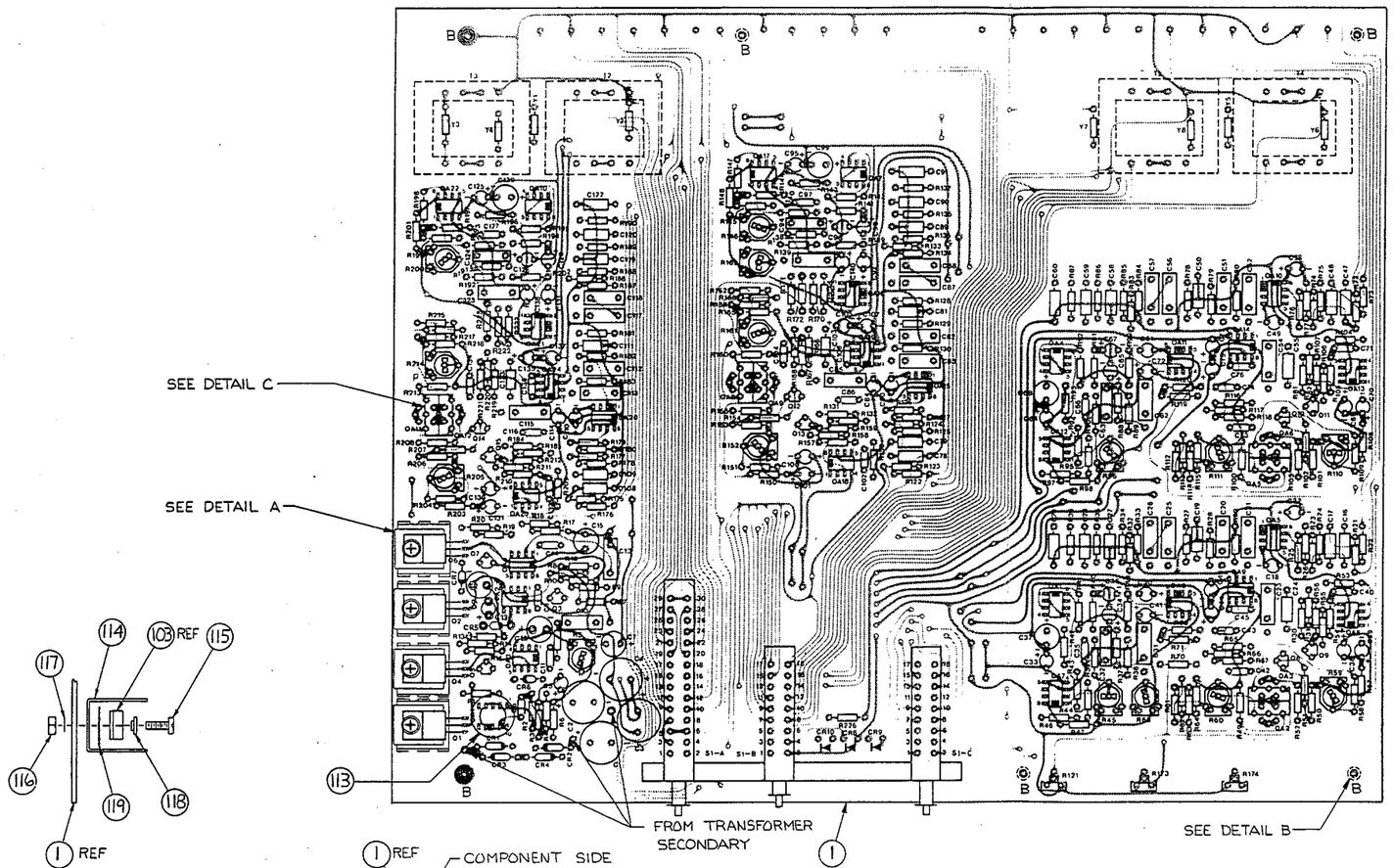
| APPROVAL | DATE |
|---|---|
| DRAWN PV | 11/25/80 |
| CHECKED [illegible] | 11/26/80 |
| PROJ ENG LJST | 12/1/81 |
| CH ENG. LJST | 12/10/81 |
| RELEASED [illegible] | 1/1/1 |

140 USED ON

dbx inc Newton, Ma.

PC BOARD ASSEMBLY
TWO CHANNEL SIMULTANEOUS NOISE REDUCTION

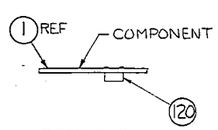
SCALE 1/1 | SIZE D | NUMBER 460250 | REV 01 | SHT 1 OF 1



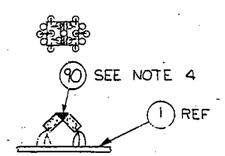




DETAIL A
TYP 4 PLACES
Q1,Q2,Q4&Q6




DETAIL B
TYP 6 PLACES
MARKED B




DETAIL C
TYP 4 PLACES
QA2&QA3, QA5&QA6,
QA8&QA9, AND QA11&QA12

NOTES:

1. REFERENCE PARTS LIST NO. 360250.
2. PREBEND TRANSISTOR LEADS WHERE TRANSISTOR PADS ARE NOT USED.
3.
4. TRANSISTOR PAIRS QA2&3, QA5&6, QA8&9, AND QA11&12 TO BE PUSHED TOGETHER AND APPLY A SMALL AMOUNT OF CONFORMAL COATING (ITEM 90) TO TOPS OF PAIRS TO ENSURE A GOOD MECHANICAL BOND.

| REV | DESCRIPTION | DATE | APPROVED |
|---|---|---|---|
| 01 | PER ECO 691 | 3/25/80 | BC |



UNLESS OTHERWISE SPECIFIED ALL DIMENSIONS ARE IN INCHES AND/OR MILLIMETERS (mm)
TOLERANCE ON INCHES
.XX ± .015 .XXX ± .005
TOLERANCE ON MILLIMETERS (mm)
(.XX) ± .38 (mm) (.XXX) ± .15 (mm)
ANGLES ± 1/2° FRACTIONS ± 1/32
APPROVED FOR PRODUCTION TOOLING
APPR'D DATE

| APPROVAL | DATE |
|---|---|
| DRAWN PV | 11/25/80 |
| CHECKED | 11/26/80 |
| PROJ. ENG. CBT | 1/1/81 |
| CH. ENG. CBT | 1/20/81 |
| RELEASED | 1/21/81 |

dbx inc. Newton, Ma.

PC BOARD ASSEMBLY
TWO CHANNEL SIMULTANEOUS NOISE REDUCTION

SCALE: 1/1 | SIZE: D | NUMBER: 460250 | REV: 01 | SHT 1 OF 1

140 | USED ON