



PROGRAMMABLE PITCH TRANSPOSER

OWNER'S MANUAL PITCHTRAQ (version 2)

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1.0 INTRODUCTION

Thank you for purchasing the ADA PITCHRAQ PROGRAMMABLE PITCH TRANSPOSER. The PITCHRAQ is the first pitchtransposer that provides 32 effect memories, complete programmability of all parameters, instant access to any program, and an optional foot controller for the ultimate on-stage control.

To properly set-up and familiarize yourself with your new PITCHTRAQ, read and follow these operating instructions completely.

IMPORTANT: Please take this time to fill-out and return your enclosed warranty card.

1.1 FEATURES

- ✓ PCM for clean reproduction(15kHz bandwidth).
- ✓ ± 1 octave of pitch transposition.
- ✓ 16 programs: four Memory Banks of four Programs.
- ✓ 16 factory preset Shadow Programs may be recalled at any time.
- ✓ For ease of use, pitch can be modified in three modes: Cents, Ratio, and Standard Interval. Standard Interval mode increments pitch in 3rds, 4ths, 5ths, 6ths, and octaves. LEDs indicate whether the selected pitch is a major or minor interval.
- ✓ Lexan membrane switch front panel protects controls from dust and dirt.
- ✓ Regeneration insert creates arpeggios when used with an external delay device.
- ✓ Random Access footswitch allows instant access to any program.
- ✓ Self diagnostic program checks unit during power up.
- ✓ Instantaneous logic-controlled FET switching.
- ✓ Simple programming routine
- ✓ One year parts and labor warranty

1.2 PRECAUTIONS

WARNING: To prevent fire or shock hazard, do not expose this appliance to rain or moisture.

CAUTION: To prevent electric shock, do not remove cover. No user serviceable parts inside. Refer servicing to qualified service personnel.

2.0 CONTROL FUNCTIONS

| | |
|--------------|--|
| HEADROOM | A four tap LED meter with a 30dB range which displays signal level relative to clipping level. |
| INPUT LEVEL | Boosts or attenuates the input signal. |
| OUTPUT LEVEL | Adjusts the EFFECT OUTPUT signal level up to +20dBm. |
| LED READOUT | Displays pitch when a program is selected. Displays the value of a selected parameter when in EDIT mode |
| MAJOR (LED) | Indicates the selected Standard Interval is in a Major mode. |
| MINOR (LED) | Indicates the selected Standard Interval is in a minor mode. |
| V \wedge | Increases or decreases the value of the selected parameter when in EDIT mode. |
| BYPASS | Engages or bypasses the effect. LED indicates effect is bypassed. |
| SHADOW PRGM | Brings factory presets forward for use when LED is lit. When LED is off, user programs are in program registers. Shadow Programs are permanently stored in memory. |

DUAL FUNCTION SWITCHES:

IN PLAY MODE

MEMORY BANK Four switches-A. B. C. D-allows Memory Bank selection Each Memory Bank has four programs within it. LED's indicate bank selected.



| | |
|---------------------|--|
| PROGRAM | Four switches-1. 2.3.4-allows program selection. LED's indicate program selected. |
| IN EDIT MODE | |
| CENTS | Allows continuous adjustment of the pitch in 1 cent increments from -1200 to +1200. |
| RATIO | Allows continuous adjustment of the pitch in ratios from .50 to 2.00 |
| STD. INTERVAL | Allows adjustment of the pitch in preset musical intervals: ± Major or minor 3rd, ± 4th, ±5th, ± Major or minor 6th, ± octave. |
| DRY LEVEL | Determines the percentage of dry signal present at the output. Display reads from 0% to 100%. |
| EFFECT LEVEL | Determines the percentage of effect signal at the output. Display reads from 0% to 100%. |
| REGEN LEVEL | Controls the amount of the effected signal fed back to the Input. Display reads from 0% to 100%. |
| SWEEP DEPTH | Determines the range of pitch shift swept by the low frequency oscillator (LFO) Display reads from 0% to 100%. |
| SWEEP RATE | Sets the speed of the low frequency oscillator. Display reads from 0.1 to 10.0 (Hertz). |
| EDIT | The master switch that takes the PITCHRAQ out of the play mode into the edit mode. Display shows value of selected parameter. When you enter the EDIT mode, the display reads "EDIT" until a parameter is selected. The V ^ buttons decrease/increase the displayed parameter value. LED indicates EDIT mode is engaged. |
| STORE | This saves any current program or edited current program in any register. LED indicates STORE mode is engaged. When in the SHADOW PRGM mode, store will not function. |

2.1 REAR PANEL

| | |
|--------------|---|
| FUSE | Externally accessible 0.5AMP fuse. Replace with equivalent type and rating only. |
| POWER SWITCH | ON/OFF rocker switch (located near power supply to prevent the leakage of AC line hum into the audio circuitry). |
| REMOTE | Provides remote access to the BYPASS and PROGRAM selection modes. Used with the optional DS-4 PROGRAM SELECTOR. The STEREO CORD from the DS-4 is a computer link and should be kept away from the audio input and output cables to prevent noise. |
| REGEN INSERT | An effects loop into which a digital delay can be inserted to produce arpeggio effects. |
| EFFECT OUT | A 600 ohm unbalanced output The level is set with the OUTPUT LEVEL control and carries the mix of dry and effect signals. |
| DIRECT OUT | A 600 ohm unbalanced output of dry signal only. The level is the same as the input signal level. |
| INPUT | An unbalanced high impedance input which interfaces with low or high impedance sources and low and high signal levels. |

2.2 BATTERY

The PITCHRAQ uses a 3 volt battery which supplies power for program storage. Expected battery live is 10 years. Should replacement be necessary, contact a qualified service technician.



3.0 INITIAL SET-UP

The ADA PITCHRAQ interacts with a wide variety of input sources including high level microphones, electronic instruments, and mixing consoles. The input circuitry is high impedance which functions properly with both low or high impedance sources and low (-30dBV) and high (+24dBV) signal levels.

1. To prepare your PITCHRAQ for use, set the rear panel POWER SWITCH to the "OFF" position. Also, set your amplifiers power switch to the "OFF" position.
2. Connect your PITCHRAQ's AC POWER CORD to a grounded outlet.
3. Set the INPUT and OUTPUT LEVEL controls on the PITCHRAQ to their minimum, counterclockwise position.
4. Connect your signal source to the rear panel INPUT JACK.
5. Connect the EFFECT OUTPUT on your PITCHRAQ to your amplifier input or mixing console effects receive input. The DIRECT OUTPUT is used with a second amplifier for stereo effects.
6. If you own the optional footswitch, connect the REMOTE jack to the DS-4 PROGRAM SELECTOR with the 1/4" STEREO CORD.

3.1 POWER UP SEQUENCE

1. Select the "ON" position of the rear panel POWER SWITCH of the PITCHRAQ, then set your amplifiers power switch to the "ON" position.
2. The PITCHRAQ will now step through its SELF-DIAGNOSTIC program, checking a variety of functions for proper operation. If no problem exists, the DIAGNOSTIC operation is completed within eight seconds. Your PITCHRAQ is now ready for operation (if a problem does occur, reference section 50 SELF-CHECK DIAGNOSIS for explanation of error codes.)

3.2 INPUT/OUTPUT ADJUSTMENT

1. (1) To properly set the input level: find the strongest signal or note that you will put into the PITCHRAQ, and set the INPUT LEVEL control to just barely light the red "0db" HEADROOM LED. The LED should flicker only on the strongest signals or notes. Never set the INPUT LEVEL control so the "0dB" LED is constantly lit. Note that the HEADROOM LED meter monitors all signals entering the device. The REGEN LEVEL control may affect the headroom and therefore the readings. While performing, remember to monitor the HEADROOM LEDs for possible overloads.
2. The OUTPUT LEVEL control sets the level of the EFFECT OUTPUT whether in BYPASS or effect "IN" modes. In general, guitar level signals will require a mid-scale or higher setting, line level signals will generally require positioning the control more counter-clockwise. Remember, proper setting of the INPUT/OUTPUT LEVEL controls is necessary to achieve maximum performance with the least amount of noise and distortion.

3.3 ACCESSING PROGRAMS

The PITCHRAQ is shipped from the factory with 16 preset Shadow Programs loaded into the Program Storage Registers. As you create your own programs, you erase the Shadow Programs in the Program Storage Registers. However, you can always recall the original factory Shadow Programs at any time, so feel free to experiment.

Programs can be changed in either BYPASS or EFFECT mode. To change to a program within the same bank as the current program, simply press the desired program number button. A single keystroke is required when changing programs only. To change to a program in another memory bank, press a memory bank location followed by a program number. Before proceeding, reference section 3.5 COPYING SHADOW PROGRAMS to load Shadow Programs.



PROGRAM SELECTION PROCESS

1. Assuming unit is in BYPASS mode with EDIT and STORE LEDS off, select the BYPASS switch. The effect is now "IN".
2. To change to another effect in your MEMORY BANK, select a PROGRAM from 1 through 4 (changing to another program in the same memory bank).
3. To change to a harmony in another MEMORY BANK, select a MEMORY BANK location followed by a PROGRAM number.
4. After listening to the various shadow programs, you can turn the unit "OFF", or you can proceed and edit a program following the steps outlined in section 3.4.

3.4 EDITING AND STORING PROGRAMS

The EDIT function is used to look at specific parameter settings and to create or modify a program. The STORE function is used to take the program in the Working Register and store it in a specific Program Storage Register. To save your own programs, you must use the STORE function. If you do not STORE a program that you have edited, it will be erased.

EXAMINE PROGRAM PARAMETERS

1. Select program C1.
2. Press the EDIT button.
3. Choose the CENTS parameter. The value "0" is displayed on the LED READOUT. Next, choose DRY LEVEL, its value is 50. Continue this process until you have examined all EDIT parameters (all switches surrounded by grey screening). An LED on the parameter switch "blinks" when the parameter has been selected for modification. Note: when in the EDIT mode, the DS-4 FOOTSWITCH is disabled.
4. Select the EDIT button when through examining the parameter values. You will now be brought back to program C1 in the play mode.

EDIT AND STORE A PROGRAM

1. Press the EDIT button.
2. Choose a parameter such as RATIO and decrease or increase its value with the V \wedge buttons.
3. Proceed to the next parameter following the same procedure as 2 above.
4. After all changes are complete, press the red STORE button.
5. Select the MEMORY BANK and PROGRAM number you want the effect assigned to. The effect is now stored in the assigned location.

WORKING THROUGH AN EDITING EXAMPLE

Let's work through an example of using the EDIT function to modify the chorus effect from shadow program C1.

1. Select memory location C1 while in the effect mode (i.e.. EDIT and STORE LEDS "OFF".)
2. Press the EDIT button
3. Select CENTS. Using the A button, change the cents to 10 from 0.
4. Select SWEEP DEPTH. Using the A button, change the sweep depth to 20(%) from 10(%).
5. Select SWEEP RATE. Using the A button, change the sweep rate to .4(Hz) from .2(Hz)
6. (6) Select DRY LEVEL. Using the V button, change the dry level to 60(%) from 50(%).
7. Select EFFECT LEVEL. Using the V button, change the effect level to 40(%) from 50(%). We have now adjusted all parameters as required and need to store the new program in a memory location.
8. Select the red STORE button.
9. Lastly, store the updated chorus effect in memory location MEMORY BANK C,



PROGRAM 1, replacing the previous chorus in C1.

3.5 SHADOW PROGRAMS

The 16 shadow programs (factory presets) are permanently stored in PROM. You can transfer any individual shadow program into any memory location or you can load all 16 programs at once.

SHADOW PROGRAM SELECTION

1. Assuming unit is in BYPASS mode with EDIT and STORE LEDs off, select the BYPASS switch. The effect is now "IN"
2. Press the SHADOW PRGM button The LED should be lit. This calls up the 16 Shadow Programs.
3. To change the harmony in the same MEMORY BANK, select a PROGRAM from 1 through 4
4. To change to a harmony in another MEMORY BANK location enter a MEMORY BANK location followed by a PROGRAM number
5. After listening to the various shadow programs, you can turn the unit "OFF", or you can proceed and edit a program following the steps outlined in section 3.4.

COPY AN INDIVIDUAL SHADOW PROGRAM

1. Press the SHADOW PRGM button.
2. Select any of the 16 shadow programs to use or modify. For example, selecting C3 calls up a copy of the original Detune program into the working register.
3. Press the SHADOW PRGM button again to toggle the SHADOW PRGM function off (The Shadow Programs are write protected and do not allow you to modify them when the SHADOW PRGM LED is on)
4. Store your selected program onto an effect memory location by selecting STORE followed by the desired memory bank and program number.
5. To modify the copy of the program you just stored, perform the steps outlined in section 3.4

LOAD ALL 16 SHADOW PROGRAMS

1. Press the STORE then simultaneously the SHADOW PRGM button This loads all 16 Shadow Programs into the main Program Storage Registers at one time Important by transferring all 16 Shadow Programs into the Main Program Storage Registers, any programs you have created will be erased

3.6 HOW ARE PROGRAM MEMORIES ORGANIZED?

The program memories of the PITCHTRAQ are organized as follows: 16 Program Storage Registers, 16 Shadow Program Storage Registers, and one Working Register Each of the 32 Program Storage Registers can be accessed and moved into the "holding area" called the Working Register. The Working Register holds the program you are listening to and allows examination or editing of the program's parameters. You can save or STORE a program you have created by copying it to one of the 16 Program Storage Registers for later recall. You cannot STORE programs to the 16 Shadow Program Registers as they hold permanent, factory preset programs.

The PITCHTRAQ's microprocessor remembers the last program used When powered up, it will place that program into the Working Register in the BYPASS mode.

4.0 CENTS, RATIO, STANDARD INTERVAL

The three switches, **CENTS**, **RATIO**, and **STANDARD INTERVAL**, control the manner in which the pitch is modified and displayed on the READOUT.



CENTS offers the finest resolution and is applicable for 'micro-tuning' or pitch matching of an out-of-tune instrument. The display increases or decreases in 1 cent increments. (1200 cents = 1 octave.)

RATIO is useful for slight detuning and is commonly used by recording engineers. (2.00(%) = 1 octave up, .50(%) = 1 octave down)

For the musician, the **STANDARD INTERVAL** mode is a last and easy way to program in musical terms. The display increases or decreases in standard musical notation: ±minor 3rd, ±major 3, ±4th, ±5th, ±minor 6th, ±major 6th, and ±octave.

When modifying a program by selecting another mode, i.e. changing from the Ratio to the Standard Interval mode, the display may read "CANT". This will occur if the original Ratio or Standard Interval value does not convert exactly to the desired mode's format (see Pitch Conversion Table). If this occurs, simply select the A or V button and the pitch will change to the closest available Ratio or Standard Interval setting.

PITCH CONVERSION TABLE

| STANDARD INTERVAL | CENTS | RATIO |
|-------------------|-------|-------|
| -Oct | -1200 | .50 |
| -Major 6th | -900 | .59 |
| -minor 6th | -800 | .63* |
| -5th | -700 | .67* |
| -4th | -500 | .75 |
| -Major 3rd | -400 | .79* |
| -minor 3rd | -300 | .84 |
| (Unison) One | 0 | 1.00 |
| (+) minor 3rd | 300 | 1.19 |
| (+) Major 3rd | 400 | 1.26 |
| (+) 4th | 500 | 1.34* |
| (+) 5th | 700 | 1.50 |
| (+) minor 6th | 800 | 1.59* |
| (+) Major 6th | 900 | 1.67* |
| (+) Oct | 1200 | 2.00 |

* Rounded to hundredths

4.1 DRY LEVEL AND EFFECT LEVEL

The DRY LEVEL and EFFECT LEVEL buttons control the mix of dry and effect signals at the outputs. As the amount of DRY LEVEL is increased, the amplitude of the dry signal is increased. Similarly, as the EFFECT LEVEL is increased, the amplitude of the processed signal is increased.

Proper setting of the effect and dry signal levels are dependent on the particular parameter settings of the effect. Because of the effects of comb-filtering which cancels different frequencies at different pitch settings, and the additive effects of using REGEN, proper adjustment of the DRY LEVEL and EFFECT LEVEL controls varies for each effect.

Experimentation is required with the DRY LEVEL and EFFECT LEVEL controls as they can radically change the texture of the effect.

For studio applications where your PITCHRAQ is in an effects loop, the DRY LEVEL will be set at 0(%) and the EFFECT LEVEL at 100(%) The processed signal level (and thus the dry/effect mix) is now controlled at the console.

4.2 REGEN LEVEL

As the REGEN LEVEL is increased, more of the pitch transposed signal is sent back to the



input of the PITCHRAQ. When using very small harmony settings the REGEN LEVEL creates arpeggios. At higher harmony settings, REGEN LEVEL adds a synthesized, "computer-game" texture.

4.3 SWEEP DEPTH AND SWEEP RATE

The SWEEP DEPTH button allows you to fade between a static modulation setting and the sweeping voltage of the internal digitally-controlled low frequency oscillator. When the SWEEP DEPTH control is set at "0", the effected signal is not swept and the signal remains stationary. As the SWEEP DEPTH is increased, a wider range of the selected harmony is swept. With the SWEEP DEPTH set at 100(%), the full 2.1 range is swept.

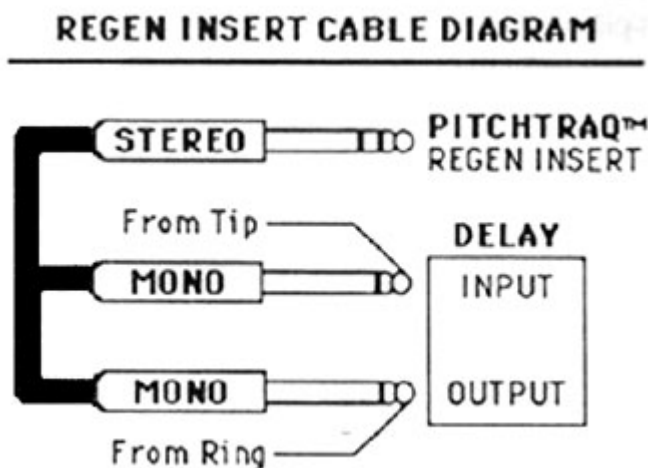
The SWEEP RATE button adjusts the speed of the low frequency oscillator from 0.1Hz to 10Hz. Extremely slow sweeps (>2sec) are useful for chorusing and subtle doubling effects. Faster sweeps produce vibrato.

4.4 REGEN INSERT

The REGEN INSERT is used in conjunction with a delay device to create arpeggio's that cascade upward or downward from the original harmony. The longer the delay time used, the greater the distance between each successive harmony.

To connect your digital delay to the REGEN INSERT jack, see the diagram below. You will need a stereo 1/4" jack which "Y" s into two 1/4" mono jacks.

REGEN INSERT CABLE DIAGRAM



If you are not interested in making the Y-cord yourself, Radio Shack supplies parts you can use. Specify Radio Shack part numbers 42-2474 Stereo Y Adapter and 274-320 Phono Plug Adapters (2 in pkg).

4.5 REMOTE

The DS-4 PROGRAM SELECTOR is a remote footswitch that accesses BYPASS, MEMORY BANK, and PROGRAM number. You can go from program to program directly without stepping up and down or sequencing through programs. Also, by simultaneously pressing BYPASS and a PROGRAM number on the PROGRAM SELECTOR, memory banks are remotely changed. LEDs on the footswitch indicate the status of effect in use or ready for use. The REMOTE jack on the rear panel of the PITCHRAQ accepts a standard 1/4" stereo cord (tip-ring-sleeve). The DS-4 comes complete with a 20' stereo cable.

5.0 SELF-DIAGNOSTICS

The PITCHTRAQ's™ self-diagnostic program checks the unit for errors during power up. This interactive feature pin points the source of problems to simplify correcting the problem.



during servicing. For example, if a problem occurs with a footswitch, an error code is displayed on the LED READOUT which allows you to determine if a specific footswitch or the footswitch cord is bad. There are two types of codes in the program: Warning/Proceed and Warning/Abort codes. Warning/Proceed codes indicate a problem has occurred that will not hinder operation of the main unit. Warning/Abort codes signal that a serious problem exists and will prevent the unit from operating further. Warning/ Abort codes rarely occur, but should they, the diagnostic program facilitates expedient repair. Should a Warning/Abort code occur, the unit will prevent you from further use until the problem has been repaired by an authorized technician.

WARNING/PROCEED CODES

| SOURCE | DESCRIPTION | CODE |
|---|---|---------------------------------|
| DS-4 Footswitch | Defective switch: Position 1 Position 2 Position 3 Position 4 Position 5 | P08 P18 P30 P60 PC1 |
| Conversion from Cents or Ratio to Standard Interval | Conversion not exact; need to increment or decrement display. | CANT |
| User Programs | Checksum error: stored program contains error * | CA1 ** |
| Battery | Dead battery | CA1,*** CA2... |

WARNING/ABORT CODES

| SOURCE | DESCRIPTION | CODE |
|----------------|--|------|
| Microprocessor | Shift register error; microprocessor cannot send program parameters. | Sr |

* Check sum error code prevents use of a damaged program. The PITCHRAQ will not abort, but will display the error code for one second then default to program A1.

** Check sum error is indicated by a "C" followed by a space and the program's Memory Bank and Program number.

*** Dead battery condition indicated by an programs displaying an error message, i.e., CA1, CA2, CA3, etc.



6.0 PATCH SETTINGS

(The following 16 patch settings are loaded into the Shadow Program Storage Registers)

| PRGM NO. | DESCRIPTION | CENTS | RATIO | STD INT | DRY LEVEL | EFFECT LEVEL | REGEN LEVEL | SWEEP DEPTH | SWEEP RATE |
|----------|-------------------|-------|-------|---------|-----------|--------------|-------------|-------------|------------|
| A1 | + minor 3rd | - | - | +m3rd | 60 | 60 | 0 | 0 | - |
| A2 | + Major3rd | - | - | +M3rd | 60 | 60 | 0 | 0 | - |
| A3 | + 5th | - | - | +5th | 60 | 60 | 0 | 0 | - |
| A4 | +Octave | - | - | +Oct | 60 | 60 | 0 | 0 | - |
| B1 | - 4th | - | - | -4th | 60 | 60 | 0 | 0 | - |
| B2 | - minor 6th | - | - | -m6th | 60 | 60 | 0 | 0 | - |
| B3 | - Major 6th | - | - | -M6th | 60 | 60 | 0 | 0 | - |
| B4 | - Octave | - | - | -Oct | 60 | 60 | 0 | 0 | - |
| C1 | Chorus, unison | 0 | - | - | 50 | 50 | 0 | 10 | .2 |
| C2 | Major 3rd. chorus | +300 | - | - | 50 | 50 | 0 | 20 | .1 |
| C3 | +Detune | - | 1.03 | - | 60 | 40 | 0 | 0 | - |
| C4 | -Detune | - | .94 | - | 65 | 35 | 0 | 0 | - |
| D1 | Dim. Scale Up | +300 | - | - | 0 | 90 | 90 | 0 | - |
| D2 | Whole Tone Up | +200 | - | - | 0 | 90 | 90 | 0 | - |
| D3 | Portamento Down | -006 | - | - | 0 | 90 | 90 | 0 | - |
| D4 | Random | 0 | - | - | 60 | 40 | 0 | 100 | 5 |

7.0 SPECIFICATIONS

| | | |
|------------------------|---------------|--|
| PITCH SHIFT | CENTS | ±1200cents |
| | RATIO | .5 (1 octave down) to 2.00 (1 octave up). |
| | STD. INTERVAL | ±Major 3rd, ±minor 3rd, ±4th, ±5th, ± Major 6th, ±minor 6th, ±octave. |
| BANDWIDTH, | DRY | 20Hz to 20kHz |
| | DELAY | 20Hz to 15kHz |
| DYNAMIC RANGE | | 84dB |
| DISTORTION (THD)@ 1kHz | | dry, 0dBV, 0.05% max wet, 0dBV, 0.2% max. |
| SWEEP DEPTH | | 0 (none) to ±600 cents |
| SWEEP RATE (PER CYCLE) | | 0.1Hz (10 Sec) to 10Hz (0.1 sec) |
| MAX. INPUT LEVEL | | +20dBm (ref. .775VRMS) |
| MAX. OUTPUT | | +20dBm (ref 775VRMS) |
| INPUT | | Single-ended. 1/4" phone jack. level signals, 500k ohm input impedance. |
| OUTPUTS | | Two: Direct and Effect, single- ended. 1/4" phone jacks. drives 600 ohms |
| REGEN INSERT | | Stereo 1/4" phone jack, send=tip, return=ring. |
| POWER CONSUMPTION | | 18 watts |
| POWER | | 120VAC, 50/60HZ |
| DIMENSIONS | | L-10,5" x W-19" x H-1.75" (483 X 44 X 269mm) |
| WEIGHT | | 6.75lbs (2.95kg); 10lbs, (4.55kg) shipping |
| OPTION | | 220 VAC, 50/60HZ |
| ACCESSORIES | | DS-4 PROGRAM SELECTOR (Includes 1/4" STEREO CORD) |

* All specifications subject to change without notice.

