ProHUSH™

INSTRUCTION MANUAL

U.S. Patents #4647876, 4696044
Other patents pending.
Foreign patents pending.

ROCKTRON
STUDIO SERIES

INTRODUCTION

The Rocktron Studio Series PROHUSH is a professional MIDI programmable single- ended noise reduction system with features unsurpassed by any single-ended noise reduction system.

This operating manual will introduce you to the PROHUSH and its various functions. After reading this manual carefully, keep it for future reference.

PRECAUTIONS

NOTE: IT IS VERY IMPORTANT THAT YOU READ THIS SECTION TO PROVIDE YEARS OF TROUBLE FREE USE. THIS UNIT REQUIRES CAREFUL HANDLING.

All warnings on this equipment and in the operating instructions should be adhered to and all operating instructions should be followed.

Do not use this equipment near water. Care should be taken so that objects do not fall and liquids are not spilled into the unit through any openings.

DO NOT ATTEMPT TO SERVICE THIS EQUIPMENT. THIS EQUIPMENT SHOULD BE SERVICED BY QUALIFIED SERVICE PERSONNEL ONLY. DO NOT REMOVE THE COVER FROM THIS EQUIPMENT AT ANY TIME. DO NOT MAKE ANY INTERNAL ADJUSTMENTS OR ADDITIONS TO THIS EQUIPMENT AT ANY TIME. DO NOT TAMPER WITH INTERNAL ELECTRONIC COMPONENTS AT ANY TIME. FAILURE TO FOLLOW THESE INSTRUCTIONS MAY VOID WARRANTY SERVICE TO THIS EQUIPMENT, AS WELL AS CAUSING SHOCK HAZARD.

VOLTAGE RATINGS

Make sure your AC outlet satisfies the voltage rating to avoid damage to this unit. The back of this unit will be rated one of the following:

JAPAN:	100 V 50/60Hz
US/CANADIAN	115 V 50/60Hz
GERMANY/FRANCE/FINLAND	220/240 V 50/60Hz

OPERATING TEMPERATURE

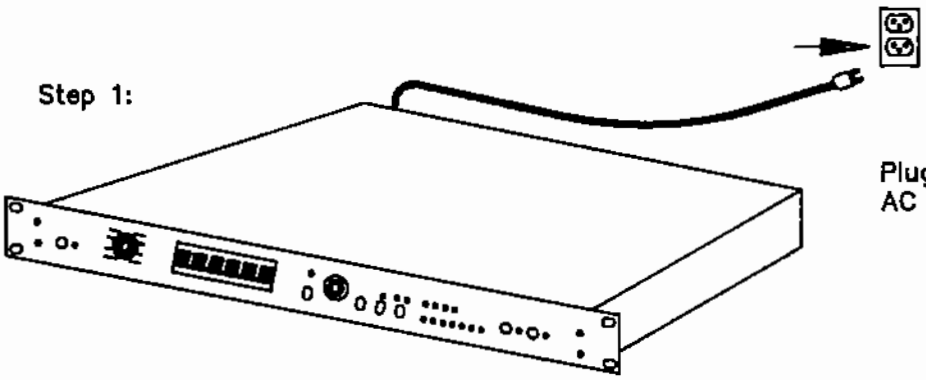
Do not expose this unit to excessive heat. This unit is designed to operate between 32F and 104F (0C and 40C). This unit may not function properly under extreme temperatures.

Before using your PROHUSH, please read and follow these operating instructions completely. The following QUICK SET–UP instructions are by no means complete, but should get you started. Please take the time to go back and thoroughly read the entire manual at your soonest convenience.

QUICK SET–UP

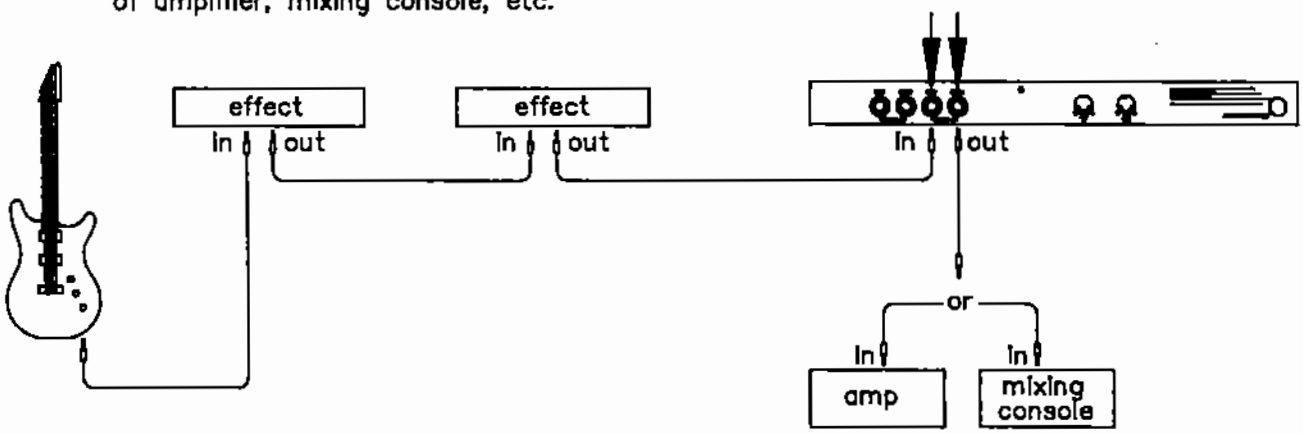
Set–up

Step 1:

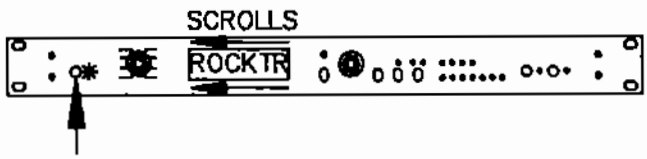


Plug your PROHUSH into an AC outlet (115VAC U.S.A.).

Step 2: Connect PROHUSH Channel Input jacks to output of your chain of effects. Connect PROHUSH Channel Output jacks to the input of amplifier, mixing console, etc.

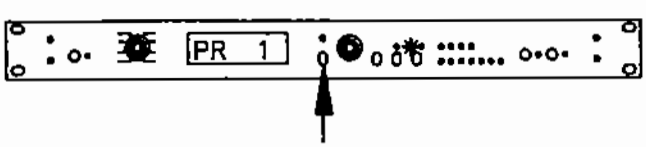


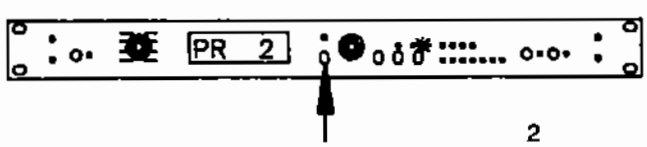
Step 3:



Engage power switch IN. A segment test will flash on the front panel display and then it will begin to scroll "ROCKTRON PROHUSH".

Step 4:

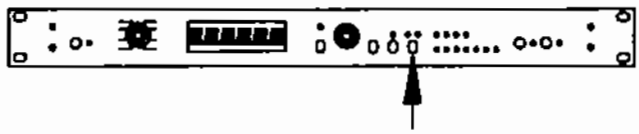




Press RECALL button. The PROHUSH automatically recalls PRESET 1 after power–up on Channel A and Channel B, with STEREO MASTER "ON". By turning STEREO MASTER "OFF", Channel B recalls PRESET 2.

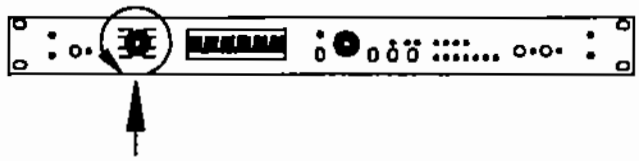
To Change Preset Programs

Step 1:



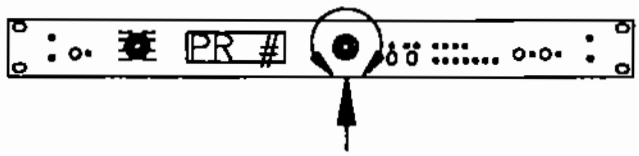
Push A/B button to desired channel. STEREO MASTER must be "OFF" to edit Channel B.

Step 2:



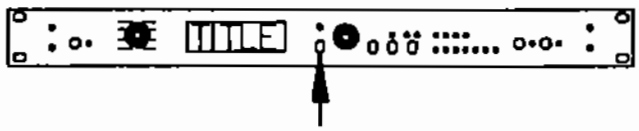
Turn SELECT PARAMETER control to preset position. (Full c.c.w.)

Step 3:



Turn ADJUST control until desired preset number and title flash.

Step 4:



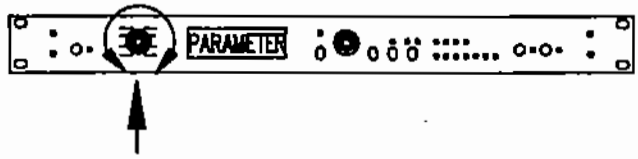
Press RECALL button. The new preset title will be displayed.

To Change Parameters

Step 1:

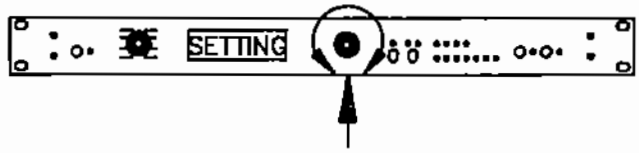
Push A/B button to desired channel. STEREO MASTER must be "OFF" to edit Channel B.

Step 2:



Turn SELECT PARAMETER control to the position of the desired parameter to be changed. The PROHUSH will then display the current setting of the parameter.

Step 3:

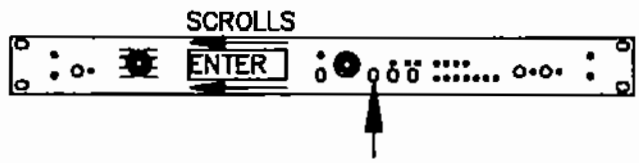


Turn ADJUST control until the desired setting is accomplished. (NOTE: It is not necessary to store each individual parameter. You may store the entire program once it is completed.)

To Store New Presets

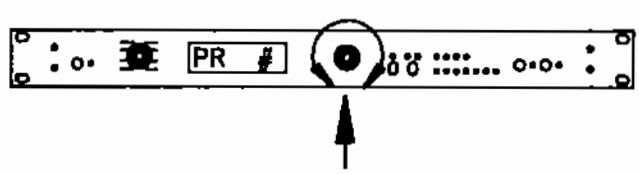
After altering a preset to the desired sound, or after creating a totally original preset, the PROHUSH allows you to store this program into preset numbers 1–128.
NOTE: To store a new preset, the SELECT PARMETER control must be in one of the parameters other than PRESET or MIDI. The PROHUSH will not store a program when left in either of these two positions.

Step 1:



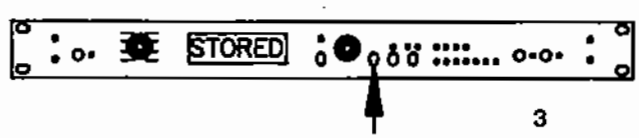
Push the EDIT/STORE button, to initiate the store procedure. "ENTER PRESET" will scroll across the display.

Step 2:



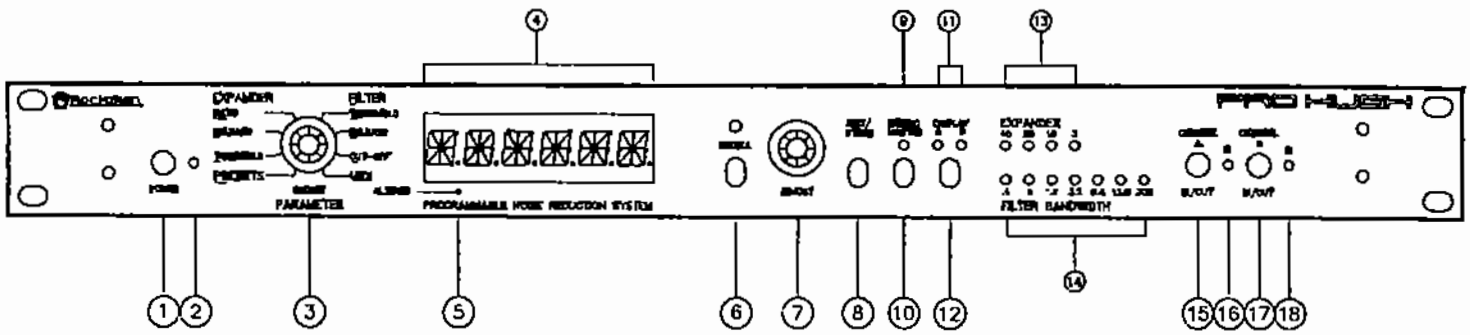
Turn the ADJUST control to the desired preset number you wish to store your new program into.

Step 3:



Push the EDIT/STORE button a second time. "STORED" should flash across the display, verifying that your program is stored into memory.

FRONT PANEL DESCRIPTION



(1). . .**POWER SWITCH:**

(2). . .**POWER ON/OFF LED:**

When lit, this LED indicates that the unit is in operation.

(3). . .**PARAMETER SELECT CONTROL:**

8 positions (Preset function, 6 adjustable parameters, and MIDI options) full counter clockwise to full clockwise.

Preset function

PRESET: preset number and title, 128 total presets available Adjustable Parameters

EXPANDER:

THRESHOLD:	Expander Threshold, +10dB to -70dB
RELEASE:	Expander Release, 0.055 sec. to 10 sec.
RATIO:	Expander Ratio, 1:1 to 20:1

FILTER:

THRESHOLD:	Filter Threshold, -20dB to -70dB
RELEASE:	Filter Release, 0.04 sec. to 4.00 sec.
CUT OFF:	Filter Cut-Off, 400Hz to 6KHz

MIDI Options

MIDI: mapping status, program mapping, controller mapping, and MIDI channel number independent for Channel A and Channel B.

(4). . .**DISPLAY PANEL:**

The Display panel consists of six alphanumeric characters of 14 segments each. On initial power up, the LED display will show a brief LED segment test.

(5). . .**ALTERED INDICATOR:**

The ALTERED indicator is the first decimal point of the first character of the display. When this decimal point is lit, it indicates that the ADJUST control has been turned to a different value (ALTERED value), than the value which is stored in that preset (STORED value).

(6). . .**RECALL BUTTON:** function dependent on the SELECT PARAMETER control

When the SELECT PARAMETER control is in PRESET, the RECALL button is used to recall the displayed preset number.

When the SELECT PARAMETER control is in one of the six adjustable parameters, (Expander Threshold, Filter Cut-Off, etc.), the RECALL button is used as a toggle between the STORED value and the ALTERED value.

When the SELECT PARAMETER control is in MIDI, the MIDI options can be stepped through by using the RECALL button. The options are: mapping status, program mapping, controller mapping, and MIDI channel number.

(7). . .**ADJUST CONTROL:** function dependent on the SELECT PARAMETER control

When the SELECT PARAMETER control is in PRESET, the ADJUST control can be used to select a preset number and to edit preset titles.

When the SELECT PARAMETER control is in one of the six adjustable parameters, the ADJUST control allows the user to select the different values available for a particular adjustable parameter.

When the SELECT PARAMETER control is in MIDI, the ADJUST control selects the value of the different MIDI options.

(8). . .**EDIT/STORE BUTTON:** function dependent on the SELECT PARAMETER control

When the SELECT PARAMETER control is in PRESET, the EDIT/STORE button is used to initiate the title edit function. All 128 preset titles can be edited to whatever the user prefers.

When the SELECT PARAMETER control is in one of the six adjustable parameters, the EDIT/STORE button is used to copy a preset into another preset. It is also used AFTER changing a parameter value when the CHANGED value is to be entered into the memory in place of the previous value.

When the SELECT PARAMETER control is in MIDI, use the EDIT/STORE button after entering any MIDI information that is to be STORED (saved) in the memory.

(9). . .**STEREO MASTER LED:**

When lit, this LED indicates that the PROHUSH is in Master/Slave, in which Channel A is the Master, and Channel B is the Slave.

(10). . .**STEREO MASTER BUTTON:**

This switch allows the user to select for either stereo or mono applications, transforming a two mono-channelled unit into stereo. For stereo applications this switch ties both channels together for precision tuning. When the stereo master is IN, the controls for Channel A are master and the controls for Channel B are slave. This parameter can be stored into each preset.

(11). . .**DISPLAY A/B LED:**

These LEDs indicate which channel has been selected. NOTE: when in Stereo Master, the Display A/B LED will always indicate Channel A (master).

(12). . .**DISPLAY A/B BUTTON:**

This switch toggles between Channel A and Channel B for entering and viewing parameters.

(13). . .**EXPANDER METER:**

This four segment meter indicates -40, -20, -10 or -3dB of expansion taking place.

(14). . .**FILTER METER:**

This seven segment meter indicates the bandwidth of the filter as being 0.4, 0.8, 1.6, 3.2, 6.4, 12.8, or 30KHz.

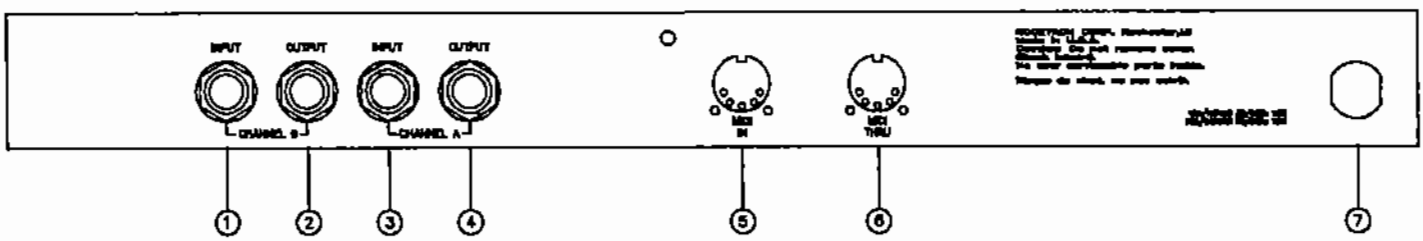
(15). . .**CHANNEL A IN/OUT SWITCH:**

(16). . .**CHANNEL A IN/OUT LED:**

(17). . .**CHANNEL B IN/OUT SWITCH:**

(18). . .**CHANNEL B IN/OUT LED:**

REAR PANEL DESCRIPTION



(1). . .**CHANNEL B INPUT JACK:** 1/4" balanced
Tip: +, Ring: -, Sleeve: ground

(2). . .**CHANNEL B OUTPUT JACK:** 1/4" balanced
Tip: +, Ring: -, Sleeve: ground

(3). . .**CHANNEL A INPUT JACK:** 1/4" balanced
Tip: +, Ring: -, Sleeve: ground

(4). . .**CHANNEL A OUTPUT JACK:** 1/4" balanced
Tip: +, Ring: -, Sleeve: ground

NOTE: FOR UNBALANCED APPLICATIONS, STANDARD 1/4" MONO JACKS CAN BE USED AND THE PROHUSH AUTOMATICALLY COMPENSATES FOR FULL OUTPUT LEVEL.

(5). . .**MIDI IN CONNECTOR:** standard MIDI 5 pin din connector

The MIDI In connector must be connected to the MIDI Out connector of the transmitting device via a standard MIDI cable, or to the MIDI Thru connector of the preceeding device if the PROHUSH is within a chain of MIDI devices.

(6). . .**MIDI THRU CONNECTOR:** standard MIDI 5 pin din connector

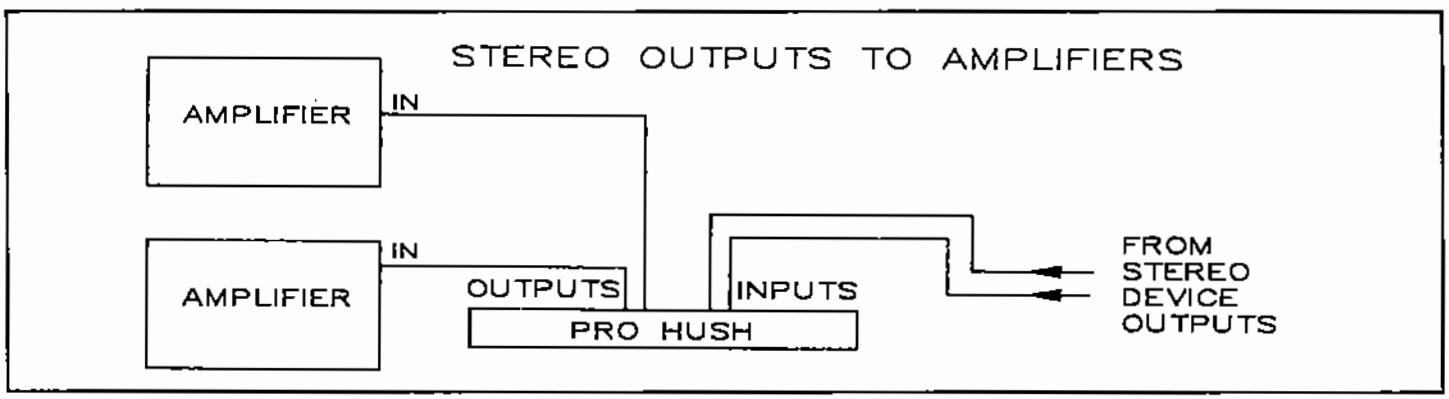
The MIDI Thru connector can be connected to the MIDI In connector of another MIDI device via a standard MIDI cable. There are limitations to the number of devices that can be chained (series connected) in this fashion. For further information, read the MIDI FORMAT section concerning MIDI In and MIDI Thru.

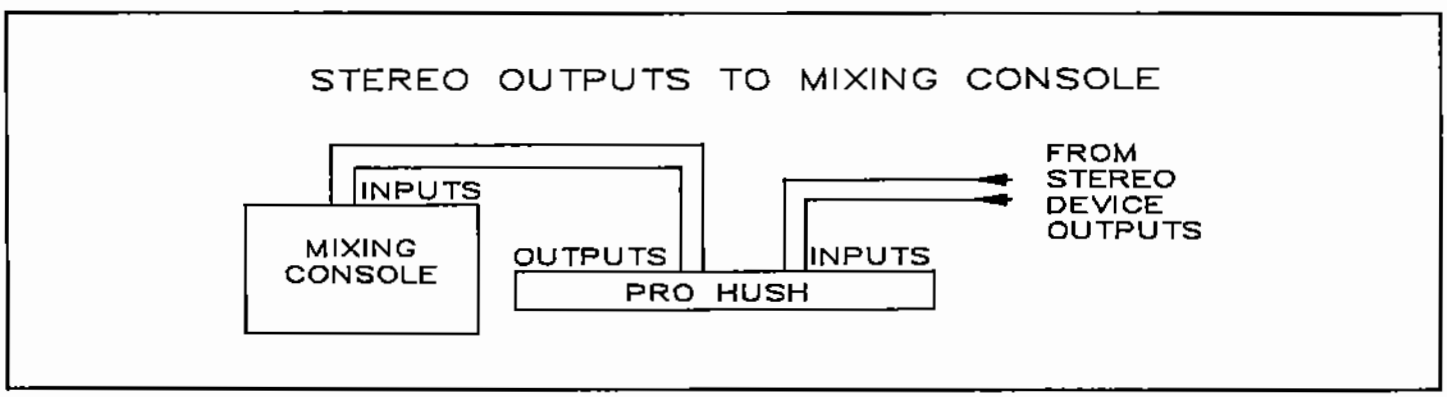
(7). . .**AC POWER CORD:**

NOTE: VERIFY THE VOLTAGE OF YOUR AC WALL OUTLET AGREES WITH THAT OF THE UNIT.

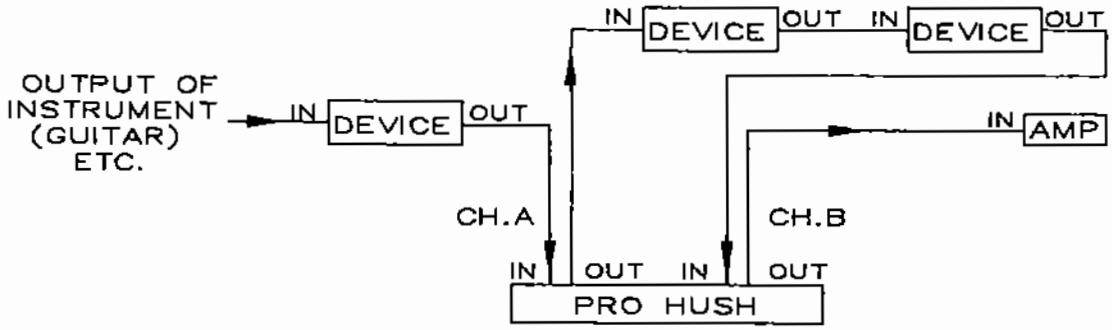
This cord is provided to connect the unit to your AC wall outlet. DO NOT RUN THIS UNIT FROM CAR BATTERIES OR ANY OTHER EXTERNAL POWER SOURCE.

CONNECTIONS

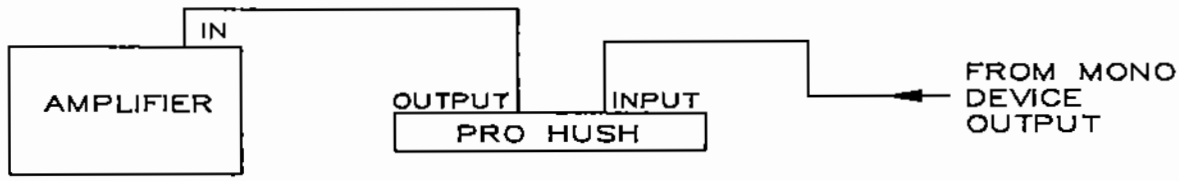




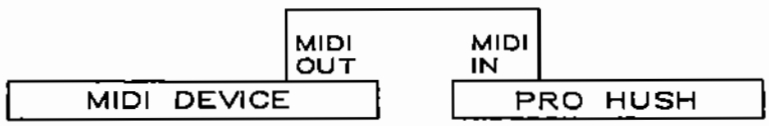
USING BOTH CHANNELS SEPERATELY



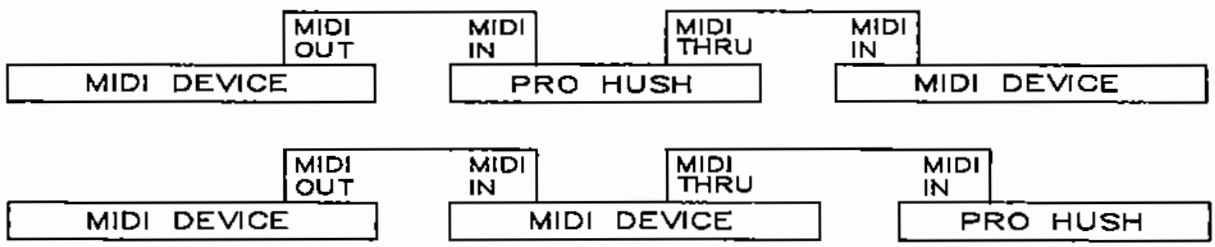
MONO OUTPUT TO AMPLIFIER



USING MIDI



USING A CHAIN OF MIDI DEVICES



BASIC FORMAT

The PROHUSH single-ended noise reduction system is comprised of two parts; the expander and the dynamically controlled low pass filter.

Expander Section

The expander operates like an electronic volume control. The design utilizes a voltage controlled amplifier (VCA) circuit which can control the gain between the input and output from unity to 30, 40, or even 50dB of gain reduction. When the input signal is above the user pre-set threshold point, the VCA circuit is at unity gain. This means that the amplitude of the output signal will be equal to the input signal. As the input signal amplitude drops below the user preset threshold point, downward expansion begins. At this point, the VCA operates like an electronic volume control and gradually begins to decrease the output signal level relative to the input signal. For example, if the input signal were to drop below the threshold point by 10dB, the output would drop approximately 12dB. As the input signal drops further below the threshold point, downward expansion increases exponentially. For example, if the input signal dropped 20dB below the threshold point, the output level would drop by approximately 60dB, i.e. 30dB of gain reduction. In the absence of any input signal, the expander circuit will reduce the gain so that the noise floor becomes inaudible. (Fig. 1)

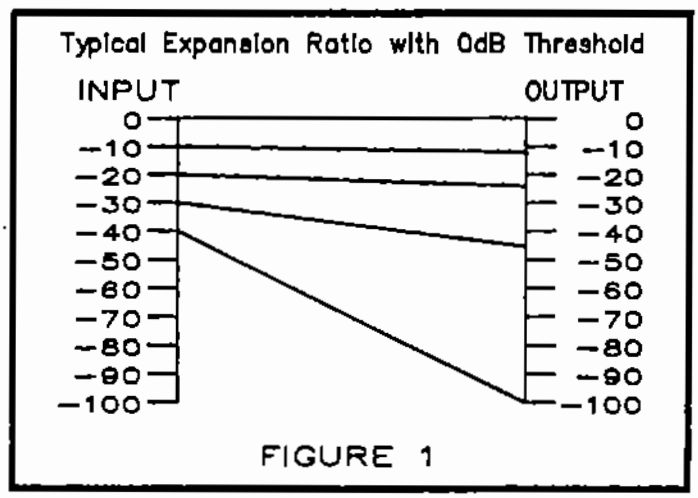


FIGURE 1

Expander Controls

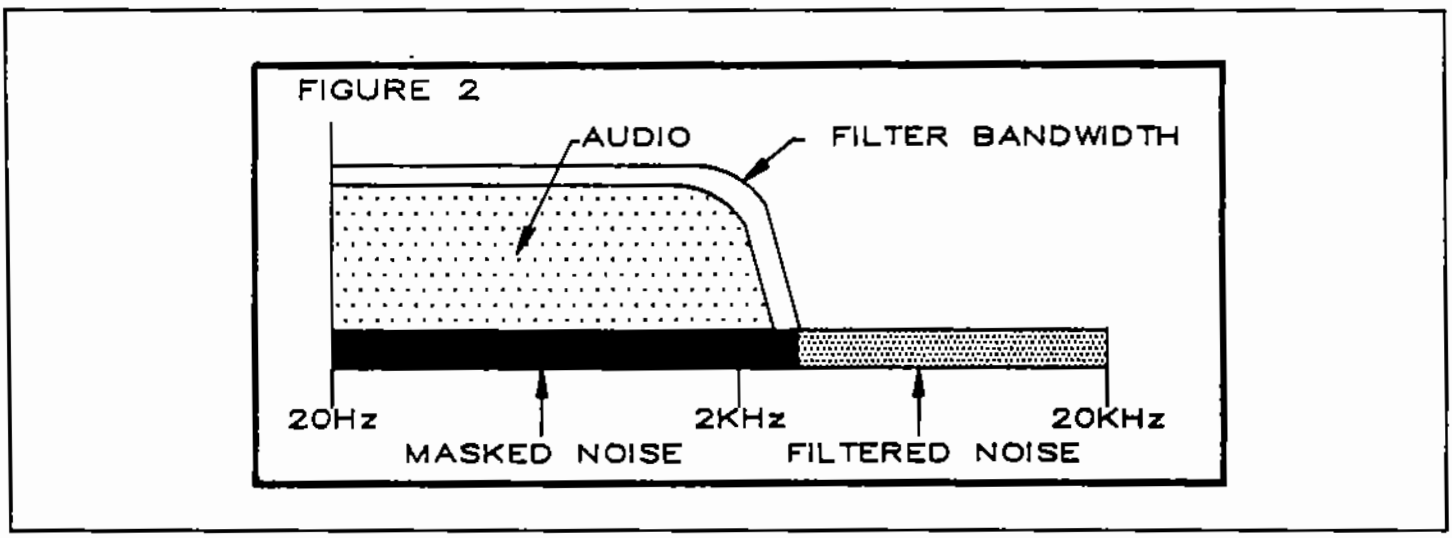
Expander Threshold: The Expander Threshold sets the point at which downward expansion begins. This is variable between -70dB and +10dB. For subtle fade outs, a setting between -60dB and -70dB would be suitable. In contrast, for severe gating applications, a setting between -10dB and +10dB would be suitable.

Expander Ratio: Once the signal level falls below the threshold point and downward expansion begins, the ratio of expansion can be adjusted. The ratio is adjustable from 1:1 to 20:1. For every 1dB of attenuation at the input, the output will attenuate to the ratio setting. For example, at a ratio of 20:1, a slight drop of 1dB of signal at the input will cause the output to drop by 20dB. (NOTE: at a ratio setting of 1:1, the audio signal remains unaffected by the entire expander section.)

Expander Release: The Expander Release sets the time period for how long the expander takes to attenuate relative to approximately 20dB down. This is adjustable between 0.055 sec. to 10 sec. For quick transients, a fast release time would be suitable. For long, slow fades a slow release around 10 sec. would be suitable.

Filter Section

The dynamically controlled low pass filter operates as follows. In the absence of any audio signal, the dynamic filter will close down to the variable preset cut-off point. This means the filter is only allowing frequencies below this cut-off point to pass through. If the cut-off was set at 400Hz, and an input signal had a bandwidth of from 20Hz to 1KHz, the filter would open far enough to pass up to the 1KHz frequency and its harmonics, while reducing any noise present from approximately 2KHz to 20KHz. If a broad band signal, with frequency components up to 20KHz appears at the input, the dynamic filter would open to its full extreme allowing the bandwidth to open all the way to 40KHz. In simple terms, what this means is that if a signal is present at the input which is primarily bass components, the dynamic filter will reduce any mid or high band noise. However, if the input signal has high frequency components present, the dynamic filter will open to its full extreme to pass the signal and eliminate the possibility of a loss of high end frequency response. (Fig 2)



Filter Controls

Filter Threshold: The Filter Threshold sets the point at which the dynamic filter will start to open. This is adjustable between -70dB and -20dB. A good starting point for this control is at the -70dB setting. The filter will open and pass broad band signal unaffected. By slowly turning the Adjust control clockwise, the filter will become less sensitive and begin to eliminate high frequency noise.

Filter Release: The Filter Release sets the time period for how long the dynamic filter takes to close down, or release, to the set cut-off point after being opened from audio signal. This is adjustable from 0.04 sec. to 4.00 sec. For long fades or passages with reverb, a slow release time of 4.00 sec. would be suitable. For composite audio signals, a faster release time between 0.04 sec. and 0.07 sec. would be adequate to reduce "breathing".

Filter Cut-Off: In the absence of any audio signal, the dynamic filter will close down to a set cut-off point. The cut-off frequency varies between 400Hz and 6KHz. This setting should be adjusted according to how much high frequency noise is present in the audio signal. With large amounts of mid

and high frequency noise, a setting around 400Hz would be suitable. With very small amounts of high frequency noise, a setting between 2KHz to 6KHz would work best.

MIDI Format

MIDI stands for Musical Instrument Digital Interface and was established as a specification which would make it possible to exchange information (program changes, expression control, etc.) between different musical equipment. MIDI makes it possible for a user of MIDI compatible equipment to expand a music system and to change system configurations to meet changing requirements. Some MIDI devices have the ability to transmit MIDI, some to receive MIDI and others can both transmit and receive MIDI. A MIDI transmitter originates messages in MIDI format and transmits them. A MIDI receiver accepts messages in MIDI format and executes MIDI commands.

The Rocktron Studio Series PROHUSH is a MIDI receiver. In order for it to receive MIDI information and execute MIDI commands, it is necessary to use the PROHUSH in conjunction with a MIDI transmitter device. The PROHUSH is compatible with MIDI transmitters that send MIDI as well as SYSEX (System Exclusive), and MIDI Time Code (MTC). It will respond only to MIDI program changes, and MIDI controller changes. It will not be affected by other MIDI commands or information.

The PROHUSH is actually two MIDI devices in one package. Each channel (A or B) operates as an individual MIDI device independent of the other. Each channel of HUSH can be sent MIDI commands on any one of 16 MIDI channels or either HUSH channel can be set to receive on OMNI (will receive MIDI commands on all MIDI channels). Each channel can set any of the MIDI parameters independent of the other channel. For example:

CHANNEL A	CHANNEL B
PRESET 1	PRESET 2
FLAT	MIX 1
—	—
—	—
—	—
—	—
MAP OFF	MAP ON
PROGRAM MAPPING	PROGRAM MAPPING
1 to 10	1 to 100
2 to 20	2 to 20
—	—
—	—
CONTROLLER MAPPING	CONTROLLER MAPPING
EXP. THR. = 0	EXP. THR. = 110
EXP. REL. = OFF	EXP. REL. = 97
—	—
—	—
MIDI CHANNEL = 1	MIDI CHANNEL = 2

MIDI IN AND MIDI THRU

MIDI information is received through the MIDI In jack. The MIDI signal received from the MIDI IN jack can be passed on to other MIDI devices by using the MIDI Thru jack. MIDI receivers can only take the MIDI information and execute the commands, they can not send their own commands out either back to the device transmitting MIDI or to other devices that receive MIDI. The MIDI Thru jack simply sends the original MIDI input signal that it received from the MIDI In jack, however, there is a limit to the number of devices which can be chained (series connected) in this fashion. With more than three devices, a slight distortion of the MIDI signal can occur, which can cause an error in MIDI signal transmission. Should this problem arise, a MIDI Thru box can be used, which connects directly to the MIDI device which transmits MIDI information and has multiple connectors for the multiple devices receiving MIDI. MIDI cables should not exceed 50 feet (15 meters) in length and for connecting multiple devices within a single rack, short cables of only a foot or two in length are much more desirable.

FACTORY SET UP

Your Rocktron Studio Series PROHUSH was set up at the factory in the following set-up. Unless otherwise indicated, these settings are fully changeable and programmable by the user.

PRESETS

On initial power up, your PROHUSH will ALWAYS come up in preset 1, Channel A.

Upon receiving your PROHUSH, the factory presets 1-20 are repeated through the remaining memory locations (presets 21-128). This allows the user to select and modify a program with sound characteristics closest to the user's preference. All factory presets can be written over.

MIDI OPTIONS

Mapping Status is set to OFF.

Program Mapping is set to a one to one correspondence. (1=1, 2=2, 24=24, etc.)

Controller Mapping is set as follows: (usable mapping from 0-120, and OFF)

0=EXPANDER THRESHOLD CHANNEL A	7=EXPANDER THRESHOLD CHANNEL B
1=EXPANDER RELEASE CHANNEL A	8=EXPANDER RELEASE CHANNEL B
2=EXPANDER RATIO CHANNEL A	9=EXPANDER RATIO CHANNEL B
3=FILTER THRESHOLD CHANNEL A	10=FILTER THRESHOLD CHANNEL B
4=FILTER RELEASE CHANNEL A	11=FILTER RELEASE CHANNEL B
5=FILTER CUT-OFF CHANNEL A	12=FILTER CUT-OFF CHANNEL B
6=STEREO MASTER CHANNEL A	

MIDI Channel Number is set to OMNI (which will receive on ALL channels), for both Channel A and Channel B.

These are the settings your PROHUSH will be set to upon receiving it from the factory. The PROHUSH will otherwise be set (upon subsequent power up) to the programmable setting changes that the user has made and stored.

OPERATION

Power Up

When the PROHUSH is initially powered on, the LED display will show a brief LED segment test. All LED segments are lit briefly indicating that all segments are working. The PROHUSH then automatically recalls preset 1. The message "ROCKTRON PROHUSH" will scroll (and continue to scroll) until the SELECT PARAMETER or ADJUST controls are turned, or the RECALL or EDIT/STORE buttons are pressed. (At this time, the display will flash "PRESET", "PR 1", and the title of Preset 1, visually displaying the recalled preset.)

"PRESET" is a particular position of the SELECT PARAMETER control of the PROHUSH. There are eight positions in the SELECT PARAMETER control. Full counter clockwise is PRESET, which selects preset number and title. There are 128 different presets available to recall. Initially factory presets 1-20 are repeated through the remaining memory location (presets 21-128). Each individual preset stores a selected value for six adjustable parameters. These six stored values in each preset are what determines how each particular noise reduction preset will operate.

Recalling a Stored Preset

Step 1: To RECALL a particular preset, turn the SELECT PARAMETER control full counter clockwise. This position is PRESET. The display will flash "PRESET", then, "PR" and the preset number currently being used will flash for about one second, and then the preset title will appear on the display.

Step 2: To change to a different preset than what is currently displayed, turn the ADJUST control until the number of the desired preset is displayed. The new preset number and title will continue to flash until the RECALL button is pressed.

Step 3: Pressing the RECALL button will change the preset to the new preset number. Until the RECALL button is pressed, no change in preset takes place.

Step 4: To CANCEL the RECALL mode, either turn the ADJUST control back to the original preset number, or turn the SELECT PARAMETER control clockwise into another setting. No change will take place as long as the RECALL button is not pressed.

Changing Adjustable Parameter Values

Step 1: One position clockwise of PRESET (full counter clockwise), is the first of the next six positions of the SELECT PARAMETER control that are adjustable parameters for modifying in each preset. Each parameter is displayed when the SELECT PARAMETER control is turned to their position. (Refer to the BASIC FORMAT section for information on what stage of the PROHUSH each parameter adjusts.)

Step 2: The parameter value stored for each of the six adjustable parameters will be immediately modified by turning the ADJUST control to the desired new value. As soon as the parameter value is changed, the Altered Indicator lights. The Altered Indicator is the decimal point of the first character of the display.

Step 3: To immediately return to the stored value in the preset, press the RECALL button. The RECALL button will allow the PROHUSH to alternate between the currently stored value and an adjusted value. This allows the user to compare the two values with the touch of a button. All of the six adjustable parameters can be modified in this same manner.

Storing Changed Parameter Values

Step 1: To STORE a changed parameter value into a preset, use the ADJUST control while in the adjustable parameter who's value you wish to change. (The Altered Indicator light should be on, verifying that the value in NOT a stored value.) Essentially you are going to copy the changed preset over the currently stored preset.

Step 2: Press the EDIT/STORE button to initiate the copy mode. "ENTER PRESET" will scroll across the display. Wait until the scolling is completed, and the current preset number and the current preset title is flashing alternately back and forth.

Step 3: Press the EDIT/STORE button, the display will flash "STORED" briefly, indicating that the changed parameters are now stored in that preset.

Step 4: If the EDIT/STORE button is pressed before the completion of the scrolling message "ENTER PRESET", the changed preset will NOT store. Press the EDIT/STORE button another time to store.

Storing Stereo Master Status

To make a particular preset recall with Stereo Master IN, simply push the Stereo Master button IN while in the preset you want, and in one of the six adjustable parameters, then push the Edit/Store button. After "ENTER PRESET" stops scrolling, push Edit/Store again.

Copying Presets

Step 1: To COPY one preset into another, recall the preset that is to be copied. Changes to any of the adjustable parameters can be made at this time.

Step 2: Then after making any adjustments, press the EDIT/STORE button while in any one of the adjustable parameters. This will initiate the copy mode.

Step 3: "ENTER PRESET" will scoll across the display. Wait until the scrolling is completed. The current preset number and current preset title will flash alternately back and forth until the ADJUST control is turned to the new preset number to which the copy is to be entered and the EDIT/STORE button is pressed. (The modified preset can be copied over itself simply by pressing the EDIT/STORE button without turning the ADJUST control to a different preset number.)

Step 4: The selected preset number and title will continue to flash until the EDIT/STORE button is pressed. The display will then flash "STORED" briefly. This will indicate that the current preset parameters were successfully STORED in to the new preset.

Step 5: If the EDIT/STORE button is pressed before the scrolling message "ENTER PRESET" has finished scrolling, no store will take place. Press the EDIT/STORE button another time to store.

Step 6: To CANCEL the copy mode once it has been initiated, turn the SELECT PARAMETER control one position in either direction. The display will briefly flash "CANCEL" and the PROHUSH will return to the state is was in before the copy was initiated.

Editing a Preset Title

Step 1: The titles for presets 1-128 can ALL be modified. To EDIT a title of a specific preset, that preset must be RECALLED.

Step 2: With the title of the preset to be changed displaying, pressing the EDIT/STORE button will initiate the title edit mode. "TITLE EDIT" will scroll on the display, then the current title will appear with the decimal point of the first character on (flashing).

Step 3: Turn the ADJUST control to change the first character of the title.

Step 4: When the desired character is selected, press the EDIT/STORE button to store the character and start editing the next character. Each time the EDIT/STORE button is pressed, the flashing decimal point will advance to the next character. (After each character is edited, the EDIT/STORE button must be pressed to store that character.)

Step 5: To end title editing, press the RECALL button, or turn the SELECT PARAMETER control.

Recalling MIDI Options

The most clockwise position of the SELECT PARAMETER control is MIDI. The MIDI options available are as follows: mapping status, program mapping, controller mapping and MIDI channel number. These options may be stepped through by pressing the RECALL button repeatedly. At each option, the status can be viewed. By turning the SELECT PARAMETER control counter clockwise while in any mode but the program mapping or controller mapping, you will exit the MIDI options.

Mapping Status

Mapping status turns the program mapping ON or OFF. When the program mapping is OFF and a MIDI program change is initiated, the preset number recalled is the program number sent via MIDI. When the program mapping is ON and a MIDI program change is initiated, the program number sent via MIDI is mapped to a preset number and that preset is recalled by the PROHUSH. The program mapping status may be changed by turning the ADJUST control and pressing the EDIT/STORE button. The changed status will remain in effect until it is changed again, even after the unit is powered down.

Program Mapping

The program mapping is initially programmed for a one to one correspondence. (That is, MIDI program number nine is mapped to preset nine, ten to ten, etc.) The program mapping may be changed by selecting the MIDI program number via the SELECT PARAMETER control, then by selecting the preset number to map to via the ADJUST control. The preset number may also be turned to the OFF position, thereby not responding to the corresponding MIDI program change. Once the desired preset number is selected, press the EDIT/STORE button to save the change for each altered mapping. The mapping change must be STORED before the PROHUSH will respond to it.

Controller Mapping

The controller mapping will map a PROHUSH adjustable parameter to a MIDI controller number, starting at controller zero through controller 120, or OFF. The controller mapping may be changed by selecting the parameter via the SELECT PARAMETER control, then by selecting the control number via the ADJUST control. The control number may also be turned to the OFF position, thereby not letting that parameter respond to any MIDI controller change. Once the desired control number is selected, press the EDIT/STORE button to save the change for each altered mapping. The mapping change must be STORED before the PROHUSH will respond to it.

MIDI Channel Number

The MIDI channel number is the channel that the PROHUSH will receive MIDI commands on. To immediately change the channel number turn the ADJUST control to the desired channel. The channel number may be set to channel number 1-16, OMNI (receives on all channels), or to the OFF position. (Thereby not allowing the PROHUSH to receive any MIDI commands.) The changed channel must be stored before the PROHUSH will respond to it. Be sure that the MIDI channel of the PROHUSH matches the MIDI channel of the transmitting device you wish to receive MIDI information from.

Each channel of HUSH is capable of receiving MIDI commands on its own MIDI channel, independent of the other channel of HUSH.

To choose adjustable MIDI parameter for Channel A:

Step 1: Press A/B button so that Channel A LED is lit.

Step 2: Turn SELECT control clockwise until "MIDI" is displayed. The first adjustable parameter is program mapping status ON/OFF, etc.

To choose adjustable MIDI parameter for Channel B:

Step 1: Press A/B button so that Channel B LED is lit.

Step 2: Turn SELECT control clockwise until "MIDI" is displayed. The first adjustable parameter is program mapping status ON/OFF, etc.

Each channel of HUSH may be set to the same MIDI channel or to different MIDI channels or set to OFF or OMNI, or any combination of the above.

(DIGITALLY CONTROLLED PROGRAMMABLE SINGLE-ENDED NOISE REDUCTION)

MODEL: PROHUSH SOFTWARE VERSION: 1.0 DATE: AUGUST 21, 1989

MIDI IMPLEMENTATION CHART

	FUNCTION	RECOGNIZED			REMARKS
BASIC	DEFAULT	1-16, OMNI, OFF			MAY BE SAVED IN
CHANNEL	CHANGED	1-16, OMNI, OFF			NONVOLATILE MEMORY
	DEFAULT	X			
MODE	MESSAGES	X			
	ALTERED	X			
NOTE	TRUE				
NUMBER	VOICE	X			
VELOCITY	NOTE ON	X			
	NOTE OFF	X			
AFTER	KEY'S	X			
TOUCH	CHANNEL	X			
PITCH BEND		X			
CONTROL	0,7	0	0=CH. A	7=CH. B	EXPANDER THRESHOLD
CHANGE	1,8	0	1=CH. A	8=CH. B	EXPANDER RELEASE
	2,9	0	2=CH. A	9=CH. B	EXPANDER RATIO
	3,10	0	3=CH. A	10=CH. B	FILTER THRESHOLD
	4,11	0	4=CH. A	11=CH. B	FILTER RELEASE
	5,12	0	5=CH. A	12=CH. B	FILTER CUT-OFF
	6	0	6=CH. A		STEREO MASTER
	0-120 , OFF	0			*MAPPED PARAMETER
PROGRAM	TRUE				
CHANGE	NUMBER	0			**PROGRAMS 1-128
SYSTEM EXCLUSIVE		X			
SYSTEM	SONG POSITION	X			
COMMON	SONG SELECT	X			
	TUNE REQUEST	X			
SYSTEM	CLOCK	X			
REAL TIME	COMMANDS	X			
AUX.	LOCAL ON/OFF	X			
MESSAGES	ALL NOTES OFF	X			
	ACTIVE SENSING		X		
	SYSTEM RESET	X			

NOTES: **ACTUAL MIDI PROGRAM VALUE SENT IS 0-127, CORRESPONDING TO PRESETS 1-128. OPTIONAL IMPLEMENTATION OF PROGRAM MAPPING ALSO AVAILABLE. *CONTROLLER MAPPING AVAILABLE.

X=NO
0=YES

SPECIFICATIONS

RFI Shielding: Meets FCC Class B computing device equipment requirements.

INPUT

Input Impedance	33KHz
Max. Input Level	+20dBu
Input Jack	1/4" RTS (T=+, R=-, S=GND) Balanced or Unbalanced

NOISE FLOOR Typ. -105dBu A-Weighted, Balanced
Typ -101dBu A-Weighted Unbalanced

DYNAMIC RANGE Typ. -125dB, Balanced
Typ. -121dB, Unbalanced

EFFECTIVE NOISE REDUCTION Greater than 60dB

FREQUENCY RESPONSE ± 1/4dB, 20Hz-20KHz (flat setting)

OUTPUT

Max. Output Level	+20dBu
Output Impedance	Less than 150 ohms
Output Jack	Balanced or Unbalanced

MIDI IN CONNECTOR standard 5-pin DIN

MIDI THRU CONNECTOR standard 5-pin DIN

POWER REQUIREMENTS 110/120VAC @ 50/60Hz

DIMENSIONS 19" x 10" x 1-3/4"

NOTE: 0dBu = 0.775V RMS

FCC NOTICE

This equipment generates and uses radio frequency energy and if not installed and used properly, that is, in strict accordance with the manufacturer's instructions, may cause interference to radio and television reception. It has been type tested and found to comply with the limits for a Class B computing device in accordance with the specifications in Subpart J of Part 15 of FCC Rules, which are designed to provide reasonable protection against such interference in a residential installation. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient the receiving antenna

-Relocate the product with respect to the receiver

-Move the product into a different outlet so that product and receiver are on different branch circuits.

If necessary, the user should consult the dealer or an experienced radio/television technician for additional suggestions. The user may find the following booklet prepared by the Federal Communications Commission helpful, "How to Identify and Resolve Radio-TV Interference Problems."

This booklet is available from the:

U.S. Government Printing Office
Washington, D.C. 20402
(Stock No. 004-000-00345-4)

MAINTENANCE

MAINTENANCE

This unit is designed to provide years of trouble-free service but requires careful handling. To maintain this unit in proper working condition read the Safety Instructions. If any problem is encountered do not return the unit to your Dealer. Rocktron will accept full responsibility for all warranty repairs.

WARRANTY

All parts and workmanship of this Rocktron product are fully guaranteed to be free of defects under normal use and service for a period of THREE years from date of purchase.

The warranty will remain in effect until the original expiration date, regardless of whether or not the product is re-sold in the interim.

It is not required that you fill out a form for warranty registration. We would however, recommend that the dated proof of purchase be retained througout the warranty period.

Any damage resulting from mis-use or failure to follow instructions and precautions as stated in the product manual will void this warranty.

Should this Rocktron product require repair, Rocktron will assume responsibility for repair service. Do not return the product to the dealer. Simply repack the unit, sending along a description of the problem to: Rocktron Corporation, 2870 Technology Drive, Rochester Hills, MI 48309. All shipping charges must be fully prepaid.

This warranty is void if the original Serial Number has been altered or removed, or if this unit has been altered in any way.

Rocktron Corporation reserves the right to make changes in design and/or improvements upon their products without any obligation to include those changes in any products previously manufactured.

There is no other express warranty on goods covered by this agreement.

FACTORY PRESETS 1–20 (REPEATED 21–128)			PARAMETERS					
PRESETS	TITLES	STEREO MASTER	EXPANDER THRESHOLD	EXPANDER RELEASE	EXPANDER RATIO	FILTER THRESHOLD	FILTER RELEASE	FILTER CUT–OFF
1.	FLAT	ON	–70	.055	1.0	–70	.04	6.00 K
2.	CD 1	ON	–50	.100	7.0	–55	.25	1.70 K
3.	CD 2	ON	–45	.055	12.0	–60	.06	1.00 K
4.	TAPE 1	ON	–45	.080	10.0	–45	.05	1.05 K
5.	TAPE 2	ON	–37	1.00	6.6	–48	.05	1.45 K
6.	TAPE 3	ON	–40	.090	20.0	–55	.20	.78 K
7.	TAPE 4	ON	–55	.300	3.8	–55	.04	3.00 K
8.	TAPE 5	ON	–48	.055	12.0	–60	.04	1.00 K
9.	DIST.	OFF	–35	.055	20.0	–60	.07	3.00 K
10.	CLEAN	OFF	–55	6.00	10.6	–60	.25	1.50 K
11.	BASS	OFF	–55	.100	12.0	–57	.20	1.00 K
12.	AMP	OFF	–30	.055	20.0	–57	.04	.50 K
13.	SNARE	OFF	–50	.100	3.0	–60	.25	3.00 K
14.	KICK	OFF	–50	.450	5.0	–50	.75	1.50 K
15.	CYMBAL	OFF	–45	3.50	10.0	–60	.75	2.00 K
16.	REV 1	ON	–45	4.80	20.0	–60	.75	5.10 K
17.	REV 2	ON	–55	10.00	2.6	–60	4.00	5.10 K
18.	GATE 1	ON	–8	.055	20.0	–50	.04	.80 K
19.	GATE 2	OFF	–5	.200	17.0	–55	.04	2.00 K
20.	GATE 3	OFF	–17	.055	20.0	–55	.04	2.70 K

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