Semoia

PG63-7550

TUTORIAL

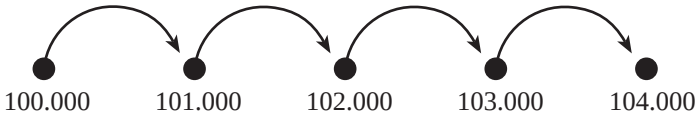
Hammerhead Features:

- √ Maximum storage capacity of 71250 individual frequencies.
- √ 75 program banks permits a minimum of 75 specific protocols.
- √ 50 levels for each bank with the capability that each of the 3750 levels can be either a single frequency or a wave packet. i.e.: A sweep from 1485 Hz to 1493 Hz in 1.0 Hz steps is stored as only one level in one bank!
- √ Frequency range: 000.001 Hz to 999999 Hz with an overall design that gives the user complete control to select and enable any frequency in this range.
- √ Each of the 3750 levels has the option of being pulsed (gated) at a rate of 1 Hz to 9 Hz. Pulse rise/fall time < 40 ns.
- √ Duration for each frequency: 0 seconds to 59 minutes, 59 seconds in 1 second increments. Timer accuracy within 99.99% of setting.
- √ Externally programmable with the Semoia Systems© PG Comm. program which is available in both Mac and PC versions.
- √ Duty factor: 50% positive offset square wave.
- √ Output TTL: 0.00 V min. to 5.0 V max. with a BNC chassis connection.
- √ Compact, easy to hold textured black (T-Box) composite case. Power supply obtained from any 12 V d.c. source.
- √ Flexible in that it can be used with any Rife type system. For example, any CB driven RifeBare machine.
- √ Dimensions: 9.25” x 5.15” x 1.35”, Weight ≈ 225 g. (8 oz.)

What are Wave Packets?

The SEMOIA PG63-7550 implements a new concept in pulse generation, the wave packet! A wave packet is a preprogrammed pattern of frequencies all of which relate to a single base frequency. There are two types of wave packets, Spreads and Sweeps.

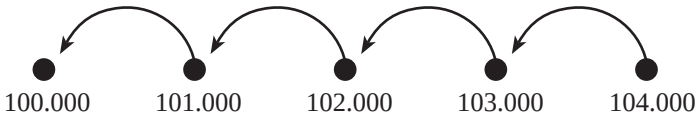
Sweeps are available in two types, Increasing or Decreasing. An increasing sweep allows the user to have the device to either start at some predetermined base frequency and increment sequentially while a decreasing sweep starts at a higher frequency and decrements towards the base frequency. For example, an increasing sweep of width 4 Hz, a base frequency of 100.000 Hz and a duration of 00:30 will produce the following frequencies in the following pattern:



all with the same duration of 30 seconds.

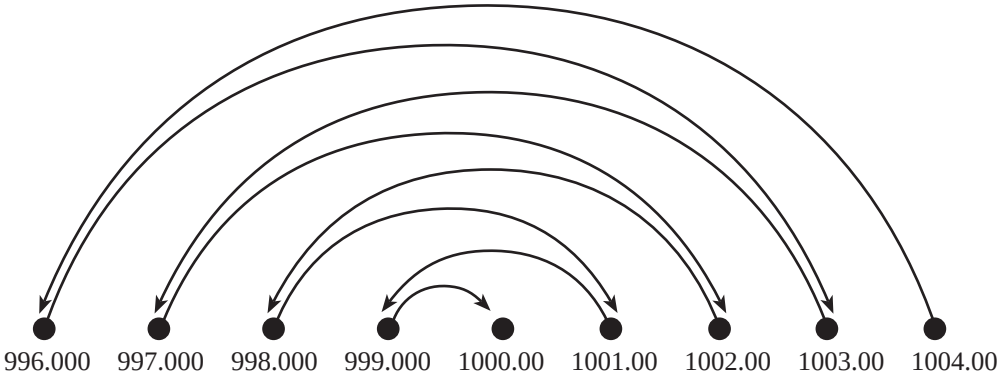
Note that FIVE frequencies are generated for a sweep with a width of 4 Hz.

If this were a decreasing sweep and all of the other choices the same, then the sequence would be:

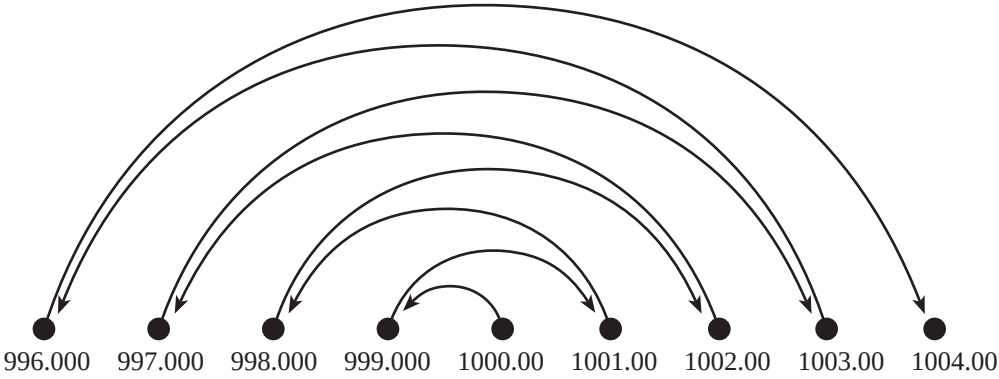


Note that the same frequencies are generated, merely the output order is reversed.

Spreads also come in two variations, contracting and expanding. As an example, consider a base frequency of 1000.00 Hz, a width for the wave packet of 4 Hz and a duration of 00:20. In this case, a contracting spread produces the frequency sequence:



and an expanding spread produces the frequency sequence:



all with the same duration of 20 seconds.

Note that NINE frequencies are generated for a spread with a width of 4 Hz and that the same frequencies are generated for both types of spreads, merely the output order is reversed.

It should be emphasized that even though wave packets produce sequences of frequencies, each wave packet only occupies one level of a bank.

By combining spreads, sweeps and conventional single frequency levels within one program bank the PG63-7550 gives the user a previously unattainable level of flexibility in their treatment protocol.

Hypothetical Case Study A

Patient A requires treatment at three different frequencies and it is decided to utilize each frequency with a different strategy. Suppose that the three frequencies are 1405 Hz, 3738 Hz and 15005 Hz.

1) The strategy for the 1405 Hz is chosen to be a rapidly contracting spread towards 1405 Hz then a sustained duration (01:30) at the 1405 Hz and finally a rapidly expanding spread away from 1405 Hz. (Level 01 to level 03 on the facing page).

2) For the second frequency, 3738 Hz, it is decided to just have a single frequency pulsed at 4 Hz for a duration of 2 minutes. (Level 04 on the facing page).

3) The third frequency will be attacked by using an increasing sweep starting at 15005 Hz, followed by a decreasing sweep towards 15005 Hz and finally a contracting spread to 15005 Hz with a pulsed of 8 Hz on the spread frequencies (Level 05 to level 07 on the facing page).

This protocol is implemented with the following 7 level program.

Level 01:	Wave packet	Spread	Contracting
	Base = 1405.00 Hz	Width = 5 Hz	Time = 00:05
	Pulsing Off		
Level 02:	Single Frequency		
	Base = 1405.00 Hz		Time = 01:30
	Pulsing Off		
Level 03:	Wave packet	Spread	Expanding
	Base = 1405.00 Hz	Width = 5 Hz	Time = 00:05
	Pulsing Off		
Level 04:	Single Frequency		
	Base = 3738.00 Hz		Time = 02:00
	Pulsing On	Rate = 4 Hz	
Level 05:	Wave packet	Sweep	Increasing
	Base = 15005.0 Hz	Width = 9 Hz	Time = 00:05
	Pulsing Off		
Level 06:	Wave packet	Sweep	Decreasing
	Base = 15005.0 Hz	Width = 9 Hz	Time = 00:05
	Pulsing Off		
Level 07:	Wave Packet	Spread	Contracting
	Base = 15005.0 Hz	Width = 9 Hz	Time = 00:05
	Pulsing On	Rate = 8 Hz	

This program produces the following frequencies...

Level 01:	1400 1410 1401 1409 1402 1408 1403 1407 1404 1406 1405
Level 02:	1405
Level 03:	1405 1404 1406 1403 1407 1402 1408 1401 1409 1400 1410
Level 04:	3738 pulsed at 4 Hz
Level 05:	15005 15006 15007 15008 15009 15010 15011 15012 15013 15014
Level 06:	15014 15013 15012 15011 15010 15009 15008 15007 15006 15005
Level 07:	14996 15014 14997 15013 14998 15012 14999 15011 15000 15010 15001 15009 15002 15008 15003 15007 15004 15006 15005 pulsed at 8 Hz

Hypothetical Case Study B

Researcher B is searching for frequencies that affect the growth of a particular sample that she was given. She is viewing the sample through a microscope and expects some effect in the range of 1000 Hz to 1200 Hz.

The strategy she chooses is to try every frequency between 1000 Hz and 1200 Hz each with a duration of 15 seconds. This can be done with a 20 level program by using sweeping wave packets. The program will have the added feature that if she observes an effect, the pulse generator can be paused by simply pressing one button. Once paused, she can look away from the microscope and determine the frequency by resuming the pulse generator.

This protocol is implemented with the following 20 level program.

Level 01:	Wave packet	Sweep	Expanding
	Base = 1000.00 Hz	Width = 9 Hz	Time = 00:15
	Pulsing Off		
Level 02:	Wave packet	Sweep	Expanding
	Base = 1010.00 Hz	Width = 9 Hz	Time = 00:15
	Pulsing Off		
Level 03:	Wave packet	Sweep	Expanding
	Base = 1020.00 Hz	Width = 9 Hz	Time = 00:15
	Pulsing Off		
.	.		
.	.		
.	.		
Level 19:	Wave packet	Sweep	Expanding
	Base = 1180.00 Hz	Width = 9 Hz	Time = 00:15
	Pulsing Off		
Level 20:	Wave packet	Sweep	Expanding
	Base = 1190.00 Hz	Width = 9 Hz	Time = 00:15
	Pulsing Off		

This program produces the following frequencies...

Level 01:	1000 1001 1002 1003 1004 1005 1006 1007 1008 1009
Level 02:	1010 1011 1012 1013 1014 1015 1016 1017 1018 1019
Level 03:	1020 1021 1022 1023 1024 1025 1026 1027 1028 1029
Level 04:	1030 1031 1032 1033 1034 1035 1036 1037 1038 1039
Level 05:	1040 1041 1042 1043 1044 1045 1046 1047 1048 1049
Level 06:	1050 1051 1052 1053 1054 1055 1056 1057 1058 1059
Level 07:	1060 1061 1062 1063 1064 1065 1066 1067 1068 1069
Level 08:	1070 1071 1072 1073 1074 1075 1076 1077 1078 1079
Level 09:	1080 1081 1082 1083 1084 1085 1086 1087 1088 1089
Level 10:	1090 1091 1092 1093 1094 1095 1096 1097 1098 1099
Level 11:	1100 1101 1102 1103 1104 1105 1106 1107 1108 1109
Level 12:	1110 1111 1112 1113 1114 1115 1116 1117 1118 1119
Level 13:	1120 1121 1122 1123 1124 1125 1126 1127 1128 1129
Level 14:	1130 1131 1132 1133 1134 1135 1136 1137 1138 1139
Level 15:	1140 1141 1142 1143 1144 1145 1146 1147 1148 1149
Level 16:	1150 1151 1152 1153 1154 1155 1156 1157 1158 1159
Level 17:	1160 1161 1162 1163 1164 1165 1166 1167 1168 1169
Level 18:	1170 1171 1172 1173 1174 1175 1176 1177 1178 1179
Level 19:	1180 1181 1182 1183 1184 1185 1186 1187 1188 1189
Level 20:	1190 1191 1192 1193 1194 1195 1196 1197 1198 1199

Lesson 1: Selecting a Mode

When the pulse generator is powered up, the user is greeted with the statement:

```
********************
* Semoia PG63-7550 *
* Pulse Generator  *
********************
```

This indicates that this version of the pulse generator will allow any frequency consisting of 6 digits with up to 3 decimal places. In addition, the device contains 25 individual banks, each of which contains 50 programmable locations or levels. This means that there is a maximum capacity of 1250 distinct frequencies, each having the capability of being a single frequency or a wave packet, and each having the option of being pulsed from 1 to 9 Hz or not.

After a couple of seconds the display will cycle through the following screens:

```
Enter choice:
1: Run bank
2: Program bank
3: Enter manual mode
```

```
Enter choice:
4: Erase one bank
5: Erase all banks
6: Communication
```

These are the five modes of operation.

Lesson 2: Running a Program

If your SEMOIA PG63-7550 did not arrive preprogrammed then jump to lesson 3 to learn how to program in a new treatment protocol.

To enter RUN mode hit '1' at the main menu described in lesson 1. At this point you will be prompted to enter the bank number (1-75) to run. You must enter a valid bank number since the device will not accept an invalid bank number. If a wrong bank is chosen then just keep entering values until the desired bank number appears. For example if you wished to run the program in bank 15 the display would read as follows:

```
Run mode
Please enter data
Hit * to cancel
Select bank#: 15
```

Once the desired bank number has been entered, the program in that bank is started by hitting the '#' key. The bank entry can be aborted and the user returned to the main choice menu by hitting the '*' key. If an invalid bank number is entered, the user is informed of this with the message 'Out of range' and then allowed to re-enter the bank number.

Next the user is allowed to choose the starting and stopping levels within a bank, There is no restriction on how these are chosen except that they must be valid levels. For example if the starting level is 5 and the stopping level is 39 then levels 5 through 39 inclusive are run. If the starting level is 39 and the stopping level is 5 then levels 39 through 50 are run at which point the levels is rolled over so that levels 1 through 5 are completed. To enter the starting and stopping levels the user is presented with the following screens:

```
Run mode
Please enter data
Hit * to cancel
Start Level:  05
```

and

```
Run mode
Please enter data
Hit * to cancel
Stop  Level:  39
```

Once the user has chosen and entered a set of valid bank and level numbers, they are informed as to the bank selected. For the example of bank 15 above the display would show:

```
Run mode
Please enter data
Hit * to cancel
Bank 15 selected
```

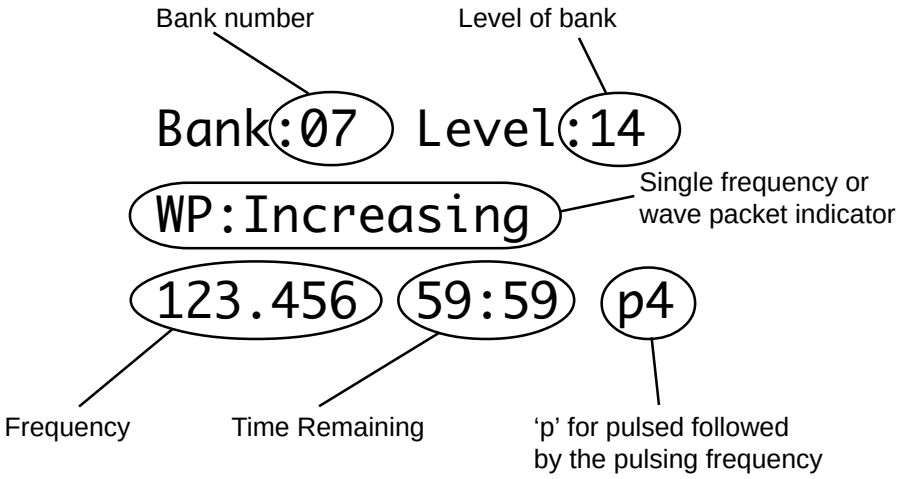
This message is displayed for a couple of seconds to give the operator time to verify that they have selected the correct bank and to give them a chance to abort the program if an incorrect bank has been chosen.

A running program can be paused at any time by hitting the '' key. Hitting any other key while the selected bank is running WILL NOT HAVE ANY EFFECT. If the program is paused, the user enters a standby mode. In standby mode the pulse generator's program is suspended and the operator is given the option of either returning to the program or aborting. Hitting the '*' key a second time aborts the program and they are returned to the main choice menu described in lesson 1. Hitting the '#' key when paused returns the operator to the program at the point it was paused.*

During the running of a bank, the display informs the user of the current program status. Specifically, the user is told:

i) the bank number being run,
ii) the level within the bank, and
iii) if this is a single frequency or a wave packet and if a wave packet, the type of wave packet.
iv) the actual frequency being produced,
v) the amount of time remaining for the frequency,
vi) if the output is pulsed or continuous and, if pulsed, the frequency of the pulsing,

These values are displayed in the above order from left to right on the display. As an example, suppose the user has chosen bank 7 and the device is at level 14 in this bank. As well, assume that for this level of bank 7 the frequency is 123.456 Hz, pulsed at 4 Hz, and it is part of an increasing sweep wave packet. In this case the last three lines of the display would read:



The time of 59:59 is the current time remaining and would, of course, be decrementing as the program runs.

Note that due to display limitations, the following conventions are used for displaying the wave packet type:

i) Sweep with increasing frequency:
WP:Increasing
ii) Sweep with decreasing frequency:
WP:Decreasing
iii) Spread expanding from a central frequency:
WP:Expanding
vi) Spread contracting to a central frequency:
WP:Contracting

As a second example suppose that we are in level 9 of bank 15 and at this level the frequency is a single frequency, unpulsed, 1000 Hz for 30 seconds. In this case the display would read:

```
Run mode
Bank:15 Level:09
Single frequency
1000.00 00:30
```

Note that the 'p' denoting pulsed is now blank.

At the end of the running sequence, the pulse generator stops producing pulses and returns once again to the main menu screen.

Lesson 3: Programming a Protocol

Before entering a new program into a bank, the user should ensure that the bank is erased otherwise the program levels beyond those being entered may contain data from a previous program. By first erasing the bank, the user can exit programming mode immediately after entering the last level of the program. That is, the remaining levels will be blank.

Hit '2' to enter PROGRAM mode then enter the bank number to program. At this point you will be prompted to enter the bank number (1-75) to program. The user must enter a valid bank number since the device will not accept an invalid bank number. If the wrong bank is chosen then just keep entering values until the desired bank number appears. For example if you wished to program bank 12 the display would read as follows:

```
Programming mode
Please enter data
Hit * to cancel
Select bank#: 12
```

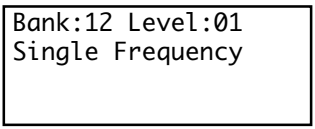
Once the bank number has been chosen, the user should press the '#' key to start the programming routines. The bank entry can be aborted and the user returned to the main choice menu by hitting the '*' key. If an invalid bank number is entered, the user is informed of this with the message 'Out of range' and then allowed to re-enter a bank number.

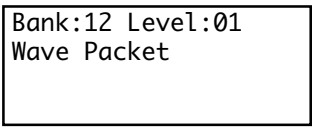
The user can leave the programming mode at any time by hitting the '*' key. The only exception to this is if the user is entering a frequency and they are not at the first position of the frequency. *In this situation **only**, the '*' key is interpreted as a decimal point.* When the user exits the programming mode, the message 'Exiting program' is displayed after which they are returned to the main choice menu.

There are a number of choices for each level of the program being entered. The first choice is the type of frequency the user wishes to run. There are two choices, single frequency and wave packet. Single frequency is the default and tells the pulse generator to produce a fixed frequency without variation while a wave packet is a structured signal that is related to a base frequency. For more information on wave packets refer to the wave packet section of this tutorial.

3.1 Programming: Frequency type

Returning to the actual programming of the device, the first choice is the frequency type. If bank 12 was selected as above, the display will show one of the two following screens:





depending on the current type already in this level. If the bank has been erased prior to programming the default of 'Single frequency' will be displayed. The current bank and level within the bank are displayed on the second line. Entering '1' will choose a wave packet and entering a '0' will choose a single frequency.
As with all of the programming choices,

> *TO ENTER THE CHOICE INTO MEMORY THE '#' KEY MUST BE HIT.*

This will move the user to the next step in the programming routine. In addition, hitting the '*' allows the user to leave the programming mode.

If a single frequency is chosen jump to step 3.4 otherwise proceed to step 3.2.

3.2 Programming: Packet choice

If a wave packet is chosen the user is asked to choose the type (sweep or spread) and the method (increasing/decreasing or expanding/contracting). The display will read either

```
Bank:12 Level:01
Wave Packet
Sweep mode
```

or

```
Bank:12 Level:01
Wave Packet
Spread mode
```

depending upon the current type already in this level, the pre-erased default being ‘Sweep mode’. Again, the current bank and level being programmed are displayed on the second line. Entering ‘1’ will choose a spread wave packet while entering ‘0’ will choose a sweep wave packet. To enter the characteristic into memory, hit ‘#’. To leave the programming mode, hit ‘*’.

3.3 Programming: Packet direction

If a wave packet has been chosen, after the sweep/spread choice is made, a method choice has to be made. There are two possibilities.

Case 1) If the user has chosen a sweep mode wave packet they are then presented with

```
Bank:12 Level:01
Wave Packet
Sweep mode
Increasing Freq
```

or

```
Bank:12 Level:01
Wave Packet
Sweep mode
Decreasing Freq
```

depending upon the current type already in this level. Entering ‘1’ will choose a decreasing sweep wave packet while entering ‘0’ will choose an increasing sweep wave packet. To enter the characteristic into memory, hit ‘#’. To leave programming mode, hit ‘*’.

Case 2) If the user has chosen a spread mode wave packet they are then presented with

```
Bank:12 Level:01
Wave Packet
Sweep mode
Expanding
```

or

```
Bank:12 Level:01
Wave Packet
Sweep mode
Contracting
```

depending upon the current type already in this level. Entering ‘1’ will choose a contracting spread wave packet while entering ‘0’ will choose an expanding spread wave packet. To enter the characteristic into memory, hit ‘#’. To leave programming mode, hit ‘*’.

3.4 Programming: Frequency

Independent of whether or not a wave packet was chosen (reflected in the second line), the user is next prompted for the frequency. Recall that if a wave packet has been chosen then this is just the base frequency for the packet. The user is presented with the current contents of the level with a cursor flashing at the first digit of the frequency. For example, if a frequency of 1234.56 Hz was in the level, the display would read:

```
Bank:12 Level:01
WP:Expanding
Base Frequency
1234.56
```

The frequency can be changed by entering digits or the ‘*’ for a decimal point. Once the decimal has been entered, it cannot be entered again until the cursor wraps around to the beginning of the frequency. If an error is made while entering the frequency, just continue to enter digits until the cursor wraps around to the beginning of the number and reenter the value. In this case, the previous value is cleared from the display. Since the ‘*’ key is used for decimal point entry, this portion of the program mode can only be aborted by hitting the ‘*’ in the first digit of the frequency. There-

fore, if for example, a frequency of 0.123 Hz is desired, the user has to enter the ‘0’ before the decimal point. If the user enters a frequency of 1.23456 Hz then only the first three decimal points to the right of the decimal point are retained in memory. That is, the number will be truncated to 1.234 Hz.

One final point concerning the frequency entry is that, for most cases, leading zeros need not be entered. In fact, the operator is encouraged not to enter leading zeros. For example, suppose that the user wants 1000 Hz. If this is entered as 001000 then the frequency will be accurate to within one half of one cycle. Alternatively, if this is entered as 1000, the device will save this as 1000.00 and the frequency will be accurate to within five-thousandths of a cycle.
If a single frequency is chosen jump to step 3.6 otherwise proceed to step 3.5.

3.5 Programming: Packet width

If a wave packet is being programmed, the next item to be entered is the width of the packet. In this case the operator is presented with the display

```
Bank:12 Level:01
WP:Expanding
Wave Packet Width
0 Hz
```

if no width has previously been entered. The width is a measure of the amount of deviation that the wave packet makes from the base frequency and it must be non-zero. If a width of zero is required, then the frequency should be entered as a single frequency and not as a wave packet. For this reason, a choice of zero for the width is considered invalid and the user will be presented with the message ‘Out of range’. To enter the width into memory, hit ‘#’. To leave programming mode, hit ‘*’.

3.6 Programming: Duration

The next choice is the duration of the frequency. For a wave packet, this duration is the amount of time for each element of the packet. The time is in minutes and seconds and is displayed in the form

```
Bank:12 Level:01
WP:Expanding
Time for each freq
59:59
```

Note that the first and third digits of the time must be less than 6 so that if one wanted to have a duration of 100 seconds, this would be entered as 1 minute and 40 seconds (01:40). The time can be continually updated until the user hits the '#' to enter the duration into memory and cycle to the next step in the program, or the '*' to leave programming mode.

3.7 Programming: Pulsed

The next choice is whether or not you wish the contents of the level to be pulsed. The display will either read:

```
Bank:12 Level:01
WP:Expanding
Pulsing Off
```

or

```
Bank:12 Level:01
WP:Expanding
     Pulsing On
```

depending upon the current type already in this level. Entering '1' will make this a pulsing level and entering '0' will make the level unpulsed. To enter the characteristic into memory, hit '#'. To leave programming mode, hit '*'.

If the user selects that the level is to be pulsed, one additional choice needs to be made. Namely, the frequency at which the pulsing is to occur. The operator is presented with the display

```
Bank:12 Level:01
WP:Expanding
Pulsing On
Pulse rate: 0 Hz
```

if no frequency has been previously entered. If a pulse frequency of zero is required, then the frequency should be chosen as non pulsing. For this reason, a choice of zero for the pulsing rate is considered invalid and the user will be presented with the message ‘Out of range’. Any frequency from 1 Hz to 9 Hz may be chosen. To enter the rate into memory, hit ‘#’. To leave programming mode, hit ‘*’.

This completes the programming of one of the levels for the selected bank. For the SEMOIA model PG63-7550 there are 50 levels for each of the 75 banks. Once a level has been completed, the programming mode moves to the next level in the selected bank. If the operator has just finished programming the 50th level of a bank, the user is prompted for another bank to enter for programming. Entering ‘*’ at this point will return the user to the main choice menu.

3.8 Programming: Backing up

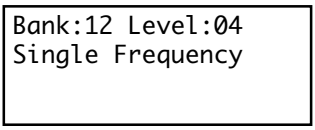
As an example, suppose that you are entering a program into bank 12 and that you are currently at level 05. If you wish to back up a level in this program, first hit the ‘*’ key. In this case, the user is presented with the following screen:

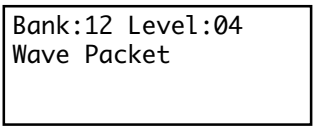
```
Bank:12 Level:05

Hit * to EXIT
# to STEP BACK
```

The second line of the display depends on exactly where in the programming sequence the backing up was invoked.

Case 1) Hitting the ‘#’ key will back the user up to the previous level in a program. In this case the screen would show one of the following screens:





depending on the current type already in this level. That is, the beginning of the previous level.

Case 2) Hitting the ‘*’ key leaves programming mode as before.

Lesson 4: Manual Entry

Hit ‘3’ to enter MANUAL entry. The primary uses for the manual entry are as a calibration mode or for frequency evaluation. This mode allows the user to enter any single frequency with up to three digits to the right of the decimal. The entry phase may be aborted by hitting the ‘*’ key at the first digit of the frequency. Upon entry, the user is presented with the following display:

```
Manual mode
000000. Hz

Enter frequency
```

The next choice is whether or not you wish the frequency to be pulsed. For example if the user entered 2500 Hz then the display will read:

```
Manual mode
2500.00 Hz
Pulsing Off
```

Entering ‘1’ will make this a pulsing frequency and entering ‘0’ will make the frequency unpulsed. To enter the characteristic into memory, hit ‘#’. To leave manual mode, hit ‘*’.

If the user selects that the frequency is to be pulsed, one additional choice needs to be made. Namely, the frequency at which the pulsing is to occur. The operator is presented with the display

```
Manual mode
2500.00 Hz
Pulse rate: 0 Hz
```

If a pulse frequency of zero is required, then the frequency should be chosen as non pulsing. For this reason, a choice of zero for the pulsing rate is considered invalid and the user will be presented with the message 'Out of range'. Any frequency from 1 Hz to 9 Hz may be chosen. To enter the rate into memory, hit '#'. To leave manual mode, hit '*'.

The frequency entered is not generated until the user presses the '#' key. Assuming that a pulsing frequency of 2 Hz was entered the display would look as follows:

```
Manual mode
2500.00 Hz
Pulse rate: 2 Hz
Running
```

The pulse generator will continue to produce this frequency until the user hits the '*' to enter the standby mode or the '#' to enter a new frequency. If the user enters a '#', they are prompted to enter a new frequency. The previously entered frequency continues to run in the background until the new frequency is entered with the '#' key. This is important to remember since if for example, a frequency of 2500 Hz is being evaluated and you wish to switch to 2000 Hz,

you MUST hit the '#' key to start the new frequency.

As well, one must be aware that the position of the cursor becomes the position of the decimal once the '#' key has been pressed to enter the value. The display will reflect this.

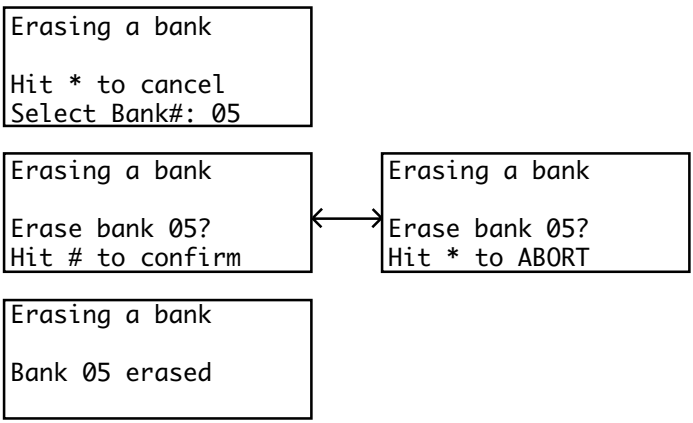
Aborting the MANUAL entry by pressing the '*' key when at either the first position of the frequency entry routine or when in the standby mode will return the user to the main choice menu.

Lesson 5: Erasing a Single Bank

Hit ‘4’ to enter ERASE BANK mode and then enter the bank number to erase. The user must enter a valid bank number. If a wrong bank is chosen then just keep entering values until the desired bank number appears. Once the desired bank number has been entered, the erasure is started by hitting the ‘#’ key. The bank entry can be aborted and the user returned to the main choice menu by hitting the ‘*’ key. If an invalid bank number is entered, the user is informed of this with the message ‘Out of range’ and then allowed to reenter a bank number.

Once the user has chosen a valid bank number (1-75), they are informed of the bank selected. This is to give the user a chance to abort the erasing process if an incorrect bank number has been entered. The user is asked to confirm the erasing action by hitting the ‘#’ key. If the user hits ‘#’ then there will be a slight delay while the bank is erased during which the display shows which bank is being erased. If the user hits any other key, ‘0-9’ or ‘*’, then the erasure routine will be aborted, leaving the stored locations unaffected and returning the user to the main choice menu.

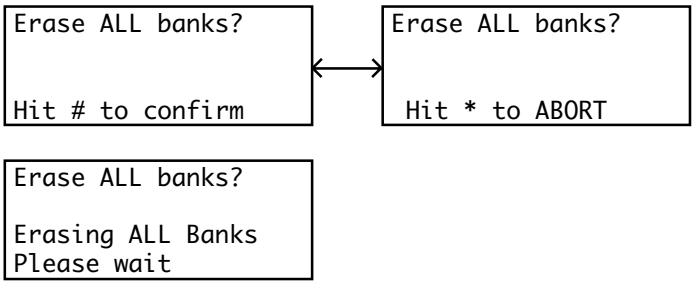
An example set of screens follows where the user is erasing bank 5:



Lesson 6: Erasing the Entire Memory

Hit ‘5’ to enter the ERASE MEMORY mode. This will erase all of the locations of all of the banks. The user is asked to confirm the erasing action by hitting the ‘#’ key. If the user hits ‘#’ then there will be a slight delay while all of the memory locations are being erased. If the user hits any other key, ‘0-9’ or ‘*’, then the erasure routine will be aborted, leaving the stored locations unaffected and returning the user to the main choice menu.

An example set of screens follows:



Lesson 7: Communications Mode

Hit ‘6’ to enter the COMMUNICATIONS mode. When running the Semoia Systems© PG Comm application the user can quickly program each of the 75 banks through with either a Mac or PC. All that is required is a serial port. If you only have USB then a USB to Serial adapter must be used.

Appendix: Sources of Electro-magnetic Interference

Situations to be avoided when programming your SEMOIA PG63-7550 device

Although every effort has been made to ensure that your SEMOIA PG63-7550 is immune to external electromagnetic interference, the design team has compiled the following list of possible sources of electromagnetic interference. This should aid the consumer in identifying those situations and activities that should be avoided to eliminate any external effects when programming the device.

Radio frequency interference:

- High power radio transmitter nearby (broadcast, military, amateur, etc.)
- Satellite receiver/transmitter
- Wireless communication devices (including cell phones)

Static/DC magnetic fields:

- Unshielded/inadequately shielded multimedia speakers
- Stereo loudspeakers
- MRI scanner next door

Transient magnetic fields:

- Kid's or adults playing with magnets
- Electromagnetic pulse (EMP) from a nearby lightning strike
- Changing the location or orientation of a monitor without degaussing

AC magnetic fields (usually at power-line frequency)

- AC or DC wall adapters/transformers
- Fluorescent lamps (magnetic ballast)
- Laser printer and other peripherals
- TV, VCR, DVD, CDR or other A/V equipment
- Additional computer monitor(s) too close
- Large appliances including furnace, A/C, refrigerator, microwave
- Wiring in walls (unbalanced load/shared neutral)
- Wiring in electronic-service panel
- Outside wiring and power distribution equipment

Power-line transmitted interference

Lack of a proper earth/ground
Lighting on dimmers (incandescent/halogen lamps/fixtures)
Motor-speed controls (ceiling fans)
Fluorescent lamps (all types)
Vacuum cleaners/shop equipment/other brush-type motors
Equipment using switch-mode power supplies
Heavy industry down the street