

**PROPRIETARY INFORMATION OF  
POLE/ZERO CORPORATION**



**DEMO FILTER CONTROLLER USER MANUAL**

UNLESS OTHERWISE  
SPECIFIED,  
DIMENSIONS ARE IN  
INCHES

**TOLERANCES:**

DECIMAL	ANGULAR
.X ± .1	X ± 10°
.XX ± .01	.X ± 5°
.XXX ± .005	

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SCALE: NONE	UNIT WT: -	SHEET: 1 OF 16	

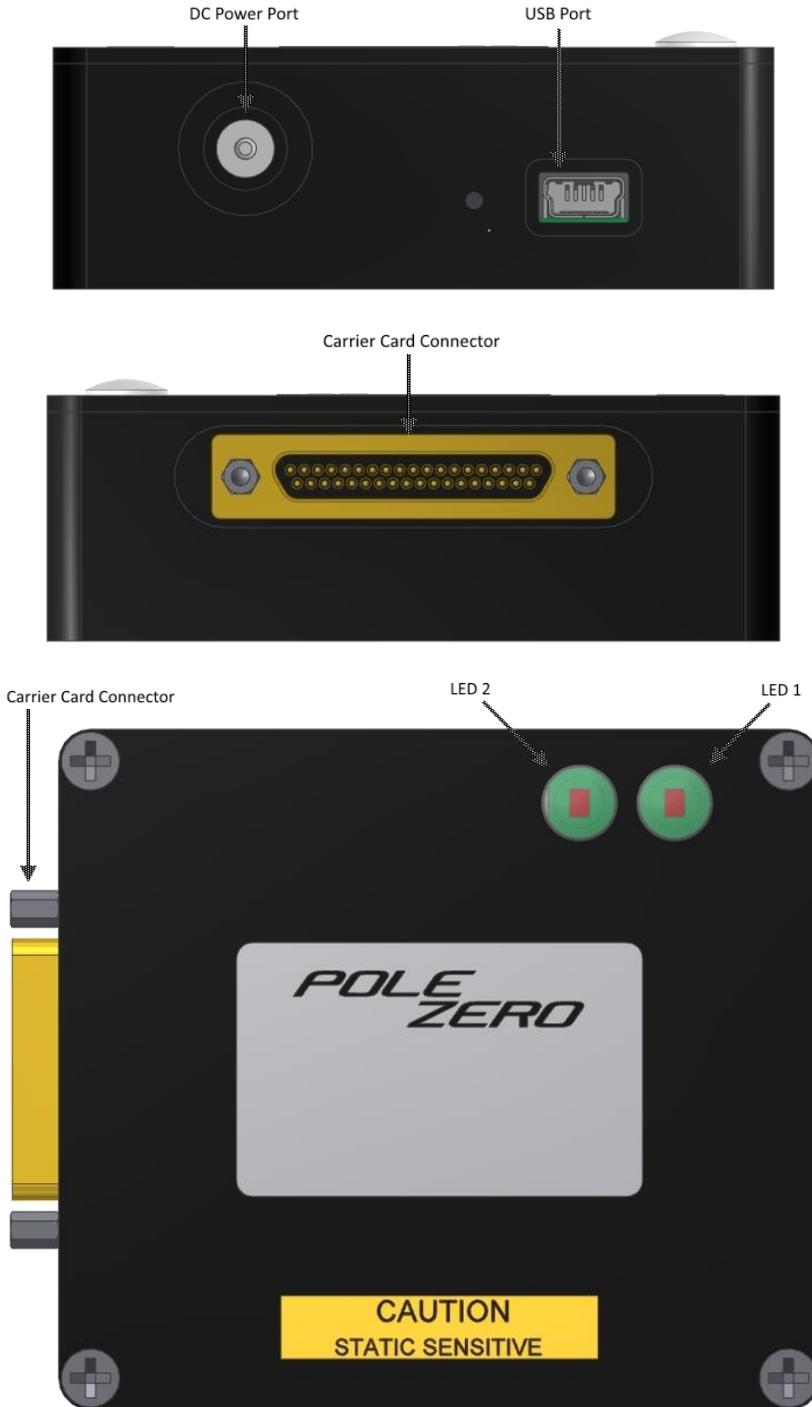
**Contents**

1.0 Demo Filter Controller Overview .....3  
 1.1 Demo Filter Controller Features .....3  
 1.2 Required Accessories.....4  
 2.0 Computer Requirements .....5  
 3.0 Connecting and Disconnecting the Demo Filter Controller.....6  
 3.1 Connecting the Demo Filter Controller.....6  
 3.2 Disconnecting the Demo Filter Controller .....6  
 4.0 Using the Customer Demo Controller Software .....7  
 4.1 Connecting to serial port.....7  
 4.2 Filter Characteristics .....9  
 4.3 Selecting the Tuning Interface .....11  
 4.4 Selecting the Tuning Mode .....12  
 5.0 Tips and Troubleshooting.....15  
 5.1 LED 1 is momentarily blinking orange .....15  
 5.2 LED 2 is rapidly blinking red .....15  
 5.3 The Demo Filter Controller will not turn on .....15  
 5.4 The Demo Filter Controller does not show up in the Communication section of the Customer Demo Controller Software.....15  
 5.5 The Customer Demo Controller Software reports an error. ....15  
 6.0 Safety .....16  
 7.0 Learn More.....16  
 8.0 Contact and support.....16

<b>PROPRIETARY INFORMATION OF THE POLE/ZERO                  CORPORATIONS, SEE SHEET ONE FOR POSSIBLE                  ADDITIONAL RESTRICTIONS.</b>	SIZE <b>A</b>	CAGE CODE <b>0U5W0</b>	DOCUMENT NUMBER <b>1071897</b>	REV <b>1</b>
	SCALE: NONE	UNIT WT: -	SHEET: 2 OF 16	

# 1.0 DEMO FILTER CONTROLLER OVERVIEW

## 1.1 Demo Filter Controller Features



PROPRIETARY INFORMATION OF THE POLE/ZERO CORPORATIONS, SEE SHEET ONE FOR POSSIBLE ADDITIONAL RESTRICTIONS.

SIZE  
**A**

CAGE CODE  
**0U5W0**

DOCUMENT NUMBER  
**1071897**

REV  
**1**

SCALE:  
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UNIT WT:  
-

SHEET:  
3 OF 16

1.2 Required Accessories

1.2.1 Mini USB 2.0



1.2.2 Carrier Card Cable (107404)



1.2.3 AC to DC Adapter



1.2.4 Carrier Card with Test Filter (Not Pictured)

<b>PROPRIETARY INFORMATION OF THE POLE/ZERO CORPORATIONS, SEE SHEET ONE FOR POSSIBLE ADDITIONAL RESTRICTIONS.</b>	SIZE <b>A</b>	CAGE CODE <b>0U5W0</b>	DOCUMENT NUMBER <b>1071897</b>	REV <b>1</b>
	SCALE: NONE	UNIT WT: -	SHEET: 4 OF 16	

## 2.0 COMPUTER REQUIREMENTS

- A computer with 7, 8, 8.1 running 32-bit or 64-bit
  - Windows XP and Vista are not officially supported
- A USB 1.1/2/3 port
- The .NET framework 4.0
- A monitor with at resolution of at least 800x600 (SVGA)
- The latest FTDI VCP drivers found here: <http://www.ftdichip.com/Drivers/VCP.htm>

<b>PROPRIETARY INFORMATION OF THE POLE/ZERO CORPORATIONS, SEE SHEET ONE FOR POSSIBLE ADDITIONAL RESTRICTIONS.</b>	SIZE <b>A</b>	CAGE CODE <b>0U5W0</b>	DOCUMENT NUMBER <b>1071897</b>	REV <b>1</b>
	SCALE: NONE	UNIT WT: -	SHEET: 5 OF 16	

### 3.0 CONNECTING AND DISCONNECTING THE DEMO FILTER CONTROLLER

You must connect the Demo Filter Controller to your computer in order to tune and read information about a test filter.

#### 3.1 Connecting the Demo Filter Controller

3.1.1 Plug the carrier card into the carrier card connector of the Demo Filter Controller.

**Note:** You must plug the carrier card into the Demo Filter Controller before applying power to the Demo Filter Controller. If you do not plug the carrier card into the Demo Filter Controller before plugging in power, the Demo Filter Controller will enter a fault state indicated by LED 2 rapidly blinking red. The Customer Demo Controller Software is also capable of resetting the fault state.

3.1.2 Plug one end of the Mini USB 2.0 cable into a USB port on your computer, and then connect the other end to the Demo Filter Controller. LED 1 may blink orange twice rapidly; this behavior is normal.

3.1.3 Plug the AC to DC Adapter into an electrical outlet and the barrel end of the adapter into the DC power port of the Demo Filter Controller. LED 2 should slowly pulse green.

#### 3.2 Disconnecting the Demo Filter Controller

It is important to disconnect the Carrier Card from the Demo Filter Controller only while the Demo Filter Controller is powered off. If the carrier card is disconnected while the Demo Filter Controller is still powered, LED 2 will begin rapidly blinking red to indicate that the Demo Filter Controller is faulted. You cannot control a filter while the Demo Filter Controller is faulted. You must unplug and then re-plug the AC to DC Adapter to reset the Demo Filter Controller.

3.2.1 Turn off the filter if it is powered on.

3.2.2 Unplug the AC to DC Adapter.

3.2.3 Unplug the Mini USB 2.0 cable.

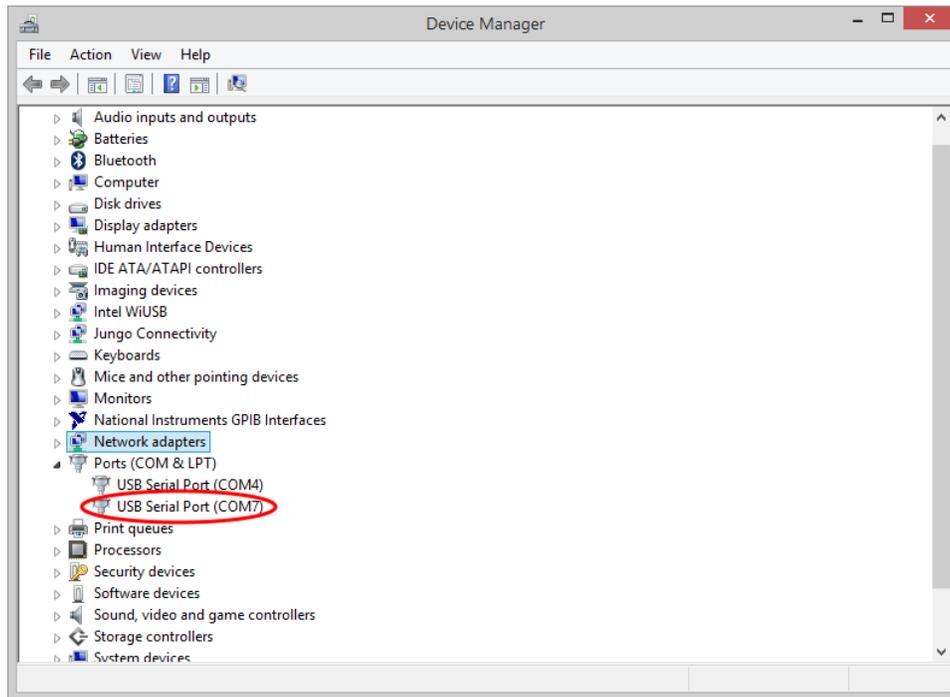
3.2.4 Unplug the Carrier Card.

## 4.0 USING THE CUSTOMER DEMO CONTROLLER SOFTWARE

The Customer Demo Controller Software is the software application you use to control the Demo Filter Controller. The Customer Demo Controller Software can read identification information about the filter, turn the test filter off and on, select different tuning interfaces for the filter, and tune the filter. This guide explains how to use the Customer Demo Controller Software to communicate with a test filter.

### 4.1 Connecting to serial port

The Demo Filter Controller shows up to the PC as a virtual COM port. If this is the first time you have connected the Demo Filter Controller to your PC, you can locate the Demo Filter Controller in the Device Manager usually by looking at the last COM entry in the “Ports (COM & LPT)” category. If you are unsure which COM port is being used by the Demo Filter Controller, unplug the USB cable from the Demo Filter Controller, reconnect the USB cable to the Demo Filter Controller and make a note of which device appears in the “Ports (COM & LPT)” category.



**PROPRIETARY INFORMATION OF THE POLE/ZERO  
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ADDITIONAL RESTRICTIONS.**

SIZE  
**A**

CAGE CODE  
**0U5W0**

DOCUMENT NUMBER  
**1071897**

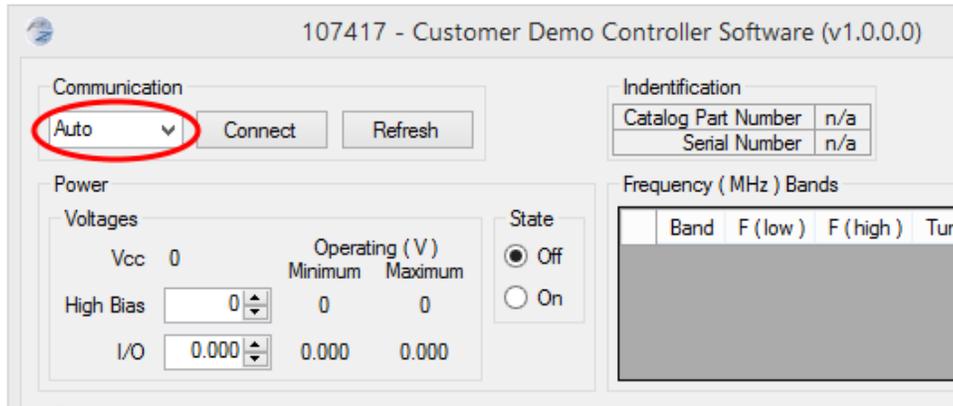
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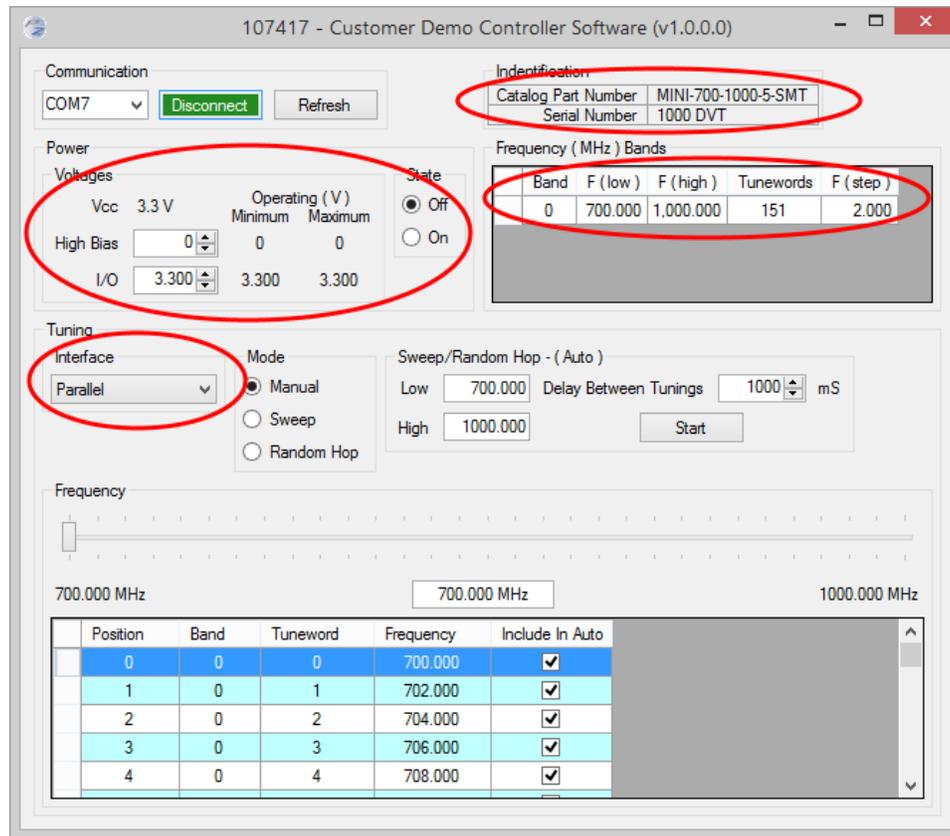
SHEET:  
7 OF 16

- 4.1.1 Open the Customer Demo Controller Software.
- 4.1.2 By default the Communication port will be selected as Auto.



- 4.1.3 In Auto Connection mode the Customer Demo Controller Software will automatically connect to the first Demo Filter Controller it finds connected to the PC. If you would like to select a specific port to connect to or there is more than one Demo Filter Controller connected to the PC, use the dropdown to select which controller you would like to connect to.
- 4.1.4 Press the Connect button to connect to the Demo Filter Controller.
- 4.1.5 After connecting to the filter, the Customer Demo Controller Software will read the identification information, frequency information, operating power supply characteristics, and compatible tuning interfaces from the filter assembly.

<b>PROPRIETARY INFORMATION OF THE POLE/ZERO CORPORATIONS, SEE SHEET ONE FOR POSSIBLE ADDITIONAL RESTRICTIONS.</b>	SIZE <b>A</b>	CAGE CODE <b>0U5W0</b>	DOCUMENT NUMBER <b>1071897</b>	REV <b>1</b>
	SCALE: NONE	UNIT WT: -	SHEET: 8 OF 16	



## 4.2 Filter Characteristics

Once connected to the test filter, the Customer Demo Controller Software will display the catalog part number, serial number, frequency band ranges, power supply requirements, and capable tuning interfaces that the test filter is capable of.

### 4.2.1 Frequency Bands

Band	F (low )	F (high )	Tunewords	F (step )
0	700.000	1,000.000	151	2.000

- 4.2.1.1 The “Band” column is an incremental identification number of a supported band of the filter.
- 4.2.1.2 The “F (low)” column shows the lowest supported frequency in a particular band.
- 4.2.1.3 The “F (high)” column shows the highest supported frequency in a particular band.
- 4.2.1.4 The “Tunewords” column shows how many tune words exist in a given band.
- 4.2.1.5 The “F (step)” column shows the frequency spacing between subsequent tune words in the selected band.

## 4.2.2 Power

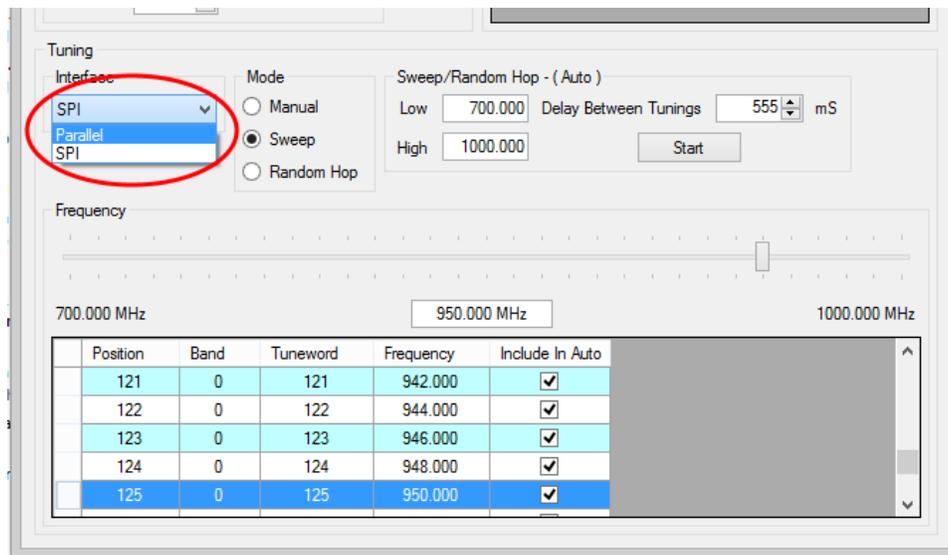
Power				State	
Voltages					
Vcc	3.3 V	Operating (V)		<input checked="" type="radio"/>	Off
		Minimum	Maximum	<input type="radio"/>	On
High Bias	<input type="text" value="0"/>	0	0		
I/O	<input type="text" value="3.300"/>	3.300	3.300		

- 4.2.2.1 Vcc is the main power supply voltage for the filter. This option cannot be changed.
- 4.2.2.2 High Bias is the high voltage power supply used for the test filter. If the High Bias supply is internal to the filter, the minimum and maximum operating High Bias voltages values will be displayed as 0. If the minimum and maximum High Bias operating voltages are both non-zero and are the same value, you cannot change the High Bias voltage. If the minimum and maximum High Bias operating voltages are non-zero and are not the same, the High Bias voltage can be adjusted using the up and down arrows next to the reported High Bias value. The High Bias values can only be adjusted when the filter is in the off state.
- 4.2.2.3 I/O is the I/O voltage used for the test filter. If the minimum and maximum operating I/O voltages values are the same value, you cannot change the I/O voltage. If the minimum and maximum operating voltages are not the same value, the I/O voltage can be adjusted using the up and down arrows next to the reported I/O voltage value. The I/O voltage values can only be adjusted when the filter is in the off state.
- 4.2.2.4 The state of the filter can be switched between off and on. When you set the filter state to off, the Vcc, High Bias, and I/O voltages are turned off and the filter is not capable of tuning. When you set the filter state to on, the Vcc, High Bias, and I/O voltages are turned on and the filter can be tuned and characterized.

### 4.3 Selecting the Tuning Interface

4.3.1 Use the interface drop down to get a list of all the tuning interfaces that the carrier card/test filter is capable of.

4.3.2 Select the interface you would like to use by clicking on that interface in the drop down.

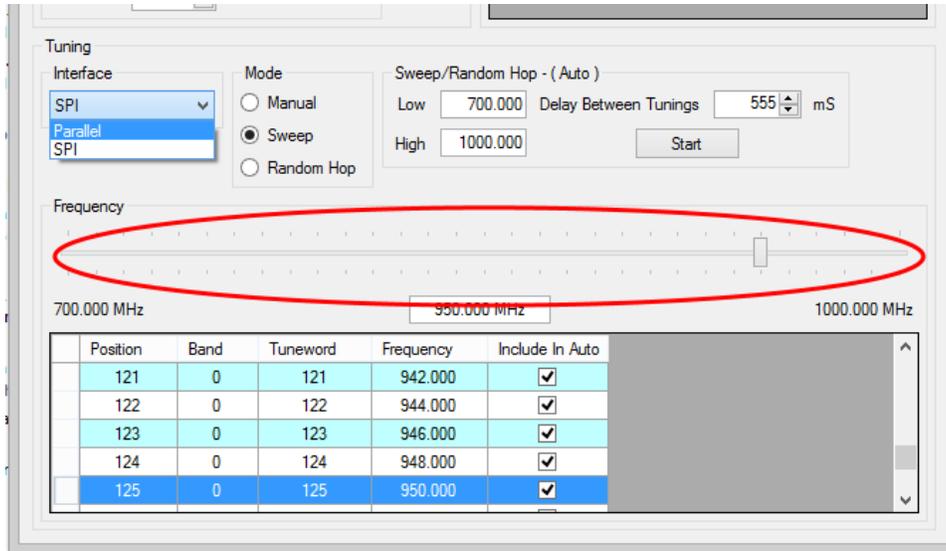


4.3.3 You should not select the tuning interface while the filter is in the on state. If you select the tuning interface while the filter is in the on state, the filter will automatically be turned off. You must manually turn the filter back on after you select the new tuning interface.

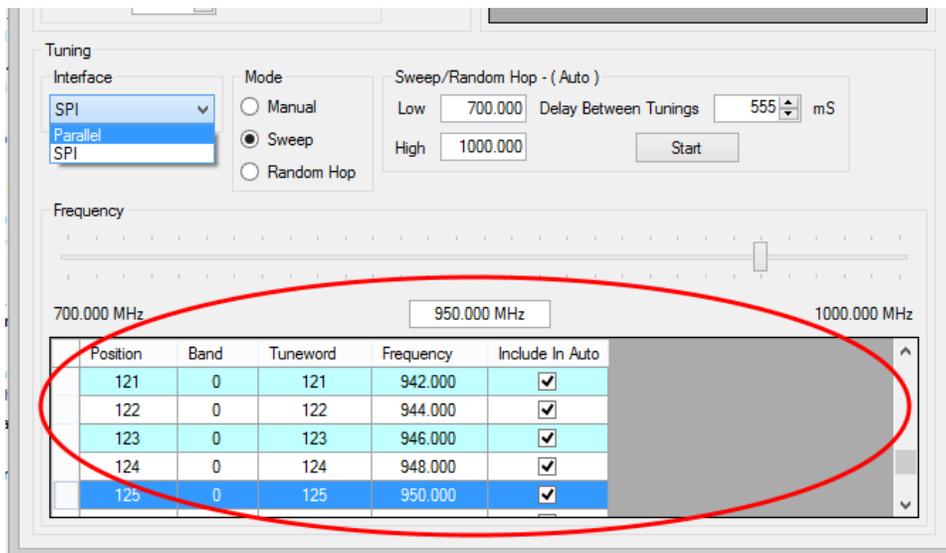
## 4.4 Selecting the Tuning Mode

### 4.4.1 Manual

Manual tuning mode allows you to select which frequency the test filter should tune to. You can select the frequency by using the frequency slider



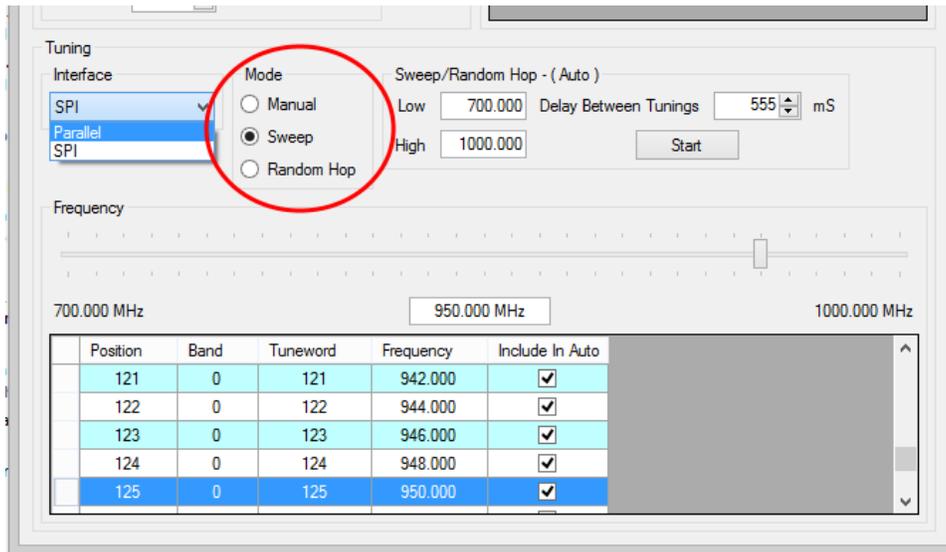
or by selecting the frequency from the frequency table. You also have the ability to type the frequency into the text box above the frequency table. The frequency will be rounded to the closest supported frequency of the filter.



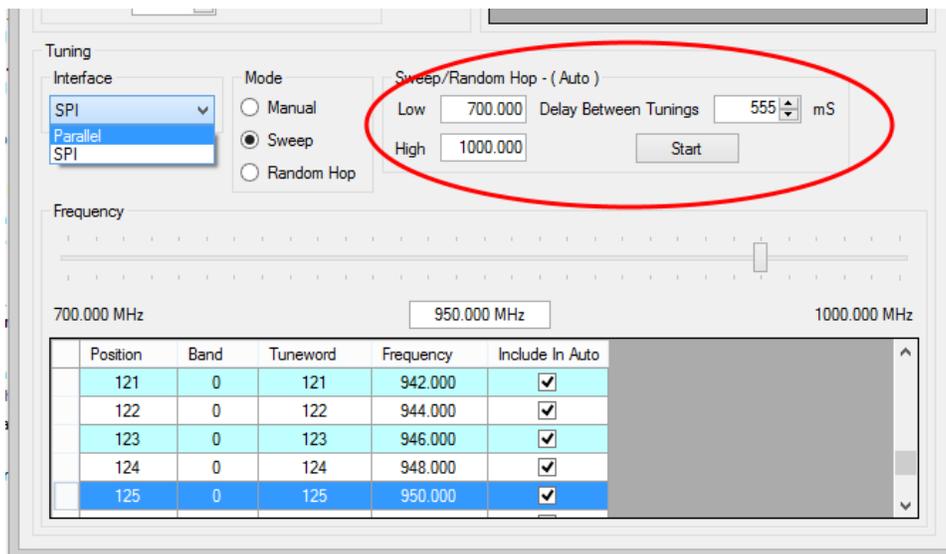
### 4.4.2 Sweep

Sweep tuning mode will tune the filter from the lowest frequency to the highest frequency, incrementing one tune position at a time. After reaching the highest frequency, the filter will decrement one tune position at a time until reaching the lowest tune frequency. The sweep process will repeat until manually stopped. The test filter must be in the on state in order to start the frequency sweep. You

should select the “Sweep” option in the tuning mode category to enable frequency sweeping.



You can select the lowest and highest frequencies in the sweep range and the delay between each tune by using the Sweep/Random Hop options category. Press the Start button to start the sweep and press the Stop button to stop it. You can include/omit certain frequencies in the sweep by checking/unchecking the “Include In Auto” checkbox in the frequency table. Multiple frequencies can be selected simultaneously and included/excluded in the right click menu of the frequency table.



#### 4.4.3 Random Hop

Random Hop mode will tune the filter to random frequencies. The hop process will continue until manually stopped. The test filter must be in the on state in order

to start the frequency hopping. You should select the "Random Hop" option in the tuning mode category to enable random hopping. You can select the lowest and highest frequencies in the hop range and the delay between each tune by using the Sweep/Random Hop options category. You should press the Start button to start the hop sequence and press the Stop button to stop the hop sequence. You can include/omit certain frequencies in the sweep by checking/unchecking the "Include In Auto" checkbox in the frequency table.

<b>PROPRIETARY INFORMATION OF THE POLE/ZERO CORPORATIONS, SEE SHEET ONE FOR POSSIBLE ADDITIONAL RESTRICTIONS.</b>	SIZE <b>A</b>	CAGE CODE <b>0U5W0</b>	DOCUMENT NUMBER <b>1071897</b>	REV <b>1</b>
	SCALE: NONE	UNIT WT: -	SHEET: 14 OF 16	

## 5.0 TIPS AND TROUBLESHOOTING

### 5.1 LED 1 is momentarily blinking orange

- Plug the USB cable into the computer.
- Plug the USB cable into the Demo Filter Controller.
- Unplug and then re-plug the AC to DC cable into the power connector.

### 5.2 LED 2 is rapidly blinking red

- Plug in the carrier card before powering the Demo Filter Controller on.
- The Demo Filter Controller may have a power supply fault. Unplug and then re-plug the power cord.

### 5.3 The Demo Filter Controller will not turn on

- Plug the AC to DC Adapter all the way into the DC power port on the Demo Filter controller.
- Plug the AC to DC Adapter into the wall outlet.

### 5.4 The Demo Filter Controller does not show up in the Communication section of the Customer Demo Controller Software.

- Press the USB cord firmly into the Demo Filter Controller.
- Plug the USB cord into the PC.
- Verify that the AC to DC Adapter is connected to a wall outlet and to the Demo Filter Controller.
- Reopen the dropdown box for selecting the COM port.

### 5.5 The Customer Demo Controller Software reports an error.

- Cannot read Filter Descriptor.
  - Make sure the Carrier Card Cable is securely attached to the Demo Filter Controller and also the Carrier Card.

## 6.0 SAFETY



### High Voltage Warning

The Demo Filter Controller may produce potentially hazardous voltages. Be careful when handling carrier cards that have high High Bias voltages enabled.



### Static Warning

The Demo Filter Controller and Carrier Cards are static sensitive devices, please handle with necessary precautions.

### Repairing the Demo Controller

Never attempt to repair the Demo Filter Controller. Please send all damaged Demo Controllers or Carrier Cards back to Pole/Zero.

## 7.0 LEARN MORE

To learn more about Pole/Zero please visit [www.polezero.com](http://www.polezero.com)

## 8.0 CONTACT AND SUPPORT

### PoleZero Corporate Office

5558 Union Centre Drive  
West Chester, Ohio 45069  
513.870.9060 (Phone)  
513.870.9064 (Fax)  
support@polezero.com

PROPRIETARY INFORMATION OF THE POLE/ZERO CORPORATIONS, SEE SHEET ONE FOR POSSIBLE ADDITIONAL RESTRICTIONS.	SIZE <b>A</b>	CAGE CODE <b>0U5W0</b>	DOCUMENT NUMBER <b>1071897</b>	REV <b>1</b>
	SCALE: NONE	UNIT WT: -	SHEET: 16 OF 16	