

# ZENTONE 7

## 7 Watt Class A Tube Amp Users Manual Version 2.1

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**BackLine Engineering LLC**

**Warning: Do not open chassis.**



**NOTE:** Before using your ZenTone 7, carefully read these operating instructions and safety suggestions:

1. **Repairs should be performed only by qualified service personnel.**
2. **Do not place this unit near heat sources, such as radiators, heat registers, or appliances that produce heat.**
3. **Guard against objects or liquids entering the enclosure.**
4. **Use only a 3-prong AC power chord and plug in to only grounded AC receptacles.**
5. **Unplug power cord when replacing tubes.**
6. **Unplug ZenTone 7 when not in use for extended periods of time.**
7. **Do not listen for prolonged periods at high volume levels as it may damage your hearing.**

**CAUTION:** To reduce the risk of fire or electric shock, do not open the bottom chassis. There are no user-serviceable parts inside. Refer servicing to qualified service personnel.

**WARNING:** To reduce the risk of fire or electrical shock, replace fuse with same type and rating. To reduce the risk of fire or electric shock, do not expose this appliance to rain or moisture.

## **Warranty Information**

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During the warranty period, BackLine Engineering shall, at its sole option, either repair or replace any product that proves to be defective upon inspection by BackLine Engineering personnel. Evidence of damage to the unit from negligence or abuse will void the warranty. BackLine Engineering reserves the right to update any unit returned for repair and to change or improve the design of the product at any time without notice. BackLine Engineering reserves the right to use reconditioned parts and assemblies as warranty replacements for authorized repairs. This is your sole warranty. BackLine Engineering does not authorize any third party, including any dealer or sales representative, to assume any liability on behalf of BackLine Engineering or to make any warranty for BackLine Engineering. BackLine Engineering may, at its option, require proof of original purchase date in the form of a dated copy of original authorized dealer’s invoice or sales receipt.

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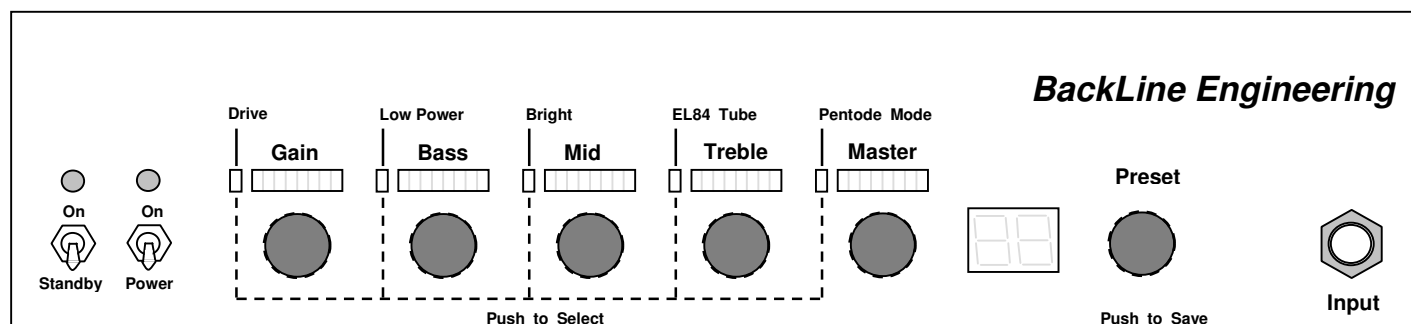
## 1 Product Overview

ZenTone 7 is a seven-watt class-A tube amp employing a classic 300V tube circuit design. It offers low power mode and/or output tube triode mode, which can bring the output power down to 3 watts or about 1 watt. Connect it to your favorite 4 ohm or 8 ohm speaker cabinet for the ultimate tube tone. As a practice or recording amp, you can get great output tube overdrive at low volume settings or while sending the direct output signal to a mixing board or audio interface device. In addition, it provides the convenience of storing your tube amp settings in one of 64 preset locations effectively creating a 64-channel tube amp. You can select a single stage preamp or a dual stage preamp using one of three preamp gain structures. It also contains a classic British tone stack design for that vintage sound. You can select between an EL84 output tube or an octal output tube on the fly. With the internal speaker load and speaker emulation circuit, the XLR or unbalanced direct output captures the tone of the entire tube amp signal path including the output transformer without the need for an external speaker. Use a standard latching footswitch (not included) to select presets or select presets and other parameters from an external MIDI source. With the free Windows editing software, the amp can be completely controlled using MIDI. For example during recording, you can control the amp tone remotely from the mixing room. Additional features of ZenTone 7 are listed below.

- 7 watt class-A single-ended amp head (low power switch brings this to below 3 watts)
- Authentic 300V tube amp signal path based on classic designs
- Two 12AX7 preamp tubes (substitute 12AT7, 12AU7, 12AY7, 12AZ7 for different tones)
- Select between 3 preamp gain structures
- Switch between EL84 or octal output tube with the push of a button
- The octal tube socket can accept 6V6 (included), 6L6, EL34 or KT77 output tubes without re-biasing
- Select output tube Pentode mode or Triode mode for a darker tone with lower power and more compression
- Gain, bass, mid, treble and master volume controls
- Low power switch allows output tube overdrive at lower volume levels
- Gain, bass, mid, treble and master volume controls
- Bright switch
- All the above control values can be stored in 64 preset locations
- Unbalanced and XLR direct outputs with level control
- Direct out contains entire tube signal path from the input to the speaker output
- Built-in classic Greenback reactive speaker load when external speaker is unplugged
- Direct out has speaker emulation frequency curve
- Cycle through presets or different groups of presets using the included footswitch
- Preset zero is a true bypass from input to unbalanced direct output
- MIDI input for selecting presets or controlling any parameter
- DC tube filaments for low noise
- Free Windows software for controlling the amp using MIDI

## 2 Front Panel Controls

The front panel shown below should be familiar to anyone who has used a simple tube amp in the past. The main difference is the Preset control, which allows you to select presets and save amp settings. In addition, there are 5 control buttons which can be turned on or off by pressing the associated control knob. All of this will be explained in more detail below.



### Power Switches

Just like other tube amps, turn on the standby switch to start warming up the tubes. Use the power switch to turn on the signal path and controls. To lengthen the life of the tubes, always turn the standby switch on first for a few minutes. If either switch is off, the input signal will be bypassed to the direct unbalanced output. If you are taking a break but want to keep the tubes warm, it is a good idea to turn off the power switch which will mute the speaker and XLR output and reduce power dissipation.

### Gain and Master Volume

The Gain control drives the preamp tubes while the Master control drives the output tube. For cleaner tones, set the gain low and master volume high. To overdrive the preamp, set the gain high and the master volume low. There are 16 gain settings and 16 master volume settings available.

### Tone Controls

A traditional tube amp tone stack design is used with Bass, Mid and Treble controls. There are eight settings for each control, providing up to 256 tonal combinations.

### Drive

The Drive switch cycles between a single stage preamp used for clean tones (LED off) a low drive two-stage preamp used for crunch tones (LED on) or a high drive two-stage preamp used for lead tones (LED blinking) by pressing the gain control knob.

### Half Power

By pressing the Bass control, the amp can be reduced to less than half power when the LED is on. By combining this with Triode Mode (see below), the amp power can be reduced by more than a factor of four.

### Bright

This is a classic tube amp bright switch that can be selected by pressing the Mid control knob. When the LED is lit, the amp produces a brighter tone.

### EL84 Output Tube

You can select between the EL84 output tube and the octal output tube by pressing the Treble control knob. When the LED is on, the EL84 output tube is selected. When the LED is off, the octal output tube is selected. The octal output tube socket can accept 6V6 (included), 6L6, EL34 or KT77 output tubes without re-biasing.

### Pentode Mode

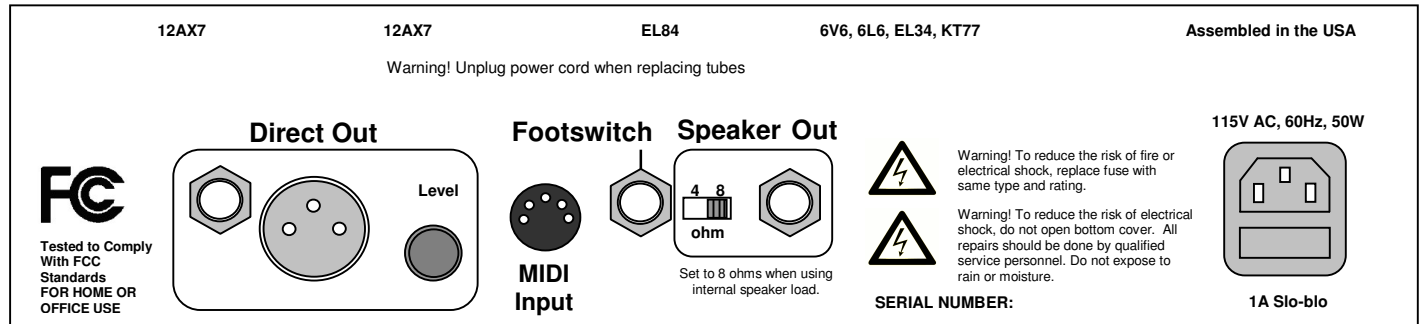
You can select between output tube Pentode mode and output tube Triode mode by pressing the Master control knob. When the LED is on, Pentode mode is selected. When the LED is off, Triode mode is selected. Triode mode reduces the output power and gives a slightly darker tone with more compression.

### Preset

You can store all amp settings into 64 preset locations. To select a stored preset simply turn the preset knob. To save the changes you have made to the current preset, press the Preset knob once to start the display flashing, and again to confirm the save. To abort after one press, simply turn the preset knob. Preset zero is reserved as a true bypass between the input and the unbalanced direct output and cannot be saved. This will be discussed further in the next section.

### 3 Rear Panel Interfaces

The rear panel interfaces are shown in the figure below and described in this section.



#### Power Cord

The power cord connection includes a fuse holder. Use only 3-prong AC power cords and 1A slo-blo fuses.

#### Speaker Output

You can connect the speaker output to either a 4 ohm or 8 ohm speaker cabinet by setting the corresponding value on the speaker output switch. With the speaker cable unplugged, an internal reactive speaker load is engaged which emulates a classic 8 ohm Greenback speaker. For best results, set the speaker switch to 8 ohms when operating with the speaker cord unplugged.

#### Direct Output

The direct out signal is routed through the entire tube signal path including the output transformer. There are two direct output jacks, one 1/4" unbalanced and one XLR. They can be used separately or at the same time. The direct output includes a speaker emulation circuit that matches the frequency response curve of a typical 12" speaker. Use the Level control knob to adjust the output volume. Set the level control higher for low amplifier volume settings and lower for high amplifier volume settings. If the output level is set too high, you may hear some high frequency distortion at the output. If the output level is set too low, the signal will not be high enough above the amplifier noise floor. When the amp is set to preset zero, the input is connected directly to the unbalanced output. In this case, the Level control and the XLR output will be inactive.

#### Footswitch

If can control the preset selection with the supplied external footswitch by plugging it into the 1/4" Footswitch jack. To change presets, first set the amp to any given preset number (call this preset A). When you press the footswitch, it will increase the preset number by one in the amp. As you keep pressing the footswitch, it will keep increasing the preset number in the amp. If the next higher preset has been stored with the gain set to minimum and the master volume set to minimum, when you press the footswitch it will cycle back to preset A as shown in figure 1. In this way, you can create many different preset groups to cycle through.

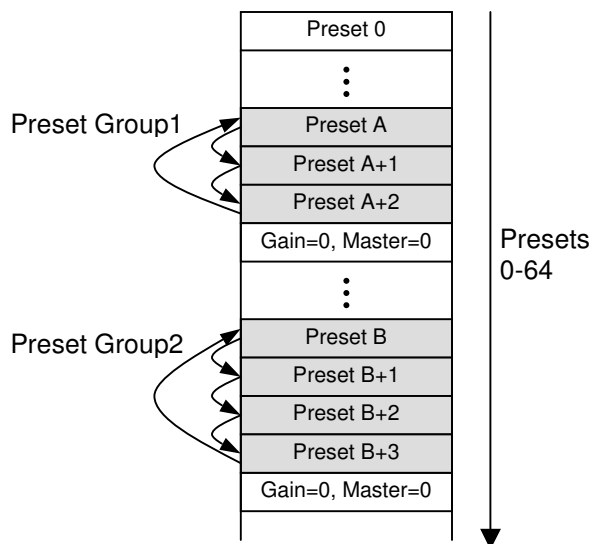


Figure 1. Bright LED off in preset 0

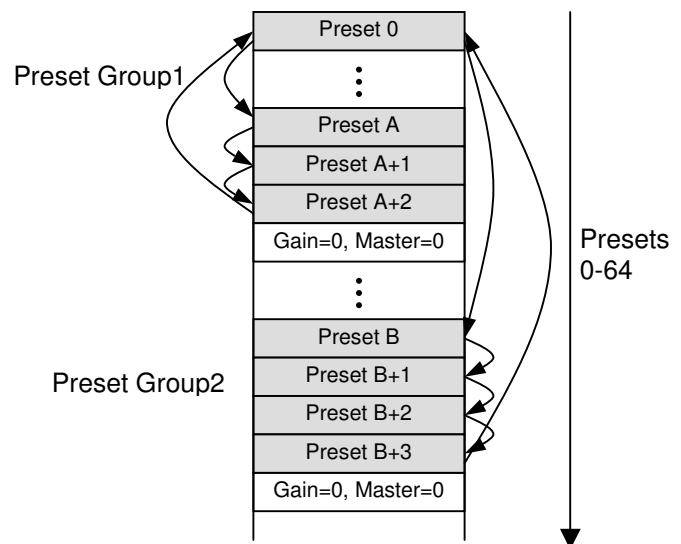


Figure 2. Bright LED on in preset 0

You can add true bypass as part of any preset group by setting the amp to preset zero and then pressing the Bright switch. This will turn on the Bright LED whenever you are in preset zero. Now when you cycle through a preset group, it works the same as described above except preset zero is included in the group right before you cycle back to preset A as shown in figure 2. Remember that preset zero has true bypass from the guitar input to the unbalanced direct output.

When cycling through presets, the gain structure and output tube configuration may be changing which can cause transients in the audio output. To avoid any audio glitches, the output is silenced for about 300mS between preset changes.

## MIDI Input

You can control the preset number and several of the amp parameters by using a MIDI controller such as a MIDI floorboard. For example, many floor effects have MIDI outputs that can be used to change the preset. To do this, connect a MIDI cable from the output of your MIDI controller to the input of the amp. The MIDI channel on your controller must be set to 9. Now when your MIDI controller sends a MIDI Program Change (PC) message (for example, when you press a footswitch on an effects floorboard), it will change the preset number in ZenTone. When changing presets, the gain structure and output tube configuration may be changing which can cause transients in the audio output. To avoid any audio glitches, the output is silenced for about 300mS between presets changes.

You can also control almost any parameter within the amp using MIDI Continuous Controller (CC) messages. The table below shows the MIDI implementation for CC messages received on MIDI channel 9. Because ZenTone uses discrete amp control settings, you should not control these parameters using a MIDI expression pedal as this may result in zipper noises. You can use the free editing software to control ZenTone through a MIDI connection from your PC.

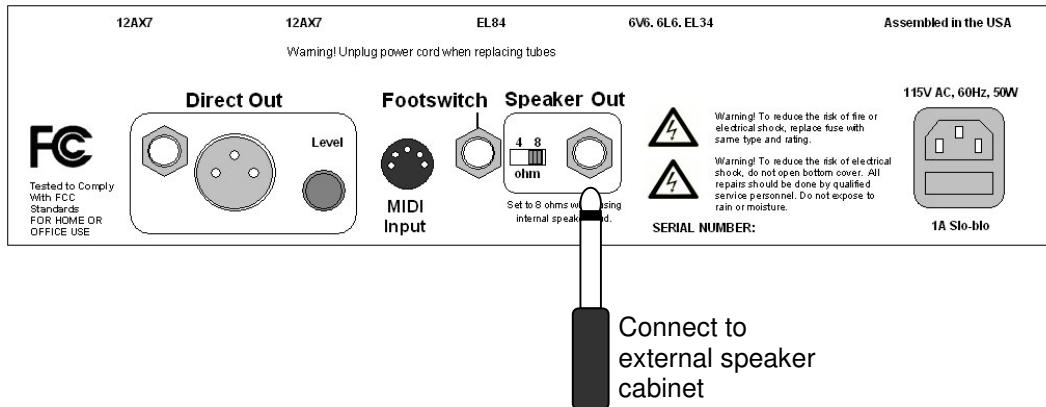
Amp Parameter	CC Number	Value
Gain	20	0-15
Bass	21	0-7
Mid	22	0-7
Treble	23	0-7
Master Volume	24	0-15
Drive	25	0 = Clean, 1 = Crunch, 2 = Lead
Half Power	26	0 = off, 1 = on
Bright	27	0 = off, 1 = on
Output Tube	28	0 = octal tube, 1 = EL84
Output Tube Mode	29	0 = triode mode, 1 = pentode mode

## 5 Typical Applications

This section shows several applications for ZenTone 7 by illustrating several back panel connection options.

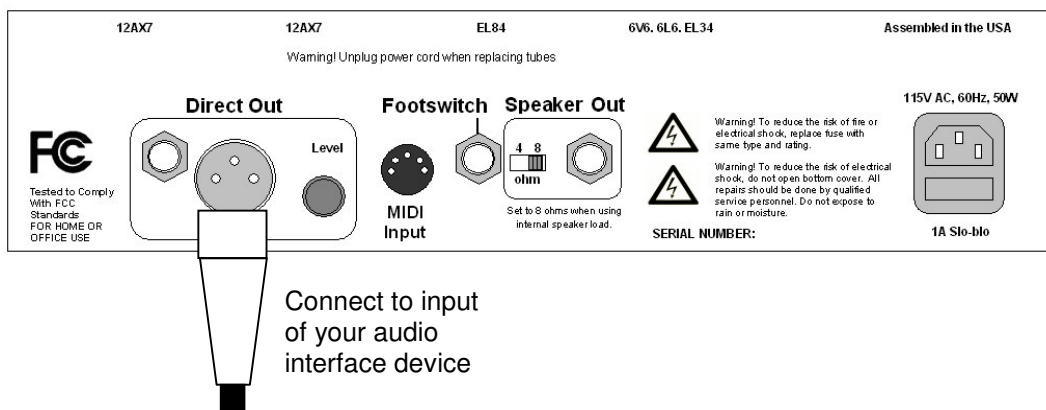
### Practice Amp

You can use ZenTone just like any other guitar amp head by plugging it into an external speaker cabinet as shown in the figure below. By doing this, you can get excellent overdriven tube tones at reasonable volume levels. Remember to set the ohm switch to match the impedance of your speaker cabinet.



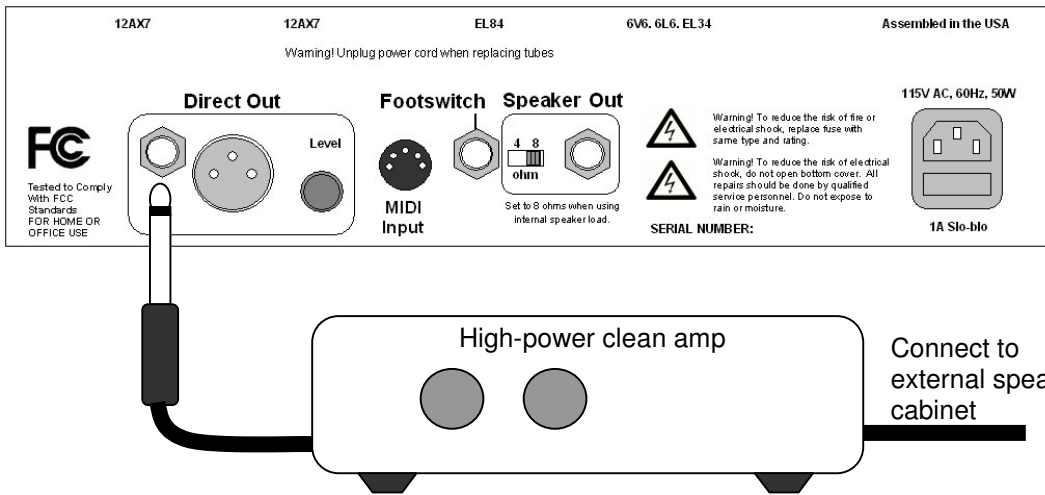
### Recording Amp

You can use ZenTone as part of your recording setup by placing a microphone in front of the cabinet described above, but a more convenient method is to use the direct output. Remember that when you unplug the speaker cable, an internal speaker load takes its place so no speaker cabinet is required to get excellent tone. Both the unbalanced and XLR outputs have speaker emulation frequency curves. For best results, send the XLR output directly into the interface that you use for audio recording as shown below. You should also set the direct output level high enough so that the signal is above the tube amp noise floor but below the level that overdrives the audio interface input.



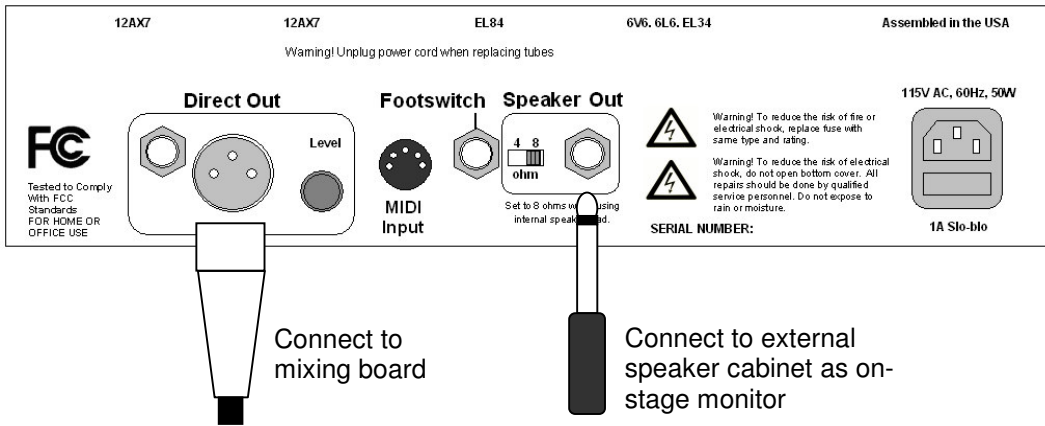
### Hybrid Amp

If you really want to push some air on stage, you can send the direct output from ZenTone to one of the low-cost, high-power solid-state clean amps that are available today as shown in the figure below. In this way you can get all that great tube tone at much higher volume levels.



## On Stage Amp

For playing on stage, you can send the direct output to the mixing board for an ultra portable stage setup. You can use the internal speaker load or use an on-stage cabinet as a monitor.



## Use in the Effects Chain

You can use ZenTone as the ultimate overdrive pedal in your effects chain by connecting the upstream signal to the guitar input on the front panel and the downstream signal from the unbalanced direct output on the back panel. You can then use the external footswitch to cycle through presets. Use preset zero as described in the previous section to add true bypass capability.

