# Sound Devices 302 Set-up Guide

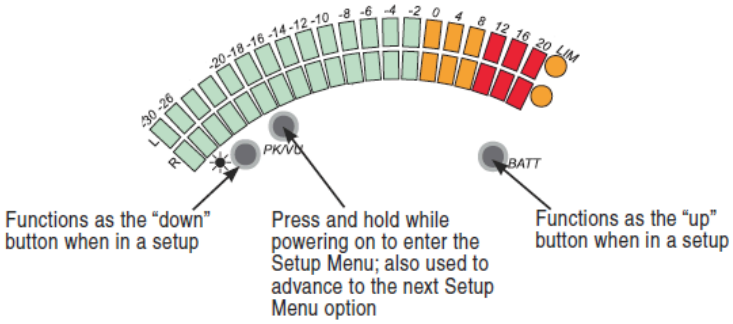
--by Andrew Garrison, Dept RTF, the University of Texas at Austin

Full details are available in the Sound Devices 302 user guide available online from the Sound Devices website.

**First—Return setting to factory default.**

Like its cousins the 744T and he 442, the 302 has menu items you cannot see that may have been changed by a previous user. So the first thing to do is return to the factory default.

All menu items are accessed from the electronic menu. Start with the 302 off, press and hold the LED brightness button and the PK/VU button right below the LED meters. While holding these two buttons down, turn on the mixer.




The meter lights will do the "scrolling dance," then the 0dB lights will stay on and the -30dB light for the Left(upper) meter will be blinking. You are now in the set-up menu.

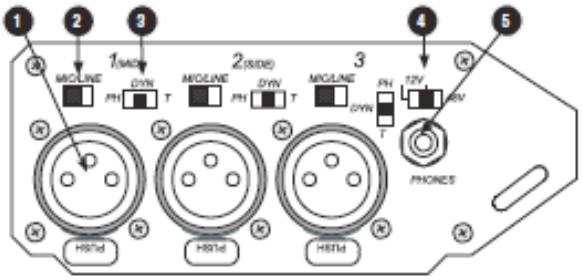
To restore all functions back to factory defaults (Line out, 1K tone, input limiter engaged, etc.) press the PK/VU button 17 times until the 12dB light on the Left(upper) meter is blinking red.. Then press the battery check button (under the HP button) twice so that the -24dB light for the Right (Lower) meter is illuminated green. To now save this setting to memory, press the PK/VU button multiple times (once will probably do it) until the meter lights do their happy scrolling dance again and then go dark. Ta-daa.

The complete set-up menu can be found on page 22 of the sound Devices User Guide. The Left(Upper) meter is always the area or domain in which you are working and the Right (Lower) meter is the actual setting value.

**Now simple set up**

Plug your microphone XLR cable into the input of your choice, 1,2, or 3. Be sure you have moved the appropriate selection switch to "Mic." (#2 in the next diagram)

## Input Panel Descriptions




1. **XLR Inputs**
   Transformer-balanced channel inputs. Pin-1 = ground; pin-2 = 'hot'; pin-3 = 'cold'. Can be unbalanced by grounding pin-3 to pin-1 of the XLR connector.
2. **Mic/Line Channel Switch**
   Selects the input level of the adjacent connector. Mic level has 40 dB more gain than line level.
3. **Phantom/DYNamic/T-Power Selection**
   Selects the microphone powering type of the adjacent input. DYN position turns off all microphone powering. Mic powering is selected per input. NOTE: Use T-Powering only for T-Powered microphones.
4. **Phantom Voltage Selection**
   Selects between 48 V or 12 V phantom voltage for all input channels. The three-position switch uses two positions for 12 V, there is no difference between these positions.
5. **Headphone Output**
   3.5 mm TRS stereo headphone output. Can drive headphones from 8 to 2000 ohms to required monitoring levels.

If your mic is a condenser mic, you'll need to power it. Either move the "Phantom/DYNamic/T-Power Selection" switch (#3) to "PH," or use a battery pack for the microphone in line with the XLR cables. Most condenser mics use 12-48v phantom power. A few use "T" power. Your mic will probably say "T" or "A-B" somewhere on its body if it needs "T" power

Select DYN if your mic is dynamic, or if you are using a wireless system or a condenser mic that is getting power from a battery pack,

The last switch on this side. # 4 is the "Phantom Voltage Selection." Many condenser microphones will work with only 12 volts of power. You save battery power for the mixer, so start with 12v and if that doesn't do it, switch up to 48v. This sets the voltage for any input you have set to phantom power. 48v will not hurt a mic that can use 12v. Here's a design weirdness. This is a three-position switch. Both of the first two positions are just 12v. The third position is 48v. I guess they did not want to have to buy a different switch when they built these.

*(Note: A-B powered-mics need a phase inverting cable) (also note: it IS possible to damage a T-powered mic by using the wrong phase. Ask about your mic if you have any doubt, before you plug it in)

**Sending Out**
The default setting for the outputs is Line out impedance. This is what you will need 90% of the time. There are few instances when you might need to send something out at a lower, mic-level impedance. If you find you need to do this (maybe you are sending the signal to a wireless transmitter that only has mic level inputs), you can change the output level in the same setup menu you just used. The correct

SETTING UP THE FRONT
This is a general setup. You will need to adjust for specific situations.

**Set the Pan switches** for each input. This determines which channel OUT you are sending your signal to. You can send each of the three input channels to Left (ch1), Right(ch2), or to both or Center.

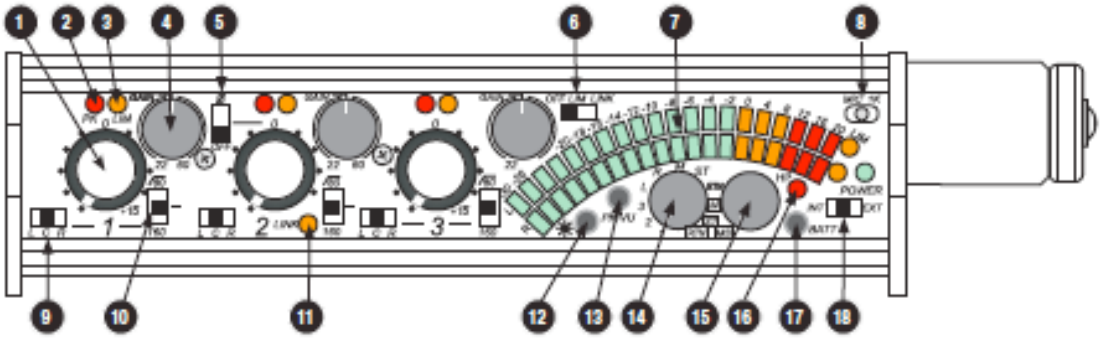
**Send tone to the camera** or recorder. Your output cables are attached to the input of a camera or recorder. The 302's default output impedance is Line level at 0dBfs.

At the camera or recorder you will need to select "Line" for the input. Since you have pushed on the tone switch on the 301 (#8 in the chart) the camera or recorder should be receiving a 1Khz tone. On the camera, you need to adjust the input gain until that steady tone is coming in at about -16 to -18 dB. Some people prefer -20dB. This means that audio you see on meters on the 302 at full scale, 0dB, are coming into the camera at 16 or 18 or 20 dB lower gain. This does not sound bad because there is such a low noise floor in digital recording. Later in your editing system, you can raise the recorded signal and not bring along a lot of internal noise. And in your production recording you are allowing "headroom." That is, a sound that may exceed 0dB in the mixer will not exceed 0dB and cause "clipping," in the recorder. You have put in a safety space. A good idea.

Now turn the tone off. Watch the meter at the mixer and the recorder will follow. You should still check your first recording of the day to make sure everything is all right. And even though you should have taped down the gain controls on the recorder, check the recorder several times during the day's work to make sure your settings have not been accidentally changed.

**Setting the Mixer Meter**
Our recommendation is peak-hold/VU. Press the PK/VU button four times to get to this setting. If you push on the slate mic for a moment (same switch, #8, as for tone but the other direction) and talk, if you have the meter in peak-hold/VU you will see a group of lights come on and change wit your voice but the farthest right light, the peak, will hold for a moment , even as the rest of the meter is showing your average loudness.

Next page is a chart taken directly from the 302 User Guide.




**1. Fader**
Primary control for adjusting the input level during operation.

**2. Peak LED**
When illuminated, indicates that the channel level is approaching the clipping point.

**3. Limiter LED**
When illuminated, indicates that the channel limiter is active and is reducing the channel gain to prevent overload.

**4. Gain (Trim)**
Coarse input gain control. Sets the initial input sensitivity level so that the Fader can be used for fine gain adjustments.

**5. Polarity Reverse Switch – Input 2**
When engaged, the polarity of Input 2 is reverse (180° out-of-phase) with respect to inputs 1 and 3. Useful to fl ip the stereo image with MS stereo.

**6. Limiter Switch**
Activates both input and output limiters. ON is dual-mono limiter operation, LINK is stereo operation. Output limiter threshold is set in the Setup Menu.

**7. Output Meter**
Sunlight-viewable, 20-segment LED meter. Calibrated in dBu when peakreading.

**8. Slate Mic/Tone Switch**
Two-position switch ,activates the slate microphone in the left (momentary) position, or the tone oscillator in the right (latched) position. Additional options are available in the Setup Menu.

**9. Pan Switch**
Assigns the input channel to the output bus. Left-only, Center (equal left and right), or Right-only.

**10. High-Pass Filter (Low Cut)**
Three-position switch engages the highpass filter. Used to reduce excessive low frequencies. 12 dB per octave at 80 Hz or 160 Hz. Center position is off.

**11. Stereo Link LED (Inputs 1 & 2)**
Indicates that inputs 1 and 2 are linked as a stereo pair. Controlled in the Setup Menu. In L/R stereo link input 2 Fader controls overall stereo level. When in MS position input 1 Gain (Trim) controls Mid, input 2 Gain (Trim) controls the amount of stereo (Side) information and the input 2 Fader controls the overall MS stereo level.

**12. Meter Brightness**
Controls the brightness of the LED output meter. Each push selects among the four brightness levels.

**13. Meter Ballistics**
Toggles among the available meter ballistic options: VU-only, peak-only, combo peak/VU, peak-hold/VU.

**14. Headphone Selector Switch**
Sets the signal source sent to headphones. Options include: input PFL 1, 2, 3; left output bus; right output bus; Mono (summed left and right); STereo master; RTN - stereo monitor return; MS-mono; MS-stereo; RTN-MS.

**15. Headphone Volume**
Adjusts the overall volume of the headphones. NOTE: the headphone output is capable of ear-damaging levels. Take care when adjusting among signal sources.

**16. Headphone LED**
Indicates signal overload in the headphone and RTN circuits.

**17. Battery Check Button**
Press and hold to display the internal and external battery levels on the output meter. Battery level remains for two seconds after button release

**18. Power Switch/LED**
Three-position switch, selects between internal battery power or external DC sources, middle position is off. Power LED illuminates when power is on. LED flashes when voltage reaches low limit.

**Limiter and Link**
Turn on the Limiter It is your friend. Switch #6. It is on for all three faders when you turn this on.

Link is a control for when you want to adjust the gain of two microphones at the same time, such as in stereo recording. When "Link" is selected, Fader 1 controls the gain for both Input 1 and Input 2.

**Headphone Selector**
Gives you different ways to listen to the signals coming. This does not change what is going to the recorder. Generally you will leave it on ST (Stereo), switching to other choices as needed. Read the User Guide to learn about the different choices.

**Setting Gain**
Start with the trim knobs (#4) at the 12 o'clock position. Listen tot the subject or talent or sound source and adjust the fader knob (#1) until they are peaking at less than 0dB and lower sounds are above -30dB. As a rule of thumb, voice levels will land between about -20 and about -12, with louder exclamations reaching almost to 0dB.

If you find your fader knob is turned very far right or very far left, try turning the trim knob for that fader up or down to give you more range to work with the fader.

**Low End Roll Off**
The 302 has two bass roll-off positions, 80Hz and 160Hz, and "flat" or no roll-off. Very little signal below 80Hz will ever be missed in recordings other than music. However, the goal of the production mixer is to affect the signal as little as possible.

My recommendation is to use 80Hz roll-of whenever you are outside, and just use the flat position for interiors. If you are experiencing so much low frequency sound that it is creating problems for the regular signal, try using the 160Hz position.

**Reverse Polarity**
This inverts the phase for the signal coming into input 2 only. It is useful in M-S stereo recording to flip the stereo sides. For now, make sure the switch is in the down, off position