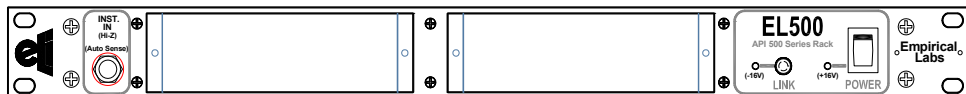


EL500



Horizontal Rack for API500 Modules

Features:

- Unique Flush Mount system for durability & looks.
- Super Quiet ± 16 Volt Supplies. Perhaps quietest available.
- More than 280mA available on both supplies.
- 48 volt Phantom supply. 35 mA of current.
- Link Switch to Stereo Link two Compressors.
- Built in “Inst In” (Instrument In) for high impedance inputs built into front panel. Direct box built right in!
- “Inst In” THD is less than .0006%.
- A performing musician can use the INST IN combined with his favorite modules, using the super quality preamp on this front panel jack.
- Auto-Sense on “Inst In” jack
- XLR & Phone Plug Inputs and Outputs. A total of 9 input and output connectors.
- Front panel Link Switch for Stereo linking dynamic devices such as compressors/limiters/gates.
- Power Consumption – 14 Watts max. 9 Watts Typical with modules installed.



Empirical Labs - *Technology for the Artist*



Installing the Modules

Cards can be tricky to install in any rack with a concealed mating connector. If the technique below doesn't go easily, one can always unplug the unit, unscrew the top cover and do it more directly. The mating electrical connector is called a 15 pin EDAC connector.

Slide the new module in and tilt the rear of the card up so the rear of the card is resting on the hidden connector. Slowly and with a firm square grip on the card, pull the card forward till you feel the card "fall" off the internal connector. With both hands on two points on the modules front (knobs, switches), try to slightly lower the rear of the card till it "feels" the entrance to the EDAC connector inside. The card should now be aimed at the entrance to the connector and with a little pressure slide into the "funnel" of the connector. The front panel should be sticking out of the EL500 Front Panel by about .2" as it starts to enter the card connector. Firmly press on the module and you should feel it slowly seat into the slot.

Some modules are two high to tilt the rear up far enough to rest on the EDAC connector inside. These you can often let rest on the bottom and then slightly tilt up into the "Funnel" of the EDAC connector.

Removing cards generally requires one to grab a knob or switch, and gently pull while wiggling from side to side and up and down to slowly unseat the card from the connector.

Wiring

Most studios will probably use the XLR inputs and outputs, which should operate problem free. However, high quality, hand-wired ¼" phone jacks are included on the EL500. With cable runs under 20 feet or so, there will be no degradation using the Phone jacks. The phone jack tips are in phase with pin 2 of the XLR connectors, so generally the device would be said to be wired with Pin 2 Hot.

The output ¼" phone plugs need special consideration. As shipped from the factory, the ring, tip, and sleeve are all connected, with the tip connected to pin 2 on the XLR output, and the ring connected to Pin 3. The sleeve is always ground (pin 1 on the XLR). The possible problem is if the module associated with a ¼" output has an active driver pushing on the ring (XLR pin 3) and the user shorts it to ground. This would happen with a normal guitar cable (a mono cable without the ring). If the associated module has a transformer, a regular guitar type cable will work fine and terminate the output transformer properly. Empirical Labs has included an internal jumper however to "lift" (disconnect) the ring of the output phone plug and prevent shorting an active amp output driver going to the ring, and pin 3 of the output XLR. If you use the output ¼" phone jack, try to determine if it has a transformer OR an active output driving that ring, and move the jumper to lift the ring if the output is active and shouldn't be shorted to ground.

Instrument Input on Front Panel

This built in Direct Box has a 330K input impedance (minimum), and is excellent for plugging in a guitar, bass or synthesizer directly to the first (left) 500 module. As soon as a standard guitar cable is plugged in, the EL500 senses it and switches the input to the left module to the Direct Box amplifier. A musician can have a great live performance preamp, with modules tailored to his needs just by plugging in.

As it comes from the factory, the "Inst In" operates at unity gain. However, there is a jumper inside that can change the gain to +10dB for lower level instruments. Most single coil guitars and basses could benefit from this gain, and provide a hotter level to the left module. This will usually improve the signal to noise of the instrument. But listen carefully for clipping by having the musician play his loudest notes. It is a hassle to have to open and shift the jumper to switch the gain if clipping occurs.

The LINK SWITCH

The LINK switch uses a relay to connect the “LINK” pins on the two API500 Modules. If the modules provide for stereo linking, this switch will engage this linking. The RED LED to the left of the switch indicates the LINK is ON, and at the same time provides the dual purpose of indicating proper operation of the –16V supply. The green Power LED has the dual function of showing proper operation of the +16V supply. If either of these LEDs is dim or unlit, there may be a problem with the associated supply.

Changing the Fuse -Pull out the power plug from the AC outlet, open unit, and ensure fuse closest to rear of the unit is blown. (Note: The fuse closer to the front panel is a spare fuse and is not connected to anything). Gently pry out one end of the blown fuse and then the other, replacing it with extra fuse provided near front right of unit. A small screwdriver may be helpful. Lay the top cover over unit, temporarily plug in AC, and turn it on to ensure that the fuse doesn't blow again, indicating a possibly more serious problem (see troubleshooting). If OK, unplug unit, replace spare fuse in front of PCB if possible, firmly screw down top cover and return the unit to normal use. Any fuse from .5 to .75A should be safe, but .5A (1/2A) is what is specified and used at factory for both 115 & 230Volts.

Line Voltage Select

For operation in different countries, changing the voltage for 115 or 230V operation also involves unplugging the unit and removing top cover. Inside on the right (as the front of the unit faces you), is a switch with 115 or 230V showing on its face. Select the desired voltage by sliding the switch until it indicates that voltage and you're done. Replace cover and screws.

Troubleshooting

- Module doesn't work. Make sure the module is properly seated in the EDAC connector. Check supplies by turning on LINK and both the RED and GREEN LED should glow brightly. If not, there is a problem with the primary supplies. Pull out both modules and check again. If the LEDs light, test each module separately and see if maybe there is a short or problem with one of the modules.
- Module is Distorting – Check the wiring and type of module. See Wiring section here. If a module has active amps driving the output pins and one of the pins is shorted through a patchbay, cable or other device, distortion can appear. Alternately, if the associated module has a transformer output and one of the output pins is not terminated to ground or another input pin, distortion, noise and frequency response can be degraded. Check the module's manual for wiring tips.
- Audio is out of phase – We test for EL500 phase here, so its quite possible that the module is out of phase itself. Try switching the out of phase module to the other slot in the EL500 and check for phase again. If the output is now in phase, the problem is with the EL500. Because of the hand wiring, people sometimes switch the XLR wiring to meet their needs. One can open the EL500 and compare the wiring of the two channels, and use a soldering iron to move the wires if somehow Empirical Labs or another user re-wired the connectors.
- Channel ones signal is appearing at Channel two's output. Internal “MIX” jumper is in wrong spot. Move to the right position, closest to the power transformer.

Gigging with the EL500.

With the vast array of modules available for the 500 series, a live performance artist can use the EL500 to get an unbeatable live setup for his/her instrument or voice. The instrument input (Inst In) is almost like a free direct box module, allowing the musician to plug in his instrument and have two 500 slots for preamping, eqing, compression etc. They could daisy chain the modules to get all the processing they need on their instrument. Alternately, a musician could plug his instrument into the left channel, have that module eq or compress it, and then use the a mic preamp for the right module to amplify and color his vocals. The EL500 turns into a mini two channel preamp that could be directly plugged into a set of powered speakers (such as the excellent JBL “EON Series”).

Keyboardist could possibly use the EL500 and select modules as a stereo preamp using the rear connectors to preamp a keyboard.



Warranty and Factory Service

This Empirical Labs Inc. product is covered by a limited warranty covering full parts and labor for 3 years from the purchase date. The warranty is only effective if the owner has returned his or her warranty card. See warranty card for further details.

Should problems arise, call Empirical Labs at 973 541 9447 or contact us from our website below, to obtain an RA number (Return Authorization). Pack the unit up well¹, with a note explaining the problem and return to Empirical Labs for repair. Include your name, address, phone number, and the date of purchase, and RA number. Send the unit with freight prepaid to the address below:

Empirical Labs (Repairs)
41 N. Beverwyck Rd.
Lake Hiawatha, NJ. 07034

We can also be reached on the Web at www.empiricalabs.com by selecting "CONTACT" and then "Techsupport" to email repair requests or information to Empirical Labs. The repaired unit will be returned to you via UPS Ground.

- 1) Pack the unit in original carton if possible. Otherwise, pack with bubble wrap and /or foam in a thick corrugated box. Shipping people are absolutely brutal to large packages and you must take every precaution against constant dropping, throwing, and crushing. We are not liable for products damaged during shipping.

Other Empirical Labs Products:

- 1) **Distressor EL8** - Classic Knee Compressor. Used on thousands of major records!
- 2) **Distressor EL8X** - The original Distressor on Steroids.
- 3) **Fatso Jr** – Two channels of Full Analog Tape Simulation and Classic Compression.
- 4) **Lil FrEQ** – An EQ with 8 Sections of unparalleled tonal contouring and De-Esser built in.
- 5) **DerrEsser** – API500 module for fixing high frequency problems.
- 6) **Mike-E** – Deep Super high performance Mic Preamp with saturation and compression.
- 7) **DocDerr** – Tone Doctor in an API 500 format module, with EQ and great compression.

Vist our website for other product info at EmpiricalLabs.com !



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