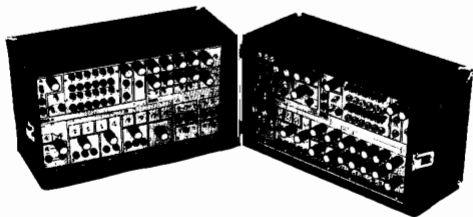


**PAIA**  
ELECTRONICS, INC.

**4761**

# ROAD CASE



The PAIA 4761 wing cabinet is a rugged module case, capable of withstanding the abuse encountered when equipment is taken on the road. When used in a studio setup, the 4761 offers the versatility of rearranging the system in a "building block" fashion to suit the individual synthesist's needs. The styling of the 4761 compliments the 4762 keyboard case.

### SPECIFICATIONS

Case Dimensions:	15-1/8" X 7" X 9-1/4"
Module Space:	13 single width modules

The 4761 assembly instructions are in three sections: The first - assembly of the basic, free standing wing cabinet; second - expansion of the basic unit into a dual section, road style case; third - application notes and recommendations for various system layouts.

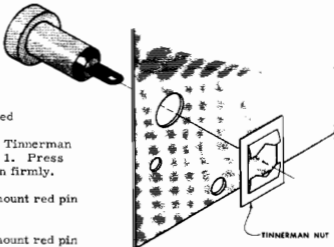
## SOLDERING

Use care when mounting all components. Use only rosin core solder (acid core solder is never used in electronics work). A proper solder joint has just enough solder to cover the solder lug and about 1/16 inch of the lead passing through it. There are two improper connections to beware of: Using too little solder will sometimes result in a connection which appears to be soldered but actually there is a layer of flux insulating the component lead from the solder bead. This situation can be cured by re-heating the joint and applying more solder. If too much solder is used on a joint there is the danger that a conducting bridge of excess solder will flow between adjacent conductors forming a short circuit. Unintentional solder bridges can be cleaned off by holding the assembly upside down and flowing the excess solder off onto a clean, hot soldering iron.

The 4761 front panel will be used to provide ground connections between cabinets and an inlet for AC power cords. Jack multiples will also be mounted on this panel to allow increased patching flexibility.

### PANEL ASSEMBLY

Place the front panel face down on a soft rag to prevent marring the finish during assembly.



- ( ) Place a red pin jack (J4) in the hole provided as shown in figure 2. Fasten in place with a Tinnerman nut as shown in figure 1. Press the tinnerman nut down firmly.
- ( ) In a similar manner mount red pin jack J5.
- ( ) In a similar manner mount red pin jack J6.
- ( ) In a similar manner mount black pin jack J7.
- ( ) In a similar manner mount black pin jack J8.
- ( ) In a similar manner mount black pin jack J9.
- ( ) Mount miniature phone jack J1 in the location shown in figure 2. Orient as illustrated and carefully tighten the mounting nut provided with the jack.
- ( ) In a similar manner, mount miniature phone jacks J2 and J3.

Figure 1 - Pin Jack Mounting

- ( ) Cut a 1-1/2" length of the bare wire provided. Slip this wire through the solder lugs of J4, J5 and J6. Solder these three connections.
- ( ) Cut another 1-1/2" length of bare wire. Slip this wire through the lugs of J7, J8 and J9. Solder the connections and J7 and J9 ONLY.
- ( ) Cut a 2" length of bare wire. Slip this wire through the upper lugs of J1, J2 and J3. Solder these three connections. NOTE: Check to make sure this wire doesn't touch the front panel or any section of the jacks other than the solder lugs.
- ( ) Cut a 2" length of bare wire. Slip this wire through the lower lugs of J1, J2 and J3. Solder the connections at J1 and J3 ONLY.
- ( ) Cut a 3" length of the insulated wire provided. Strip 1/4" of insulation from each end. Connect one end to the lower lug of J2. Solder this connection.
- ( ) Connect the remaining end of the previously installed wire to the solder lug of J8. DO NOT SOLDER AT THIS TIME.
- ( ) Cut a 7" length of insulated wire. Strip 1/4" of insulation from each end. Connect one end of this wire to the solder lug of J8. Solder this connection which includes the two previously installed wires.

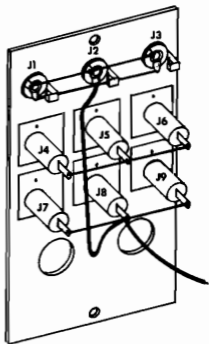


Figure 2 -  
4761 Front Panel Layout

This completes preliminary assembly of the 4761 front panel. The two remaining holes will be used after the final case configuration is determined in section two. Set the 4761 front panel aside and proceed to the case assembly.

#### CASE ASSEMBLY

During case assembly it may prove helpful to use a 1/16" drill or ice pick to produce pilot holes for any screws which go into the wooden case. Refer to figure 3 for proper case hardware placement.

- ( ) Prepare the wood case for mounting the metal corners by trimming the FOUR REAR corners with a razor blade or sharp knife. (See figure 3.) This will allow the metal corners to mount flush against the case.

- ( ) Mount the four metal corners on the rear corners of the case using twelve #4 X 3/8" screws. NOTE: The two screws used to mount the corners to the case bottom also mount two of the rubber feet. Do not overtighten these screws.
- ( ) Using two #4 X 3/8" screws, mount the remaining two rubber feet near the front edge of the case bottom. The rubber feet should be located approximately 3/4" from each edge. (See figure 3.)

Temporarily set aside the case assembly while the power busses are assembled.

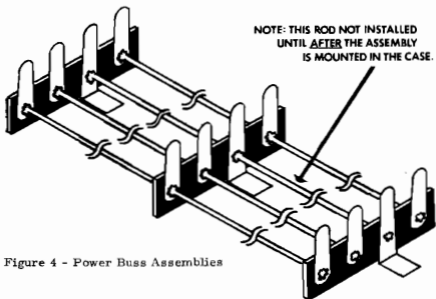


Figure 4 - Power Buss Assemblies

#### POWER BUSS ASSEMBLY

Refer to figure 4 during assembly of the power busses.

- ( ) Weight down the mounting tab of one of the four-lug terminal strips so that the strip stands upright. Place two of the 12" nickel plate buss bars supplied through the outer lugs of the terminal strips. Note that these rods go through the hole that cinches the lug to the phenolic strip and not through the top part of the terminal. Arrange the rods so they protrude slightly from the opposite side of the terminal strip. Place a second terminal strip at the far end of the buss rods to act as a temporary support. Solder the rods to the first terminal strip. This step will require considerable heat, but there is nothing that can be damaged during soldering.
- ( ) Slide the terminal strip that was acting as a support in the previous step up to the middle of the buss rods (6" from either end). Solder the second terminal in place.

**4761 ASSEMBLY DRAWINGS**  
Remove this section for  
easy reference during assembly.

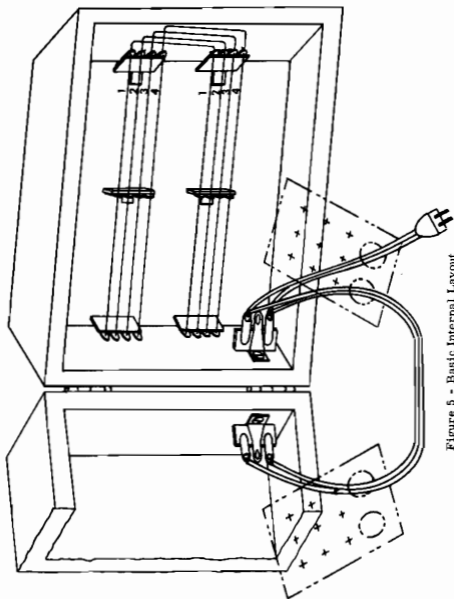


Figure 5 - Basic Internal Layout

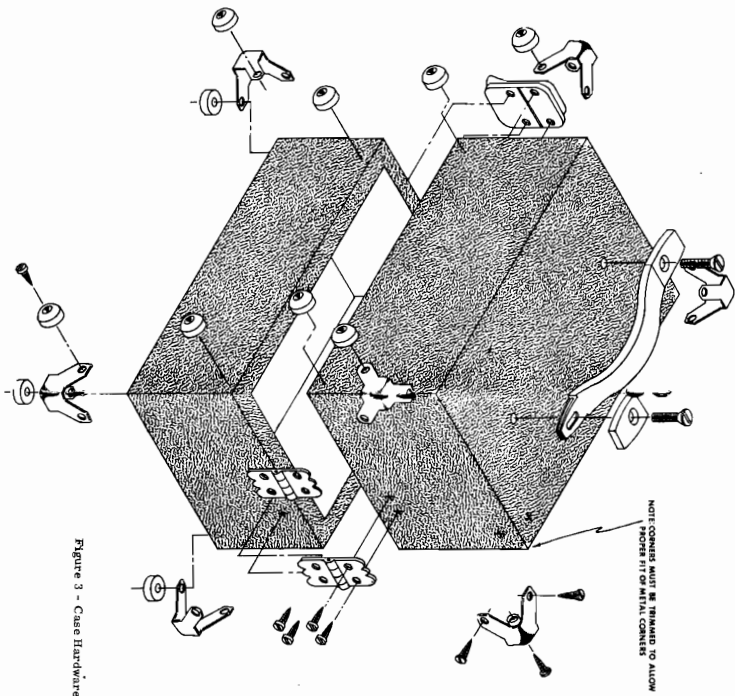


Figure 3 - Case Hardware Placement

NOTE CORNERS MUST BE TRIMMED TO ALLOW PROPER FIT OF METAL CORNERS

476



- ( ) Slide a third terminal strip onto the buss rods and arrange so that about 1/4" of the rods protrudes beyond the terminal strip. Solder this terminal in place.
- ( ) Slide a third rod through the holes in the buss assembly terminal strip lugs. (Use the lugs that are not part of the terminal strip mounting brackets.) Solder this rod in place at three solder lugs.
- ( ) Build a second power buss assembly identical to the one just completed using the three remaining four-lug terminal strips and three of the remaining buss rods.

#### FINAL ASSEMBLY

During the following steps, refer to figure 5 for internal layout and wiring.

- ( ) Install the two buss rod assemblies on the inside rear panel of the case. One assembly should be mounted on a line 2" up from the case bottom. The other assembly should be mounted on a line 2" down from the case top. Make sure the power buss assemblies are parallel to the case bottom and top, and centered between the case sides. Use three #4 X 3/8" screws to mount each assembly.
- ( ) Install the fourth buss rod in the upper buss rod assembly by inserting one end into the remaining solder lug of the middle terminal strip and, while gently curving the buss rod, pull the rod through to the far terminal strip. Insert the buss rod into the remaining lug of this terminal strip. Push the buss rod through the lug further than necessary in order to allow the remaining end of the buss rod to be inserted into the appropriate solder lug of the remaining terminal strip. Center the buss rod and solder at all three terminals.
- ( ) In a similar manner, install the remaining buss rod in the lower buss rod assembly. Solder the buss rod at all three terminal strips.
- ( ) ~~Cut a 5" length of the insulated wire provided and prepare it by stripping 1/4" of insulation from each end. Connect one end of this wire to Lug #1 of the upper buss rod assembly at one end. (See figure 5.)~~ Connect the remaining end of the wire to Lug #1 of the lower buss rod assembly. Solder both connections.
- ( ) Cut and prepare a 5" length of <sup>isateral balore</sup> insulated wire. Connect one end of this wire to Lug #2 of the same upper buss assembly. Connect the other end to Lug #2 of the lower buss assembly. Solder both connections.
- ( ) Cut and prepare a 5" length of insulated wire. Connect one end to Lug #3 of the upper buss assembly. Connect the other end of the wire to Lug #3 of the lower buss assembly. Solder both connections.
- ( ) Cut and prepare a 5" length of insulated wire. Connect one end to Lug #4 of the upper buss assembly. Connect the other end of the wire to Lug #4 of the lower buss assembly. Solder both connections.

5  
over wire

Locate the drilled aluminum module mounting strip. Insert each end into the sawcuts on the sides of the module case while holding the mounting strip at an angle to the top and bottom of the case. (See figure 6.) Gently slide the ends of the bracket into the sawcuts until the bracket is parallel to the case top and bottom. Position the bracket so it is approximately equally spaced between the top and bottom of the case. When modules are mounted at a later time, the bracket will position itself and be held in place.

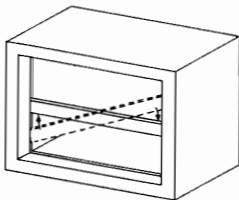


Figure 6- Installing Module Mounts

The wing cabinet structure and 4761 front panel are now primarily assembled. Further assembly and completion of the 4761 is dependent upon the final layout you intend to use for your system. Let's take a look at the various options available, and see how these options affect completion of the 4761.

The two unused holes in the 4761 front panel (the large holes located in the power box) are to allow 1) an outlet for the AC power cord, and 2) a power jumper cord to an accompanying wing cabinet if used in pairs. The 4761 front panel will usually be mounted in one of the lower corners to allow the line cord to pass beneath the wing cabinet to an AC supply, thus keeping the power cord away from the patching between modules.

The most basic 4761 arrangement is the single, free standing wing cabinet. In this configuration, placement of the front panel is non-critical, as long as it is in one of the lower corners. No additional hardware need be added to the case structure.

The dual section road style case uses two of the basic arrangements to form a unit which will fold in half and latch to itself to provide a portable, protective enclosure for the modules. In this configuration, the 4761 front panel in each module case needs to be mounted in the lower corners nearest to each other when the case is open. (See figure 5.) This will allow the easiest means of jumping power from case to case. Extra hardware will also need to be mounted if the case is to be closed, latched and carried.

At this time, determine your final case layout and proceed with the final assembly.

- ( ) After determining the corner location of the 4761 front panel, mount the three-lug terminal strip on the case side nearest the panel location. (See figure 5.) Mount the terminal strip about half way between the front and rear of the module space, using a #4 X 3/8" screw.

- ( ) Insert the rubber grommet into the panel hole which will be nearest the case side. A small screwdriver may be helpful in pushing the grommet through the hole.

The following three steps are used only if constructing the dual wing case. They involve the line cord which will be used to power this wing cabinet. A line cord is provided with the 2720-7 kit or can be obtained as a separate item when using 4770 supplies.

- ( ) If you are planning to use two wing cabinets as a folding case, cut a 12" length from the end of the line cord which does not have a molded plug on it.
- ( ) Separate 1 inch of the two conductors at each end of the previously cut length of line cord. Strip 1/4 inch of insulation from each end of each conductor. Twist the exposed strands of each conductor tightly together and "Tin" the exposed strands by melting a small amount of solder into the wire.
- ( ) Prepare the remaining length of line cord (the molded plug is on one end of this length) by separating 1 inch of the conductors. Strip 1/4 inch of insulation from each conductor, twist and "tin" the exposed strands.

- ( ) Fold the molded strain relief over the line cord about 5" from the end with the tinned wires. While squeezing the strain relief with a pair of pliers, insert the line cord into the front panel hole which will be farthest from the case side. Insert the strain relief until it locks into the panel hole.
- ( ) Solder one wire from each line cord (one through the grommet, one through the strain relief) to each outer lug of the three-lug terminal strip previously mounted on the case side. If the single free standing 4761 is being built, only one line cord will be passing through the strain relief on the 4761 front panel.
- ( ) Connect the ~~free end of the wire~~ connected to the "ground" lugs of the front panel jacks to the "ground" buss rod. Remember, the upper buss rod is +18 volts, the second is +9 volts, the third from the top is "ground" and the bottom buss rod is -9 volts. Solder the connection at the "ground" buss rod. *LDA Lampen fill just*
- ( ) Mount the 4761 front panel in the case in it's chosen position using two #4 X 3/8" screws. The aluminum module mounts may require slight repositioning during this step.

At this point, the basic single 4761 is completed. Those building the basic enclosure can skip to the final checkout and user's notes.

## DUAL WING CABINET

If you are building a dual wing cabinet, you should have in addition to the basic cabinet, a length of line cord protruding from the rubber grommet on the 4761 front panel. This wire should be immediately inside the edge of the case. Proceed with the construction of a "mirror image" wing cabinet. NOTE: There will be three major differences in the second cabinet construction:

- 1) The 4761 front panel will be in a mirror image location, so the panels will be next to each other when the cabinets are set side by side. The location of the rubber grommet and strain relief will also be reversed so the grommet is located closest to the case side.
  - 2) There will be no line cord extending from the strain relief.
  - 3) There will be no section of line cord protruding from the rubber grommet.
- ( ) Construct the second wing cabinet with the above considerations in mind. DO NOT mount the 4761 front panel at this time.
- ( ) Arrange the two cabinets so they are facing each other with the case bottoms (the rubber feet are mounted on the bottom) facing the same direction. Locate the hinges on the case sides directly between the 4761 front panels when the case is opened. Mount the hinges about 1-1/2 inches in from the top and bottom of the cabinet using four #6 X 3/8" screws for each hinge. (See figure 5.)
- ( ) Open the cabinets fully to allow completion of the inter-cabinet wiring. Pass the free end of the protruding section of line cord through the rubber grommet on the second 4761 panel. Solder one wire of the line cord to each of the outer solder lugs of the three-hug terminal strip which was previously mounted on the case side.
- ( ) Check to make sure the ground wire on the 4761 front panel has been soldered to the ground buss at the rear of the case. Install the 4761 panel using two #4 X 3/8" screws.
- ( ) Close the wing cabinets and arbitrarily designate one of the units as the top half and the other as the bottom half. On the wing cabinet which is designated as the bottom, mount four rubber feet using the #4 X 3/8" screws which have already been used to mount the metal corners to the case back. (See figure 3.)
- ( ) Turn the folded wing cases so they are setting on the feet just installed. Using a sharp knife, cut through the vinyl covering in the top half of the wing cabinets where two holes have been drilled in the wooden case. These holes may be found most easily by punching through the vinyl from the inside using an awl or ice pick.
- ( ) Mount the handle assembly at the two holes in the case. Make sure the molded plastic handle has a metal strap inside it. Pass a #8 flat-head bolt through the handle end cap, through the handle itself, and finally through the hole in the wing cabinet. Fasten with a #8 lock-washer and a #8 nut. Repeat the procedure for the other end of the handle.

With the cases closed, mount the latch assembly in the center of the side opposite the hinges. Mount the lower portion of the latch first followed by the upper section. Adjust the upper section for a tight fit to prevent accidental opening of the case during transit. Use four #6 X 3/8" screws.

#### ASSEMBLY OF YOUR 4761 WING CABINETS IS COMPLETE.

#### TESTING

Before mounting modules in the wing cabinet, all supply lines should be checked for continuity with an ohm meter. Measure the resistance between the upper and lower ++ buss bars (the top rod in each group of four). In a similar manner, check continuity of + lines, lines, and - lines. While checking the lines for continuity, also check for continuity between the buss rods and each of the three grounded pin jacks on the 4761 front panel.

Check for continuity between all three of the pin jack multiples. Similarly, check for continuity between the miniature phone jacks by inserting a phone plug in each of the jacks and checking for zero resistance between the center conductors of each jack.

Also check continuity of the grounding terminals of the plugs. Finally, check for infinite resistance between the center conductor and grounding lug of each phone jack.

#### USING THE 4761

A separate set of power supplies should be installed in each 4761. Location of the power supply should be as close as possible to the AC terminal strip mounted on the side of the wing cabinet just behind the 4761 front panel. This will minimize any hum which may be caused by the AC supply. The power supply outputs are wired to the appropriate buss rods, as are the supply lines for each module.

When using multiple 4761 cabinets, the ground jacks on the 4761 front panels must be patched together between all cabinets. This common ground is essential for proper voltage reference between the modules in various cabinets.

Those who have single wing cabinets and wish to expand to a dual cabinet portable system can order the extra hardware kit which includes: handle, latch, hinges, and necessary hardware. Order part #4761 HDW for \$3.00 postpaid.