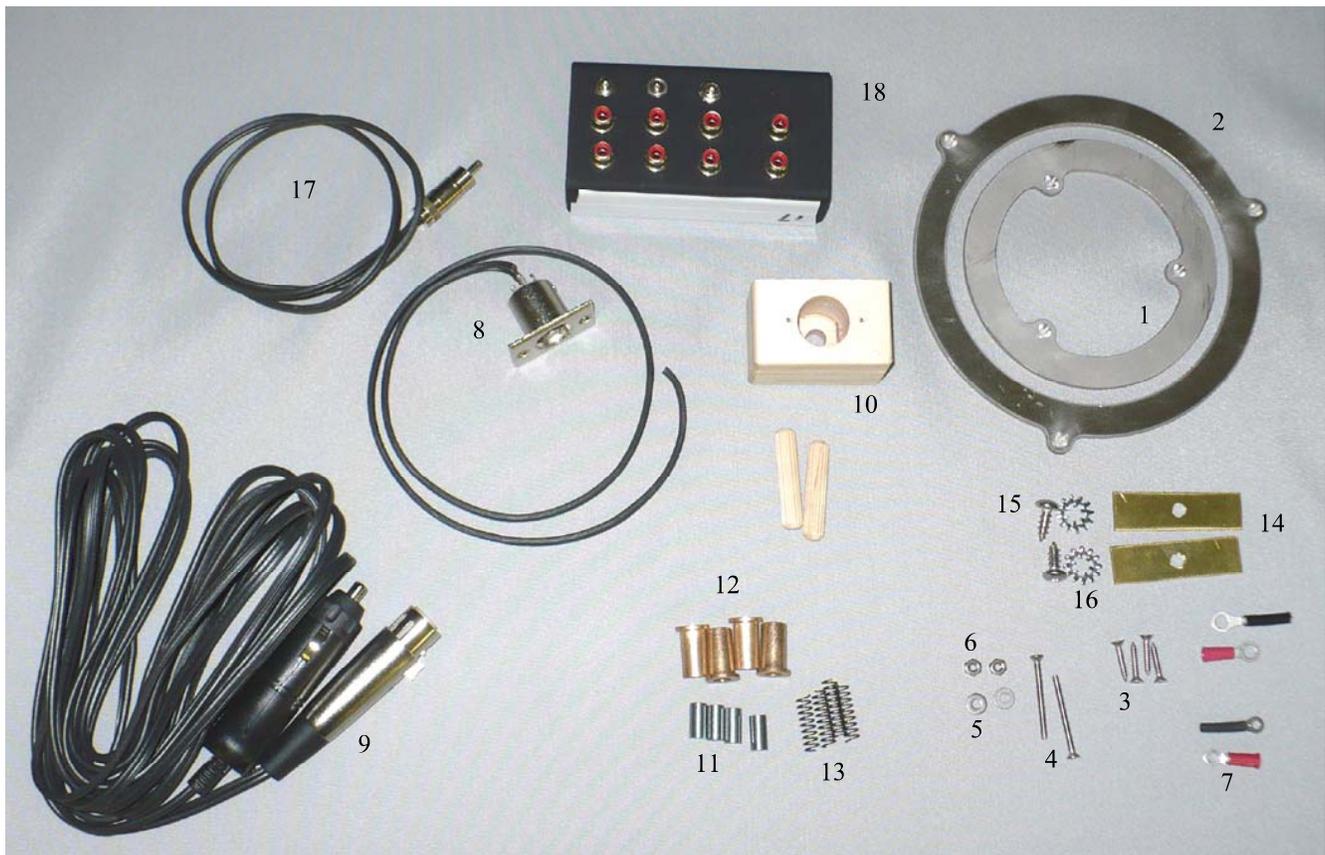


Astrosystems Powered Ground Board Hardware Installation

* No modification to existing Pivot is necessary

Using the Astrosystems power ground board hardware, a connection from an external 12V dc battery up to 12' away from the telescope can be made to the ground board and then up through the ground board into the bottom of the rocker box. Adequate power is then available for a GOTO drive, dew control system or other accessories.

Power is fed from the bottom of the ground board through the outside ring (positive). A spring loaded contact inside the rocker box runs against the inner ring on the surface of the ground board, which is then connected through hardware to the bottom of the ground board (negative). Connections are then made through a distribution panel inside the rocker box. This panel has seven RCA style output jacks and one RCA style input jack. The output jacks feature one 12V dc unswitched jack and six 12V dc switched output jacks which are switched in three pairs.



Parts to be installed in the Ground Board

1	Contact Ring	1	3" x 4"	Small Stainless predrilled
2	Contact Ring	1	4.5" x 5.5"	Large Stainless predrilled
3	Mount Screws	4	#4 x 1/2"	Flathead wood screws
4	Contact/Mount screws	2	#4-40 x 1"	Flathead - stainless
5	Contact/Mount washers	2	#4	Flat washer - stainless
6	Contact/Mount Nuts	2	#4-40	Nut - stainless
7	Ring Connectors	4		(2) #4 (2) #10
8	XLR jack	1		XLR jack with cable
9	XLR/Auto plug	1		XLR plug, 12 foot cable, fused auto plug w/LED
10	XLR Jack Mount	1		Wood XLR jack mount w/dowels
*	Template	1		Clear Hole Template

Parts to be installed in the Rocker Box

11	Contacts	4	Bronze contacts
12	Contact Mounts	4	1/4" ID x 3/8" OD x 3/4" long Bronze Bushings
13	Contact Spring	4	1/4" x 0.8"
14	Contact Spring Retainer	2	1/2" x 2" brass with center hole
15	Retainer Screw	2	Pan head #10 x 1/2" - stainless
16	Retainer Washer	2	#10 star washer
17	Power Cord	1	Connection to power distribution center w/RCA plug
18	Power Distribution Center	1	2" x 4" w/3 toggle switches, 8 RCA jacks
19	XLR Jack Screws	2	#4 x 3/4" Flathead - stainless

Tools and Materials Required

Drill	Drill Bits 3/32", 1/8", 9/64", 3/8"	1/4" Nut Driver or Pliers
Phillips Screwdriver #1, #2	Wire stripper or knife	Locktite/superglue
Matches/lighter	Hammer	

Ground Board Installation

Install the Pivot Contact Rings

Position the template on the Ground Board and center at the pivot. Mark the six mounting holes with a push pin or small nail. Each ring is held by one #4-40 machine screw that goes through the ground board for the bottom wire connection and two wood screws. The 1/8" through holes for the contact screws to pass through the ground board are oriented toward the XLR plug position. This is toward the foot with the plug cutout on a new TeleKit or toward where the wood block is mounted on a retrofit.

The other two holes on each ring are drilled 3/32" for the two wood screws and do not need to go all the way through the ground board, just deep enough for the screws. Position the rings over the holes and fasten with the two #4 wood screws and one #4-40 machine screw.



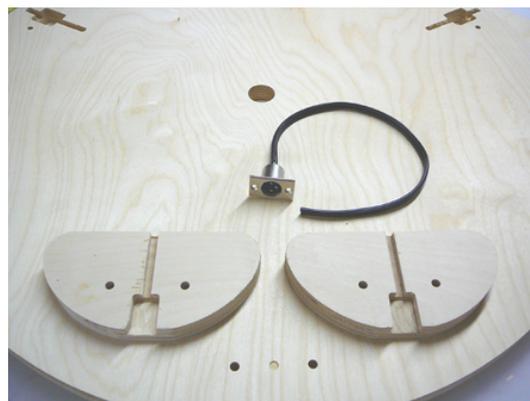
Install the XLR Plug Jack (retrofit using the wood mount)

Using a 21/64" bit, through drill the ground board. The holes are 1.25" from the Ground Board edge and 1" apart. Glue the mount to the bottom of the Ground Board using the two glue dowels and epoxy. After finishing the mount like the Ground Board, install the XLR plug by inserting the wire first, then push the plug in flush. Use the two #4 x 3/4" flathead wood screws to fasten the plug in place.



Installing the XLR Jack Mount with the supplied foot feedthrough

Dry fit the jack in the two foot halves and do any minor sanding required. Glue both halves together and fine sand the edge. Glue the 3 feet on the groundboard using the 1/4" glue dowels for proper orientation, making sure the one with the plug is oriented at the Teflon bearing position, the one without a through slot for the bearings. The photo at right shows the foot halves at this position, although they are shown on top of the groundboard, in actuality they will be glued together and then to the bottom side.



This photo shows the plug as it would look installed in the foot. After finishing the Ground Board, install the XLR jack by inserting the wire first, then push the jack in flush. Mark the holes, remove the jack and drill 3/32" pilot holes. Reinsert the jack and using the two #4 x 3/4" flathead wood screws supplied, fasten the jack in place.



Connect XLR jack to contact ring screws

Run the wire from the XLR jack in the foot or mount block to the connecting screws that pass through the groundboard to the rings. Split the wire apart and determine the length to the screw that is connected to the larger (+) ring (grooved side). Cut the wire to this length leaving enough to insert into the connector. Repeat for the wire going to the smaller (-) ring.



Strip about 3/8" of the insulation from the grooved (+) side, insert into the red insulated connector and crimp the connector. Attach to the screw by first placing a washer over the screw, then the connector and a nut.



Apply Loctite or fingernail polish and tighten the nut. Cut the smooth wire to length to match the un-insulated connector at the screw from the smaller ring (-). Slide the provided heat shrink insulation on the wire, and crimp the connector. Slide the heat shrink onto the connector and using a lighter or match, shrink the insulation (see photo at right). Place a washer on the screw, then the connector(-) and a nut, tighten using Loctite or fingernail polish to secure the nut.

Use the supplied wire retainers to fasten the wire (see photo at right, below). The groundboard installation is now finished, with the rings connected to the XLR jack. It is advisable to check the connections and polarity. Plug the auto plug with the XLR plug to the XLR jack and using an ohmmeter, insure that the tip of the auto plug (+) has continuity (no resistance) to the outer large ring and the side plug contact (-) has continuity to the inner small ring.



Rocker Box Installation

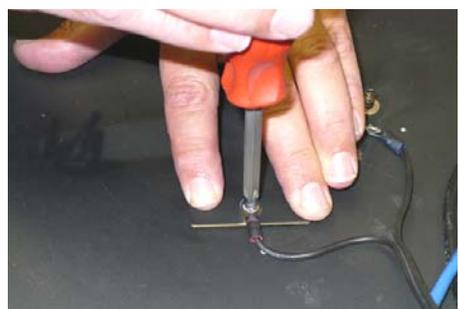
Insert Bushing into Rocker Box Bottom

Position the template in the bottom of the rocker box, centering it on the pivot bushing. Mark holes #7-12 on the template with a push pin or small nail. Drill the four holes, #7-10 through the rocker box with a 3/8" bit, use a scrap piece of wood on the bottom to drill into for a smooth hole. Drill these holes as perpendicular to the rocker box bottom as possible. This insures full contact with the electrical contacts. Drill holes #11 and #12 a half inch deep with a 9/64" bit. Insert the four bronze bushings into the 3/8" holes and tap in, using a piece of wood or a plastic hammer to avoid marring the bushing. Seat the bushing so the flange is against the rocker box bottom.

Install the distribution center centered against the inside of the taller rocker box front board. Peel the double sided tape and attach to the rocker box bottom, centered from side to side. The photo at top right shows the four bushings and distribution center installed. Next, assemble the rocker box and ground board. Insert the four bronze contacts into the bushings and then a spring, see photo.

Plug the wire with the RCA plug into the distribution center at the lower right jack (no toggle switch above). Extend the wire and cut to length so the loop on the terminal is centered at the screw hole between the contact bushings. As with the groundboard connections, strip and crimp the red insulated terminal and attach to the grooved side (+) of the wire. Strip 3/8" of the smooth wire, slide the heat shrink over the wire and crimp the terminal. Slide the heat shrink up over the terminal and shrink the insulator with a lighter or match.

Connect the wires to the contact plate by placing a #10 x 1/2" screw through the crimp terminal. Position a large star washer over the hole between the bushings. Place the brass retainer on the springs and hold down against the bushings, compressing the springs. Drive the screw in to hold the brass retaining plate down against the star washer (see photo at right).



Testing

With all cables connected, use a Volt/Ohmmeter to insure the center of the auto plug has continuity (connection) to the positive (center) of the RCA plugs on the Power Distribution Center. Also check the outside of the auto plug (negative) has continuity to the negative (outside) of the RCA plugs on the Power Distribution Center (switches on). Last, check across the positive and negative to confirm no shorts.

Operation

The 12' extension cord with the XLR plug is inserted into the XLR jack on the bottom of the Ground Board. The auto plug is plugged into a 12V dc power supply that is placed well to the side of the telescope. A carpet or wire protector can be used over the cord to avoid the wire getting pulled or tripped over. Once power is applied, connection is made through the contacts, connecting the extension wire with the distribution center. 12V dc accessories can be plugged into the distribution center and switched with the toggles. You now have a high capacity power supply independent of the telescope and at a safe distance.

Parts Checklist

Parts to be installed in the Ground Board (3/4" thick)

PFT-1	Contact Ring	1	3" x 4"	Small Stainless predrilled
PFT-2	Contact Ring	1	4.5" x 5.5"	Large Stainless predrilled
PFT-11a	Contact/Mount screws	2	#4-40 x 1"	Flathead - stainless
PFT-14	Mount Screws	4	#4 x 1/2"	Flathead wood screws
PFT-13	Contact/Mount screws	2	#4-40 x 1"	Flathead - stainless
PFT-15	Contact/Mount washers	2	#4	Flat washer - stainless
PFT-16	Contact/Mount Nuts	2	#4-40	Nut - stainless
PFT-17	Wire Ring Connectors	1	#4 insulated	
PFT-18	Wire Ring Connectors	1	#4 non-insulated	
PFT-19	Wire Ring Connectors	1	#10 insulated	
PFT-20	Wire Ring Connectors	1	#10 non-insulated	
PFT-22	XLR jack	1	XLR jack with cable	
PFT-23+21	XLR/Auto plug	1	XLR plug, 12 foot cable, fused auto plug w/LED	
	XLR Jack Mount	1	Wood XLR jack mount w/glue dowels	

Parts to be installed in the Rocker Box (3/4" thick)

PFT-4	Contacts	4	Zinc coated brass contacts	
PFT-6	Contact Mounts	4	1/4" ID x 3/8" OD x 3/4" long Bronze Bushings	
PFT-7	Contact Spring	4	1/4" x 0.8"	
PFT-9	Contact Spring Retainer	2	1/2" x 2" brass with center hole	
PFT-25	Retainer Screw	2	Pan head #10 x 1/2" - stainless	
PFT-29	Retainer Washer	2	#10 star washer	
PFT-31+21	Power Cord	1	Connection to power distribution center w/RCA plug	
PFT-8,26,27	Power Distribution Center	1	2" x 4" w/3 toggle switches, 8 RCA jacks	
PFT-14	XLR Jack Screws	2	#4 x 3/4" Flathead - stainless	

Parts to be installed in the Ground Board (1.5" thick)

PFT-1	Contact Ring	1	3" x 4"	Small Stainless predrilled
PFT-2	Contact Ring	1	4.5" x 5.5"	Large Stainless predrilled
PFT-11a	Contact/Mount screws	2	#4-40 x 1.75"	Flathead - stainless
PFT-14	Mount Screws	4	#4 x 1/2"	Flathead wood screws
PFT-15	Contact/Mount washers	2	#4	Flat washer - stainless
PFT-16	Contact/Mount Nuts	2	#4-40	Nut - stainless
PFT-17	Wire Ring Connectors	1	#4 insulated	
PFT-18	Wire Ring Connectors	1	#4 non-insulated	
PFT-19	Wire Ring Connectors	1	#10 insulated	
PFT-20	Wire Ring Connectors	1	#10 non-insulated	
PFT-22	XLR jack	1	XLR jack with cable	
PFT-23+21	XLR/Auto plug	1	XLR plug, 12 foot cable, fused auto plug w/LED	
	XLR Jack Mount	1	Wood XLR jack mount w/glue dowels	