

Topic

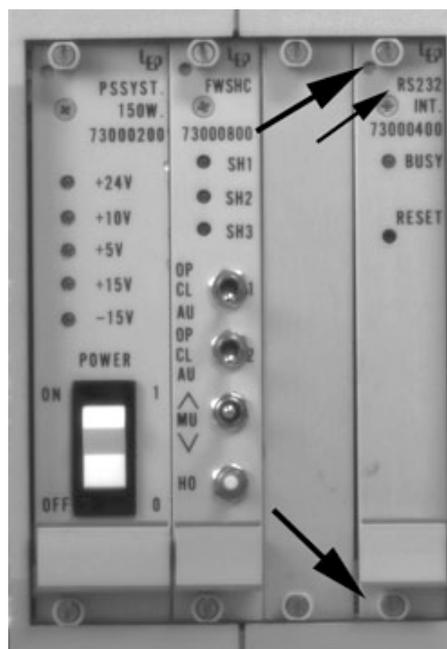
This technical note describes how to configure the internal switches (“dipswitches”) of Ludl Electronics control units to enable proper serial communication with Openlab. The process involves disassembly and reassembly of the controllers. Because the assembly of the MAC2000 and MAC2002 controllers is similar, a single description is provided for these units. A separate description is provided for the MAC5000 controller. Please note that the power cord should be removed from the wall socket before proceeding with these instructions.

Discussion

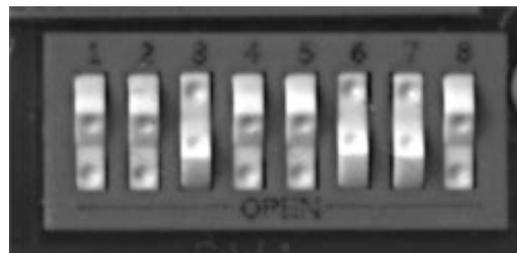
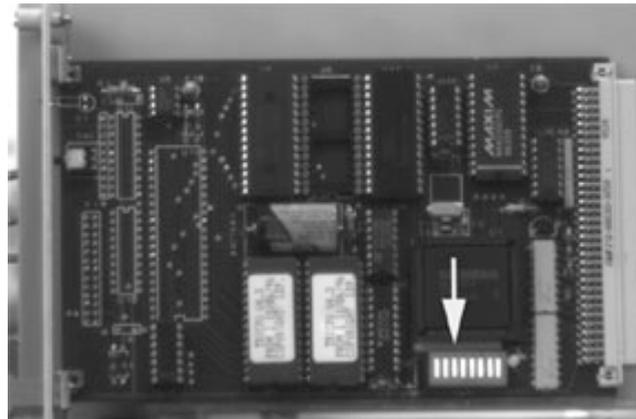
MAC2000 and MAC2002

The circuit boards on these controllers are accessed from the front of the controller unit. Use these instructions to gain access to the dipswitches, check configuration of the dipswitches, and reassemble the controller:

1. Switch off the power to the control unit.
2. Remove the power cord from the wall socket.
3. Locate the RS-232 control module (on these controllers individual modules are identifiable as discreet panels inserted into the controller housing; the RS-232 module will be imprinted with text including “RS232”).
4. The following figure shows a MAC2000 RS-232 module and its locking screws. The small arrow indicates the position of the “RS232” text and the large arrows indicate the two locking screws:



5. "Unlock" the screws at the top and bottom of the RS-232 module (these are not standard threaded screws; just turn each 1/4 turn counter-clockwise to enable removal of the module).
6. Grasp the handle just above the lower locking screw and remove the RS-232 module by sliding it out from the front of the controller housing.
7. On the RS-232 circuit board there is a red cubic region that contains a bank of eight white switches (the dipswitches; see figure on left below); the word "Open" is scribed on one side of the red region. Check to see that the dipswitch configuration matches that shown in the figure on right below.

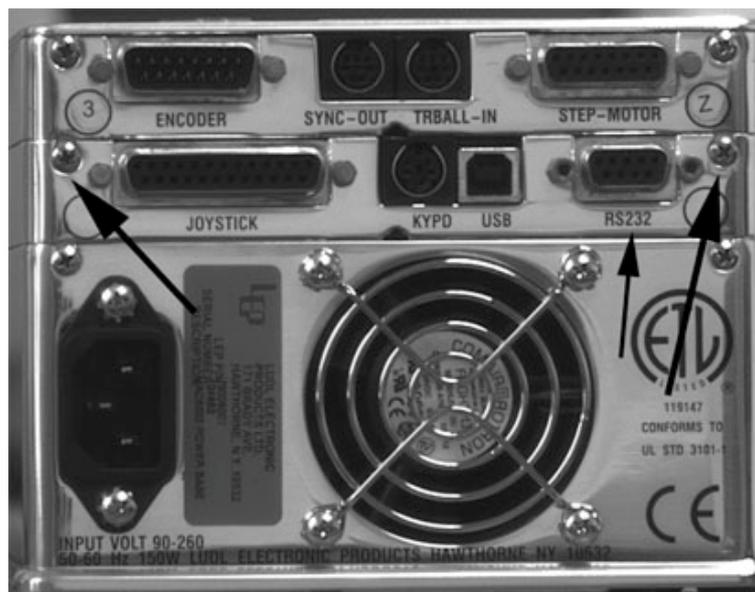


8. Reinsert the RS-232 module into the controller housing. It should fit into and slide along rails in the controller housing. Ensure that the module is pushed all the way into the controller.
9. Turn the locking screws 1/4 turn clockwise to lock the module in to the controller housing.
10. Plug the power cord back into the wall socket.

MAC5000

The circuit boards on these controllers are accessed by removing screws from the back of the controller housing and removing the modules above the desired module (in our case, the RS-232 module). Use these instructions to gain access to the dipswitches, check configuration of the dipswitches, and reassemble the controller:

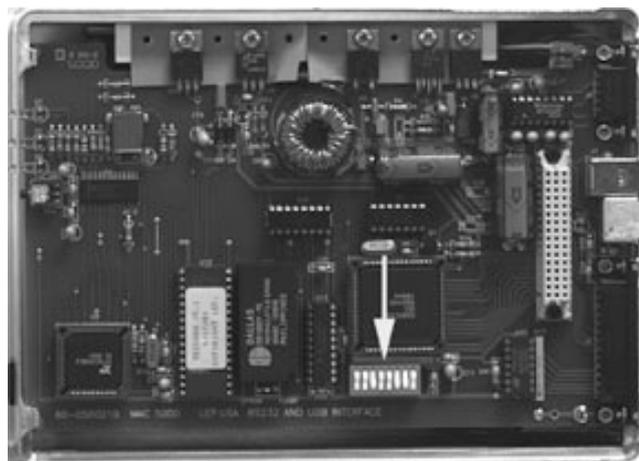
1. Switch off the power to the control unit
2. Remove the power cord from the wall socket
3. Remove all of the cords from the back of the MAC5000; if necessary tag the cords so you'll know which connectors they plug into.
4. Locate the RS-232 control module (on these controllers individual modules are stacked on each other; the RS-232 module is normally the one just above the power unit, which contains the power cord connector and the fan). The RS-232 module will include the plugs shown in the figure below, and will be imprinted with text including "RS232" (indicated by the small arrow in the figure below).
5. Remove the screws at the top left and right corners of the RS-232 module (indicated by large arrows in the figure below).

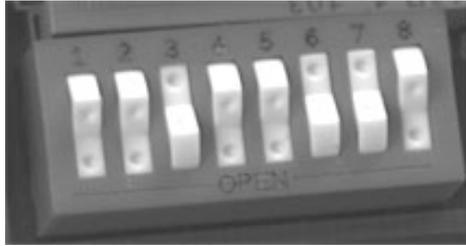


- Lift the back end of the modules above the RS-232 module until it releases from the RS-232 module. Shown below is the back end of a MAC5000 module propped above the RS-232 module using a pen cap.



- By lifting the upper modules further from the RS-232 module you will be able to fully remove them from the controller unit. This will expose the RS-232 circuit board, which you can see by looking at the module from the top.
- On the circuit board there is a red cubic region that contains a bank of eight white switches (the dipswitches; see figure on left below); the word "Open" is scribed on one side of the red region. Check to see that the dipswitch configuration matches that shown in the figure on right below.





9. Replace the upper modules onto the RS-232 module: begin by sliding the front end of the upper modules into position on the RS-232 module (clips on the front end of the upper modules will slide into a slot on the front end of the RS-232 module). When the front end of the upper modules is in place then push down on the back end until it drops into place.
10. Replace the two screws on the upper corners of the back end of the RS-232 module.
11. Plug in the cords into their proper connectors.
12. Plug the power cord back into the wall socket.