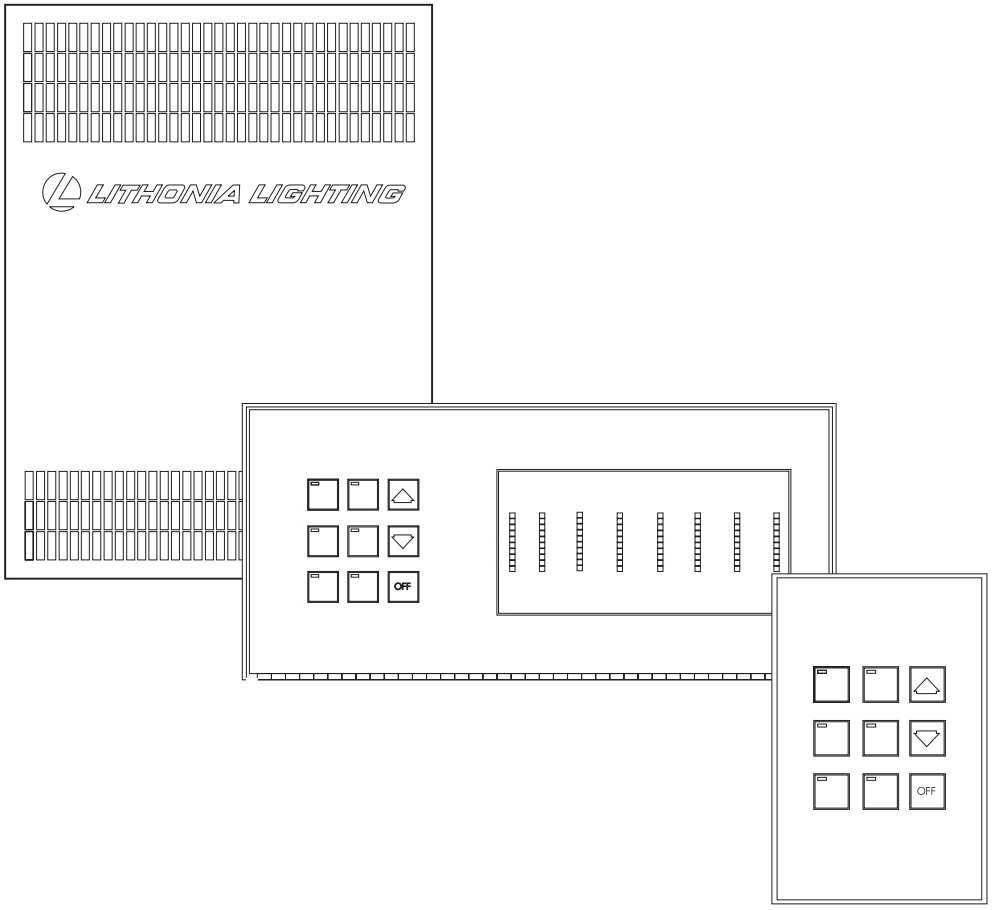
SEQUEL *MiniPac*

ARCHITECTURAL DIMMING SYSTEM

Operation
and
Maintenance Manual



LITHONIA LIGHTING
LIGHTING CONTROL SYSTEMS

Table of Contents

Introduction

This manual contains the instructions needed to properly configure your Sequel MiniPac Architectural Dimming System. It can also be used to modify the factory recommended configuration documented in the “SEQMPDOC” As-Built drawings.

Configuring the system requires the setting of switches on the control stations and dimmer packs. The available settings will allow your system to meet a wide variety of applications.

After you have set the switches, and completed all required field wiring, follow the start up procedure on page 11 to verify proper system operation.

The Sequel MiniPac System you have purchased was engineered to provide years of reliable operation for commercial applications. If problems are experienced this manual also contains an extensive troubleshooting procedure to diagnose and solve field issues that may arise. If assistance beyond the scope of this manual is required contact Lithonia Controls Technical Services at 800-533-2719 (out of warranty systems 770-987-4200.)

Configuring the Control Station

The Sequel MiniPac control station shown in *Figure 1* performs a variety of functions based on the settings of dip switches located on the back of the station. These settings may be obtained from the As-Built drawings (if provided) or by following the guide below.

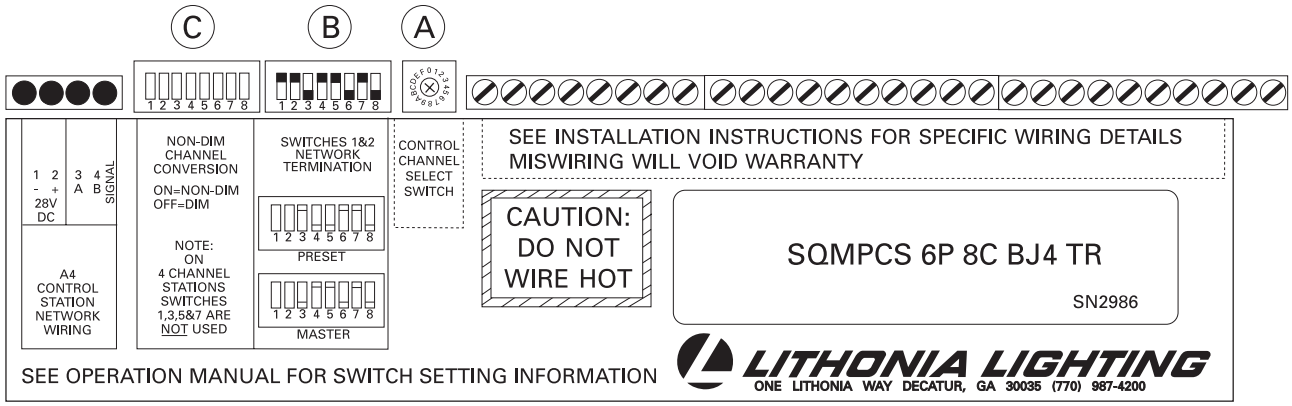


Figure 1 - Rear View of Control Station

Catalog Number	Switch Setting	Channels Controlled
SQMPCS 6P 4C	4	1 — 4
SQMPCS 6P 8C	8	1 — 8

Table 1 - Control Channel Select Switch (A)

(A) Control Channel Select Switch

The control channel select switch, as shown in *Figure 1* (A) selects which channels are controlled by the control station. Set this switch on "4" for four channel stations, or on "8" for eight channel stations. Dimmers, or output circuits, are then assigned to control channels so the desired control functions are obtained. For information on how to assign dimmers, see page 4, "Configuring the Dimmer Cabinet."

(B) Master Select Switch

Set switches as shown below:

Master Operation

Ⓒ Converting Channels for Non-dimmed Operation

A non-dim channel is used for loads that are to switch on and off only. Any or all channels can be converted to non-dim operation by turning on the corresponding position of switch bank Ⓒ (See figure 1). In eight-channel stations, the positions correspond to the channels as they appear from left to right. In four-channel stations, positions 2, 4, 6 and 8 correspond to the channels from left to right.

Ⓒ

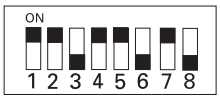
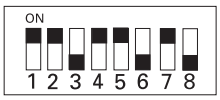
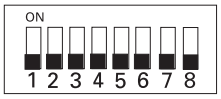
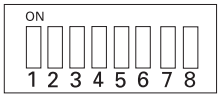
Eight-channel station with leftmost and rightmost channels converted to non-dim operation.

Ⓒ

Four-channel station with leftmost and rightmost channels converted to non-dim operation.

Record Your Control Station Configuration Below

Record your control station switch configuration in the last line below. The first four lines are completed and represent examples of typical settings.

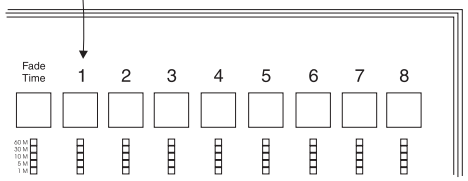
Channels Controlled	Ⓒ Non-Dim Bargraph Positions 1-8	Ⓑ Termination Master	Ⓐ Control Channel Select Switch
1 - 8 Channel 1 & 8 nondim			8
1 - 8 No nondims			8
1 - 4 Channel 1 & 4 nondim			4
1 - 4 No nondims			4
			

Configuring the Dimmer Cabinet

Step #1

Determine which loads will be operated by each of the channels on the control station. Do this by filling in the Schedule of Controlled Loads worksheet on page 5. Write in each load to be controlled in ascending channel number order. Any spare channel must be at the end of the control station (far right-hand side). See example below.

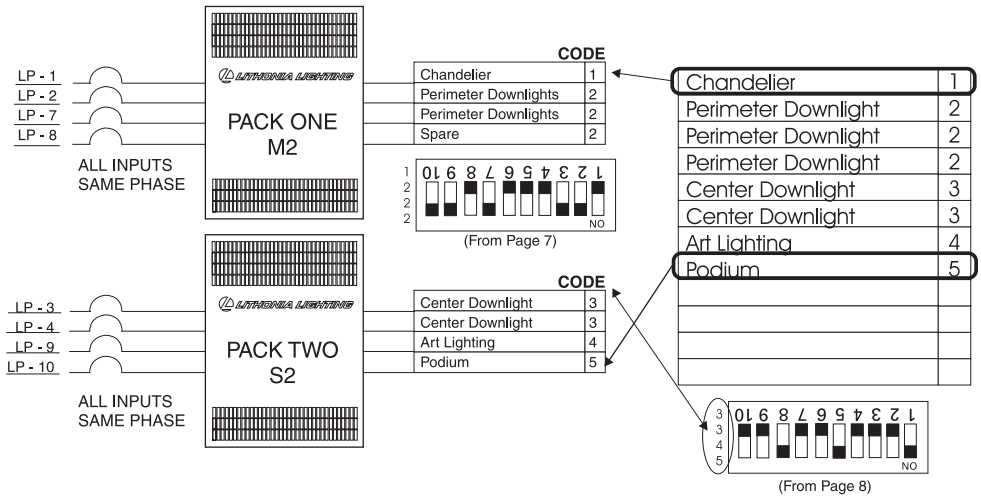
Chandelier	1
Perimeter Downlight	2
Perimeter Downlight	2
Perimeter Downlight	2
Center Downlight	3
Center Downlight	3
Art Lighting	4
Podium	5
(Spare Channel)	6
(Spare Channel)	7
(Spare Channel)	8



SQMPCS Control Station

Step #2

Transfer the information from Step #1 to the Dimmer Pack Outputs Worksheet on page 6. Channel #1 will be the first output of the first pack. The remaining channels must be placed in ascending order on the remaining outputs. Fill in the branch circuit breaker number to the left of each pack.



Step #3

Obtain the NUMERIC CODE in order to set the dip switches inside the dimer packs. If a dimmer pack does not have the required four outputs for a code, simply use the last digit entered to complete the remaining slots. In the example above the code for Pack one is 1-2-2-2, and for Pack two it is 3-3-4-5.

Step #4

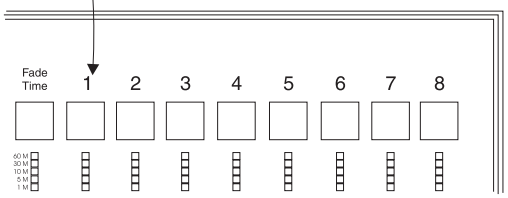
Using the pack number and four digit CODE's obtained from Step #3, circle the corresponding dip switch picture and set switches in each pack accordingly. Refer to Pack one - Pack four switch settings on pages 7 - 10.

Configuring the Dimmer Cabinet - Schedule of Controled Loads

Follow steps 1 -4 on previous page to determine your dimmer cabinet configuration.

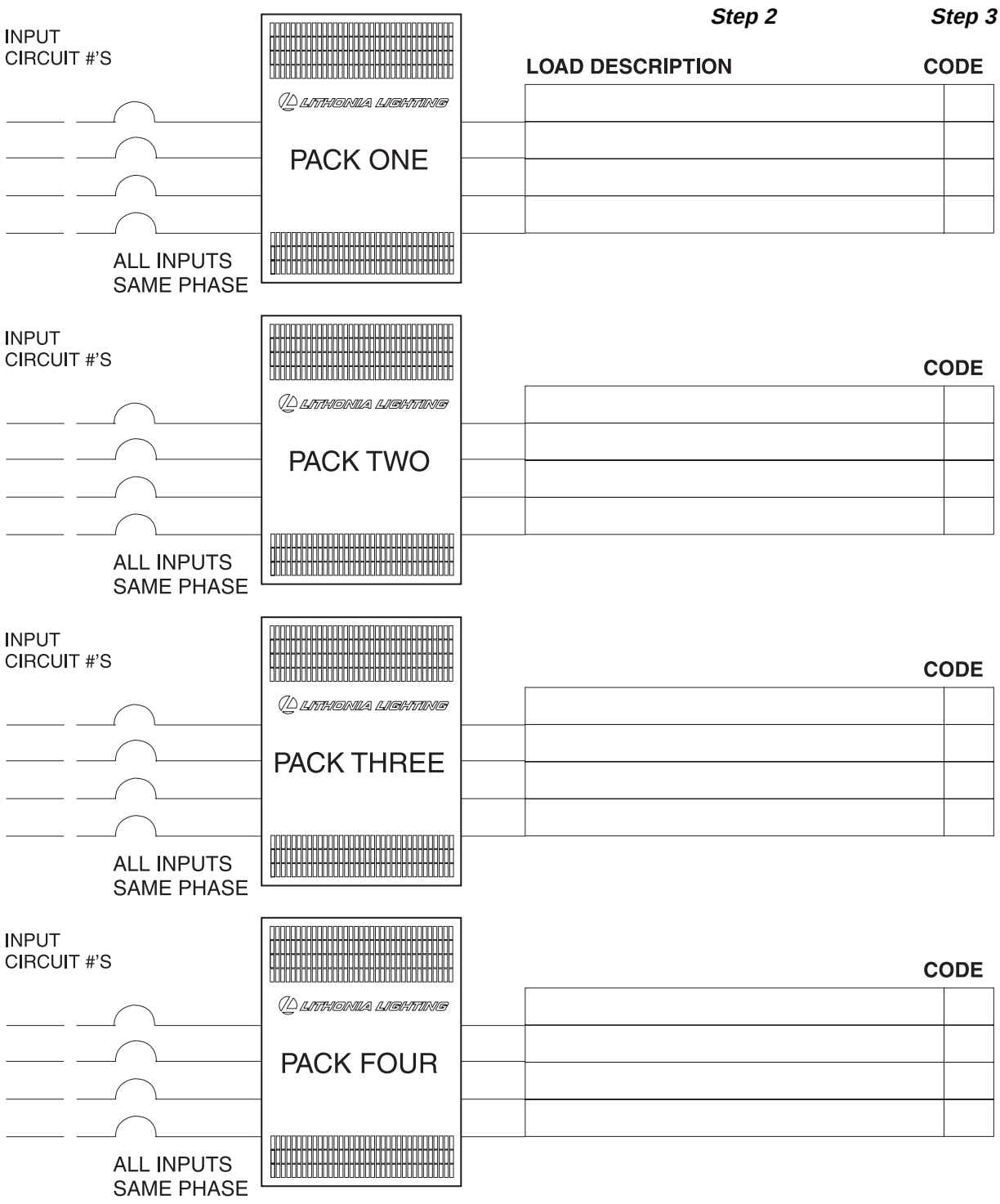
Step 1

Load Description	**Channel #**
	1



SQMPCS Control Station

Configuring the Dimmer Cabinet - Dimmer Pack Outputs

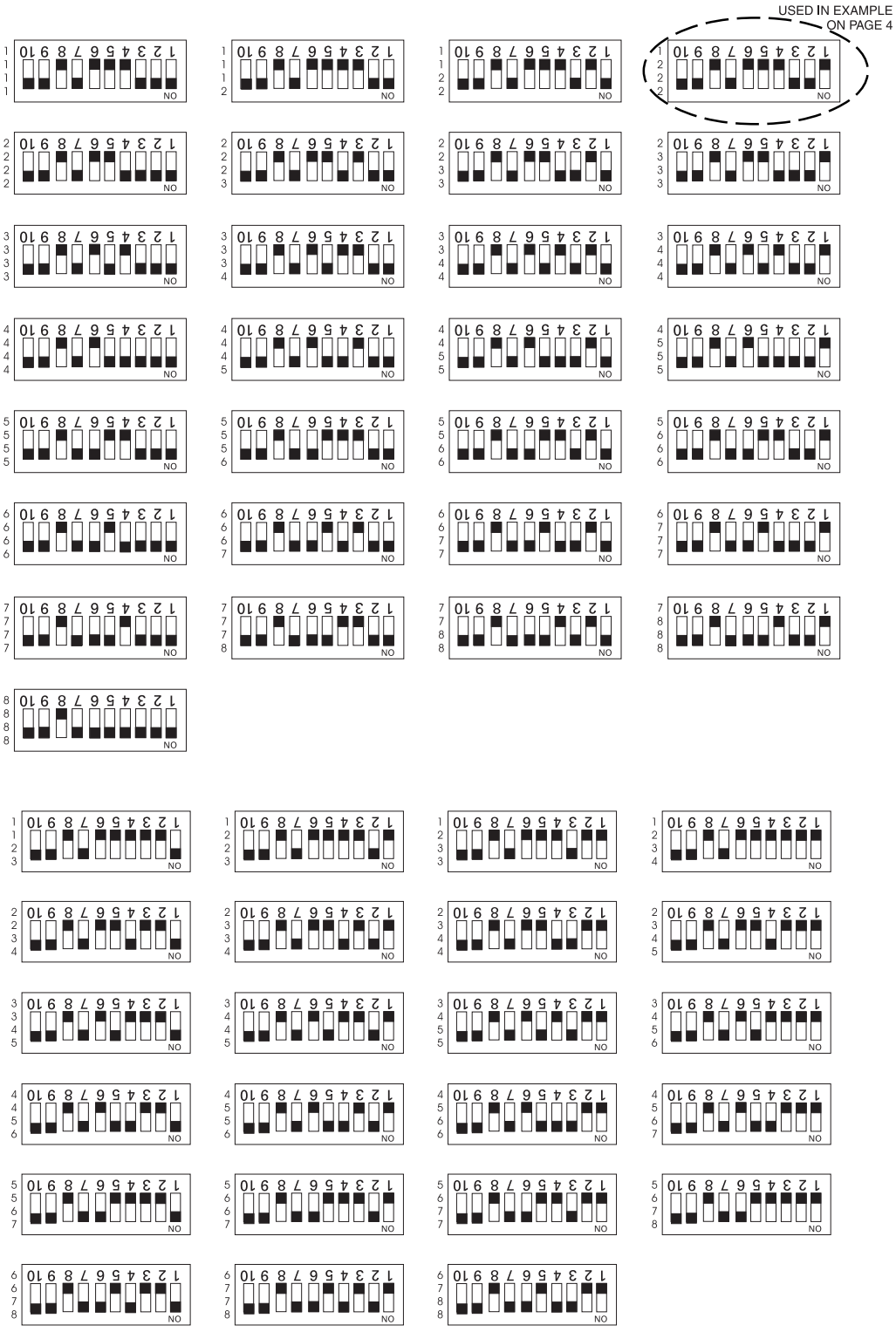


Step 4

Circle the dip switch pictures corresponding to the codes you have determined in the tables that follow for Pack one through Pack four. Set the switches in the packs to match.

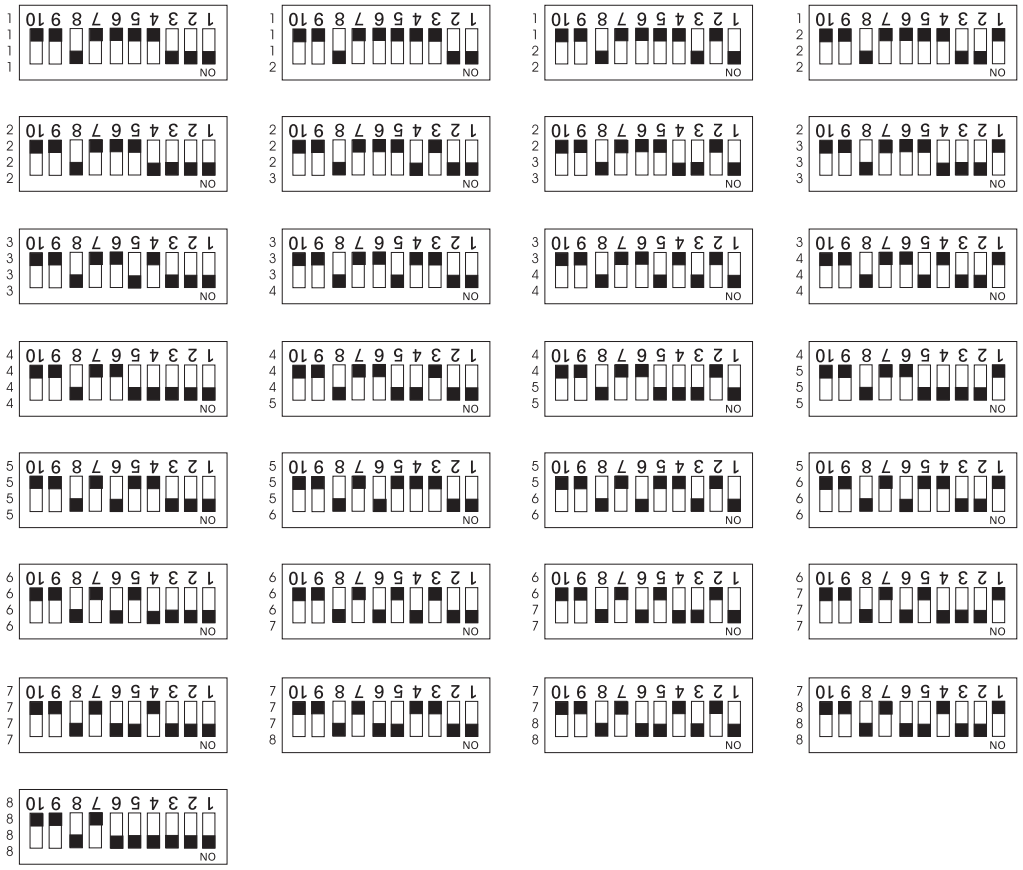
Configuring the Dimmer Cabinet

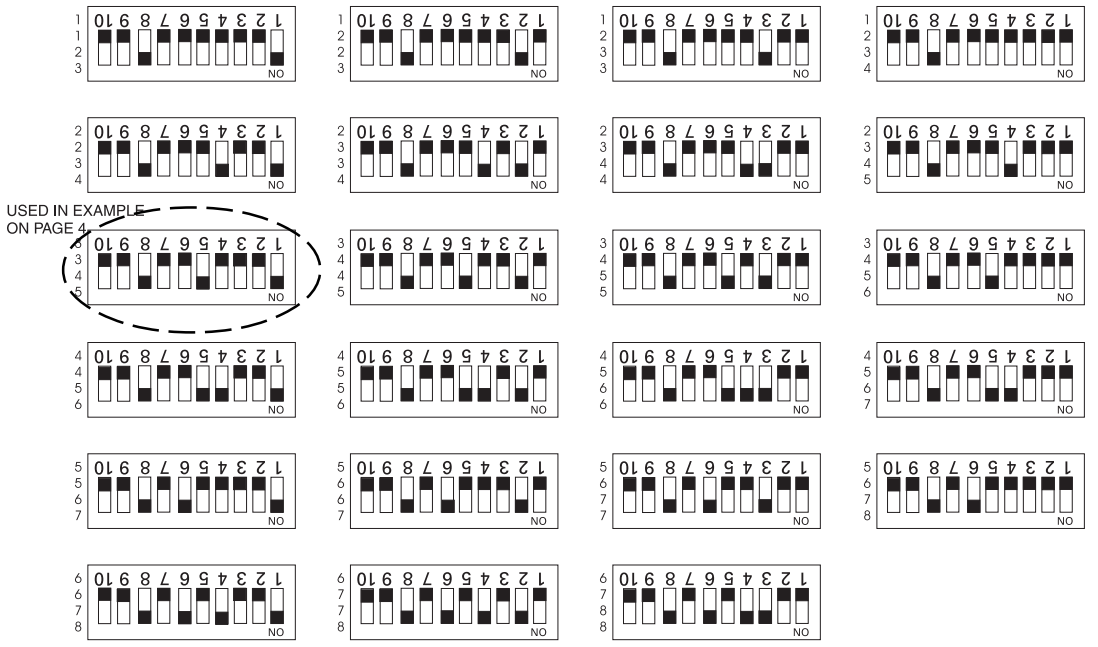
Pack 1



Configuring the Dimmer Cabinet

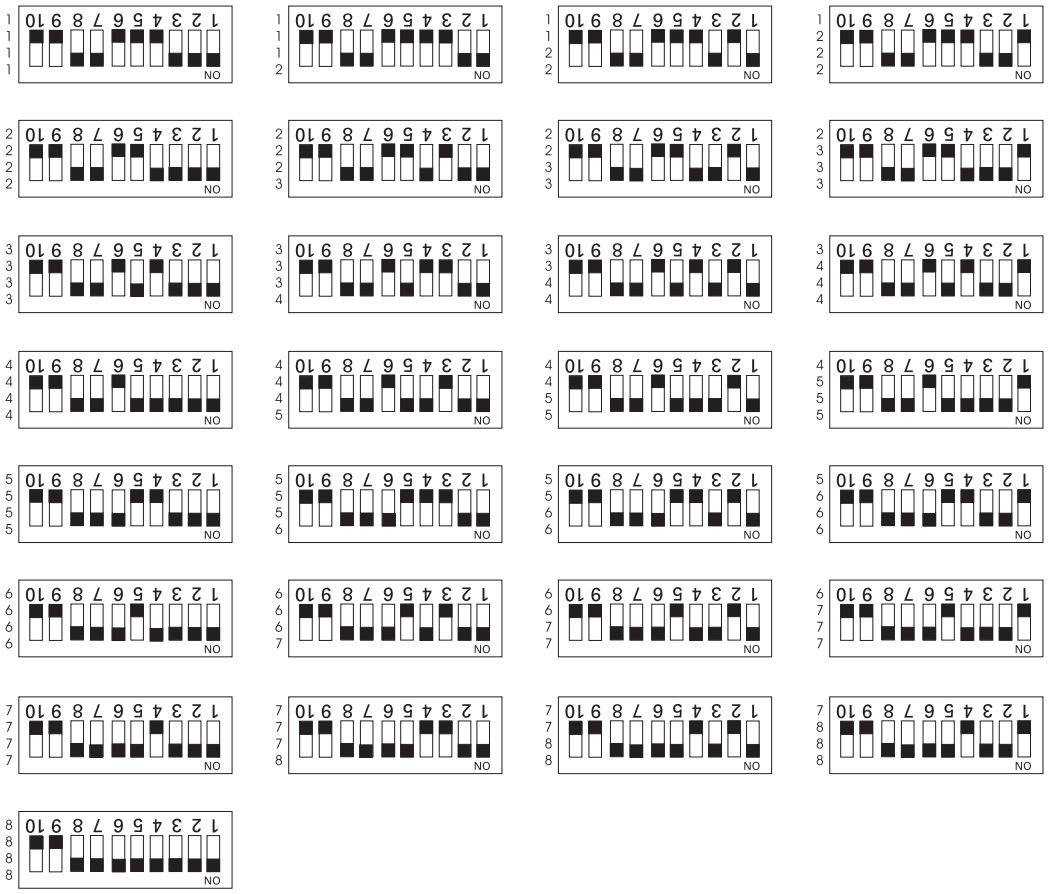
Pack 2

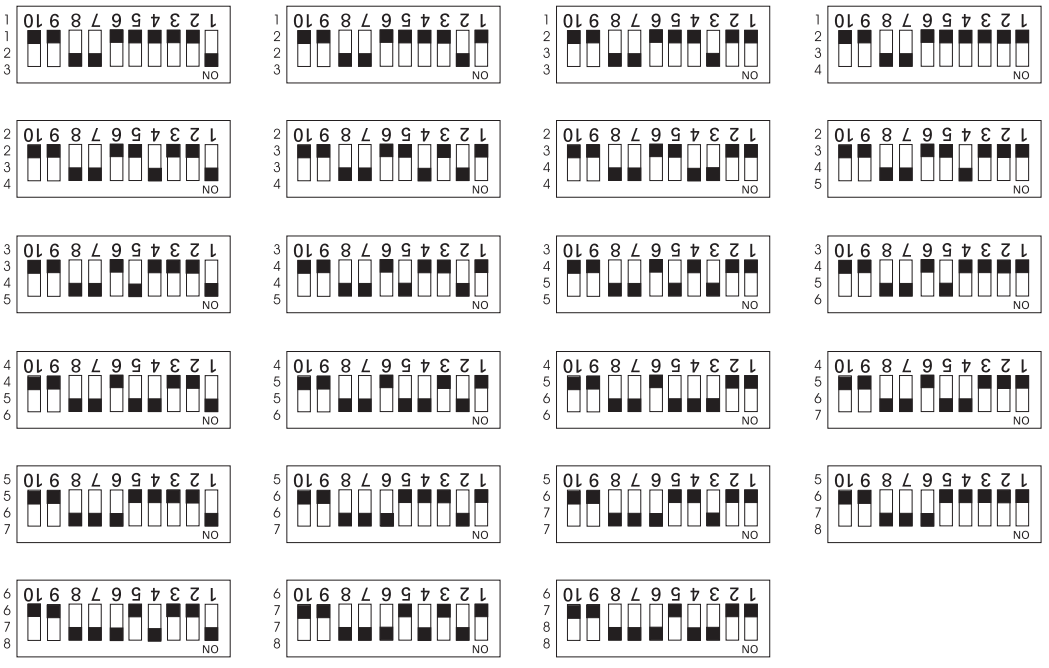




Configuring the Dimmer Cabinet

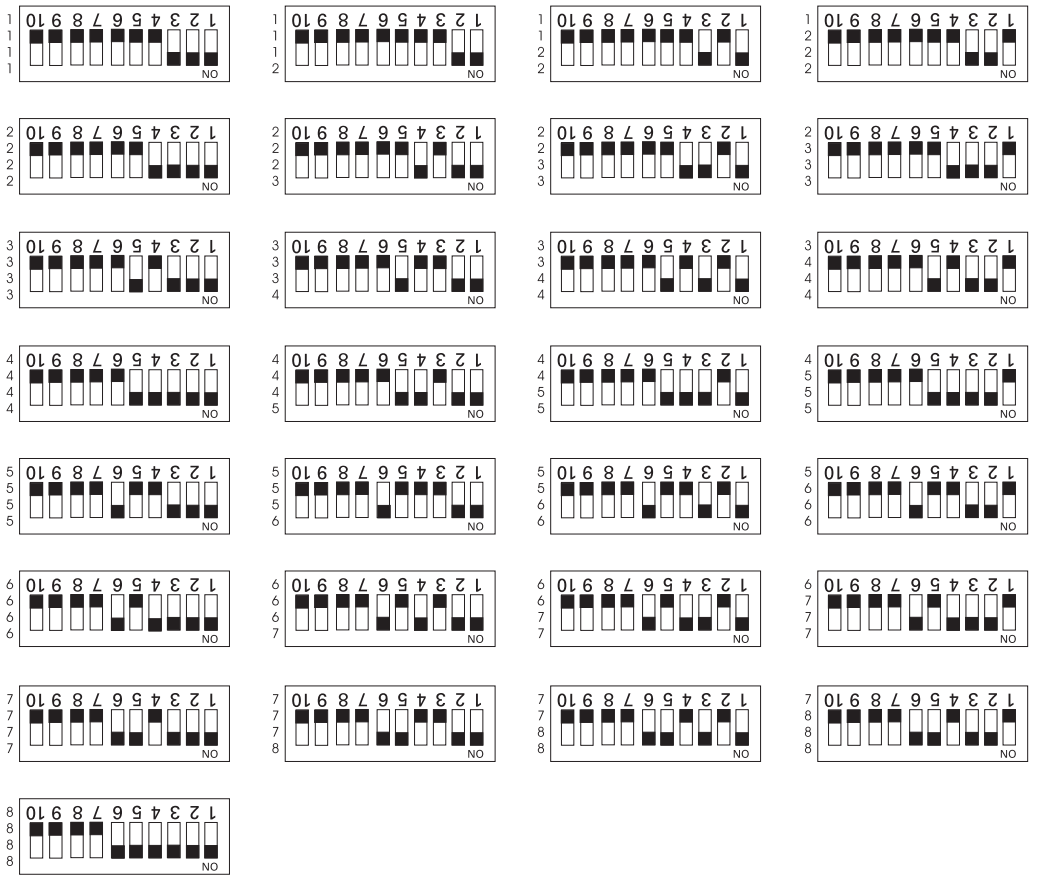
Pack 3

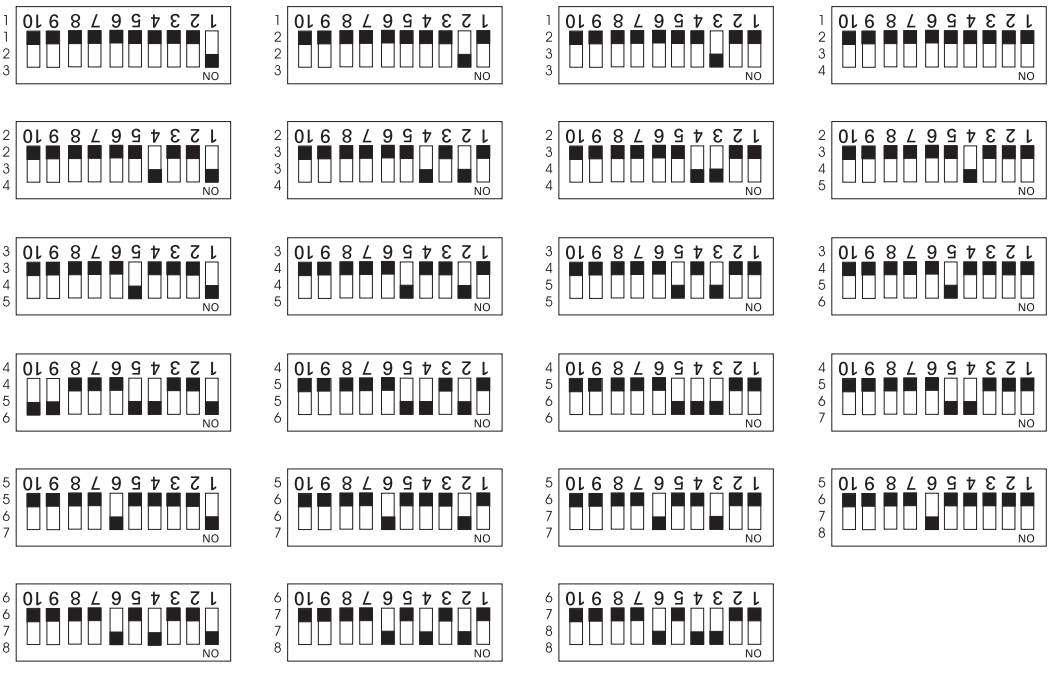




Configuring the Dimmer Cabinet

Pack 4





Before beginning the start up procedure, you should have completed the following steps:

- Completed all line and load circuit wiring.
- Terminated all low voltage wiring connections.
- Configured the control station (see pages 2 and 3).
- Set the dimmer pack dip switches (see page 4-10).
- Familiarized yourself with basic control station operation found in the Sequel User Guide.

Start Up Procedure

1. Measure Network Voltages

This step tests for network miswires, and may prevent damage to equipment in cases where miswires have occurred.

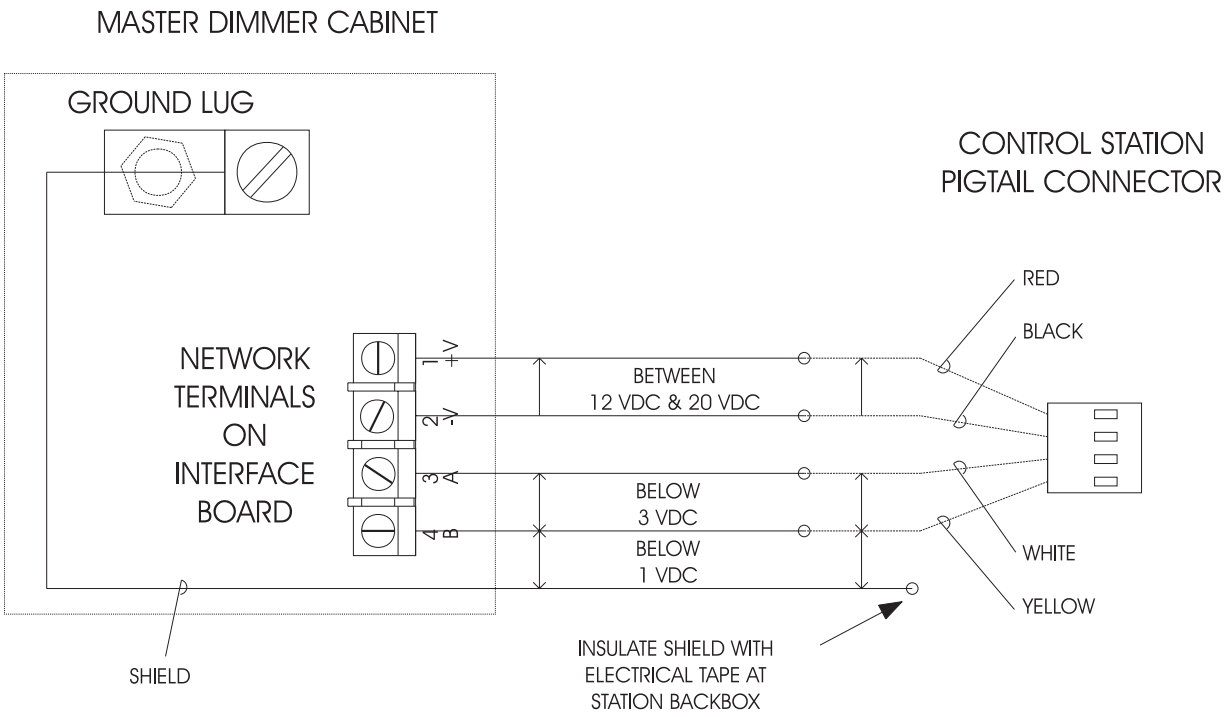
a) With the input terminals energized measure the DC voltages between the network terminals in the master dimmer cabinet and at the control station network pigtail connectors. See figure 2 below. At this stage the batteries in the M2 cabinet and the pigtail connectors are still disconnected from the back of the station. If the voltages you measure are not within the range shown, immediately turn off the input breakers and verify field wiring terminations. If the voltages you measure are within the ranges shown:

I.) Turn off input breaker to input #1 on all dimmer packs.

II.) Attach network pigtail connector to station.

III.) Attach the batteries in the M2 pack.

IV.) Turn on the input breakers to all dimmer packs.



2. **Reboot the System**

   This step clears the microprocessor memory, reloads the factory default settings, and eliminates poor performance that can be a result of improper shipping and storage. Rebooting is also required when control station dip switches are changed.

   a) Turn off input breakers to input #1 on all packs.

   b) Detach the batteries in the M2 cabinet for 5-10 seconds.

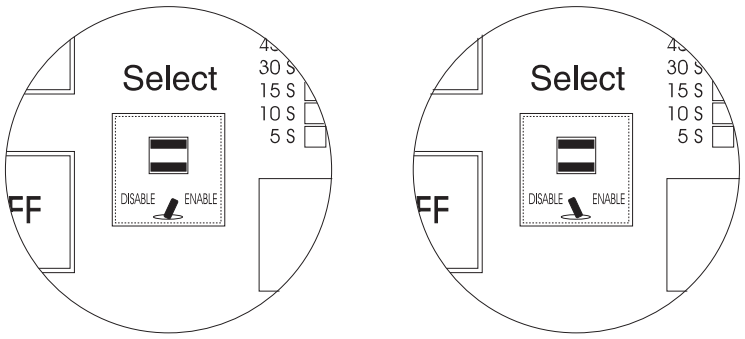
   c) Attach the batteries in the M2 pack.

   d) Turn on the input breakers to all dimmer packs.

3. **Verify Proper Operation of Controls**

   a) Operate the control station channel and master raise/lower buttons. Observe that the LED bargraphs scroll smoothly. If bargraphs do no scroll smoothly or if top segment flashes without any buttons being pressed perform Step 4 below and refer to troubleshooting section.

   b) Operate lighting presets. Follow the instructions in the User Guide to save and activate presets. If presets are not able to be saved, remove the select button cap and verify that the switch behind it is in the “enable” position. Setting this switch in the disable position prevents presets from being saved, and the dimmer curves and high and low end trims from being set. See figure 3 below.



Select Button Enabled ***Select Button Disabled***

Figure 3 - Select Enable/Disable Switch

4. Verify Proper Operation of the Dimmers

   a) Operate the control station one channel at a time. Dimmers should respond smoothly and operate over the full range of light output from minimum to maximum.

   b) Dimmer response curves can be set to optimize operation with a variety of light sources. If loads are flickering at low settings, or need to be adjusted to restrict full output, follow the set-up steps on page 13.

MODIFYING THE DIMMER RESPONSE CURVE

Press and hold the *Fade Time Decrease* button. While holding the *Fade Time Decrease* button press and release the *Fade Time Increase* button. Release the *Fade Time Decrease* button. The current response curve for each channel will now be displayed as the lowest LED segment lit. See Figure 4 for lamp type reference. Factory default is for standard incandescent or halogen lamps.

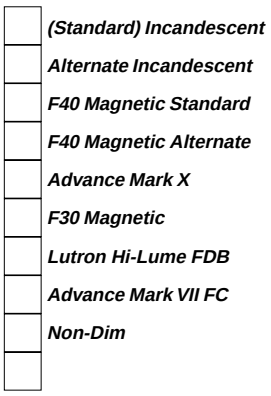


Figure 4

Adjust the *Channel Raise* and *Lower* buttons for each channel until the appropriate lamp type is indicated. Press and release the select button to save the settings.

MODIFYING HIGH/LOW END TRIMS

High and low intensity trim limits can be set for each channel. The Low End Trim is useful to eliminate flicker in fluorescent and neon loads when dimmed too low. The High End Trim can be adjusted to save energy or extend lamp life. Low End Trims are factory set at 0%. High End Trims are factory set at 100%.

To Modify the Low End Trim

Press and hold the *Select* button then press and release the *Fade Time Decrease* button. Release the *Select* button. Note that the Fade Time top LED segment will blink to indicate that the station is in a special mode of operation. Adjust the *Channel Raise* and *Channel Lower* buttons until the desired Low End Trim values are displayed. Press and release the *Select* button to save the trim values.

The Low End Trim also determines the point within a preset fade that a non-dim channel will switch. With the standard curve, a setting of about 50% low end trim will produce good results for non-dim channels controlling fluorescent lamps.

To Modify the High End Trim

Press and hold the *Select* button then press and release the *Fade Time Increase* button. Release the *Select* button. Note that the Fade Time top LED segment will blink to indicate that the station is in a special mode of operation. Adjust the *Channel Raise* and *Channel Lower* buttons until the desired High End Trim values are displayed. Press and release the *Select* button to save the trim values.

Troubleshooting Procedure

Search the following list for the problem definition closest to your symptoms. Read all of the steps associated with troubleshooting the problem and perform them in the order that is appropriate for your project. If you are in need of further assistance, call Lithonia Controls Technical Services and provide the information indicated on the last page of this manual.

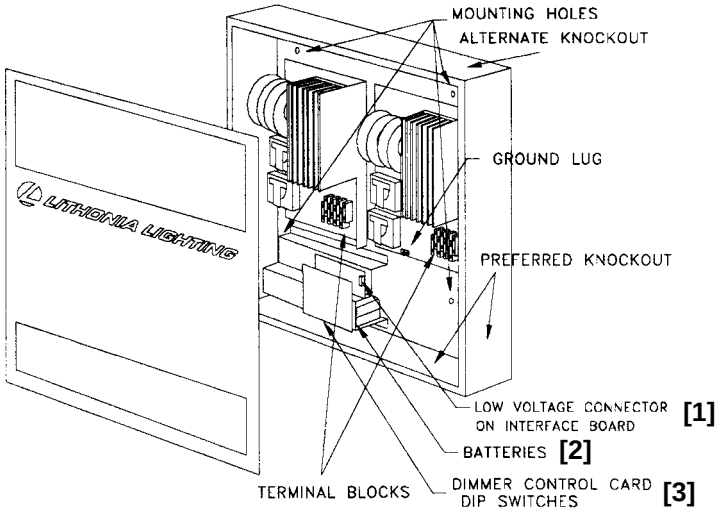


Figure 5

SITUATION I: NOT ENOUGH VOLTAGE ON + AND - WIRES ON "A4" NETWORK TERMINAL BLOCK [3].

Step 1. Visually inspect fuse on interface board [1].
Step 2 Verify that 15 VAC is present on the purple wires connected to the terminals marked "LV" on the interface board [1].
Step 3. Verify that input 1 to the master pack is energized, and that terminal #7 on the left module is connected to the panelboard neutral.
Step 4. Verify that the green LED in the right hand corner of the dimmer board [3] is on.

Make corrections as required. Contact LCS for additional assistance and transformer or interface board replacement.

SITUATION II. CONTROL STATION IS NOT OPERATING. CHANNEL BARGRAPH LED'S ARE "FROZEN" OR ARE "OFF" AND WILL NOT CHANGE.

Step 1. Press the select button on the station.
Step 2. Follow the steps shown in Start-Up Procedure step 4.

SITUATION III. CONTROL STATION BARGRAPHS DO NOT SCROLL SMOOTHLY, AND/ OR TOP SEGMENT OF BARGRAPH FLASHES WITHOUT THE SELECT OR PRESET BUTTONS PRESSED IN PRESSED IN.

Step 1. Verify that all control station or SQMPRSI interface switch settings are correct. See Page 2 of this manual and (optional) SQMPRSI Installation Instructions. Correct settings as required, and follow the steps shown in Start-Up Procedure Step 4.

Step 2. Follow the steps shown in Start-Up Procedure Step 4. Turn off the power to input #1 on all dimmer packs. Observe the operation of the station if the batteries in the M2 pack have charged. If the operation is now correct a faulty dimmer board [3], or duplicate dimmer board dip switch settings are suspected. Verify that the switch settings in each dimmer pack are unique, and that no more than one switch setting was used from each of pages 7-10 (4 packs maximum). Correct dimmer board dip switch settings as required before energizing the input breakers. Test operation of control station after resetting the switches.

Step 3. If the operation of the station is correct when all input #1 breakers are off, and if all switch settings were determined to be correct in step 2 above, a faulty dimmer board is suspected. Energize the input #1 breakers on dimmer packs one at a time until the operation of the station is no longer smooth. The pack which causes the poor performance has a faulty dimmer board [3]. Phone Lithonia Controls Technical Services and provide the information indicated on the last page of this manual.

SITUATION IV. DIMMERS ARE OPERATING AS ON/OFF DEVICES.

Step 1. If you have a 120/208 service to the project, verify dimmer pack phasing by measuring for AC voltage input between 1 and inputs 2,3 and 4. With one meter lead on the terminal for input 1 verify 0 volt between terminal 1 and inputs 2,3 and 4. If 208 volts is found between any of the terminals, the pack must be rephased as a single phase pack.

Step 2. If this is a UF style pack make sure that the load has been terminated on the dimmed output, and not on the switched output.

SITUATION V. ALL LIGHTS ARE OFF AFTER REBOOTING THE SYSTEM.

Step 1. Verify that input 1 to all dimmer packs is energized, and that terminal #7 on the left module is connected to the panelboard neutral.

Step 2. Remove wiring to secondary packs (if applicable). Reboot the system again per the Start-Up Procedure Step 4. If control stations are operating properly, a dimmer board [3] is most likely the problem. If Control Stations are still not operating properly then the station is most likely the problem. Phone Lithonia Controls Technical Services and provide the information indicated on the last page of this manual.

Step 3. If it is necessary to bypass the system to provide circuit breaker control, connect the input circuits directly to the corresponding controlled output. The system will have circuit breaker on/off control only at this point.

SITUATION VI. LUTRON DIMMING BALLASTS ARE NOT PROVIDING FULL RANGE DIMMING OR ARE FLICKERING BEFORE THE EXPECTED LOW END.

Step 1. Verify that the leads for the modules controlling the Hilume or ECO-10 ballasts have been moved from terminal #8 to terminals #3 and #5 per figure 5 of the UF Minipac installation instructions.

Step 2. Verify that the orange ballast control leads for all fixtures have been connected to the dimmer pack dimmed outputs, and the black ballast power leads are connected to the dimmer pack switched outputs and that no field wiring connections are crossed.

SITUATION VII. THE CONTROL STATION CHANNELS DO NOT OPERATE THE CORRECT DIMMERS.

Step 1. If factory dimmer board settings and pack schedules were provided make sure that field settings and wiring terminations match. Correct as required.

Step 2. See pages 4-10 of this manual for additional information on setting dimmer to channel assignments.

SITUATION VIII. SOME CIRCUITS ARE OFF WHEN THEY SHOULD BE AT FULL OUTPUT.

Step 1. Verify load conductor is on the proper pack output terminal block.

Step 2. Trace power from input terminal through dimmer pack power devices and out to terminal blocks. Contact LCS with information recorded for additional assistance.

Step 3. Check steps shown in Problem IV for affected circuits.

SITUATION IX. SOME CIRCUITS ARE FULL ON, AND DO NOT DIM OR GO OFF.

Step 1. Verify that dimmer pack switch settings are set to active channels on the control station. See page 4-10 for proper dip switch settings.

Step 2. Verify that the twisted pair connection is made to all S2 packs.

Step 3. Unplug the connector on the solid state relay. If load is still full on the SQ PUCK ASSEMBLY has most likely failed. Contact LCS for additional information.

Step 4. If this pack has the “EM” option verify that a 120 volt control circuit was connected to terminals 7 and 8 of the right hand module as noted in Figure 4 of the UX pack installation instructions.

SITUATION X. REMOTE STATIONS NOT OPERATING PROPERLY, MULTIPLE LED'S LIGHT WITH A SINGLE BUTTON PRESS, OR THE WRONG LED'S LIGHT, OR BUTTONS DO NOT FUNCTION.

Step 1. Verify wiring run length is under 250 feet (80m) and that low capacitance multi-conductor cable or individual conductors were used to connect remotes to stations. Verify that the remote station is not shorted to the backbox, and all conductors are isolated from ground. Contact LCS for additional information.

SITUATION XII. LOADS CYCLE ON AND OFF AFTER SYSTEM IS OPERATED FOR A FEW HOURS.

Step 1. Verify that air intake and exhaust to the dimmer pack is not blocked.

SITUATION XIII. RELAYS BUZZ WHEN THEY ARE ENERGIZED.

Step 1. Remove magnetic material that has adhered to the relay coils.

Additional Information

LCS Technical Service is available from 8:00 a.m. to 6:00 p.m. EST for phone consultation. It is important for you to complete the required testing prior to calling. LCS Field Service is available for on-site visits with adequate notice and a service call charge. Prior to phoning, please have the following information at hand:

- Lithonia Order Number
- Lithonia Packing List
- Master Station and Dimmer Pack Switch Configuration
- Dimming System As-Built Drawings
- Plus specific test information as requested in Troubleshooting Procedure.

LCS Field Service

In Warranty	1-800-533-2719
Out of Warranty	1-770-987-4200
Fax	1-770-987-1002

Warranty

Lithonia Control Systems warrants all equipment to be free from defect in manufacturing, under normal and proper storage, installation, and use, for a period of one (1) year. Our guarantee liability extends only to the repair or replacement of the defective part and no labor charges for correction of the defect by repair or replacement will be honored by Lithonia Control Systems unless prior written authority has been granted by our Customer Service Department.

LITHONIA LIGHTING
LIGHTING CONTROL SYSTEMS
ONE LITHONIA WAY, DECATUR, GEORGIA 30035, TELEPHONE 770-987-4200, FAX 770-987-1002
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1/99