Installation Instructions

Controllable Breaker - SYBP

READ AND FOLLOW ALL SAFETY INSTRUCTIONS!
SAVE THESE INSTRUCTIONS AND DELIVER TO OWNER AFTER INSTALLATION

IMPORTANT SAFETY INSTRUCTIONS

⚠ WARNING
To reduce the risk of death, injury or property damage from fire, electric shock, cuts, abrasions, falling parts, and other hazards:

- Service of the equipment must be performed by qualified service personnel.
- Installation and maintenance must be performed by a person familiar with the construction and operation of this product and any hazards involved. All applicable codes and ordinances must be followed.
- Read this document before installing, servicing, or maintaining this equipment. These instructions do not cover all installation, service, and maintenance situations. If your situation is not covered, or if you do not understand these instructions or additional information is required, contact *Synergy Lighting Controls.*

⚠ WARNING
Before installing, servicing, or maintaining this equipment, follow these general precautions.

To reduce the risk of electrocution:

- Make sure the equipment is properly grounded.
- Always de-energize any equipment before connecting to, disconnecting from, or servicing the equipment.

To reduce the risk of fire:

- Use supply conductors with a minimum installation temperature rating as specified.

To reduce the risk of personal injury from cuts, abrasions:

- Wear gloves to prevent cuts or abrasions from sharp edges when removing from carton, handling and maintaining this equipment.
- Do not install a damaged equipment.

Synergy Lighting Controls, a division of *Acuity Brands* Inc., assumes no responsibility for claims arising out of improper or careless installation or handling of this product.

SAVE THESE INSTRUCTIONS

Installation Instructions
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Before You Start

1. Always disconnect all power.
2. Install in accordance with the National Electrical Code and any other codes which may apply.
3. Use only as intended and at the listed voltage.
4. All installation and service must be performed by qualified personnel or service technicians.
5. Do not install conduit where "No Conduit Entry" is shown in *Figure 1.*
6. Do not discard these instructions, this document is a reference for installation, programming, operation, and maintenance of the system.
7. All installation and wiring information contained herein is based on industry-accepted standards and practices. This information is not meant to conflict with or overrule any applicable codes or ordinances. If any conflicts exist, please contact Synergy Lighting Controls before proceeding with installation.
8. Document all wiring, device terminations and locations. This information will be necessary to correctly configure the system and perform the system start up .
9. USE EXTREME CAUTION WHEN PERFORMING MAINTENANCE ON THE CONTROLLABLE BREAKER PANEL AND ANYTIME THE ENCLOSURE DOOR IS OPEN OR REMOVED. HIGH VOLTAGE IS PRESENT INSIDE THE ENCLOSURE! Failure to follow all warnings and proper safety procedures can cause severe injury or death, and/or damage to the equipment.

Controllable Breaker Panel
42 Circuit, Top Feed

Synergy Lighting Controls Conyers Ga, 30012
TEL : (800)-533-2719 www.Synergylightingcontrols.com

Install Enclosure

IMPORTANT: Punch the conduit entrance holes BEFORE installing the interior and electronics.

1. Before punching the conduit entrance holes, determine whether the panel interior is configured as top or bottom feed.
2. Once the feed orientation is determined, punch the conduit entrance holes for both high and low voltage conductors. The main feed and low voltage conductor entrances will ALWAYS be at opposite ends of the enclosure. (See *Figure 1* for details)
3. Clean all metal shavings and debris from inside the enclosure.

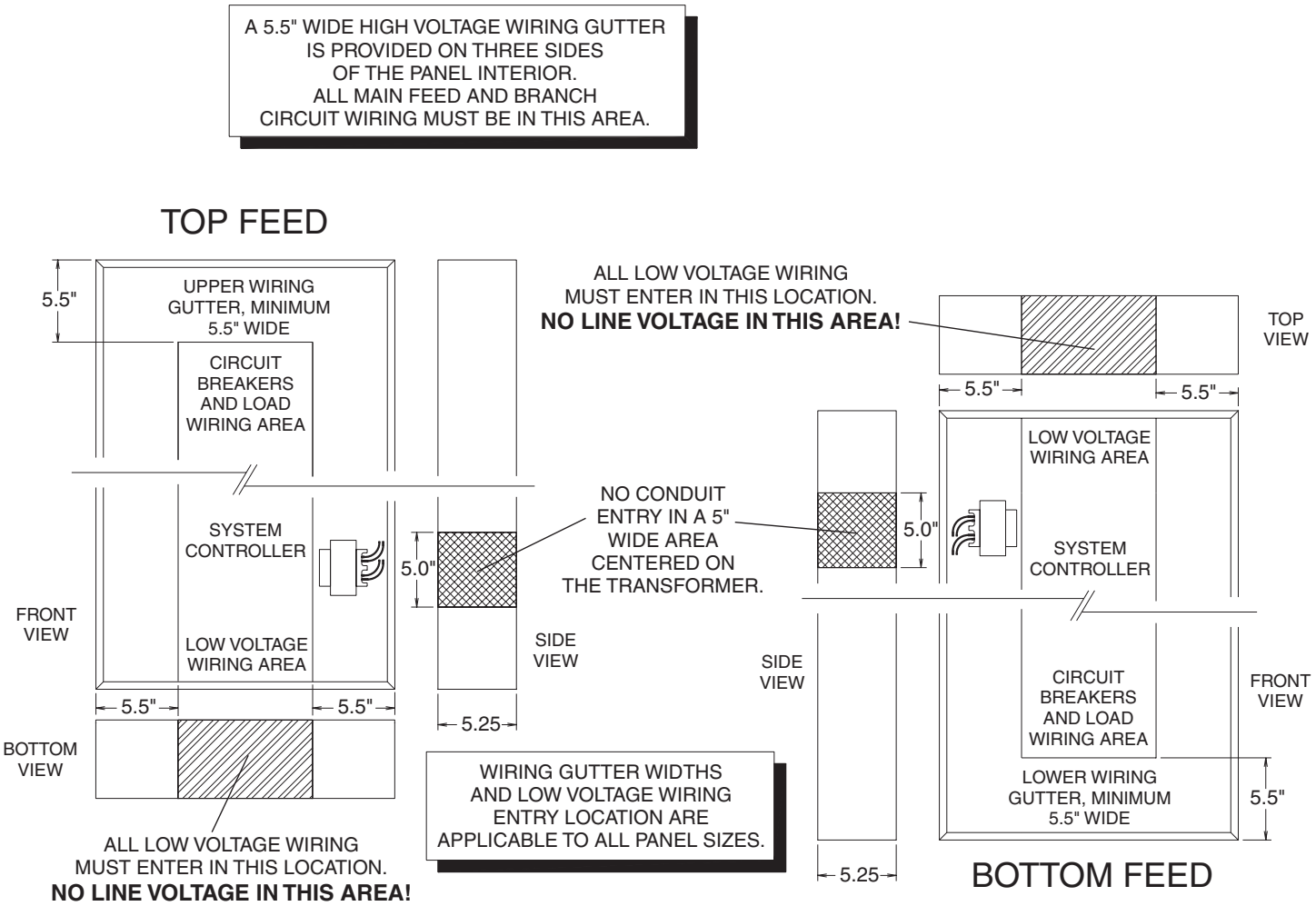

Figure 1 - Conduit and Cable Entry

Mount Interior

The interior and low voltage power supply are shipped as a completed assembly.

1. Locate the hardware pre-pack supplied with the interior.
2. Install four square adjusting clips onto the four mounting studs which secure the interior. (*See Photo 1 for details*)
3. Place the interior on the 4 mounting studs. The adjusting clips can be used to align (raise or lower) the interior with the flush trim kit (door assembly).
4. Secure the interior with (4) of the supplied 1/4-20 hex flange nuts.
5. Secure the Neutral Bar to 2 of the mounting studs in the enclosure with (2) 1/4-20 hex flange nuts. If the interior is top fed, install the Neutral Bar on the right side (as viewed when facing the panel) of the enclosure. If the interior is bottom fed, install the Neutral Bar on the left side of the enclosure. (*See Photo 2 for details*) Place 2 red protective caps over each stud.
6. Secure the Ground Bar to the 2 remaining studs in the enclosure with (2) 1/4-20 hex flange nuts. Place 2 red protective caps over each stud.
   NOTE: Orient the Neutral Bar so the bar is closest to the side of the enclosure. This will maximize the available space in the wiring gutter.
7. Connect the white 18 ga neutral wire from the power supply to the neutral bar. **DO NOT OVERLOOK THIS STEP!** The cabinet electronics will not function if this is not done.

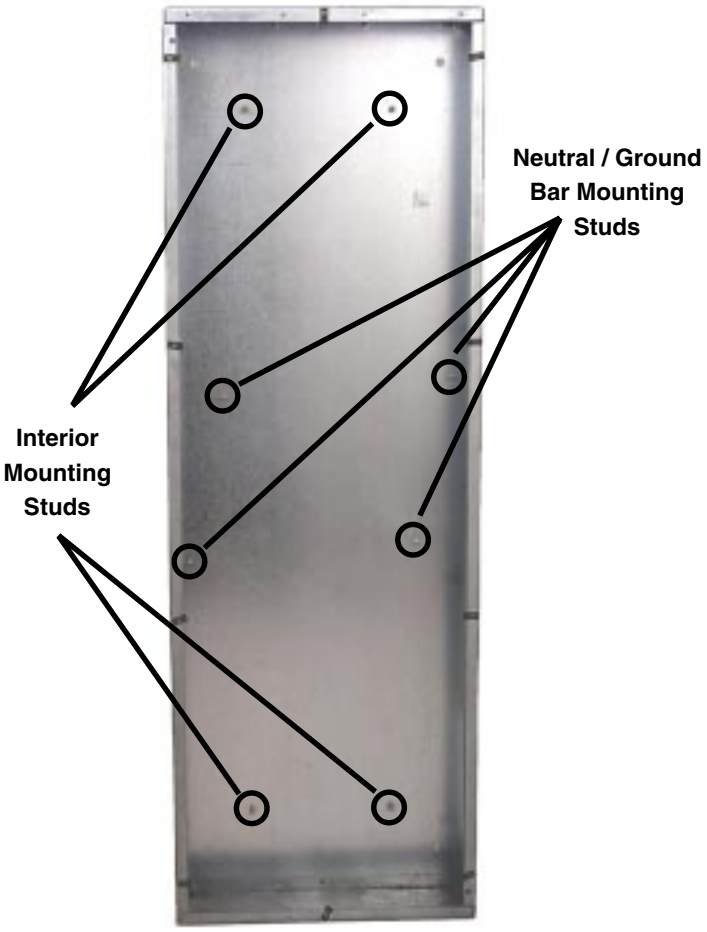

Photo 1 - Enclosure Mounting Stud Locations

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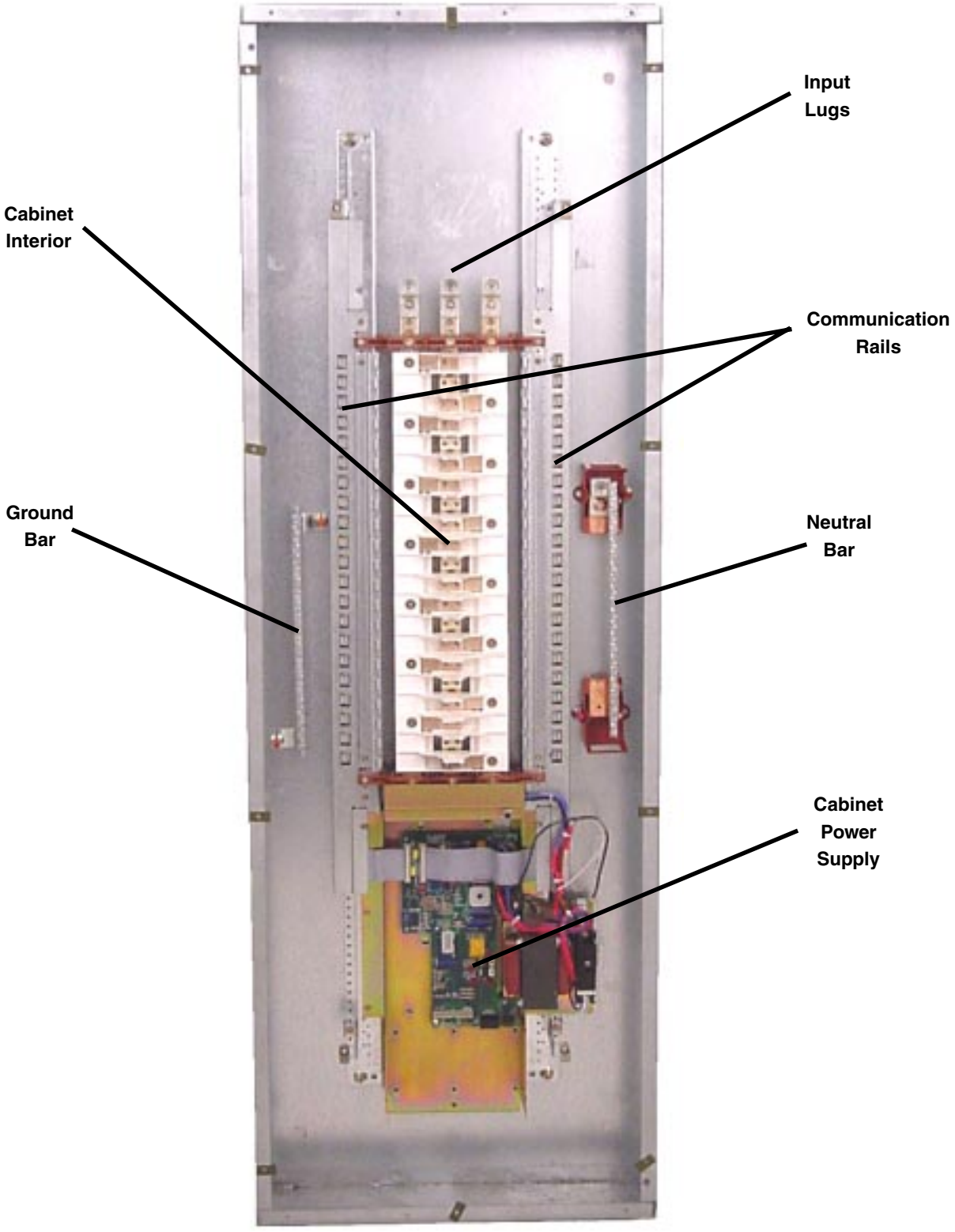

Photo 2 - Interior Details (Top Feed Interior Shown)

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Make Line Voltage Connections

Before connecting main feed and load wiring to the panel, consult the included NEMA publication, PB 1.1-1996, for general instructions, accepted standards and practices, and maintenance methods for panelboards.

If the panel is classified as SERIES RATED, consult the included Series Rating Information Manual for important information regarding this rating and installation.

1. Consult the project specifications, load schedules or other project details before making main feed or branch circuit connections.
2. Connect the main feed conductors to the input lugs or the main breaker terminals. (*See Photo 2 for details*)
3. Locate the circuit breakers. *Both controllable and standard breakers can be use in the same enclosure.*
4. The control pigtails on BABRS series (120 volt) controllable breakers are part of the breaker assembly, GHBS (277 volt) controllable breakers use separate pigtails. To install GHBS controllable breaker pigtails, see steps 4a and 4b below.
   - 4a. Locate the pre-pack containing the controllable breaker pigtails (This pre-pack is supplied with the interior)
   - 4b. One end of the pigtail has a 3 prong connector, the other end has a 4 prong connector. Insert the pigtail end with the 3 prong connector onto the 3 pigtail "fingers" of each controllable breaker. (The pigtail "fingers" are located on the bottom of the breaker, beneath the load wire terminal) The pigtail wires should be oriented pointing AWAY from the load terminal. (*See Photo 3 for GHBS Controllable Circuit Breaker details*)
5. Install the circuit breakers. Each circuit breaker is secured with a mounting screw, torque the mounting screw to the torque specification listed on the breaker.
6. Connect the 4 terminal end of each controllable breaker pigtail to the communication rail. (*See Photo 2 for details*) The pigtail for each breaker MUST be plugged into the correct header position along the rail. To avoid connection errors, begin plugging the pigtails in at the bottom of the rail and move up, one by one, until all the pigtails are connected. **If any standard breakers are present, be sure to skip the header position wherever a standard breaker is used.**
7. Connect the load conductors to the circuit breakers, neutral conductors to the neutral bar and ground conductors to the ground bar.

Controllable Breaker Pigtail

Bottom of GHBS Circuit Breaker

GHBS Controllable Breaker with Pigtail Installed

Photo 3 - Circuit Breaker Details

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Apply Power, Check for Short Circuits

1. Verify all load circuit breakers are in the "OFF" position.
2. Energize the feed to the panel.
3. Switch on each load circuit breaker, one at a time, and verify there are no short circuits. If short circuits do exist, correct the error before continuing with the panel installation.
4. Put the the controller ON/OFF toggle switch in the "ON" position. (*See photo 6 for details*)
5. Verify the 3 green power supply LED's are on. (*See photo 4 for details*)
6. Remove power from the panel, then continue with the installation.

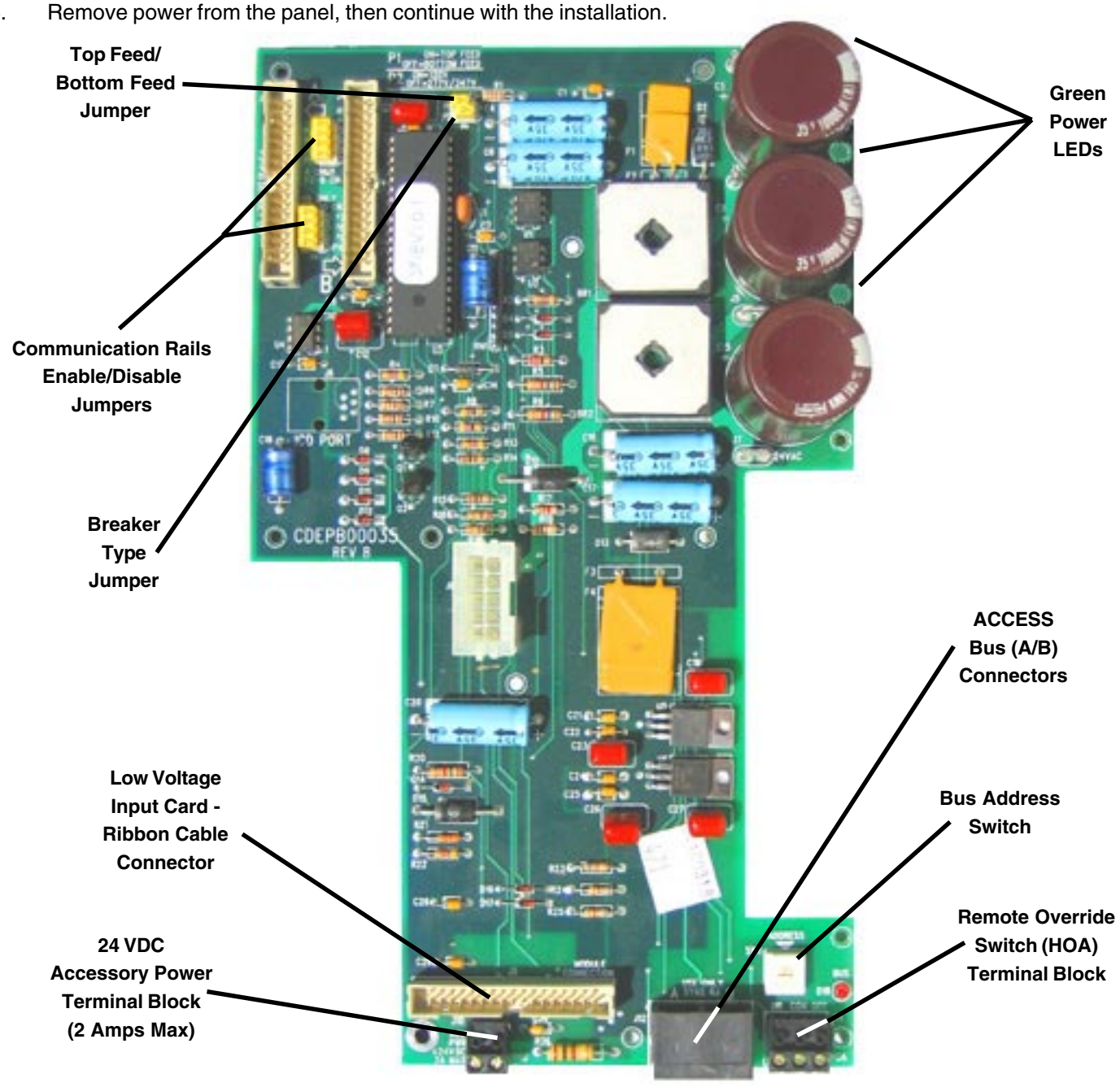

Photo 4 - Power Supply Details

Master/Secondary Configuration

In panels utilizing an SYBP MLS or SYBP MLX controller, two additional controllable breaker panels can be connected to a single MLS or MLX controller (panel), to form a master/secondary arrangement. This arrangement allows one SYBP MLS or MLX controller to control up to 3 controllable breaker panels (one panel contains the controller - two have no controller) via the internal ACCESS bus. When using this configuration, each panel MUST be set at a unique bus address.

1. In three panel configurations, the panel containing the MLS or MLX controller should be located in the center position of the three panels. The maximum total length of the ACCESS bus network is 50 feet (2 - 25' cables).
2. Connect the master/secondary buss network using the SYAS RJ secondary cable(s). **DO NOT USE STANDARD PHONE CABLES!** Connect the ACCESS bus connector on the power supply card in the master cabinet to either of the ACCESS (A/B) bus connectors on the power supply card in the secondary cabinet(s). (Either position A or B can be used)
3. Set the bus address wheel to the correct address, with each panel being at a unique address. The standard configuration has the master panel set at "0", and the other panels set at "1" and "2". (*See Figure 2 for details*)

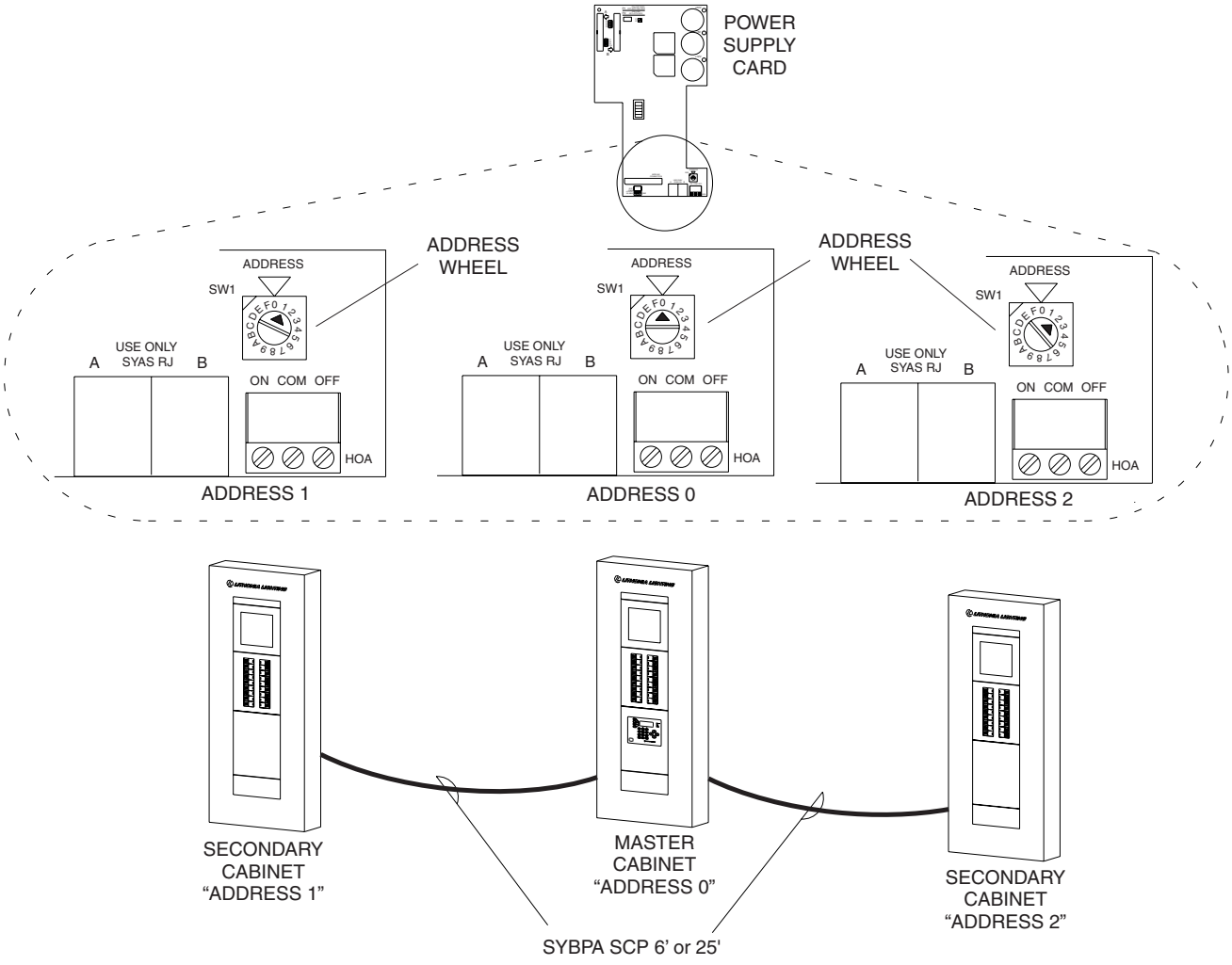

Figure 2 - Master/Secondary Details

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Make Low Voltage Connections

An optional Low Voltage Input card can be installed to provide 16 low voltage inputs and an analog photocell input. On installations that have master/secondary configurations, each cabinet may contain one low voltage input card. Each low voltage input card on the master/secondary ACCESS bus **must** have a unique buss address.

1. If applicable, install the Low Voltage Input Card(s).
2. On installations that **do not** have Master/Secondary configurations, set the address wheel on the low voltage input card to "2".
   On installations **that do have** master/secondary configurations and multiple low voltage input cards, set each card address so that each card (power supply and low voltage input) has a unique address.
3. Connect any low voltage switches or sensors to the low voltage input card. (*See Figure 3 for details*)

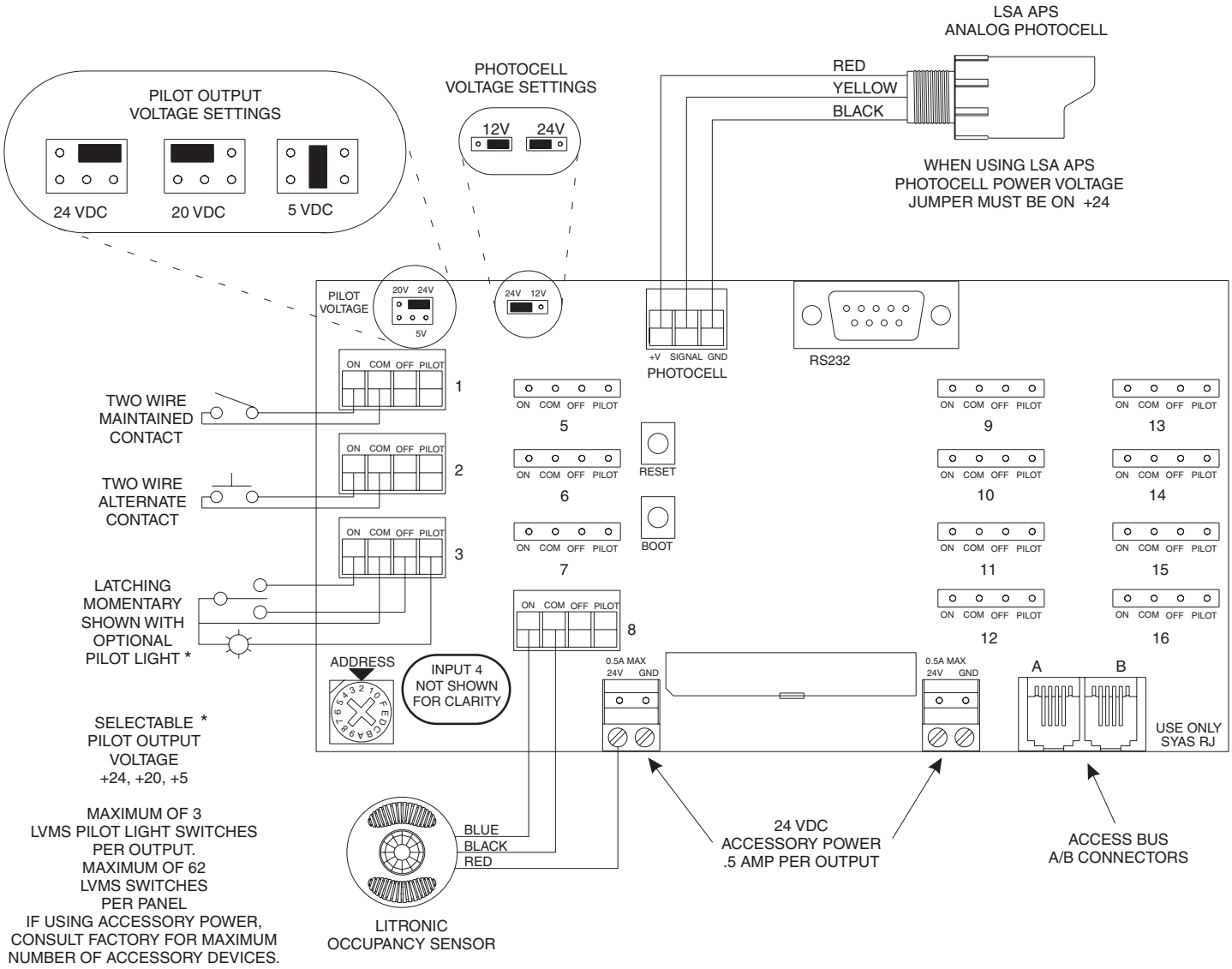

Figure 3 - Low Voltage Input Card Details

Install Controller

1. Install the controller by positioning the alignment slot in the controller bracket over the alignment tab in the power supply bracket.
2. Slide the controller down onto the power supply making sure the 10 position connector on the back of the controller completely engages the 10 position connector on the power supply.
3. Tighten mounting screw on controller bracket.
4. On MLX controllers, connect the S2 cabinet communication network cable to the controller's network terminal block. (*See Figure 4 for details*) Before installing the controller, consult the MLX controller installation instructions for important information and detailed installation drawings.
5. Connect any digital stations to the panel. Consult the installation instructions of the device being installed for correct installation procedures. (*See Figure 5 for details*)
6. Verify the both the S2 and digital station network connections **before applying power to the controller.** Miswires of either network can damage some or all of the network device(s) and void equipment warranty.

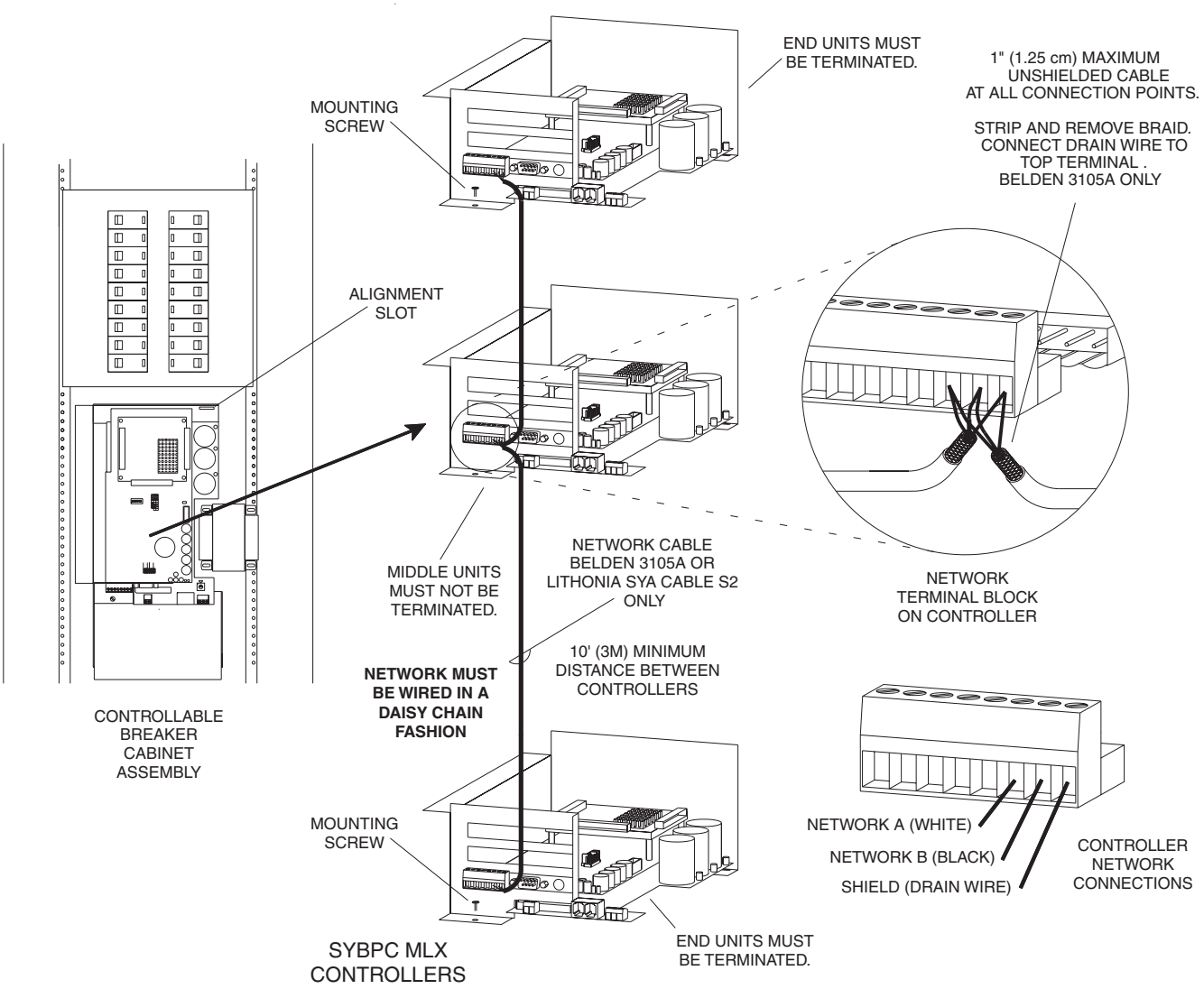

Figure 4 - SYBP MLX Controller Wiring Details

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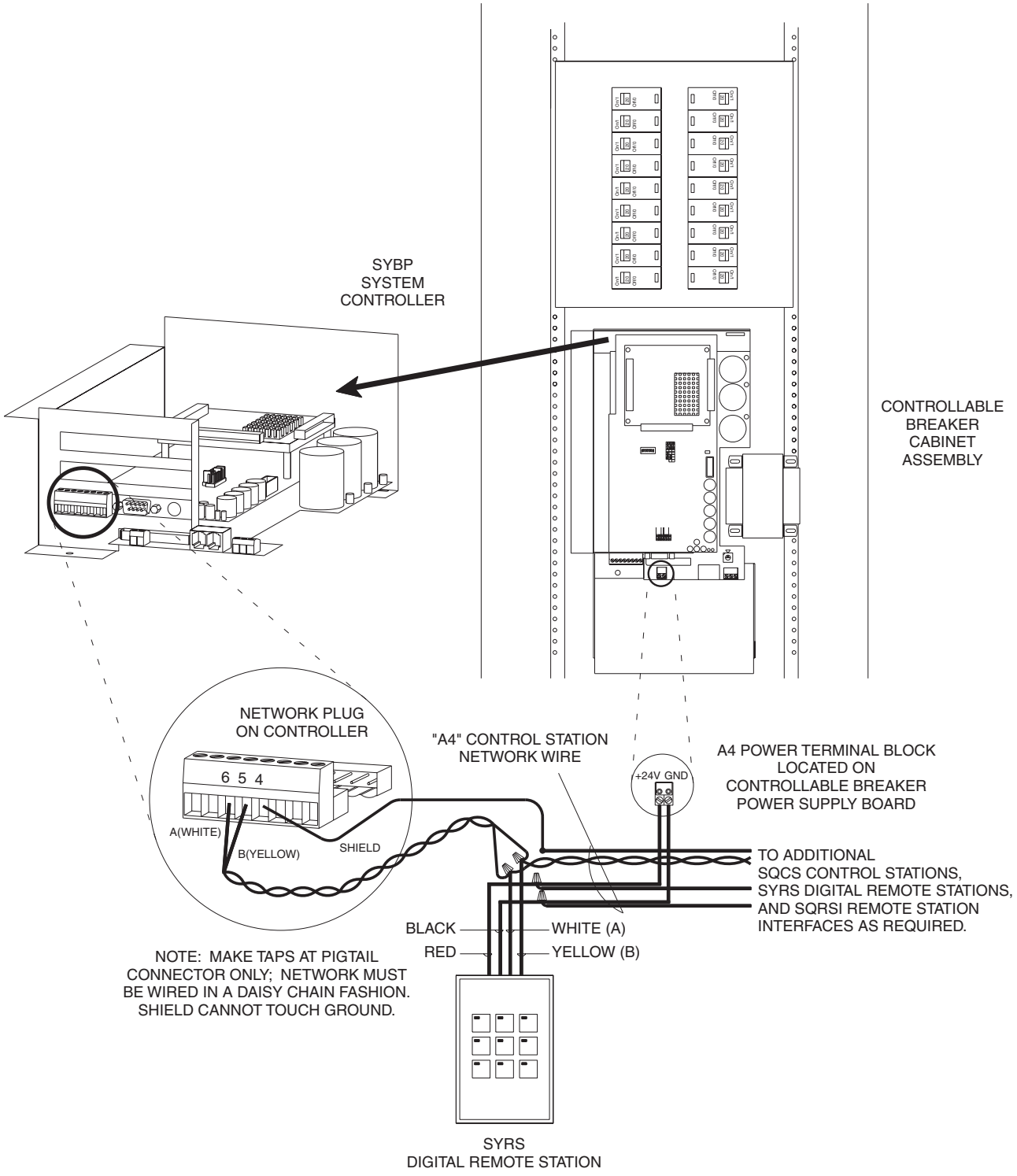

Figure 5 - Digital Station Network Wiring Details

Install Keypad and Cover

1. Install the low voltage barrier plate (if required).
2. Locate the dead front cover, the cover has the keypad attached to it. Connect the keypad ribbon cable from the power supply card to the socket on the back of the keypad. When connecting the ribbon cable, make sure to align the tab on the ribbon cable plug with the notch in the socket. (*See Photo 5 for details*)
3. Attach the dead front cover to the panel.

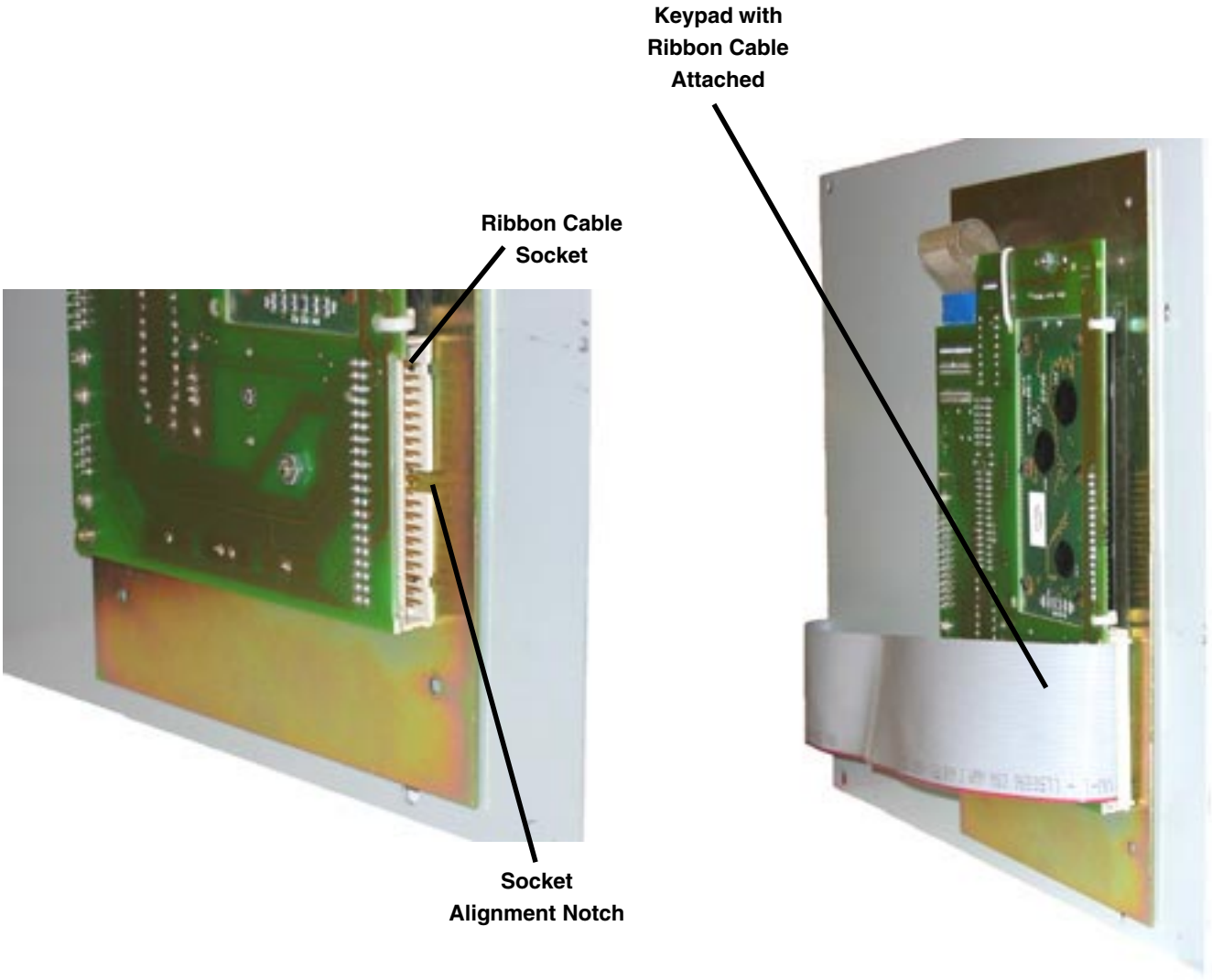

Photo 5 - Keypad Connection Details

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Apply Power and Verify Operation

1. Verify the controller ON/OFF toggle switch is in the "ON" position. (*See Photo 6 for details*)
2. Install the front cover (panel door) using the supplied 4 screws, finishing washers and finish protecting washers.
3. Energize the feed to the panel. The controller should boot up, then display the main menu.

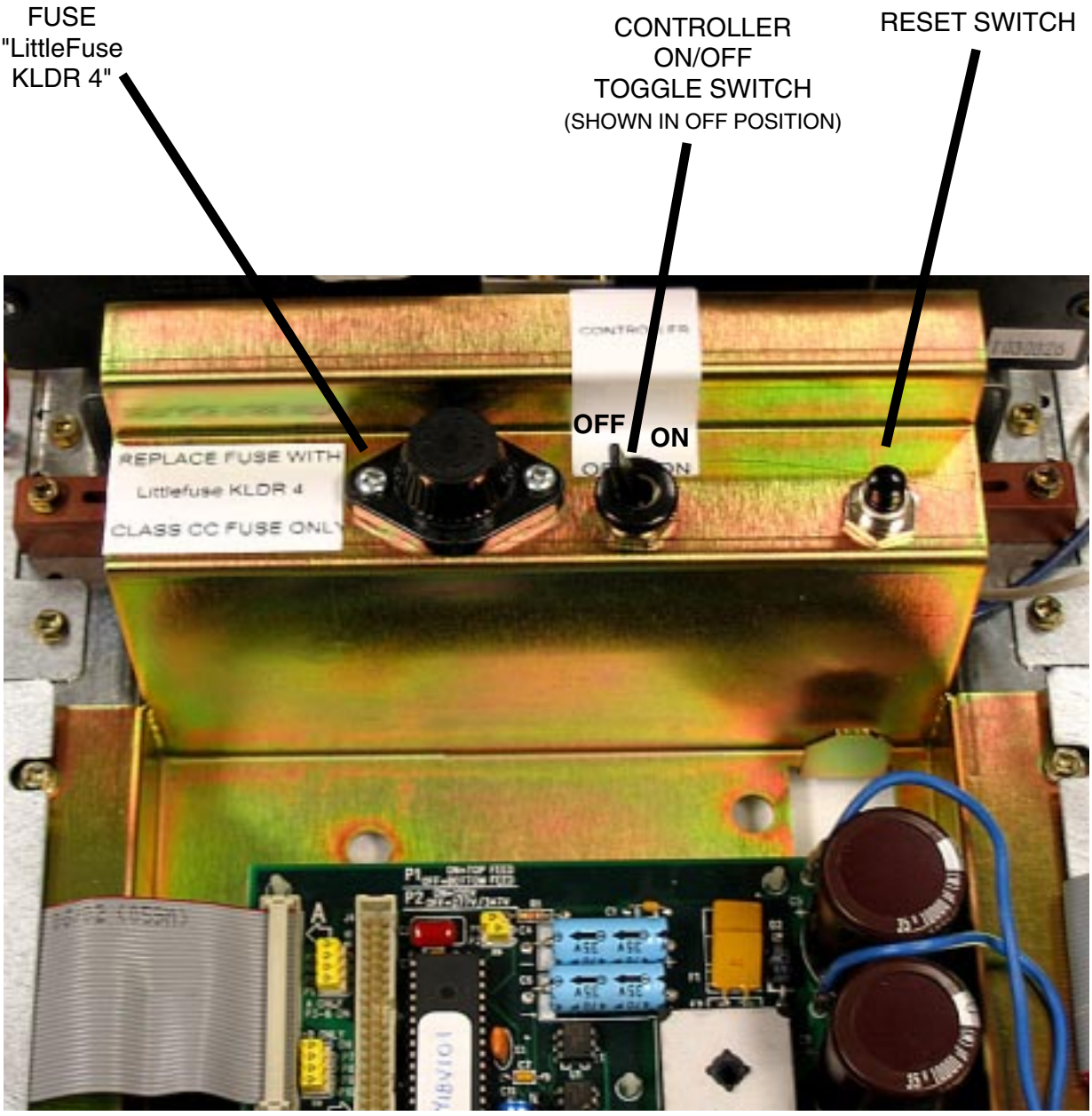

Photo 6 - Fuse, ON/Off Switch and Reset Switch

Power Supply Board Jumper Settings

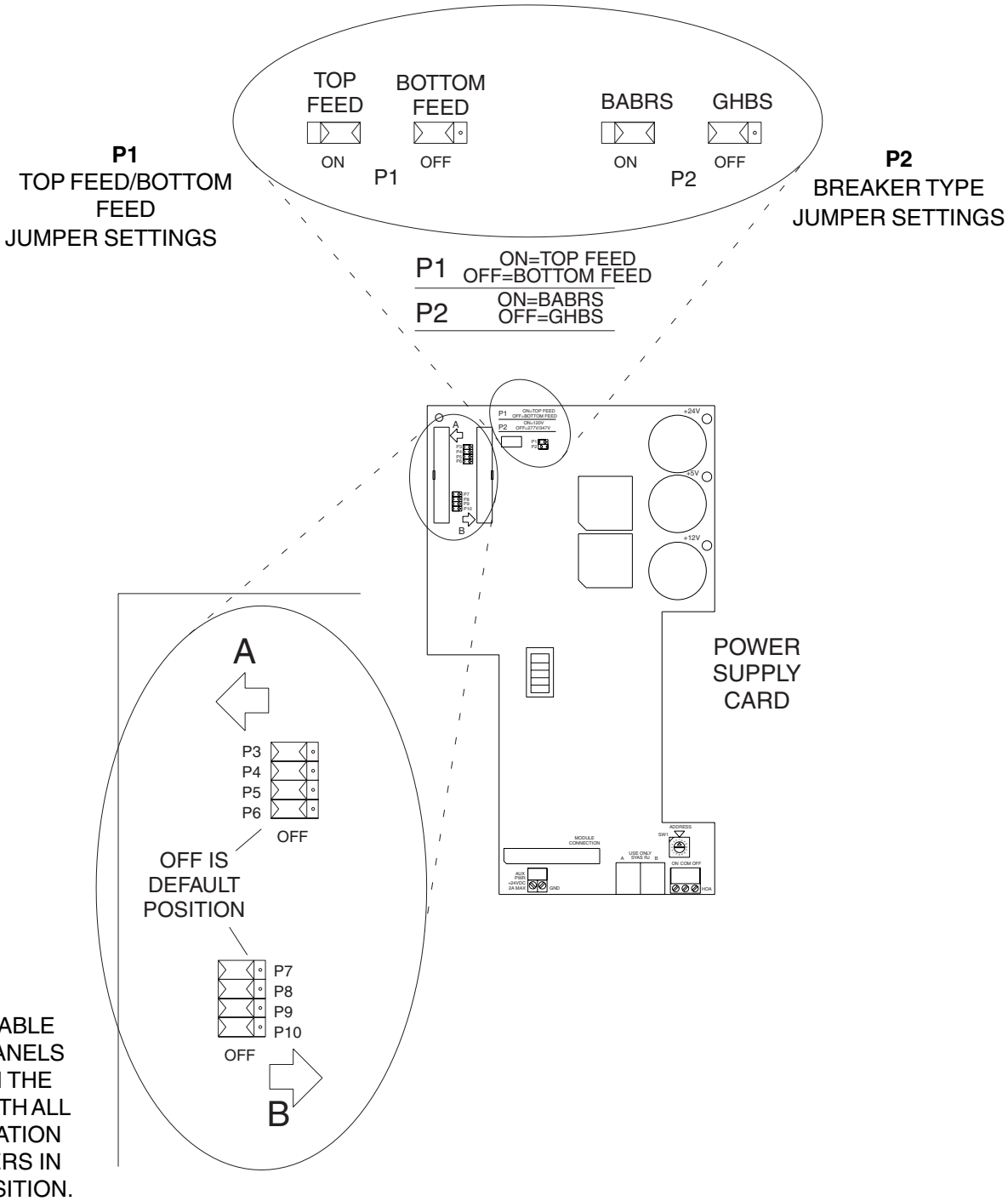

Figure 6 - Power Supply Card Jumper Settings

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Troubleshooting Procedures

SYMPTOM: CONTROLLER DOES NOT RESPOND TO KEY PRESSES

A reset button is located behind an access hole in the top right edge of the keypad panel. To reset the controller, insert a small screwdriver or point and press and hold the reset button for 5 seconds.

SYMPTOM: SYNERGY TOP LEVEL SCREEN DOES NOT APPEAR.

Check the following:

1. Was the controller ON/OFF toggle switch in the "ON" position before the dead front cover was installed?
2. Were the 3 Green power supply status LEDs "ON" while power was applied during load circuit verification?

SYMPTOM: SYNERGY "TOP LEVEL" SCREEN IS NOT IN ENGLISH (SPANISH) (FRENCH)

Press the BACK key, choose the appropriate language, then begin programming.

SYMPTOM: THE CONTROLLER IS OPERATING THE WRONG BREAKER

1. The pigtails on each controllable breaker MUST be plugged onto the correct header in the communication rail. Verify these connections are correct.
2. Verify power supply card jumper P1 (top/bottom feed) is in the correct position for this installation. (*See Figure 6 for details*)
3. If the pigtail connections and top/bottom feed jumpers are correct, check the system programming. See the Synergy Controllable Breaker Operation Manual for programming instructions.

SYMPTOM: CONTROLLABLE BREAKERS WILL SWITCH ON BUT NOT OFF, OR OFF BUT NOT ON

BABRS and GHBS controllable breakers use different control modes to operate the breakers.

1. Verify power supply card jumper P2 (BABRS/GHBS) is on the correct position for this installation. (*See Figure 6 for details*)

If after performing the above tests the panel still does not function correctly, contact the Synergy Lighting Controls Technical Service department between the hours of 8 AM and 5 PM EST, Monday - Friday, at 800-533-2719.

System LED's:

The cabinet power supply board (*See Photo 2 for location*) has several LED's which indicate various panel functions. (*See Photo 4 for details*)

BUS LED:	This LED indicates communications status on the access bus. It should flash at least once every 5 seconds (more frequently while the access bus is busy). This LED mimics the function of the LOCAL LED on the front of the keypad.
GREEN LED's:	These LED's should be ON any time power is applied to the panel.
NET LED:	This LED indicates network communication over the BACnet or ARCNET network. (MLX Controllers ONLY)

Visit Synergy Lighting Controls on the internet at **http://www.synergylightingcontrols.com** for further information on products, technical data or installation instructions.

Warranty

Synergy Lighting Controls warrants all equipment to be free from defect in manufacturing under normal and proper storage, installation, and operation 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 Synergy Lighting Controls unless prior written authorization has been granted by our Customer Service Department.