Synergy Operation, Programming and Maintenance Manual

Project Name:
Project Location:
Acuity Agency:
Order #:
PO #:
Project ID:
Date:

Controls Tech Support:

1-800-535-2465 - option 1: nLight; option 2: SSI; option 3: Fresco; option 4: Synergy; option 5: LC&D/Bluebox; option 6 ROAM

To preschedule a call with tech support (providing a 4 hour business lead time) go to the following link: http://www.acuitybrands.com/resources/schedule-support-request

Additional Technical Literature:

https://www.acuitybrands.com/products/controls/synergy

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Installation Instructions

Lighting Control System Enclosure - SYESB, SYEMB and SYELB 120/277

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

Lighting Control System Enclosure - SYESB, SYEMB and SYELB 120/277

Overview

The Synergy System is a universal lighting control panel that allows control of switched lighting circuits and dimmed lighting circuits incluing most incandescent and electronic dimmable ballasts. The Synergy System consists of three main elements.

1. **Controller** - The controller provides for programming and automated operation of the system. This can be stand alone or networked with the other Synergy cabinets or other building systems. Refer to Synergy Operation Manual for program instructions.
2. **Power Modules** - The power modules control the system outputs or lighting loads as required. Input and output wiring requirements vary with the particular power module supplied. Refer to power module instructions for additional details.
3. **Enclosures** - The enclosures provide for rough-in wiring and house the controller and a quantity of power modules. Enclosures house up to the following quantity of power modules:

SYESB	2 Power Modules
SYEMB	4 Power Modules (3 Dimmer modules maximum)
SYELB	6 Power Modules (5 Dimmer modules maximum)

Before you begin you should obtain information about the scope and type of lighting loads that will be controlled. This information is available from Lithonia supplied "As Built" drawings or from project specifications and standard installation instructions. Contact Lithonia Controls Technical Services at 800-533-2719 for additional information.

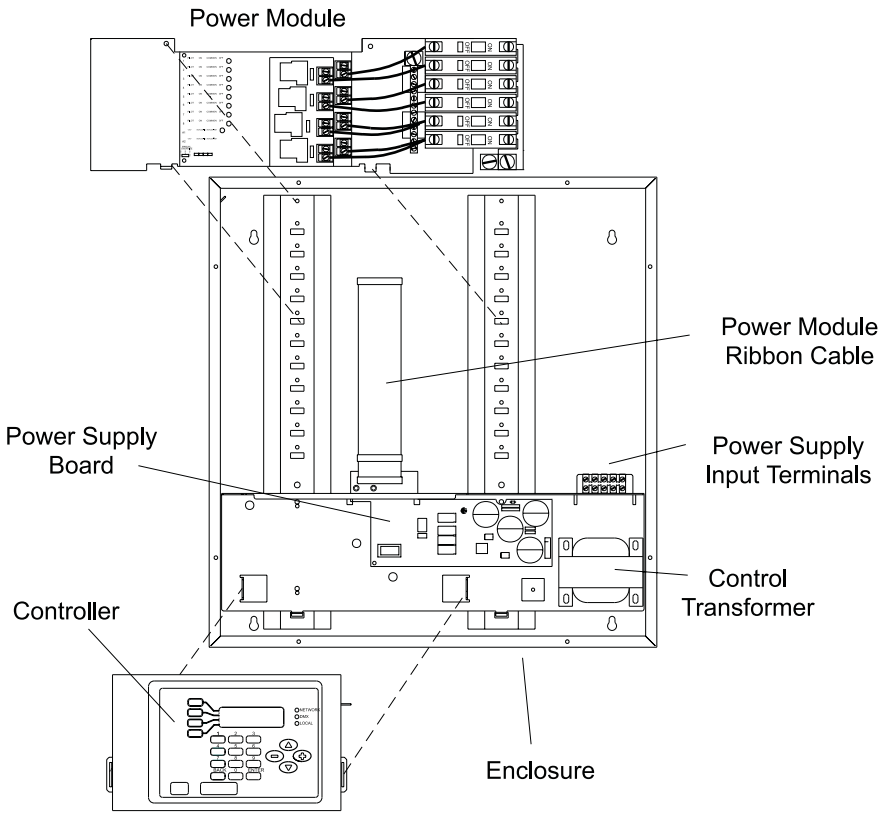

Figure 1 - Cabinet Details

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

Synergy® LIGHTING CONTROLS
An AcuityBrands Company

Installation Instructions

Lighting Control System Enclosure - SYESB, SYEMB and SYELB 120/277

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. Do not install conduit where "No Conduit Entry" is noted in figure 3.
3. Use only as intended.
4. Use only accessories recommended by Lithonia Control Systems.
5. Use only at voltage listed on product and component labels.
6. Refer to Main Feed Application information sheet for main feed guidelines.

Important Cabinet Rough In Notes

1. Ambient Conditions:
   Maximum Ambient Temperature: 104°F/40° C
   Minimum Ambient Temperature: 32°F/0°C
   Relative Humidity:10-90% Non condensing.
2. Cabinet will make noise during normal operation. Mount in an area where noise will not be objectionable.
3. Dimmer cabinet produces heat while operating equivalent to 3% of connected dimmer load at 120V, 1.5% of dimmer load at 277V.
4. Cabinet Physical Specifications — See *Figure 2.* SYESB 55lbs(25Kg), SYEMB 70lbs (32Kg), SYELB 80lbs (40Kg) Modules add additional weight.
5. Cabinet may be recess mounted if desired. Order accessory SYA SRE for small, SYA MRE for medium, or SYA LRE for large enclosures.
6. Do not block air intake and exhaust or cabinet overheating will occur.

Connect Power Supply Input

1. Connect a dedicated 15 or 20 amp branch circuit breaker to the power supply input. See Figure 4. This input can be 120, 230 or 277 VAC (50 or 60 Hertz) as labeled on the cabinet. The power supply input requires a maximum of 300VA in a fully loaded and configured system. Connect a suitably sized ground conductor to the ground lug. See *Figure 4.*
2. The power supply input should remain un-powered until the power modules are installed and terminated. The controller "on/off" switch should remain in the "off" position until the controller is installed. See *Figure 5.*

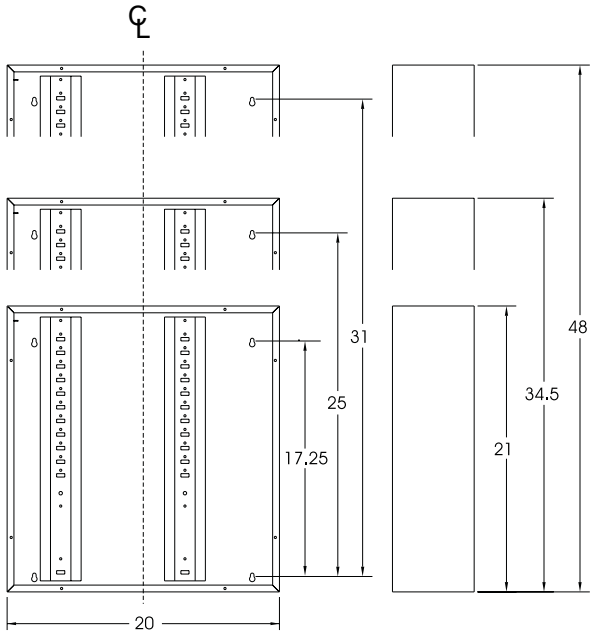

Figure 2 - Cabinet Dimensions (inches)

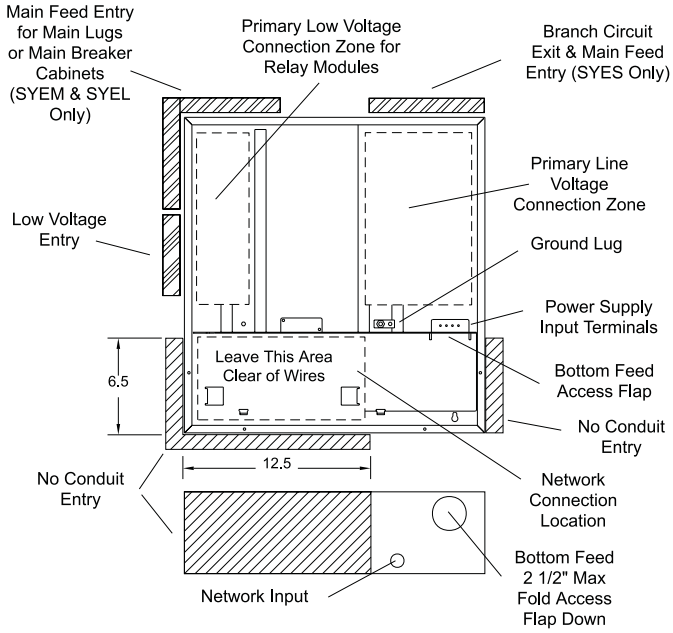

Figure 3 - Recommended Conduit Entry Locations

Installation Instructions

Lighting Control System Enclosure - SYESB, SYEMB and SYELB 120/277

Rough In Instructions

1. **Remove Cover** — Remove screws located on the edge of the front panel. Remove cover and set aside.
2. **Mount Cabinet** — Mount the cabinet to structural members as required using the four holes that have been provided in the back of the cabinet. Refer to *Figure 2* for dimensions.
3. **Choose Conduit Entry Locations** — Choose desired location of main feed entry and branch circuit exit from the cabinet. Choose desired entry points for low voltage inputs, and network wiring. See *Figure 3.* Bottom access is allowed only where shown in *Figure 3.* Top access is strongly recommended.
4. **Remove Excess Contaminants** — Remove excess metal shavings and excess contaminants from the cabinet prior to installation of controller and power modules.

Important Wiring Notes

1. Use conductors with 90°C insulation rating. Derate to 60°C capacity when using dimming type power modules (not necessary to derate with relay power modules.)
2. Allow 6" (150mm.) above and below the cabinet for adequate ventilation when using dimming type power modules.
3. Refer to As-Built drawings, main feed application note, and the bill of material furnished to determine main feed wiring arrangement.

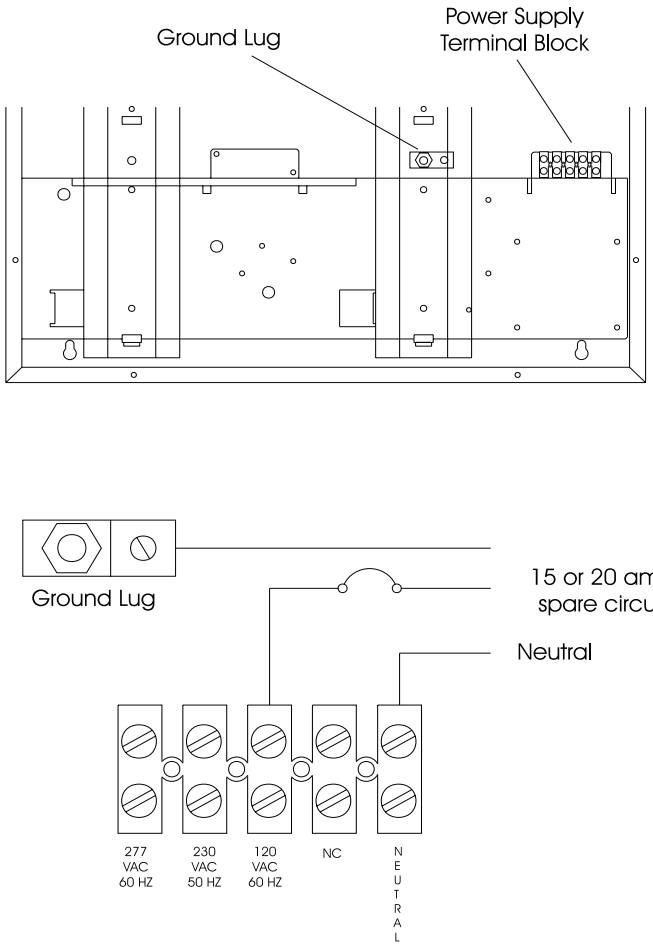

Figure 4- Power Supply Input Wiring

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.

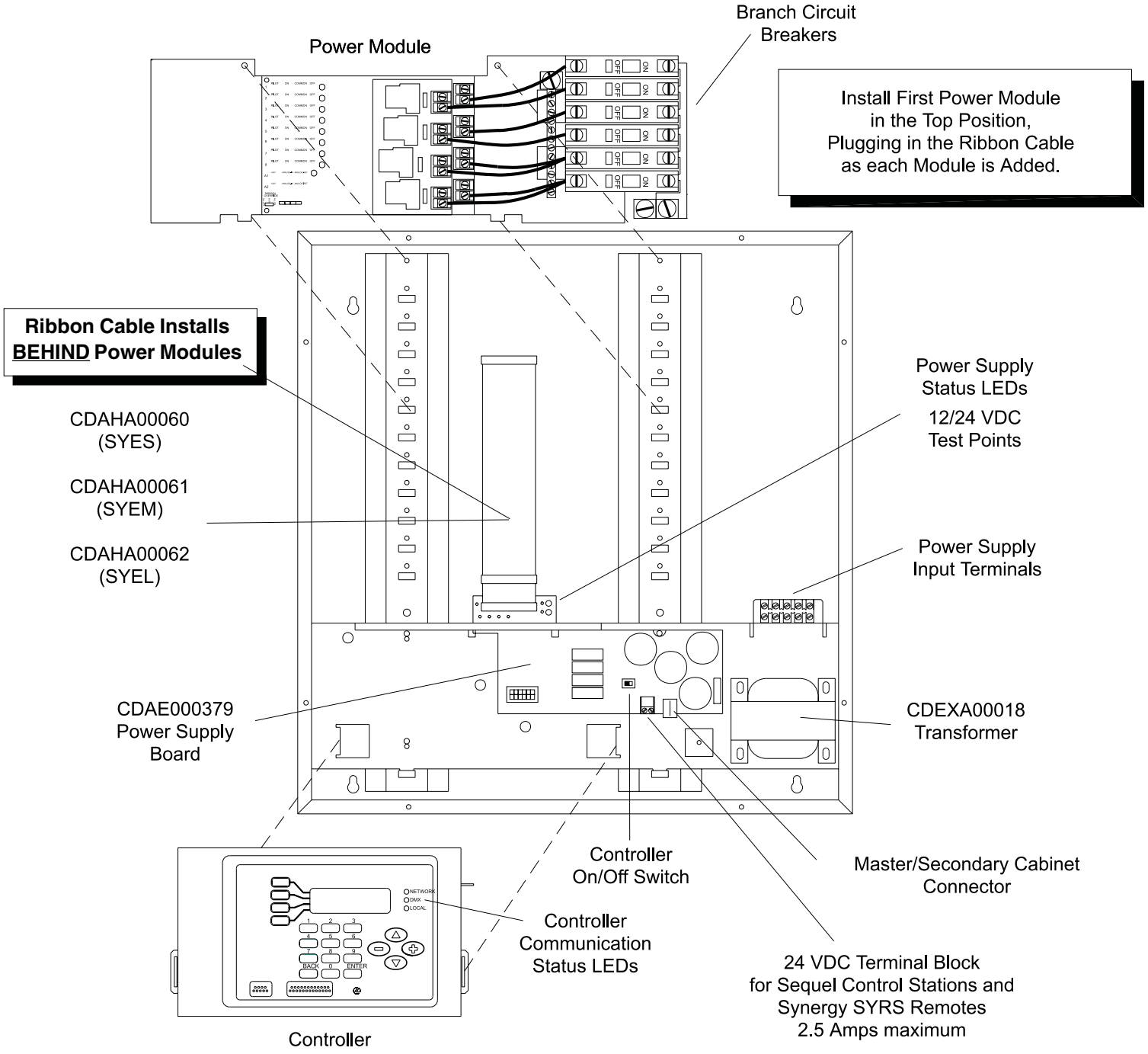

Figure 5 - Part Number and Voltage Test Point Reference Information

Configuration Instructions

Lighting Control System Controller - SYSC MLX IP

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- 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
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- 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:

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- Do not install a damaged equipment.

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Configuration Instructions

Lighting Control System Controller - SYSC MLX IP

Overview

The Synergy System is a universal lighting control panel which allows control of switched lighting circuits and dimmed lighting circuits, including most incandescent and electronic dimmable ballasts.
The Synergy System consists of three main elements:

1. **Controller** - The controller provides for programming and automated operation of the system. Operation can be stand alone or networked with other Synergy cabinets or building systems. Refer to the Synergy Operation Manual for programming instructions.
2. **Power Modules** -Synergy power modules control the system outputs or lighting loads as required. Input and output wiring requirements vary with the particular power module supplied. Refer to power module instructions for additional details.
3. **Enclosures** - The enclosures provide for rough-in wiring and house the controller and a quantity of power modules. Enclosures house up to the following quantity of power modules:

SYES - 2 Power Modules	SYESB - 1 Relay/Dimmer Module with Breakers
SYEM - 4 Power Modules	SYESMB - 3 Relay/Dimmer Modules with Breakers
SYEL - 6 Power Modules	SYESLB - 5 Relay/Dimmer Modules with Breakers

Before you begin you should obtain information about the scope and type of lighting loads being controlled. This information is available from Synergy supplied "As Built" drawings or from project specifications and standard installation instructions. Contact Synergy Lighting Controls Technical Services at 800-533-2719 for additional information.

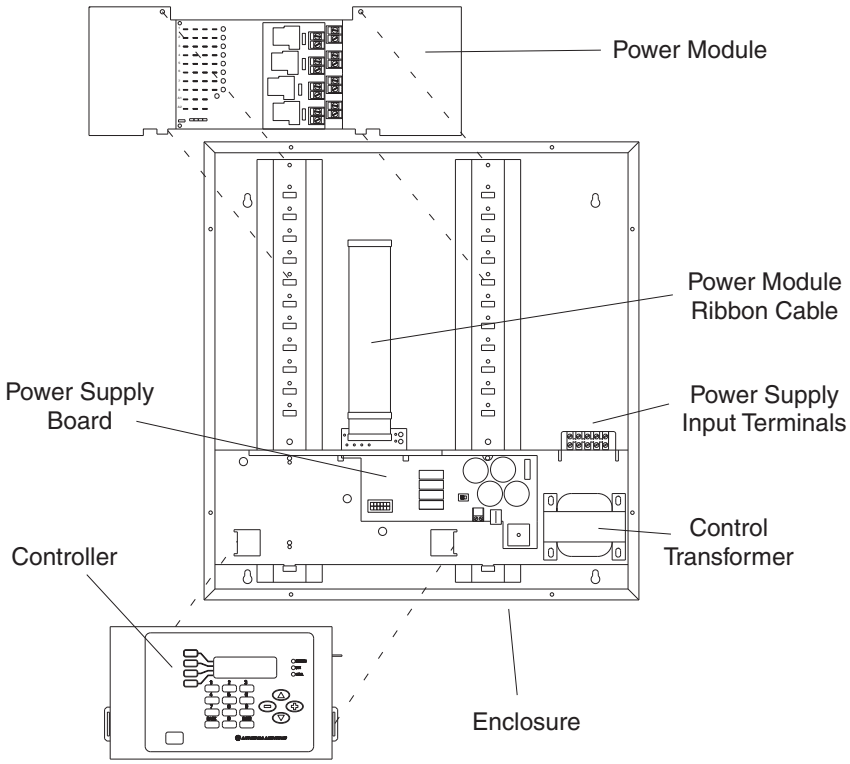

Figure 1 - Cabinet Details

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

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Before You Start

1. Controller switch should be in the off position. See figure 2.
2. Install in accordance with the National Electrical Code and any other codes which may apply.
3. Do not remove the controller with the controller on/off switch in the "on" position.
4. Use only accessories recommended by Synergy Lighting Controls.
5. Use only at the voltage listed on product and component labels.

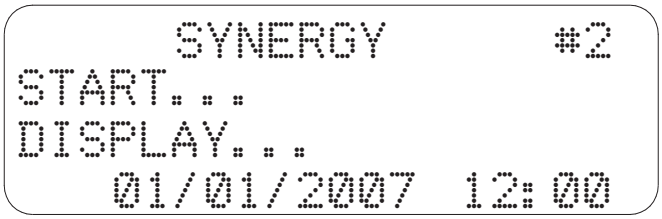
Controller Installation

1. Ambient Conditions:
   Maximum Ambient Temperature: 104°F/40° C
   Minimum Ambient Temperature: 32°F/0°C
   Relative Humidity:10-90% Non condensing.

2. Slide controller into the enclosure using the bayonets on the power supply mounting brackets as guides. Stop when the controller has made electrical contact (keypad lights up) and tighten the two mounting screws on top of the power supply brackets to hold the controller firmly in place.

3. Make sure all power modules have been addressed properly, and no duplicate addresses are present. Correct as required.

4. Turn controller on/off switch to the "on" position. In about one minute the keypad will display the "top level" Synergy screen pictured below, with correct date and time.



5. If this screen does not appear, go to troubleshooting guide on back of these instructions. If it does appear, press the "START" softkey, "OVERRIDING", then "GROUP", then "LEVEL", then use +/- keys and "ENTER" to turn relays or dimmers on and off. If you are unable to control relays, refer to troubleshooting guide at the back of these instructions.

6. Each controller connected to a network must have a unique network number. Each controller ships from the factory at address 2. You must set the address of the controller to a unique number as part of the programming process. Refer to the Synergy Operation Manual for instructions on setting the network address.

7. The Synergy Operation Manual contains programming information and in conjunction with your factory supplied or field created "As-Built" drawings will enable you to completely configure your Synergy System. For additional information or assistance contact Synergy Lighting Controls Technical Service at 800-533-2719.

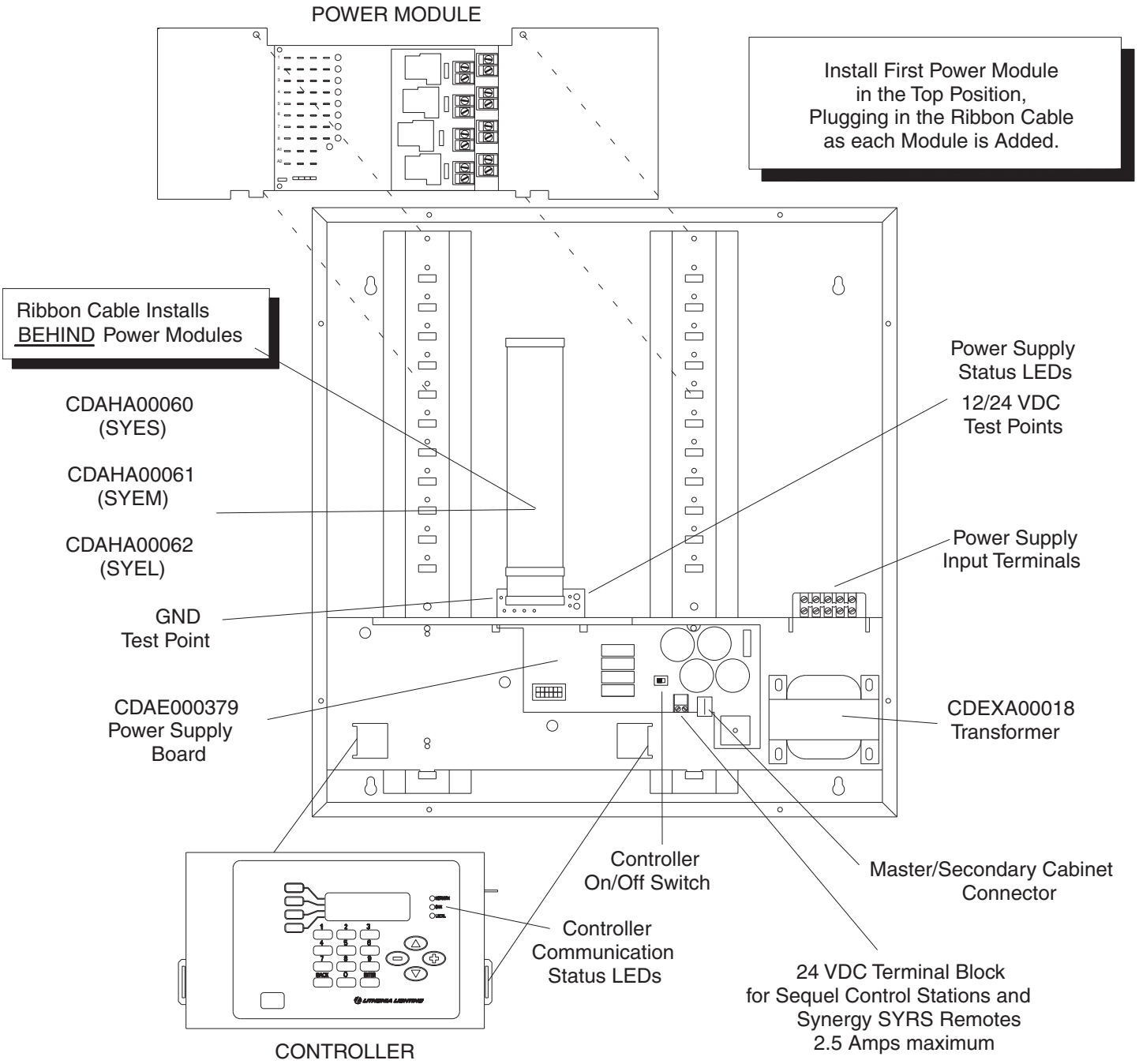


Figure 2 - Part Number and Voltage Test Point Reference Information

Troubleshooting

SYMPTOM: SYNERGY TOP LEVEL SCREEN DOES NOT APPEAR.
Check the following:

1. Verify controller on/off switch is in the "on" position.

2. Verify both Amber and Green power supply status LEDs adjacent to the ribbon cable connector are lit.

3. If the LEDs are not lit, verify proper voltage is present on the power supply input terminal block. If voltage is present on the input terminals, check transformer output. Transformer red wire to red wire should be 12 VAC nominal and blue wire to blue wire should be 24 VAC nominal. Contact Synergy Lighting Controls Technical Service for additional information.

4. If both power supply LEDs are lit, verify controller is firmly seated against power supply connector. Cycle input power for 10 seconds. If both switch and connector are properly set, and you have waited for more than one minute without seeing the "top level" screen, contact Synergy Lighting Controls Technical Service for additional information.

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

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

SYMPTOM: CONTROLLER IS NOT ABLE TO TURN RELAYS ON OR OFF
Check the following:

1. Ribbon cable is connected to power supply and all modules.

2. Manual Override switch is in the "AUTO" position on ALL modules.

3. Each relay card MUST be set to a unique address, starting with "1" at the top card of the cabinet.

Cycle enclosure power supply circuit off for 10 seconds, then back on. Note any changes in system performance. Contact Synergy Lighting Controls Technical Service for additional information.

Warranty

Contact Synergy Lighting Controls Technical Service at 800-533-2719. Synergy Lighting Controls Technical Service is available Mon - Fri from 8:00 a.m. to 5:00 p.m. EST for phone consultation.

Synergy Lighting Controls warrants all equipment to be free from defects 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 Synergy Lighting Controls unless prior written authority has been granted by our Customer Service Department.

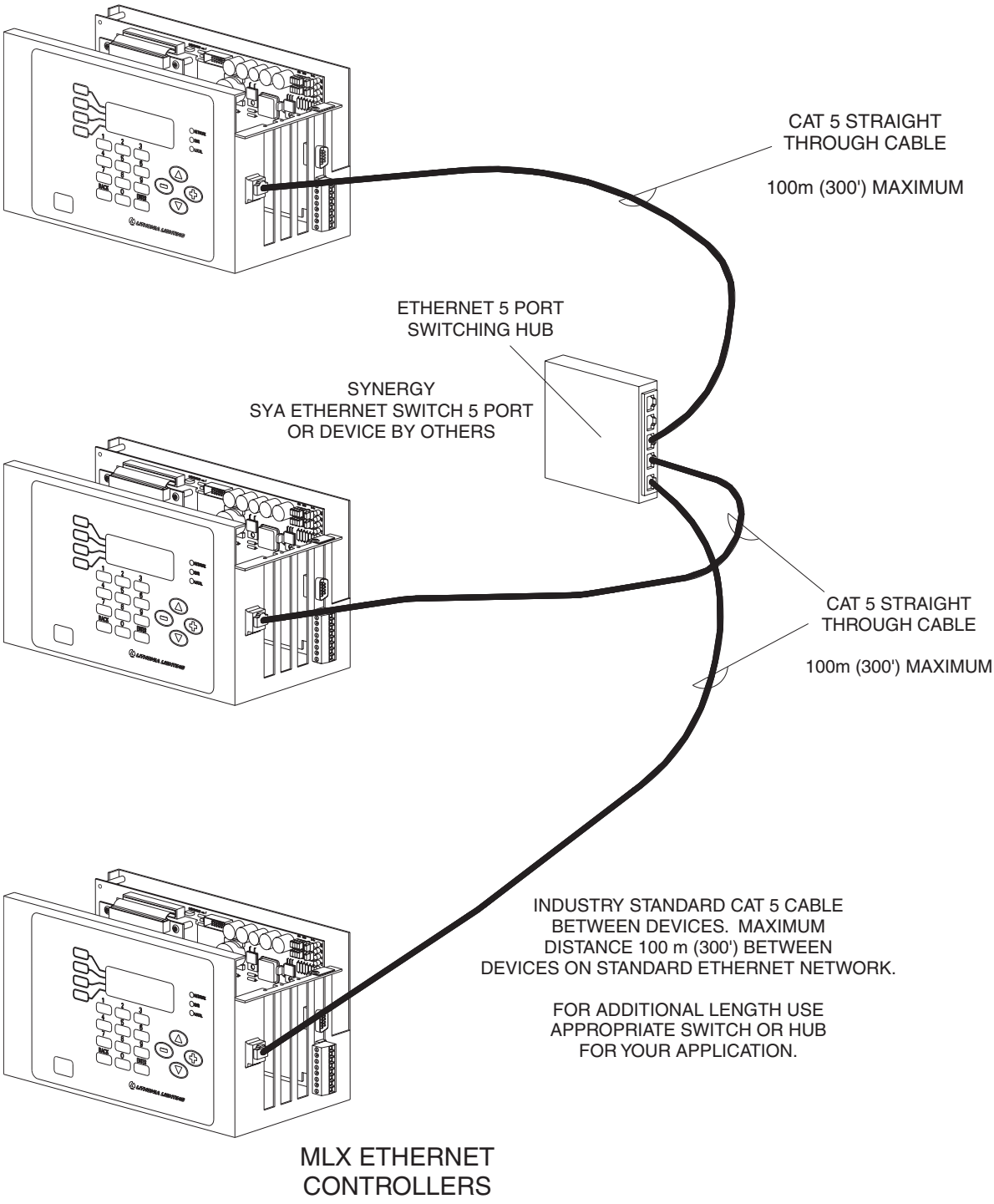


Figure 3 - Ethernet Network Wiring Terminations

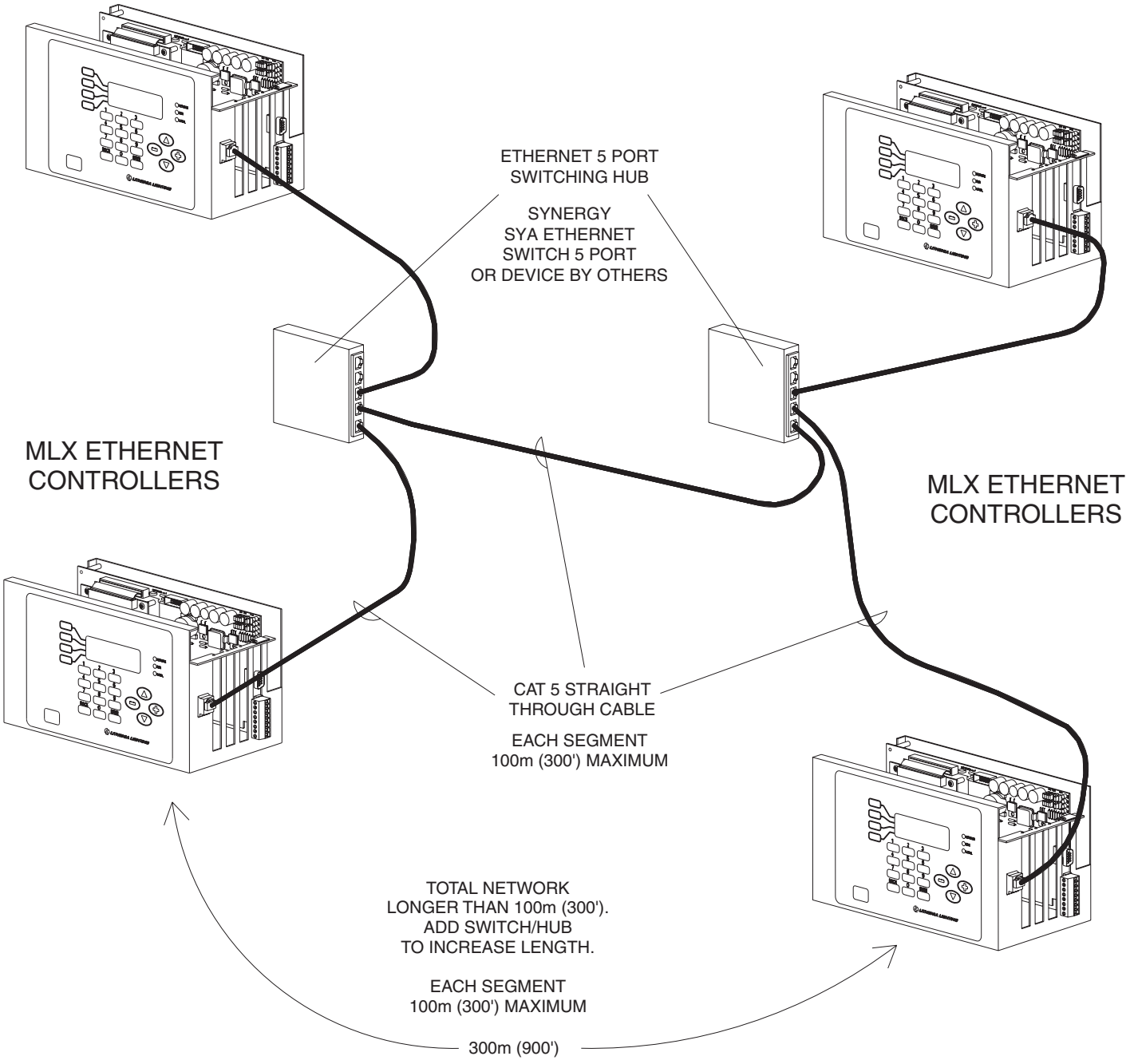
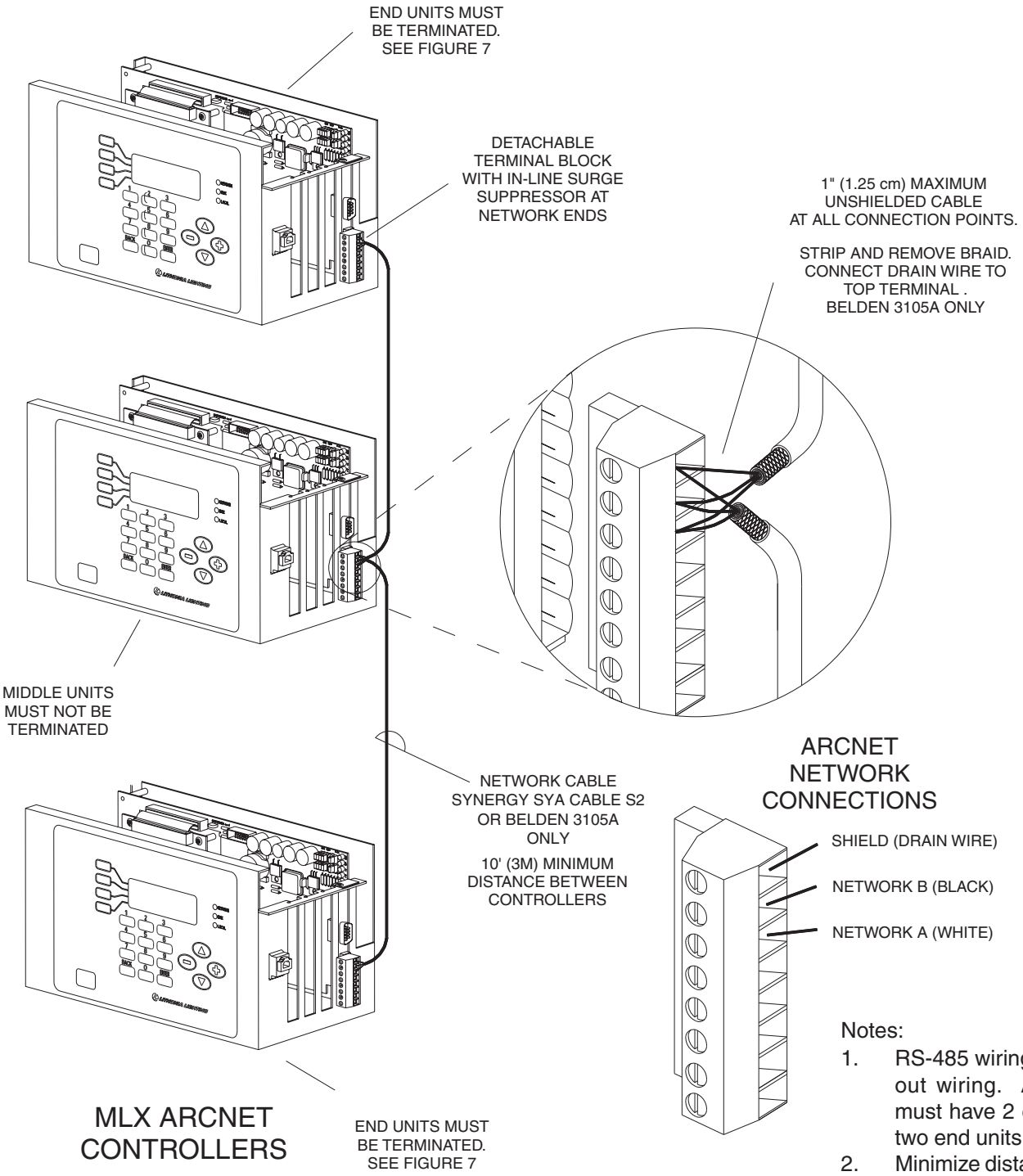


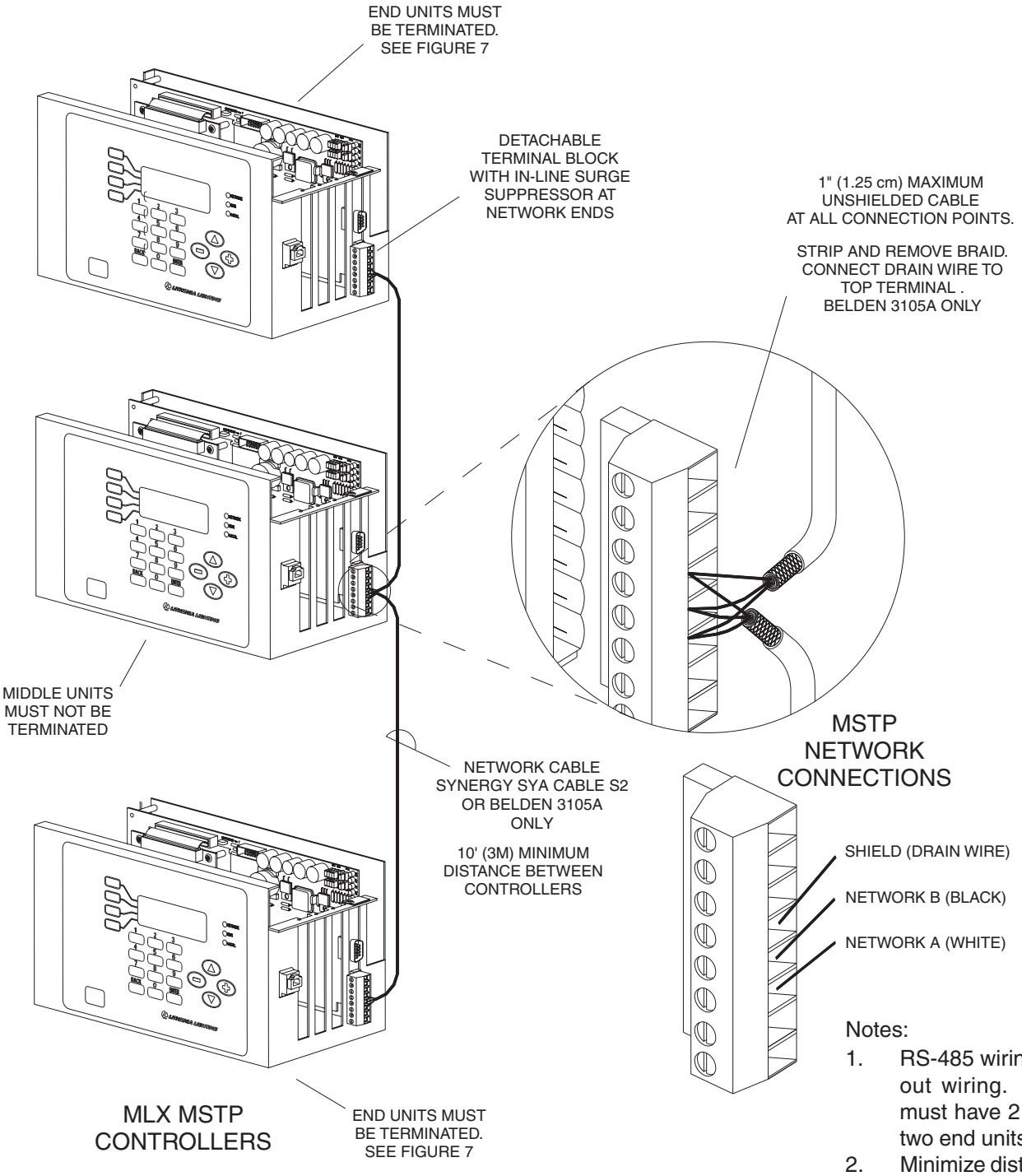
Figure 4 - Ethernet Network Wiring Terminations - Network Length Over 100m (300')



Notes:

1. RS-485 wiring must be in and out wiring. All middle units must have 2 cables, and only two end units are permitted.
2. Minimize distance of exposed, unshielded cable at all connection points.
3. 10 foot (3M) minimum conductor distance between devices on the network.

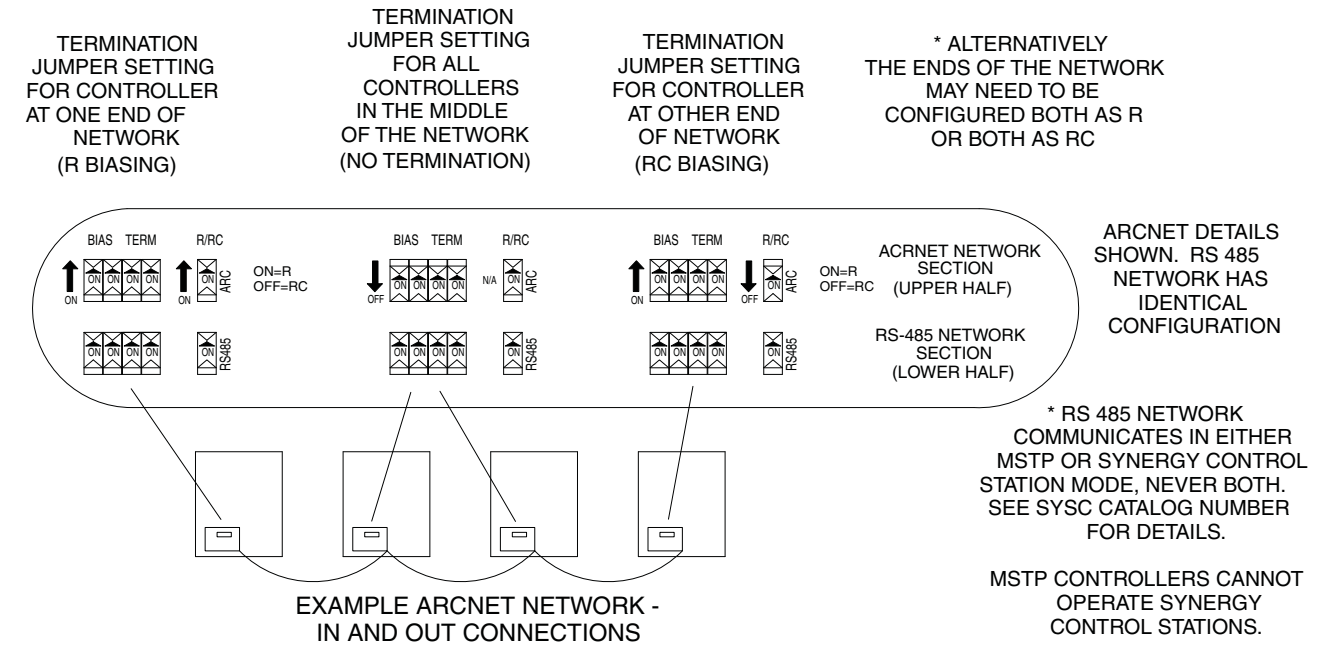
Figure 5 - ARCNET Network Wiring Terminations



Notes:

1. RS-485 wiring must be in and out wiring. All middle units must have 2 cables, and only two end units are permitted.
2. Minimize distance of exposed, unshielded cable at all connection points.
3. 10 foot (3M) minimum conductor distance between devices on the network.

Figure 6 - MSTP Network Wiring Terminations



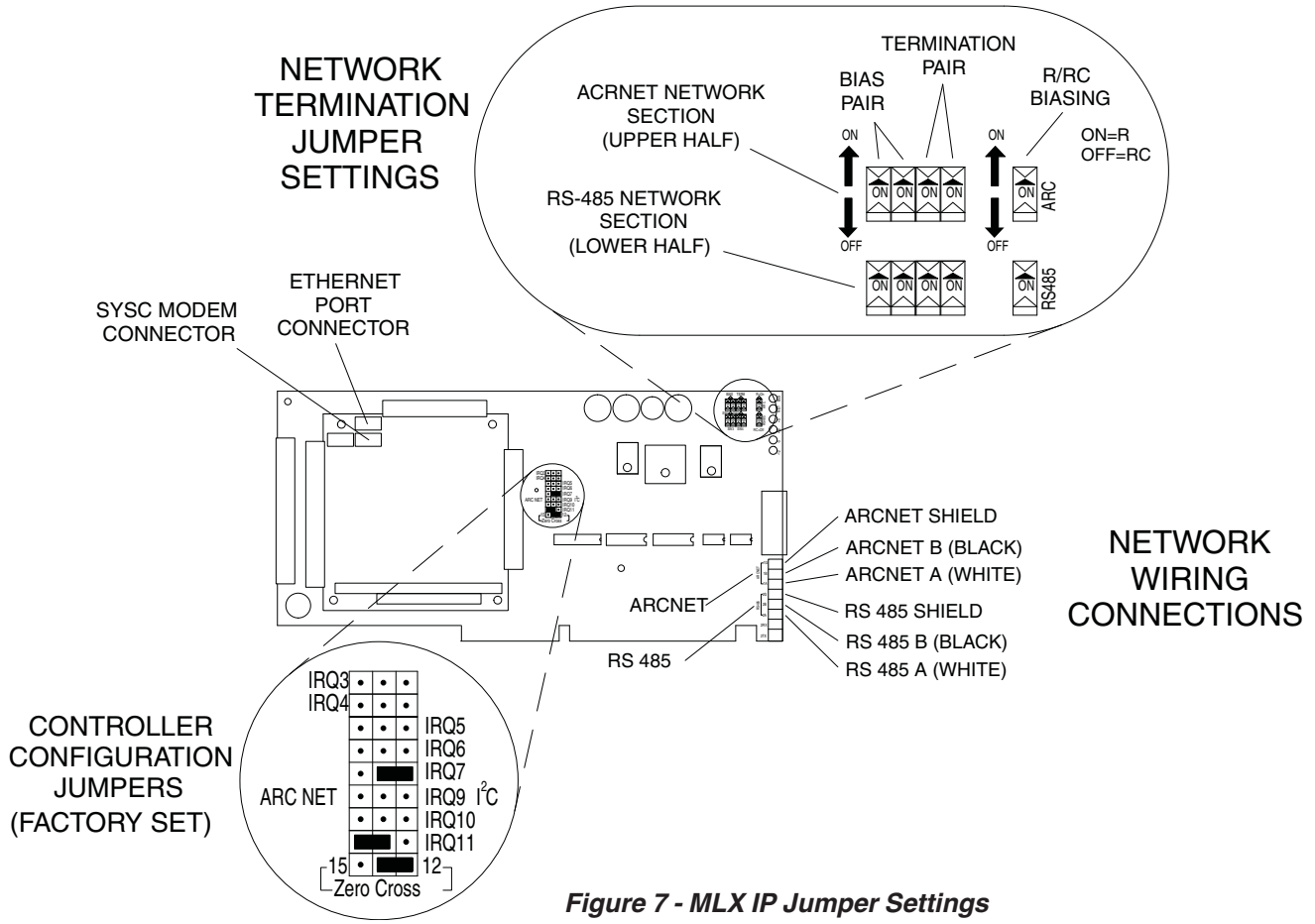


Figure 7 - MLX IP Jumper Settings

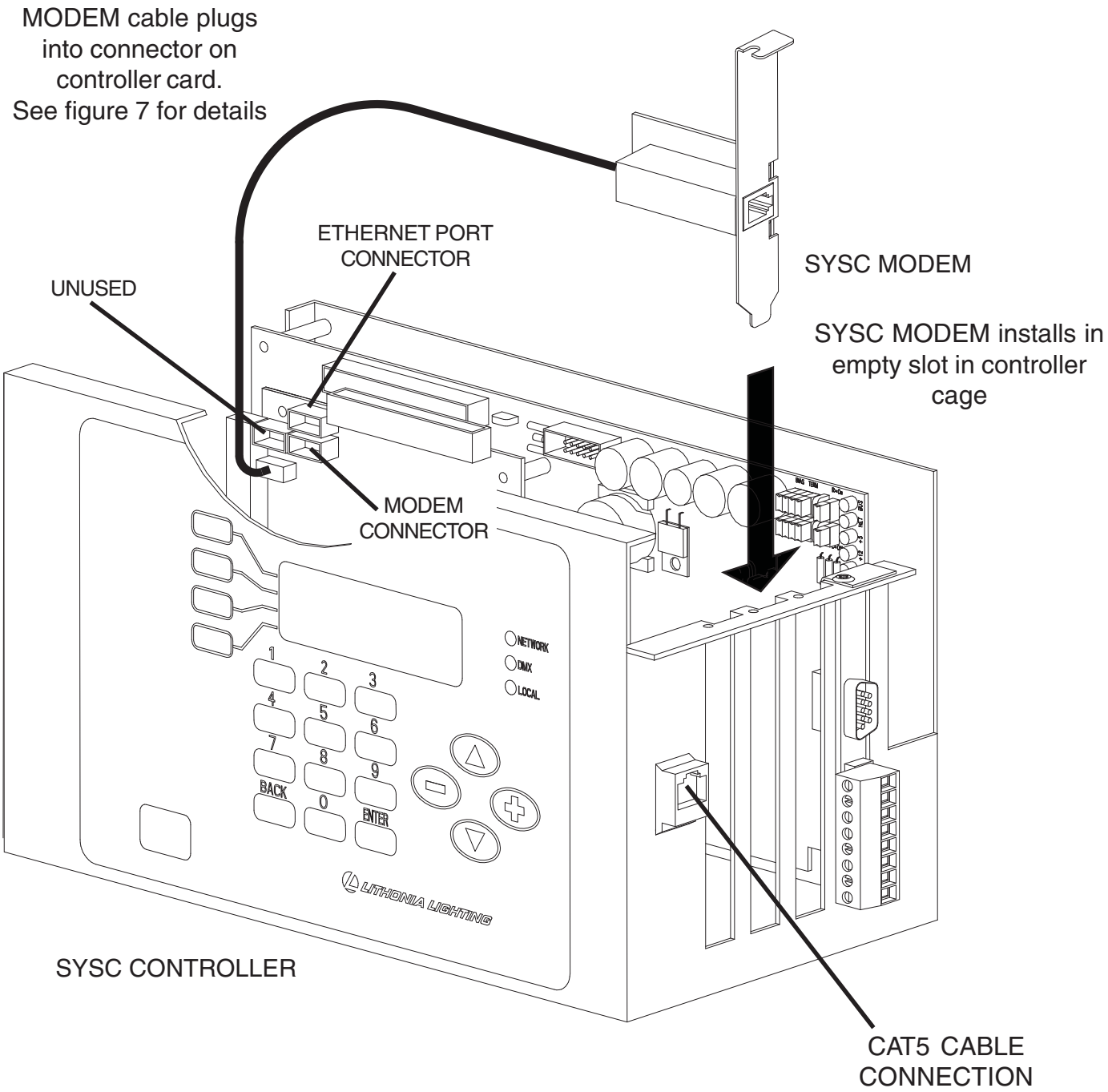


Figure 8 - SYSC MODEM installation

Installation Instructions

SYA SKIT

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- 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.

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SAVE THESE INSTRUCTIONS

Installation Instructions

SYA SKIT

Before You Start

1. Install in accordance with the National Electrical Code and any other codes which may apply.
2. Using ordinary phone cable to connect cabinets will short power supplies and void warranty.
3. Use only as intended.
4. Review figure 1 for acceptable mounting configurations.

Overview

The SYA SKIT is used to blank the hole ordinarily filled by the Synergy controller. The cabinet has been supplied without the controller for one of the following two reasons:

1. A Synergy enclosure can be applied without a controller if this cabinet is mounted directly adjacent to Synergy enclosure with a master SYSC MLS or SYSC MLX controller. In this application the Synergy controller can be used to control up to 12 power modules, or more as determined by the factory. See figure 1 for enclosure interconnection information.

2. A Synergy enclosure and power modules can operate in a controllerless mode if the only requirements of the system are a 1:1 mapping of inputs to outputs and SPDT momentary switches are used to control the outputs. Discard the gray cable if using the Synergy system in this manner.

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Warranty

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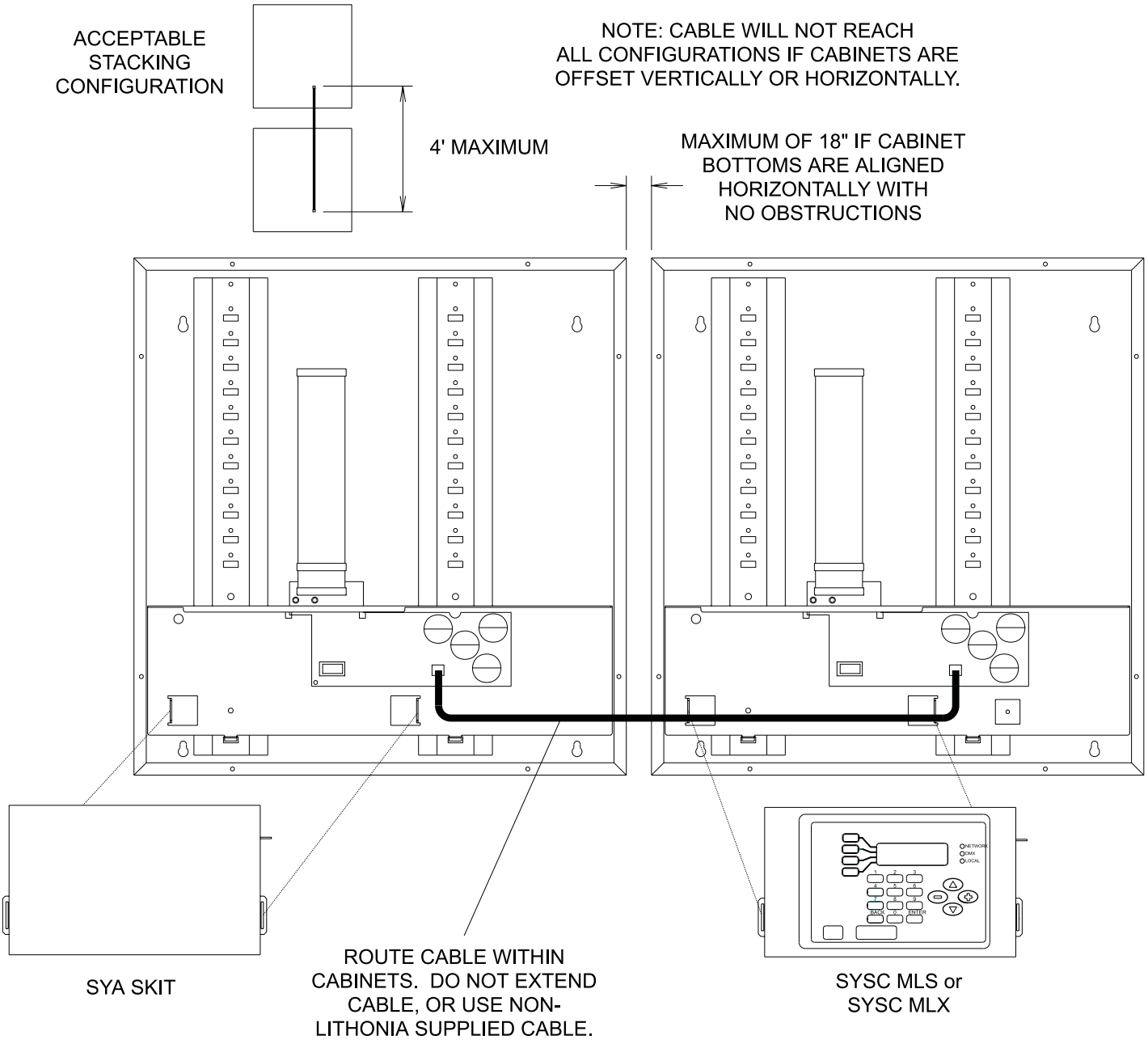

Figure 1 - Master Secondary Cable Installation

Installation Instructions

Synergy Enclosure Voltage Barrier - SYE HVB

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- 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.

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SAVE THESE INSTRUCTIONS

Installation Instructions

Synergy Enclosure Voltage Barrier - SYE HVB

Overview

The Synergy SYE HVB high voltage barrier allows Synergy enclosures to mix both normal and emergency circuits, or both 120 and 277 volt circuits, in the same enclosure.
Install the SYE HVB high voltage barrier between SYPM power modules controlling differing load sources or voltages.

The SYE HVB voltage barrier's mounting tabs locate on top of an SYPM power module. Install the power module first, then the voltage barrier. See figure 2 for details.

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.
4. Use only accessories recommended by Synergy Lighting Controls.

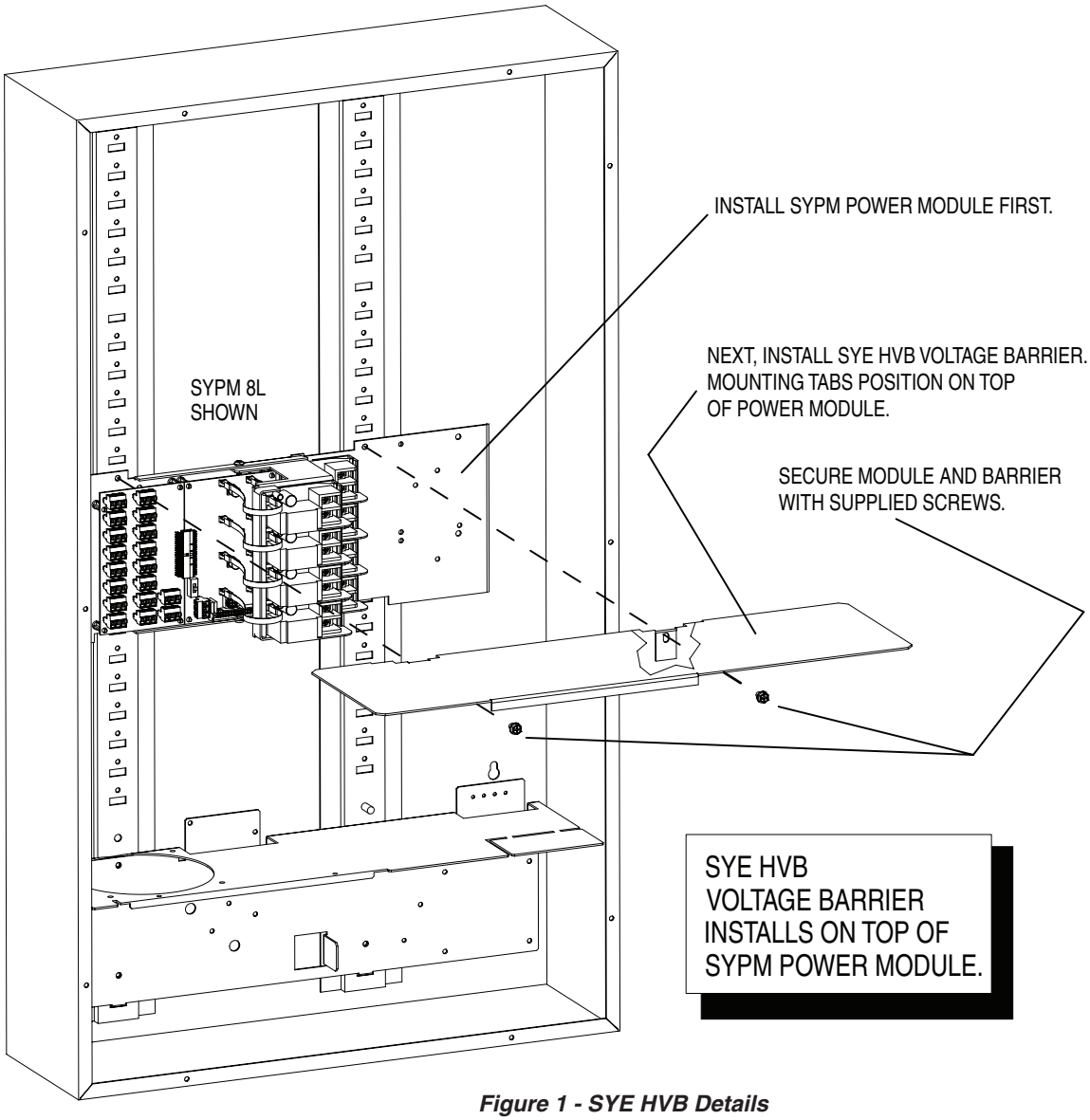

Figure 1 - SYE HVB Details

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Synergy® LIGHTING CONTROLS
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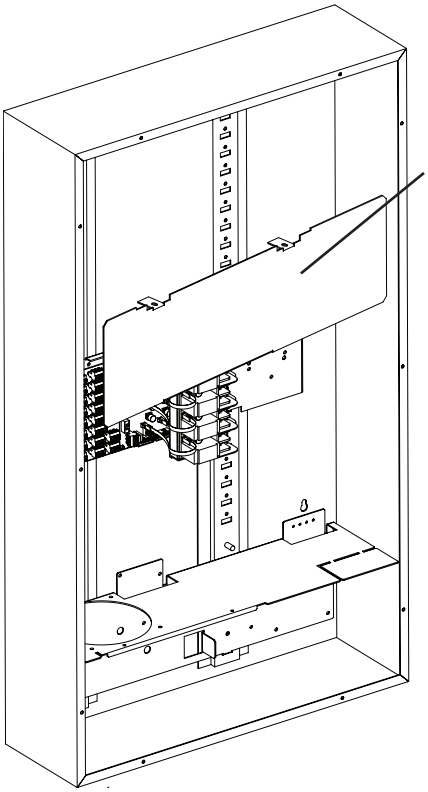
Installation Instructions

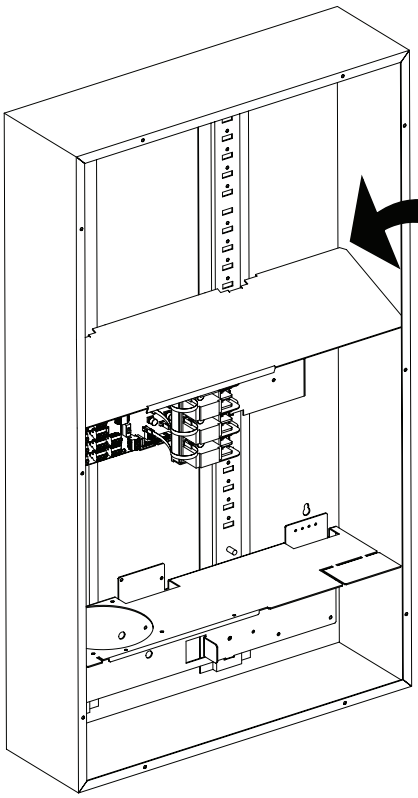
Synergy Enclosure Voltage Barrier - SYE HVB



STEP 1

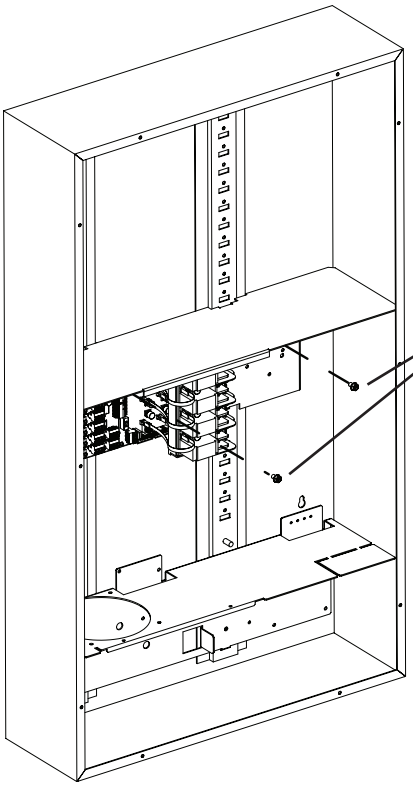
POSITION VOLTAGE BARRIER IN THE VERTICAL POSITION, WITH TABS FACING THE BACK OF THE BACK OF THE ENCLOSURE.

ROTATE SLIGHTLY AS SHOWN., AND MOVE INSIDE ENCLOSURE.



STEP 2

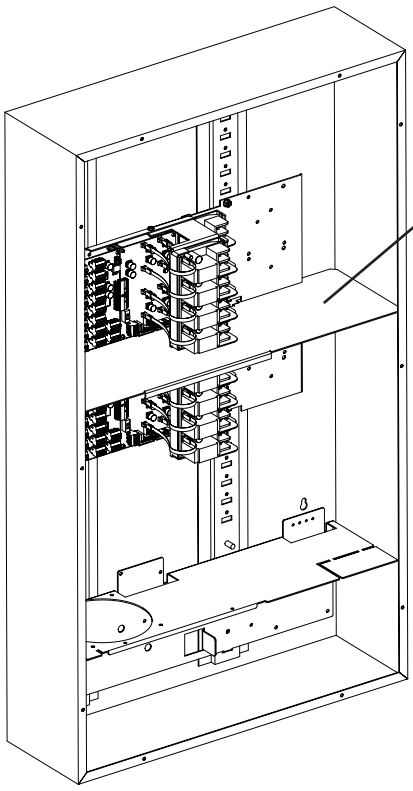
ROTATE THE REAR OF THE VOLTAGE BARRIER DOWNWARDS, TOWARD THE POWER MODULE.



STEP 3

WHEN IN POSITION, THE HOLES IN THE VOLTAGE BARRIER WILL LINE UP WITH THE HOLES IN THE POWER MODULE AND THE MOUNTING HOLES IN THE ENCLOSURE.

INSTALL SCREWS.



STEP 4

CONTINUE INSTALLING MODULES

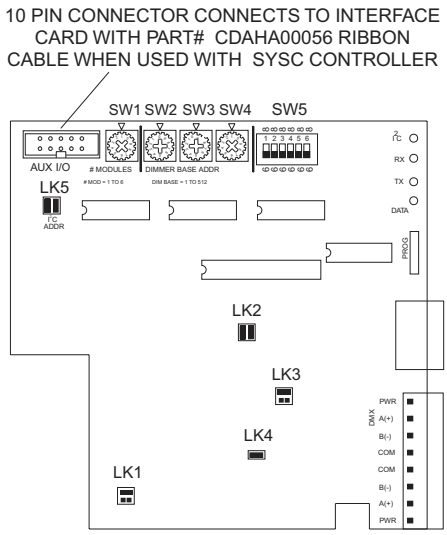
Figure 2 - Installation

Installation Instructions

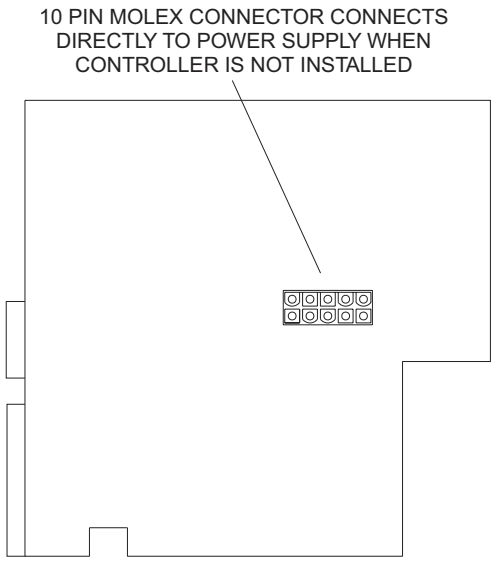
DMX OPTION

Overview

The DMX card option allows Synergy power modules to receive DMX512 commands from the DMX master. The card can address individual relays and dimmers directly, or can communicate DMX levels to the Synergy SYSC MLX or MLS controller to operate groups of outputs. DMX signals can be assigned a priority level by the Synergy controller if DMX levels are sent to the controller. If DMX levels are sent directly to the modules, the "last action" will determine the level of the outputs.



DMX CARD FRONT VIEW



DMX CARD REAR VIEW

Important Configuration Information (See Figures 1 - 4)

1. SPECIFY DMX CARD OPERATION (LK2)
   Select the jumper setting to configure DMX signal routing within the Synergy cabinet.
   Note:
   If this card is used without a Synergy controller, jumper block LK2 **MUST** be set to send DMX levels to output modules (both jumpers vertical).
2. SPECIFY CARD ADDRESS (LK5)
   Choose a unique card address if multiple DMX cards are associated with a single controller, or group of cabinets.
3. SELECT NUMBER OF MODULES (SW 1)
   Rotate # of modules switch to configure number of modules associated with this card.
4. SELECT MODULE OUTPUT QUANTITY (SW 5)
   Using the dip switches, select the number of outputs for each module in the cabinet. For relay modules select "8", for dimmer modules select "6".
5. SELECT DMX BASE ADDRESS (SW 2,3 and 4)
   Using the three rotary switches, select the first DMX address this card will receive. When sending DMX levels to output modules this card will receive a continuous run of DMX channels, starting with the BASE ADDRESS NUMBER and continuing for up to 48 addresses, based on the quantity and type of modules. When sending DMX levels to the controller all programmed DMX levels will be sent to the controller.
6. CONFIGURE THE DMX TERMINAL BLOCK (LK1,LK3 & LK4)

   LK1 - This jumper block determines whether 0,12 or 24 VDC will be available at the "PWR" terminals.
   LK3 - This jumper block determines DMX network termination, and is based on it's location in the network (middle or end).
   LK4 - This jumper block grounds the shield in the DMX communications cable. Use if network noise is present.

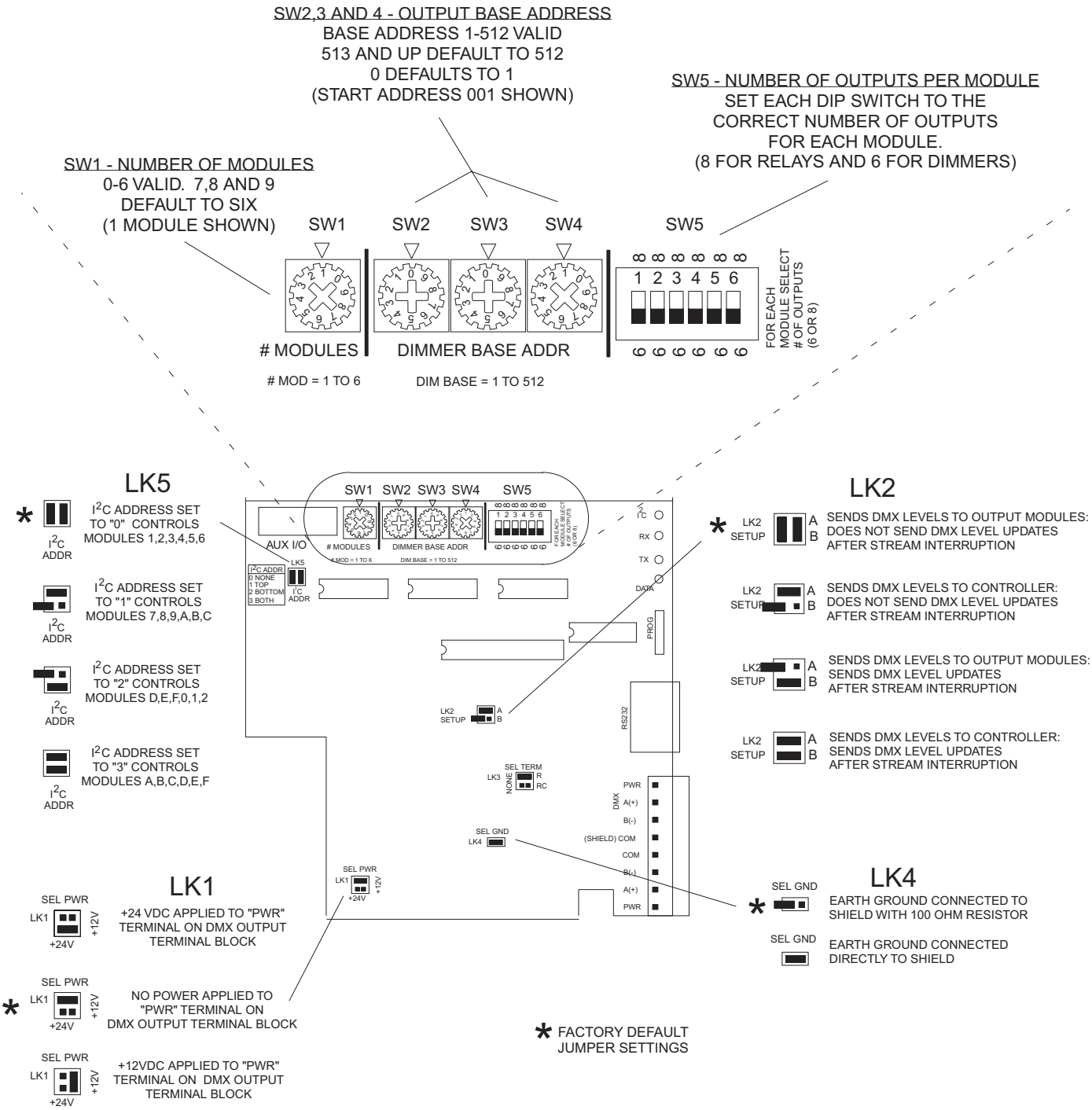


Figure 1 - DMX Card Jumper Settings

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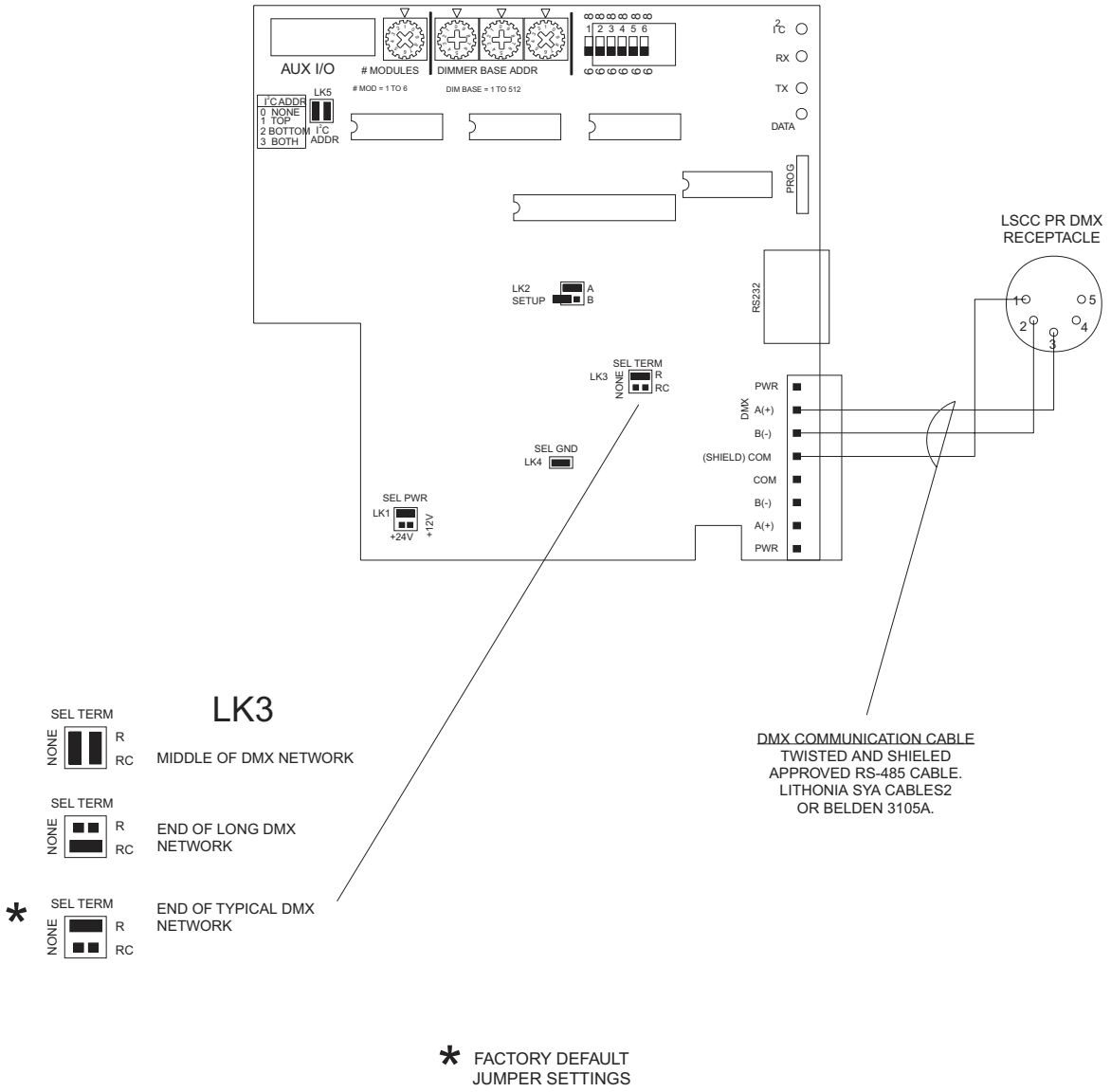

Figure 2 - DMX Network Termination - One Cabinet, One Console

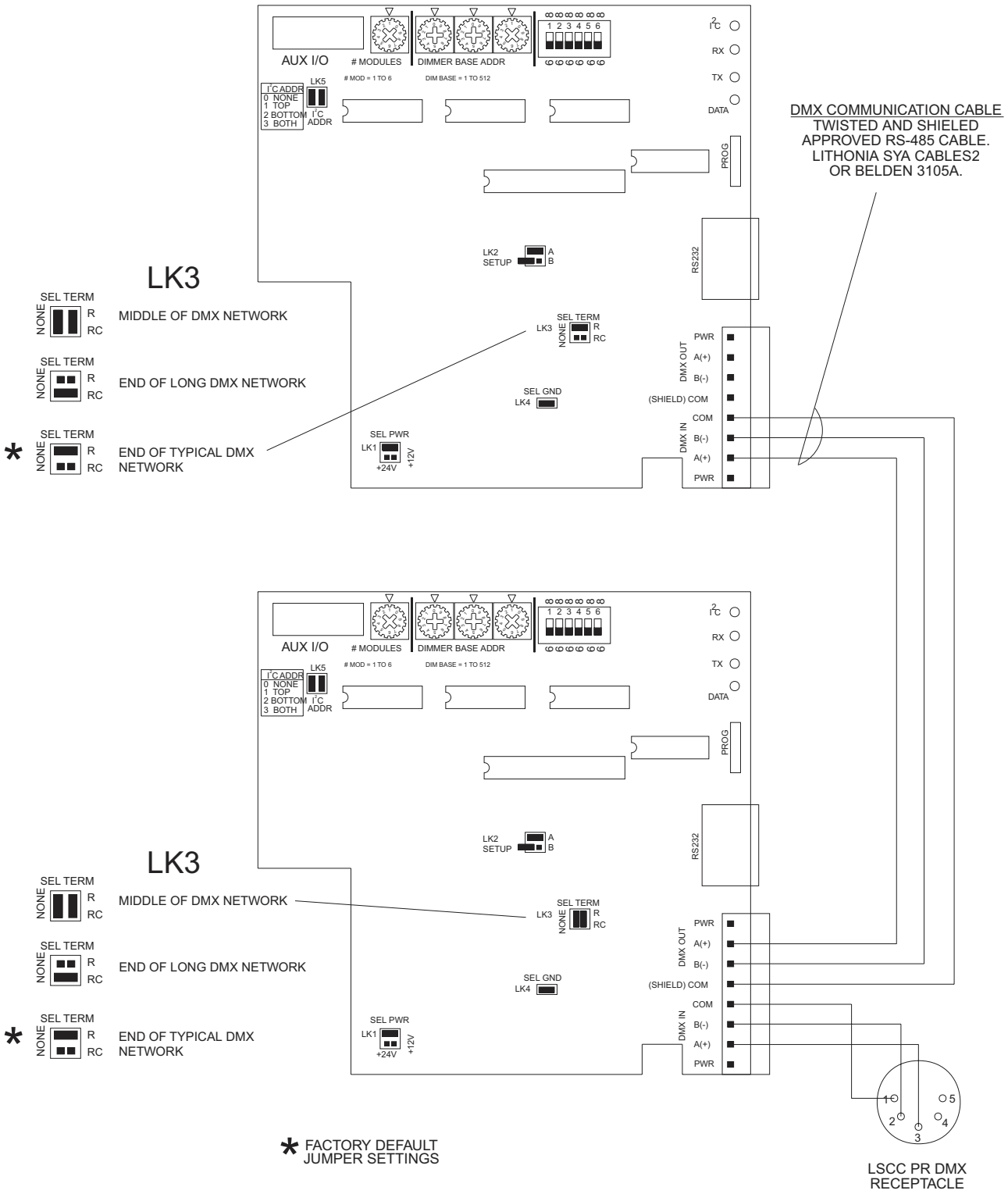

Figure 3 - DMX Network Termination - 2 Cabinets, 1 Console

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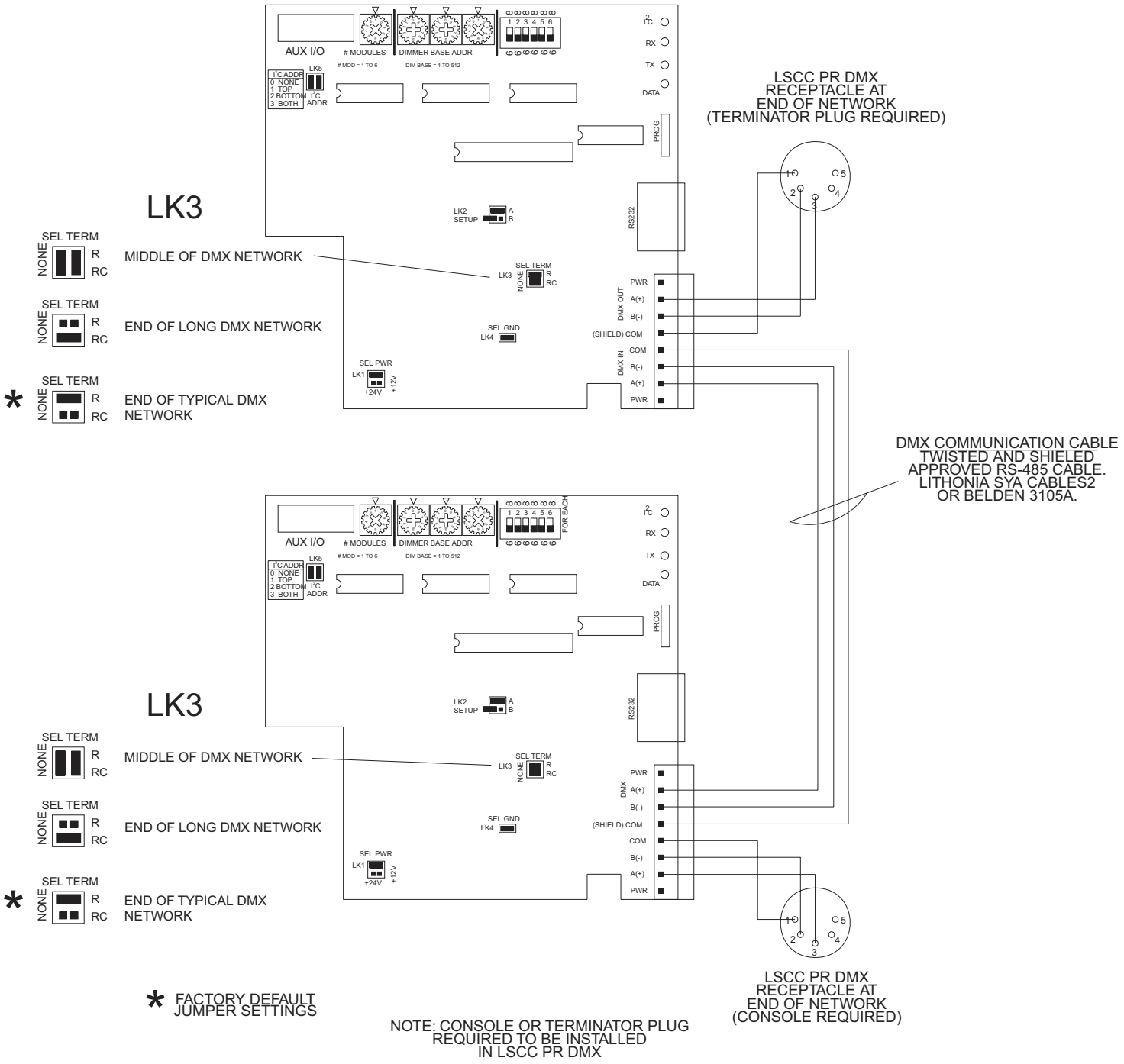


Figure 4 - DMX Network Termination - 2 Cabinets, 2 Consoles

Installation Instructions

Universal Relay Power Module - SYPM 8L

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 at 1-800-533-2719.*

⚠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 insulation 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 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

Universal Relay Power Module - SYPM 8L

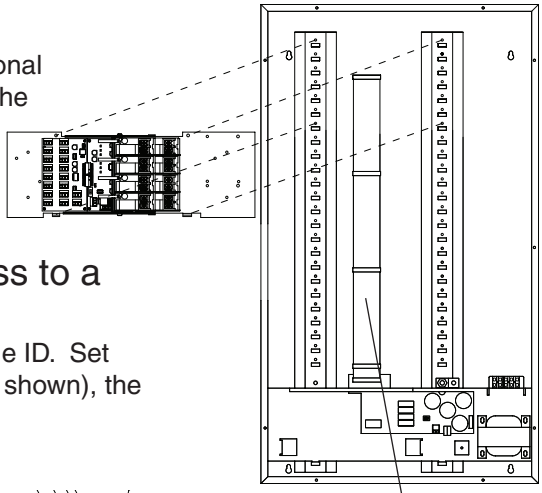
Quick Setup Guide **Module WITHOUT BREAKERS**

SEE THE FOLLOWING PAGE FOR MODULES WITH BREAKERS

Refer to the instructions on the following pages for complete details on the steps outlined below.

1 Install the Modules in the Enclosure.

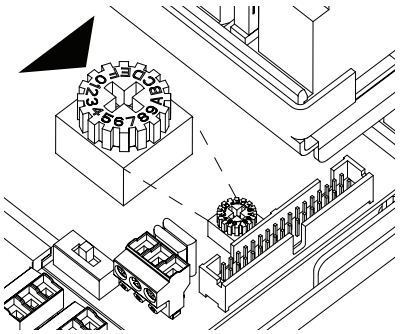
Install the first module in the top position as shown, then install additional modules in the positions below. Make sure the ribbon cable stays at the rear of the enclosure **behind the installed modules.**



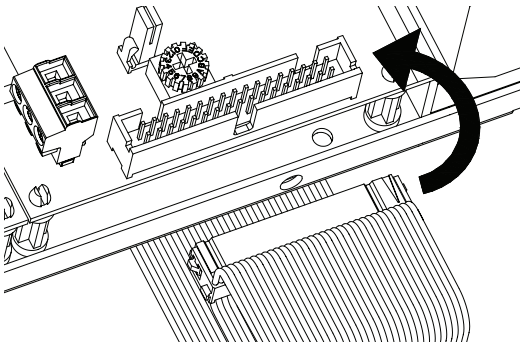
Ribbon Cable

2 Set Each Module Address to a Unique Address

Rotate the address wheel to set the ID. Set the ID of the top module at "1" (as shown), the second at "2" and so on.

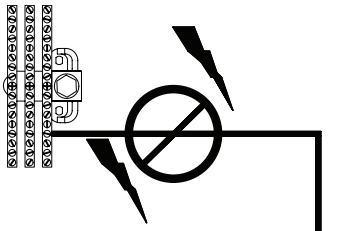


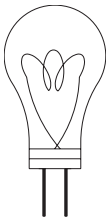
3 Connect the Ribbon Cable to Each Module



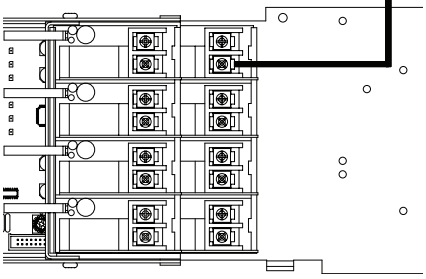
4 Test for Short Circuits in Load Wiring

Test for short circuits in load wiring **PRIOR** to connecting load to output





5 Connect Load Wiring as Shown in Figure 1 0-10V Dimming Connections are shown in Figure 2



6 Test Power Module Operation

Turn on the cabinet power supply. Use the ON/AUTO/OFF switch to test the module. All module outputs should turn ON when the switch is in the ON (UP) position and turn OFF when the switch is in the OFF (DOWN) position. When testing is complete, return the switch to the AUTO (Center) postion. The ON/AUTO/OFF switch MUST be in the AUTO position for normal system operation and control from the system controller and low voltage inputs.

7 Connect Any Low Voltage Wiring (If Required) as Shown in Figure 2

Installation Instructions

Universal Relay Power Module - SYPM 8L

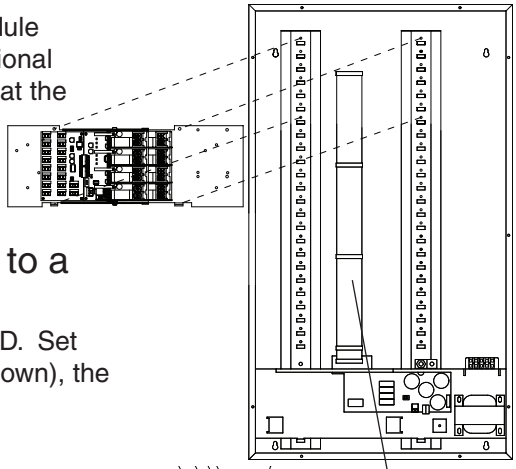
Quick Setup Guide **Module WITH BREAKERS**

SEE THE PREVIOUS PAGE FOR MODULES WITHOUT BREAKERS

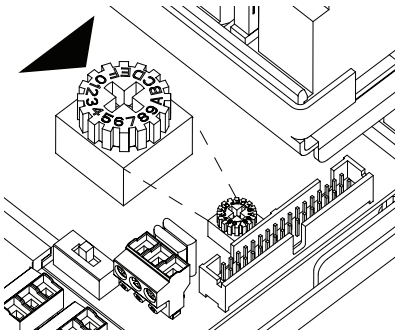
Refer to the instructions on the following pages for complete details on the steps outlined below.

1 Install the Modules in the Enclosure.

Install a neutral bar module in the top position. Install the first relay module in the position directly below the neutral bar as shown, then install additional relay modules in the positions below. Make sure the ribbon cable stays at the rear of the enclosure **behind the installed modules.**

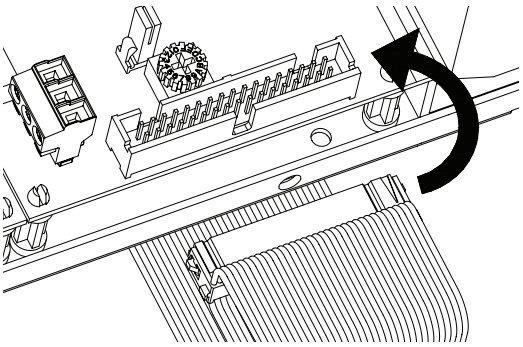


2 Set Each Module Address to a Unique Address



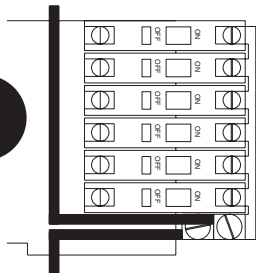
Rotate the address wheel to set the ID. Set the ID of the top module at "1" (as shown), the second at "2" and so on.

3 Connect the Ribbon Cable to Each Module



Ribbon Cable

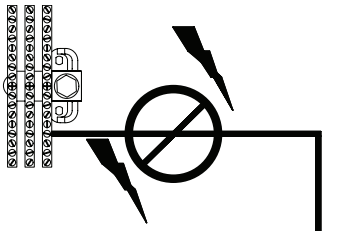
4 Connect the Power Feed Wiring to the Input Lugs



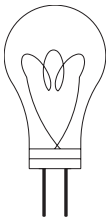
The lugs accept #14 - 2/0 AWG conductors. Use the second lug to tap feed additional modules.

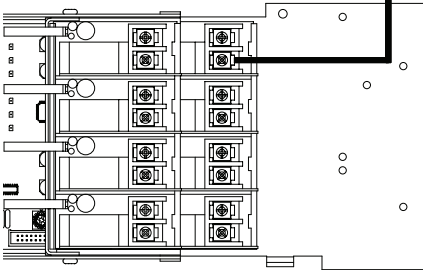
5 Test for Short Circuits in Load Wiring

Test for short circuits in load wiring **PRIOR** to connecting load to output terminals.



6 Connect Load Wiring as Shown in Figure 1 0-10V Dimming Connections are shown in Figure 2





7 Test Power Module Operation

Turn on the cabinet power supply. Turn on all module circuit breakers. Use the ON/AUTO/OFF switch to test the module. All module outputs should turn ON when the switch is in the ON (UP) position and turn OFF when the switch is in the OFF (DOWN) position. When testing is complete, return the switch to the AUTO (Center) postion. The ON/AUTO/OFF switch MUST be in the AUTO position for normal system operation and control from the system controller and low voltage inputs.

8 Connect Any Low Voltage Wiring (If Required) as Shown in Figure 2

Installation Instructions
Universal Relay Power Module - SYPM 8L

SYPM 8L Power Module Features

The SYPM 8L is a relay power module available in two versions, the SYPM 8L and SYPM 8L DSO (Digital Switching Only). It utilizes 30 Amp mechanically latching relays, which offer increased output capacity and an 18,000 Amp SCCR rating for long, trouble free contact life. During a power loss to the Synergy system, the mechanically latching relay contacts will not change states which is ideal for applications requiring emergency lighting during power outages (emergency power must supplied by external source). The input terminal blocks for switches, sensors etc are removable for easy conductor termination.

SYPM 8L - (8) relay outputs, (8) 0-10Vdc dimming outputs, (8) dry contact switch inputs, (2) analog (photocell) inputs, (1) remote override input.
SYPM 8L DSO - (8) relay outputs, (1) remote override input.

MANUAL OVERRIDE SWITCH

ON - When the ON position is selected all eight relays and 0-10Vdc dimming outputs will be overriden to the ON state. All commands from low voltage switches, digital remotes, other external inputs or the SYSC controller WILL NOT be executed. To resume responding to commands, the switch must be returned to the AUTO position.

OFF - When the OFF position is selected all eight relays and 0-10Vdc dimming outputs will be overriden to the OFF state. All commands from low voltage switches, digital remotes, other external inputs or the SYSC controller WILL NOT be executed. To resume responding to commands, the switch must be returned to the AUTO position.

AUTO- When the AUTO position is selected all eight relays and 0-10Vdc dimming outputs WILL RESPOND to all commands from low voltage switches, digital remotes, other external inputs and the SYSC controller. **The AUTO position is the standard position for this switch during normal operation.**

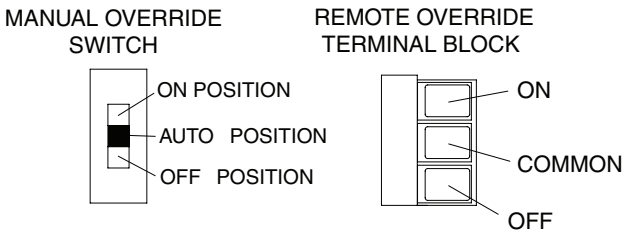
MANUAL OVERRIDE INPUT

This input functions identically to the manual override switch (described above), but uses external dry contacts (AV, BAS systems etc) to trigger the three possible states (ON, OFF or AUTO).

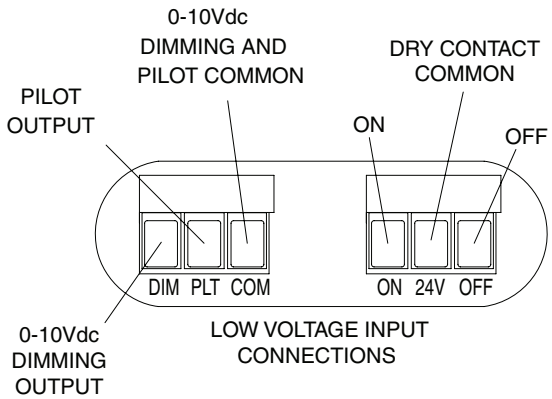
SWITCH INPUTS

The SYPM 8L has eight inputs for switches, sensors, contact closures and other external devices. The terminal and their functions are:

DIM – Provides the 0-10Vdc signal output to dim 4 wire fluorescent ballasts or LED drivers.
PLT – Provides power to the status light on a dry contact switch.
COM – The common terminal for 0-10Vdc dimming and pilot lamp(s). Commons for pilot lamps and 0-10V dimming can be connected in the same terminal if needed.
ON – Terminal for ON dry contact switch connections.
24V – Common terminal for dry contact switch connections.
OFF – Terminal for OFF dry contact switch connections.



Manual Override Details



Dry Contact Switch Input Details

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.

Important Module Installation Notes

1. Install power modules in cabinet starting at the top. **Plug ribbon cable into each module before installing the next module. Ribbon cable installs behind modules.**
2. SYPM 8L relays are rated for:
   30A@277V Ballast
   20A@120V Tungsten
   20A@347V Ballast
   18K Amp SCCR rating @277 VAC
   Verify load type is compatible with these maximum ratings.
3. Test branch circuits for short circuits **prior** to energizing module.
4. Module relay output terminal specification:
   (1) #8 - #14 AWG or (2) #8 - #14 AWG maximum.
7. **DO NOT** connect multi-pole circuits or loads to these relays. Equipment warranty void if multi-pole loads are controlled directly. Use Synergy 2, 3 or 4 pole accessory relays (SYA 2POLE/3POLE/4POLE) or external contactors only.
8. The 0-10 VDC ballast control output connections are Class 2 circuits and should be installed in accordance with the National Electric Code and any local codes which may apply. For specific information on conductor routing for your application consult the ballast manufacturer's recommendations.
9. A minimum of two and maximum of fifty 0-10VDC ballasts can be connected to one 0-10VDC ballast output.

Module Installation and Wiring

1. MOUNT TOP MODULE
   Starting at the TOP of the cabinet, mount the module by setting the bottom tabs in the slots at the back of the cabinet then securing the top with the screws provided.
2. SET MODULE ID AND CONNECT RIBBON CABLE Rotate the relay card ID switch to the address 1 position. (See Figure 1) Plug the male connector on the ribbon cable into the female socket on the relay module. Ribbon cable installs behind the modules.
3. Repeat steps 1 & 2 for additional modules, incrementing the relay card ID switches by 1 from the top of the cabinet down.
4. PROVIDE PRIMARY POWER WIRING & BRANCH CIRCUIT CONNECTION
   Modules without breakers:
   Connect the terminal labeled LINE on each relay to an appropriately sized, single pole branch breaker. A single branch breaker can be connected to multiple LINE terminals if required. Make load wiring connections per Figure 1.
   Modules with breakers:
   Connect each module input lug to an appropriately sized conductor. Use the module's feed through lug to connect additional modules to an input circuit on the same phase. See Figure 1 for load connection details and Figures 3 and 4 for typical feed wiring details.
   Torque connections to 16 inch-lbs.
   Refer to Synergy supplied As-Built drawings for more details.
   TEST FOR SHORT CIRCUITS PRIOR TO ENERGIZING MODULE.
5. FOR 0-10VDC DIMMING APPLICATIONS
   0-10V ballast control wires (violet and gray) connect to the DIM and COM terminals on the removable terminal blocks on the Input/Output card. The violet wire connects to DIM, the gray connects to COM. See Figure 2 for more details.
   A minimum of two and maximum of fifty 0-10VDC ballasts can be connected to one 0-10VDC ballast output.
6. CONNECT LOW VOLTAGE INPUT WIRING
   Inputs from switches, sensors, contact closures and other external devices terminate to the ON, OFF, PLT, COM, 24V and AIN terminals in the removable terminal blocks on the Input/Output card. (See Figure 2 for details)
   Refer to Synergy supplied As Built drawings, accessory instructions or project specifications for details.
7. START-UP POWER MODULES TO ALLOW MANUAL LIGHTING CONTROL
   Following this procedure step by step will reduce the chance of damage due to relay closing on a short circuit. Module warranty void if relay closes on a short circuit.
   1. Turn off all Branch Breakers.
   2. Verify "MANUAL OVERRIDE SWITCH" is in the ON position. (See Figure 1)
   3. Turn on circuit breaker for the enclosure power supply.
   4. Turn on branch breakers. Use the manual override switch for convenient on/off override.
8. POWER MODULE CONFIGURATION
   The power modules are fully programmable with the addition of the SYSC system controller. Refer to the SYSC system controller installation instructions and Synergy Operation and Programming Manual for more information.

Troubleshooting Procedures

SWITCH INPUTS NOT WORKING:

1. Remove the terminal block of the input being tested.
2. The current status of each input can be viewed at the SYSC controller. On the controller press START...SEARCHING...STATUS...INPUTS... MODULES
   Status for each input is displayed by module. For example, all inputs for module 2 are displayed on one screen, numbered as 02xx, where xx is the input number.
3. Use the UP and DOWN arrow keys to move to the desired module input screen, the current status for each input will be displayed. A * indicates the input is ON, a . indicates the input is OFF. Using a suitable jumper (wire, screwdriver, etc) short between the ON and 24V terminal, the input status should show * (ON). Short between OFF and 24V, the input status should show . (OFF).
4. If this test is successful, the switch inputs are working properly. Reinstall the input terminal block and test the switch. If the switch input is still not working, either the wiring to the switch(es) and/or the switch(es) themselves are defective. Correct as required.

THE RELAYS OR 0-10V OUTPUTS ARE NOT FUNCTIONING. FOLLOW THESE STEPS:

1. Verify the correct voltage is present between the LINE terminal and the NEUTRAL BUSS.
2. Verify the cabinet power supply LEDs are on and the RIBBON CABLE is properly connected to the power supply and the module.
3. Verify the module CIRCUIT BREAKERS are in the ON position (if applicable).
4. Verify voltage is present on the LOAD terminal and/or the output of the CIRCUIT BREAKERS.
5. Move the MANUAL OVERRIDE SWITCH on the relay module to the “ON” position. All loads and RELAY OUTPUT STATUS LEDs should turn on.

FOR 0-10VDC BALLASTS ONLY:

6. Verify the DC voltage between the DIM and COM terminals is approximately 10VDC when the MANUAL OVERRIDE SWITCH is in the ON position. Verify the voltage between the DIM and COM terminals is approximately 0.7VDC when the MANUAL OVERRIDE SWITCH is in the OFF position.
7. Switch the MANUAL OVERRIDE SWITCH on the relay module to “AUTO”. Verify the voltage between the DIM and COM terminals varies between 0 and 10VDC while the outputs are being raised and lowered using the controller, control stations or other input devices.

A basic test for 0-10VDC dimming ballast operation is to connect the violet and grey wires together at the ballast (ballast must have line voltage power applied during this test) The lamps should dim to the lowest dimmed level. Then disconnect the violet and grey wires, the lamps should go to full output. If this test IS NOT successful, the ballast and/or control wiring is faulty. Consult the ballast manufacturer if additional troubleshooting or information is required.

FOR ALL LOAD TYPES:

8. If the loads switch on/off using the manual override switch but do not respond to the controller, check the system programming. See the Synergy Operation Manual for programming instructions.

If after performing the above tests one or more circuits still do not operate correctly, contact Synergy Lighting Controls Technical Service department, Monday - Friday, at 800-533-2719.

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.

Installation Instructions

Universal Relay Power Module - SYPM 8L

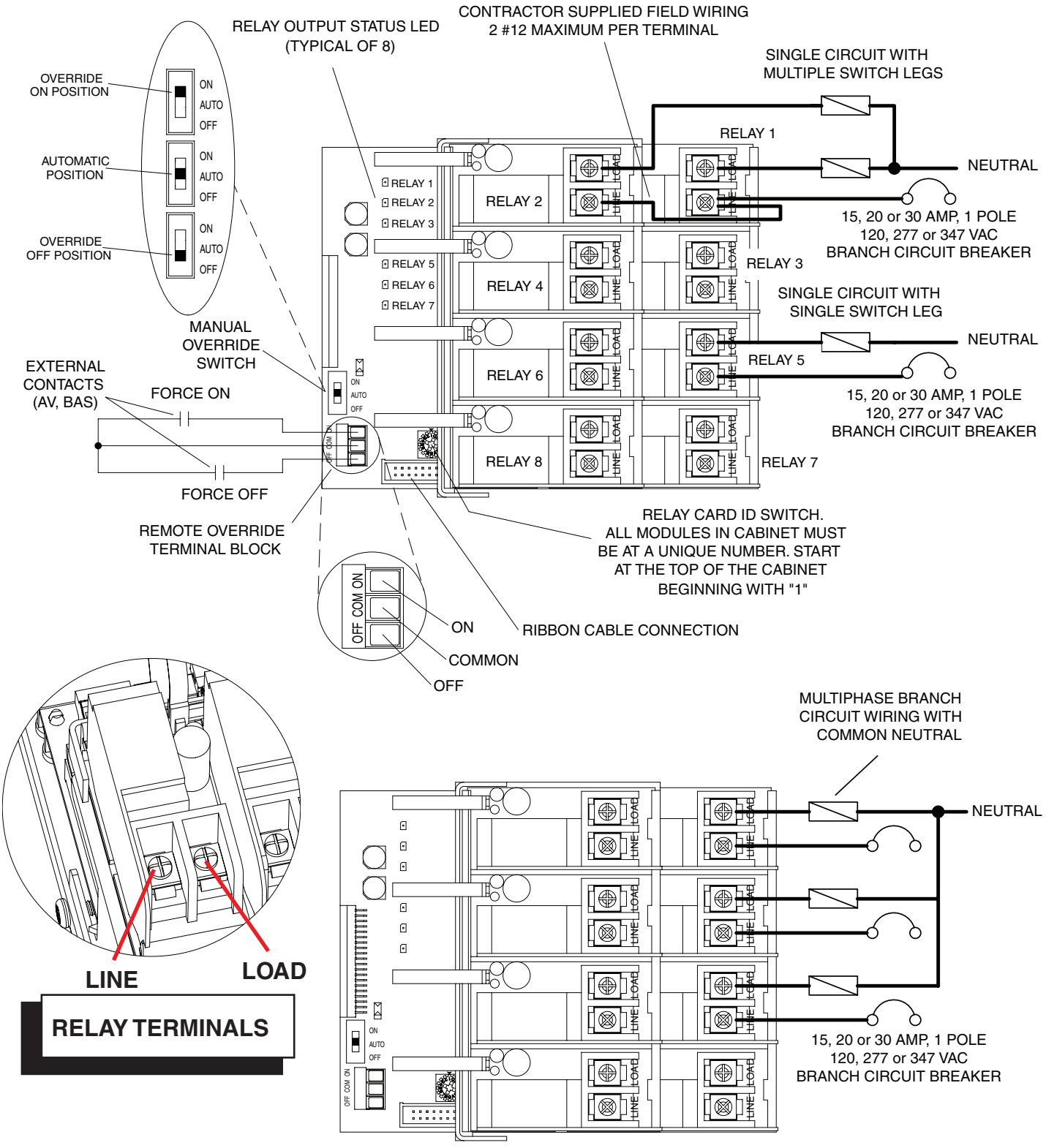
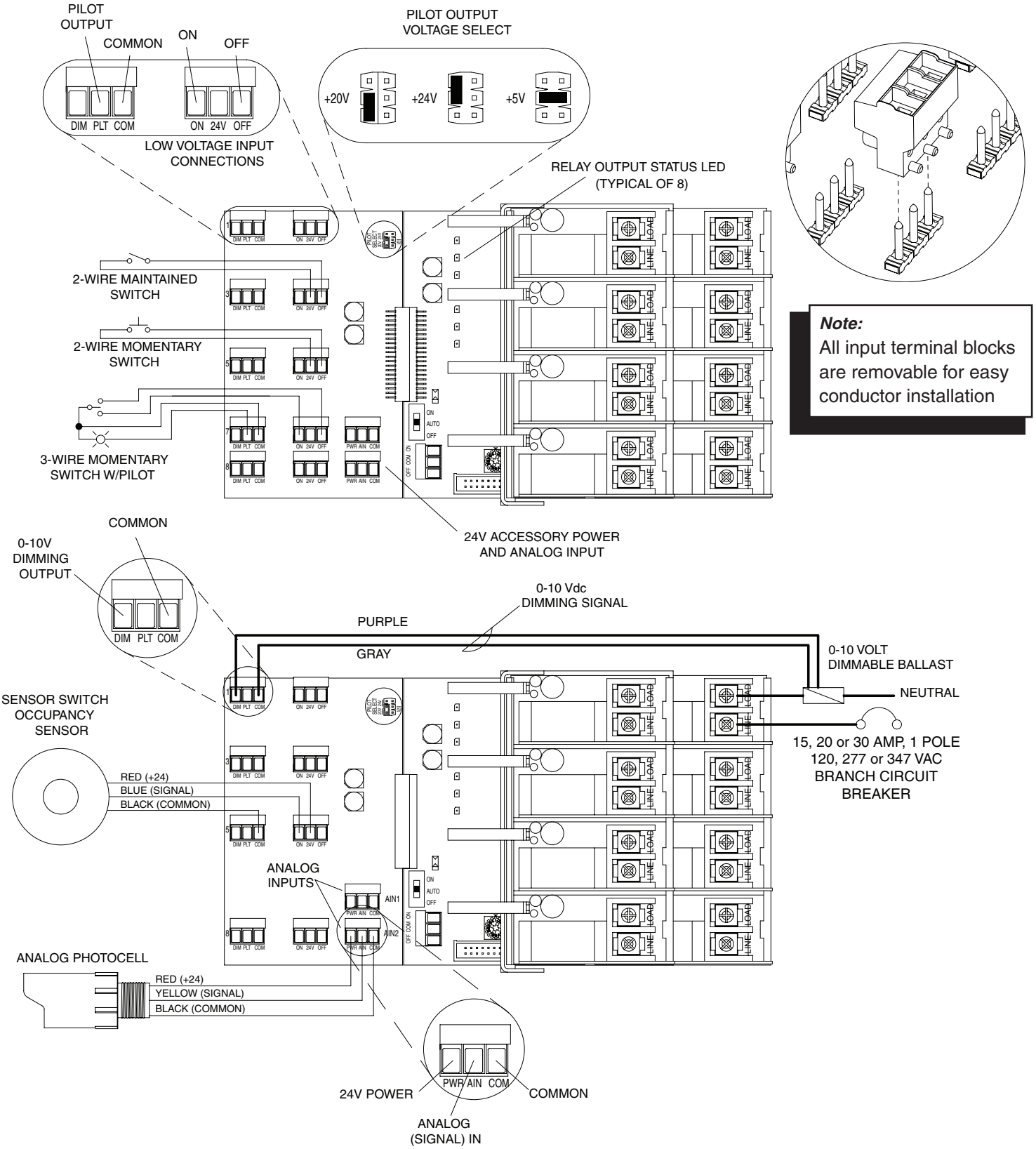


Figure 1 - SYPM 8L DSO (No Switch Inputs) Switching Only Wiring Detail

Installation Instructions

Universal Relay Power Module - SYPM 8L



Note:
All input terminal blocks are removable for easy conductor installation

Figure 2 - SYPM 8L Switch Inputs and 0-10Vdc Dimmimg Wiring Detail

Three Phase Four Wire Main Feed Details

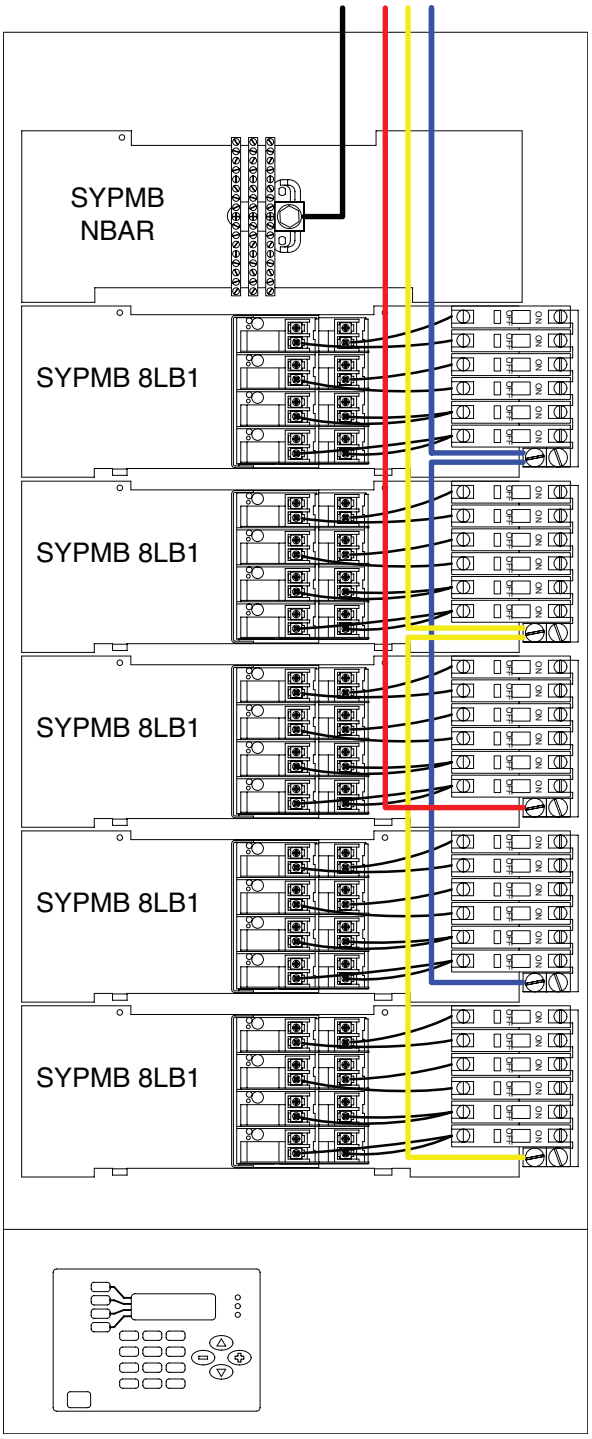


Figure 3 - Large Enclosure Module Population Modules w/Breakers and Neutral Bar

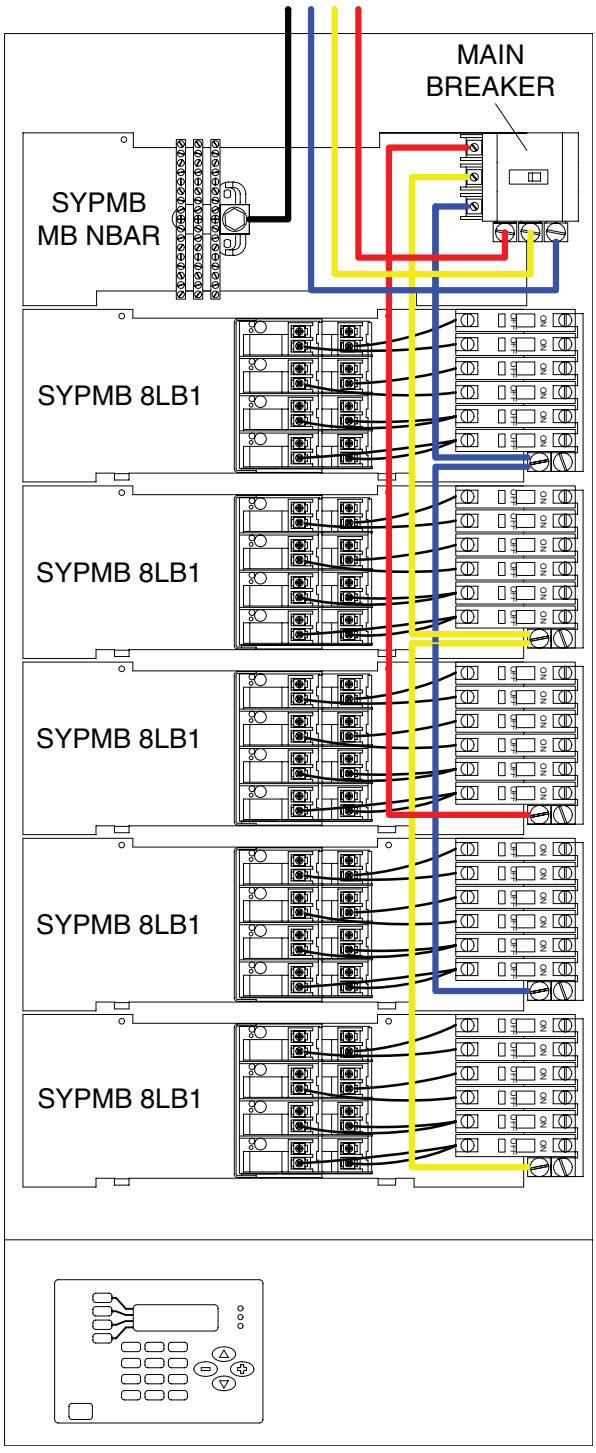


Figure 4 - Large Enclosure Module Population Modules w/Breakers, Neutral Bar and Main Breaker

Installation Instructions

Dimmer Power Module - SYPMB 6DB1 through 5

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.

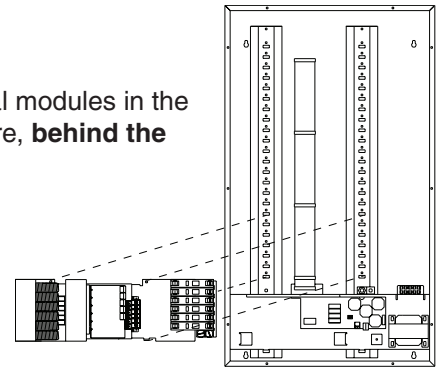
SAVE THESE INSTRUCTIONS

Installation Instructions

Dimmer Power Module - SYPMB 6DB1 through 5

Dimmer Module Quick Setup Guide

Refer to the instructions on the following pages for complete details on the steps outlined below.

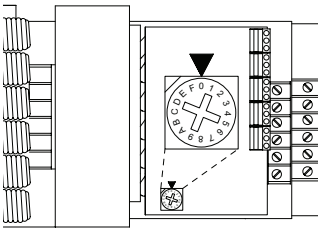


1 Install the dimmer modules in the enclosure.

Install the first module in the bottom position, as shown, then install additional modules in the positions above. Make sure the ribbon cable stays at the rear of the enclosure, **behind the installed modules.**

2 Set Each Module Address to a Unique Address

Rotate the address wheel to set the ID. Set the ID of the top module at "1" (as shown), the second at "2" and so on.



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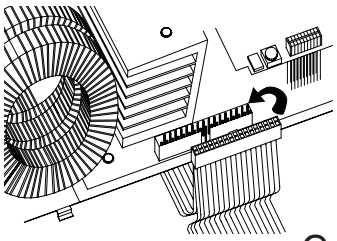
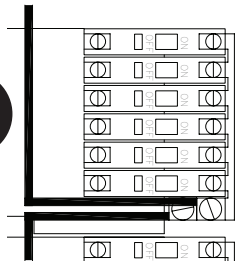
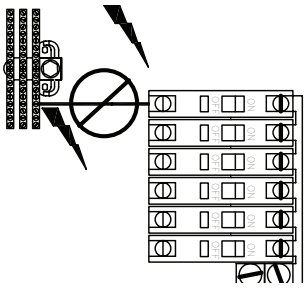


Connect the Ribbon Cable to Each Module



4 Connect the Power Feed Wiring to the Input Lugs

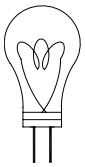
The lugs accept #14 - 2/0 AWG conductors. Use the second lug to tap feed additional modules



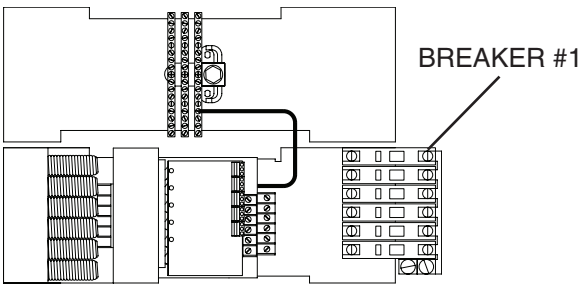
5 Test for Short Circuits in Load Wiring

Test for short circuits in load wiring **PRIOR** to connecting load to dimmer output

6



Connect Load Wiring as Shown in Figure 3



7 Connect Dimmer Module Neutral Wire

Connect the dimmer module white neutral pigtail to the neutral bar, which is also installed in the enclosure.

8 Test Dimmer Module Operation

Turn on the cabinet power supply. Energize the module by turning on module breaker #1, then turn on all remaining

module breakers. Use the ON/AUTO/OFF switch to test the module. All module outputs should turn ON when the switch is in the right-most (ON) position and OFF when the switch is in the left-most (OFF) position. When testing is complete return the switch to the AUTO (Center) postion.The ON/AUTO/OFF switch MUST be in the AUTO

9 Connect Any Low Voltage Wiring (If Required) as Shown in Figure 2

Installation Instructions

Dimmer Power Module - SYPMB 6DB1 through 5

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.
4. Use only accessories recommended by Lithonia Control Systems.
5. Use 6DB1 and 6DB3 modules for 120 VAC circuits; 6DB2 and 6DB4 modules for 230 or 277 VAC circuits.

Important Module Installation Notes

1. Dimmer modules must be installed in the cabinet starting at the bottom. **Plug the ribbon cable into each module before installing the next module**. **RIBBON CABLE INSTALLS BEHIND MODULE.**
2. Verify that the load type being connected is compatible with the dimmer module type and capacity as listed on module label.
3. Each module **MUST** be fed with a **single phase.**
3. Test all branch circuits for short circuits **prior** to energizing module.
4. Dimmer output terminal block specifications:
   (1) #10, #12, #14 AWG or (2) #12, #14 AWG conductors maximum.
   Input and feed-through lug specification:
   (1) #14 through #2/0 AWG conductor.
   Class 2 input terminal block specifications:
   (1) # 22 through # 18 AWG conductor.

Note:

Each circuit (dimmer) requires a minimum load of 50VA. (This does not apply to un-used dimmers)

Module Installation and Wiring

1. INSTALL NEUTRAL OR MAIN DISTRIBUTION MODULES
   Mount main lug, main breaker and/or neutral bar power modules starting at the top of the cabinet. See *Figures 4,5 and 6* for typical feed wiring configurations. If SYPMB ML and SYPMB MN distribution modules are being used, refer to the installation instructions furnished with those modules or the optional Synergy supplied As-Built drawings for job specific installation and wiring details.
2. MOUNT FIRST DIMMER MODULE
   Begin at the **BOTTOM** module position of the cabinet and mount the module by setting the bottom tabs in the slots at the back of the cabinet, and securing the top with the screws provided.
3. SET MODULE ID AND CONNECT RIBBON CABLE
   Rotate the dimmer card ID switch to the position indicated on the label on the side of the cabinet or as shown in Synergy supplied As-Built drawings. (See *Figure 1)* Plug the male connector on the ribbon cable into the female socket on the relay module. **Ribbon cable installs behind the modules.**
4. Repeat steps 2 & 3 for additional modules, incrementing the dimmer card ID switches by 1 from the top of the cabinet down.
5. PROVIDE PRIMARY POWER WIRING TO MODULE INPUT LUG AND CONNECT LOADS
   Each module MUST be fed with a single phase input circuit. Each input circuit should be connected to each module using an appropriately sized conductor. Use the module's feed through lug to connect additional modules to the same phase input circuit. See *Figures 4, 5 and 6* for typical feed wiring configurations. Make load wiring connections for the appropriate module type as shown in *Figure 3*. Refer to the optional Synergy supplied As-Built drawings for job-specific details. **Test for short circuits prior to energizing module.** Torque terminal block screws to 7 inch-lbs.
6. CONNECT DIMMER MODULE NEUTRAL
   Trim, strip and connect the factory attached white neutral wire on the module to the neutral bar.
   Note: This neutral wire and the #1 circuit breaker provide control power to the module.

Installation Instructions

Dimmer Power Module - SYPMB 6DB1 through 5

Module Installation and Wiring Cont.

7. CONNECT LOW VOLTAGE INPUT WIRING
   Terminate wiring from dry contact closure and analog input devices on the class 2 terminal blocks shown in *Figure 2*. Refer to the accessory instructions, project specifications, or optional Synergy supplied As Built drawings for additional wiring details.
8. START-UP POWER MODULES TO ALLOW MANUAL LIGHTING CONTROL
   Following this procedure step by step will reduce the chance of equipment damage resulting from the dimmer closing on a short circuit.
   The dimmer module warranty is void if a dimmer is energized while connected to a short circuit.

   1. Turn off power to the main feed.
   2. Verify the module "manual override switch" is in the ON position. (See *Figure 1)*
   3. Turn on the circuit breaker for the cabinet power supply.
   4. Energize the main feed. If a circuit breaker trips when the main feed in energized, turn off all power and remove the short circuit.

   Use the manual override switch for convenient ON/OFF overide of the connected loads until the system has been programmed. The manual override switch MUST be in the AUTO position for normal system operation and control from the system controller and low voltage inputs.
9. DIMMER MODULE CONFIGURATION
   The dimmer modules are fully programmable with the addition of the system controller. The controller must be used to set dimmer curves for loads other than incandescent. Refer to the system controller installation instructions and Synergy Operation Manual for more information.

Troubleshooting Procedures

If the dimmer outputs do not come on follow these steps:

1. Verify the correct voltage is present between the INPUT LUG and the NEUTRAL BUSS.
2. Verify the dimmer module neutral (white) lead is connected to the NEUTRAL BUSS.
3. Verify the cabinet power supply LEDs are on and the RIBBON CABLE is properly connected to the power supply and the module.
4. Verify the module CIRCUIT BREAKERS are in the ON position. **Breaker number one MUST be ON to energize the dimmer module electronics.**
5. Verify voltage is present on the output of the CIRCUIT BREAKERS.
6. Verify the Zero Cross LED (ZX) on the dimmer module is on and blinking rapidly. (See *Figure 1)*
7. Switch the MANUAL OVERRIDE SWITCH on the dimmer module to “ON”. All loads and DIMMER STATUS LEDs should turn on.
8. Check for voltage on the appropriate OUTPUT TERMINAL BLOCK connections.
   NOTE: Perform this test with a load connected to the output terminal block. False voltage readings may be present without a load connected.

   If after performing the above tests one or more circuits still do not turn on, contact Synergy Lighting Controls Service department between the hours of 8 AM and 5 PM EST, Monday - Friday, at 800-533-2719. If the dimmer is found to be defective, replace the electronic control assembly with Synergy part number **SYRP 6D 120** (120 VAC) or **SYRP 6D 277** (277 VAC).

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.

Electronic Control Module Assembly Removal

1. Turn off power to the Synergy cabinet.
2. Remove the dimmer cabinet door.
3. Identify the bad dimmer module (see Troubleshooting Procedure).
4. Record the setting of the DIMMER CARD ID SWITCH from the dimmer module to be replaced.
5. Disconnect the ribbon cable from dimmer module.
6. Remove the 6 INPUT LEADS (BLACK) from the CIRCUIT BREAKERS. Each wire installs in a specific location and is numbered to identify its location, 1 - 6. However, the numbers are small and you may wish to add additional numbering to the wires **before** removal as an aid when reinstalling.
7. Remove the LOW VOLTAGE INPUT TERMINAL BLOCK (if installed) by grasping the terminal block and pulling it up and away from the circuit board.
8. Remove the REMOTE OVERRIDE (RO) TERMINAL BLOCK (if installed) by grasping the terminal block and pulling it up and away from the circuit board.
9. Completely loosen the 6 screws on the TOROID FILTER TERMINAL BLOCK located between the heat sink and the toroids. (See *Figure 1)*
10. Remove the dimmer module neutral (WHITE) lead from NEUTRAL BUSS.
11. Disconnect the RIBBON CABLE from the module.
12. Unscrew the 2 captive mounting screws located on each side of the DIMMED OUTPUT TERMINAL BLOCK. (See *Figure 1)*
13. After the 2 captive mounting screws have been loosened, the electronic control module assembly can be moved toward the circuit breakers. Slide it toward the breakers, then lift up on the heat sink and remove the assembly from the module.

Electronic Control Module Assembly Installation

1. On the new module control assembly, completely loosen the 6 screws on the TOROID FILTER TERMINAL BLOCK located next to the heat sink.
2. Make sure the existing WIRE LEADS from the toroids are straight and have not been bent during disassembly.
3. Orient the electronic control module assembly so the heat sink is facing the toroids.
4. Place the assembly over the two chassis rails, then slide the assembly towards the toroids. **The protruding wire leads from the toroids MUST properly align and insert into the toroid filter terminal block.**
5. Tighten the 2 captive mounting screws located on each side of the DIMMED OUTPUT TERMINAL BLOCK.
6. Tighten the 6 screws on the TOROID FILTER TERMINAL BLOCK located between the heat sink and the toroids.
7. Reconnect the 6 INPUT LEADS (BLACK) to the CIRCUIT BREAKERS. The leads are marked 1 to 6 and **MUST** be connect to the correct CIRCUIT BREAKERS. The Breakers are numbered 1 to 6 from top to bottom. Torque the breaker screws per the specifications printed on the breaker labels. **Failure to install each input lead into the correct breaker will result in faulty system operation.**
8. Install the LOW VOLTAGE INPUT TERMINAL BLOCK (if required) by aligning the block over the header pins and pushing down.
9. Install the REMOTE OVERRIDE (RO) TERMINAL BLOCK (if required) by aligning the block over the header pins and pushing down.
10. Cut the dimmer module neutral (WHITE) lead wire to the appropriate length, strip 1/4", and connect it to the NEUTRAL BUSS.
11. Set the address on the new module by matching the DIMMER CARD ID SWITCH setting to the setting from the old dimmer module. **Failure to set the correct address will result in faulty system operation.**
12. Reconnect ribbon cable to dimmer module.
13. Perform module start-up. See the START-UP POWER MODULES TO ALLOW MANUAL LIGHTING CONTROL section for details.
14. Replace the cabinet door.

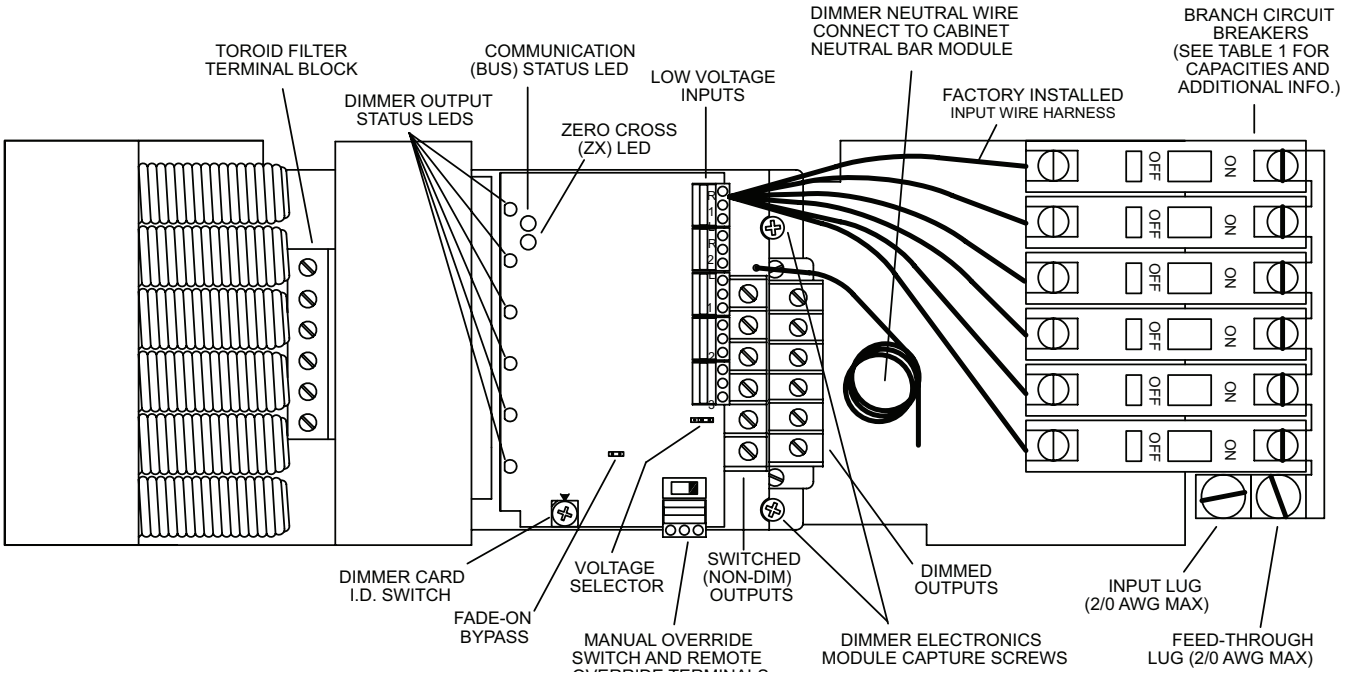


Figure 1 - Dimmer Module Layout

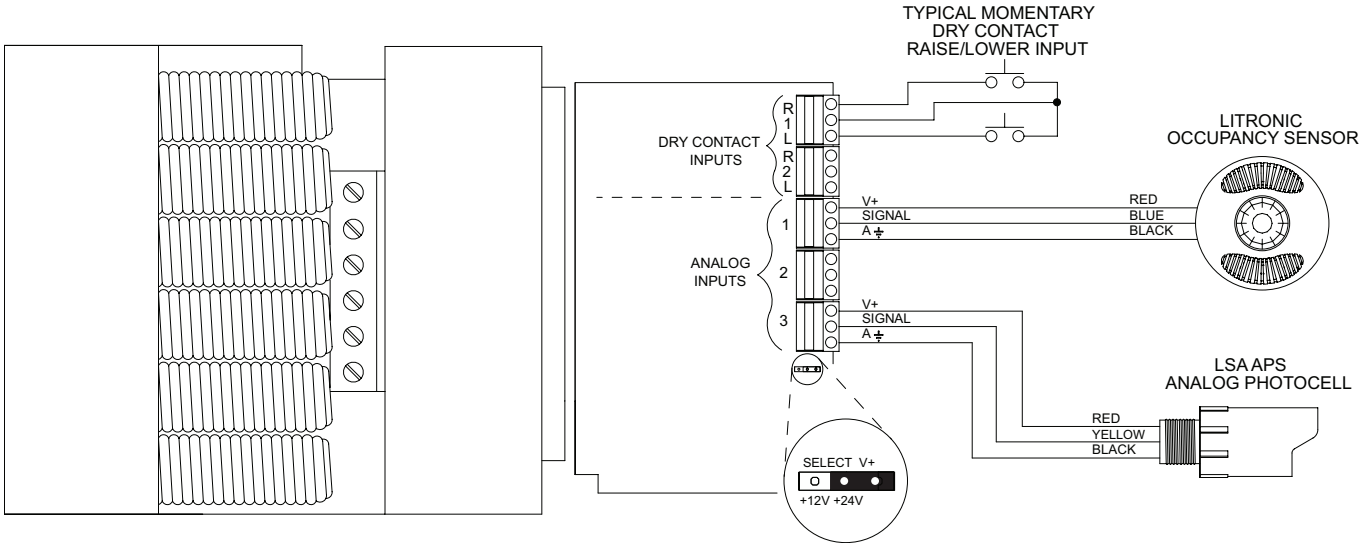


Figure 2 - Low Voltage Class 2 Inputs - Wiring Details

Installation Instructions

Dimmer Power Module - SYPMB 6DB1 through 5

SYPMB 6DB1

Six 120V, 20A, 10,000 AIC Breakers Module Capacity = 10,000 VA		
Breaker	Feeds Dimmer(s)	Capacity
1 (Top)	1	16A
2	2	16A
3	3	16A
4	4	16A
5	5	16A
6	6	16A

SYPMB 6DB3

Six 120V, 15A, 10,000 AIC Breakers Module Capacity = 8,640 VA		
Breaker	Feeds Dimmer(s)	Capacity
1 (Top)	1	12A
2	2	12A
3	3	12A
4	4	12A
5	5	12A
6	6	12A

SYPMB 6DB5

Four 120V, 20A, 64,000 AIC Breakers Module Capacity = 7,680 VA		
Breaker	Feeds Dimmer(s)	Capacity
1 (Top)	1	16A
2	2	16A
3	3	16A
	4	Total
4	5	16A
	6	Total

SYPMB 6DB2

Four 277V, 20A, 14,000 AIC Breakers Module Capacity = 17,500 VA		
Breaker	Feeds Dimmer(s)	Capacity
1 (Top)	1	12.5 Amps
2	2	12.5 Amps
3	3	12.5 A ea.
	4	16 A Total
4	5	12.5 A ea.
	6	16 A Total

SYPMB 6DB4

Four 277V, 15A, 14,000 AIC Breakers Module Capacity = 13,300 VA		
Breaker	Feeds Dimmer(s)	Capacity
1 (Top)	1	12 Amps
2	2	12 Amps
3	3	12 A ea.
	4	12 A Total
4	5	12 A ea.
	6	12 A Total

Table 1 - Available Dimmer Module Configurations and Capacities

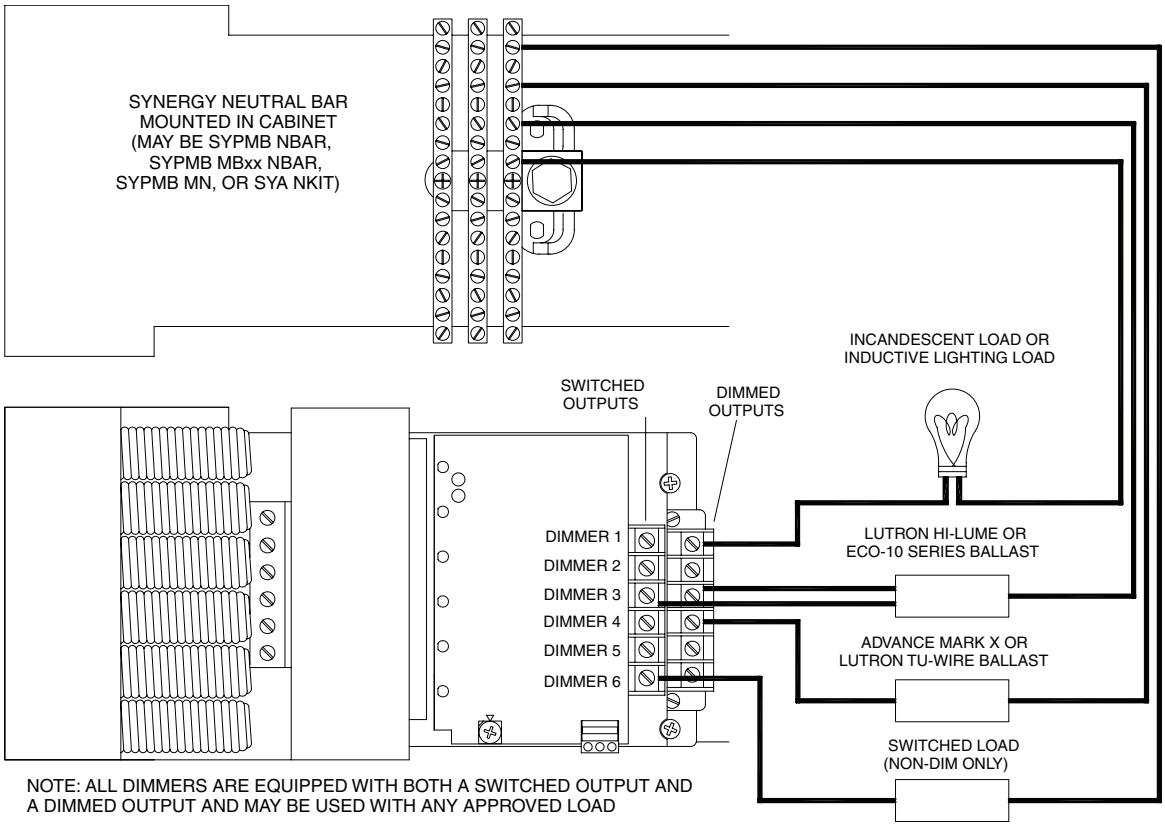


Figure 3 - Approved Load Wiring Details- Valid For All Dimmer Module Configurations

Three Phase Four Wire Main Feed Details

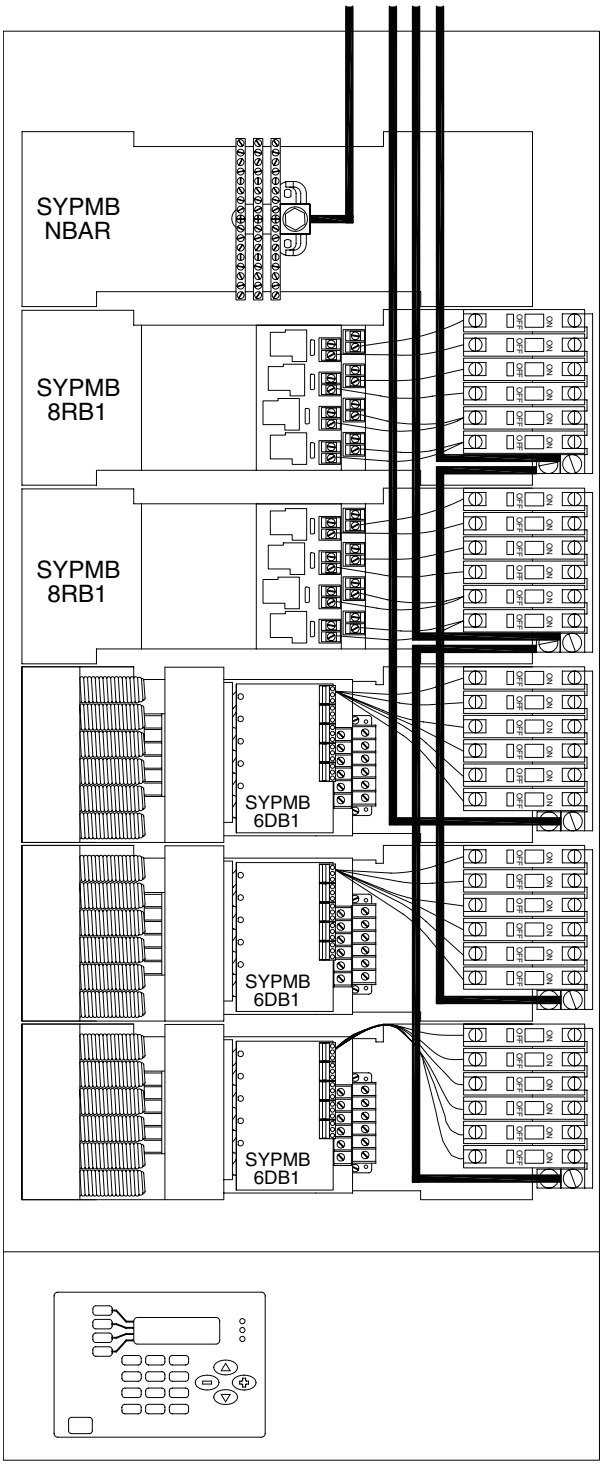


Figure 4 - Example Large Enclosure Module Population with Neutral Bar

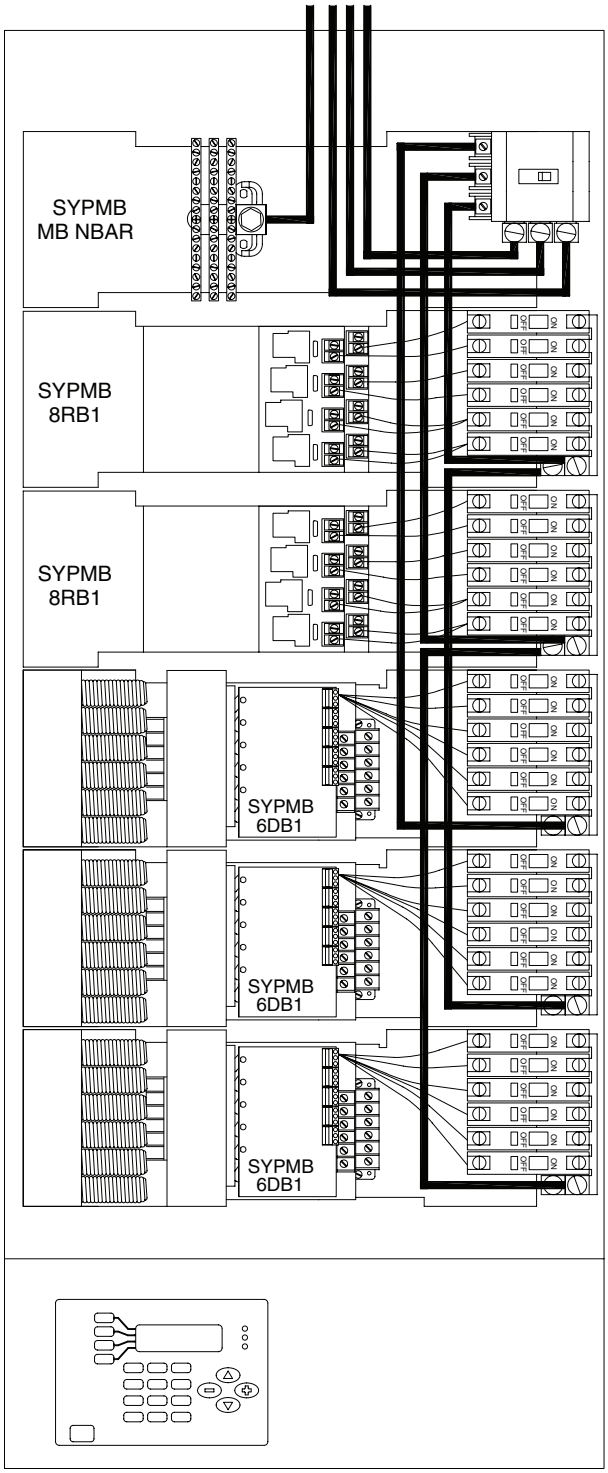


Figure 5 - Example Large Enclosure Module Population with Main Breaker and Neutral

Three Phase Four Wire Main Feed Details

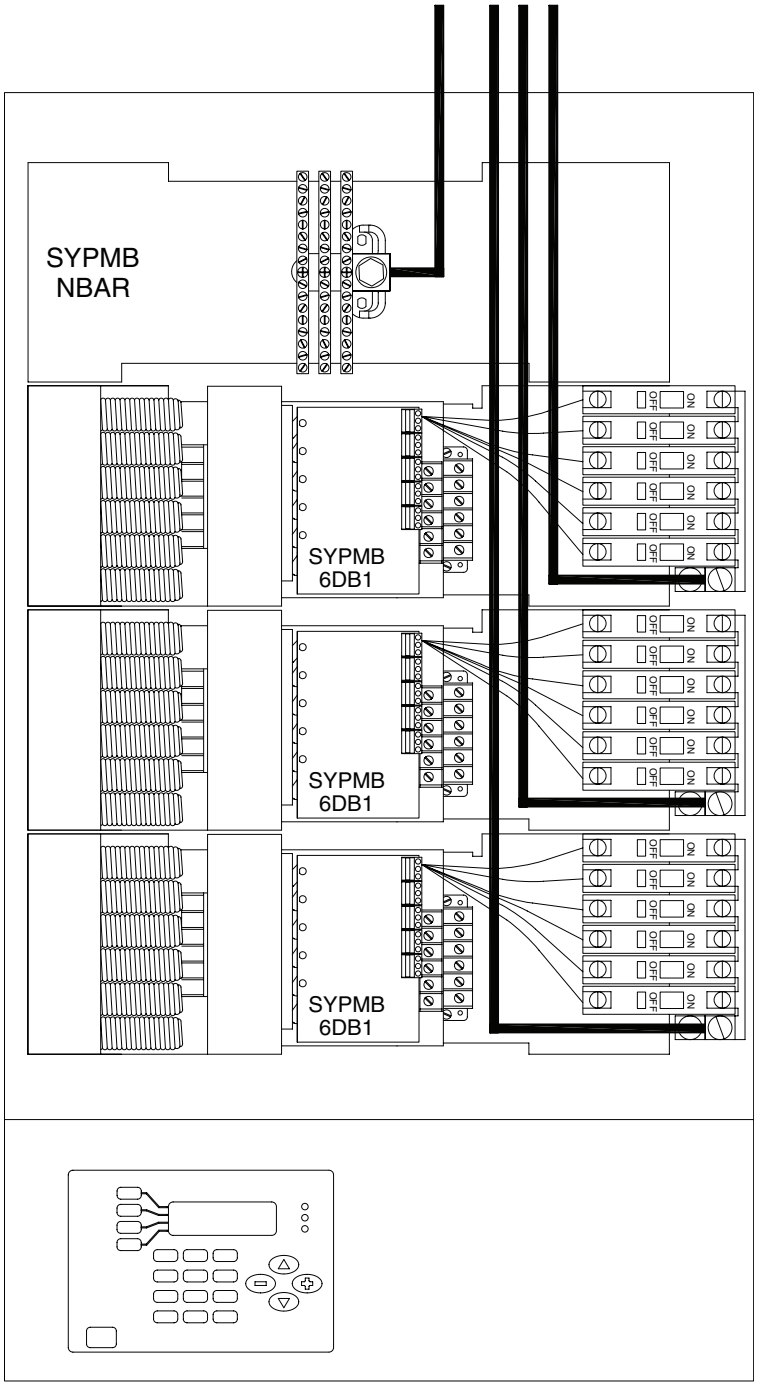


Figure 6 - Example Medium Enclosure
Module Population with Neutral Bar

Installation Instructions

Synergy Power Module - SYPM S5BC

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:

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- 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.

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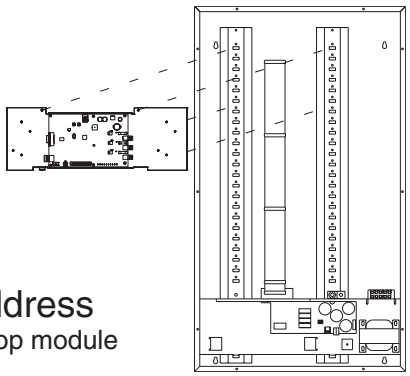
SAVE THESE INSTRUCTIONS

Installation Instructions

Synergy Power Module - SYPM S5BC

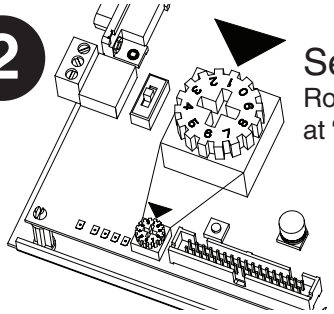
Quick Setup Guide **SYPM S5BC Power Module**

Refer to the instructions on the following pages for complete details on the steps outlined below.



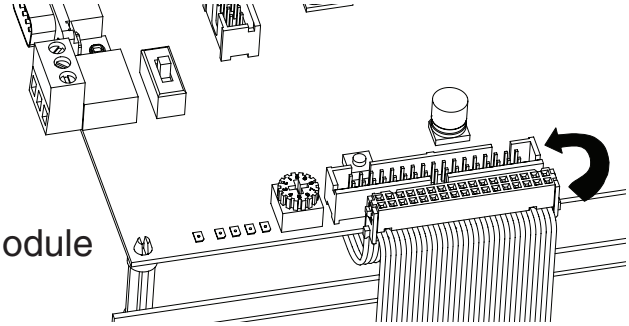
1 Install the Power Modules in the Enclosure.

Install the first module in the top position as shown, then install additional modules in the positions below. Make sure the ribbon cable stays at the back of the enclosure **behind the installed modules.**



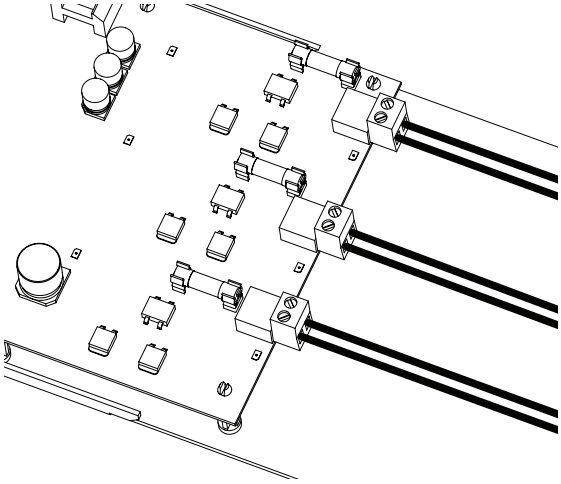
2 Set Each Module Address to a Unique Address

Rotate the address wheel to set the ID. Set the ID of the top module at “1” (as shown), the second at “2” and so on.



3 Connect the Ribbon Cable to Each Module

4 Connect Each Intelligent Ballast Control (IBC) Network



5 Test Power Module Operation

Turn on the cabinet power supply. Use the ON/AUTO/OFF switch to test the module. All module outputs on each Simply5 network should turn ON when the switch is in the ON (up) position and turn OFF when the switch is in the OFF (down) position. When testing is complete, return the switch to the AUTO (center) position. The ON/AUTO/OFF switch MUST be in the AUTO position for normal system operation and control from the system controller and system low voltage inputs.

Installation Instructions

Synergy Power Module - SYPM S5BC

The SYPM S5BC intelligent ballast control module can control either DALI ballasts or SIMPLY5 ballasts. Connection to, and control of, either ballast type from the SYPM S5BC power module and a Synergy system are identical.

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.

Important Module Installation Notes

1. Install power modules in cabinet starting at the top. **Plug ribbon cable into each module before installing the next module. Ribbon cable installs behind modules.**
2. The Intelligent Ballast Control (IBC) output connections are either Class 1 or Class 2 circuits, and should be installed in accordance with the National Electric Code and any local codes which may apply. For specific information on conductor routing for your application, consult the ballast manufacturer's recommendations.
3. A maximum of 64 DALI/Simply5 ballasts can be connected to a single DALI/Simply5 network. The SYPM S5BC power module contains three Simply5 networks, with each network containing a dedicated controller and power supply. Each SYPM S5BC power module supports a maximum total of 192 DALI /Simply5 ballasts.

Module Installation and Wiring

1. MOUNT TOP MODULE
   Starting at the **TOP** of the cabinet, mount the module by setting the bottom tabs in the slots at the back of the cabinet then securing the top with the screws provided.
2. SET MODULE ID AND CONNECT RIBBON CABLE
   Rotate the power module card ID switch to the address 1 position. (See *Figure 1)* Plug the male connector on the ribbon cable into the female socket on the power module. **Ribbon cable installs behind the modules.**
3. Repeat steps 1 & 2 for additional modules, incrementing the power module card ID switches by 1 from the top of the cabinet down.
4. CONNECT SIMPLY5 NETWORK OUTPUTS TO SIMPLY5 OR DALI BALLASTS
   Each DALI/SIMPLY5 has a pair of control wires. Each control pair should be terminated on a DALI/SIMPLY5 network plug-in connector on the power module, (See *Figure 1).* Refer to Synergy supplied Installation drawings and any additional accessory instructions or project specifications for details. **A maximum of 64 DALI/SIMPLY5 ballasts can be connected to a single SIMPLY5 network.**
5. START-UP POWER MODULES TO ALLOW MANUAL LIGHTING CONTROL
   1. Verify the three "Manual Override Switches" are in the ON position. (See *Figure 1)*
   2. Turn on circuit breaker for the enclosure power supply.
   3. Turn on the circuit breakers supplying power to the SIMPLY5 ballasts. Use the manual override switches for convenient on/off override of the lighting.
6. POWER MODULE CONFIGURATION
   IBC power modules and DALI/SIMPLY5 groups are fully programmable with the addition of the SYSC system controller. Refer to the SYSC system controller installation instructions and Synergy Operation Manual for more information.

Troubleshooting Procedures

If the IBC power module control outputs do not come on, follow these steps:

1. Verify the correct input voltage is present at the line voltage input of the DALI/SIMPLY5 ballast.
2. Verify the cabinet power supply LEDs are on and the RIBBON CABLE is properly connected to the power supply and the module.
3. Switch the MANUAL OVERRIDE SWITCH on the power module to the “ON” position. All controlled DALI/SIMPLY5 loads should turn ON on each DALI/SIMPLY5 network.
4. If the loads switch ON/OFF using the manual override switch but do not respond to the controller, check the system programming. See the Synergy Operation Manual for programming instructions.
5. If the loads will not respond to controller commands, check the voltage on each DALI/SIMPLY5 network. There should be 9.5 to 22 volts DC across each DALI/SIMPLY5 network control wire pair. If no voltage is present, check the appropriate DALI /SIMPLY5 network fuse.

   If after performing the above tests one or more circuits still do not turn on, contact Synergy Lighting Controls Technical Service department between the hours of 8 AM and 5 PM EST, Monday - Friday, at 800-533-2719.

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

Warranty

Synergy Lighting Controls warrants all equipment to be free from defects 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.

Synergy Lighting Controls Conyers Ga, 30012
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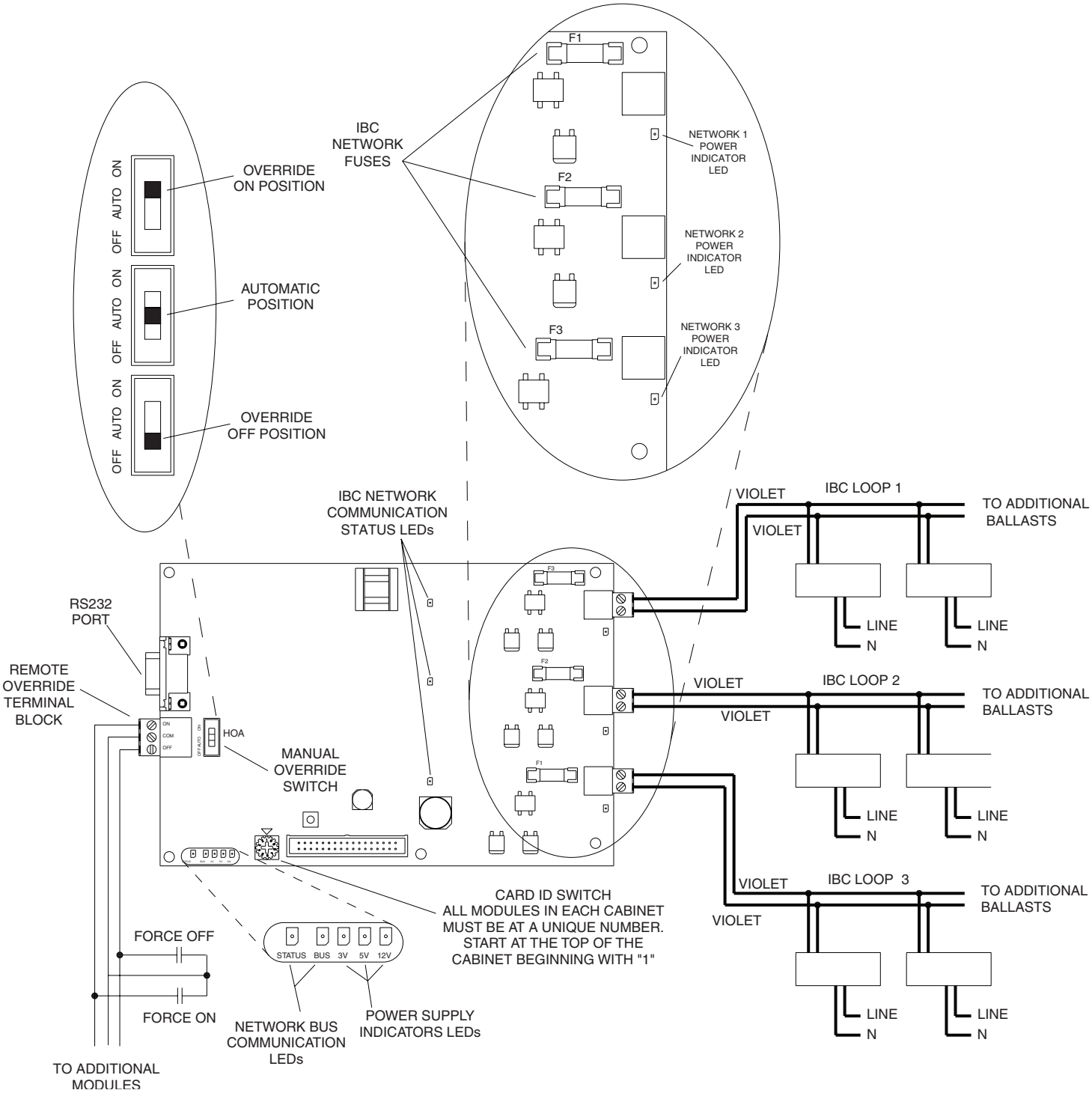

Figure 1 - SYPM S5BC Wiring Detail

Note: DALI and SIMPLY5 ballast connections are identical.

Installation Instructions

SYPM Plate, SYA 2POLE, 3POLE, 4POLE

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

SYPM Plate, SYA 2POLE, 3POLE, 4POLE

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.
4. Use only accessories recommended by Lithonia Control Systems.
5. Use only at voltage listed on product labels.

Important Module Installation Notes

1. This module does not plug into the ribbon cable. Install in a convenient module position.
2. Verify that load type is compatible with voltages, loads and capacity listed on the relay.
3. Test branch circuits for short circuits **prior** to energizing module.
4. Relay input and output terminal specification:
   2 and 4 pole - (1) #8, #10, #12 or (2) #12 AWG maximum.
   3 pole - (1) #2 - #12, or (2) #10 - 12 AWG maximum.

Module Installation and Wiring

1. MOUNT RELAYS
   Mount 2, 3 or 4 pole relays to the plate using the holes identified in *Figure 1*. Up to 4 relays can be installed per plate.
2. MOUNT THE PLATE
   Mount the module in the cabinet by setting the bottom tabs in the slots at the back of the cabinet then securing the top with the screws provided..
3. INSTALL MODULES
   Install additional modules per their specific instruction sheets.

Module Installation and Wiring Cont.

4. CONNECT COIL
   Connect the coil of the 2, 3 or 4 pole relay to the terminal block (TB1-TB8) of a SYPM 8R, 8H or 8F module. Connect the line side of the terminal block (TB1-TB8) to a branch circuit of the proper voltage as indicated on the 2, 3 or 4 pole relay coil. See *Figure 2* for wiring details.

   Note:
   SEE AS-BUILT DRAWINGS (IF FURNISHED) FOR SPECIFIC CIRCUIT AND TERMINAL BLOCK NUMBERS FOR YOUR PROJECT.

5. Connect the contacts of the 2, 3 or 4 pole relay to a source and load as shown in the example wiring of *Figure 2*.
6. START-UP POWER MODULES TO ALLOW MANUAL LIGHTING CONTROL
   Following this procedure step by step will reduce the chance of damage due to relay closing on a short circuit. **Module warranty void if relay closes on a short circuit.**
   1. Turn off all Branch Breakers.
   2. Verify the 8R, 8H or 8F power module "manual override switch" is in the ON position. *See the 8R, 8H or 8F power module installation instruction sheet for details.*
   3. Turn on the circuit breaker for the enclosure power supply.
   4. Turn on the branch breakers. Use the manual override switch for convenient on/off override.

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.

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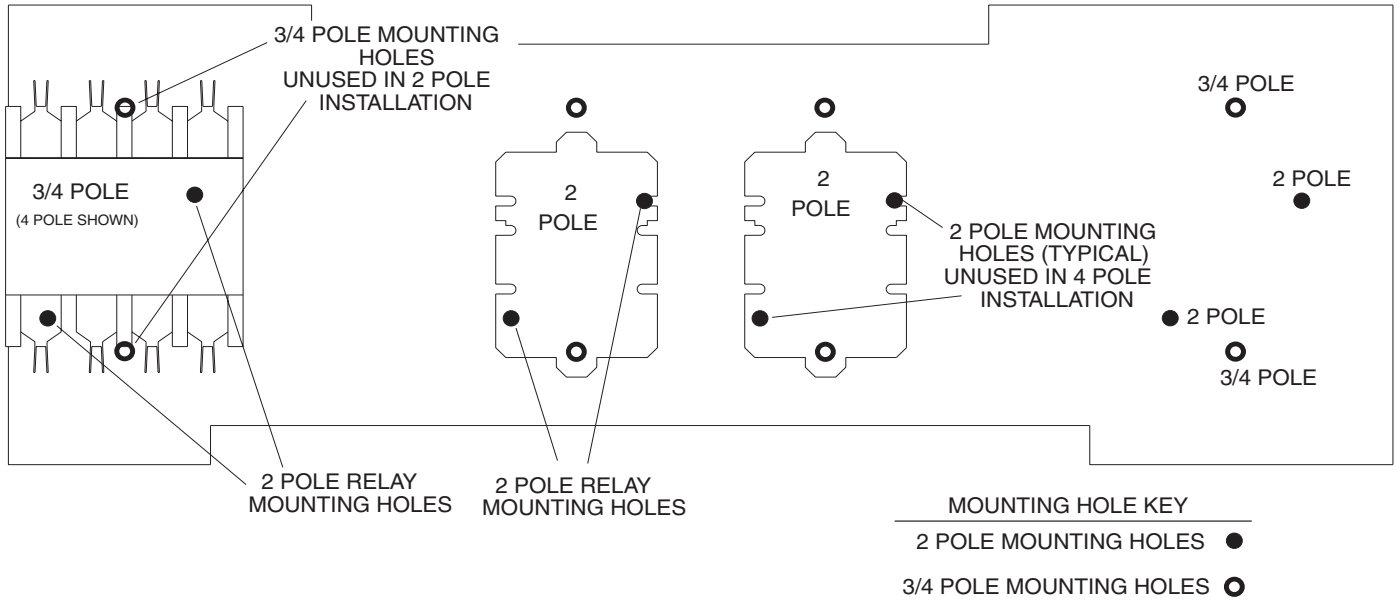


Figure 1 - Example Mounting Detail

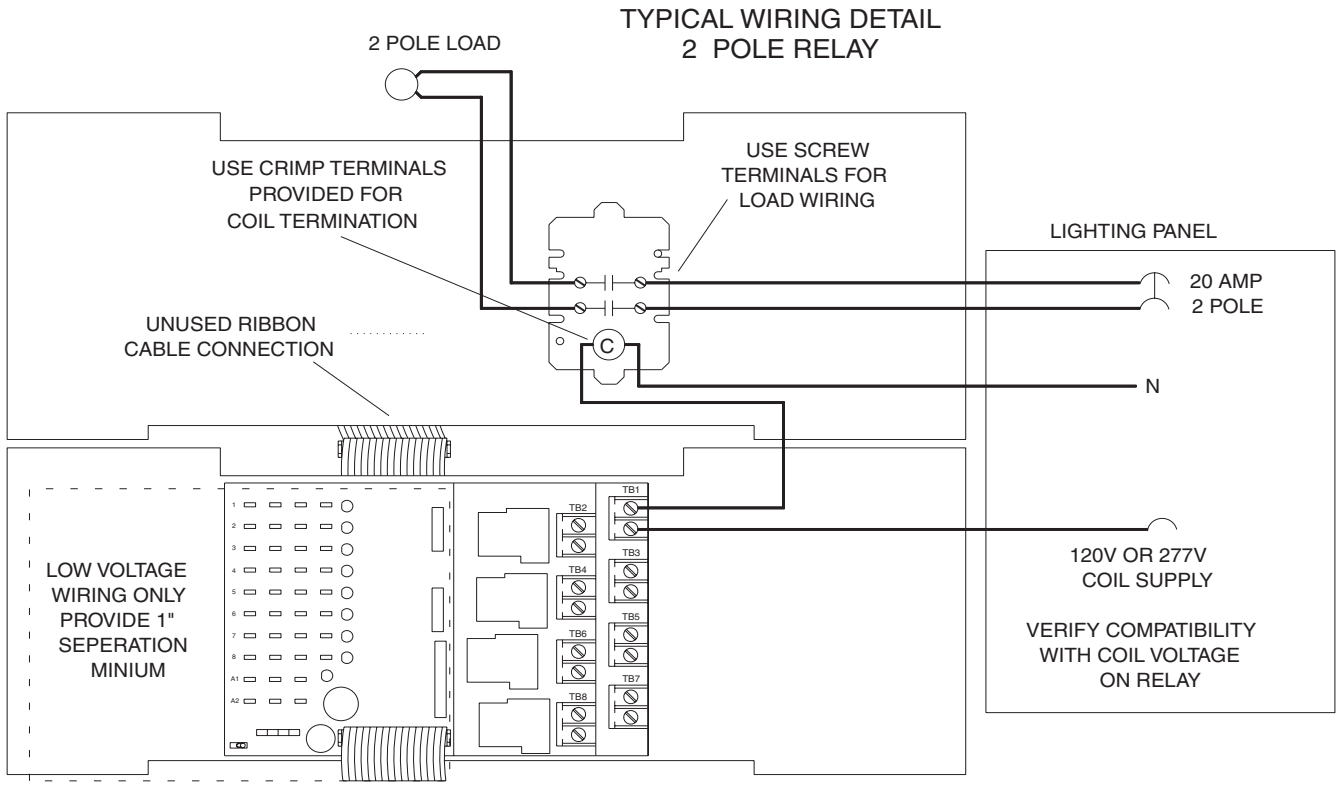


Figure 2 - Example Wiring Detail

Installation Instructions
Control Station

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
Control Station

Before You Start

1. Always disconnect all power.
2. This device is supplied by a Class 2 low voltage transformer in the dimmer cabinet. Install in accordance with appropriate codes.
3. Excessive dust may damage the control station. Install during final finish work.
4. Use only as intended.
5. Use only accessories recommended by Lithonia Control Systems.

Back Box Selection Chart

Control Station Catalog Number	Required Backbox
SQCS 6P 4C **SQCS 6P 8C**	**5 Gang** Lithonia SQCS 5GB Raco #699 Steel City GW535C
SQCS 6P 12C **SQCS 6P 16C**	**8 Gang** Lithonia SQCS 8GB Steel City (2) GW435C Ganged Together

Step 1: Install frame to backbox using 6/32 screws.

Step 2: Seat alignment pins and mount station to frame using small black philips screws provided.

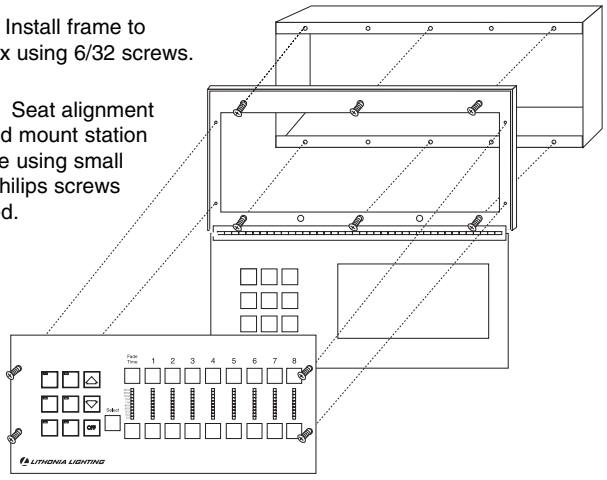


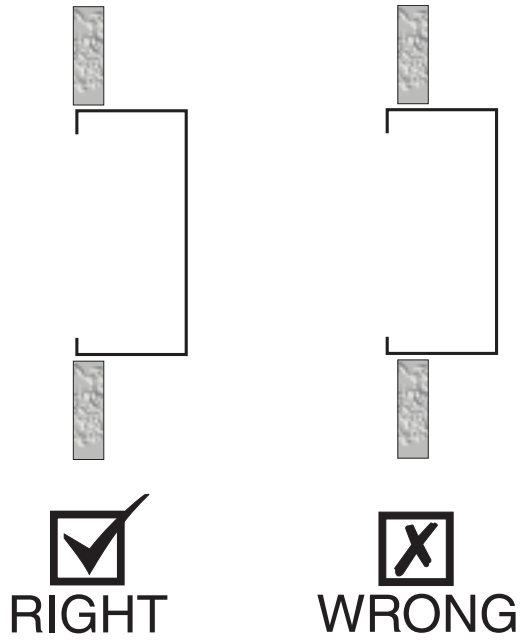
Figure 1 - Exploded View of Control Station

Important Control Station Mounting and Location Notes

1. Ambient Conditions:
   Maximum Ambient Temperature: 104°F/40° C
   Minimum Ambient Temperature: 32°F/0°C
   Relative Humidity: 10-90% Non condensing
2. Control station door hinges down. Leave 6" space below the backbox for door to open properly.
3. Recommended mounting height for optimum operating ease is 52" to the bottom of the switch box.

Rough in Mounting Instructions For Wall Mounted Stations

Install the appropriate backbox at the required location. Consult factory for retrofit applications. See Backbox Selection Chart on left. Backbox should be slightly behind the face of the wall to finish off properly. See illustration below.



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Important Control Station Rough In Wiring

1. Station frame must be mounted to a grounded back box, or a separate ground conductor must be added.
2. Control station network must be wired in a daisy chain. Remote stations must home run to the control station. *See Figure 2.*
3. Verify the correct voltage is present on the A4 power conductors BEFORE connecting the control station pigtail. Maximum 28 VDC (nominal) should be present. See *Figure 3 or 4* for detailed interconnect wiring of control station network.
4. See SQRS remote station or accessory installation instructions for detailed interconnect wiring of remote stations or other accessories. See *Figure 7* for other functions that are available from remote input terminals.
5. See *Figure 6* for connection of momentary dry closures to the SQCS. See *Figure 7* for other functions that are available from remote input terminals.
6. Refer to the Operation and Maintenance Manual or As Built drawings for the switch settings on the back of the SQCS.
7. Do not mix control wiring in power wiring conduits.
8. Refer to Sequel User Guide for operating information.

One Line Wiring Symbols

A4 Control Station Network Cable. Class 2 low voltage; do not install in high voltage conduit or raceway. All devices connecting to network must be wired in a daisy chain (in and out); "T" taps or branches in the network are not permitted. The numerical order in which devices are connected is not important. The network wire shall be two #16 AWG wires for power plus one EIA-485 approved twisted and shielded pair for data. Synergy Lighting Controls SYA CABLE A4 (optional - contact Synergy if cable is needed and not included as a separate line item on the Bill of Material) or (1) Belden 3105A with (2) #16 AWG conductors. Contact Synergy if the total length of the network exceeds 2000 feet.

L# Quantity of Class 2 low voltage individual #18 AWG wires as indicated in the symbol. If multiconductor cable is desired, use Belden 83653, 83662 shielded, low capacitance, **(not twisted)** control cable or equal. A spare conductor is shown in each run below for applications with a total wire length of greater than 250 feet (80m).

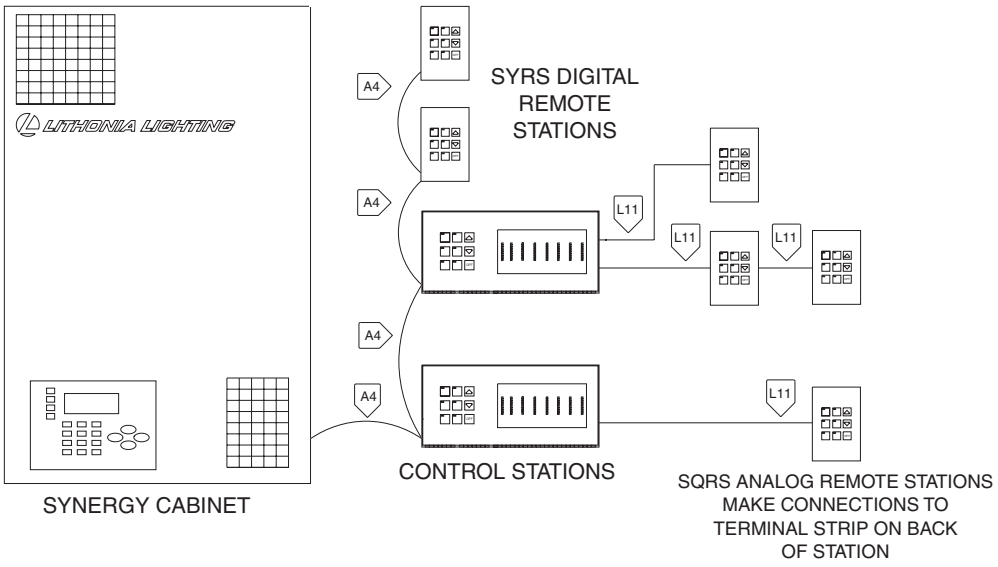


Figure 2 - Control Station One Line Drawing: Synergy System

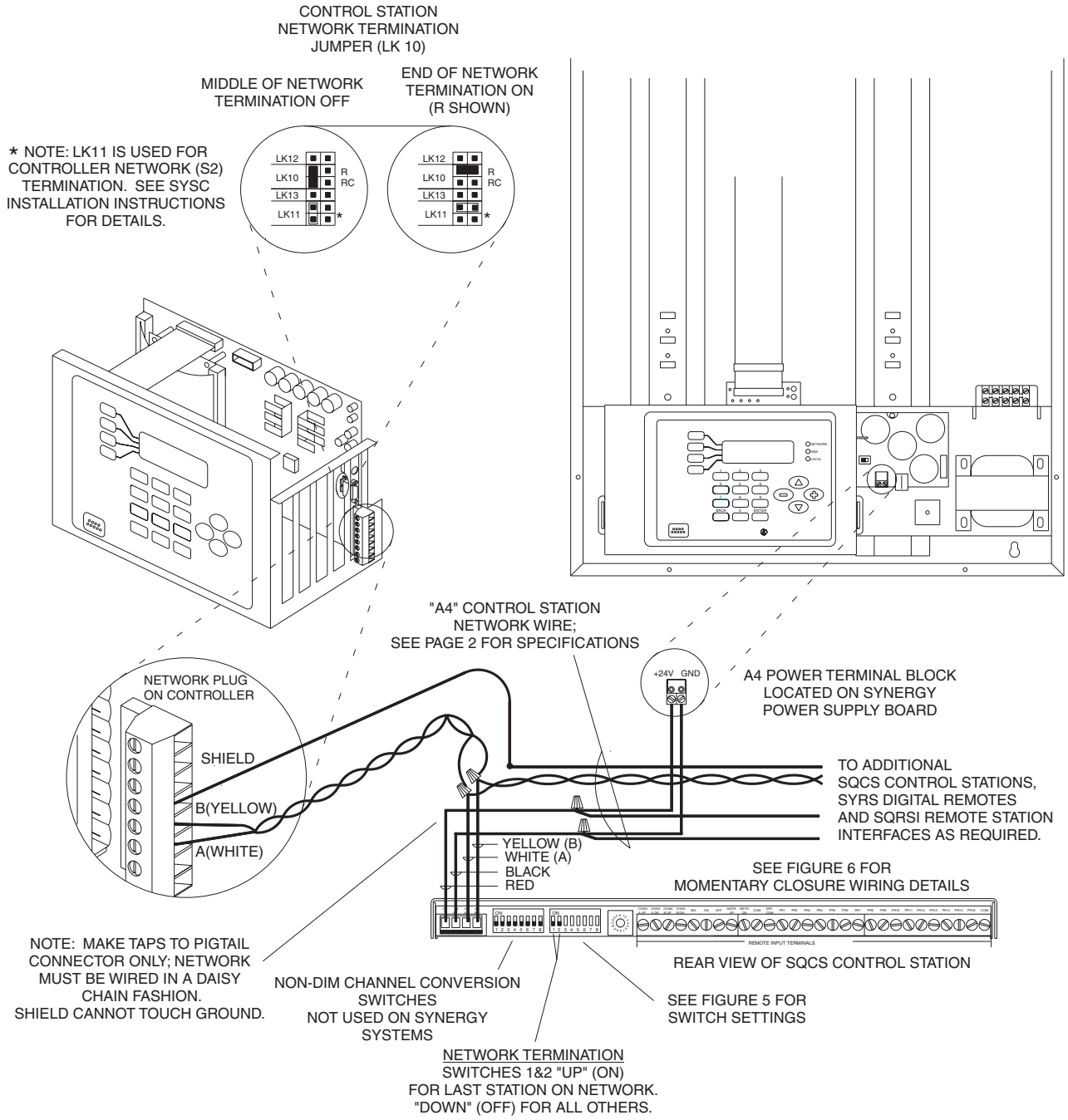


Figure 3 - Synergy Control Station Network - Typical Wiring

Synergy Cabinet ONLY

IMPORTANT: Control Station network miswires may cause damage and void warranty. Verify correct voltage is present before attaching pigtail connector to the back of the Control Station. Maximum 28 VDC (nominal) should be present on the A4 power conductors.

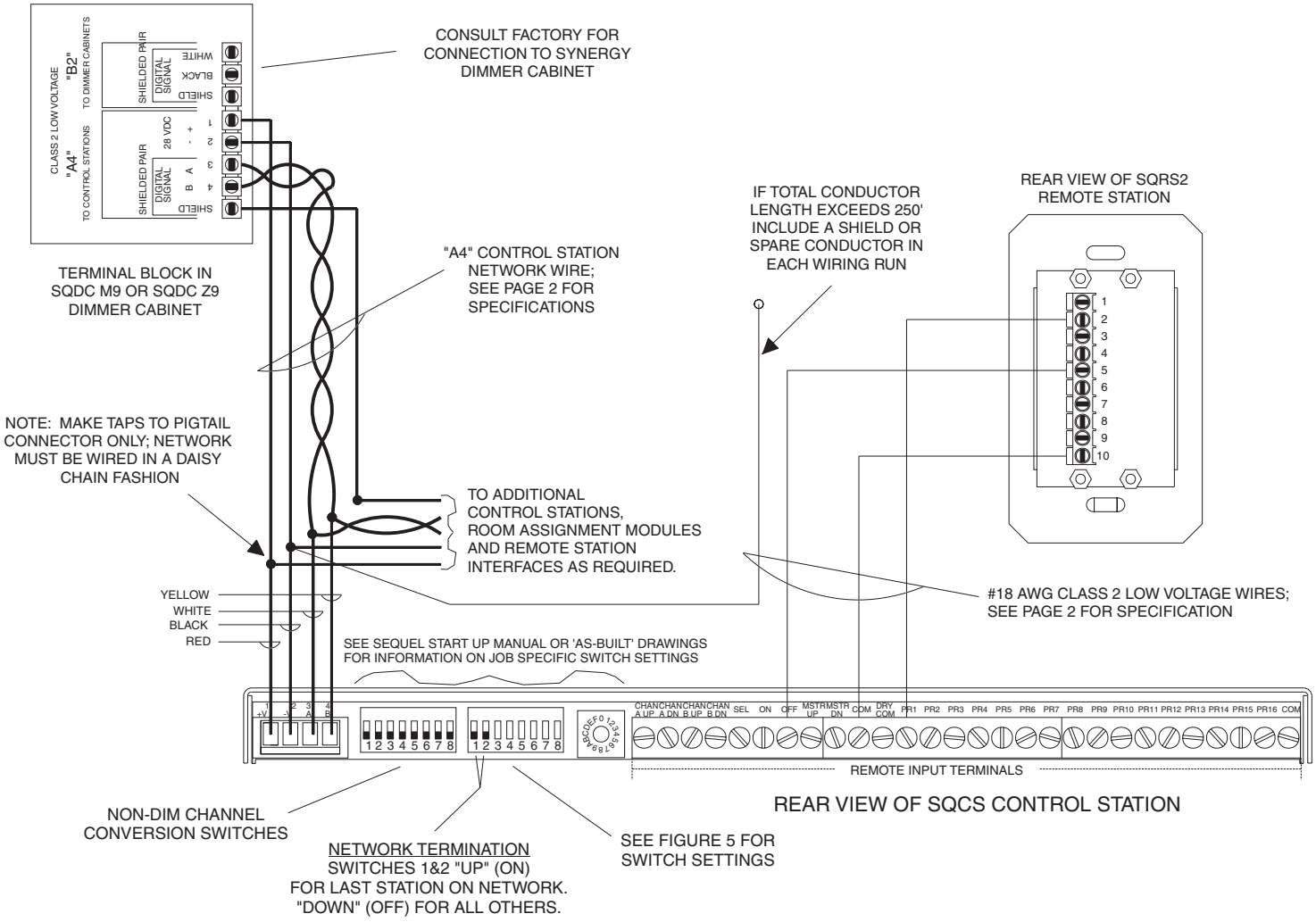


Figure 4 - Sequel Control Station Network - Typical Wiring Details
Sequel Cabinet ONLY

IMPORTANT: Control Station network miswires may cause damage and void warranty. Verify proper voltages are present before attaching pigtail connector to the back of the Control Station. See the Start Up section of the Sequel Operation and Maintenance manual for information.

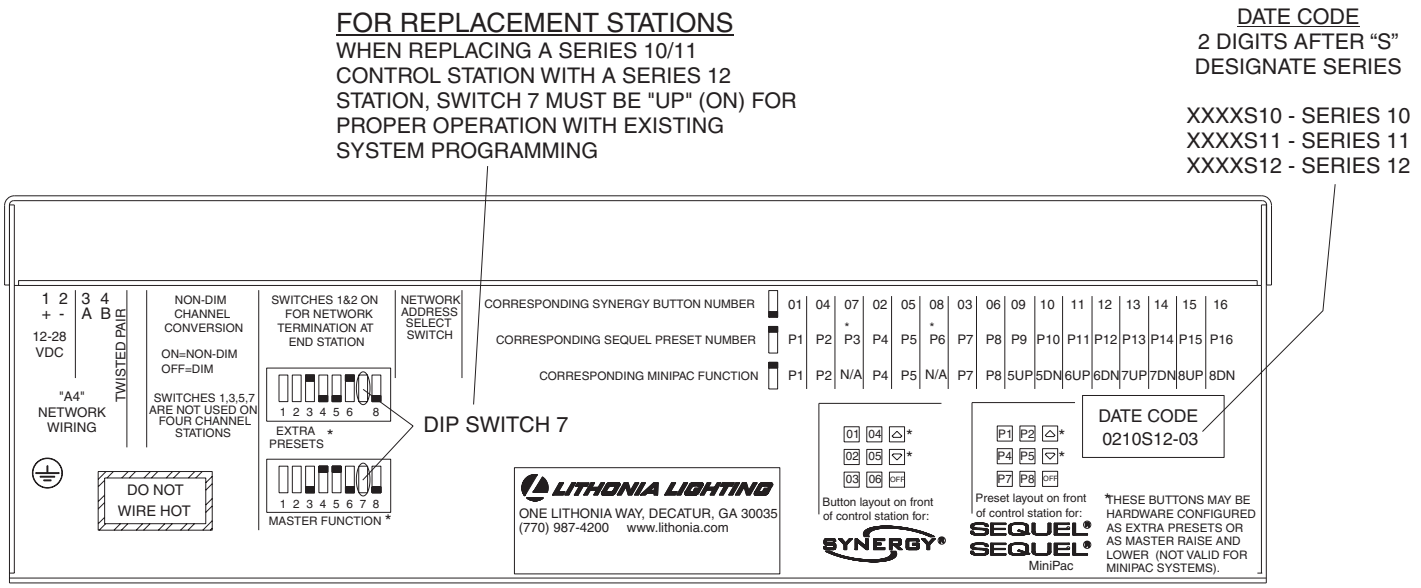
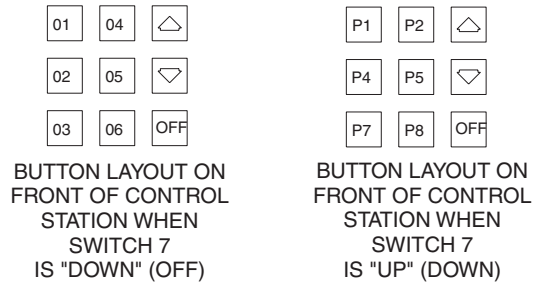


Figure 5 - Dip Switch Settings and Functional Information



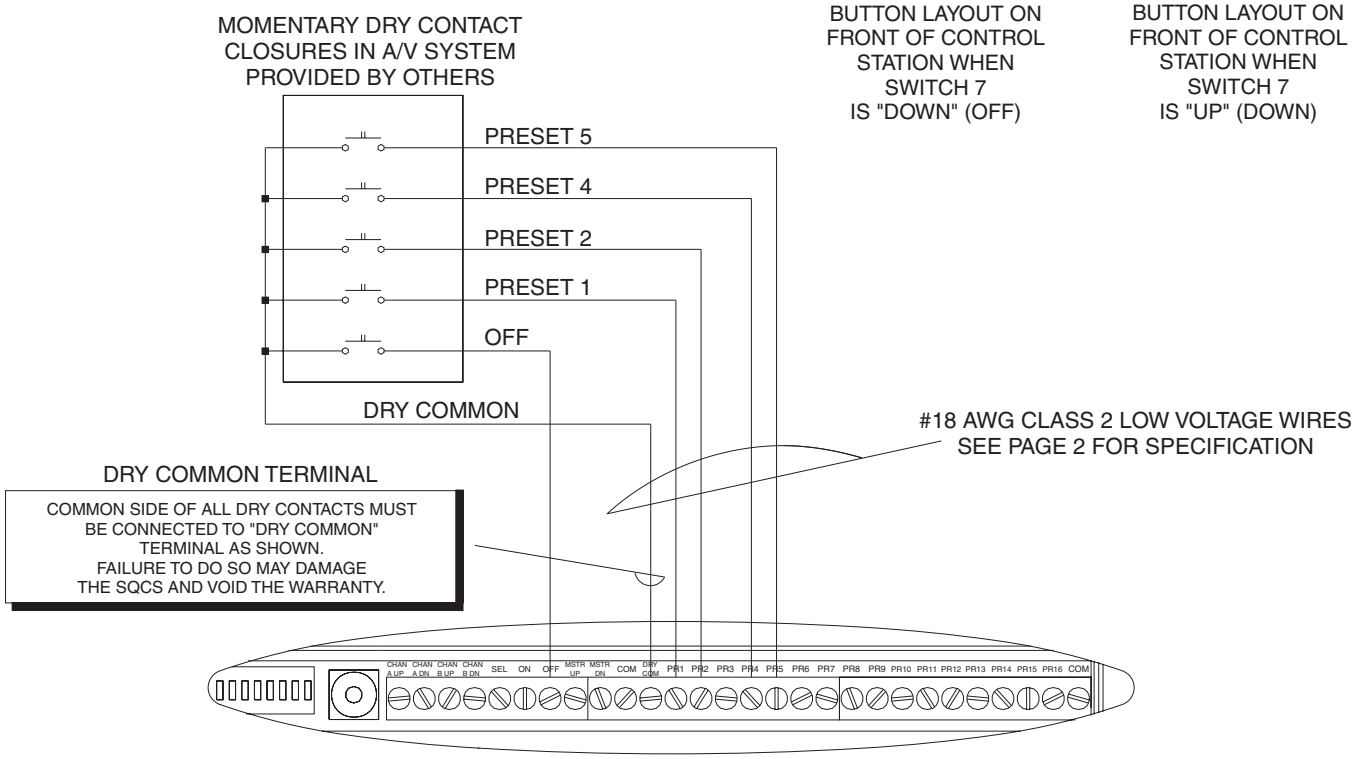
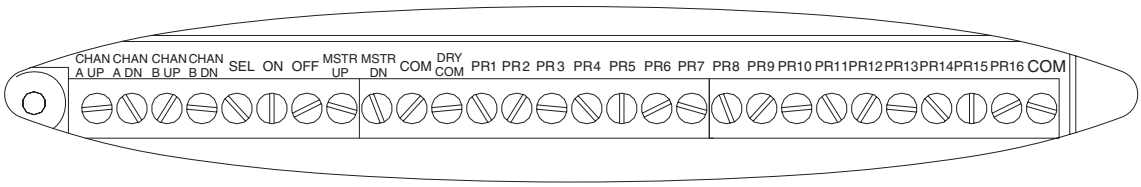


Figure 6 - Momentary Closure Wiring Detail

Installation Instructions

Control Station

TERMINAL FUNCTIONS		
TERMINAL LABEL	**FUNCTION W/SWITCH 7 OFF (SYNERGY)**	**FUNCTION W/SWITCH 7 ON (SEQUEL)**
CHAN A UP	4 Channel Station - First Channel Raise 8,12, or 16 Channel Station - Second Channel Raise	SAME SAME
CHAN A DN	4 Channel Station - First Channel Lower 8,12, or 16 Channel Station - Second Channel Lower	SAME SAME
CHAN B UP	4 Channel Station - Second Channel Raise 8,12, or 16 Channel Station - Fourth Channel Raise	SAME SAME
CHAN B DN	4 Channel Station - Second Channel Lower 8,12, or 16 Channel Station - Fourth Channel Lower	SAME SAME
SEL	Select function used when programming	SAME
ON	All channels FULL ON	Recalls previous light level (last state before off button was pressed)
OFF	All channels OFF	SAME
MSTR UP	All dimmed channels raise	SAME
MSTR DN	All dimmed channels lower	SAME
COM	Used only with SQRS remote station	SAME
DRY COM	Used with dry contact closures and accessory devices	SAME
PR1	Button 1	Preset 1
PR2	Button 4	Preset 2
PR3	Button 7	Preset 3
PR4	Button 2	Preset 4
PR5	Button 5	Preset 5
PR6	Button 8	Preset 6
PR7	Button 3	Preset 7
PR8	Button 6	Preset 8
PR9	Button 9	Preset 9
PR 10 through PR 16	Button 10 through Button 16	Preset 10 through Preset 16



INPUT TERMINAL LABELING
SEE CHART ABOVE FOR FUNCTIONS

Figure 7 - Input Terminal Functions

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

Warranty

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Installation Instructions

SYRSP EXT

Digital Remote Station

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

SYRSP EXT

Digital Remote Station

SYRSP EXT Basic Overview

The Synergy SYRSP EXT Digital Remote Station can be used either stand alone, or with a Synergy controller and other digital stations to provide state-of-the-art networked lighting control. The SYRSP EXT is available in 1 through 9 button configurations and comes standard with an infrared sensor to provide handheld remote operation.

The SYRSP EXT contains an analog (photocell) input and a digital (occupancy sensor) input for use in local (stand alone) or networked operation. It features Daylight Harvesting on locally controlled 0-10Vdc 4-wire dimming ballast circuits. Daylight Harvesting maintains a constant light level based on a user defined light level (set point).

The SYRSP EXT contains two switched outputs which are suitable for control of power packs to allow local switching of lighting fixtures, and two 0-10Vdc dimmer outputs for local control of 4-wire dimming ballasts.

Before You Start

1. Always disconnect all power.
2. This device is supplied by a Class 2 low voltage transformer in the system enclosure. Install in accordance with National Electric code and any other codes that may apply.
3. Use only as intended and at the listed voltage.
4. Use only accessories recommended by Synergy Lighting Control Systems.

SYRSP requires Synergy all in one cable
SYA CABLEA4 (plenum rated)
OR
Belden 3105A (non plenum rated) plus
2 #16 AWG conductors for power

Rough in Mounting Instructions/ Important Notes

The SYRSP station flush mounts to a Synergy SYRS 1GR or Steel City GW-125-G one gang masonry box (1-7/8" minimum inside width, 2-1/2" minimum inside depth) or to a Synergy SYRS 1GR or Steel City 52C13 one gang plaster ring attached to a grounded 4" square, 2-1/2" deep outlet box. For maximum ease of installation in EXT applications, (due to the number of wiring connections needed) the 4" box method is recommended. If a plaster ring is used, the plaster ring should be mounted slightly behind the wall face, within 1/8", and not protruding to finish off properly. See illustration below.

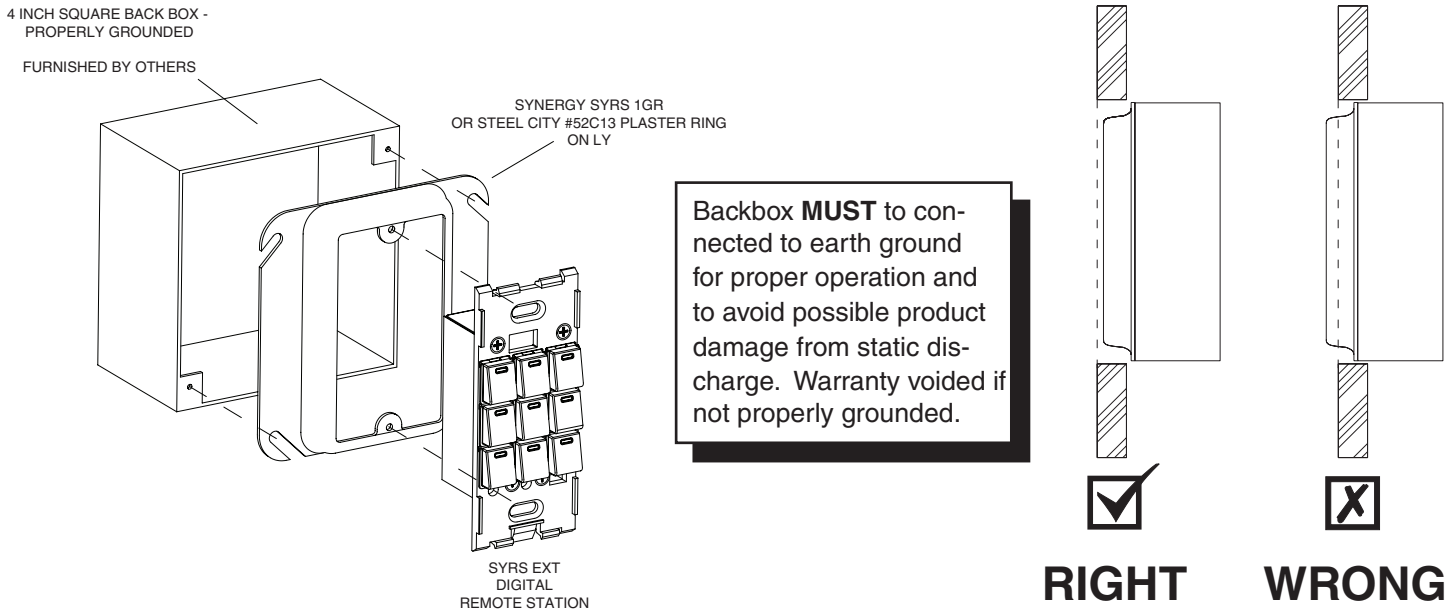

Figure 1 - SYRSP Mounting Details

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Important Remote Station Rough In Wiring

1. Outlet boxes **must** be grounded for proper operation and to avoid possible product damage from static discharge. Warranty voided if not properly grounded.
2. SYRSP stations can be connected to a Class 2 low voltage Synergy A4 network.
3. **Do not** install A4 network cable in AC power conduit or raceways.
4. All A4 network devices **must** be connected in a daisy chain (in and out) configuration. "T" taps or branches in the network are **NOT** permitted. See *Figure 2.*
5. Network wire shall be:
   (1) EIA-485 approved twisted and shielded pair for data signal and (2) #16 AWG conductors for power. The **ONLY** approved cables are Synergy SYA CABLEA4 (four conductors) or (1) Belden 3105A (2 wire, twisted and shielded pair) and 2 #16 AWG conductors, supplied by others.
6. Contact Synergy Technical support at 1-800-533-2719 if A4 network length exceeds 2000 feet.
7. See *Figures 4 - 8* for detailed interconnect wiring of SYRSP station network.

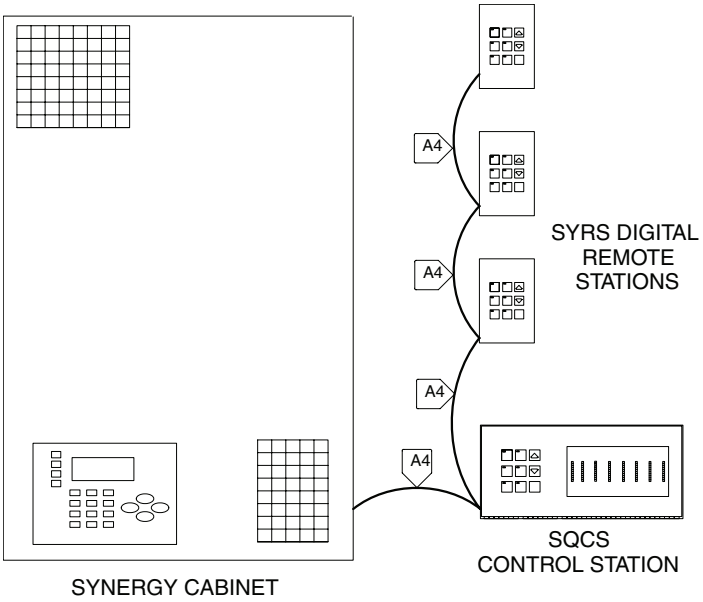

Figure 2 - SYRSP Remote Station One Line Drawing

SYRSP EXT Power Requirements

SYRSP stations can be powered from the Synergy SYE enclosure power supply or a remote power pack. The Synergy MLX system controller supports a maximum of 60 A4 network devices. A single SYE enclosure power supply can power a maximum of 20 SYRSP stations. A single power pack can power a maximum of 3 stations. See *Figures 5 and 6* for appropriate details. If the A4 network requires more than 20 SYRS stations, consult factory for guidelines. If a power supply is powering other network devices in addition to the SYRSP stations, consult factory for guidelines. Power Packs that supply 15 - 24Vdc are acceptable.

SYRSP EXT Remote Station Installation

1. Verify voltage on the A4 power conductors IS NOT above 28 VDC (nominal) BEFORE connecting to the SYRS station. Maximum 28 VDC (nominal) should be present.
2. Connect A4 network wiring as shown in *Figures 5 or 6*.
3. Connect auxillary devices as shown in *Figures 7 or 8*.
4. Orient and mount station to plaster ring as shown in *Figure 1*.

One Line Wiring Symbols

A4 Control Station Network Cable. Class 2 low voltage; do not install in high voltage conduit or raceway. All devices connecting to network must be wired in a daisy chain (in and out) configuration; "T" taps or branches in the network are not permitted. The numerical order in which devices are connected is not important.

Network wire shall be:

SYRSP requires Synergy all in one cable
SYA CABLEA4 (plenum rated)
OR
Belden 3105A (non plenum rated) plus
2 #16 AWG conductors for power

Installation Instructions
SYRSP EXT
Digital Remote Station

SYRSP EXT Operation

The SYRSP EXT can operate in one of several modes: stand alone manual mode, stand alone daylight harvesting mode or network mode.

Stand Alone Manual Mode:

SYRSP EXT stations can be operated in stand alone manual mode. In this mode the user has manual control of the lighting loads connected to the switched or dimmed (0-10Vdc) outputs. The light level can be raised or lowered using the Raise/Lower buttons, or can be switched ON/OFF using the alternate action ON/OFF button (the ON/OFF function requires the use of an accessory power pack to switch ballast power). See the chart on page 12 for button function details for each station type.

An occupancy sensor (if used) will automatically turn the connected lights on and off. **The photocell input is disabled.**

Stand Alone daylight harvesting Mode:

The SYRSP EXT utilizes the photocell input to operate in daylight harvesting mode, which automatically controls 0-10Vdc dimmed output 1 (Dimmed output 2 IS NOT controlled locally by the photocell). The SYRSP EXT's photocell input can be calibrated to maintain a user defined light level (ex. 50 foot candles), which sets the maximum amount of artificial light (dimmer) output from the station. The dimmer output level can be manually adjusted while in daylight harvesting mode, but it will **not** exceed the maximum level set during calibration.

An occupancy sensor (if used) will automatically turn the lights on and off.

Network Mode:

The SYRSP EXT station communicates to the SYSC system controller through the Synergy A4 network. Each button on the SYRSP EXT can be programmed for single or multiple circuit control of any load(s) connected to the Synergy system. Each button, analog input, and digital input can be monitored by the SYSC system controller to provide system wide functions based on each object's status.

Network Daylight Harvesting Mode:

The SYRSP EXT station can function in daylight harvesting mode while connected to the Synergy A4 network. The SYRSP EXT network functions operate as described in the network mode section. However, only loads connected to the 0-10Vdc dimmed output 1 of the SYRSP EXT are controlled locally by the photocell, as described in the stand-alone daylight harvesting mode section.

SYRSP EXT and Photocell

The SYRSP EXT can be used in conjunction with a Synergy analog photocell to provide automatic 0-10Vdc fluorescent dimming control of 4 wire ballasts. The SYRSP EXT has a 0-10Vdc photocell input which can be used to provide automatic Daylight Harvesting. Daylight Harvesting maintains a constant light level based on a set point calculated during photocell calibration.

See photocell installation section for more details and Figure 8 for photocell wiring details.

SYRSP EXT and Occupancy Sensor

The SYRSP EXT contains a digital input compatible for use with all Synergy supplied occupancy sensors. When selecting a mounting location for the occupancy sensor, position the sensor where it will not detect movement in undesired areas. (Refer to the occupancy sensor's documentation for coverage specifications) In an office, do not place the sensor where it will detect hallway traffic causing the loads to turn on when the office is unoccupied.

In open areas, place the sensor in the center of the area being controlled.

See Figures 7 and 8 for occupancy sensor wiring details.

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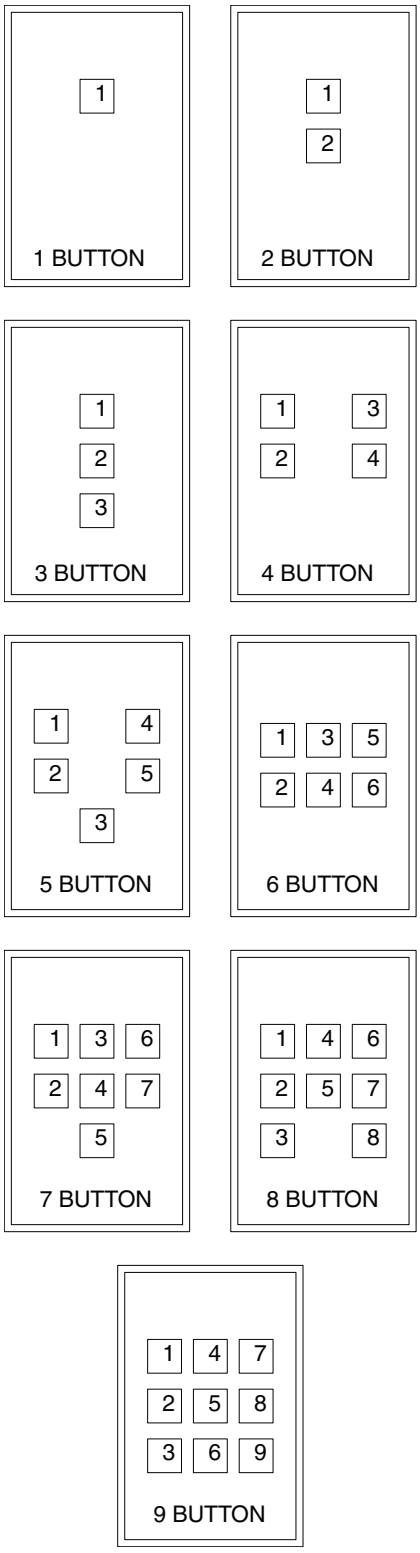


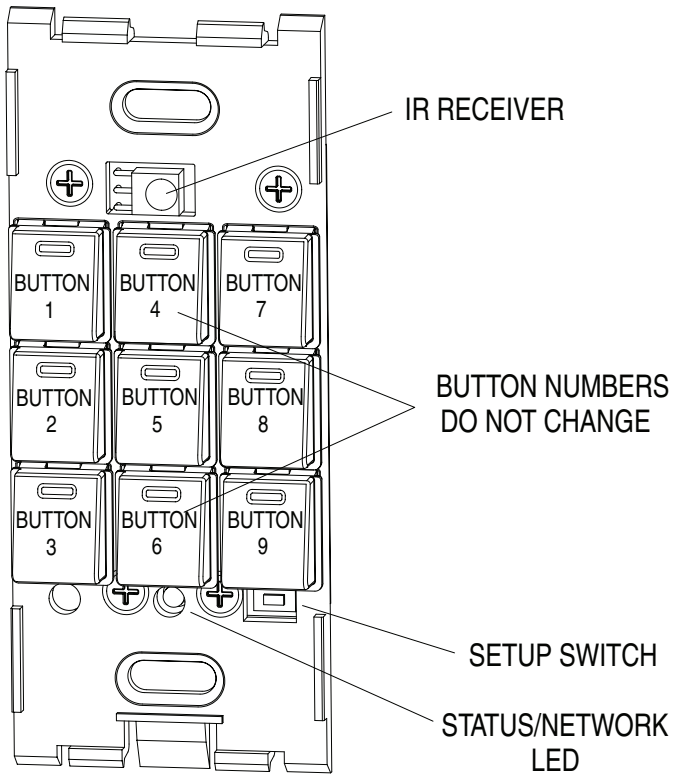
Figure 3 - SYRSP EXT Buttons And Button Numbering

SYRSP Button Operation

The SYRSP EXT is available with one to nine buttons. Each button can be programmed for single or multiple circuit control (connection to the A4 control station network is required to enable this feature). The SYSC system controller stores the programming information for each button.

Each button configuration (1 through 9) requires a specific setup configuration. (See *Figure 3* for button numbering schemes)

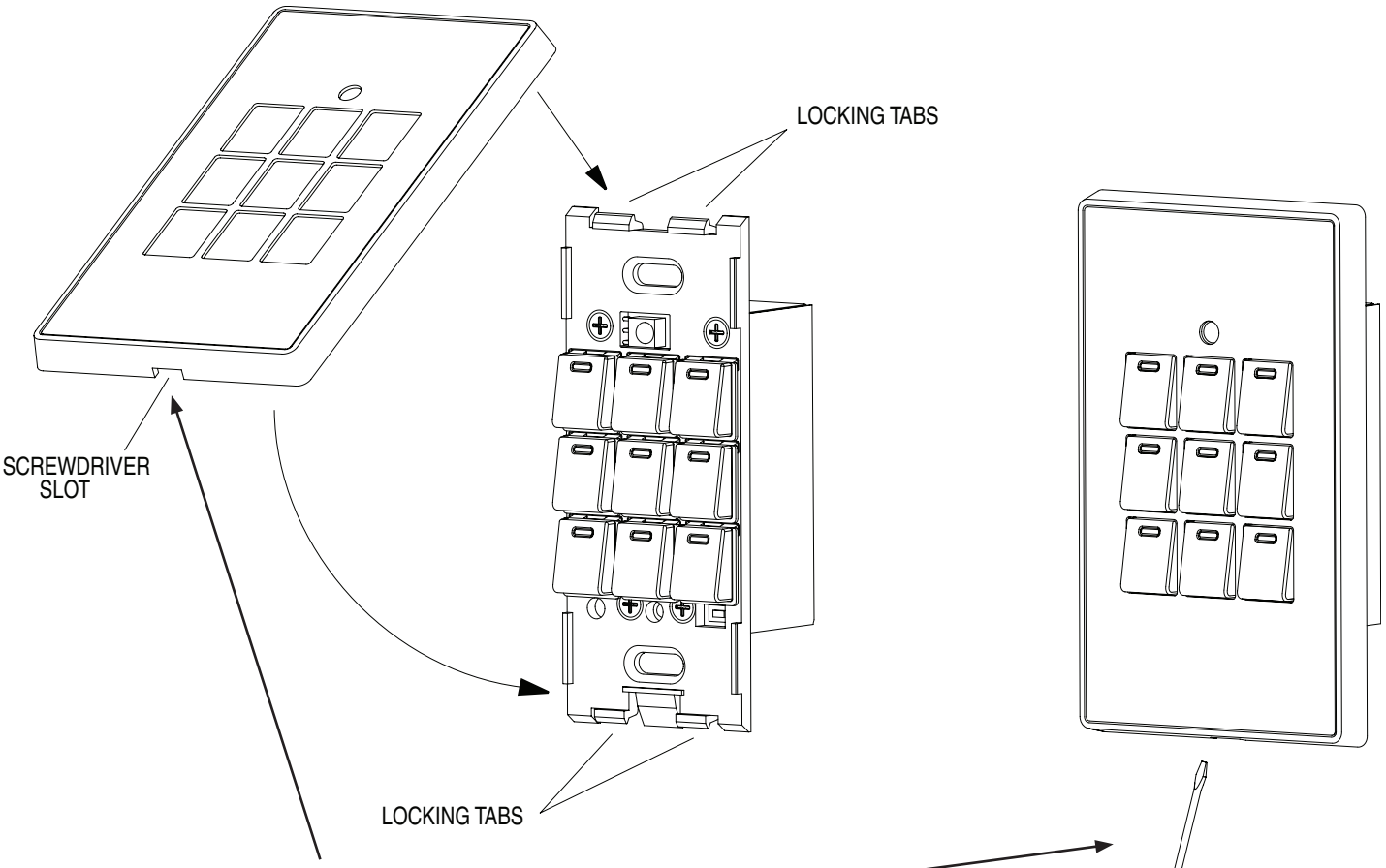
The SYRSP EXT station ships from the factory pre-configured with the appropriate button configuration. In the event the button configuration is lost, the station will indicate an error condition by flashing all the button (green) LEDs in a continuous Blink – Blink – Pause – Blink – Blink – Pause pattern. See the SYRSP Setup section for details on reprogramming the station type (button configuration).



SYRSP Details

SYRSP Faceplate Removal

TO INSTALL THE FACEPLATE, HOOK THE TOP OF THE FACEPLATE OVER THE TOP LOCKING TABS, THEN SWING THE FACEPLATE DOWN ONTO THE BOTTOM LOCKING TABS UNTIL A CLICK IS HEARD, WHICH LOCKS THE FACEPLATE ON THE SWITCH BODY.



TO REMOVE THE FACEPLATE, INSERT A SMALL FLATBLADE SCREWDRIVER INTO THE SLOT IN THE BOTTOM OF THE FACEPLATE, AND GENTLY PRY OUT AND AWAY FROM THE SWITCH BODY.

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SYRSP Station Addressing

The SYRSP station communicates to the controller through the Synergy A4 network. Each device on the A4 network **must** have a unique address.
DUPLICATE ADDRESSES ARE NOT ALLOWED!
To set the network Address:

Select and set a unique network address for each station. The leftmost switch sets the “10s” value, the rightmost switch sets the “1s” value.

For example address 25 would have the leftmost switch set to “2” and the rightmost switch set to “5”. See *Figure 4* below for details.

DO NOT CONNECT 24VDC POWER SUPPLY FROM SYE ENCLOSURE TO ACCESSORY POWER PACKS. STATION DAMAGE MAY RESULT AND VOID WARRANTY

SYRSP A4 Network Termination

The A4 network must be properly terminated for network operation. The device residing at each end of the network **MUST** be terminated. The SYSC system controller is normally located at one end of the network and ships from the factory with termination activated. If an SYRSP station is at the end of the A4 network it must be terminated. (See *Figure 4* below for details)

If SYRSP stations are located at both ends of the network, BOTH SYRSP stations must be terminated and the factory applied A4 network termination on the SYSC system controller **must** be removed. (See the SYSC system controller jumper settings in *Figure 5* to remove termination from the controller)

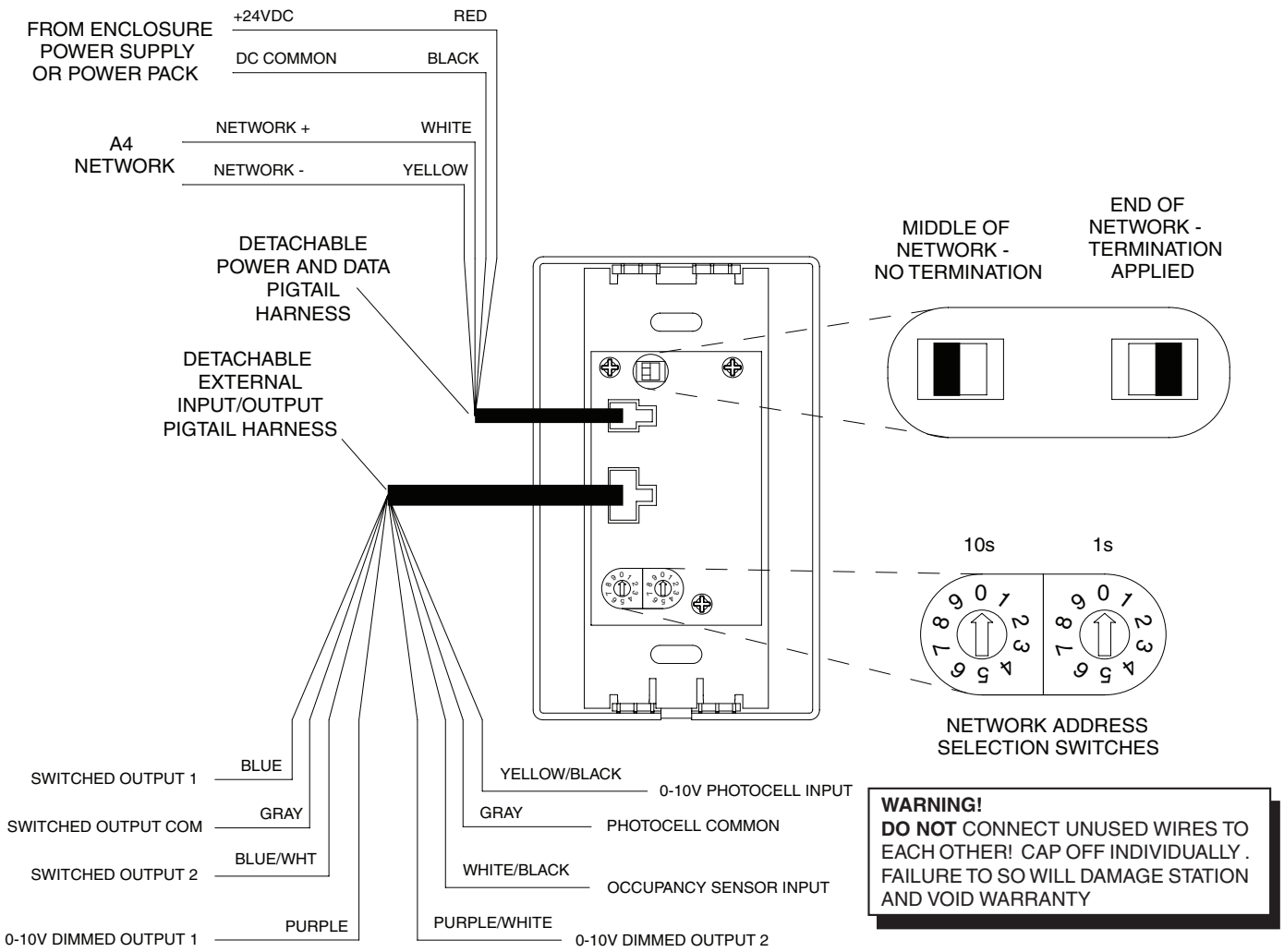
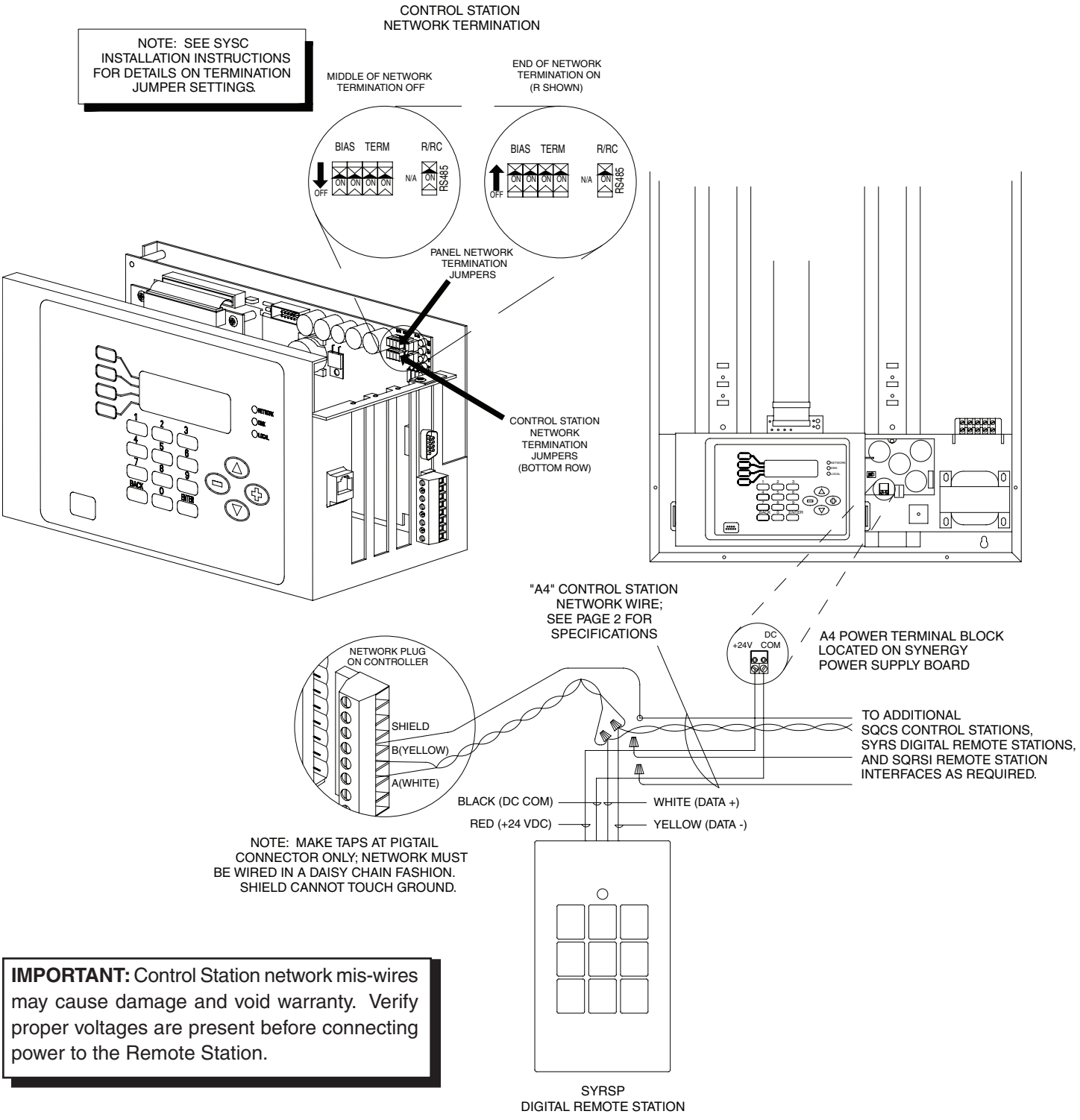


Figure 4 - SYRSP EXT Wiring Details (Back View)



IMPORTANT: Control Station network mis-wires may cause damage and void warranty. Verify proper voltages are present before connecting power to the Remote Station.

Figure 5 - SYRSP Remote Station Network - Typical Wiring
Power Supplied Synergy Enclosure

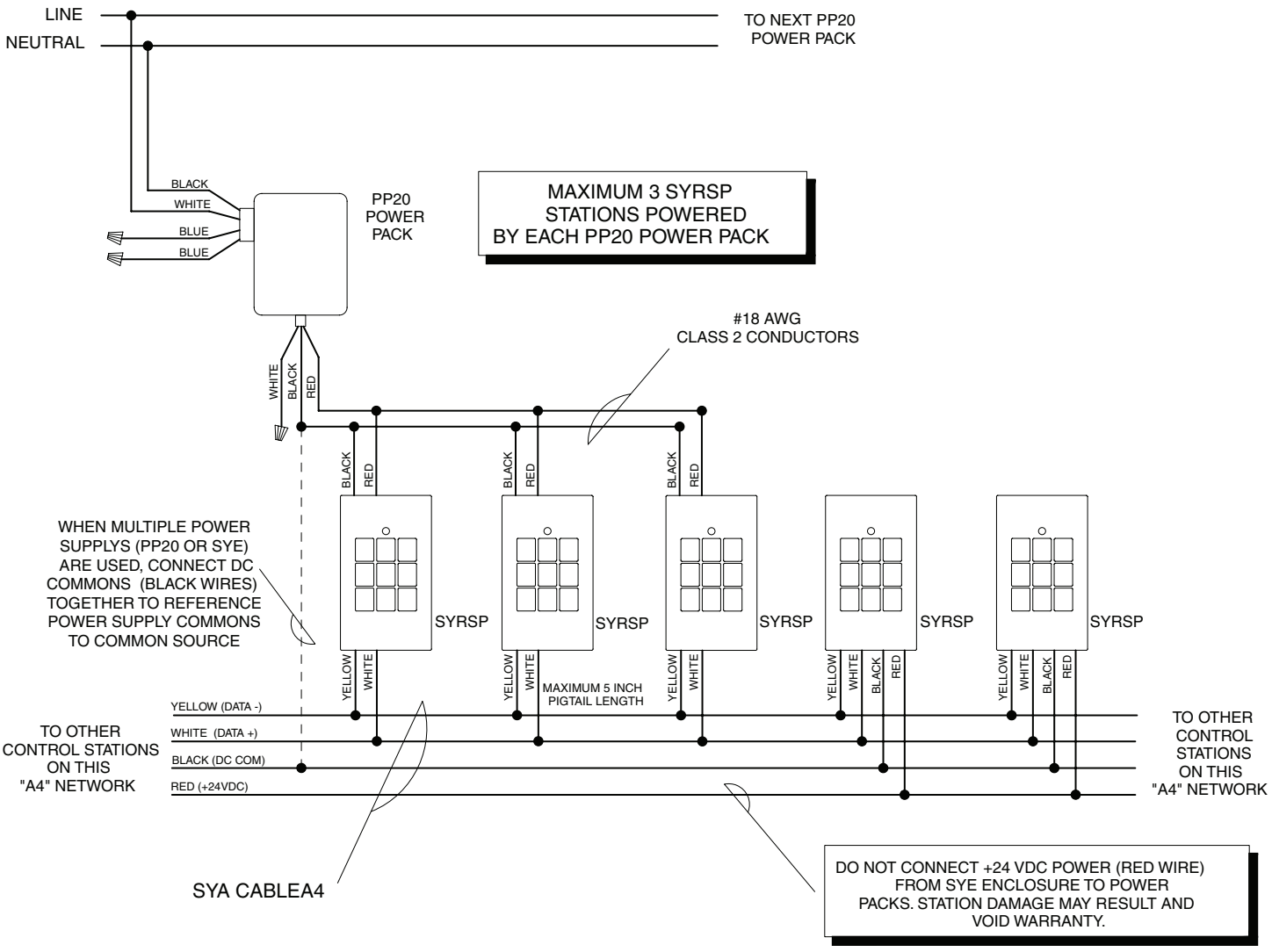


Figure 6 - SYRSP Remote Station Network - Typical Wiring
Power Supplied by PP20 Series Power Packs

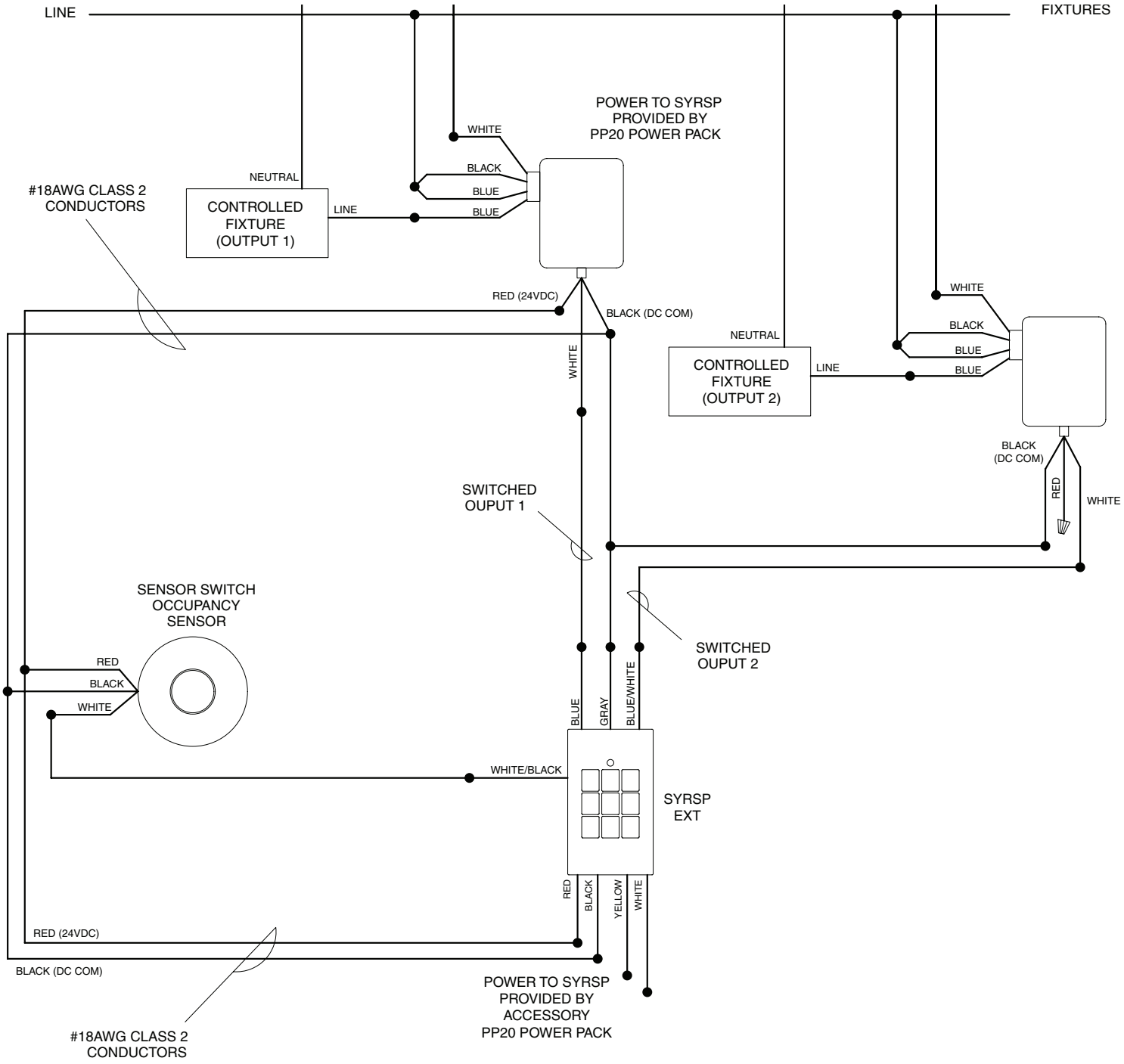


Figure 7 - SYRSP EXT Details - Occupancy Sensor and Dual Switching w/Power Packs

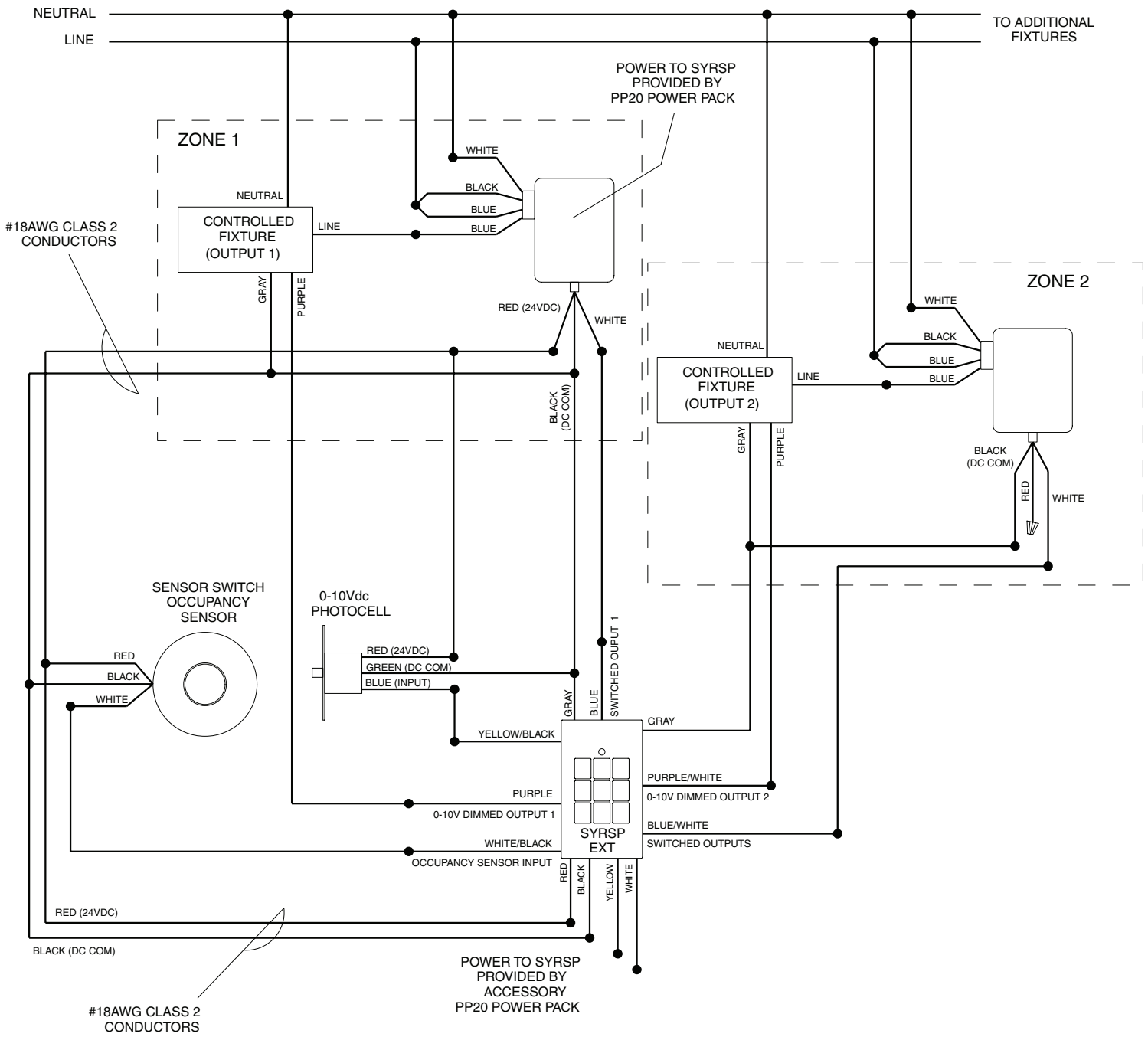


Figure 8 - SYRSP EXT Details - 0-10Vdc Dimming w/Photocell and Occupancy Sensor

SYRSP EXT Stand Alone Operation

The SYRSP EXT can operate as a stand alone unit in distributed control applications. Stand Alone mode is used by setting the station address to 60. When operating in stand alone mode, the occupancy sensor input will turn ON/OFF the lighting circuits connected to both switched outputs. The outputs can overridden OFF using the buttons on the station. Once turned OFF by a button, the occupancy sensor will NOT turn back on the outputs until the room becomes unoccupied, then again occupied.

The photocell input provides automatic control of 0-10Vdc 4 wire dimming ballasts connected to dimming output 1. Dimmed output 1 will track up or down with the photocell level. As the ambient light level increases at the photocell, the controlled lighting will dim. As the ambient light level decreases at the photocell, the controlled lighting will raise.
See the Photocell Setup and Configuration sections for more information on setting up the photocell input.
Note, the occupancy sensor input controls both switched outputs 1 and 2. The photocell input ONLY controls dimmed output 1.

Simple multi-location operation is possible by connecting multiple stations together via the four wire A4 control station network (all stations must be set to address 60) **All commands are sent (Channel 1 and 2 Raise/lower, ON/OFF) which creates the ability to have outputs on several stations function in unison.** For example, having a station at each entry door to a room where all the stations should function as Master controls for that room.

When operating in stand alone mode, button control is as follows: (See *Figure 3* for button and output numbering)

1 BUTTON STATION
Button 1 turns ON and OFF outputs 1 and 2

2 BUTTON STATION
Button 1 RAISES outputs 1 and 2
Button 2 LOWERS outputs 1 and 2

3 BUTTON STATION
Button 1 RAISES outputs 1 and 2
Button 2 LOWERS outputs 1 and 2
Button 3 turns ON and OFF outputs 1 and 2

4 BUTTON STATION
Button 1 RAISES output 1
Button 2 LOWERS output 1
Button 3 RAISES output 2
Button 4 LOWERS output 2

5 BUTTON STATION
Button 1 RAISES output 1
Button 2 LOWERS output 1
Button 3 turns ON and OFF outputs 1 and 2
Button 4 RAISES output 2
Button 5 LOWERS output 2

6 BUTTON STATION
Button 1 RAISES output 1
Button 2 LOWERS output 1
Button 3 RAISES output 2
Button 4 LOWERS output 2
Button 5 RAISES outputs 1 and 2
Button 6 LOWERS outputs 1 and 2

7 BUTTON STATION
Button 1 RAISES output 1
Button 2 LOWERS output 1
Button 3 RAISES output 2
Button 4 LOWERS output 2
Button 5 turns ON and OFF outputs 1 and 2
Button 6 RAISES outputs 1 and 2
Button 7 LOWERS outputs 1 and 2

8 BUTTON STATION
Button 1 RAISES output 1
Button 2 LOWERS output 1
Button 3 turns ON outputs 1 and 2
Button 4 RAISES output 2
Button 5 LOWERS output 2
Button 6 RAISES outputs 1 and 2
Button 7 LOWERS outputs 1 and 2
Button 8 turns OFF outputs 1 and 2

9 BUTTON STATION
Button 1 RAISES output 1
Button 2 LOWERS output 1
Button 3 turns ON and OFF output 1
Button 4 RAISES output 2
Button 5 LOWERS output 2
Button 6 turns ON and OFF output 2
Button 7 RAISES outputs 1 and 2
Button 8 LOWERS outputs 1 and 2
Button 9 turns ON and OFF outputs 1 and 2

Note:
Any button which functions as RAISE or LOWER can be used as an INSTANT ON or INSTANT OFF by pressing and releasing the button quickly in a “Quick Click” manner.

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SYRSP Setup

SYRSP setup is accomplished using the SETUP SWITCH on the front of the unit and the buttons on the station. There are 3 basic functions controlled by the Setup Switch; Address preview, station configuration and station re-initialization. To perform setup, the faceplate must be removed. To remove the faceplate, place a small flat blade screwdriver in the slot at the bottom of the faceplate and pry up. The faceplate should easily pop off. *See page 6* for details.

Note, the button LEDs on the SYRSP are either very bright (ON) or very dim, they are never completely off. This is the "nightlight" feature of the SYRSP.

Address Preview:
The address selection switches are on the back of the station. Use the address preview function to view the currently selected address without having to remove the station from the wall.
To preview the address:
1. Remove the Faceplate.
2. Press and release the SETUP SWITCH. During address preview, the station will indicate its address by brightly illuminating its button LEDs according to each digit of the address. The button LEDs indicate digits 1-9, zero is indicated by the setup LED. When the address is greater than 9, the first blink will be the ten's digit, the second blink the one's. See *figure 3* for the numerical value of each switch. The address will be shown 3 times, then the SYRSP will revert back to normal operation.

Setup Mode:
Enter Setup Mode by pressing and holding the Setup Switch (for approximately 3 seconds) until you hear a beep.

Station Configuration:
There are 4 settings in this mode.
1. Enable/Disable photocell control for dimmer 1.
2. Photocell type (0-10V or 10-0V).
3. Photocell calibration.
4. Sunlight Discount Factor adjustment.

To enable/disable photocell control:
1. If not already in Setup mode, enter Setup Mode (described above).
2. Press and release button 1 to toggle photocell control. When the LED is brightly illuminated, the photocell DOES HAVE control of dimmer 1. When it is dim, the photocell DOES NOT have control of dimmer 1. The default setting is disabled.

To change the photocell type:
1. If not already in Setup mode, enter Setup Mode (described above).
2. Press and release button 2 to toggle the photocell type. When the LED is brightly illuminated, the photocell type is a 10-0 volt photocell (0V output at full sunlight). When it is dim, the type is 0-10 volt (10V output at full sunlight).

To calibrate the photocell see the Photocell Calibration Section on page 15.

To adjust the Sunlight Discount Factor see the Photocell Calibration Section on page 15.

Exit Setup Mode:
Exit Setup Mode by pressing and releasing the setup switch. Upon exiting configuration mode, you will hear 3 short beeps. Setup mode will also timeout after 60 seconds of inactivity.

SYRSP Setup (Continued)

Station Re-Initialization:
WARNING!
Re-initializing the station ERASES ALL user configuration, photocell calibration and station type (number of buttons).

To re-initialize the station:
1. Press and hold the setup switch for 10 seconds.
2. After 3 seconds a short beep indicates entering configuration mode.
3. Continue holding the button for approximately 10 seconds. A long beep will indicate re-initilaization. The setup LED will begin flashing alternately between red and green and the button LEDs will all blink. All settings are now set back to their defaults and the station type (number of buttons) is erased.

The station is now waiting to have the station type (number of buttons) configured, indicated by the station LEDs blinking in a continuous Blink – Blink – Pause – Blink – Blink – Pause pattern. Configure the station type as described below.

Note:
NO other station setup can be performed until the station type is configured.

Set Station type (number of buttons):
The SYRSP comes from the factory configured with the button configuraton matching the supplied faceplate. The only way to reconfigure the number of buttons is to re-initialize it. (described above)

To reconfigure the number of buttons, or if setup is lost:
1. Perform the re-initialization procedure (if not already done)
2. Enter Setup mode by pressing and holding the Setup Switch until you hear a beep.
3. Press each button that has, or will have, a button cap installed.
4. After each button press, the LED will be bright and solid (no blinking).
5. Once all buttons have been pressed, exit setup by pressing and releasing the setup switch. You will hear 3 short beeps indicating the station has returned to normal mode.

Photocell Installation

Careful consideration should be given to photocell placement to achieve maximum system performance.
Follow these guidelines for proper photocell installation:
1. Do not mount photocells in areas with exposure to direct sunlight or areas exposed to sunlight reflected from highly reflective surfaces.
2. Do not mount photocells next to fixtures not controlled by the photocell.
3. Do not mount photocells directly above indirect lighting fixtures.
4. Do not mount photocells within 6 feet of windows. Special consideration should be given for windows facing east or west to avoid exposure to direct sunlight.
5. Photocells should be evenly spaced between adjacent fixtures being controlled by the photocell.
6. Mount photocells over commonly used areas within the space being controlled.
7. Horizontal window blinds should not be adjusted to focus light directly on the photocell. Doing so will adversely affect dimming performance.
8. For optimum performance, the photocell should be located so it receives an equal amount of daylight and artificial light.

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Photocell Calibration - Daylight Harvesting Mode (Stand Alone Mode Only)

Photocell Calibration

The maximum amount of ambient light the photocell will see must be calibrated into the station by using this procedure. The SYRSP EXT uses this level to make internal photocell calculations. Calibration should be done while the photocell is seeing the maximum amount of available light.

The resolution on the analog input is approximately 1000 points. The higher the calibration reading the better. There needs to be at least 100 points measured in order to match the 0-100% levels used for dimming. Anything less will not allow the station accurate control over dimming and could possibly bounce between levels (strobing). Should there be less than 100 points, switch LED 3 will illuminate during calibration. Switches 7 & 9 allow the adjustment of the maximum set point level. During calibration, the maximum set point is calibrated to the maximum output of the controlled lighting. Sometimes it is desired to reduce this level so that lumen depreciation can be controlled, or the designed foot candle level in the space is too high. Switch 9 lowers the set point level and Switch 7 raises the set point. To save the set point, press and hold Switch 8 until you hear a beep (approximately 3 seconds).

To enter photocell calibration:

1. Enter Setup mode by pressing and holding the Setup Switch (for approximately 3 seconds) until you hear a beep. After hearing the beep, release the Setup Switch. The Setup LED should be blinking green once per second.
2. Press and hold Switch 3 (for approximately 3 seconds) until you hear a beep. The station will indicate calibration mode by the following sequence of events:
   A. Flashing the lights to FULL/OFF/FULL.
   B. The maximum light level will then be measured for approximately 30 seconds. During this time, the switch LEDs will illuminate in a repeating order from 3-2-1-3-2-1…
   C. The lights will go off and the low level will be measured for approximately 10 seconds. During this time, the switch LEDs will illuminate in a repeating order from 1-2-3-1-2-3…
   D. The lights will flash to indicate the end of calibration and return back to configuration mode.

To adjust the maximum set point level use switches 7 and 9 as described above.

3. Save the set point by pressing and holding (approximately 3 seconds) Switch 8 until you hear a beep.

Once photocell calibration is complete you can either exit by pressing and releasing the setup switch, or modify the Sunlight Discount Factor Setting as described below.

Sunlight Discount Factor adjustment

In most installations the photocell measures the artificial light level differently than sunlight on a work surface. A Sunlight Discount Factor can be configured to compensate for this. Ideally, all of the light measured by the photocell will be light that is reflected off the work surface towards the sensor. This results in a constant ratio between the light level measured at the work surface and the light level measured at the photocell. However, in most cases the photocell also measures sunlight bouncing off other surfaces. The result is the ratio of ARTIFICIAL LIGHT hitting the work surface to ARTIFICIAL LIGHT measured at the photocell is different than the ratio of SUNLIGHT hitting the work surface to the SUNLIGHT measured at the photocell. This ratio is always higher for sunlight due to sunlight requiring a larger change (than artificial light) at the photocell to result in the same change at the work surface.

To compensate for this effect, the part of the light measurement from sunlight is divided by the Sunlight Discount Factor. This is possible since the artificial light contribution is known. The default setting is 2, the possible settings are 1-9. Pressing and releasing one of the 9 switches will set the discount factor, with the switch number indicating the discount factor setting. Note that changing the discount factor setting can affect the maximum set point level. You may need to re-adjust the set point level after changing the discount factor.

To enter Sunlight Discount Factor adjustment:

1. Enter Setup mode, (See page 13) the setup LED will blink green.
2. Press the Setup Switch again, the setup LED will now be blinking red.

The Sunlight Discount Factor can now be adjusted as described above using switches 1 - 9.

Exit Setup

To exit Setup Mode press and release the setup switch again. Upon exiting setup mode, you will hear 3 short beeps. Setup mode will also timeout after 60 seconds of inactivity.

SYRSP Troubleshooting

SYMPTOM:
ALL BUTTON (GREEN) LEDS ARE FLASHING

Flashing in Unison:

An A4 network communication error has occurred. Check and verify all A4 network connections and verify the system controller is functioning properly. Refer to the controller operations manual for proper operating and troubleshooting instructions.

Blink – Blink – Pause – Blink – Blink – Pause pattern:

The station's button configuration has been lost. To reprogram the button configuration for an SYRSP station, follow these steps:

BUTTON RECONFIGURATION

1. Record the current setting of SWITCH 1 and SWITCH 2. (network address)
2. Set SWITCH 1 to "F" and SWITCH 2, bits 1 & 2, to the UP (ON) position. (network address "63") See Figures 8 for details.
3. Press and hold any button for more than 3 seconds. All button LEDs will start to flash.
4. Press and release each button. (The order in which the buttons are pressed is NOT important) After each button is pressed the button LED will stay on, no flashing.
5. Return SWITCH 1 and SWITCH 2 to the network address setting recorded earlier.

Note:
Only configure one station at a time on the A4 network.

SYMPTOM:
SYNERGY SYSTEM RESPONDS SLOWLY OR WILL NOT RESPOND TO SYRSP BUTTON PRESSES

Check the following:

1. Each device on the A4 network **must** have a unique address. DUPLICATE ADDRESSES ARE NOT ALLOWED! Using duplicate addresses will cause poor system performance, erratic operation and network communication errors.
2. Verify the A4 network address for each station by checking the Network Address Selection switches. See *Figure 4* for switch settings of a specific address.

Contact Synergy Lighting Controls Technical Support at 800-533-2719. Synergy Lighting Controls Technical Support is available from 8:00 a.m. to 5:00 p.m. EST, Monday through Friday, for phone consultation.

Warranty

Synergy Lighting Controls warrants all equipment to be free from defects 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.

Visit Synergy Lighting Controls on the internet at **http://www.SynergyLightingControls.com** for additional information on products, technical data and installation instructions.

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SYGS Installation Guide

SECTION 1 – Safety

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 at 1-800-533-2719.

Software Compatibility

For optimal compatibility the Synergy controller should use firmware 2.71 or later and Synergy Config version 2.1.16 or later. **DO NOT** attempt to upgrade a Synergy controller currently using firmware 2.30 or earlier. Consult factory for firmware updates.

⚠ 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 insulation 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 damaged equipment.

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SECTION 2 – Installation

SYGS Basic Overview

The SYGS is a graphical touchscreen control station for Synergy Lighting Control systems. The clean styling is ideal for high-finish areas and its high resolution screen is easy to view and simple to use. The SYGS station connects to the Synergy lighting control system via a four-conductor network bus. It is fully compatible with current Synergy user interfaces. Up to 60 devices per SYSC, MLS or MLX controller.

Before You Start

1. Always disconnect all power.
2. This device is supplied by a Class 2 low voltage transformer in the system enclosure. Install in accordance with National Electric code and any other codes that may apply.
3. Use only as intended and at the listed voltage.
4. Use only accessories recommended by Synergy Lighting Control Systems.

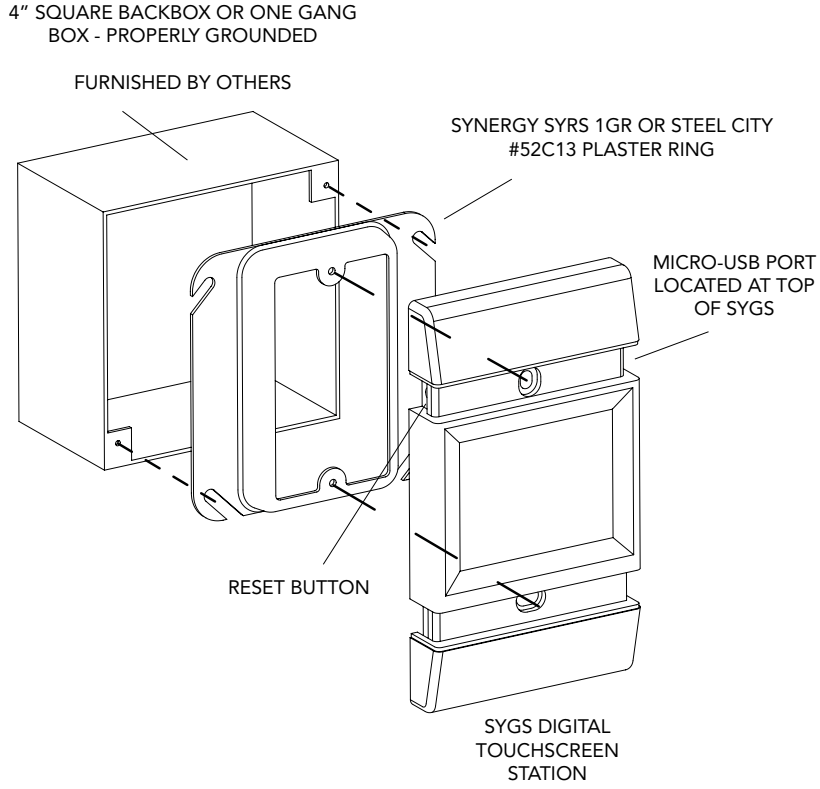
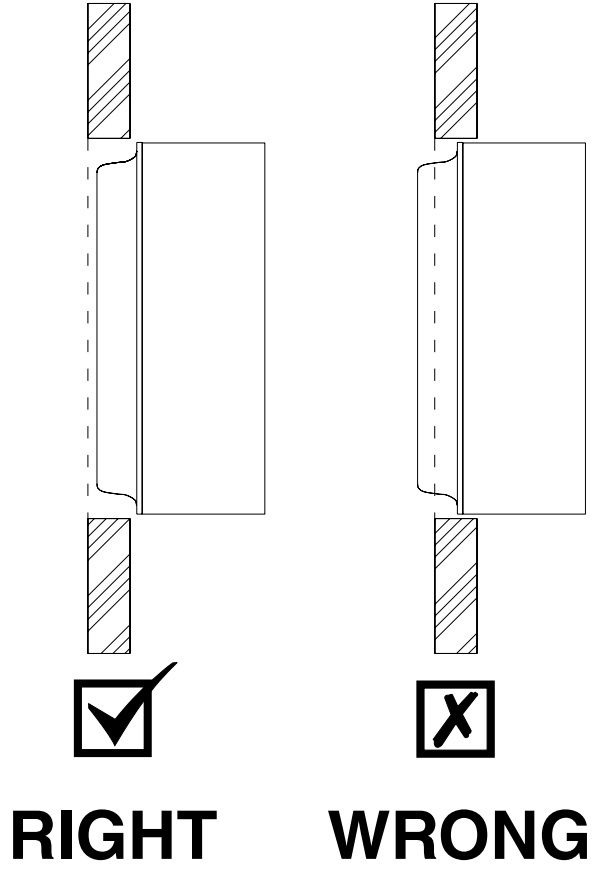


Figure 1 - Exploded View of Control Station

Rough-In Mounting Instructions/ Important Notes

The SYGS station flush mounts to a one gang box (2-1/2" minimum inside depth) or to a Synergy SYRS 1GR or Steel City 2C13 one gang plaster ring attached to a grounded 4" square, deep outlet box. If a plaster ring is used, the plaster ring should be mounted slightly behind the wall face, within 1/8", and not protruding to finish off properly. See illustration to the right.

Backbox **MUST** be connected to earth ground for proper operation and to avoid possible product damage from static discharge. Warranty voided if not properly grounded.



Important Remote Station Rough-In Wiring

1. Outlet boxes must be grounded for proper operation to avoid possible product damage from static discharge.
2. SYGS stations can be connected to a Class 2 low voltage Synergy A4 network.
3. **Do not** install A4 network cable in AC power conduit or raceways.
4. All A4 network devices **must** be connected in a daisy chain (in and out) configuration. "T" taps or branches in the network are **NOT** permitted. See *Figure 2* on p.6.
5. Network wire shall be:
   (2) #16 AWG conductors for power and (1) EIA-485 approved twisted and shielded pair for data signal. Approved cables are Synergy SYA CABLEA4 (four conductors) or (1) Belden 3105A (2-wire, twisted and shielded pair) and (2) #16 AWG (or larger) conductors, supplied by others.
6. Contact Synergy Technical support at 1-800-533-2719 if the A4 network length exceeds 2000 feet.
7. See *Figure 5* on p.8 for detailed interconnect wiring of SYGS station network.
8. See *Table 1* on p.10 for guidelines on the number of SYGS stations that can be installed without auxiliary power supplies. Additional power supplies may be required based on the length of the A4 cable.

SECTION 3 – Wiring

Network Wiring

A4 Control Station Network Cable. Class 2 low voltage. Do not install in high voltage conduit or raceway. All devices connecting to network must be wired in a daisy chain (in and out) configuration; "T" taps or branches in the network are not permitted. The numerical order in which devices are connected is not important.

Network wire shall be:

SYGS requires SYNERGY all one cable SYA CABLEA4 (plenum rated)
OR
Belden 3105A (non-plenum rated) plus
(2) #16 conductors for power

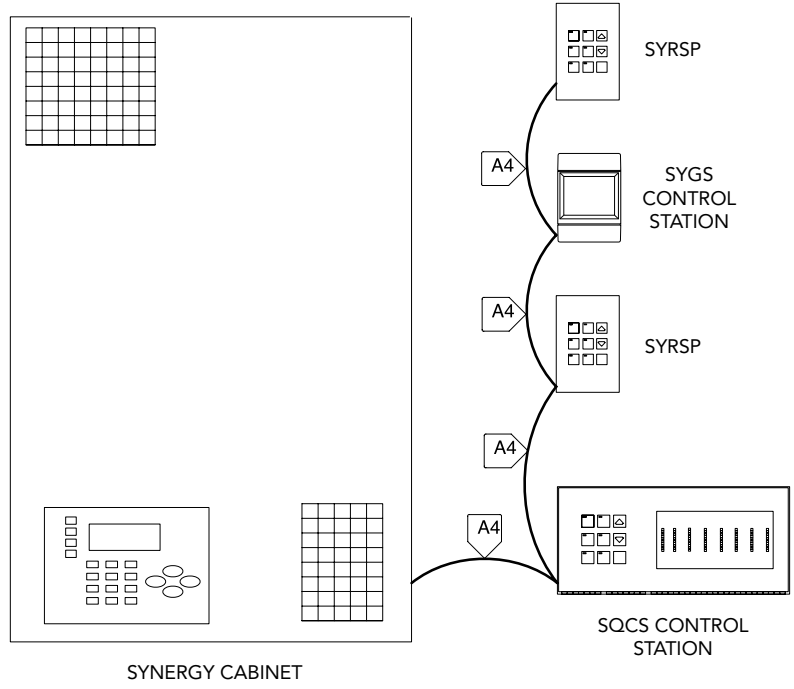


Figure 2 - SYGS Control Station One Line Drawing

SYGS Synergy Enclosure Wiring

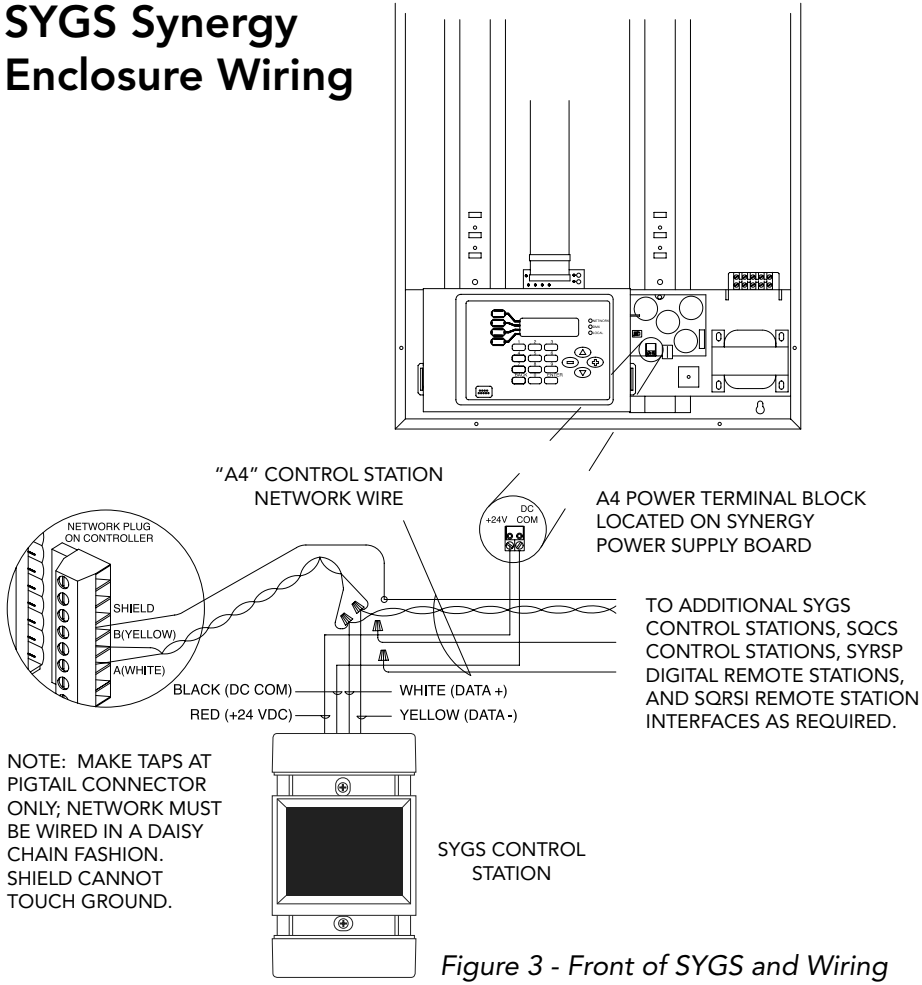


Figure 3 - Front of SYGS and Wiring

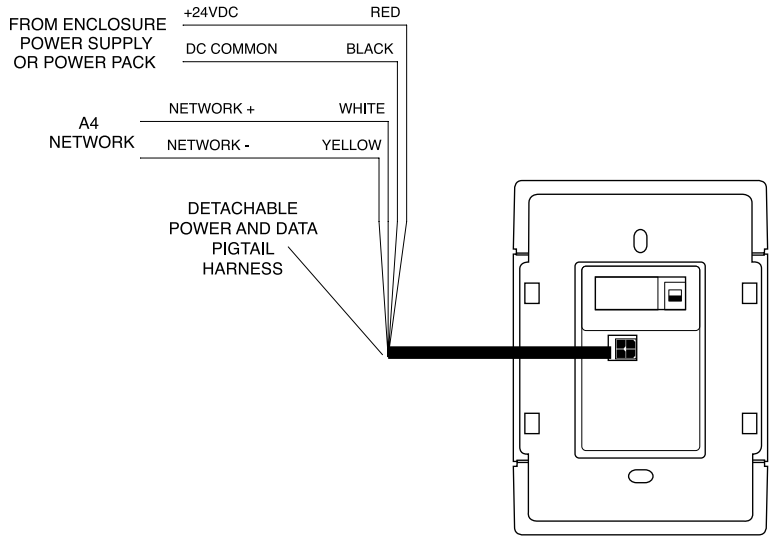


Figure 4 - Back of SYGS

SECTION 4 – Wiring Details and Termination

SYGS A4 Network Termination

The A4 network must be properly terminated for network operation. The device residing at each end of the network **MUST** be terminated. The SYSC system controller is normally located at one end of the network and ships from the factory with termination activated. If an SYGS station is at the end of the A4 network, it must be terminated. (See *Figure 5* for details)

If SYGS stations are located at both ends of the network, BOTH SYGS stations must be terminated and the factory applied A4 network termination on the SYCS system controller **must** be removed. (See the SYSC system controller jumper settings in *Figure 6* on p.9 to remove termination from the controller)

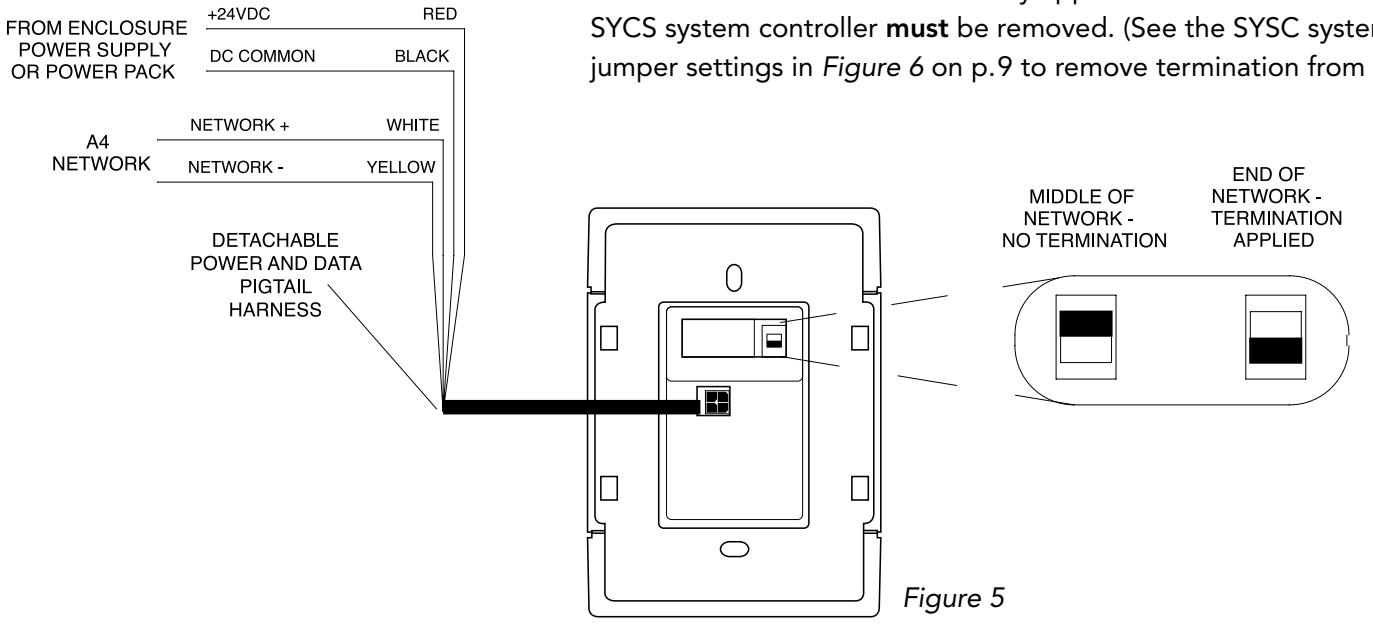


Figure 5

Installation Instructions

Wireless Infrared Transmitter - SYWR 6B

Synergy® LIGHTING CONTROLS

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

Synergy® LIGHTING CONTROLS
An AcuityBrands Company

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

Part No. CDCS000258 REV A
6/01

Information below is for Lithonia Lighting documentation purposes only, **DO NOT** include in instruction sheet art.

PART NUMBER	INSTRUCTION SHEET	SIZE: ☐ 8.5 X 11 - ONE SIDE ☐ 8.5 X 11 - FOUR SIDES ☐ 8.5 X 11 - TWO SIDES ☐ 8.5 X 11 - SIDES
CDCS000258	Wireless Infrared Transmitter - SYWR 6B	

REV.	CN. NO.	CHANGE DESCRIPTION	DATE	DR.	APPROVAL ENG.	APPROVAL MKT.	APPROVAL Q.C.	PG. OF
A		INITIAL RELEASE		JWC				

Installation Instructions

Wireless Infrared Transmitter - SYWR 6B

Specifications

POWER – Two type 23A batteries (type used for camera and garage door openers), provided.

CONTROL RANGE – effective range will vary based on the condition of the batteries, the reflectivity of the room surfaces and the cleanliness of the lenses.

NOMINAL RANGE - 25' (7.5m), direct line of sight. Replace the batteries when the range drops to where it is no longer acceptable.
SIZE – 5.45" L x 1.77" W x 1.13" H
OPERATING TEMPERATURE - 0 to 50° C

Introduction

The SYWR 6B is a hand held Infrared transmitter. It is used in conjunction with the Synergy SYRS digital remote stations having the IR receiver option. The operational features of the unit will vary somewhat, based on the configuration of the SYRS station. Not all IR functions are available in all station configurations. See the SYRS Installation Guide for details on configuring the SYRS digital remote station for IR operation.

Operation

Pressing a button on the hand held transmitter sends an encoded infrared light pulse to the receiver. It is important to hold the unit so the infrared signal has a clear path to the receiver (wall or ceiling mount).

Before the SYWR 6B can function properly, the SYRS station containing the IR receiver must be properly configured as a control station with channels.

Battery Installation

1. Press the battery compartment cover latch tab and lift off the cover.
2. Install two fresh type 23A batteries in the direction indicated in the bottom of the battery compartment.
3. Replace the battery compartment cover.

WARNING: Do not store the unit in such a way that any buttons are continuously pressed. This will reduce battery life and could cause damage to the unit.

Functions

All ON: Turns ON all channels controlled by the station
All Off: Turns OFF all channels controlled by the station.
Master Raise: Ramps up all channels controlled by the station.
Master Lower: Ramps down all channels controlled by the station.
Preset: A saved setting of light levels for a group of channels.
Fade: The time saved for transitioning from one preset to another.

Part No. CDCS000258 REV A
6/01

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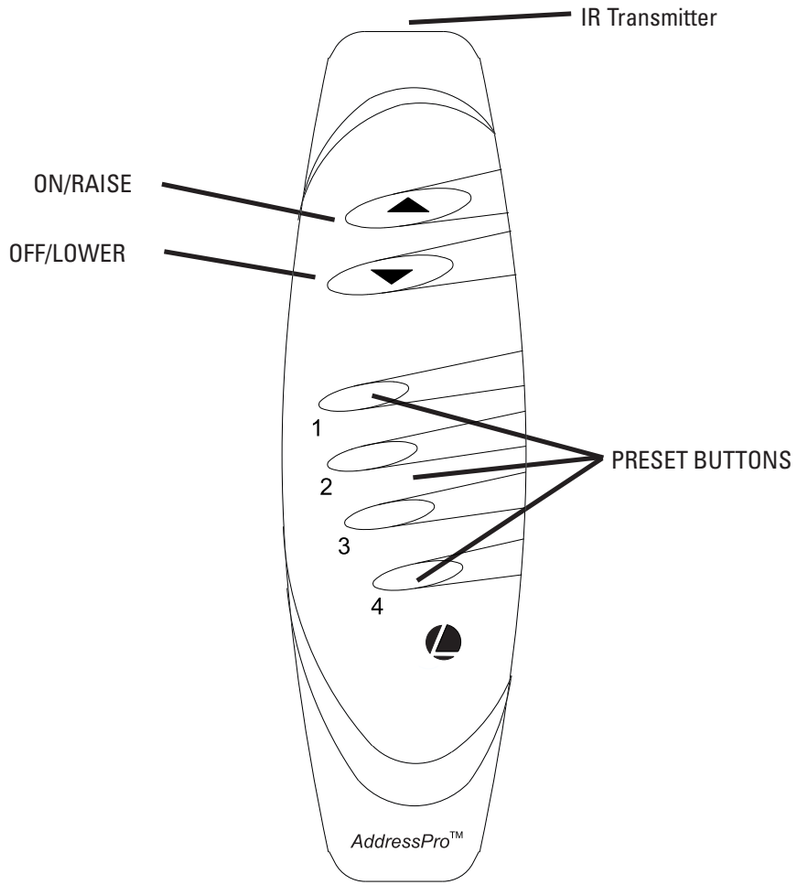
CDCS000258	Wireless Infrared Transmitter - SYWR 6B	

REV.	CN. NO.	CHANGE DESCRIPTION	DATE	DR.	APPROVAL ENG.	APPROVAL MKT.	APPROVAL Q.C.	PG. OF
A		INITIAL RELEASE		JWC				

Installation Instructions

Wireless Infrared Transmitter - SYWR 6B

Functional Operation



Turn all lighting ON
PRESS AND RELEASE the ON/RAISE button to turn on all lighting controlled by channels assigned to this station.

Turn all lighting OFF
PRESS AND RELEASE the OFF/LOWER button to turn off all lighting controlled by channels assigned to this station. Note: The ON and OFF functions only work with channels. These functions will only work with SYRS stations that have been programmed to control channels.

Master Raise
PRESS AND HOLD the ON/RAISE button. All lighting controlled by channels on this station will ramp up over a six second period as long as the button is held down.

Master Lower
PRESS AND HOLD the OFF/LOWER button. All lighting controlled by channels on this station will ramp down over a six second period as long as the button is held down.

Activate a preset
PRESS AND RELEASE a PRESET button. The lighting will fade to the levels saved in the preset over the fade time saved with the preset. Preset buttons will activate the functions associated with the first four buttons on the SYRS remote station.

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Part No. CDCS000258 REV A
6/01

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CDCS000258	Wireless Infrared Transmitter - SYWR 6B	

REV.	CN. NO.	CHANGE DESCRIPTION	DATE	DR.	APPROVAL ENG.	APPROVAL MKT.	APPROVAL Q.C.	PG. OF
A		INITIAL RELEASE		JWC				

Installation Instructions

Hand Held Programmer

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

Hand Held Programmer

Specifications

POWER – Four AAA batteries, provided.

CONTROL RANGE – effective range will vary based on the condition of the batteries, the reflectivity of the room surfaces and the cleanliness of the lenses.

NOMINAL RANGE - 25' (7.5m), direct line of sight. Replace the batteries when the range drops to where it is no longer acceptable.
SIZE – 7.42" L x 2.35" W x 1.0" H
OPERATING TEMPERATURE - 0 to 50° C

Battery Installation

1. Press the battery compartment cover latch tab and lift off the cover.
2. Install four fresh AAA batteries in the direction indicated in the bottom of the battery compartment.
3. Replace the battery compartment cover.

WARNING: Do not store the unit in such a way that any buttons are continuously pressed. This will reduce battery life and could cause damage to the unit.

Introduction

The SYWR HHP is a hand held Infrared transmitter. It is used in conjunction with Synergy SYRS digital remote stations having the IR receiver option. The operational features of the HHP will vary somewhat based on the configuration of the SYRS station. Not all IR functions are available in all station configurations. See the SYRS Installation Guide for details on configuring the SYRS digital remote station for IR operation.

Operation

Pressing a button on the hand held transmitter sends an encoded infrared light pulse to the receiver. It is important to hold the HHP so the infrared signal has a clear path to the receiver (wall or ceiling mount).

Before the HHP can function properly, the SYRS station containing the IR receiver must be properly configured as a control station with channels.

Functions

All ON: Turns ON all channels controlled by the station
All Off: Turns OFF all channels controlled by the station.
Raise: Ramps up the intensity of the selected channel(s).
Lower: Ramps down the intensity of the selected channel(s)
Master Raise: Ramps up all channels controlled by the station.
Master Lower: Ramps down all channels controlled by the station.
Channel: A group of lights that are controlled together. Usually applies to dimming.
Preset: A saved setting of light levels for a group of channels.
Fade: The time saved for transitioning from one preset to another.

Synergy Lighting Controls Conyers Ga, 30012
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Synergy® LIGHTING CONTROLS
An AcuityBrands Company

Functional Operation

Turn all lighting ON
PRESS AND RELEASE the ON/RAISE button to turn on all lighting controlled by channels assigned to this station.

Turn all lighting OFF
PRESS AND RELEASE the OFF/LOWER button to turn off all lighting controlled by the channels assigned to this station.
NOTE: The ON and OFF functions only work with channels. You must have SYRS stations programmed to control channels.

Master Raise
PRESS AND HOLD the ON/RAISE button. All lighting controlled by channels on this station will ramp up over a six second period as long as the button is held down.

Master Lower
PRESS AND HOLD the OFF/LOWER button. All lighting controlled by channels on this station will ramp down over a six second period as long as the button is held down.

Activate a preset
PRESS AND RELEASE a PRESET button. The lighting will fade to the levels saved in the preset over the fade time associated with the preset.

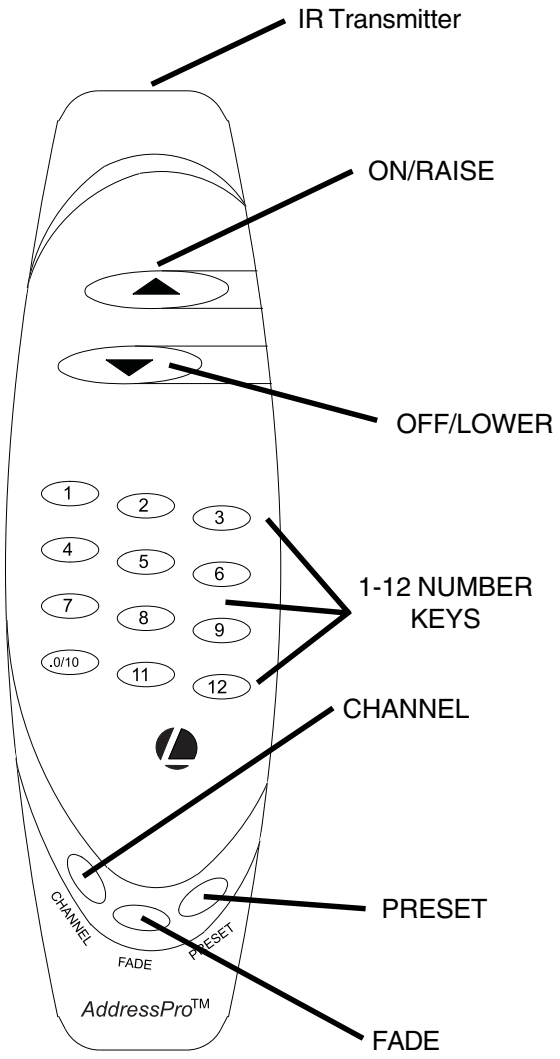
Manually Control a Channel
PRESS AND RELEASE the CHANNEL button. The button will light. *PRESS AND RELEASE* the channel button(s) to be controlled. The selected channel button(s) will light. *PRESS AND HOLD* the ON/RAISE button to ramp the lighting up or *PRESS AND HOLD* the OFF/LOWER button to ramp the lighting down. *PRESS AND RELEASE* the CHANNEL button to end the sequence. All illuminated buttons will extinguish.

Saving a Preset
Saving a preset is a three step process. First, adjust the channel levels, then set the fade time, and finally assign the preset to a numbered button.

Step 1: Adjust Channel Levels
PRESS AND RELEASE the CHANNEL button. The button will light. *PRESS AND RELEASE* the numbered button for the first channel to be adjusted. Use the ON/RAISE and/or OFF/LOWER buttons to select the appropriate light level for the channel. Once the desired level is achieved, *PRESS AND RELEASE* the numbered channel button to extinguish the illuminated button, which deselects the channel. *PRESS AND RELEASE* the numbered button for the next channel to be adjusted. Repeat this process for all channels.

Step 2: Set the Fade Time
PRESS AND RELEASE the FADE button. The button will light. Enter the desired fade time using the numeric keys. Valid fade time entries are **5, 10, 15, 30, 45,** and **60** seconds. Press the FADE button until it beeps.

Step 3: Choose a Button to Store the Preset
PRESS AND RELEASE the PRESET button. The button will light. *PRESS AND RELEASE* a numbered button to store the preset. The button will light. *PRESS AND HOLD* the PRESET button until it beeps and all illuminated buttons extinguish. The numbered button now stores the preset level, and pressing it will recall the stored light levels.



Installation Instructions

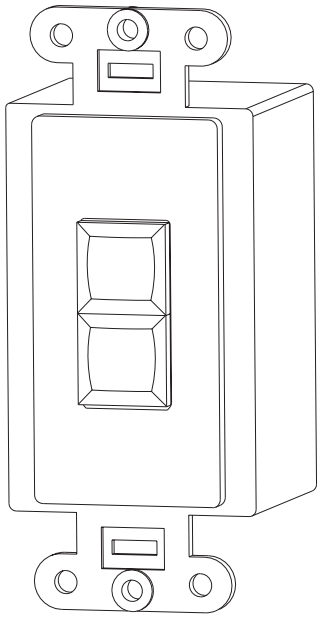
LVPS 2 BUTTON SWITCH

Before You Start

1. Install in accordance with the National Electrical Code and any other codes which may apply.
2. Use only as intended.

Important Wiring Notes

1. Switches are Class 2 devices. Install according to local standards and codes.
2. Do not install Class 2 and line voltage conductors in the same conduits or outlet boxes.
3. For runs up to 500 feet, #18 AWG conductors may be used. For runs up to 1200 feet use #16 AWG conductors.
4. Where excessive electrical noise is present use shielded cable.
5. Place link jumper on relay module pilot output voltage selector into "LK3" position, which outputs 20 VDC to pilot light. **If four or more pilot lights are to be connected to a single pilot terminal a second jumper must be added in the LK1 position.** The pilot outputs of relays are is associated with the RELAY status, not the input status.
6. Program switch input types as follows:
   For Synergy
   Latching, or alternate action in certain applications
   For SwitchPak
   3-Wire Momentary
7. See the Synergy or SwitchPak Operation Manuals for additional information about input programming.
8. Consult factory for connection to systems other than Synergy. Contact Synergy Lighting Controls technical service between 8:00 AM and 5:00 PM EST Mon-Fri at 800-533-2719.



Installation

1. The LVPS installs in a standard Decora® style wallplate and can be multi-ganged as needed.
2. See *Figure 2* for typical wiring details.

Button Labels

The button caps in the LVPS will accept 1/2" square custom printed labels. Custom labels should be printed on high quality transparency film. The LVPS comes standard with 5 pre-printed labels, (2) ON/OFF, (2) ARROWS (for raise or lower) and (1) UP and DOWN arrow. To install the labels:

1. Remove the button caps by gently prying them away from the LVPS buttons using a small flat blade screwdriver.
2. Place the label under the button cap, then press the button cap back on the button. Make sure the locking tabs in the button caps are in the vertical position. (See Figure 1 for details)

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.

Installation Instructions

LVPS 2 BUTTON SWITCH

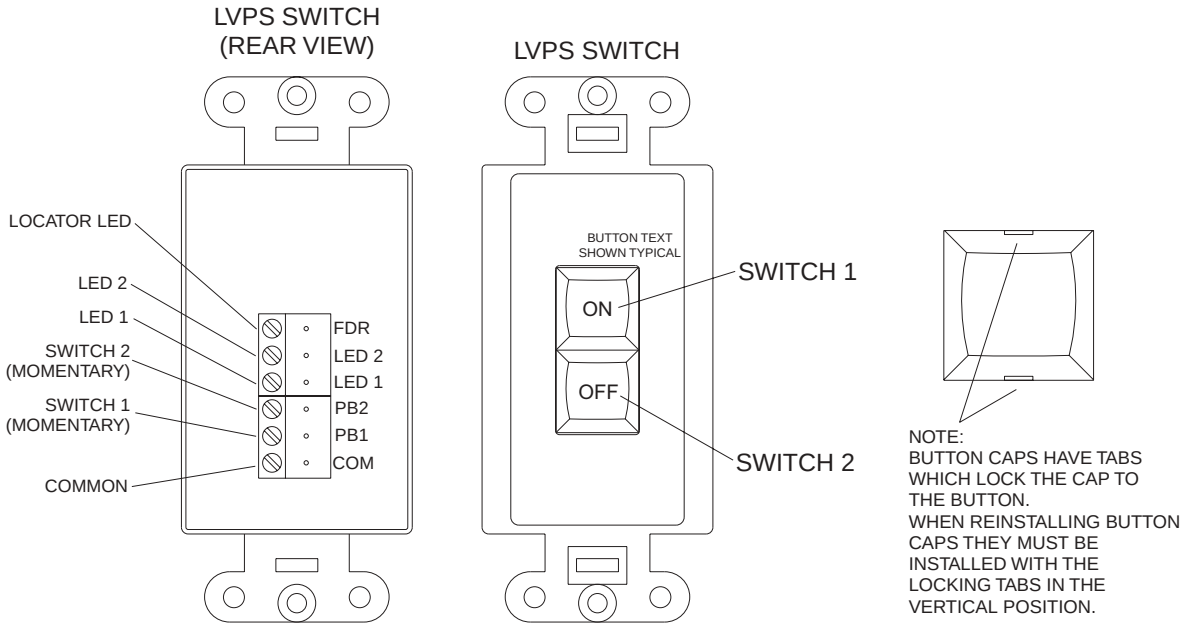


Figure 1 - LVPS Details

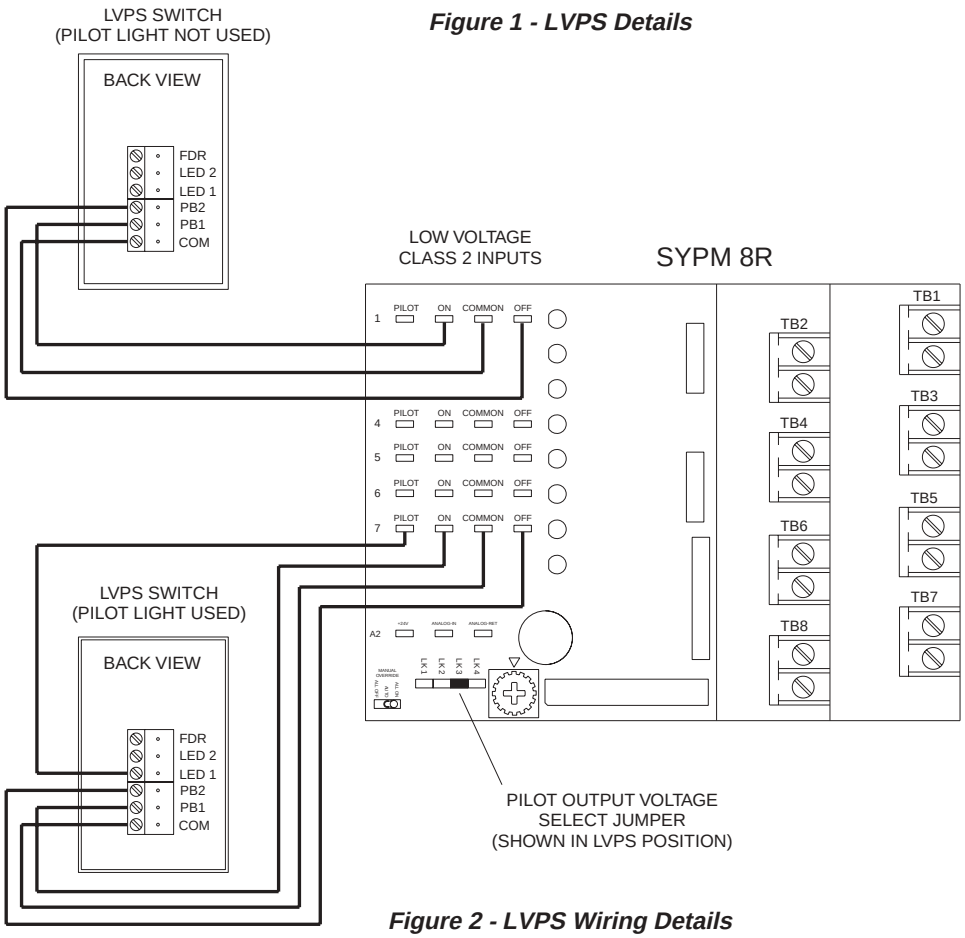


Figure 2 - LVPS Wiring Details

Synergy Lighting Controls Conyers Ga, 30012
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Installation Instructions

LVKS LOCKING SWITCH

Before You Start

1. Install in accordance with the National Electrical Code and any other codes which may apply.
2. Use only as intended.

Important Wiring Notes

1. Switches are Class 2 devices. Install according to local standards and codes.
2. Do not install Class 2 and line voltage conductors in the same conduits or outlet boxes.
3. For runs up to 500 feet, #18 AWG conductors may be used. For runs up to 1200 feet use #16 AWG conductors.
4. Where excessive electrical noise is present use shielded cable.
5. Program switch input types as follows:
   For Synergy
   LVPS SPDT MOM - "Latching"
   LVPS HOA - "Maintained"
   LVPS SPDT - "Maintained"
   For SwitchPak
   LVPS SPDT MOM - "3-Wire Momentary"
   LVPS HOA - "Maintained"
   LVPS SPDT - "Maintained"

7. See Synergy Operation Manual for additional information about input programming.
8. Consult factory for connection to systems other than Synergy. Contact Synergy Lighting Controls technical service between 8:00 AM and 5:00 PM EST Mon-Fri at 800-533-2719.

Installation

1. The LVKS installs in a standard Decora® wallplate. It can be multi-ganged in any Decora® multi-gang plate.
2. The keyswitch contains pigtails for device connect ions. See *Figure 1* for several example applications and their corresponding connections.

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.

Installation Instructions

LVKS LOCKING SWITCH

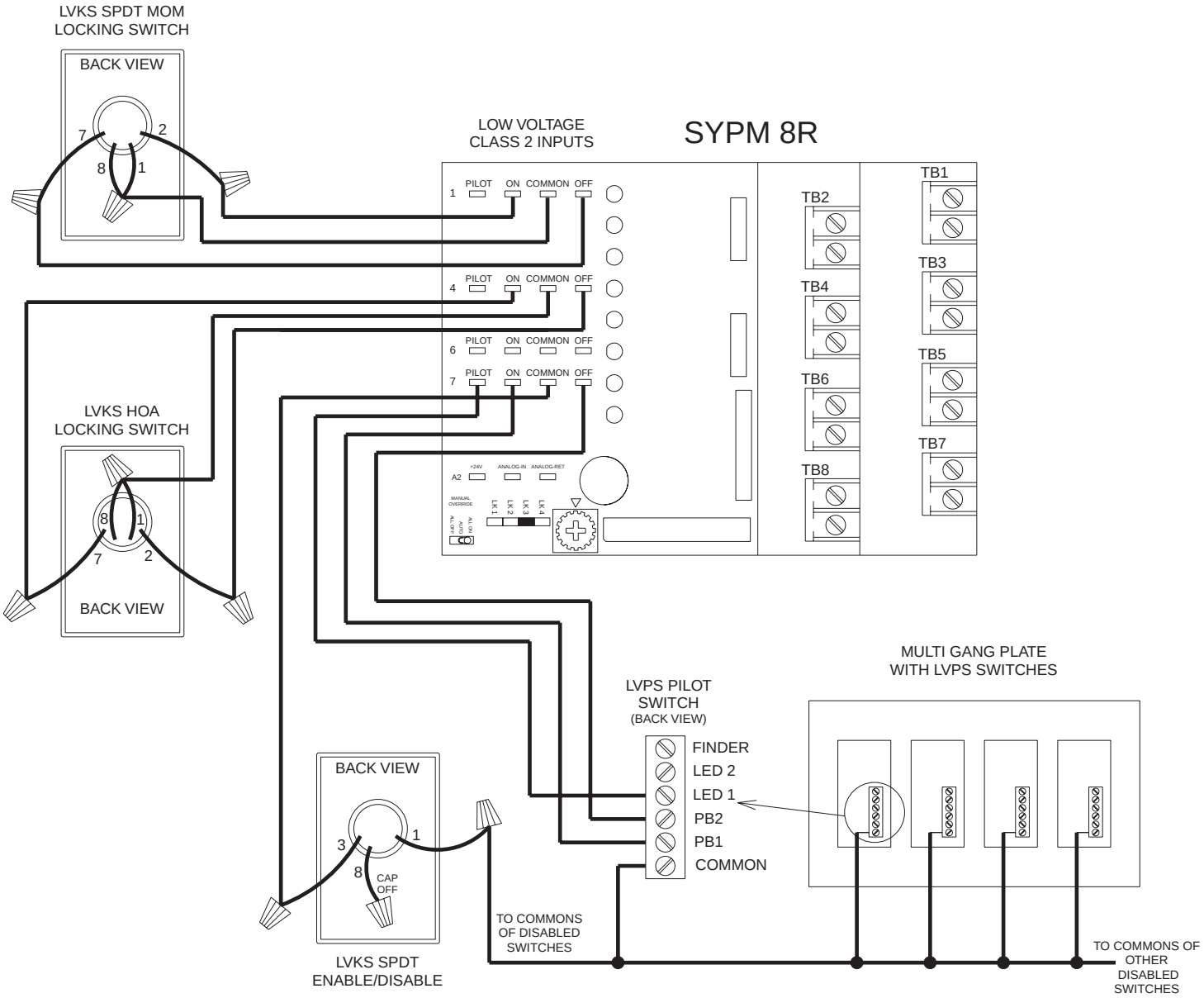

Figure 1 - LVKS Wiring Details

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Installation Instructions

SYA IR Partition

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 at 1-800-533-2719.*

⚠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 insulation 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 damaged equipment.

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SAVE THESE INSTRUCTIONS

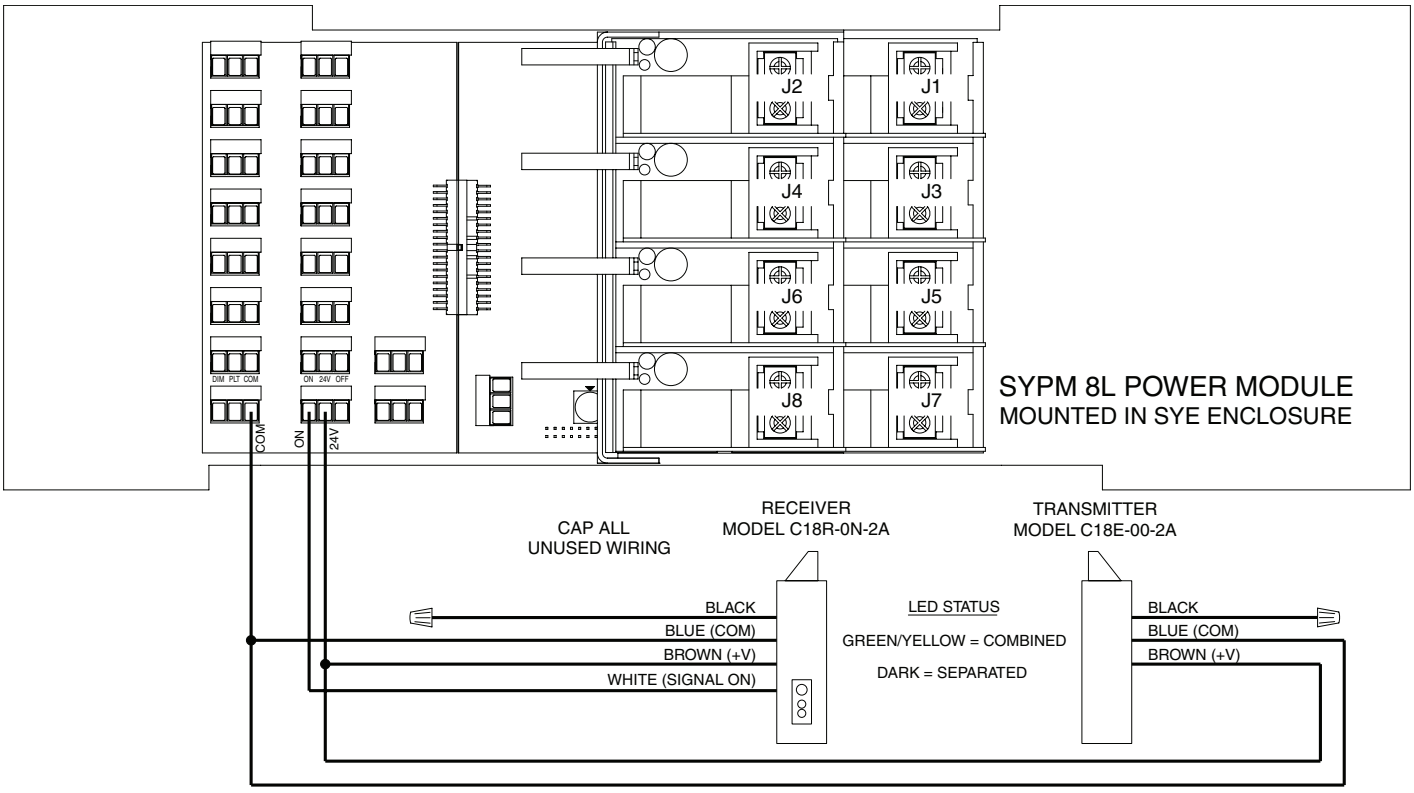

Figure 1 - IR Partition Wiring

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
SwitchPak - SPAK

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 the 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 THIS EQUIPMENT. HIGH VOLTAGE IS PRESENT INSIDE THE ENCLOSURE! Failure to follow any or all warnings and proper safety procedures can cause severe injury or death, and/or damage to the equipment.

Install Cabinet

1. Mount the cabinet using the four holes provided in the back of the enclosure. Refer to *Figure 2* for dimensions.
2. Choose the desired location for line voltage and low voltage conductor entry in the cabinet. DO NOT install conduit where NO CONDUIT ENTRY is shown in *Figure 1.*
3. **ALL LINE VOLTAGE** conductors **must** enter the cabinet on the right side (when facing) of the enclosure, in the area shown in *Figure 1.*
4. **ALL LOW VOLTAGE** conductors **must** enter the cabinet on the left side (when facing) of the enclosure, in the area shown in *Figure 1.*
5. Remove **ALL** metal shavings and excess contaminants from the enclosure **before** applying power to the cabinet.

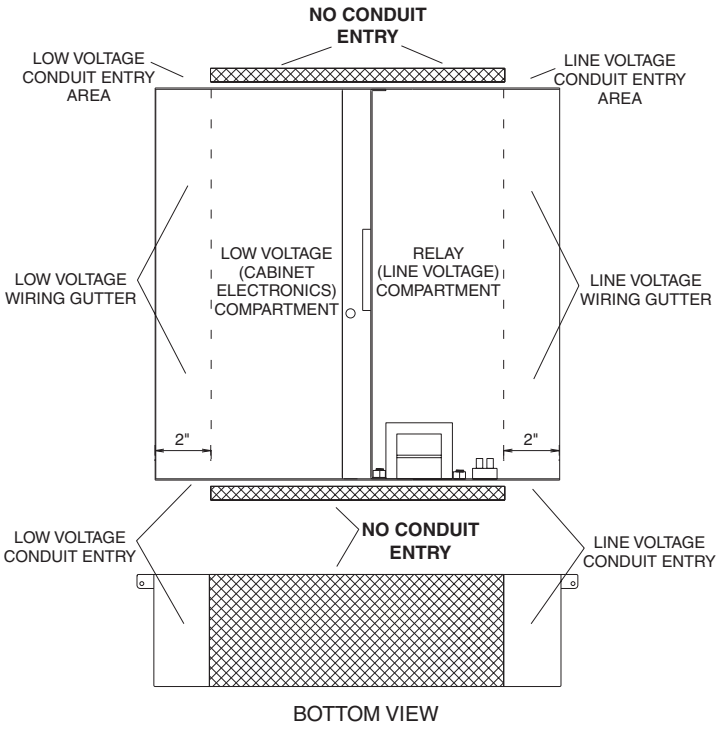

Figure 1 - Conduit and Cable Entry

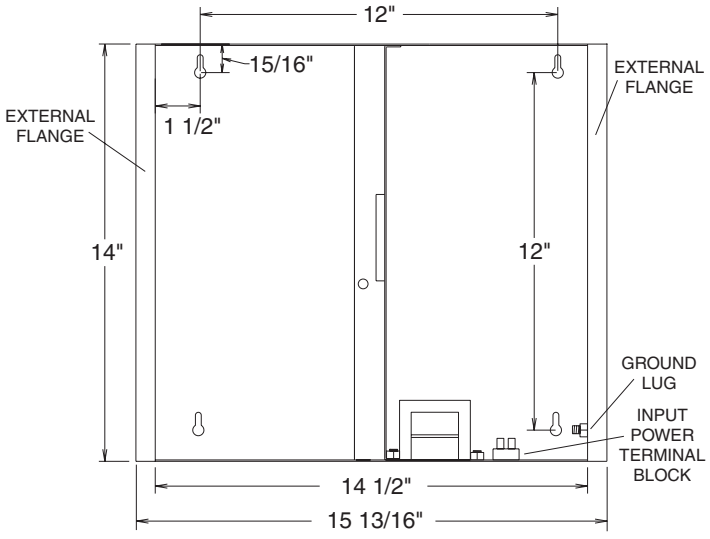

Figure 2 - Cabinet Dimensions

Semi-recessed mounting option:
Opening should be 14 5/8" wide, 14 1/16" high, and requires 3 3/8" wall depth minimum.

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Connect Power Supply Input

1. Use conductors with minimum 90°C insulation rating.
2. Connect a dedicated 15 or 20 amp branch circuit to the power supply input. The power supply input can be connected to either 120 or 277 VAC, 60 Hertz. The power supply terminal block label shows the connection positions for each voltage, see *Figure 3* for details.
3. Attach a spade (fork) or ring terminal to a suitably sized ground conductor, then connect the ground to the grounding stud in the lower right side of the enclosure. See *Figure 2* for details.

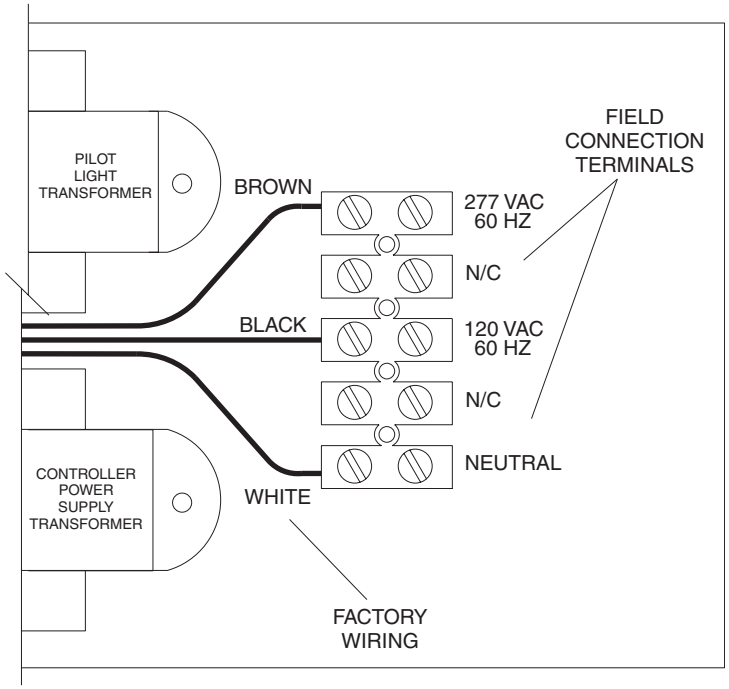

Figure 3 - Power Supply Connections

Important Relay Connection Notes

1. Test branch circuits for short circuits **prior** to energizing the SwitchPak.
2. Relay terminal block specification (1) #10, #12, #14 AWG or (2) #12, #14 AWG maximum.
3. **DO NOT** connect 2 pole circuits or loads to SwitchPak single-pole relays, this will void the equipment warranty. For 2 pole or 30 Amp loads use the optional SwitchPak 2 pole, 30 Amp relays.

Connect Loads - 8 Single Pole

1. Connect a 120 or 277 volt, 20 amp maximum, branch circuit breaker to the output terminal block position labeled LINE.
2. Connect the load to the output terminal block position labeled LOAD. See *Figure 4* for details.

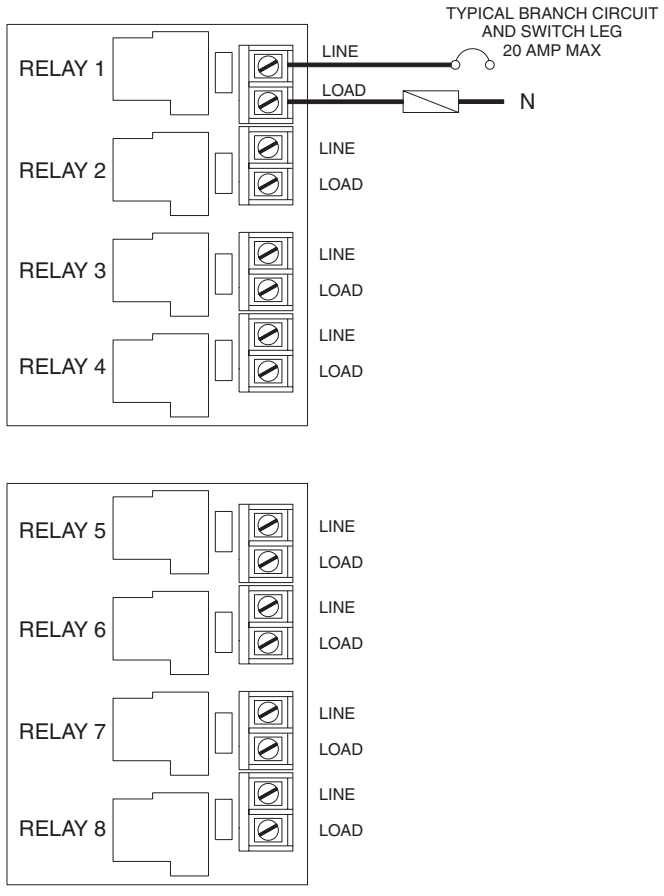

Figure 4 - Load Connections 8S (8 Single Pole)

Connect Loads - 4 Single Pole, 2 Double Pole

Single Pole Relays:

1. Connect a 120 or 277 volt, 20 amp maximum, branch circuit breaker to the output terminal block position labeled LINE.
2. Connect a single pole load to the output terminal block position labeled LOAD. See *Figure 5* for details.
   Note: Factory wiring configures the 4 single pole relay outputs to correspond to RELAY buttons 1- 4.

Double Pole Relays:

1. Connect the 2 pole relay card CONTROL POWER INPUT to a 120 or 277 volt circuit, typically the same circuit connected to the cabinet power supply.
2. Connect a 120 or 277 volt, 30 amp maximum, 2 pole branch circuit breaker to the 2 pole relay terminal positions labeled LINE.
3. Connect a 2 pole load to the 2 pole relay terminal positions labeled LOAD. See *Figure 5* for details.
   Note: Factory wiring configures the 2 double pole relay outputs to correspond to RELAY buttons 5 and 6.

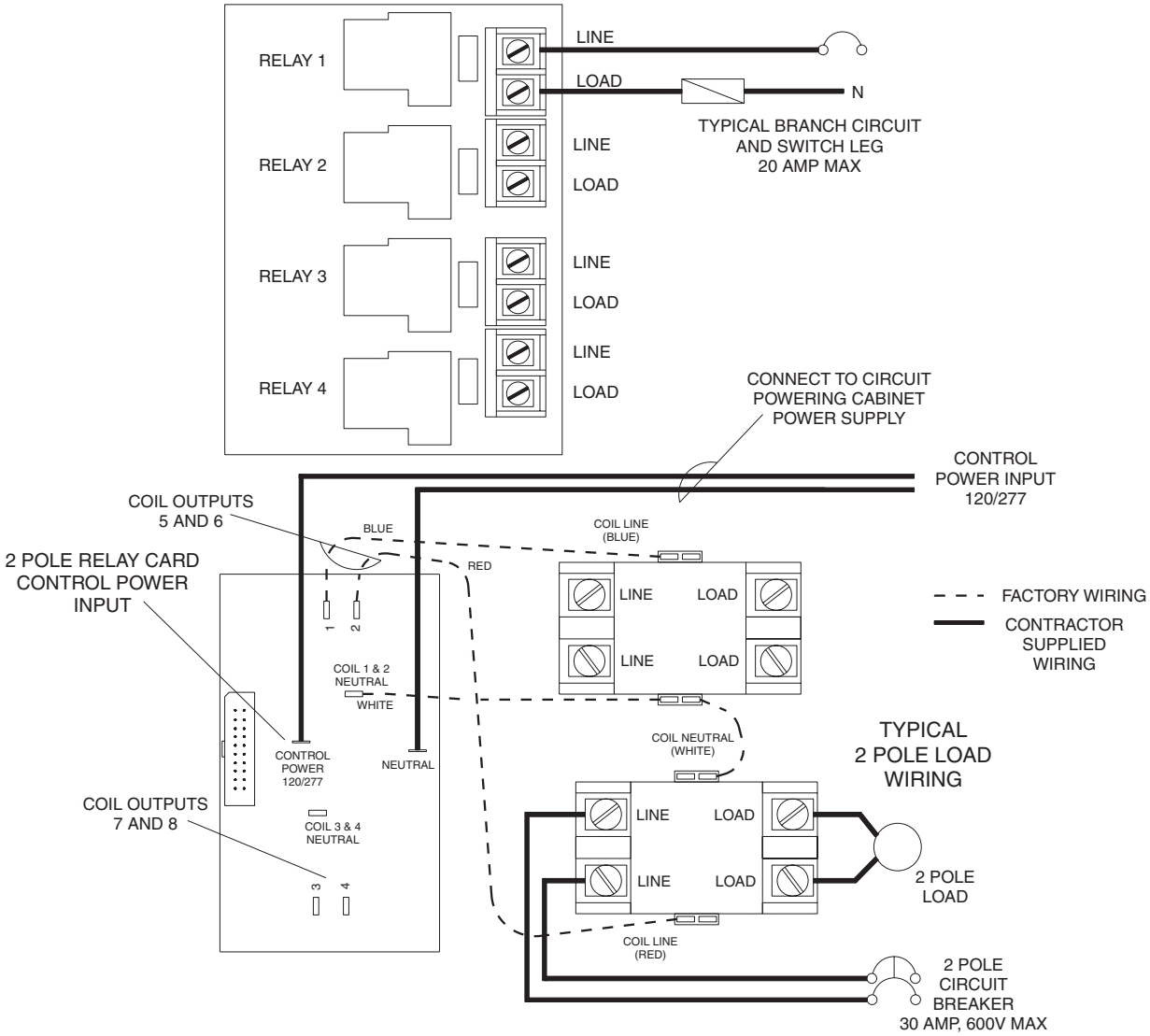

Figure 5 - Load Connections 4S 2D (4 Single Pole, 2 Double Pole)

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Connect Loads - 4 Double Pole

Double Pole Relays:

1. Connect the 2 pole relay card CONTROL POWER INPUT to a 120 or 277 volt circuit, typically the same circuit connected to the cabinet power supply.
2. Connect a 120 or 277 volt, 30 amp maximum, 2 pole branch circuit breaker to the 2 pole relay terminal positions labeled LINE.
3. Connect a 2 pole load to the 2 pole relay terminal positions labeled LOAD. See *Figure 6* for details.
   Note: Factory wiring configures the 4 double pole relay outputs to correspond to RELAY buttons 1 - 4.

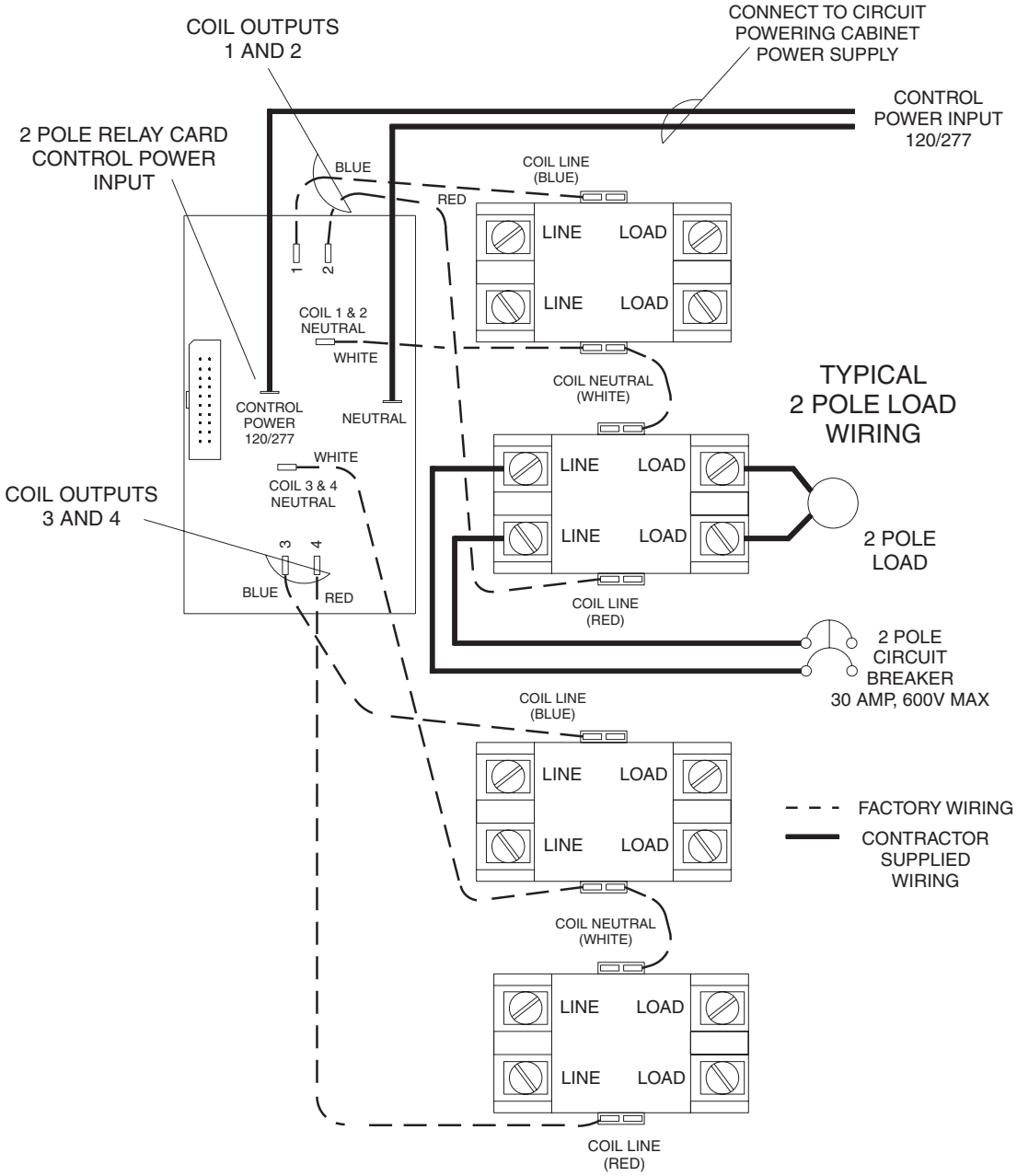

Figure 6 - Load Connections 4D (4 Double Pole)

Make Low Voltage Connections

1. If required, connect low voltage switches or other dry contact closure devices to the switch inputs. See *Figure 7* for typical connection details.
2. If required, connect an analog photocell to the analog photocell input. See *Figure 7* for typical connection details.
3. If required, connect a low voltage occupancy sensor to a switch input. See *Figure 7* for typical connection details.
4. The ON/OFF override input can be connected to a normal sense relay (RRU SPDT), or other dry contact closure devices and switches to provide override control of all relays. All relays (excluding any programmed as DISABLED) will be overridden when using this input. See *Figure 7* for typical connection details.

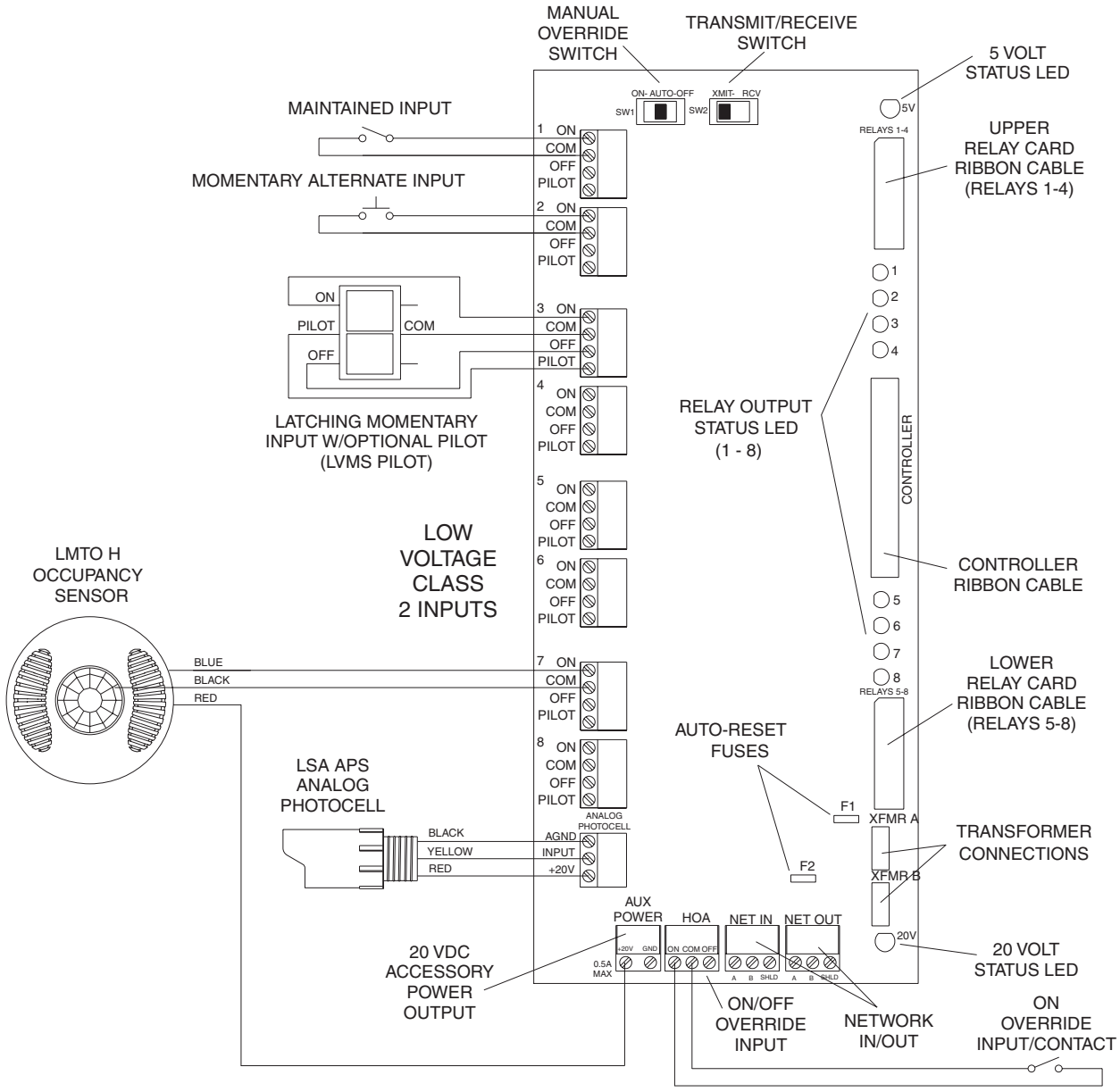

Figure 7 - Low Voltage Connections

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System Remote Network Connections

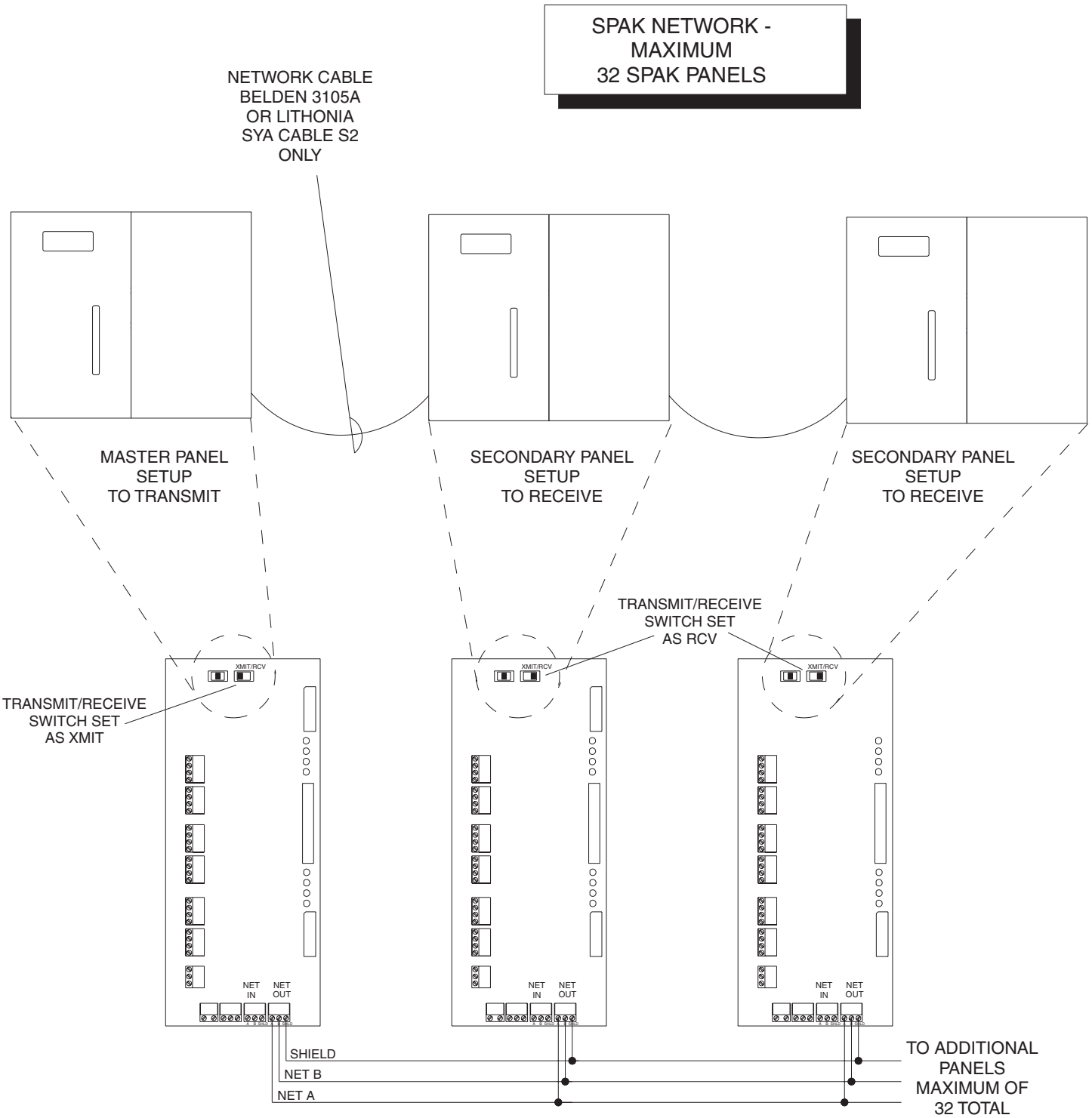

Figure 8 - SPAK network connections

Troubleshooting Procedures

SYMPTOM: OUTPUTS (RELAYS) DO NOT SWITCH ON OR OFF
Check the following:

1. Verify the 5 volt and 20 volt GREEN (STATUS) LEDs on the power supply card are on. (See *Figure 7 for LED locations*). If both LEDs are on, proceed to STEP 2. If either LED is not on, verify the correct voltage is present on the INPUT POWER TERMINAL BLOCK. Verify the wires connecting the input transformers to the CONTROLLER CARD (purple wires) are connected properly. (*See Figure 7*) If these conditions are correct and either or both LEDs are still not on, contact Lithonia Controls Technical Support for more information. (See contact information below)
2. Verify the correct voltage is present on the LINE side of the RELAY TERMINAL BLOCK. If the correct voltage is present and the outputs still don't function correctly, proceed to STEP 3.
3. Verify both the UPPER and LOWER RELAY CARD RIBBON CABLES are properly connected to the POWER SUPPLY and RELAY CARD SOCKETS. (*See Figure 7*) If both are properly connected and the outputs still don't function correctly, proceed to STEP 4.
4. Switch the MANUAL OVERRIDE SWITCH on the POWER SUPPLY CARD to the “ON” position. (See *Figure 7 for switch location*) All loads which are programmed as NORMALLY OPEN (default) and the corresponding RELAY OUTPUT STATUS LEDs should turn on.
5. Switch the MANUAL OVERRIDE SWITCH on the POWER SUPPLY CARD to “AUTO”. Use the RELAY BUTTON(S) on the front panel to switch individual relays ON/OFF. Observe the RELAY OUTPUT STATUS LEDs on the POWER SUPPLY CARD. The LEDs for all relays which are NOT programmed as DISABLED should indicate ON/OFF as the RELAY BUTTON(S) are being pressed. Also, an audible clicking should be heard as the relays switch.

   If after performing the above tests the panel still does not function correctly, contact Synergy Lighting Controls Technical Support. (See contact information below)

SYMPTOM: THE INPUT BUTTON(S) ARE OPERATING THE WRONG RELAY(S)

1. Check Programming. The RELAY BUTTON LED for each relay controlled by an INPUT BUTTON will light when switched on by the input. If a programming error is suspected, consult the SwitchPak Operation and Maintenance Manual for detailed programming information.

Contact Synergy Lighting Controls Technical Support at 800-533-2719. Synergy Lighting Controls Technical Support is available from 8:00 a.m. to 5:00 p.m. EST Monday through Friday for phone consultation.

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

Warranty

Synergy Lighting Controls warrants SPAK equipment to be free from defects in manufacturing under normal and proper storage, installation and operation for a period of one (3) years. 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.

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TEL : (800)-533-2719 www.Synergylightingcontrols.com

Configuration Instructions

SYA ROUTER

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

Configuration Instructions

SYA ROUTER

The Automated Logic Router has several parameters which can be edited, with the IP Address option being the most commonly changed. Instructions for entering the router configuration menu and changing the IP address are shown below. A complete list of router parameters and their descriptions are shown on the next page.

Gain Access to the Router Configuration Menu

You need a terminal program such as Windows HyperTerminal and a null modem cable.

1. Connect the PC to the Automated Logic Router DB9 (serial) port using a null modem serial cable.
2. Start the Terminal software.
3. Configure the Terminal connection as follows:

Bits per second	38400
Data bits	8
Parity	None
Stop bits	1
Flow Control	None

4. Connect to the router using the new settings.
5. The Terminal screen will probably be blank.
   - type: **access** (no characters will display on the screen)
   - press: **ENTER**
   - a prompt **password:** will be displayed
   - type: **access** (no characters will display on the screen)
   - press: **ENTER**

The router parameters will be displayed. To edit a parameter, type the number of the parameter to be edited and press ENTER. Then, type in the new value and press ENTER.

Note: Parameter changes will not take effect until the router is restarted.

Changing the IP Address

The IP address is option #3 in the router configuration menu. To change the IP address, perform the following steps once the configuration menu is accessed:

1. Type **3**
2. Press **ENTER**
3. Type in the new IP Address.
4. Press **ENTER**
5. Type **1**
6. Press **ENTER** to restart the router.

The parameter change will not take effect until the router has restarted.

IMPORTANT:
Make sure the blue, 5 position dip switch, at the lower left corner of the router has **switch # 3 in the ON POSITION** (to the right).
If this switch is set to OFF, the router will automatically default to IP ADDRESS 192.168.168.0 Any user configured IP Address will be ignored by the router.

Note:
Earlier router models have a 4 position dip switch. On these routers put switch #2 in the ON POSITION.

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Configuration Instructions

SYA ROUTER

Router Configuration Parameters

Option 1	Restart	Restarts router firmware, necessary for certain changes to take effect.	
Option 2	Display Modstat	Displays version of firmware, IP address and other router parameters.	
Option 3	IP Address	Sets IP Address of Router.	(See Note 1)
Option 4	Subnet Mask	Selects which IP address range will be monitored.	(See Note 2)
Option 5	Default Gateway		
Option 6	BACnet/IP UDP Port	Typically set to BAC0h or 47808	
Option 7	BACnet/IP Network	A number between 1 and 65535	(See Note 4)
Option 8	BACnet/Ethernet Network	A number between 1 and 65535	(See Note 5)
Option 9	BACnet/ARCnet or BACnet/MSTP Network		(See Note 6)
Option 10	Display B/IP PAD Table	Displays B/IP PAD Table	(See Note 7)
Option 11	Delete B/IP PAD Table Entry	Deletes B/IP PAD Table Entry	(See Note 7)
Option 12	Add B/IP PAD Table Entry	Adds B/IP PAD Table Entry	(See Note 7)
Option 13	Clear B/IP PAD Table	Clears B/IP PAD Table Entry	(See Note 7)

Note 1:

The IP Address setting assigns an IP address used in BACnet/IP communication. The address is given in dotted decimal. This address should be in the subnet of the network to which the router is connected. Intranets typically use non-routing IP addresses available in 3 Class ranges. Class A - 10.0.0.0 to 10.255.255.255, Class B - 172.16.0.0 to 172.31.255.255 and Class C - 192.168.0.0 to 192.168.255.255. Gateways and routers are typically addressed at a x.x.x.1 or x.x.x.254 address. Some addresses cannot be used. For example, X.X.X.0 is the NETID, X.X.X.255 is the broadcast address, and 0.X.X.X and 255.0.0.0 are reserved.

Note 2:

The Subnet Mask ID is dependent on the IP Address, and defines which IP address range be monitored. Class A mask - 255.0.0.0, Class B mask - 255.255.0.0 and Class C mask - 255.255.255.0. A zero in the mask ID allows any value in the IP address Class range to communicate.

Note 3:

The BACnet/IP UDP Port is normally set to BAC0h or 47808. It's value may be changed if needed, but any other devices communicating to this router will need to be configured accordingly.

Note 4:

The BACnet/IP Network number is a value between 1 and 65535, and any clients or routers sharing this BACnet/IP network should use the same network number. Set this value to zero to disable this network option.

Note 5:

The BACnet/Ethernet Network number is a value between 1 and 65535, and any clients or routers sharing this ethernet network should use the same network number. Set this to zero to disable this network option.

Note 6:

The BACnet/ARCNET or BACnet/MSTP Network number is a value between 1 and 65535, and any clients or routers sharing this ethernet network should use the same network number. Set this to zero to disable this network option.
**The LGE router can route either to MS/TP or to ARCNET, but not to both at the same time.

Note 7:

The BACnet/IP PAD - Protocol Packet Assembler Dissassembler. See Annex H of the BACnet standard for more details on how to configure the PAD tables.

For a more detailed explanation of the above options, consult ANNEX H and ANNEX J of the BACnet-2001 standard.

Designer Wall Box Dimmer

Single Pole (One location) or 3-Way (Multi-location)

Fluorescent Only

Cat. No. ISD 600 ADEZ (Lighted)
Rated: 600VA-120VAC, 60Hz

Cat. No. ISD 1000 ADEZ (Lighted)
Rated: 1000VA-120VAC, 60Hz

Cat. No. ISD 1200 ADEZ (Lighted)
Rated: 1200VA-277VAC, 60Hz

INSTALLATION INSTRUCTIONS

Synergy® LIGHTING CONTROLS
1335 Industrial Boulevard, Conyers GA 30012
Phone: 800-533-2719 www.synergylightingcontrols.com

GUARANTEE

Synergy Lighting Controls warrants all equipment to be free from defects in manufacturing, under normal and proper storage, installation, and use, for a period of two years. 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 authority has been granted by our Customer Service Department.

For Technical Assistance Call:
1-800-533-2719
www.synergylightingcontrols.com

FEATURES

- Large ON/OFF switch
- Color conversion available
- ON/OFF LED indicates status of load

INSTALLATION INSTRUCTIONS

WARNING: TO BE INSTALLED AND/OR USED IN ACCORDANCE WITH APPROPRIATE ELECTRICAL CODES AND REGULATIONS.

WARNING: IF YOU ARE NOT SURE ABOUT ANY PART OF THESE INSTRUCTIONS, CONTACT LITHONIA CONTROL SYSTEMS AT 1-800-533-2719.

WARNING: TO AVOID OVERHEATING AND POSSIBLE DAMAGE TO THIS DEVICE AND OTHER EQUIPMENT, USE ONLY WITH THE APPROPRIATE ADVANCE TRANSFORMER 120/277V MARK X™ ELECTRONIC BALLASTS FOR CONTROLLING THE SPECIFIC FLUORESCENT LAMPS.

OTHER CAUTIONS:

1. USE ONLY ONE (1) DIMMER IN A 3-WAY CIRCUIT. THE SWITCH(ES) WILL TURN THE LIGHT ON AT THE BRIGHTNESS LEVEL SELECTED AT THE DIMMER.
2. LIGHTING FIXTURE AND DIMMER MUST BE GROUNDED.
3. DISCONNECT POWER WHEN SERVICING OR CHANGING LAMPS.
4. USE THIS DEVICE ONLY WITH COPPER OR COPPER CLAD WIRE. WITH ALUMINUM WIRE USE ONLY DEVICES MARKED CO/ALR OR CU/AL.

MULTI-GANG INSTALLATION:

When ganging dimmers, the side sections of the mounting strap must be removed. Use pliers to carefully bend side sections back and forth until they break off **(see Figure 1)**. The side sections dissipate heat, so removing them requires a derating of the dimmer's capacity **(see chart)**.

MAXIMUM BULB WATTAGE:

Mark X™ dimmers are rated in Volt-Amps (VA). The maximum bulb wattage is determined by the efficiency of the Mark X™ ballast. The following tables show the maximum number of ballasts that can be connected to a single dimmer for different Mark X™ ballasts. Also note the table shows maximum ballasts for multi-gang installations.

TO INSTALL:

1. **WARNING:** TO AVOID FIRE, SHOCK, OR DEATH; **TURN OFF POWER** AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE WIRING!
2. Remove existing wallplate and switch, if applicable.
3. Remove 3/4" (1.9 cm) of insulation from each circuit conductor. Make sure the ends of wires are straight.
4. Connect wires per appropriate WIRING DIAGRAM as follows: **NOTE: Common terminal of 3-Way Switch is usually labeled and/or BLACK.** Twist dimmer leads together with circuit conductors and push firmly into appropriate wire connector. Screw connectors on clockwise making sure no bare wires show below the wire connectors. Secure each connector with electrical tape.
   NOTE: Dimmer can be installed on either the Load or Line side **(refer to Wiring Diagrams 2 and 3, respectively).**
   NOTE: For single pole applications, cap one BLACK lead with an appropriate size wire connector. Secure connector with electrical tape.
5. Installation may now be completed by carefully positioning all wires to provide room in outlet box for dimmer. Mount dimmer into box with mounting screws supplied. Attach wallplate.
6. Restore power at circuit breaker or fuse. **INSTALLATION IS COMPLETE.**

MAXIMUM LOAD PER DIMMER FOR MULTI-GANG			
Cat. No.	**Single**	**Two Gang**	**More than 2 Gang**
ISD 600 ADEZ	600VA	500VA	400VA
ISD 1000 ADEZ	1000VA	800VA	700VA
ISD 1200 ADEZ	1200VA	1200VA	1200VA

Cat. No. ISD 600 ADEZ, 120V, For use with Advance Transformer 120V MarkX™ Electronic Ballasts

Advance Mark X™ Part No.	Lamp	Max. # Ballasts/Dimmer for Multi-gang		
		Single Gang	Two Ganged	More than 2 Gang
REZ-IT32	CFM26W/GX24Q	19	16	13
REZ-IT32	CFM32W/GX24Q	16	13	10
REZ-IT42	CFM42W/GX24Q	12	10	8
REZ-2Q26	CFQ26W/G24Q	10	9	7
REZ-132	F25T8	19	16	13
REZ-2S32	F25T8	10	8	7
REZ-3S32	F25T8	7	6	5
REZ-132	F32T8	17	14	11
REZ-2S32	F32T8	8	7	6
REZ-3S32	F32T8	6	5	4
REZ-1TTS40	FT40W/2G11	15	12	10
REZ-2TTS40	FT40W/2G11	7	6	5

Cat. No. ISD 1000 ADEZ, 120V, For use with Advance Transformer 120V MarkX™ Electronic Ballasts

Advance Mark X™ Part No.	Lamp	Max. # Ballasts/Dimmer for Multi-gang		
		Single Gang	Two Ganged	More than 2 Gang
REZ-1T32	CFM26W/GX24Q	32	26	22
REZ-1T32	CFM32W/GX24Q	26	21	18
REZ-1T42	CFM42W/GX24Q	20	16	14
REZ-2Q26	CFQ26W/24Q	17	14	12
REZ-132	F25T8	32	26	22
REZ-2S32	F25T8	17	13	12
REZ-3S32	F25T8	11	9	8
REZ-132	F32T8	28	22	19
REZ-2S32	F32T8	14	11	10
REZ-3S32	F32T8	9	8	7
REZ-1TTS40	FT40W/2G11	25	20	17
REZ-2TTS40	FT40W/2G11	12	10	9

NOTE: ISD 1200 ADEZ 277 Chart located on reverse side of instructions.

COLOR CONVERSION PROCEDURE

The color of this device can be changed to suit your interior design requirements. Simply obtain a color conversion kit of the appropriate color from your Lithonia distributor and proceed as follows (please note that wallplate must be removed):

1. Select the color of the face you desire.
2. The frame has snaps on its sides. Using your fingers, grip around the frame and push on one side to release it from the strap **(see Figure 2).**
3. Take the new frame and position it properly to the strap. Line up the plastic snaps with the square holes in the strap. Insert the snaps on one side of the frame into the strap.
4. Firmly press sideways and down to slip the other snaps into place. The frame snaps in with a audible click. Ensure that all four snaps are secure.
5. Moving the slider up or down will automatically engage the slider control mechanism. Replace wallplate. **The color conversion is complete.**

Synergy® LIGHTING CONTROLS
An AcuityBrands Company
PK-93315-10-00-0A

TO OPERATE

- GREEN LED will remain ON when the lights are OFF
  - Facilitates access to switch in the dark.
- Depress push-button switch to ON position
  - Lights will turn ON (GREEN LED will turn OFF).
- Move slider control lever – lights will brighten or dim to level set.
- Depress push-button switch to OFF position
  - Lights will turn OFF (GREEN LED will turn ON).
- Lights will turn ON at set brightness level
  (from either switch location in a 3-way installation).

TROUBLESHOOTING

- Light does not turn ON and ON/OFF LED does not turn ON
  - Circuit breaker or fuse has tripped.
  - Lamp is burned out.
  - Lamp is not connected to line Neutral.
- Lights flickering
  - Lamp has a bad connection.
  - Wires not secured firmly with wire connectors.

Cat. No. ISD 1200 ADEZ, 277V - For use with Advance Transformer 277V MarkX™ Electronic Ballasts

Advance Mark X™ Part No.	Lamp	Max. # Ballasts/Dimmer for Multi-gang		
		Single Gang	Two Ganged	More than 2 Gang
VEZ-1T32	CFM26W/GX24Q	39	39	39
VEZ-1T32	CFM32W/GX24Q	31	31	31
VEZ-1T42	CFM42W/GX24Q	24	24	24
VEZ-2Q26	CFQ26W/G24Q	21	21	21
VEZ-132	F25T8	39	39	39
VEZ-2S32	F25T8	20	20	20
VEZ-3S32	F25T8	14	14	14
VEZ-132	F32T8	33	33	33
VEZ-2S32	F32T8	17	17	17
VEZ-3S32	F32T8	11	11	11
VEZ-1TTS40	FT40W/2G11	29	29	29
VEZ-2TTS40	FT40W/2G11	14	14	14

PK-93315-10-00-0A

Figure 1 – Dimmer Functions

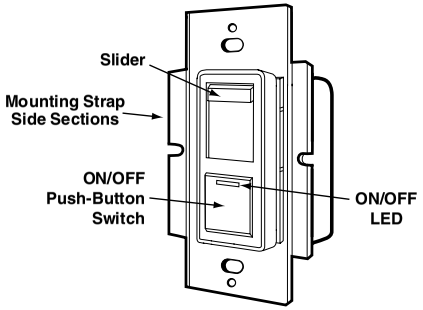
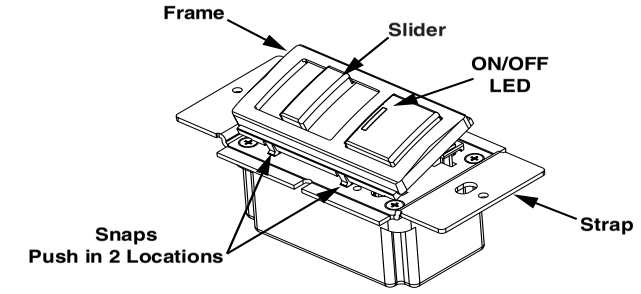
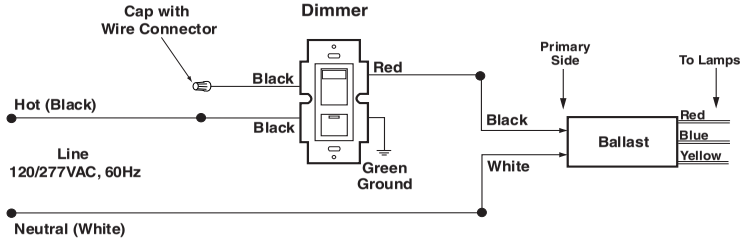


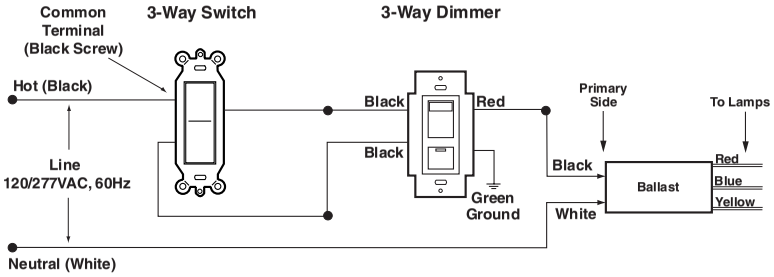
Figure 2 – Color Conversion



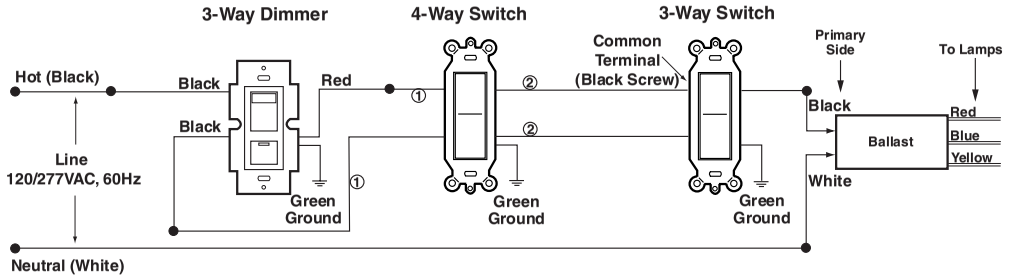
Wiring Diagram 1 – Single Control Application



Wiring Diagram 2 – Two Location Control Application



Wiring Diagram 3 – Three Location Control Application



①Travelers between switches "IN"
②Travelers between switches "OUT"

Designer Wall Box Dimmer

Single Pole (One location) or 3-Way (Multi-location)

120VAC, 60Hz

Electronic Low-Voltage

Cat. No. ISD 400 ELV (Lighted)

Rated: 400VA

INSTALLATION INSTRUCTIONS

Synergy® LIGHTING CONTROLS

1335 Industrial Boulevard, Conyers GA 30012
Phone: 800-533-2719 www.synergylightingcontrols.com

GUARANTEE

Synergy Lighting Controls warrants all equipment to be free from defects in manufacturing, under normal and proper storage, installation, and use, for a period of two years. 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 authority has been granted by our Customer Service Department.

For Technical Assistance Call:
1-800-533-2719
www.synergylightingcontrols.com

Synergy® LIGHTING CONTROLS

An AcuityBrands Company

FEATURES

- Minimum Brightness Adjustment
- Large ON/OFF switch
- Color conversion available
- ON/OFF LED indicates status of load

INSTALLATION INSTRUCTIONS

WARNING: TO BE INSTALLED AND/OR USED IN ACCORDANCE WITH APPROPRIATE ELECTRICAL CODES AND REGULATIONS.

WARNING: IF YOU ARE NOT SURE ABOUT ANY PART OF THESE INSTRUCTIONS, CONTACT LITHONIA CONTROLS AT 1-800-533-2719.

WARNING: TO AVOID OVERHEATING AND POSSIBLE DAMAGE TO THIS DEVICE AND OTHER EQUIPMENT, DO NOT INSTALL TO CONTROL A RECEPTACLE, FLUORESCENT LIGHTING, A MOTOR- OR A TRANSFORMER-OPERATED APPLIANCE OTHER THAN APPROPRIATE LOW-VOLTAGE LIGHTING.

CAUTION (For Electronic Low-Voltage Only):

1. USE WITH ELECTRONIC LOW-VOLTAGE TRANSFORMERS ONLY. **DO NO**T USE TO CONTROL A MAGNETIC LOW-VOLTAGE TRANSFORMER. USE A LITHONIA MAGNETIC LOW-VOLTAGE DIMMER TO CONTROL MAGNETIC LOW-VOLTAGE TRANSFORMERS.
2. THIS DIMMER PROVIDES PROTECTION FROM OVERHEATING. AN EXCESSIVE LOAD APPLIED TO THE DIMMER WILL CAUSE THE DIMMER TO OVERHEAT. THE EXCESS LOAD MUST BE REMOVED TO RESUME PROPER OPERATION.

OTHER CAUTIONS:

1. USE ONLY ONE (1) DIMMER PER LOAD. THE SWITCH(ES) WILL TURN THE LIGHT ON AT THE BRIGHTNESS LEVEL SELECTED AT THE DIMMER.
2. DISCONNECT POWER WHEN SERVICING FIXTURE OR CHANGING LAMPS.
3. USE THIS DEVICE ONLY WITH COPPER OR COPPER CLAD WIRE. WITH ALUMINUM WIRE USE ONLY DEVICES MARKED CO/ALR OR CU/AL.

MULTI-GANG INSTALLATION:

When ganging dimmers, the side sections of the mounting strap must be removed. Use pliers to carefully bend side sections back and forth until they break off **(see Figure 1)**. The side sections dissipate heat, so removing them requires a derating of the dimmer's capacity **(see chart)**.

MAXIMUM LOAD PER CONTROL FOR MULTI-GANG			
Cat. No.	**Single**	**Two Gang**	**More than 2 Gang**
ISD 400 ELV	400VA	350VA	250VA

MAXIMUM BULB WATTAGE (For Electronic Low-Voltage Only):

Low-voltage dimmers are rated in Volt-Amps (VA). The maximum bulb wattage is determined by the efficiency of the transformer in the low-voltage lighting system. Transformer efficiencies will vary from different manufacturers; consider 90% efficient as average. Use the chart to determine maximum bulb wattage for typical transformer efficiency ratings.

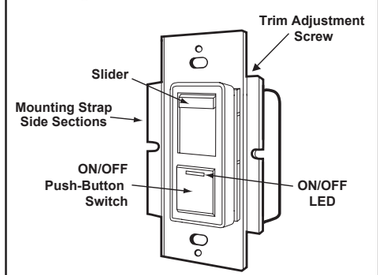
MAXIMUM BULB WATTAGE AT 90% EFFICIENCY			
Rating	**Single**	**Two Gang**	**More than 2 Gang**
400VA	360W	315W	225W

TO INSTALL:

1. **WARNING:** TO AVOID FIRE, SHOCK, OR DEATH; TURN OFF POWER AT CIRCUIT BREAKER OR FUSE AND TEST THAT POWER IS OFF BEFORE WIRING!
2. Remove existing wallplate and switch, if applicable.
3. Remove 3/4" (1.9 cm) of insulation from each circuit conductor. Make sure the ends of wires are straight.
4. Connect wires per appropriate WIRING DIAGRAM as follows: **WARNING: CONNECT AN ELECTRONIC LOW-VOLTAGE DIMMER ONLY TO THE PRIMARY (HIGH-VOLTAGE) SIDE OF AN ELECTRONIC LOW-VOLTAGE TRANSFORMER. NOTE: Common terminal of 3-Way Switch is usually labeled and/or BLACK.** Twist dimmer leads together with circuit conductors and push firmly into appropriate wire connector. Screw connectors on clockwise making sure no bare wires show below the wire connectors. Secure each connector with electrical tape.

   NOTE: For single pole applications, cap one BLACK lead with an appropriate size wire connector. Secure connector with electrical tape.

Figure 1 - Dimmer Functions



NOTE: This model incorporates a trim adjustment which will allow the installer to precisely set the low end of the dimming range to suit each installation. This adjustment is preset at the factory and should require no further adjustments for most installations. If adjustment is required proceed as follows, otherwise continue with step 8:

5. Restore power at circuit breaker or fuse. Press the ON/OFF push-button switch several times **(see Figure 1)**. The GREEN LED will turn ON and OFF indicating power to the switch. Position the slider to the minimum brightness level (bottom of stroke).
6. The brightness adjustment is located at the top of the dimmer back cover **(see Figure 1)**. Using a small, insulated screwdriver, rotate the trim adjustment until the desired level of minimum brightness is obtained.
7. Check for proper operation by raising the slider to it's maximum position and returning to minimum (bottom of stroke). If operation is not satisfactory, repeat step 6. When the brightness level is adjusted to satisfaction, **TURN OFF POWER**.
8. Installation may now be completed by carefully positioning all wires to provide room in outlet box for dimmer. Mount dimmer into box with mounting screws supplied. Attach wallplate.
9. Restore power at circuit breaker or fuse. **INSTALLATION IS COMPLETE.**

COLOR CONVERSION PROCEDURE

The color of this device can be changed to suit your interior design requirements. Simply obtain a color conversion kit of the appropriate color from your Lithonia distributor and proceed as follows (please note that wallplate must be removed).

1. Select the color of the face you desire.
2. The frame has snaps on its sides. Using your fingers, grip around the frame and push on one side to release it from the strap **(see Figure 2)**.
3. Take the new frame and position it properly to the strap. Line up the plastic snaps with the square holes in the strap. Insert the snaps on one side of the frame into the strap.
4. Firmly press sideways and down to slip the other snaps into place. The frame snaps in with a audible click. Ensure that all four snaps are secure.
5. Moving the slider up or down will automatically engage the slider control mechanism. Replace wallplate. **The color conversion is complete.**

TO OPERATE

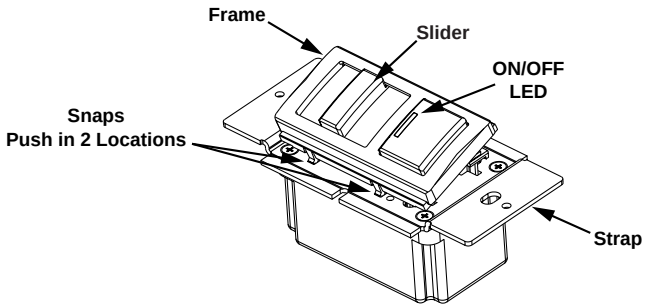
- GREEN LED will remain ON when the lights are OFF - Facilitates access to switch in the dark.
- Depress push-button switch to ON position - Lights will turn ON (GREEN LED will turn OFF).
- Move slider - Lights will brighten or dim to level set.
- Depress push-button switch to OFF position - Lights will turn OFF (GREEN LED will turn ON).
- Lights will turn ON at set brightness level (from either switch location in a 3-way installation).

TROUBLESHOOTING

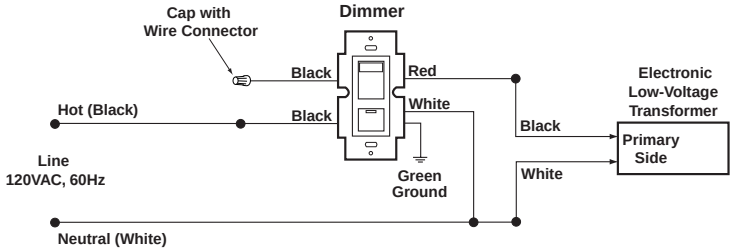
- Light does not turn ON and ON/OFF LED does not turn ON
  - Circuit breaker or fuse has tripped.
  - Lamp is burned out.
  - Lamp is not connected to line Neutral.
- Lights Flickering
  - Lamp has a bad connection.
  - Wires not secured firmly with wire connectors.

DI-40X-IPE04-00A

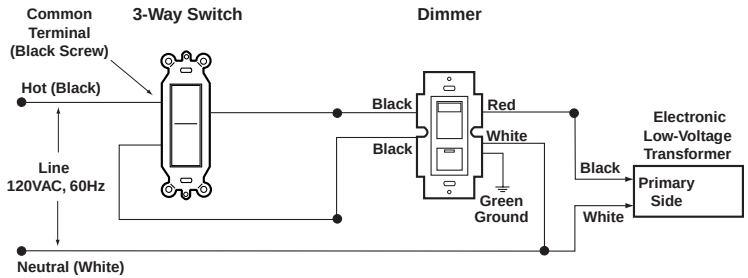
Figure 2 - Color Conversion



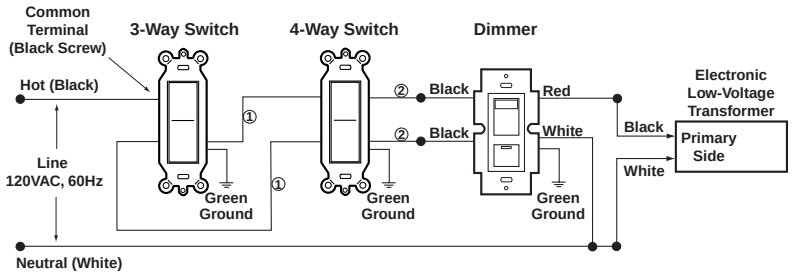
Wiring Diagram 1 - Single Location Control Application



Wiring Diagram 2 - Two Location Control Application



Wiring Diagram 3 - Three Location Control Application



Installation Instructions

RRU SPDT 120 and RRU SPDT 277

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

RRU SPDT 120 and RRU SPDT 277

Before You Start

1. Refer to project specifications, and the wiring diagrams on the second page of this sheet.
2. Always disconnect all power.
3. Install in accordance with National Electrical Code and any other codes which may apply.
4. Use only as intended.
5. Use only accessories recommended by Synergy Lighting Controls.

Installation

1. MOUNTING
   Mount the RRU in the designated fixture to be controlled. If sufficient space is not available in the fixture the RRU may be mounted in an enclosure connected to the designated fixture.
2. WIRING CONNECTIONS
   Make electrical connections as indicated in figures 2-5 which are appropriate for your application.
3. TESTING
   A) Cycle the power connected to the voltage sensing circuit to verify proper operation.
   B) Instruct owner on how to perform testing procedure. Test monthly.

Overview

The RRU is a relay output, voltage sensing unit designed to automatically energize fixtures on loss of sensing voltage. This is not a transfer device, it should be used in conjunction with an always energized feed from a transferred power source. Ordinarily the unit mounts in the designated fixture, and controls only a single fixture.

Ratings

Sensed Voltage Input:

RRU SPDT 120	5VA at 120 VAC
RRU SPDT 277	5VA at 277 VAC

Relay Contacts:

Normally Opened Contacts
16 Amps Ballast at 120/277
5 Amps Tungsten at 120
5 Amps Electronic ballast at 120/277

Normally Closed Contacts
8 Amps Ballasts at 120/277
5 Amps Tungsten at 120
5 Amps Electronic ballast at 120/277

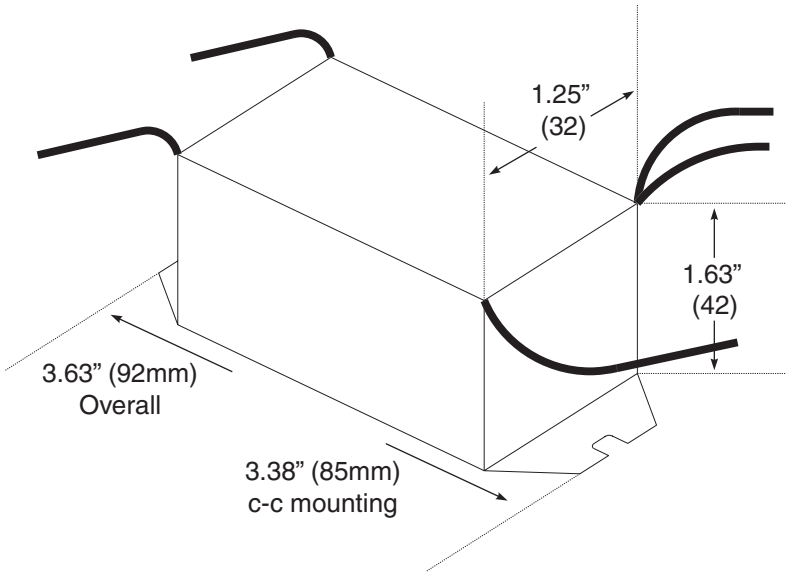


Figure 1 - Dimensions and Mounting

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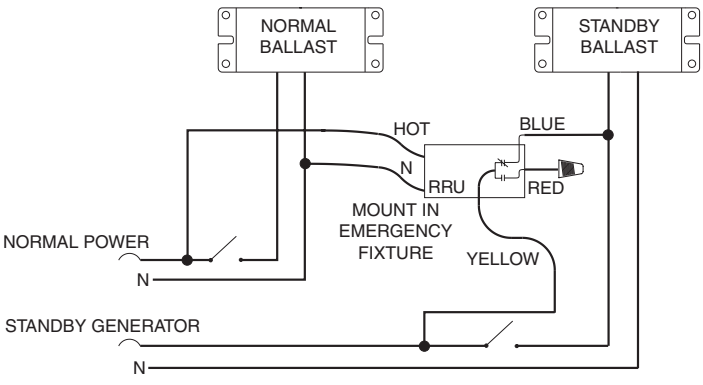

Figure 2 - Dual Switch Single Location Applications

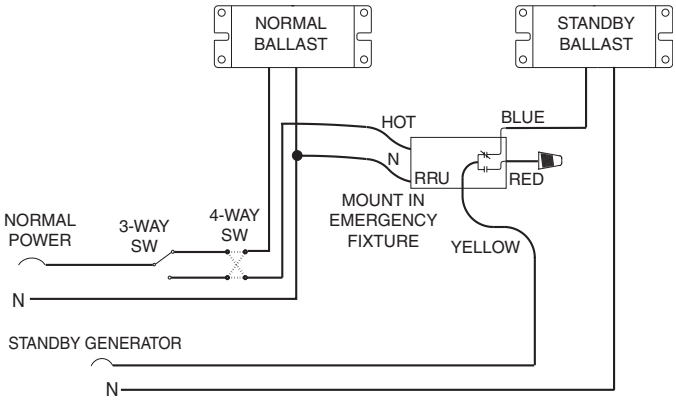

Figure 4 - Single Switch Multi-location Applications

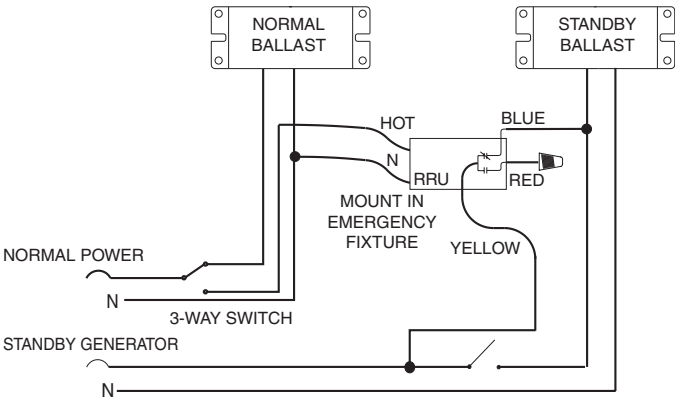

Figure 3 - Single Switch Single Location Applications

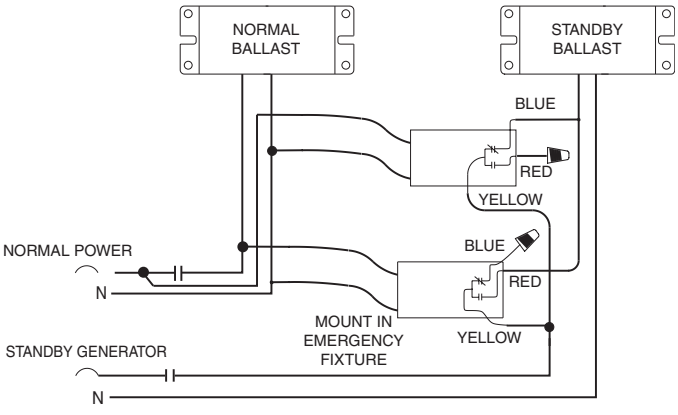

Figure 5 - Dual Single Pole Relay or Switch Application

Programming Manuals

Synergy Operation Manual . . . 142-228

Synergy Configuration Software Users Guide . . . 229-261

Switch PAK Operation and Maintenance Guide . . . 262-283

SYGS Operations Manual . . . 284-319

SYSTEM
OPERATION AND MAINTENANCE
V 2.67

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How to use this manual

This manual is organized into three parts, plus an appendix and a glossary.

- **Part I: Your Introduction to Synergy**
- **Part II: Keypad Basics**
- **Part III: Keypad Programming**
- **Appendix: Advanced Application Information**
- **Glossary**

Part 1: Your Introduciton to Synergy

About the system

The Synergy System performs a wide variety of important lighting control functions, from de-energizing lighting during unoccupied periods to energizing outside lighting during the evening for safety and convenience. Synergy is a fully capable control system which operates by recognizing events and acting on outputs. Events occur when the controller recognizes external actions, such as a user operating a wall switch connected to an input, or when photosensors measure fluctuating light levels. Events may also occur when the controller recognizes a specific time-of-day, or when internal timers reach predetermined levels. After events are recognized, the controller acts on the lighting by changing the state or level of an output. Events are linked to groups of outputs when the controller is programmed through the keypad, or with an optional PC based software package available from Synergy.

System Installation

The key to a successful operation is a careful and well-documented system installation. Begin by following the installation instructions that are furnished with each item, then record input and output descriptions on blank schedules included with this manual and each enclosure. Referring to this information will reduce programming time and errors. Some projects may have been supplied with factory documentation. If factory documentation was furnished, record any changes for future reference. It is very easy to link an input to an output, allowing an action to take place when an event occurs. However, if the installation is poorly documented, the task of programming can be frustrating and tedious. The factory is available for technical support between the hours of 8:00 AM and 5:00 PM, EST at 800-533-2719. Please complete schedules on pages 12-16 prior to contacting factory for programming assistance.

What makes up a working Synergy System?

First is the enclosure, a metal box surrounding the system electronics. The enclosure is shipped from the factory with a transformer to reduce the high voltage incoming power, and a power supply that converts the incoming AC power to the DC power required to run the electronic assemblies. Second is the controller. The controller connects to this power supply, and contains a computer to recognize events and act on the outputs in logical ways. A keypad for programming and manually changing output states is also furnished. The controller assembly also contains connectors to allow the connection of a PC. A PC can be temporarily connected to program the controller using optional Windows® based configuration software. Third are the power modules which are mounted above the controller assembly in the enclosure. The power modules contain inputs to receive information from the building and outputs to control lighting loads.

How are inputs and outputs identified?

The controller uses a “Hotel” numbering system to identify each module’s inputs and outputs. Similar to a multi-story hotel where the room numbers are identified first by the floor and then by the room number, the Synergy system’s inputs and outputs are identified first by their module number and secondly by their position number. For example, on relay module number six, the fourth relay output is identified as RELAY 0604. Leading zeros can be skipped if desired when entering relay, group, passwords and input numbers. Relay module number three’s second input *identification number* is SWITCH 0302. The easiest way to understand how these inputs and outputs relate to your building is to complete the schedules on pages 12-16 and cross-reference the *identification number* with a more meaningful label, such as “HALLWAY LIGHTS.” With the optional PC software, these meaningful names can be displayed rather than the “Hotel” number to further simplify programming.

How are outputs controlled?

First, the outputs are collected into groups and assigned a group number. This group is then linked to any number of inputs or schedule event times. Any number of inputs or times can be linked to a single group. For example, a “HALLWAY LIGHTS” group can be created by assigning it a group number, then by entering all of the outputs that are associated with this area of the building. The LOAD SCHEDULEs can be used to make a record of groups associated with a specific relay cabinet. Once created, the group can be easily linked to the various inputs and times that are necessary to control the hallway lights. This group could then change state based on an event that is recognized by the Synergy controller. The change of state might occur when a person turns on a wall switch connected to an input, or when the time is 6:05 AM on a Wednesday, or when a photocell senses a predetermined light level. To correctly respond to the needs of the building, the Synergy controller must be programmed to link the correct events to the desired group of outputs.

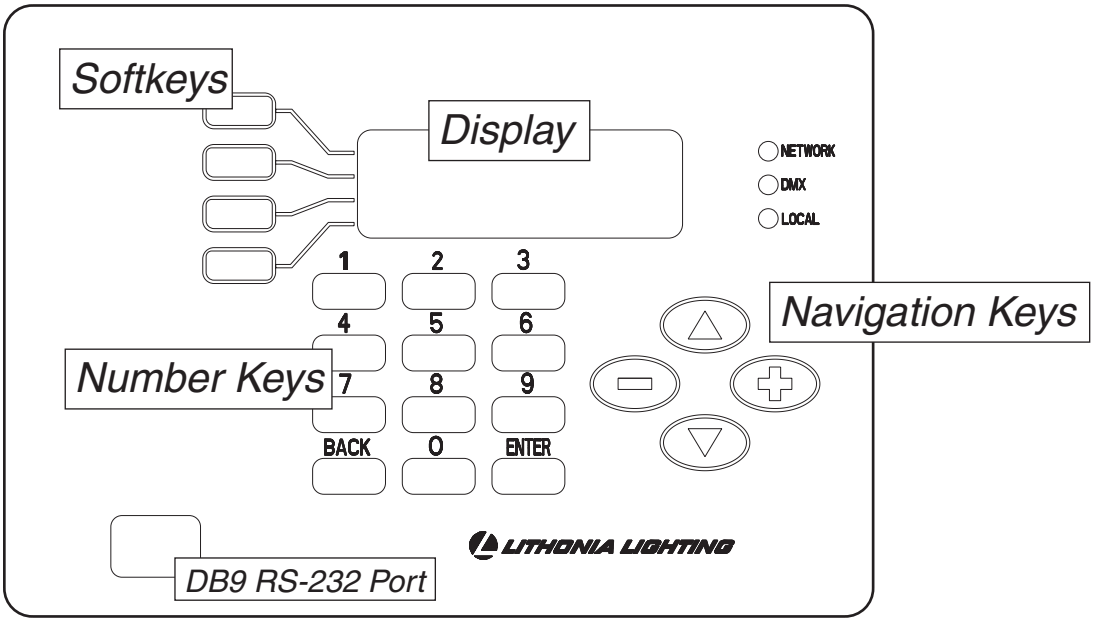
What is the Configuration script?

The configuration script is a text file that is the basis for all of the actions taken by the controller. It is the end result of the information that is programmed into the controller, with the exception of the date and time. The controller reads the configuration script, looking for scheduled event times or actions that need to be taken as the result of an input event. The configuration script is a simple text file that can be uploaded from the controller to a PC.

What initial information is present in the system?

The Synergy controller is shipped from the factory with an initial script based on six relay power modules, having a total of 48 switch inputs, 12 analog inputs, and 48 relay outputs. Initial group information is also present, with each input linked to a single group. This group contains one relay, and this relay’s number is the same as the group number. For example, switch input 101 is linked to group 101, which contains relay 101. Groups containing more than one relay should be recorded on the blank load schedule (pages 12-15). All switch inputs are set up for momentary latching switches. The date, time, daylight savings, time zone, longitude and latitude are factory set to Atlanta, Georgia. A new script can be built which will clear ALL user programming (with the exception of the date and time), and re-initializing the controller based on the modules that have been installed in the cabinet. See page 31 for more information on re-initializing the system.

Part II - Keypad Basics



Display – Made up of four 20-character lines used to show Menu Choices, Data Selection or Data Values.

Softkeys – Keys that dynamically change function based on the words that are shown in the adjacent line of the display. Letters shown above are used in conjunction with Appendix I for quick programming.

Number Keys – Keys to allow current information in Data Selection windows to be edited.

BACK Key – Key to return the display to the previous Menu Choice, or to cancel a value being edited, and returns the current value to the display.

ENTER Key – Key required to store the value being edited.

Navigation Keys – Keys that are used to move within large groups of Data Selection Windows, or used to move the cursor when information is being edited. The up and down arrows act as page up and page down. The - and + keys display available text choices for non-numeric Data Selections.

DB9 Port – Connector that allows attachment of a serial data device such as a PC through use of a SYA CABLE null modem cable.

Keypad operation

The softkey adjacent to a Menu Choice Window is pressed to branch out the selections and reach the desired Data Selections. For a complete menu diagram, see Appendix I. When the desired Data Selection window is displayed, press the adjacent softkey. A prompting cursor will then appear to the right of the equal sign requesting new numeric or text information. To cancel the request and restore the present values, press the BACK key. Once the desired information is displayed **and the ENTER key is pressed**, the new values are permanently stored.

Data Selection windows that prompt for numeric information.

After pressing the softkey in certain Data Selection windows, a prompt for numeric information will appear. Examples of prompts which appear requesting information from the number keys are:

- "????" is a request for input, output or group number. To cancel without entering data, press BACK twice.
- "MM/DD/YYYY" is a request for numeric information for Months, Day, and a four digit Year.
- "hh: mm: ss: t" is a request for hours, minutes, seconds, and tenths of seconds.
- "ddd: mm" is a request for numeric information for degrees and minutes of longitude and latitude.

When the number keys are used to add new information followed by a press of the ENTER key, the displayed information will be stored. If the BACK key is pressed prior to the ENTER key, then the previously stored numeric values will remain unchanged.

Data Selection windows that prompt for text information.

After pressing the softkey, in other Data Selection windows, a prompt for text information will appear. For example, TYPE = MAINTAINED* indicates that a particular input is programmed for proper operation when used with a remote mounted maintained switch. Note that the currently stored text information is displayed with an asterisk (*) at the end of the word. After pressing the appropriate softkey, additional choices of text (if there are more than 2) can be displayed by pressing the - or + keys. This alternates the display between the preprogrammed choices. If the ENTER key is pressed, the displayed text selection will be stored, and immediately identified by an asterisk. If the BACK key is pressed, prior to the ENTER key, then the previously stored text information will remain unchanged.

Note: Some menus, such as START...SETTING UP...ENVIRONMENT...TIME DATE FORMAT and DAYLT SAVE don't use +, -, ENTER or BACK. You must press the softkeys to toggle values.

What functions can you perform with the keypad and display?

With the keypad and display you can accomplish the following five basic functions:

1. OVERRIDING… This allows you to change the current state of relays, and adjust the levels of dimmers. This is a great way to get started with the system; it will build skills and confidence with the keypad operation without having to worry about storing any data values.
2. SETTING UP... This allows you to configure top-level system information such as date and time. Also included is the capability to re-initialize the system to factory default information, clearing ALL user-entered information.
3. PROGRAMMING...This is used to create and edit the information used by the controller in relation to the events and actions that will take place in the system.
4. SEARCHING... This is used to display current status of inputs or outputs as well as including a "FLASH TO FIND" feature that is useful in determining which lighting load is attached to a particular relay.
5. DISPLAY... This displays and provides the capability to print the programming script, past events and relay data.

Where do I begin?

1. Review the Simple system example programming on pages 10 and 11 of this manual.
2. Document the system by completing the schedules on pages 12-16 for each of the controllers on the system.
3. Review page 6-7 of this manual for tips about reading and using this manual.
4. If any of your controllers have dimmer modules, breaker modules, ballast modules, or have more than 6 relay modules, build a new script. See page 28 for information on building a new script.

5. For NETWORKED systems: Set-up each controller with unique addresses, as explained on page 20-23, if these controllers are being installed as a networked system . If you will be programming the system with the optional PC configuration software, skip steps 6-9 below.

6. For STAND-ALONE systems: Set-up the date, time, longitude and latitude per page 19.
7. Program the groups that were documented in step 2 above by following the instructions on pages 32-34.
8. Program the inputs from switches, analogs, buttons, DMX and phones by entering the required information detailed on pages 35-42.
9. Program the events for the time-of-day functions following the steps on pages 44 through 47.
10. Review your programming and test all of your inputs for proper functionality. If you have specific questions after reviewing the manual and completing your schedules in step 2 above, you may contact Synergy Lighting Controls Technical Service department at 800-533-2719.

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Part III - Programming with the Keypad

The next five sections of this manual cover the five MAIN MENU functions of the controller: OVERRIDING... PROGRAMMING... SETTING UP... SEARCHING... DISPLAY... A typical display screen is shown and described below:

Press the softkeys associated with the instructions here to branch out to Data Selection

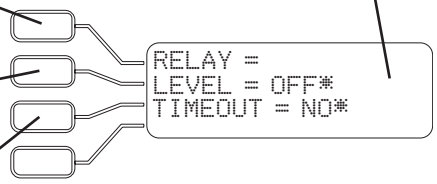
The LCD Display text shown here should be displayed after pressing the softkey sequence shown on the page header.

START... OVERRIDING... RELAYS

Pressing the softkeys in this order will enable you to override lighting circuits to ON, OFF, or any level in between. Entering a TIMEOUT value will reverse an ON action after the time period has expired.

Explanations here describe basic programming functions and key presses used in programming this softkey function.

1. Press the – or + keys to cycle through the relay list, or press the RELAY softkey, then enter a relay output number to go directly to that relay. See note ❶
2. Press the LEVEL softkey, then – or + to cycle, or use the number keys to enter a specific level. Press the ENTER key to confirm or the BACK key to cancel. See note ❷
3. If desired, press the TIMEOUT softkey, and use the number keys to enter a time in hours and minutes. After this time expires the relay overridden to ON will turn OFF. See note ❸



Quick Tips explain additional details or give added information

QUICK TIPS

TIP *Relays not added to the controller's hardware configuration can not be overridden.*

TIP *Relays include outputs from relay modules, ballast modules, and breaker modules.*

Notes:

Notes keyed to the text with numbers provide further details about programming or advanced operating functions.

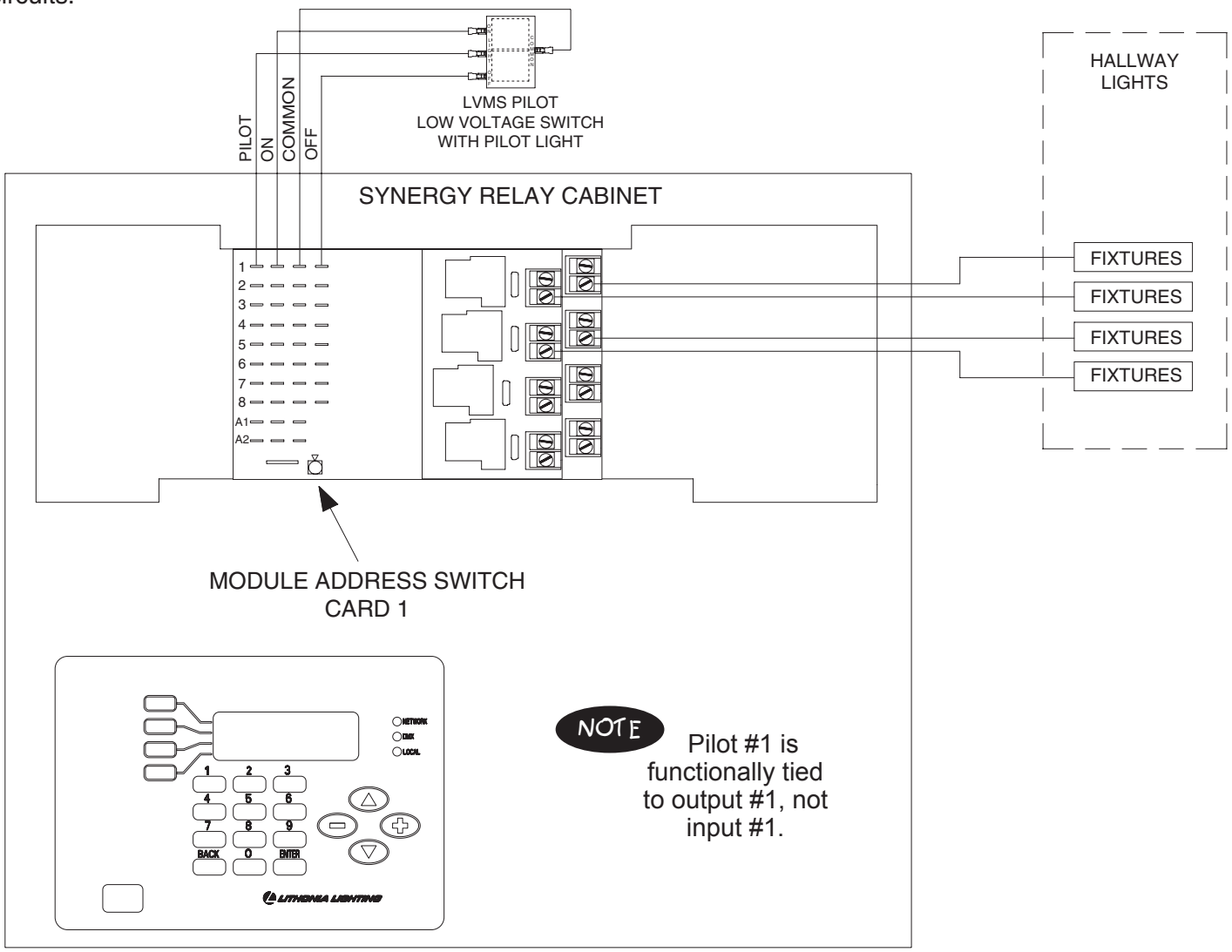
❶ DIMMERS, LEGACY-DIMMERS, SIMPLY5, GROUPS and PARTITIONS can be overridden in the same manner as relays. GROUP 0000 is factory default, and is programmed to contain all relays and dimmers. Partitions are outputs which correspond to moveable walls as are often found in multi-section ballrooms.

❷ A numeric level above the relay low set (see page 48) will cause the relay to turn ON, a level equal or below the low set will cause the relay to turn OFF.
A numeric level above the relay low set (see page 48) will cause the relay to turn ON, a level equal or below the low set will cause the relay to turn OFF.

❸ Please note that these actions could cause lights to turn OFF, and could leave occupants in the dark.

Basic System - Programing Example

The following example will lead you through four steps that will help you understand Synergy programming. In the diagram shown below, four circuits powering hallway lighting are wired through the first four relays on power module 1, relays 101, 102, 103 & 104. The switch that is to control these circuits is wired to switch input 101, which is the first switch input on the same module. A time schedule will also be created to control these circuits.



STEP 1 - Group the "HALLWAY LIGHTS" relays:

Outputs 101, 102, 103 and 104 for the "HALLWAY LIGHTS" are added to Group #1. (See page 32 of this manual for group programming information)

STEP 2 - Control the "HALLWAY LIGHTS" through switches:

Group #1 is linked to Input 101 to allow for control. (See page 36 for switch input programming information) At this point, the switch shown in the diagram now has control of the "HALLWAY LIGHTS" group.

STEP 3 - Control the "HALLWAY LIGHTS" through a time schedule:

Synergy is capable of seven day scheduling operation, plus special holiday date operation. Set Monday through Friday to Schedule # 1, Saturday and Sunday to Schedule # 2, and Holidays to Schedule #8 for this example, following the instructions on pages 46-47.

STEP 4 - Add time schedule events:

Add an event in Schedule 1 to turn Group #1 On at 7:30 A.M., Off at 8:15 P.M. (20:15 military time), Off again at 10:15 P.M. (22:15 military time), following the instructions on pages 44-45.

At this point, you have set up both manual overrides and time-of-day operation. You are well on your way to completing the programming which will automate your facility's lighting loads! Complete a LOAD SCHEDULE and time schedule for each cabinet per the example below to simplify and document your programming.

Sample relay cabinet, switch, and event schedules for the programming examples above:

LOAD SCHEDULE ENTRY (Blank schedule available on Pages 12-16)

MODULE ADDRESS & TYPE	RELAY NUMBER	CIRCUIT DESCRIPTION	CIRCUIT PANEL I.D.	FEED CIRCUIT #	LOAD (W)	PHASE (A,B,C)	CUSTOMER ASSIGNED CONTROL GROUP NUMBER(S)	DEFAULT GROUP NUMBERS	
1 SYPM 8R	0101	*Center Hallway*	*1HA*	*1*	*1500*	*A*	*1*	0101	0117
	0102	*Center Hallway*	*1HA*	*3*	*1500*	*B*	*1*	0102	
	0103	*West Hallway*	*1HA*	*5*	*1340*	*C*	*1*	0103	
	0104	*North Hall*	*1HA*	*7*	*1200*	*A*	*1*	0104	
	0104	*Lobby*	*1HA*	*9*	*1500*	*B*	*2*	0104	
	0106	*Lobby*	*1HA*	*11*	*1500*	*C*	*2*	0106	
	0107	*Open Office*	*1HA*	*13*	*1275*	*A*	*3*	0107	
	0108	*Open Office*	*1HA*	*15*	*1275*	*B*	*3*	0108	

MODULE		INPUT NUMBER	INPUT NAME / LOCATION	INPUT TYPE	GROUP NUMBER	TIMEOUT	WARN	PRIORITY	LOW SET	HIGH SET
A		0101	*Center Hallway*	*Latching*	*1*	*No*	*10*	*Normal*		
D		0102								

DAILY ASSIGNMENT SCHEDULE
(Page 16)

MONDAY	1
TUESDAY	1
WEDNESDAY	1
THURSDAY	1
FRIDAY	1
SATURDAY	2
SUNDAY	2
HOLIDAY	8

EVENT SCHEDULE
(Page 16)

SCHEDULE#	1
EVENT TIME:	7:30
LEVEL-WARN:	On
GROUP:	1
EVENT TIME:	20:15
LEVEL-WARN:	Off
GROUP:	1
EVENT TIME:	22:15
LEVEL-WARN:	Off
GROUP:	1

SYNERGY™

RELAY CABINET
LOAD WIRING SCHEDULE

SYNERGY CABINET I.D.: _____
CABINET LOCATION: _____
BACNET ADDRESS: _____
ARCNET ADDRESS: _____

CONTROL CIRCUIT NUMBER: _____
CONTROL CIRCUIT PHASE: _____

MODULE ADDRESS & TYPE	RELAY NUMBER	CIRCUIT DESCRIPTION	CIRCUIT PANEL I.D.	FEED CIRCUIT #	LOAD (W)	PHASE (A,B,C)	CUSTOMER ASSIGNED CONTROL GROUP NUMBER(S)	DEFAULT GROUP NUMBERS	
1 SYPM 8R	0101							0101	0117
	0102							0102	
	0103							0103	
	0104							0104	
	0104							0104	
	0106							0106	
	0107							0107	
	0108							0108	
2 SYPM 8R	0201							0201	0217
	0202							0202	
	0203							0203	
	0204							0204	
	0205							0205	
	0206							0206	
	0207							0207	
	0208							0208	
3 SYPM 8R	0301							0301	0317
	0302							0302	
	0303							0303	
	0304							0304	
	0305							0305	
	0306							0306	
	0307							0307	
	0308							0308	
4 SYPM 8R	0401							0401	0417
	0402							0402	
	0403							0403	
	0404							0404	
	0405							0405	
	0406							0406	
	0407							0407	
	0408							0408	
5 SYPM 8R	0501							0501	0517
	0502							0502	
	0503							0503	
	0504							0504	
	0505							0505	
	0506							0506	
	0507							0507	
	0508							0508	
6 SYPM 8R	0601							0601	0617
	0602							0602	
	0603							0603	
	0604							0604	
	0605							0605	
	0606							0606	
	0607							0607	
	0608							0608	

DIMMER CABINET
LOAD WIRING SCHEDULE

SYNERGY CABINET I.D.: _____

CABINET LOCATION: _____

FEED VOLTAGE / TYPE: _____

BACNET ADDRESS: _____

CONTROL CIRCUIT # / PHASE: _____

ARCNET ADDRESS: _____

MODULE ADDRESS & TYPE	DIMMER NUMBER	CIRCUIT DESCRIPTION	LOAD TYPE	LOAD (W)	PHASE (A,B,C)	LOAD CIRCUIT # (from plans)	CUSTOMER ASSIGNED CONTROL GROUP NUMBER(S)	DEFAULT GROUP NUMBERS	
1 SYPMB 6DB1	0101							0117	0101
	0102								
	0103							0118	
	0104								0102
	0105							0119	
	0106								
1 SYPMB 6DB1	0201							0217	0201
	0202								
	0203							0218	
	0204								0202
	0205							0219	
	0206								
1 SYPMB 6DB1	0301							0317	0301
	0302								
	0303							0318	
	0304								0302
	0305							0319	
	0306								
1 SYPMB 6DB1	0401							0417	0401
	0402								
	0403							0418	
	0404								0402
	0405							0419	
	0406								
1 SYPMB 6DB1	0501							0517	0501
	0502								
	0503							0518	
	0504								0502
	0505							0519	
	0506								

PHASE A TOTAL LOAD: 0

PHASE B TOTAL LOAD: 0

PHASE C TOTAL LOAD: 0

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SYNERGY CABINET I.D.: _____
CABINET LOCATION: _____
BACNET ADDRESS: _____
ARCNET ADDRESS: _____

RELAY CABINET LOW VOLTAGE INPUT SCHEDULE

MODULE		INPUT NUMBER	INPUT NAME / LOCATION	INPUT TYPE	GROUP NUMBER	TIMEOUT	WARN	PRIORITY	LOW SET	HIGH SET
ADDRESS 1	SWITCH INPUTS	0101								
		0102								
		0103								
		0104								
		0105								
		0106								
		0107								
		0108								
	ANALOG INPUTS	0101								
		0102								
ADDRESS 2	SWITCH INPUTS	0201								
		0202								
		0203								
		0204								
		0205								
		0206								
		0207								
		0208								
	ANALOG INPUTS	0201								
		0202								
ADDRESS 3	SWITCH INPUTS	0301								
		0302								
		0303								
		0304								
		0305								
		0306								
		0307								
		0308								
	ANALOG INPUTS	0301								
		0302								
ADDRESS 4	SWITCH INPUTS	0401								
		0402								
		0403								
		0404								
		0405								
		0406								
		0407								
		0408								
	ANALOG INPUTS	0401								
		0402								
ADDRESS 5	SWITCH INPUTS	0501								
		0502								
		0503								
		0504								
		0505								
		0506								
		0507								
		0508								
	ANALOG INPUTS	0501								
		0502								
ADDRESS 6	SWITCH INPUTS	0601								
		0602								
		0603								
		0604								
		0605								
		0606								
		0607								
		0608								
	ANALOG INPUTS	0601								
		0602								

DAILY AND HOLIDAY ASSIGNMENT SCHEDULE

DAY OF WEEK		DATE	SCH#	DATE	SCH#
MONDAY		***01/01/09***	**1**	***10/01/09***	**2**
TUESDAY		/ /		/ /	
WEDNESDAY		/ /		/ /	
THURSDAY		/ /		/ /	
FRIDAY		/ /		/ /	
SATURDAY		/ /		/ /	
SUNDAY		/ /		/ /	
HOLIDAY		/ /		/ /	

SCHEDULE#						
EVENT TIME:						
LEVEL-WARN:						
GROUP:						
EVENT TIME:						
LEVEL-WARN:						
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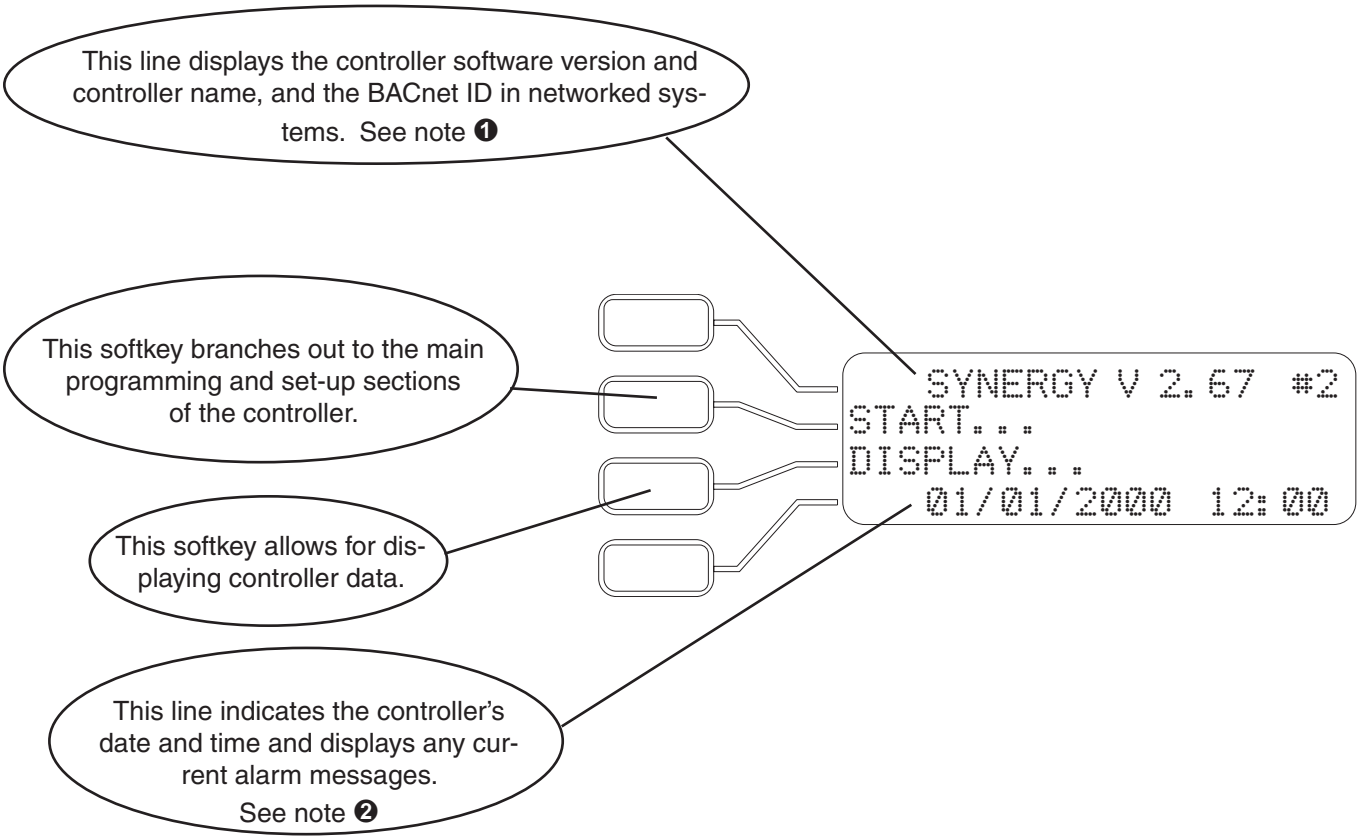
MAIN MENU DISPLAY



QUICK TIPS

TIP *After a lack of keypad activity, the controller display will return to the main menu.*

Notes:

1. The default display is the controller name. Pressing the corresponding softkey will toggle between the controller name and the software version number. Optionally shows the BACnet ID next to the controller name on networked systems.

2. Press this softkey when the date is displayed to change the date and time. Note that this procedure is an alternate method to pressing START,,, SETTING UP.... ENVIRONMENT... TIME procedure shown on page 19. Pressing this softkey while an alarm is displayed toggles the alarm beep to silence.
Note: After doing this, you must press BACK 4 times to get back to the main menu.

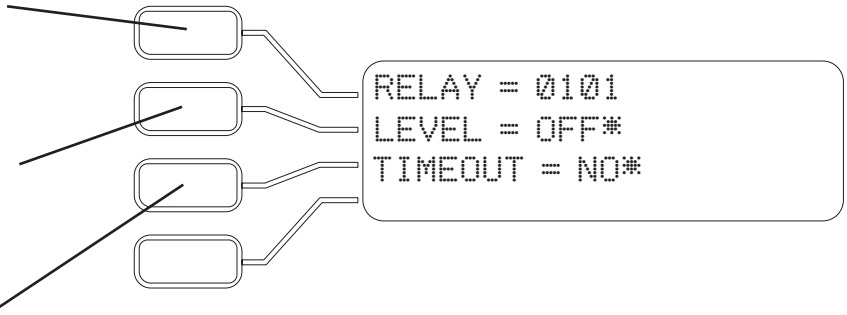
START... OVERRIDING... RELAYS

Pressing the softkeys in this order will enable you to override lighting circuits to ON, OFF or any level in between. Entering a TIMEOUT value will reverse an ON action after the time period has expired.

1. Press the – or + keys to cycle through the relay list, or press the RELAY softkey, then enter a relay output number to go directly to that relay. See notes ❶ , ❹ and the quick tips.

2. Press the LEVEL softkey, then – or + to cycle, or use the number keys to enter a specific level. Press the ENTER key to confirm or the BACK key to cancel. See note ❷.

3. If desired, press the TIMEOUT softkey, and use the number keys to enter a time in hours and minutes. After this time expires the relay overridden ON will turn OFF. See notes ❸ and ❺.



QUICK TIPS

TIP *Relays not added to the controller's hardware configuration cannot be overridden.*

TIP *Relays include outputs from relay modules, ballast modules and breaker modules.*

Notes:

❶ DIMMERS, LEGACY-DIMMERS, SIMPLY5 AND PARTITIONS can be overridden in the same manner as relays. GROUP 0000 is factory default, and is programmed to maintain all relays and dimmers. Partitions are outputs which correspond to moveable walls as are often found in multi-section ballrooms.

❷ A numeric level above the relay low set (see page 48) will cause the relay to turn ON, a level equal or below the low set will cause the relay to turn OFF.

❸ Please note that these actions could cause the lights to turn OFF, and could leave the occupants in the dark.

❹ To cancel entry of a relay output number, press BACK or a different softkey.

❺ Key in 00:00 and press ENTER to change the TIMEOUT to NO.

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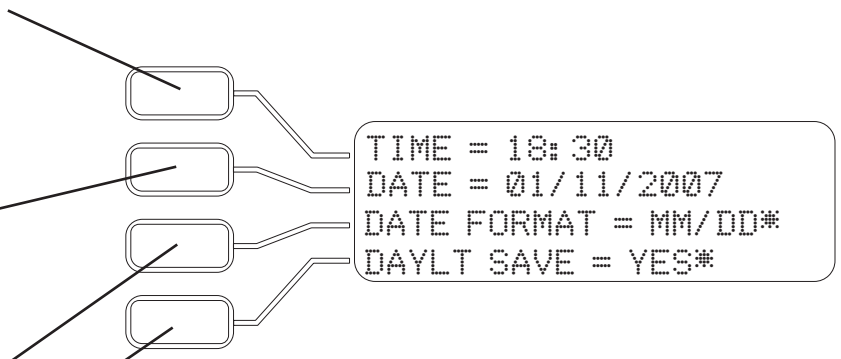
START... SETTING-UP... ENVIRONMENT... TIME...

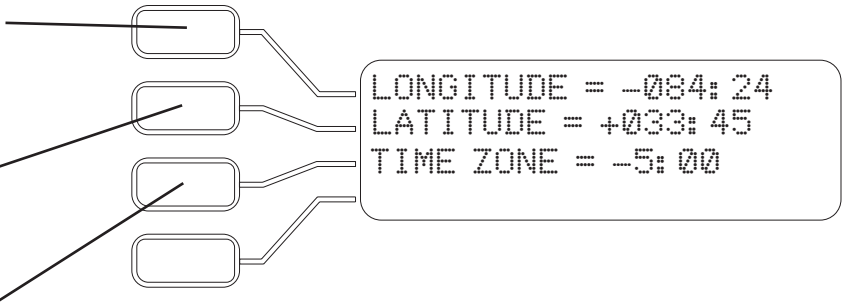
Branching out to the Data Selection windows below sets up important controller information based on it's geographical location. The time and date are necessary for time schedules to operate correctly.

1. Press the TIME softkey and the number keys to enter the current time in military (24 hour) format. For example 6:30 AM would be entered 06:30 while 6:30 PM would be entered 18:30.
2. Press the DATE softkey and the number keys to enter the current date. The date format softkey dictates whether the month (United States) or the day (European) format is listed first.
3. Press the DATE FORMAT softkey to toggle between MM/DD United States date format or DD/MM European date format.
4. Press the DAYLT SAVE softkey to toggle between Yes for daylight savings clock adjustments or No for no daylight savings clock adjustments.



START... SETTING-UP... ENVIRONMENT... LOCATION…

1. Press the LONGITUDE softkey, then enter the longitude degrees and minutes for your geographic location. Use the up key to toggle from – to + longitude. Refer to the table in Appendix II on page for U.S. longitude, latitude and time zone information.
2. Press the LATITUDE softkey. Use the number keys to enter the latitude degrees and minutes for your geographic location.
3. Press the TIME ZONE softkey, then the number keys to enter the time zone offset for this installation. The offset (hh:mm) is either ahead (+) or behind (–)



START... SETTING-UP... ENVIRONMENT... NETWORK…

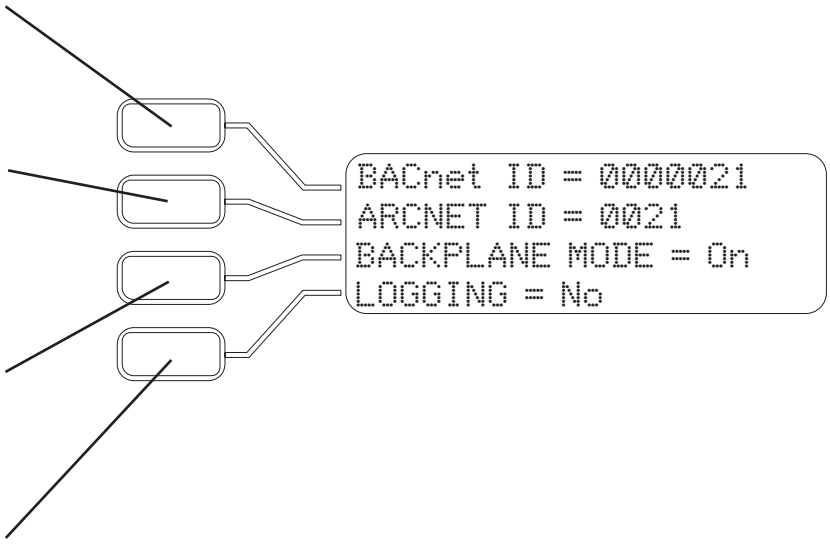
When ARCNET network type is selected: (BACnet ARCNET Interface menu)

1. Press the BACnet ID softkey to edit the network address of this controller. This must be a unique number from 0 to 4194302 for each controller in the system. This is used only for systems using multiple panels on a two-wire network.

2. Press the ARCNET ID softkey to enter a unique address (between 1 and 250) used by the ARCNET network. Usually the same as the BACnet number.

3. Press the BACKPLANE MODE softkey to set the duty cycle used by the ARCNET network. This should be set to ON, but could be set to OFF by your field service technician during startup if warranted.
   WARNING: Pressing this button will force the controller to reboot.

4. Press the LOGGING softkey to enable or disable logging of BACnet network events.



QUICK TIPS

TIP Changing the Backplane mode will force the controller to reboot.

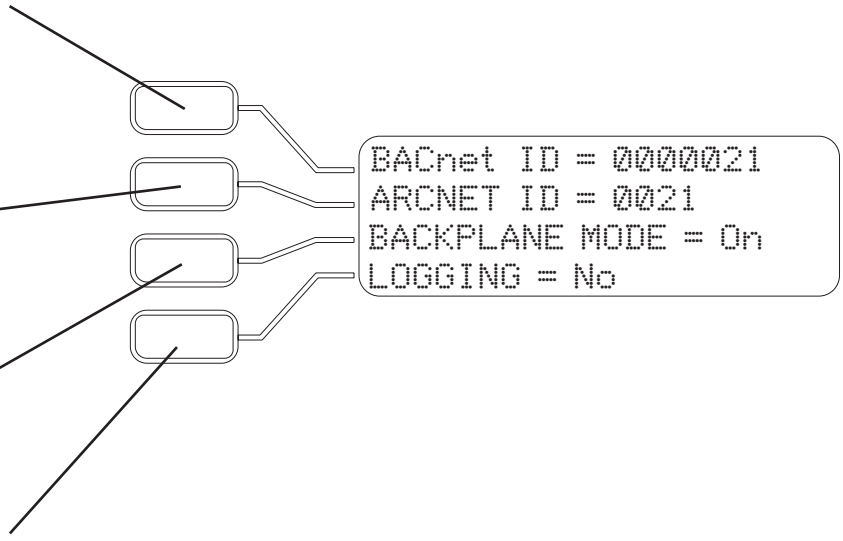
When BACnet/IP network type is selected: (BACnet/IP Interface menu)

1. Press the BACnet ID softkey to edit the network address of this controller. This must be a unique number from 0 to 4194302 for each controller in the system. This is used only for systems using multiple panels on a BACnet/IP Ethernet network.

2. Press the IP ADDRESS softkey to setup the type of Internet Protocol addressing method, and the Internet Protocol address or address range, if necessary.

3. Press the IP PORT softkey to change the BACnet/IP UDP port number. This should normally be set to 47808, but could be set to some other value by your field service technician during startup.

4. Press the LOGGING softkey to enable or disable logging of BACnet network events.



START... SETTING-UP... ENVIRONMENT... NETWORK...IP ADDRESS

Branching out to the Data Selection windows below sets up important controller IP network information that is critical for BACnet/IP network communication.

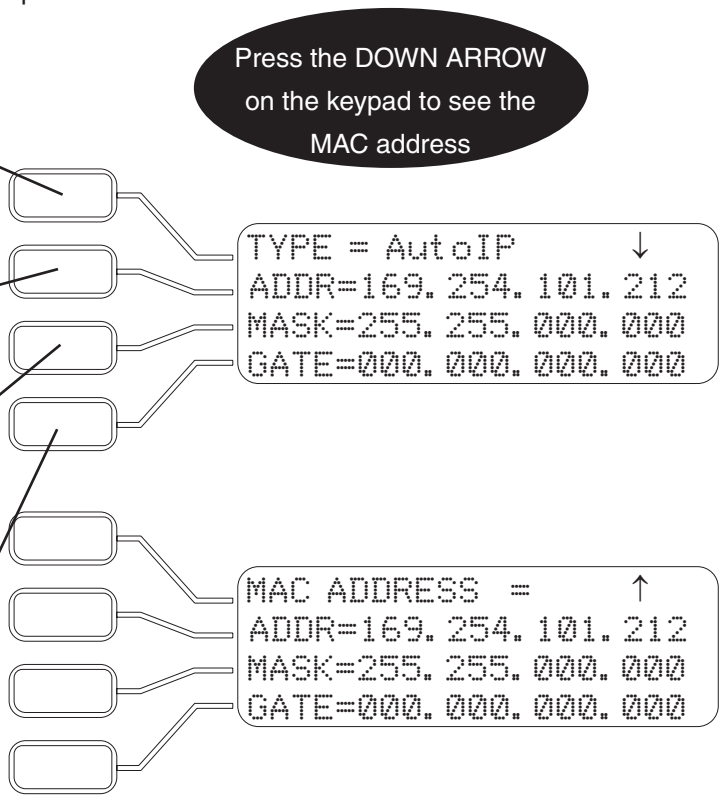
BACnet/IP Interface menu:

1. Press the TYPE softkey to set the type of Internet Protocol addressing method. See note ❶

2. Press the ADDR softkey to change the Internet Protocol address or address range, if permitted. AutoIP and DHCP do not permit this setting to be change. The current Internet Protocol address assigned to the controller is displayed. The value in each field (octet) must be 0 to 255.

3. Press the MASK softkey to change the Internet Protocol Subnet Mask. AutoIP and DHCP do not permit this setting to be change. The current Internet Pro tocol subnet mask assigned to the controller is displayed. The value in each field (octet) must be 0 to 255. See note ❷

4. Press the GATE softkey to change the Internet Protocol Default Gateway address. The value in each field (octet) must be 0 to 255. See note ❸



Notes:

❶ There are four types of addressing methods that the controller can be configured to use.
AutoIP: This is short for "Automatic Private IP Addressing." The controller will automatically assign itself an unused Internet Protocol address in the range of **169.254.0.0 -169.254.255.255,** a range reserved by the Internet Assigned Numbers Authority (IANA). The Subnet MASK is fixed at 255.255.0.0.
Range: The controller will automatically assign itself an unused Internet Protocol address in the range that is specified by setting MIN and MAX ADDR, and MASK.
Static: The controller will assign itself an Internet Protocol address specified by setting ADDR and MASK.
DHCP: DHCP stands for Dynamic Host Configuration Protocol. DHCP is capable of supplying each controller with an Internet Protocol address, subnet mask, default gateway, and an IP address for a DNS server. The DHCP setting requires that a DHCP server be present on the network. The ADDR, MASK, and GATE are assigned by the DHCP server.

❷ MASK: Short for subnet mask, is a bitmask used to tell how many bits in an octet(s) identify the subnetwork, and how many bits provide room for host addresses. *Subnetting* an IP network allows a single large network to be broken down into what appear (logically) to be several smaller ones. The subnet mask is combined with the Internet Protocol address to identify which computer network the controller is on. Typically the values 255 and 0 are used for each octet, where 255 means that the Internet protocol address octet must match exactly, and 0 means that the octet can be any value.

❸ GATE: Short for Default Gateway, is the address of a local Internet Protocol router on the same network as the controller that is used to forward traffic to destinations beyond the local network. Using the default setting of 0.0.0.0 means that traffic is restricted to the local network.

Branching out to the Data Selection windows below sets up important controller MSTP network information that is critical for network communication.

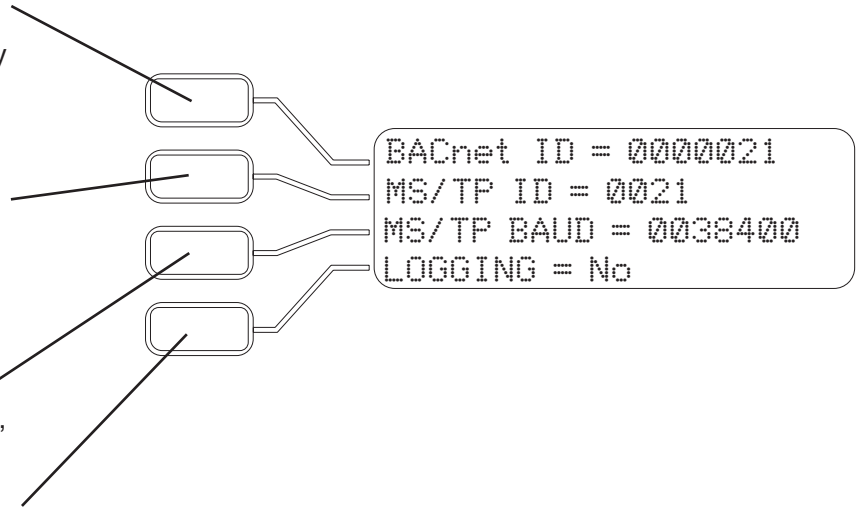
When MSTP network type is selected: (MSTP Interface menu)

1. Press the BACnet ID softkey to edit the network address of this controller. This must be a unique number from 0 to 4194302 for each controller in the system. This is used only for systems using multiple panels on two-wire network.

2. Press the MS/TP ID softkey to enter a unique address (between 0 and 127) used by the MS/TP network. Usually the same as the BACnet number in small networks.

3. Press the MS/TP BAUD softkey to toggle and set the baud rate used by the MS/TP network. The values will toggle between 9600, 19200, 38400, 57600 and 115200.

4. Press the LOGGING softkey to enable or disable logging of BACnet network events.



START... SETTING-UP... ENVIRONMENT... OTHER

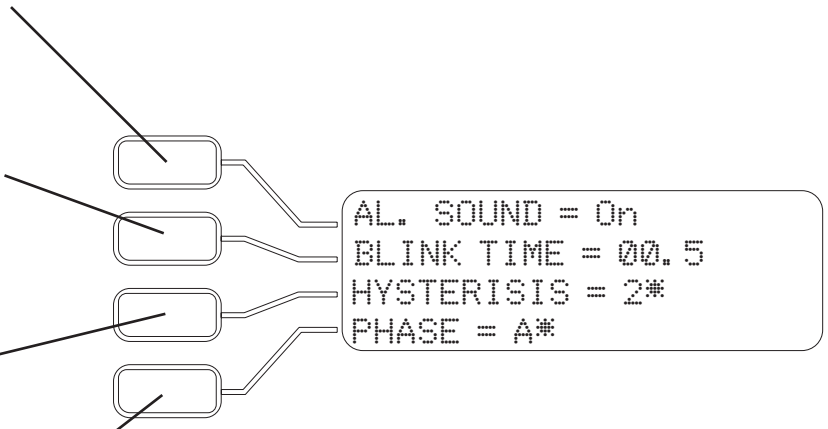
Branching out to the Data Selection windows below sets up important controller parameters.

1. Press the ALARM SOUND softkey to toggle the controller alarm sound on or off. When the sound is on, all alarms will sound until they are corrected.

2. Press the BLINK TIME softkey to set up the duration of the time that the relay will open during the warning of an OFF event. The value listed is in seconds and tenths of seconds.

3. Press the HYSTERESIS softkey then use the number keys to enter a Hysteresis value for analog inputs. This is the full range percentage change required to cause events to occur with a variable type analog input such as a photocell.

4. Press the PHASE softkey to toggle the choices for the electrical phase which is feeding the controller. Press Enter to save. The phase is used to determine timing for available zero cross-switching operation. See note ❶



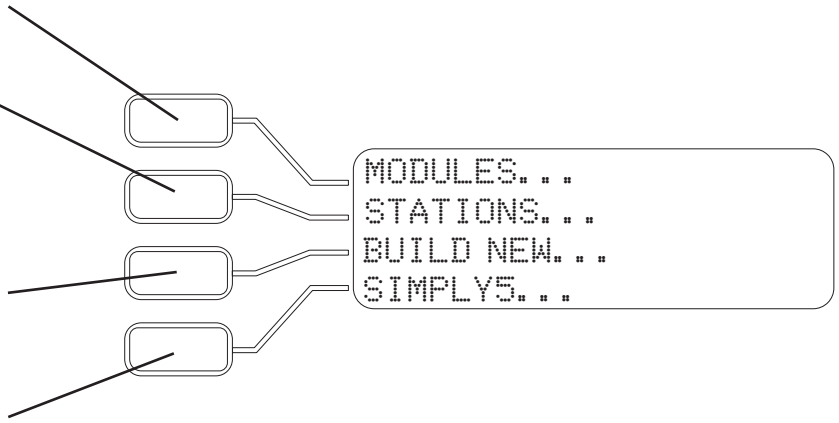
Notes:

❶ To reduce wear and extend the life of relays, enter the electrical phase powering the controller per item 4 above, and program the phase of all relay outputs as indicated in START...PROGRAMMING...OUTPUTS...RELAY on page 48.

START... SETTING-UP... HARDWARE

Branching out to the Data Selection and Menu Choice windows below allow for configuration script file maintenance and creation.

1. Press the MODULES softkey to change the current script by adding or removing modules.
2. Press the STATIONS softkey to add SEQUEL control stations or SYNERGY digital remote stations to the current script.
3. Press the BUILD NEW softkey to build a new script based upon modules that are currently found on the local bus. After pressing the ENTER key the new script will be created, erasing all user programming. See note ❶
4. Press the SIMPLY5 softkey to configure a SIMPLY5 module and the SIMPLY5 ballast addresses. This menu item is only present when a SIMPLY5 module is plugged into the controller.
   See note ❷



Notes:

❶ The controller is shipped with a default configuration script based on six relay modules. If your system has a different configuration, it is recommended that you BUILD NEW before you start programming. The new configuration script will include all inputs and outputs found on the local bus, and will include default programming. The default program groups the outputs as shown in the schedules on pages 11 & 12 and assigns the inputs to those groups so that control of the outputs is possible before the system is completely programmed. **All modules must be addressed properly prior to building a new configuration script, and any modules not yet installed will not be included automatically in the configuration script and will need to be added manually per the instructions on Page 26.** Any and all of the default programming may be deleted, changed, or added to as shown in this manual per the project requirements.

The SIMPLY5 menu item will be displayed ONLY if one or more SIMPLY5 modules are installed.

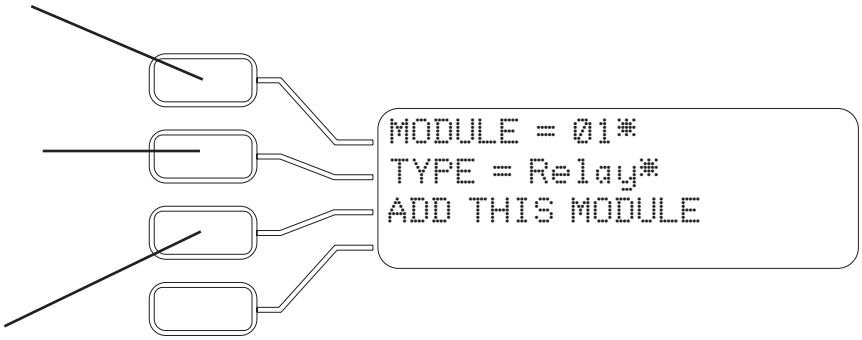
START... SETTING-UP... HARDWARE...MODULES

Branching out to the Data Selection windows below displays information about the modules currently found on the local bus and/or contained in the current configuration script and allows module types to be added, changed or removed from the current script. All modules must be uniquely addressed via the onboard rotary switch before they can be automatically detected by the system in this procedure. Modules can be added to the current script without altering any of the other current script programming.

1. Press the - and + keys to cycle through a list of valid module addresses. A * displayed after the address indicates that a module has been detected on the local bus at this address.

2. Press the TYPE softkey to toggle choices until the desired module is shown then press the ENTER key to add a future power module to the script. A * displayed after the type indicates that this module type is included in the current script. See note ❶ and note ❷

3. Press the ADD MODULE softkey to add a module of the type displayed found on the local bus to the script. UPDATING MODULES appears briefly while the module is being added to the current script.



Notes:

❶ The controller is shipped with a default script based on six relay modules. If your system has a different configuration, it is recommended that you build a new script before you start programming. See page 25 for information on building a new script. **All modules must be addressed properly prior to building a new script, and any modules not yet installed will not be included automatically in the script and will need to be added manually per note ❷ below.**

❷ If future inputs and outputs are planned they can be added by changing the module type for a given address from "NOT FOUND" to the required type by pressing the TYPE softkey.

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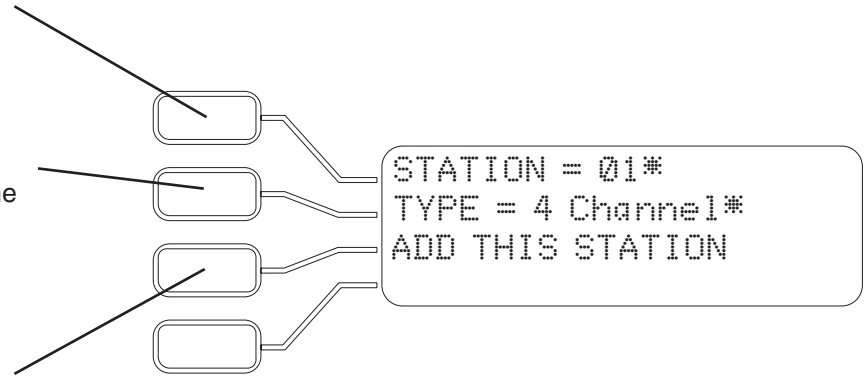
START... SETTING-UP... HARDWARE...STATIONS

Branching out to the Data Selection windows below adds SEQUEL control stations or SYNERGY digital remote stations to the current script.

1. Press the - and + keys to cycle through a list of station addresses. A ✱ displayed after the address indicates that this station has been detected on the control station network.

2. Press the TYPE softkey to toggle choices until desired station hardware is shown then press the ENTER key to add this station to the current script. A ✱ displayed after the type indicates that this station type is included in the current script. See note ❶

3. Press the ADD THIS STATION softkey to add a station of the type displayed to the script. Adding Station appears briefly while this station is being added to the current script.



QUICK TIPS

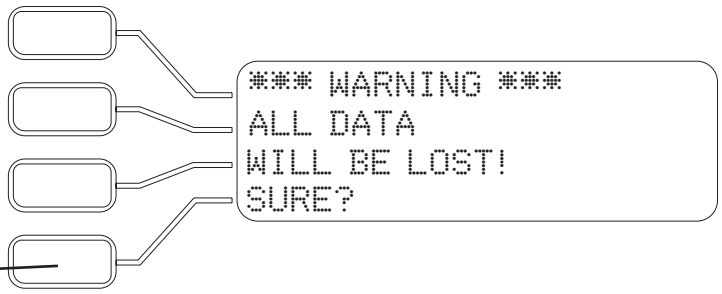
TIP *If future stations are planned but not yet installed they can be added by changing the station type for a given address from* NOT FOUND *to the required type, then added with the* ADD THIS STATION *softkey.*

Notes:

1 All SEQUEL Control Stations and SYNERGY remote stations must be addressed properly at the device prior to being automatically detected. If the stations are not yet installed on the control station network, See the **Quick Tip** above.

START... SETTING-UP... HARDWARE...BUILD NEW

Branching out to the Menu Choice below builds a new configuration script based on the modules that are currently found on the local bus. Build New also erases all user programming. See note ❶



Press the SURE softkey to build a new configuration script.

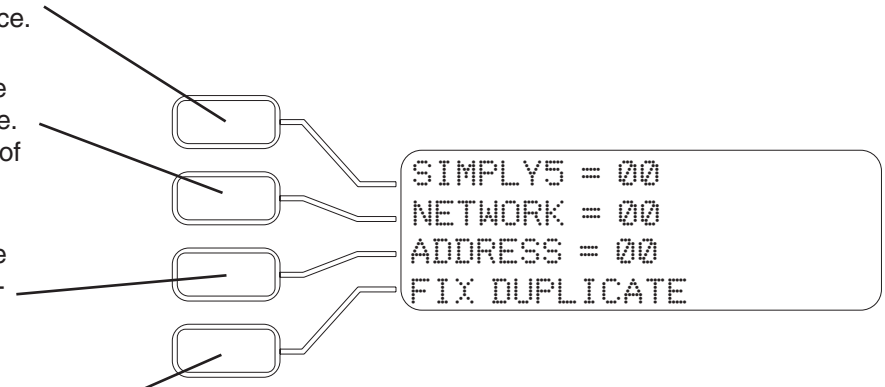
Notes:

1 The controller is shipped with a default configuration script based on six relay modules. If your system has a different configuration, it is recommended that you BUILD NEW before you start programming. The new configuration script will include all inputs and outputs found on the local bus, and will include default programming. The default program groups the outputs as shown in the schedules on pages 11 & 12 and assigns the inputs to those groups so that control of the outputs is possible before the system is completely programmed. **All modules must be addressed properly prior to building a new configuration script, and any modules not yet installed will not be included automatically in the configuration script and will need to be added manually per the instructions on Page 26.** Any and all of the default programming may be deleted, changed, or added to as shown in this manual per the project requirements.

START... SETTING-UP... HARDWARE...SIMPLY5

Branching out to the Data Selection and Menu Choice windows below allows for SIMPLY5 ballast address maintenance. When entering this menu, the SIMPLY5 ballast specified as SIMPLY5 = xx will cycle ON and OFF to indicate maintenance mode.

1. Press the SIMPLY5 softkey to increment the current SIMPLY5 address under maintenance.
2. Press the NETWORK softkey to change the SIMPLY5 network that is under maintenance. The SIMPLY5 module supports 3 networks of SIMPLY5 ballasts: 0, 1, and 2.
3. Press the ADDRESS softkey to change the ballast from its current address to a new address in the range of 0 to 63.
4. Press the FIX DUPLICATE softkey to clear a short address from any SIMPLY5 ballasts that have it. The ballast(s) will then be assigned a unique short address by the SIMPLY5 card.



START... SETTING-UP... PASSWORDS

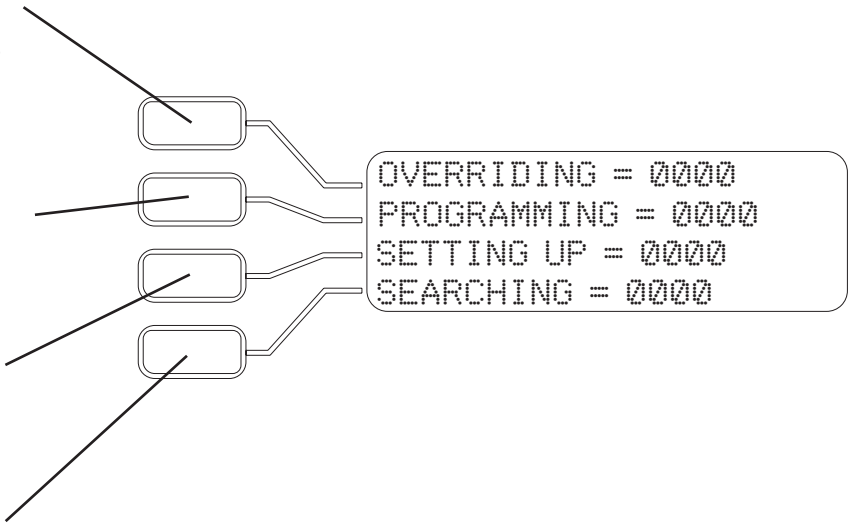
Branching out to the Data Selection windows below sets up four levels of password protection for the menus listed below. These passwords may be unique per level if desired.

1. Press the OVERRIDING softkey, then enter the password using the number keys. This restricts access to all of the menus below the OVERRIDING softkey. Current password is displayed. See note ❶

2. Press the PROGRAMMING softkey, then enter the password using the number keys. This restricts access to all of the menus below the PROGRAMMING softkey. See note ❶

3. Press the SETTING UP softkey, then enter the password using the number keys. This restricts access to all of the menus below the SETTING UP softkey. See note ❶

4. Press the SEARCHING softkey, then enter the password using the number keys. This restricts access to all of the menus below the SEARCHING softkey. See note ❶



QUICK TIPS

TIP *Record your passwords and place them in a secure location. Do not lose or forget your passwords. If the SETTING-UP password is lost, consult Synergy Lighting Controls for special backdoor password.*

Notes:

1 The 0000 value shown above means that no password is required to access the menus corresponding to the softkey headings above.

START... SETTING-UP... OTHER...LOGIC

This menu choice allows for an optional logic element of programming to be ACTIVATED, DEACTIVATED, or RESTARTED through keypad commands. This logical element is a subprogram that allows multiple conditions to be compared within the system through the use of "IF-THEN-ELSE" logical commands. This subprogram is written using the optional SYSW CONFIG configuration software and then loaded into the controller over the network or via the RS-232 serial port on the front of the keypad. Consult factory for additional information about the use of logic in programming scenarios.

Note: The RESTART command on this screen will reboot the controller and may be used even if a logic program is not present on the controller.

START... SETTING-UP... OTHER...LOGGING

Synergy logs all events that can cause an output to change state, and displays them as detailed on page 60 of this manual. In addition, Synergy logs each time a relay starts, and accumulates a run time for this output. Relay logs are displayed as detailed on page 61 of this manual. This menu choice allows for the log of all system events to be reset, as well as the all of the relay starts and hours to be reset. Individual relay starts and hours can be reset as noted on page 61. When the RESET EVENTS or RESET STARTS/HOURS softkey is pressed, the prompt SURE? will replace the softkey text. Pressing the ENTER key will delete the corresponding log file.

START... SETTING-UP... OTHER...REINITIALIZE

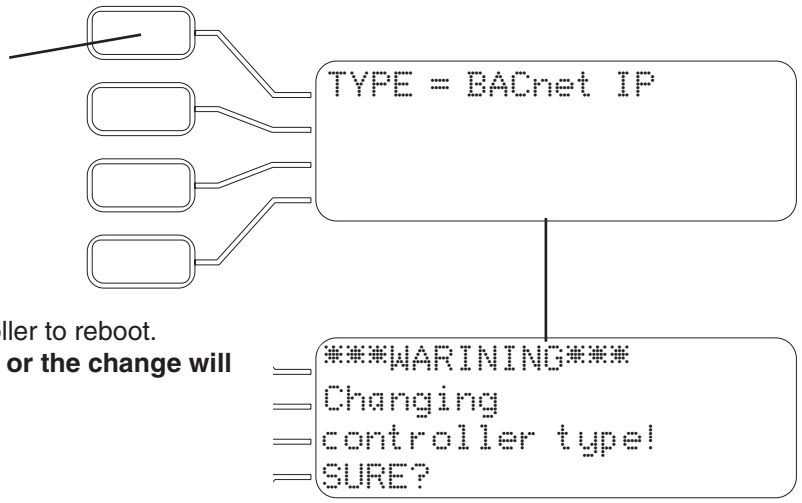
Press the Re-initialize softkey to erase all user programming and build a new script based on the factory default of 6 relay modules, regardless of what modules are detected on the local bus. In addition, the log files are also reset, the control station settings are cleared, and any optional logic element is deactivated. The passwords are deactivated. An entry in the system log is made. The BACnet ID and associated network settings are not changed.

START... SETTING-UP... OTHER...NETWORK TYPE

There are 4 network modes available. A**RCNET, MS/TP**, **BACnet/IP**, and **NONE**. The correct mode must be selected to enable proper network communication.

Press START...SETTING UP...OTHER... NETWORK TYPE...

The currently selected network type will be displayed. Press the menu softkey to change the network type, each press of the softkey cycles through the available types. Select NONE only if you have an SYSC MLS controller (which has no network operation) .



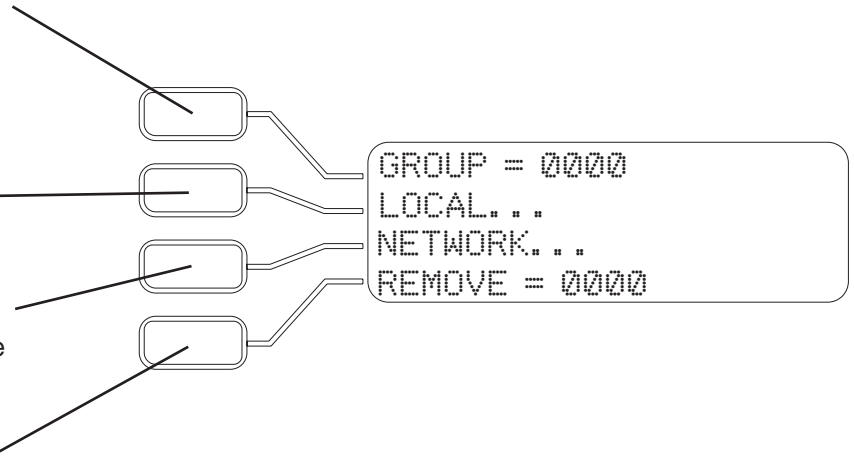
Notes:

Changing the controller type will force the controller to reboot.
You must press ENTER to accept the change or the change will be lost!

START... PROGRAMMING...GROUPS

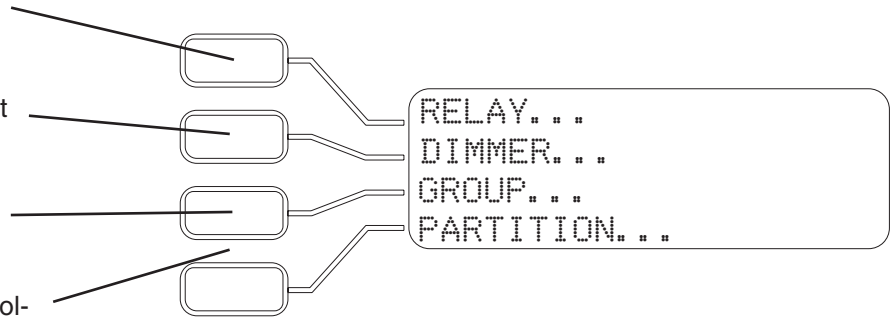
Branching out to the Data Selection window below allows the programming of outputs into groups. See Appendix 4 for Group Programming examples. To be controlled, all outputs must be included in at least one Group. It is helpful to refer to completed load schedule when programming group information, see page 11 for an example load schedule and pages 12-16 for blank load schedules. All groups that are created should be added to your project documentation.

1. Current GROUP number is displayed, use the – and + keys to cycle through existing groups or the number keys to go to a specific group. To add a new group, enter the desired group number and press the ENTER key twice. See note ❶
2. Press the LOCAL... softkey to collect outputs associated with this controller in the group displayed.
3. Press the NETWORK... softkey to collect outputs associated with other controllers in the group displayed.
4. Press the REMOVE softkey to remove the GROUP that is displayed
   See note ❷



For the GROUP # displayed press the LOCAL... softkey to program outputs for this cabinet only.

1. Press the RELAY... softkey to collect relays in this group. See note ❶
2. Press the DIMMER... softkey to collect dimmers in this group
3. Press the GROUP... softkey to collect groups in this group.
4. Press the PARTITION... softkey to collect partitions in this group.



Notes:

❶ GROUP 0000 is a default group containing all of the relays and dimmers contained in the script. Groups 0101 through 0608 are factory default programmed to control a relay of the same number.

❷ **When removing groups, a prompt will be returned requesting a series, for example 0000–????. To remove a single item press the ENTER key three times after adding the number. To enter a series of groups add the last item number in the series, press ENTER key twice again to confirm, or BACK to cancel.**

START... PROGRAMMING...GROUPS...LOCAL...RELAY...

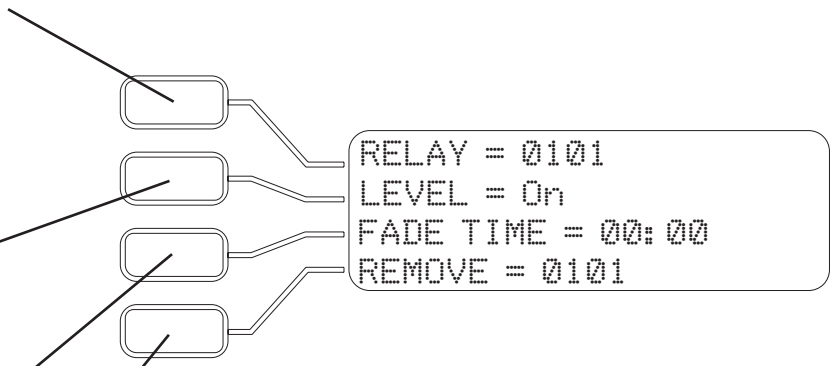
The Data Selection Window shown below for relays is similar to the choices available if the :DIMMER... or SIM-PLY5... or LEGACY-DIMMER... or GROUP... or PARTITION... softkey is pressed. See Appendix IV for group programming examples.

1. A relay output included in the current group is displayed. Pressing the – and + keys will cycle through all of the relay members. Pressing the RELAY softkey will create the prompt ???? allowing the number keys to add a new relay to this group. See note ❶

2. Press the LEVEL... softkey to change the level for this relay within the group. Usually relays have an "On" level. Relays having an "Off" level will be turned Off when this group is turned On. See note ❷, ❸ or ❹

3. Press the FADE TIME softkey to add a FADE TIME in minutes and seconds to relays in this group. Relays that included a fade time will not respond instantly to events that change the GROUP's level. See note ❺

4. Press the REMOVE softkey to remove this relay. See note ❶



Notes:

❶ **When removing groups or adding dimmers or relays, a prompt will be returned requesting a series, for example 0000-????. To enter a single item press the ENTER key three times after adding the number. To enter a series of relays or groups, add the last item number in the series, press ENTER key twice again to confirm, or BACK to cancel.**

❷ When programming relays, use the + key to change the level from On to Off, and the – key to change the level from Off to On. Load shedding or light level stepping can be accomplished by setting different levels for each of the relays within the group. Mapping an analog input level to the group will provide a progressive step down and step up of the load resulting in a load shed priority.

❸ The level for dimmers is the percentage output that the dimmer will be at when this group is turned on. The fade time determines the rate at which the dimmer to go from its initial level to the new level within the group.

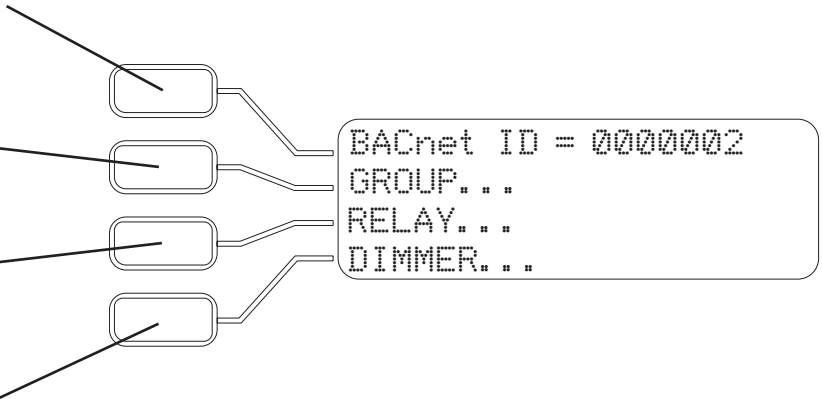
❹ When programming a Preset Group, or a group of groups, the output level is determined by the Preset Group level multiplied by the output level within the subgroups. The individual output fade time is ignored and the fade time is determined by the Preset Group fade time.

❺ **Setting a fade time for certain members in a group will provide a stepped On and stepped Off operation. This will avoid surges from too many loads energizing at once, and will not leave an area in total darkness**

START... PROGRAMMING...GROUPS...NETWORK...RELAY...

Press the NETWORK... softkey when this group contains outputs installed in other cabinets connected on the network. See Appendix 4 for group programming examples.

1. Press the BACnet ID softkey to identify the controller address that has members which will be remotely controlled. See page 16 for information about setting the BACnet ID.
2. After the BACnet ID is entered, a group from that remote controller can be added to this local group. See note ❶
3. After the BACnet ID is entered, a relay from that remote controller can be added to this local group. See note ❷
4. After the BACnet ID is entered, a dimmer from that remote controller can be added to this local group. See note ❷



QUICK TIP

TIP *After the BACnet ID is entered, a partition from that remote controller can be added to this local group by pressing the down arrow.*

Notes:

1. **Interlocking of Network Groups will produce undesirable results from "circular actions". Groups are interlocked when a group X in controller 1 contains group Y in controller 2, and group Y in controller 2 contains group X in controller 1. When controller 1 group X is turned On, it turns on group Y in controller 2. Group Y then turns On group X, which in turn turns On group Y, and a circular action takes place. To avoid circular actions create two groups in each controller per the example in Appendix 4.**

2. Relays and dimmers controlled via the network are programmed with the same information as local relays.

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START... PROGRAMMING...INPUTS...SWITCH...

Branching out to the Data Selection windows below allows the programming of inputs that are received from remote mounted switches. It is helpful to refer to the input and output schedule, and the group information while programming inputs.

1. Current SWITCH number is displayed, use the – and + keys to cycle through existing inputs. Pressing this softkey will return the prompt ???? allowing the number keys to add a new input, or go to an existing one. See note ❶

2. Pressing this softkey toggles through the available switch types. Pressing the ENTER key will save the selection that is displayed. See note ❷

3. To replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys.

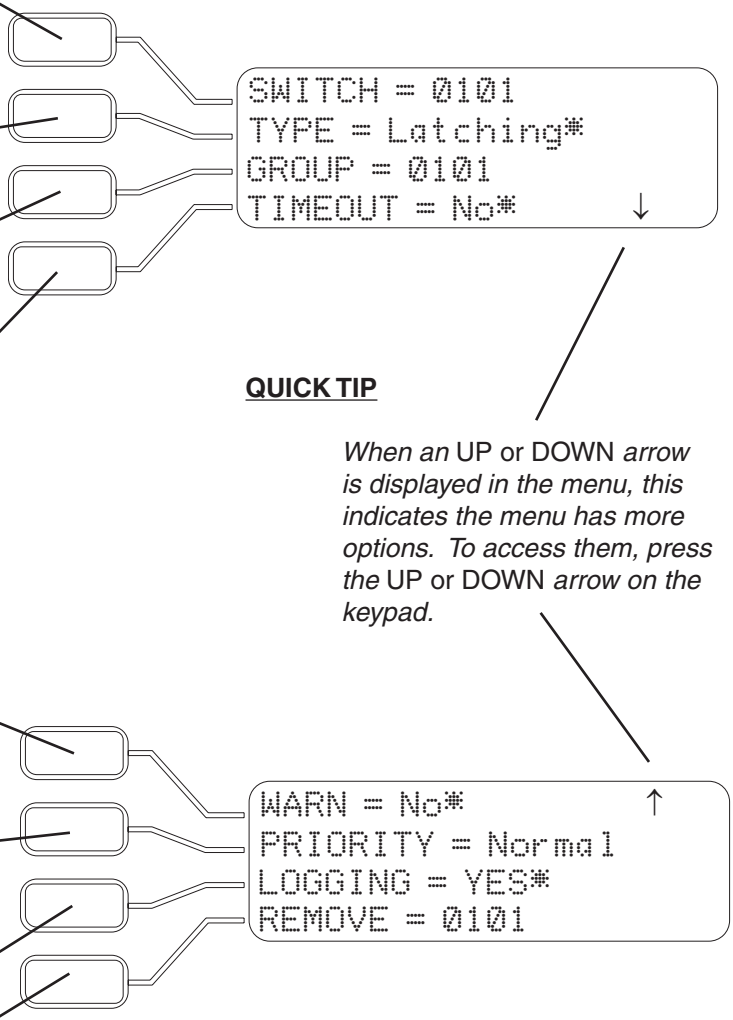
4. Press the TIMEOUT softkey to automatically reverse the On action of an input. A “hh:mm” prompt will appear requesting a time out in hours and minutes, allowing a value of 00:01 through 99:99 to be entered. See note ❸

5. Press the WARN softkey to blink the lights prior to their timeout. An “mm” prompt will appear requesting a time in minutes, allowing a value of 01 through 99. This value must be less than the timeout value. See note ❹

6. Press the PRIORITY softkey to change the priority of this input. Select LOW if this switch’s OFF action should be disabled by normal events such as schedules. See note ❺ for priority level details.

7. Press the LOGGING softkey to enable or disable logging for this input.

8. Press the REMOVE softkey to remove the SWITCH INPUT that is displayed.



QUICK TIP

When an UP or DOWN *arrow is displayed in the menu, this indicates the menu has more options. To access them, press the* UP or DOWN *arrow on the keypad.*

Notes:

1. **When adding or removing inputs, a prompt will be returned requesting a series. For example 0101 – ????. To enter a single item press the ENTER key three times after adding the number. To enter or remove a series of inputs, add the last item number in the series, press the ENTER key twice again to confirm, or BACK to cancel. Switch inputs, which do not match the hardware configuration, will not be accepted.**

2. The selections available for the TYPES are LATCHING for use with SPDT momentary switches, ALTERNATE for use with SPST momentary switches, MAINTAINED for use with SPST maintained switches, or DISABLED to eliminate the ability of the controller to recognize this input.

3. A value of 00:00 indicates that the On action of this input will not be automatically reversed. The Timeout does not affect the Off action of the input.

4. A value of 00 indicates that the lights will not be blinked prior to the Off action created by the timeout. After pressing the enter key the value 00 will display as No*.

5. Multiple levels of priority are available to be assigned to outputs and are detailed in the matrix below. All Scheduled events take place at NORMAL priority. Lowest BACnet priority level number is highest priority event.

SYNERGY PRIORITY	BACnet Priority	Input Level	Input Source	Output Action	Application and Common Usage
Hardware	1	On/Off	HOA Switch RO Terminals	Outputs set at level	Service override or egress lighting
ON	3	1-100	Synergy Input	Outputs set at level at Priority 3	Panic or security override.
		0	Synergy Input	Relinquish Priority 3	
OFF	4	0-99	Synergy Input	Outputs set at level at Priority 4	Forced load shed or testing
		100	Synergy Input	Relinquish Priority 4	
N/A	6	Any	BACnet network	No action	Minimum on-off time not supported
Flash to Find	8	On/Off	Keypad Menu	Blink on and off at Priority 8	Flash to find the output
DMX Normal	9	0-100	Synergy DMX In	Outputs set at level at Priority 9	DMX 512 control
		Interruption	Synergy DMX In	Relinquish Priority 9	
NORMAL	10	1-100	Synergy Input	Outputs set at level at Priority 10	Schedule, PC Control, switch and analog inputs
		0	Synergy Input	Relinquish Priority 13	
LOW	13	1-100	Synergy Input	Outputs set at level at Priority 13	Switches, sensors, and other inputs that are to be disabled by scheduled ON events.
		0	Synergy Input	Relinquish Priority 13	
	1-5, 7-16	0-100	BACnet network	Outputs set at level at priority	BACnet interoperation
	1-5, 7-16	NULL	BACnet network	Relinquish Priority	BACnet interoperation

*DMX Normal priority takes place at level 9 and relinquishes to lower level on interruption of DMX data stream. ON, OFF, and LOW priorities for DMX inputs are the same as shown above.

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START... PROGRAMMING...INPUTS...ANALOG...

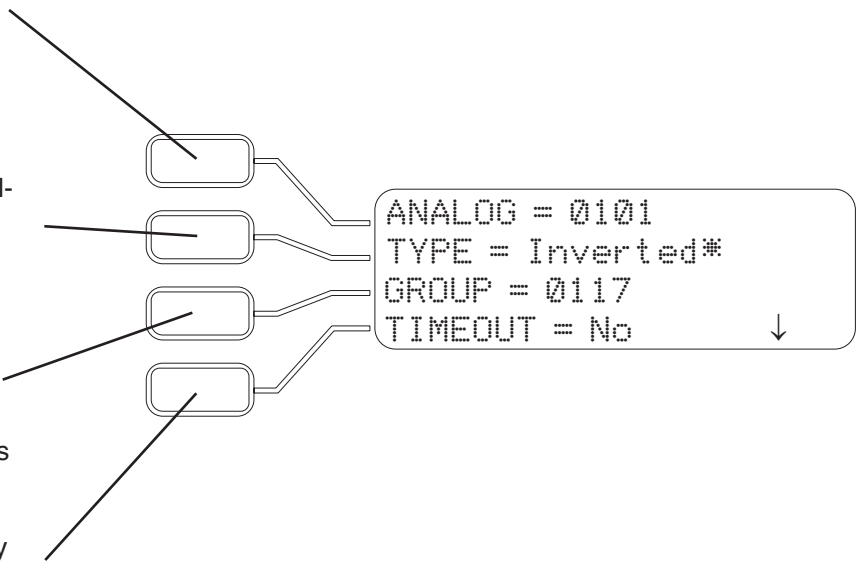
Branching out to the Data Selection Windows below allows the programming of inputs that are received from remote mounted analog devices. It is helpful to refer to the input and output schedule and the group information while programming the inputs.

1. Current ANALOG number is displayed, use the – and + keys to cycle through existing inputs. Pressing this softkey will return the prompt ???? allowing the number keys to add a new input, or go to an existing one. See note ❶

2. Pressing this softkey toggles through the available analog types. Pressing the ENTER key will store the selection that is displayed. See note ❷

3. To replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys. An input can only control a single GROUP of relays or dimmers.

4. Press the TIMEOUT softkey to automatically reverse the On action of an input. A hh: mm prompt will appear requesting a time out in hours and minutes, allowing a value of 00:01 through 99:99 to be entered. See note ❸



Notes:

❶ **When adding or removing inputs, a prompt will be returned requesting a series, for example 0101 – ????. To enter a single item, press the ENTER key three times after adding the number. To enter or remove a series of relays or groups, add the last item number in the series, press ENTER key twice again to confirm, or BACK to cancel. Analog inputs, which do not match the hardware configuration, will not be accepted.**

❷ The selections available for the TYPEs are Variable for use with analog inputs which control lights proportionally (typical for dimmer slider operation), Inverted for use with analog inputs which turn off lights as their voltage increases (typical photocell operation), or Disabled to eliminate the ability of the controller to recognize this input.

❸ A value of 00:00 indicates that the On action of this input will not be automatically reversed. The Timeout does not affect the Off action of the input.

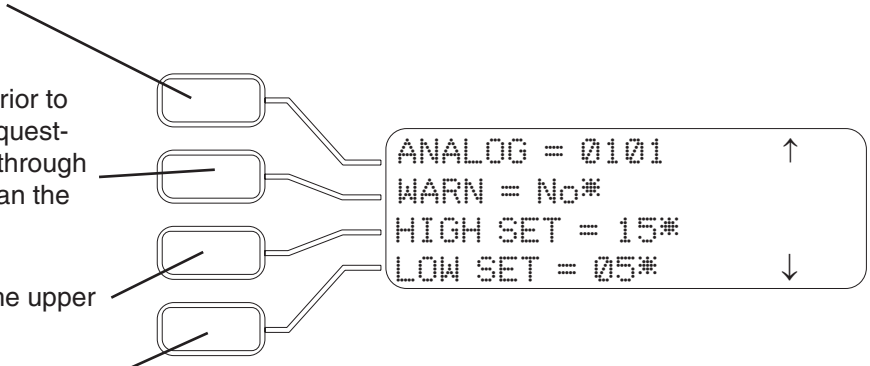
START... PROGRAMMING...INPUTS...ANALOG... (CONTINUED)

5. Current ANALOG number is displayed, use the – and + keys to cycle through existing inputs. See note ❶

6. Press the WARN softkey to blink the lights prior to their timeout. An "mm" prompt will appear requesting a time in minutes, allowing a value of 01 through 99 to be entered. This value must be less than the timeout value. See note ❶

7. Press the HIGH SET softkey to change the upper limit of this input. See note ❷

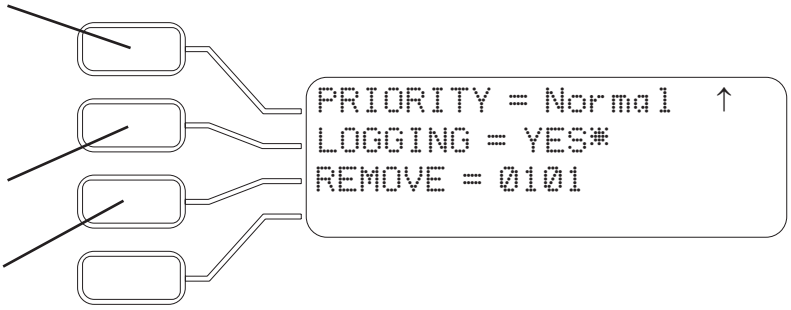
8. Press the LOW SET softkey to change the lower limit of this input. See note ❷ and note ❸



9. Press the PRIORITY softkey to change the priority of this input. Select LOW if this switch's OFF action should be disabled by normal events such as schedules. See note ❺ on page 36 for priority details.

10. Press the LOGGING softkey to enable or disable logging for this input.

11. Press the REMOVE softkey to remove the ANALOG INPUT that is displayed.



Notes:

❶ A value of 00 in the WARN field indicates that the lights will not be blinked prior to the Off action created by the timeout. After pressing the enter key the value 00 will display as No*.

❷ Variable Analog inputs will turn On the lights when the high set point is crossed in an ascending manner, and will turn off the lights when the low set point is crossed in a descending manner. A photocell used in conjunction with a Variable type input will turn On the lights as the sensed light level becomes brighter than the high set point and turn Off the lights as the sensed light level becomes dimmer than the low set point. Inverted Analog inputs will turn Off lights when the high set point is crossed in an ascending manner, and turn On the lights when the low set point is crossed in a descending manner. A photocell used in conjunction with an Inverted type input will turn On the lights as the sensed light level becomes dimmer than the low set point and turn Off the lights as the sensed light level becomes brighter than the high set point.

❸ Setting the high and low set points at Off (by typing "00" or using the "-" key) will cause the level of the assigned group to directly (if the input is set as Variable) or inversely (if the input is set as Inverted) track the level of this input. If relays are included in the group, their Low Set level (see page 48) will determine the ON/OFF switch point for each relay. If dimmers are included in the group, their output level will simply track the level of this input. This type of setting is most often used when potentiometers are being used to control dimmers, or when multi-level switching control of relays is desired. To obtain multi-level group switching set individual relay low set points to the percentage of analog level where the ON or OFF transition is desired. For example, a group of 20 relays can be programmed so that one will switch ON for every 5% change in the analog level.

START... PROGRAMMING...INPUTS...BUTTON...

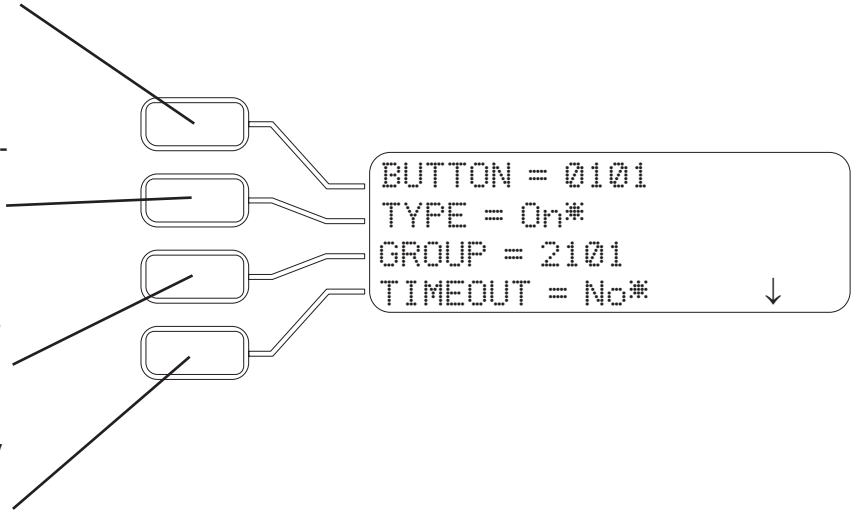
Branching out to the Data Selection windows below allows the programming of inputs that are received from SEQUEL Control Stations or SYNERGY digital remote stations. With these accessory stations installed, you can manually override a large number of lighting groups on a twisted pair communication network. Setting-up a station (see page 27) is recommended over adding individual buttons. See Appendix 5 for station and button mapping and examples.

1. Current BUTTON input number is displayed, use the – and + keys to cycle through existing inputs. Pressing this softkey will return the prompt ???? allowing the number keys to add a new input, or go to an existing one.

2. Pressing this softkey toggles through the available button types. Pressing the ENTER key will save the selection that is displayed. See note ❶

3. To replace the GROUP number shown, press this softkey, and enter a new group using the number keys.

4. Press the TIMEOUT softkey to automatically reverse the On action of an input. A "hh:mm" prompt will appear requesting a time out in hours and minutes, allowing a value of 00:01 - 99:99 to be entered. See note ❷



Notes:

❶ The selections available for the TYPEs are "On" for preset, "Off" for off only action, "Latching" for Non-dim and "Ramping" for dimmed SEQUEL channel buttons, "Master Raise" for dim up of all SEQUEL channel buttons on this station, "Master Lower" for dim down of all SEQUEL channel buttons on this station, "Ramp Up" for dim up only, "Ramp Down" for dim down only, "Maintained" for screen control, "Alternate" for On/Off toggle, and "DISABLED" to eliminate the ability of the controller to recognize this input.

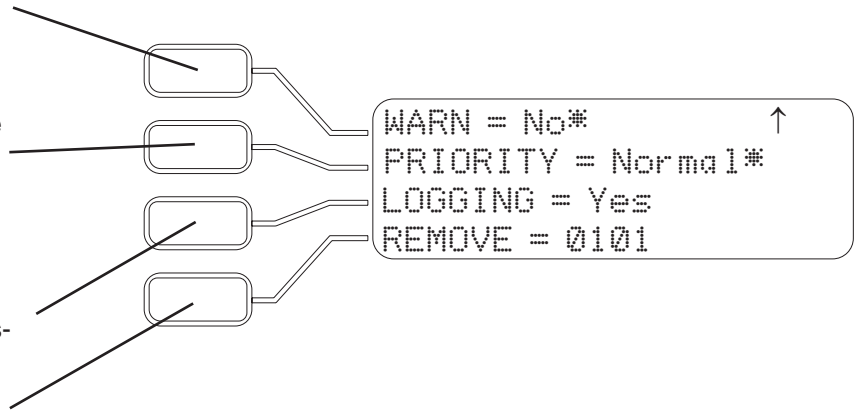
START... PROGRAMMING...INPUTS...BUTTON...(CONTINUED)

5. Press the WARN softkey to blink the lights prior to their timeout. An “mm” prompt will appear requesting a time in minutes, allowing a value of 01 through 99. This value must be less than the timeout value.

6. Press the PRIORITY softkey to change the priority of this input. Select Low if the OFF action should be disabled by normal events such as schedules. See note ❺ on page 36 for priority details.

7. Press the LOGGING softkey to enable or disable logging for this input.

8. Press the REMOVE softkey to remove the BUTTON that is displayed.



Notes:

❶ The selections available for the TYPEs are ”On”or preset, “Off” for off only action, “Latching” for Non-dim and “Ramping” for dimmed SEQUEL channel buttons, “Master Raise“ for dim up of all SEQUEL channel buttons on this station, “Master Lower“ for dim down of all SEQUEL channel buttons on this station, “Ramp Up” for dim up only, “Ramp Down” for dim down only, “Maintained” for screen control, “Alternate” for On/Off toggle, and “DISABLED” to eliminate the ability of the controller to recognize this input.

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START... PROGRAMMING...INPUTS...OTHER...DMX...

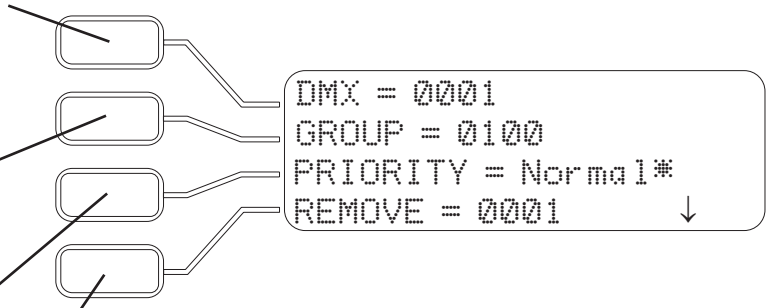
Branching out to the Data Selection windows below allows the programming of inputs that are linked to a DMX data stream. With the DMX option module installed, you can control SYNERGY outputs through a DMX compatible theatrical console. It is helpful to refer to the input and output schedule, and the group information while programming inputs.

1. Current DMX input number is displayed, use the – and + keys to cycle through existing inputs. Pressing this softkey will return the prompt "????" allowing the number keys to add a new input, or go to an existing one. See note ❷

2. To add a new GROUP or replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys. A DMX input can only control a single GROUP.

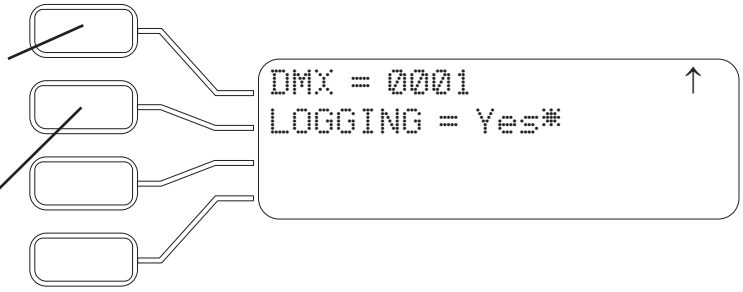
3. Press the PRIORITY softkey to change the priority of this input. Select Low if this DMX OFF action should be disabled by normal events such as schedules. See note ❸ below and note ❻ on page 36 for priority details.

4. Press the REMOVE softkey to remove the DMX input that is displayed.



5. Current DMX input number is displayed, use the – and + keys to cycle through existing inputs. Pressing this softkey will return the prompt "????" allowing the number keys to add a new input, or go to an existing one. See note ❷

6. Press the LOGGING softkey to enable or disable logging for this input.



Notes:

❶ DMX inputs can directly control relay and dimmer outputs, or they can activate groups of outputs via the controller. See the DMX module Installation Instructions for additional information about DMX control.

❷ DMX input numbers on this screen are only indirectly related to the DMX512 network addresses — rather, the DMX input number is a four digit number that is comprised of the two digit I^2C address of the DMX module and a two digit offset number. The DMX512 network address that an input will respond to is simply the DMX512 base address (set on the module) plus the offset number. For example, if the DMX512 base address on module 00 is set at 172, input 0024 would respond to DMX512 network address 196 (172+24 = 196). Since each DMX input module has a maximum of 48 inputs and the valid I^2C addresses for DMX modules are 1 – 4, the valid input ranges for this screen are 0000-0048, 0100-0148, 0200-0248, and 0300-0348. See the DMX module installation instructions for additional information.

❸ DMX Normal priority is at level 9 and takes precedence over other Normal and low priority events. DMX levels are relinquished only after interruption of the DMX data stream.

START... PROGRAMMING...INPUTS...OTHER...PHONE...

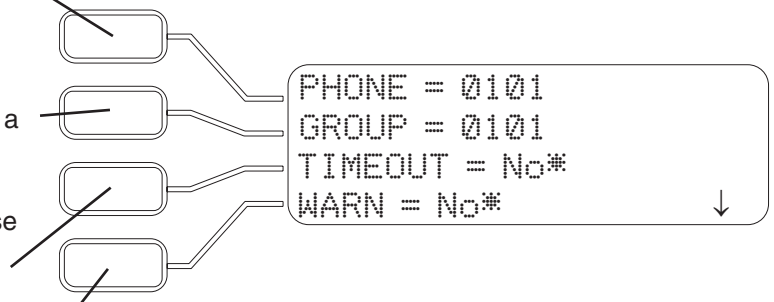
Branching out to the Data Selection windows below allows the programming of inputs that are received from touch tone phones via the optional voice modem. With this option installed, you can override lighting simply by following voice prompts and pressing the number keys on your telephone. It is helpful to refer to the input and output schedule, and the group information while programming the inputs.

1. Current PHONE input number is displayed, use the – and + keys to cycle through inputs. Pressing this softkey will return the prompt "????" allowing the number keys to add a new input. When connected by phone, dial this number to override the group shown.

2. To replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys. A phone input can only control a single GROUP.

3. Press the TIMEOUT softkey to automatically reverse the On action of an input. A "hh:mm" prompt will appear requesting a time out in hours and minutes, allowing a value of 00:01 through 99:99 to be entered. See note ❶

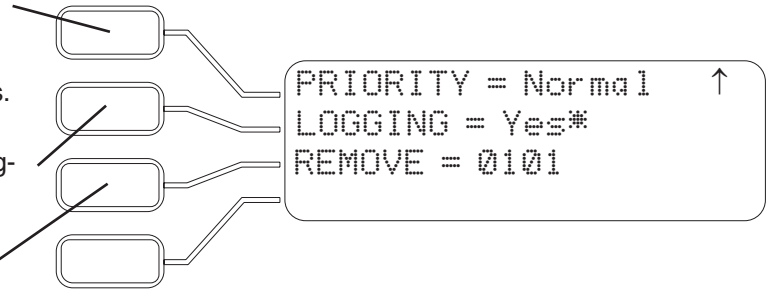
4. Press the WARN softkey to blink the lights prior to their timeout. An "mm" prompt will appear requesting a time in minutes, allowing a value of 01 through 99 to be entered. This value must be less than the timeout value. See note ❷



5. Press the PRIORITY softkey to change the priority of this input. Select LOW if this phone OFF action should be disabled by normal events such as schedules. See note ❺ on page 36 for priority level details.

6. Press the LOGGING softkey to enable or disable logging for this input.

7. Press the REMOVE softkey to remove the PHONE input that is displayed.



Notes:

A value of 00:00 indicates that the On action of this input will not be automatically reversed. The Timeout does not affect the Off action of the input. A value of 00 indicates that the lights will not be blinked prior to the Off action created by the timeout.

A value of 00 indicates that the lights will not be blinked prior to the Off action created by the timeout. After pressing the enter key the value 00 will display as No*.

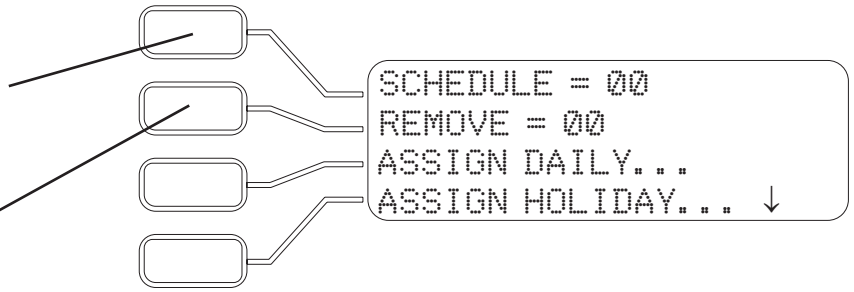
This page intentionally left blank.

START... PROGRAMMING...SCHEDULES...

Branching out to the Data Selection windows below allows the entry of time-of-day events into specific schedule numbers. These schedule numbers are linked to days of the week through the ASSIGN DAILY... menu choice Windows. It is helpful to refer to the group information while programming the time-of-day events

1. The current SCHEDULE number is displayed, use the – and + keys to cycle through existing schedules. Pressing this softkey will return the prompt "????" allowing the number keys to add a new schedule, or go directly to an existing one for review or editing.

2. Press the REMOVE softkey to remove the SCHEDULE that is displayed.



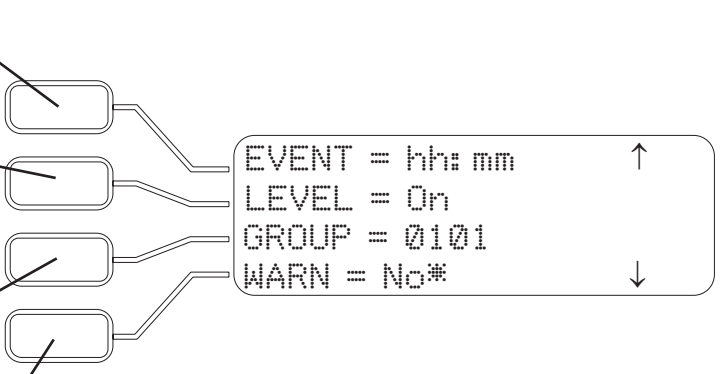
When display is as shown above, press the Down Arrow key to add events to the Schedule displayed. A total of 100 non-repeating schedules are available; the number of events in each schedule is limited only by the available disk space. See page 43 for information on checking the available disk space on the controller.

3. The first EVENT in the schedule is displayed; use the – and + keys to cycle through any existing events for this schedule. To add a new event to the schedule, press the EVENT softkey and enter the time for the new event in hours and minutes at the prompt. See note ❷

4. Press the LEVEL softkey to change the level for the displayed group within the event. Use the + key to change the level from On to Off, the – key to change the level from Off to On, or type in a level from 1 – 99. See note ❸

5. To replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys. An event can only control a single GROUP, but multiple events may occur at the same time.

6. Press the WARN softkey to blink the lights prior to the scheduled time off. An "mm" prompt will appear requesting a time in minutes, allowing a value of 01 through 99 to be entered. See note ❹



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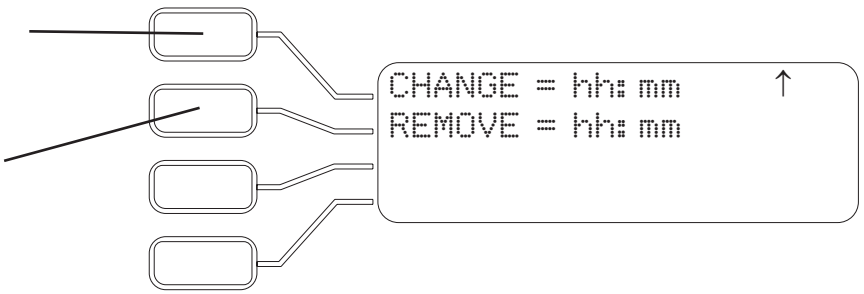
START... PROGRAMMING...SCHEDULES...(CONTINUED)

7. Press the CHANGE softkey to change the event time that is displayed. This action does not add a new event; it modifies the event time only.

8. Press the REMOVE softkey to remove the event that is displayed.



Notes:

1. See pages 46 & 47 of this manual for information on assigning schedules to run on specific days or on Holidays.

2. Press the up or down arrow keys to allow for entry of astronomic events. Press the ENTER key to store the programmed event time. Astronomic events require that the longitude, latitude and time zone be set up properly. See page 19 and Appendix 2 for additional information on these settings.

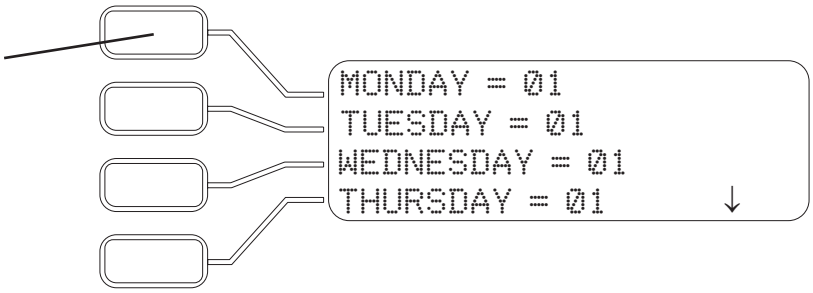
3. Levels that are activated when the event time is recognized by the controller multiply with the level of the relay or dimmers within the group. For example, if the level of a dimmer in a group is 80, and the level of the event is 50, then the dimmer will be sent to a 40% level, (50% of 80%). See Page 33 for more information about setting the levels of members within a group.

4. A value of 00 indicates that the lights will not be blinked prior to the Off action created by the event. The display will then be changed to No.

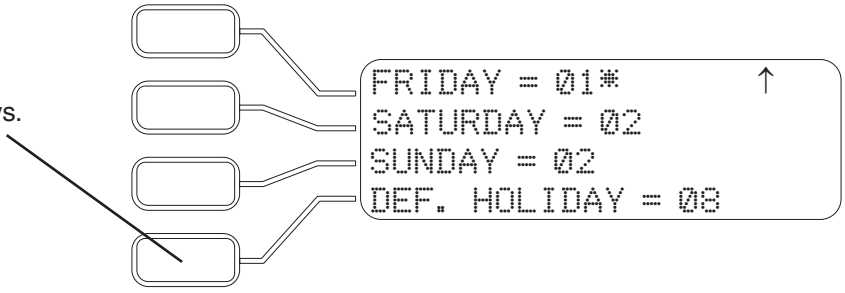
START... PROGRAMMING...SCHEDULES...ASSIGN DAILY...

Branching out to the Data Selection windows below sets up repeating schedules by linking time schedules to days of the week. By editing the schedule numbers shown, you can program which schedule will run on each day of the week as well as a default holiday schedule (see Page 47 for more information on holiday scheduling). The example below shows the same schedule programmed to run on Monday through Friday, a second schedule programmed to run on Saturday and Sunday, and a third schedule programmed as the default for holidays. Repeating schedules save programming time and simplify future schedule changes.

1. Press the MONDAY softkey and enter a schedule using the number keys. Repeat for Tuesday through Sunday. See note ❶



2. Press the DEF. HOLIDAY softkey, and enter a schedule number with the number keys. This schedule will be the default for all dates programmed as holidays in the START... PROGRAMMING...SCHEDULES... ASSIGN ASSIGN HOLIDAY PRO-GRAMMING... editing Window. See note ❷



Notes:

❶ The events that take place in the various schedules are programmed in the START PROGRAMMING SCHEDULES Editing Window (See Pages 44 & 45). The current day of the week is displayed with an asterisk. If a schedule number is assigned that either does not exist or contains no events, no schedule will run on that day and the relays and dimmers will remain as they were set by the last event of the day before or the manual controls.

❷ **Holiday Schedules take precedence over daily schedules when they are programmed by the ASSIGN HOLIDAY... Data Selection window. If manual overrides are provided for the lighting, the most effective way to control the lighting is through the use of Off events only. Never scheduling the lighting to turn On will in most cases eliminate the requirement to program Holiday Schedules and assign Holiday Dates.**

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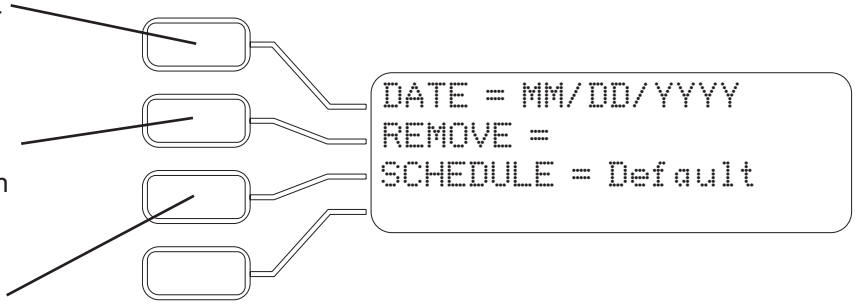
START... PROGRAMMING...SCHEDULES...ASSIGN HOLIDAY...

Branching out to the Data Selection windows below sets up the scheduling by assigning the calendar dates that will not run the daily schedule, but instead will run a special schedule. See note ❶

1. Press the DATE softkey to set up a calendar date that will skip the daily schedule and run the schedule listed adjacent to the SCHED-ULE softkey. Use the number keys to enter the dates. See note ❷
2. Press the REMOVE softkey to remove any date previously set up. If no dates have been set up, the field to the right of remove will be blank.
3. Press the SCHEDULE softkey once a date has been set up to change from the default schedule to any schedule number desired. See note ❸ To enter a schedule number other than the default, first press the up arrow, then enter the desired schedule number.



Notes:

❶ Holiday schedules take precedence over daily schedules. If a repeating (see note ❷ below) and a single year holiday are programmed for the same month and day, the single year schedule will have precedence.

❷ Cycle through the dates which have already been programmed using the - and + keys. Not entering a year in the DATE field will create a repeating annual holiday. This is especially useful for holidays such as January 1st and Christmas that occur on the same date each year.

❸ The Default schedule is assigned in the DEF. HOLIDAY field in the START...PROGRAMMING...SCHEDULES...ASSIGN DAILY... data selection window (see Page 46 for more information). Each holiday date that is added will initially be assigned to this default schedule, which may then be changed if desired.

START... PROGRAMMING...OUTPUTS...RELAY...

1. The current RELAY number is displayed. The – and + keys may be used to cycle through existing relays, or this softkey may be pressed to allow the use of the number keys to jump directly to an existing relay or add a new one.

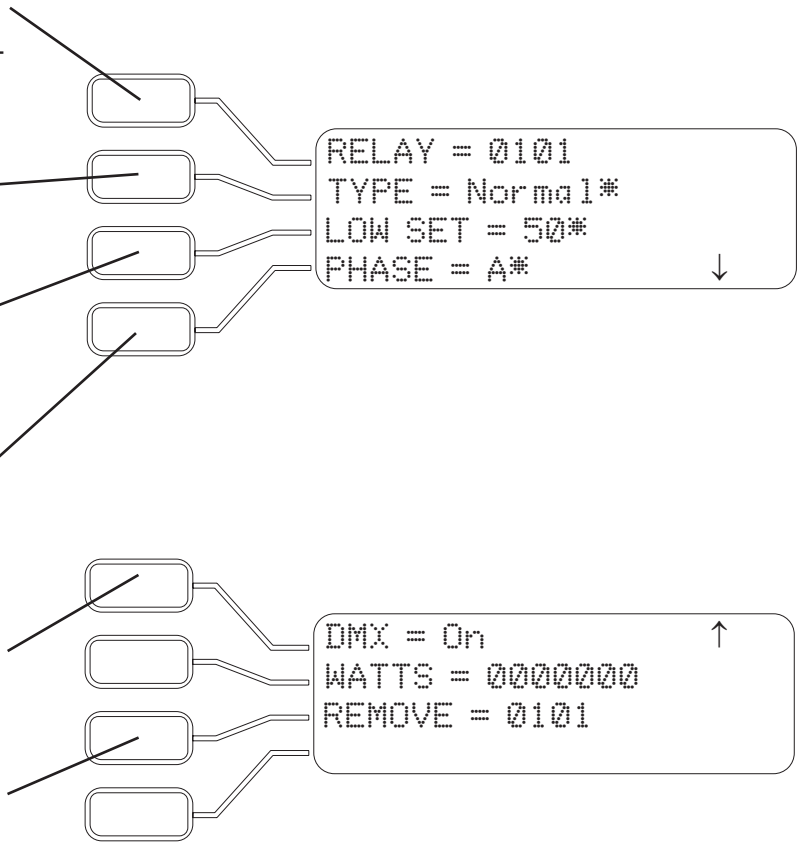
2. Pressing this softkey toggles through the available relay types. Pressing the ENTER key will store the selection that is displayed. See note ❶

3. Pressing this softkey will return a cursor prompt allowing the number keys to change the Low Set level above which the relay transitions from off to on.

4. Press the PHASE softkey to toggle through the electrical phase choices for power going to the relay. Pressing the ENTER key will store the selection for optimal zero cross-switching operation. See note ❷

5. Press the DMX softkey to display Off if this relay is not affected by the optional interface to a DMX console.

6. Press REMOVE softkey to remove the displayed relay.



Notes:

❶ Changing the relay type changes the way that the relay responds to ON and OFF events. Valid relay types and how each respond to ON and OFF events are shown in the table below.

TYPE	ON Event	OFF Event	Notes
Normal	Contacts Close	Contacts Open	Acts like a SPST, normally open relay
Inverted	Contacts Open	Contacts Close	Acts like a SPST, normally closed relay
Momentary On	Contacts Close for 1 second, then re-open	No Action	
Momentary Off	No Action	Contacts Close for 1 second, then re-open	
Sweep Relay	No Action	Contacts Close for 7 second, then re-open	Use with SSPL series Sweep Switch
InteliSwitch	No Action	Contacts Close for 1 second, then re-open	Use with InteliSwitch
Diasbled	No Action	No Action	The relay will remain in the state that it is in when its type is changed

❷ **To reduce wear and extend the life of relays, enter the relay phase per item 4 above, and program the** phase of controller power supply as indicated in the START... SETTING-UP... ENVIRONMENT... data selection windows.

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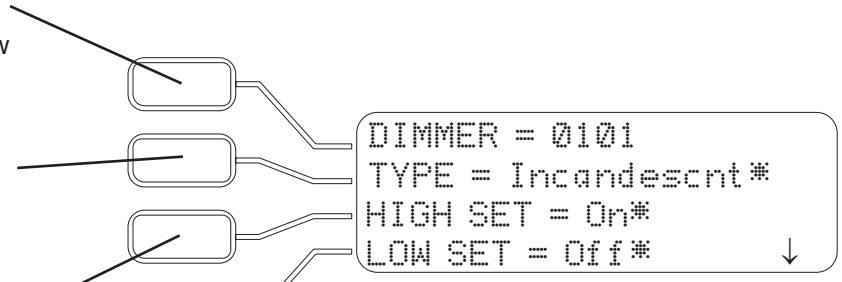
START... PROGRAMMING...OUTPUTS...DIMMERS...DIMMER

1. Current DIMMER number is displayed, use the – and + keys to cycle through existing dimmers. Pressing this softkey will return the prompt "????" allowing the number keys to add a new valid dimmer, or go to an existing one.

2. Pressing this softkey toggles through the available dimmer types. Pressing the ENTER key will store the selection that is displayed. See note ❶

3. Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level. See note ❷.

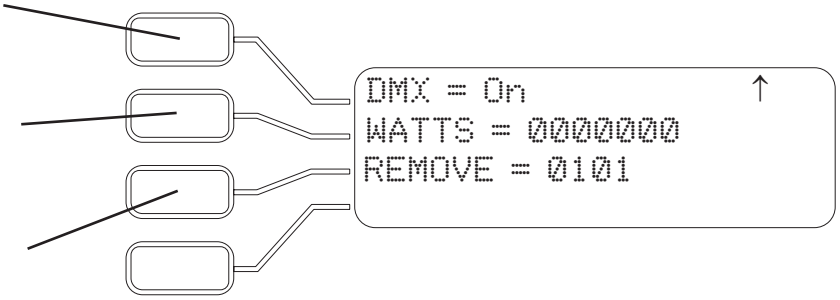
4. Pressing this softkey allows the initial dimmed output to be set at this LOW SET level. See note ❸



5. Press the DMX softkey to display Off if this dimmer is not effected by optional interface to DMX data stream.

6. Press WATTS softkey to annotate the amount of load on this output. The value is used by the workstation.

7. Press REMOVE softkey to remove the dimmer displayed. See note ❹



Notes:

❶ Available TYPES should be matched to the load being controlled. Choices for Incandescnt, Advance Mark X, Lutron Hilume®, NonDim, and Disabled are available. This setting optimizes the dimmer output level to match the perceived light level with the Synergy displayed intensity level. Disabled dimmers remain at their HIGH SET level.

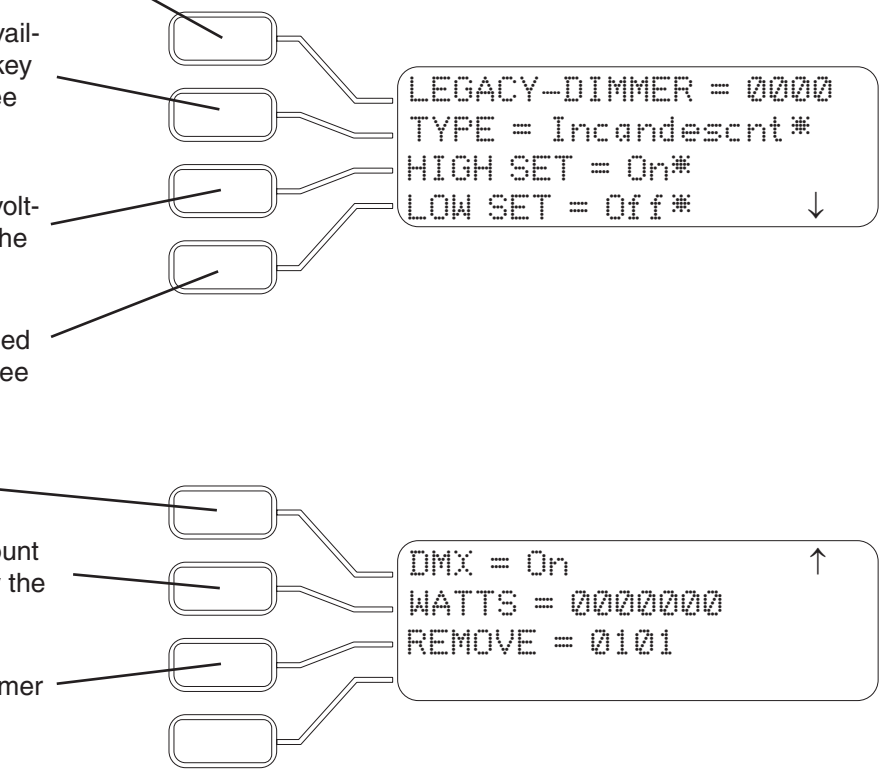
❷ Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level.

❸ Pressing this softkey sets the initial dimmed output to be set at this level. The dimmer will still turn off at 1% level.

❹ When removing dimmer outputs, a prompt will be returned requesting a series, for example "0101 – ????". To remove a series of dimmers, add the last item number in the series, press ENTER key twice again to confirm, or BACK to cancel.

START... PROGRAMMING...OUTPUTS...DIMMERS...LEGACY-DIMMER

1. Current DIMMER number is displayed, use the – and + keys to cycle through existing dimmers. Pressing this softkey will return the prompt "????" allowing the number keys to add a new valid dimmer, or go to an existing one. See note ❺
2. Pressing this softkey toggles through the available dimmer types. Pressing the ENTER key will store the selection that is displayed. See note ❶
3. Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level. See note ❷.
4. Pressing this softkey allows the initial dimmed output to be set at this LOW SET level. See note ❸
5. DMX is not used on Legacy-Dimmers.
6. Press WATTS softkey to annotate the amount of load on this output. The value is used by the workstation.
7. Press REMOVE softkey to remove the dimmer displayed. See note ❹



Notes:

❶ Available TYPES should be matched to the load being controlled. Choices for Incandescnt, Advance Mark X, Lutron Hilume®, NonDim, and Disabled are available. This setting optimizes the dimmer output level to match the perceived light level with the Synergy displayed intensity level. Disabled dimmers remain at their HIGH SET level.

❷ Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level.

❸ Pressing this softkey sets the initial dimmed output to be set at this level. The dimmer will still turn off at 1% level.

❹ When removing dimmer outputs, a prompt will be returned requesting a series, for example "0101 – ????". To remove a series of dimmers, add the last item number in the series, press ENTER key twice again to confirm, or BACK to cancel.

❺ The first digit of the dimmer number (0000) indicates the Legacy Dimmer card number (0-3), the last 3 digits indicate the dimmer output number, 0-253.

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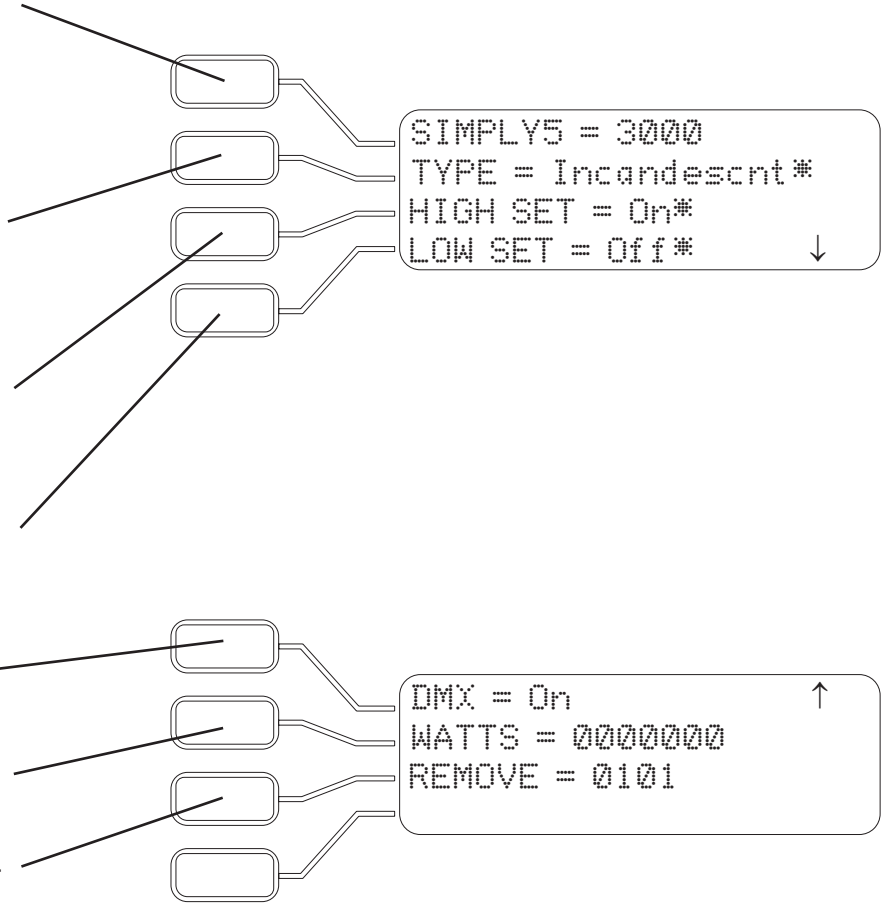
START... PROGRAMMING...OUTPUTS...DIMMERS...SIMPLY5

1. Current DIMMER number is displayed, use the – and + keys to cycle through existing dimmers. Pressing this softkey will return the prompt "????"allowing the number keys to add a new valid dimmer, or go to an existing one.
   See note ❺
2. Pressing this softkey toggles through the available dimmer types. Pressing the ENTER key will store the selection that is displayed. See note ❶
3. Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level. See note ❷.
4. Pressing this softkey allows the initial dimmed output to be set at this LOW SET level. See note ❸
5. DMX is not used on SIMPLY5 dimmers.
5. Press WATTS softkey to annotate the amount of load on this output. The value is used by the workstation.
6. Press REMOVE softkey to remove the dimmer displayed. See note ❹



Notes:

❶ Available TYPES should be matched to the load being controlled. Choices for Incandescnt, Advance Mark X, Lutron Hilume®, NonDim, and Disabled are available. This setting optimizes the dimmer output level to match the perceived light level with the Synergy displayed intensity level. Disabled dimmers remain at their HIGH SET level.

❷ Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level.

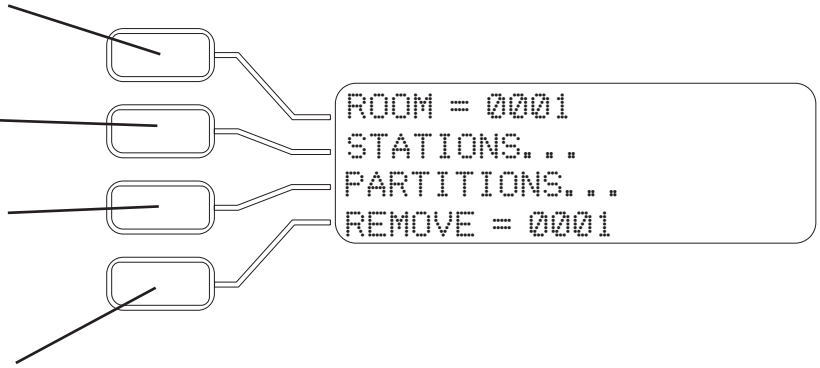
❸ Pressing this softkey sets the initial dimmed output to be set at this level. The dimmer will still turn off at 1% level.

❹ When removing dimmer outputs, a prompt will be returned requesting a series, for example "0101 – ????". To remove a series of dimmers, add the last item number in the series, press ENTER key twice again to confirm, or BACK to cancel.

❺ The first digit of the dimmer number (0000) indicates the SIMPLY5 card number (0-9), the second number indicates the SIMPLY5 network number (0-2), and the last 3 digits indicate the SIMPLY5 ballast number, 0-63.

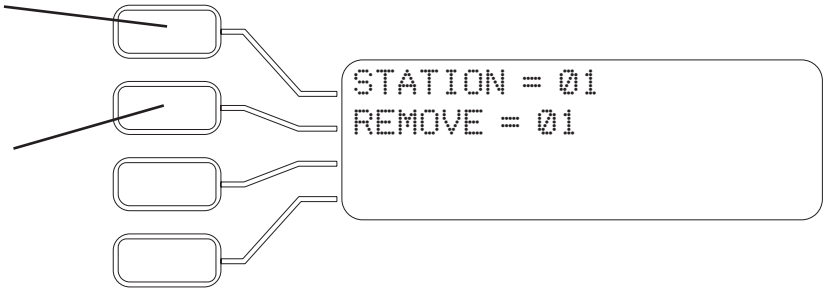
START... PROGRAMMING...OUTPUTS...ROOM...

1. The current ROOM is displayed. The – and + keys may be used to cycle through existing rooms, or this softkey may be pressed to allow the use of the number keys to jump directly to an existing room or add a new one. See note ❶
2. Pressing this softkey displays the stations currently associated with this room.
3. Pressing this softkey displays the partitions that are currently associated with this room. See note ❶
4. Pressing this softkey allows the Room displayed to be removed from programming. See note ❶



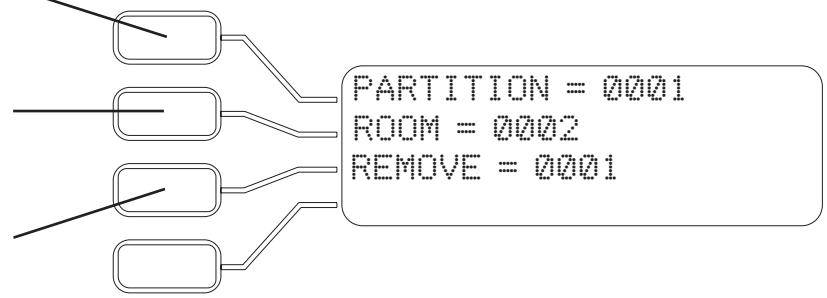
STATIONS...

5. Press the + and – keys to cycle through the list of stations that are associated with this room. Pressing this softkey will return the prompt "????" allowing the number keys to add a new station to this room.
6. Press REMOVE softkey to remove this station.



PARTITONS...

7. Current PARTITION number is displayed, use the – and + keys to cycle through partitions. Pressing this softkey will return the prompt "????" allowing the number keys to add a new valid partition, or go to an existing one.
8. Pressing this softkey changes the room number that is separated from the room number currently being programmed by the partition listed.
9. Pressing this softkey removes the partition that is currently displayed.



Notes:

❶ See Appendix V for additional application and programming examples related to the programming of rooms and partitions.

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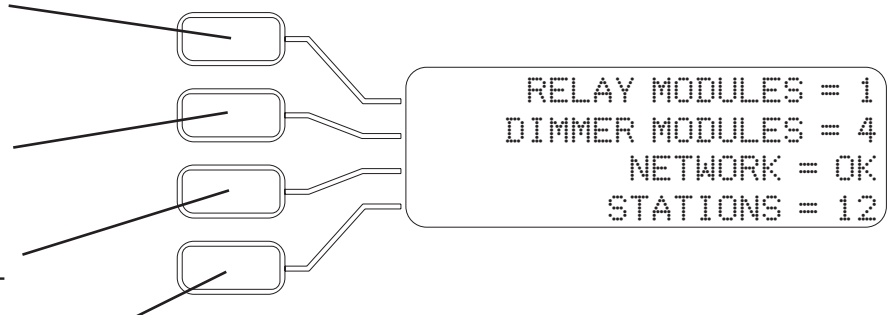
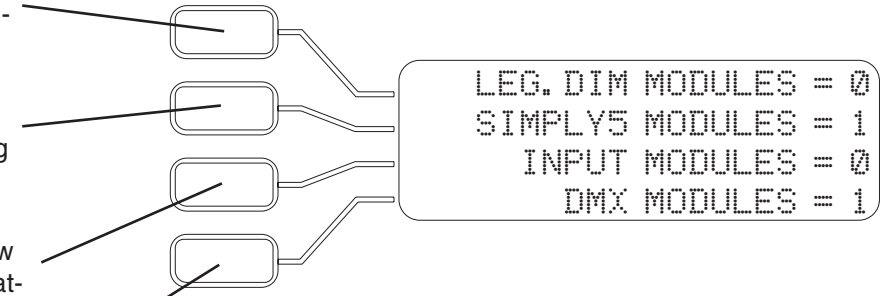
START... SEARCHING...ABOUT...SYNERGY...

Branching out to the Data Value windows below displays the devices the controller has found on the system. Press the down arrow to display additional menu screens.

1. Display indicates the number of relay modules currently communicating with the controller.
2. Display indicates the number of dimmer modules currently communicating with the controller.
3. Display indicates that network status for diagnostic purpose has been detected. Messages include those listed in note ❶ below.
4. Displays the quantity of Sequel control stations and Synergy remote stations currently detected.



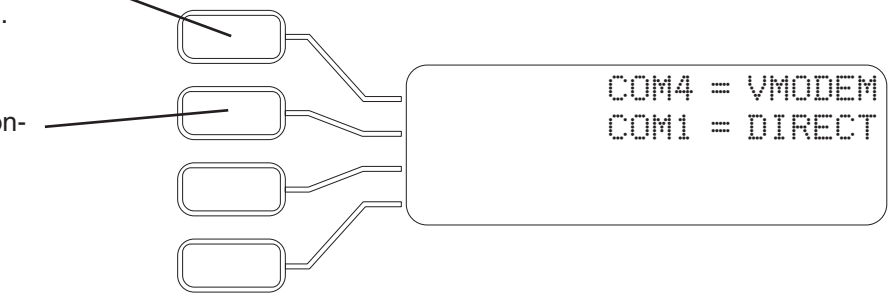
5. Display indicates the number of optional legacy dimmer modules currently communicating with the controller.
6. Display indicates the number of optional SIMPLY5 modules currently communicating with the controller
7. Display indicates the number of optional low voltage input modules currently communicating with the controller.
8. Display indicates the number of optional DMX interface modules currently communicating with the controller.



QUICK TIP

TIP *Press the UP or DOWN arrows to access additional items in these menus.*

9. Display indicates the status of the optional modem that is connected to the COM4 port of the controller. VMODEM indicates the voice modem is installed. ERROR indicates that the voice modem is not installed. See note ❷
10. Display indicates the status of the serial console port attached to COM1. See note ❷



START... SEARCHING...ABOUT...SYNERGY...(CONTINUED)

Notes:

1

1. OK – Network is functioning properly.
2. DUP ID – Duplicate MAC or IP addresses are present on the network. Change duplicate addresses, per page 20, and cycle power to the controllers with duplicate addresses.
3. NO CHIP – Non-network MLS controller with the network software driver enabled, network chip failed or not seated in socket properly.
4. NO WIRE – Not connected to network.
5. OFF – MLS Controller normal status, or MLX controller where software driver has been shut down. If MLX controller displays this message restart controller by cycling power with the on/off switch.
6. NO INIT – Task not running, restart controller by cycling power.
7. NO QUEUE — Out of memory, restart controller by cycling power.
8. ???? – Undefined fault, restart controller by cycling power.

2

1. VModem – A voice modem is installed on the serial port, and is functioning properly.
2. Direct – No modem is installed on the serial port. Using direct serial port connection.
3. Error – An error has been detected trying to initialize the serial port.
4. DModem – A data-only modem is installed on the serial port, and is functioning properly.
5. DTMF – Touch tones are detected on an active call on the modem on the serial port.
6. Hangup – A hangup has been detected on an active call on the modem on the serial port.
7. Bad File – A voice file.is not in the correct WAV format.
8. ???? – Undefined fault for the serial port.

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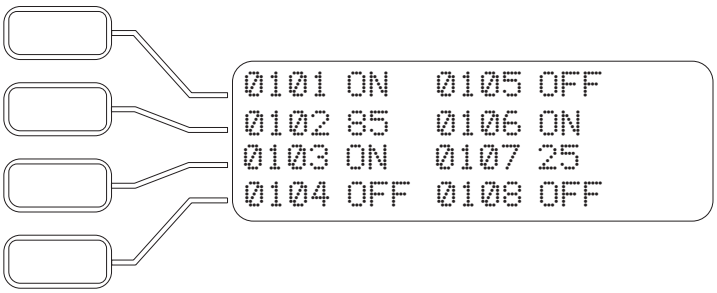
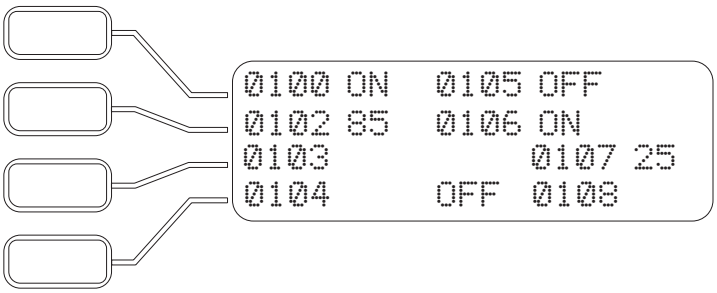
START... SEARCHING...STATUS...OUTPUTS....OUTPUTS

Branching out to the Data Value windows below displays the output levels the controller has found on the system. The display indicates the power module address [01] followed by the output number [05] and finally the output status [OFF]. Use the - and + keys to cycle through the modules. Use the ↑ and ↓ keys to see status of outputs x09 – x42. Relay and Dimmer outputs display a percentage when they are at a level other than On or Off. Dimmers controlled by raise lower switches will display ↑ when raising, ↓ when lowering, and – when stopped before final state is determined by the controller.



START... SEARCHING...STATUS...OUTPUTS....SIMPLY5

Branching out to the Data Value windows below displays the SIMPLY5 output levels the controller has found on the system. The display indicates the SIMPLY5 module address [0101] followed by the SIMPLY5 network number [0101] followed by the SIMPLY5 ballast number [0101] and finally the output status [OFF]. If Use the - and + keys to cycle through the modules. Use the ↑ and ↓ keys to see status of any additional SIMPLY5 outputs. SIMPLY5 Dimmer outputs display a percentage when they are at a level other than On or Off. Dimmers controlled by raise lower switches will display ↑ when raising, ↓ when lowering, and – when stopped before final state is determined by the controller.

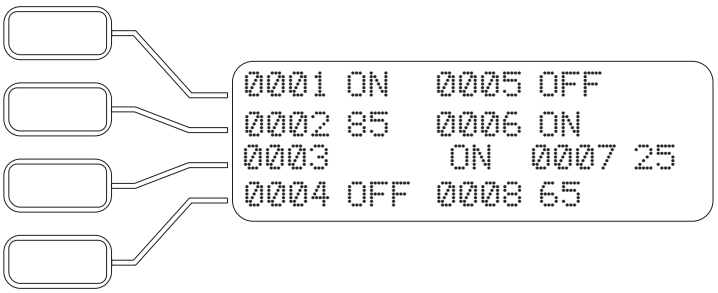


QUICK TIP

TIP *If the status for a particular SIMPLY5 output is blank, that output is either missing or not installed.*

START... SEARCHING...STATUS...OUTPUTS....LEGACY-DIMMER

Branching out to the Data Value windows below displays the SIMPLY5 output levels the controller has found on the system. The display indicates the Legacy dimmer module address [0001] followed by the Legacy dimmer output number [0001] and finally the output status [OFF]. Use the - and + keys to cycle through the modules. Use the ↑ and ↓ keys to see status of any additional SIMPLY5 outputs. Legacy Dimmer outputs display a percentage when they are at a level other than On or Off. Dimmers controlled by raise lower switches will display ↑ when raising, ↓ when lowering, and – when stopped before final state is determined by the controller.



QUICK TIP

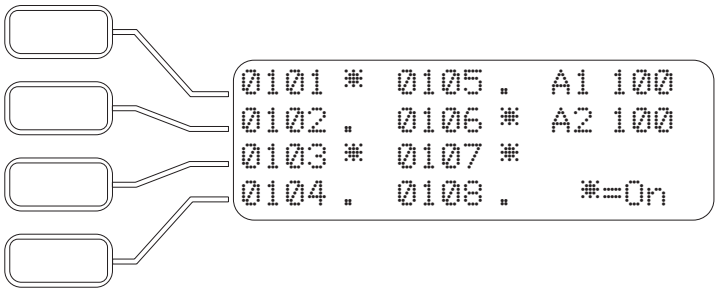
.

TIP *If the status for a particular Legacy dimmer output is blank, that output is either missing or not installed.*

START... SEARCHING...STATUS...INPUTS....

MODULES. . .

Branching out to the Data Value window below displays the input levels the controller has found on the modules in the system. This screen is especially helpful to determine and correct field wiring errors related to the input wiring connections. Display indicates the module address [0102] followed by the input number [0102] and finally the input status [0102.] where [.] is off, and [*] is on. Use the -and + keys to cycle through the modules. The analog levels A1 and A2 are displayed from 0 through 100 in 1% increments.



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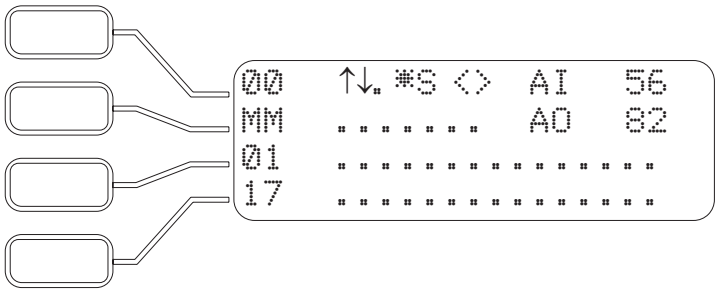
START... SEARCHING...STATUS...INPUTS....

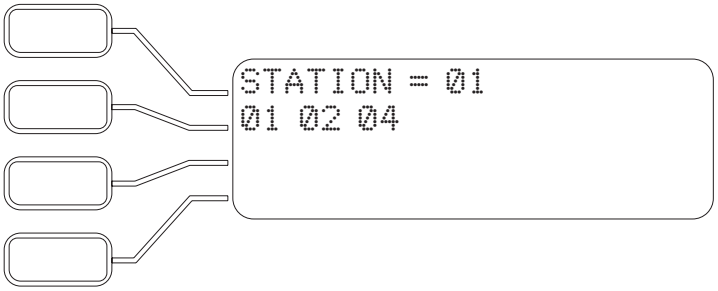
STATIONS...

Branching out to the Data Value window below displays the input levels the controller has found for the devices on the control station network. This screen is especially helpful to determine and correct field wiring errors related to the Control station input wiring connections. The top display line from left to right indicates the station address [00, an asterisk will be shown next to the address if a station is detected at that address on the network], followed by the master function list [master raise ↑, master lower ↓, OFF . ON *, select S, fade decrease <, fade increase >] ending with the optional external input level [AI 56] (where [.] is off, and [*] is on) . The second line indicates both status of the master inputs as well as the optional external output status [AO 82] . The bottom two lines indicate the status of buttons 1 – 32. Use the -and + keys to cycle through station addresses.



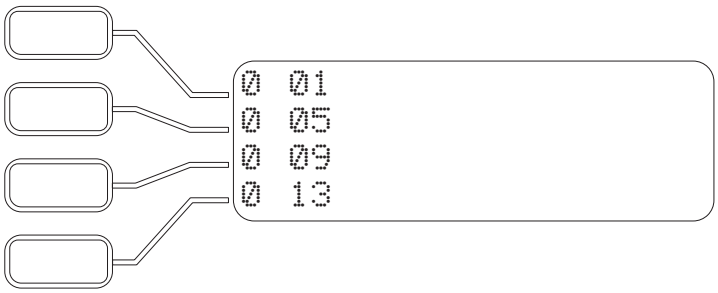
ROOMS...

Branching out to the Data Value window below displays the current room assignment status on the system. The second line of the display indicates the current list of parallel acting stations for the station address listed on the first line. Use the -and + keys to cycle through the stations. For a full explanation of room assignment see Appendix V.



DMX...

Branching out to the Data Value window below displays current status of the optional DMX input modules in the system. The number in the top left corner of the screen is the module address (0), use the – and + keys to cycle through the modules. Each screen shows the status of 16 DMX input channels; the column next to the address indicates the first input for that row (in the example below, the first row shows the status of inputs 01, 02, 03, & 04, the second row 05, 06, 07, & 08 and so on). The input numbers shown are offsets from the DMX base address set on the DMX input card.



START... SEARCHING...STATUS...COMMUNICATION...

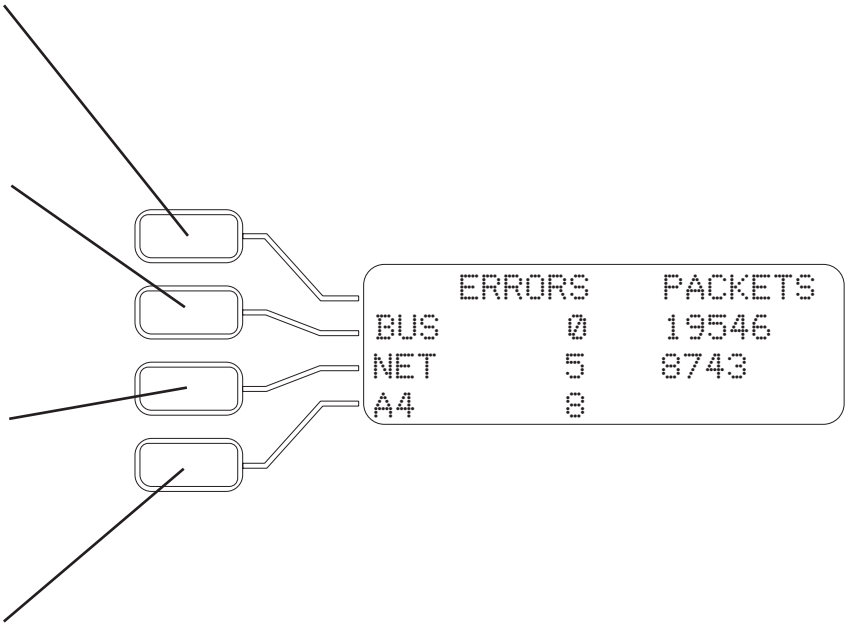
The communication status window displays continuously updated statistics for the total number of packets sent and errors returned on each of the system's digital networks. Pressing the softkey next to any of the network labels will reset the statistics for that network to zero.

1. This displays the column labels for lines 2,3 and 4. The PACKETS to ERRORS ratio is a measure of the quality of communications for each of the networks displayed.

2. BUS is the local bus connection the controller to the Relay, Dimmer and DMX modules. High error rate (1% or greater) indicates a module is not communicating properly, the bus connection is damaged, or the length of the bus connection is to long.

3. NET is the network controller to controller connection. High error rate (1% or greater) indicates that this controller is not communicating properly. Possible causes for a high error rate include improper network termination, network wiring problems, or a duplicate network address.

4. The A4 is the control station network that connects SEQUEL (SQCS) Control Stations and SYNERGY (SYRS) remote stations to the controller. High error rate (2% or greater) indicates that a station is not communicating properly. Possible causes for a high error rate include improper network termination, network wiring problems, or duplicate station address on the network.



START... SEARCHING...STATUS...SYSTEM...

Branching out to the Data Value window below displays the amount of RAM and disk space that is currently available for use. Also shown are the baud rates for the serial console and the control stations or MS/TP network.

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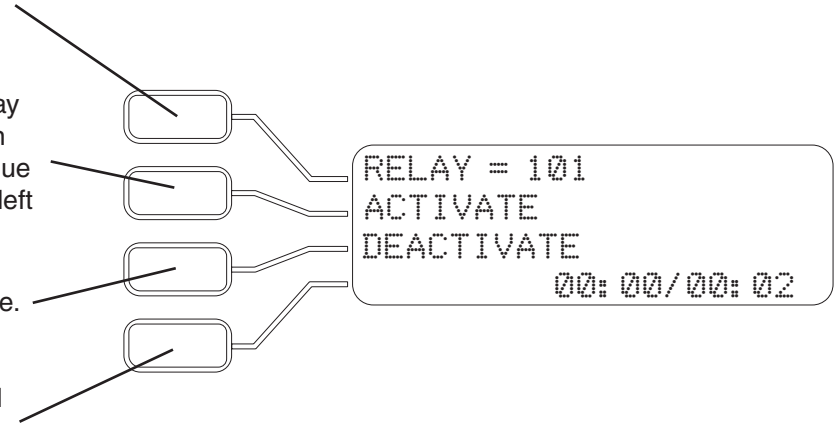
START... SEARCHING...FLASH TO FIND...

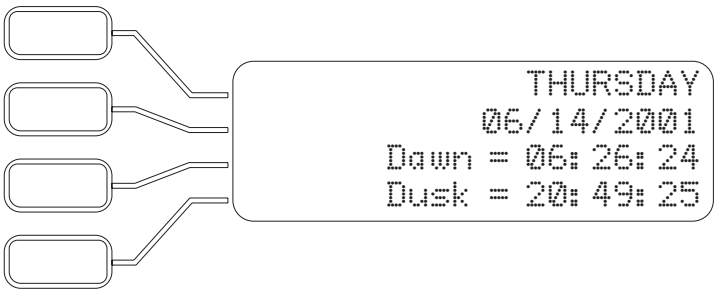
Branching out to the Data Selection windows below will allow you to override lights in a flashing mode. This is most often used to locate which lighting loads are connected to a particular relay or dimmer, or to display the outputs programmed in to a particular group. RELAYS are overridden in the example shown below; DIMMERS, DALI, LEGACY-DIMMERS, and GROUPS can be overridden in the same manner. GROUP 0000 is initially programmed to override all relays and dimmers in the panel.

1. Press the – or + keys to cycle through the relay list, or press the RELAY softkey, then enter a relay output number to go directly to that relay.
2. Pressing this softkey will turn the displayed relay On, cycle the relay Off for one second, then On for two seconds. This flashing mode will continue for two minutes, at which time the relay will be left in the On position.
3. Pressing this softkey will stop the flashing mode. The relay will be left in the On position.
4. The number of hours and minutes elapsed and the total number in the flashing sequence is displayed. Pressing the activate softkey multiple times will double the duration of the flashing mode each time it is pressed.



START... SEARCHING...OTHER...

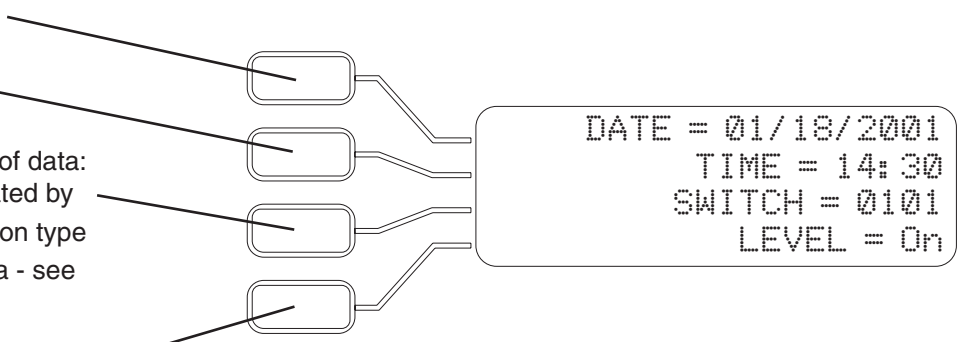
Branching out to the Data Value windows below displays the day, date, and astronomic event times calculated by the controller. Calculated dawn and dusk times are determined by the date, longitude, latitude, Daylight Savings Time, and time zone number information as detailed on page 19 in the START... SETTING-UP... ENVIRONMENT... section.



DISPLAY...EVENTS...

Branching out to the Data Value windows below displays the events that have taken place in the system.

1. Date on which the event took place.
2. Time at which the event took place.
3. This window can display three types of data: Event type data with identifier separated by and equal sign - see note ❶, Operation type data - see note ❷, or Alarm type data - see note ❸.
4. Level of the event where On is 100%. See note ❹



NOTES:

❶ Event types can be SWITCH (for switch input), ANALOG (for analog input), BUTTON (for station input), DMX (for DMX input), PHONE (for telephone input), NETWORK (for network input), EVENT (for scheduled event), COUNTER (for step dependent event), RELAY (for keypad overriding) , DIMMER (for keypad overriding), GROUP (for keypad overriding), NET GROUP (for network controlled group), NETWORK (for network controlled output), COMGROUP (for RS232 controlled group) or WARN. Identifier is the 4 digit number associated with the particular input or output, or the time at which a scheduled event took place, or the time interval in minutes preceding a warned event. Additional events include PARTITION, COUNTER and TIMER.

❷ Operation type data can include SCRIPT SAVED (programming changes were saved to file), ALL ON OVERRIDE (module overridden On), ALL OFF OVERRIDE (module overridden Off), SWITCHED TO AUTO (module returned to Auto), POWERED DOWN (main power supply or controller switched off), POWERED UP (main power supply or controller switched off), RESET STARTS/HOURS, FLASH TO FIND, RESTART, LOGIC ENABLED, LOGIC DISABLED, AL SOUND, POWERED DOWN (main power supply or controller switched off).

❸ Alarm type data can include, NETWORK ERROR, SHORTED PILOT, ZERO CROSS FAIL, PHASE SENSE FAIL, DMX512 OFFLINE, MAX KEYS PRESSED, PHANTOM KEY, LCD MODULE FAILED, NO ZERO CROSS IRQ, DUPLICATE DEVICE, SCRIPT LOGIC, SCRIPT ERROR, REPLACE BATTERY, WATCHDOG T/O, EEPROM FAILED, OFFLINE, ONLINE, ADDRESS CHANGED, UNKNOWN OPCODE, MEMORY LOW.

❹ Line 4 specifies the event category and action. Two categories of events are levels and warnings. LEVEL is followed by the event level that occurred (usually On or Off, but could be shown as a percentage). WARNED is followed by a time in minutes, after which time the effected outputs will turn Off. DISABLE and ENABLE correspond to actions that occur to suspend or allow normal operation. START, INC, DEC, RESET and STOP are actions associated with TIMER operation.

DISPLAY...OUTPUTS...(RELAY, DIMMER, LEGACY-DIMMER or SIMPLY5)

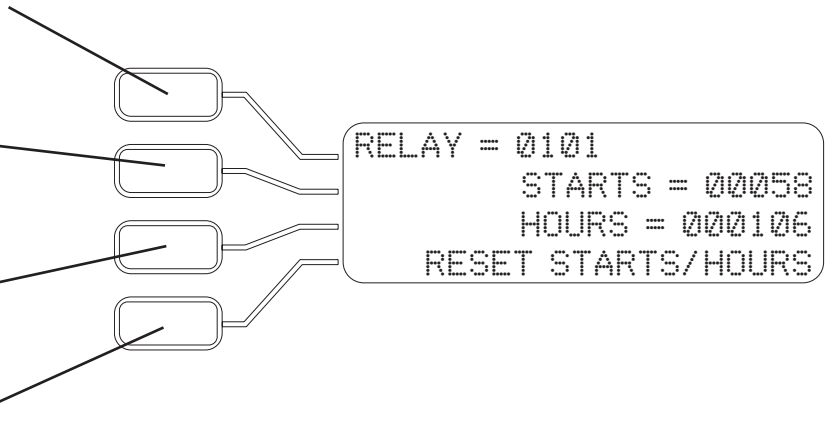
Branching out to the Data Value windows below displays the stored operational data for each of the individual outputs in the system.

1. Press the – or + keys to cycle through the output list, or press the OUTPUT softkey, enter an output number, and go directly to that output. To scroll through each module address, use the ↑ and ↓ keys.

2. This Data Value Window displays the number of On/Off operations since the last time this output was reset.

3. This Data Value window displays the number of hours this output has been on since the last time this output was reset.

4. Press this softkey followed by the ENTER key to reset the Starts and Hours for this output. All outputs can be reset simultaneously through the START... SETTING UP... OTHER... LOGGING menu branch.



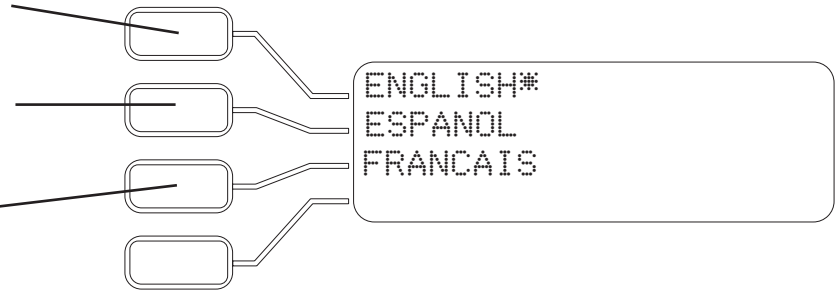
Synergy outputs are referred to by their module number and output number. See the chart below for a description of these ranges.

		Module Number * (I2C Address)	Output Number		Module Number * (I2C Address)	Output Number
RELAY, DIMMER BALLAST OUTPUTS	START	00	01	to	00	16
		↓			↓	
	END	15	01	to	15	16
CONTROLLABLE BREAKER OUTPUTS	START	00	01	to	00	42
		↓			↓	
	END	15	01	to	15	42
LEGACY DIMMER OUTPUTS	START	0	000	to	0	253
		↓			↓	
	END	3	000	to	3	253
SIMPLY5 DIMMER OUTPUTS	START	00	00	to	00	63
		↓			↓	
	END	92	00	to	92	63
SYRS EXT OUTPUTS	START	20	01	to	20	02
		↓			↓	
	END	79	01	to	79	02

MULTILANGUAGE SUPPORT

Pressing the BACK key while the Main Menu is displayed allows a choice of three languages to be used for the keypad programming. Consult Factory for availability of Spanish and French manuals.

1. This softkey selects ENGLISH as the keypad language.
2. This softkey selects SPANISH as the keypad language.
3. This softkey selects FRENCH as the keypad language.



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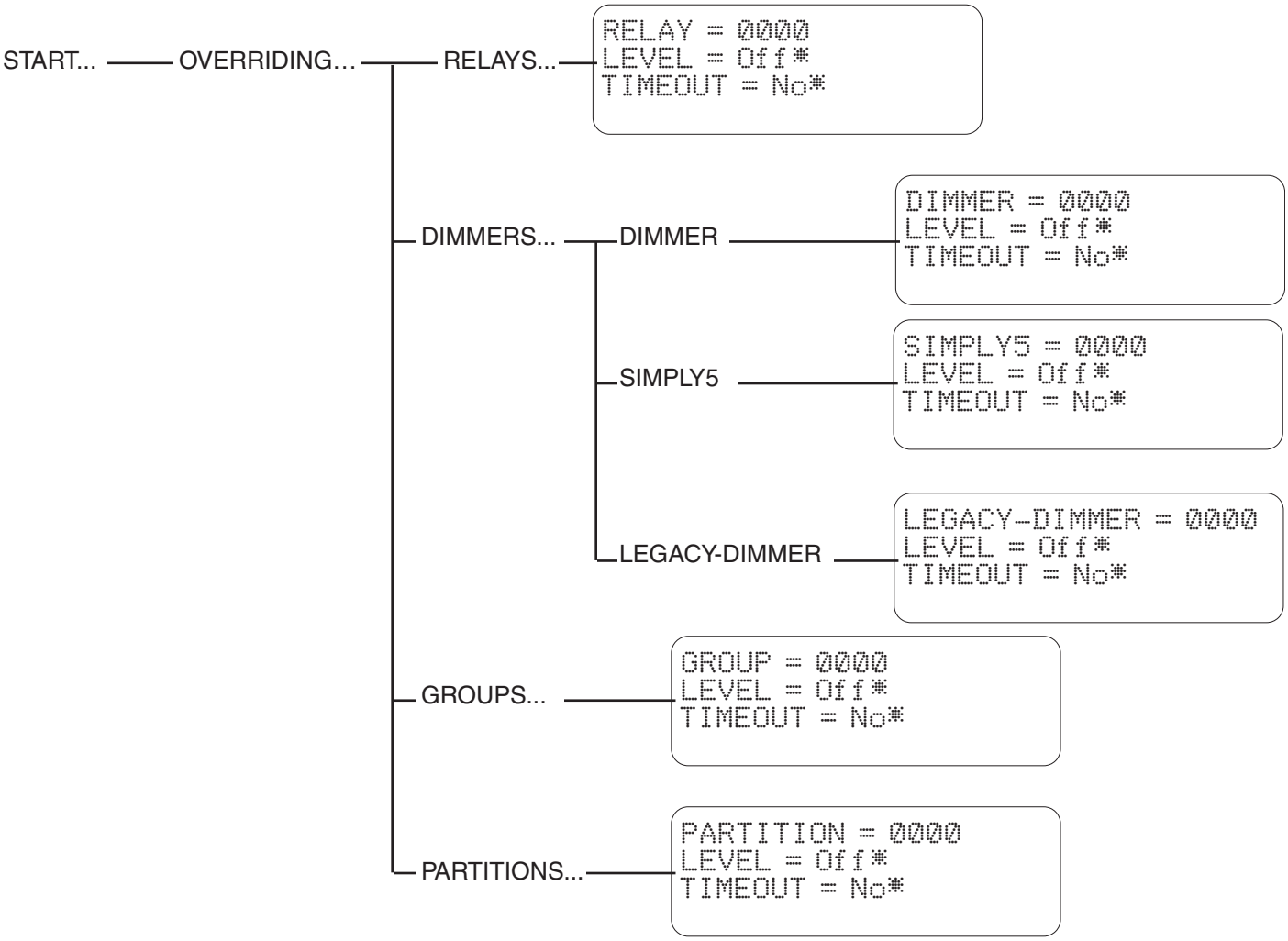
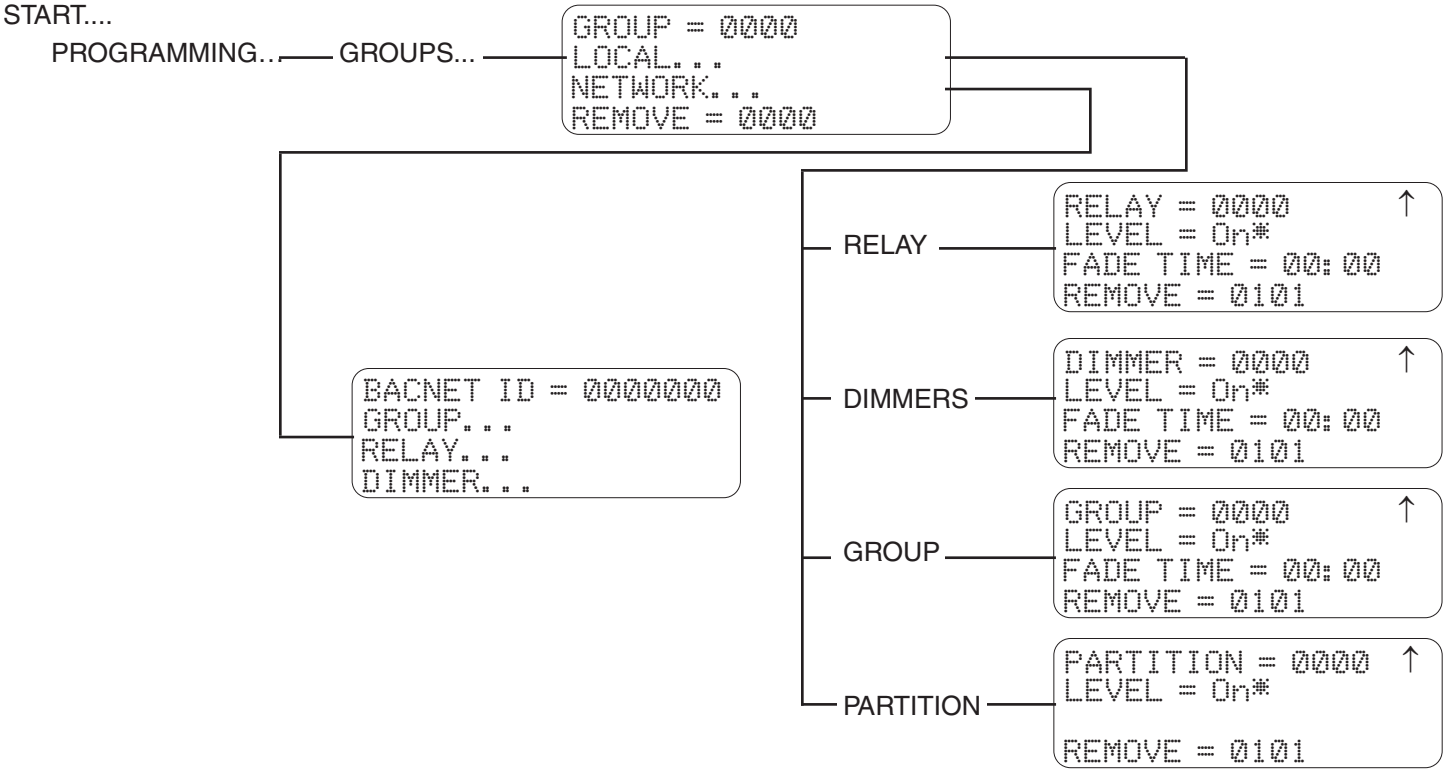
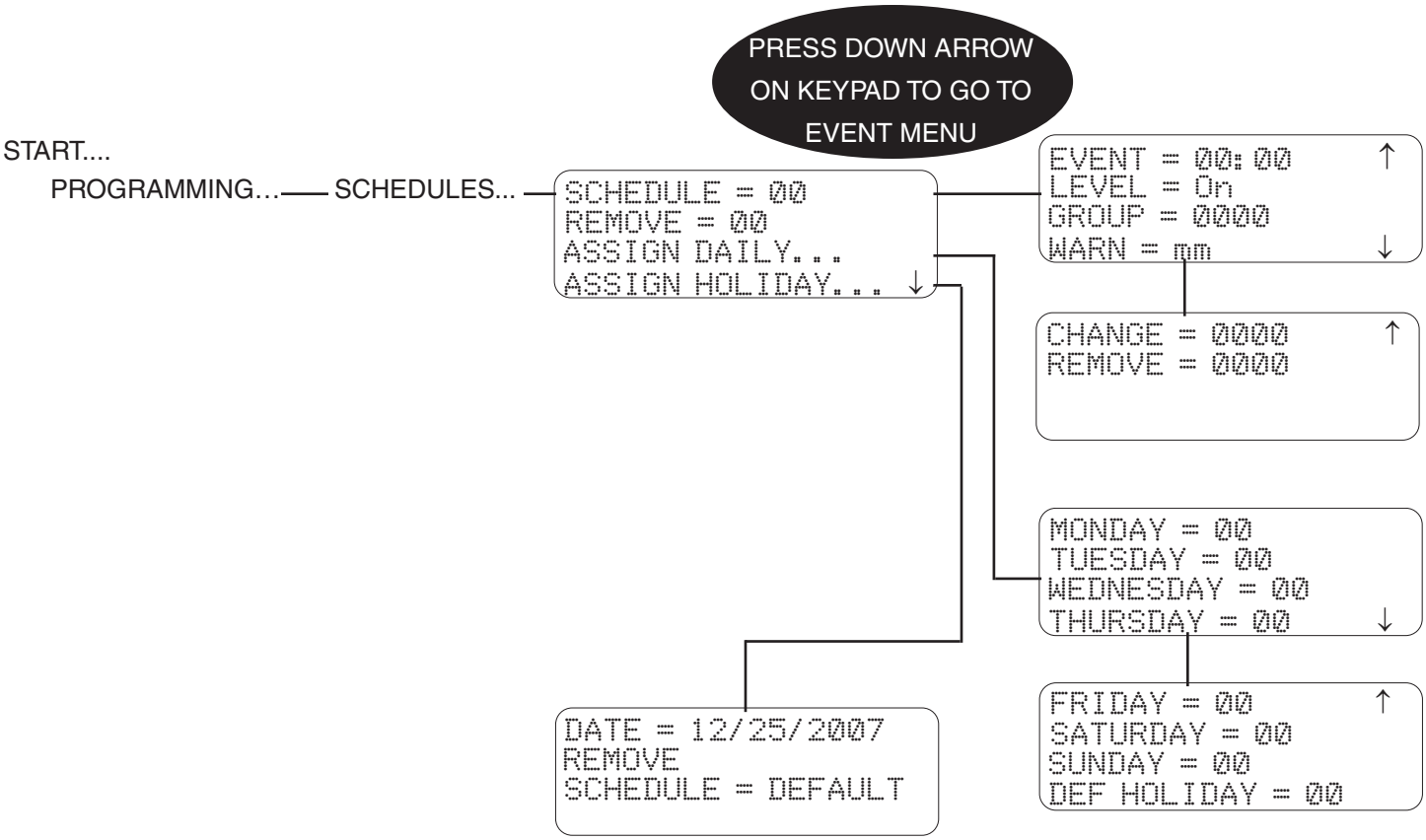
Glossary of Terms

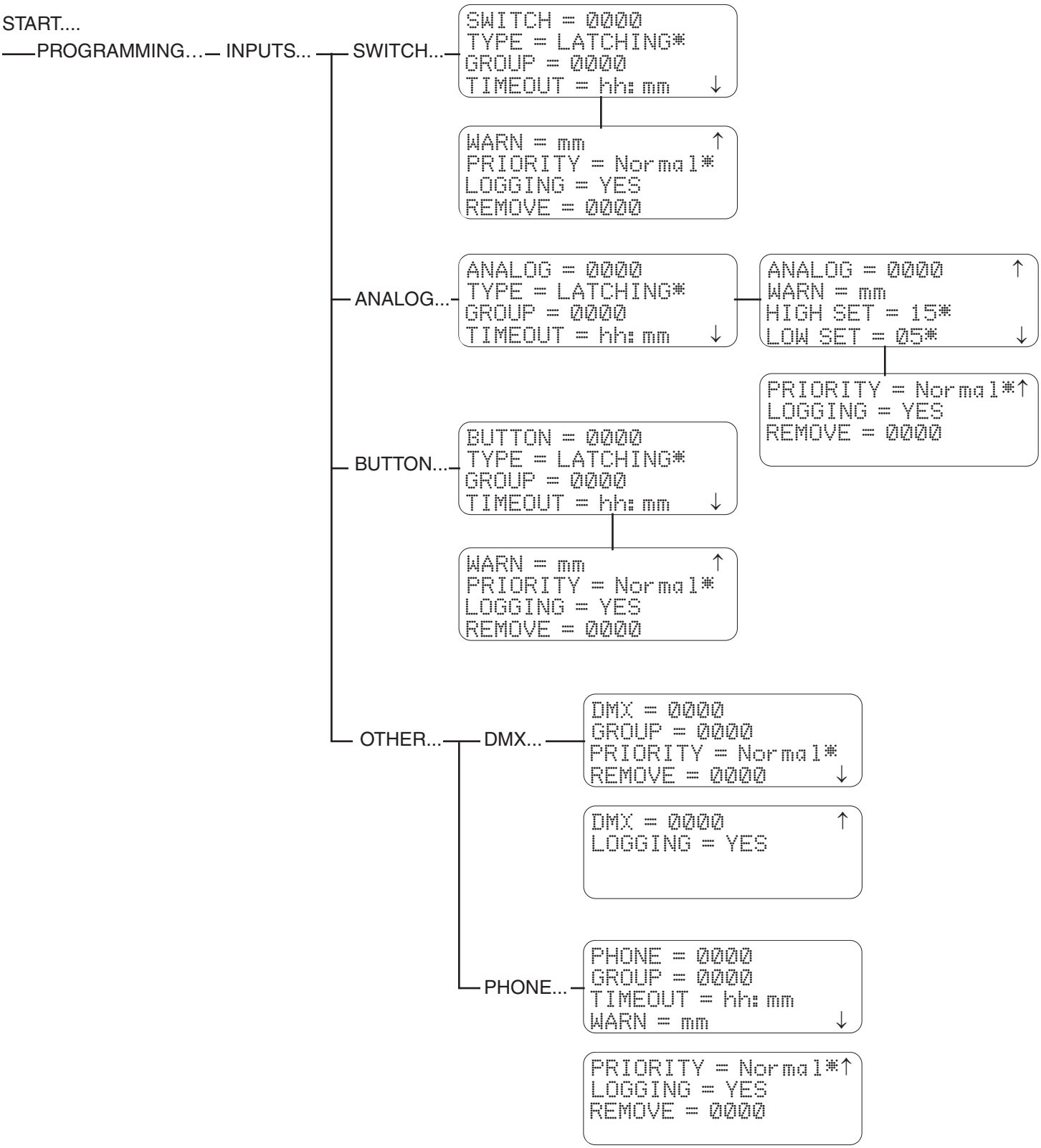
Branching out – Using the softkey choices to uncover additional Menu Choices or Data Selections or Values.
Canceling - The act of restoring a data value in the process of being changed or backing up to the next highest Menu Choice Window.
Change of state – The act of a relay closing or opening which results in a lighting load being energized or de-energized.
Cabinet - The physical enclosure containing Synergy components. Most cabinets will contain a controller and some relay or dimmer modules. However, a secondary cabinet will not contain a controller.
Controller – The system component responsible for recognizing events and the sending of messages that act on outputs.
Data Selection – Left justified keypad display followed by an equal sign (=), and the current information. "TIME = 10:20" is an example of a Data Selection. Pressing the associated softkey will allow editing of the currently displayed information.
Data Values – Keypad display word followed by an equal sign (=) and controller calculated value. Data values are right justified, and cannot be edited by pressing the softkey. "DAWN = 06:35" is an example of a Data Value.
Entering - The act of changing a data value through the use of number or - and + keys, and pressing the ENTER button to store the new information.
Event – The controller receiving an input action, or recognition of the time reaching a predetermined set point.
Groups - Collections of outputs created through programming and assigned a four-digit number.
Identification Number – Four-digit number by which all inputs, outputs, or groups can be uniquely defined within a controller.
Inputs – Attachment points that are used to collect information from remote mounted switches and sensors. This information is transmitted to the controller allowing events to take place.
Link – Association of an input or time event with a GROUP.
Menu Choice – Keypad display word followed by three periods (…). "START…" is an example of a Menu Choice. Pressing the associated softkey will branch out the selection displaying additional Menu Choices, Data Selections, or Data Values.
Outputs – Relays or dimmers that are attached to lighting loads. Relays are devices that change the ON/OFF state of lighting loads. Dimmers are devices that vary the intensity level of lighting loads.
Reinitialize – To restore factory default programming to 6 relay modules and clear all user programming.
Script - A text file that is the basis of all controller actions. The script is compiled from information that is stored when the controller is programmed.

APPENDIX 1 - MENU DIAGRAM




START....
PROGRAMMING...
GROUPS...
GROUP = 0000
LOCAL...
NETWORK...
REMOVE = 0000
BACNET ID = 00000000
GROUP...
RELAY...
DIMMER...
RELAY
RELAY = 0000
LEVEL = On*
FADE TIME = 00:00
REMOVE = 0101
DIMMERS
DIMMER = 0000
LEVEL = On*
FADE TIME = 00:00
REMOVE = 0101
GROUP
GROUP = 0000
LEVEL = On*
FADE TIME = 00:00
REMOVE = 0101
PARTITION
PARTITION = 0000
LEVEL = On*
REMOVE = 0101


PRESS DOWN ARROW ON KEYPAD TO GO TO EVENT MENU
START....
PROGRAMMING...
SCHEDULES...
SCHEDULE = 00
REMOVE = 00
ASSIGN DAILY...
ASSIGN HOLIDAY...
DATE = 12/25/2007
REMOVE
SCHEDULE = DEFAULT
EVENT = 00:00
LEVEL = On
GROUP = 0000
WARN = mm
CHANGE = 0000
REMOVE = 0000
MONDAY = 00
TUESDAY = 00
WEDNESDAY = 00
THURSDAY = 00
FRIDAY = 00
SATURDAY = 00
SUNDAY = 00
DEF HOLIDAY = 00



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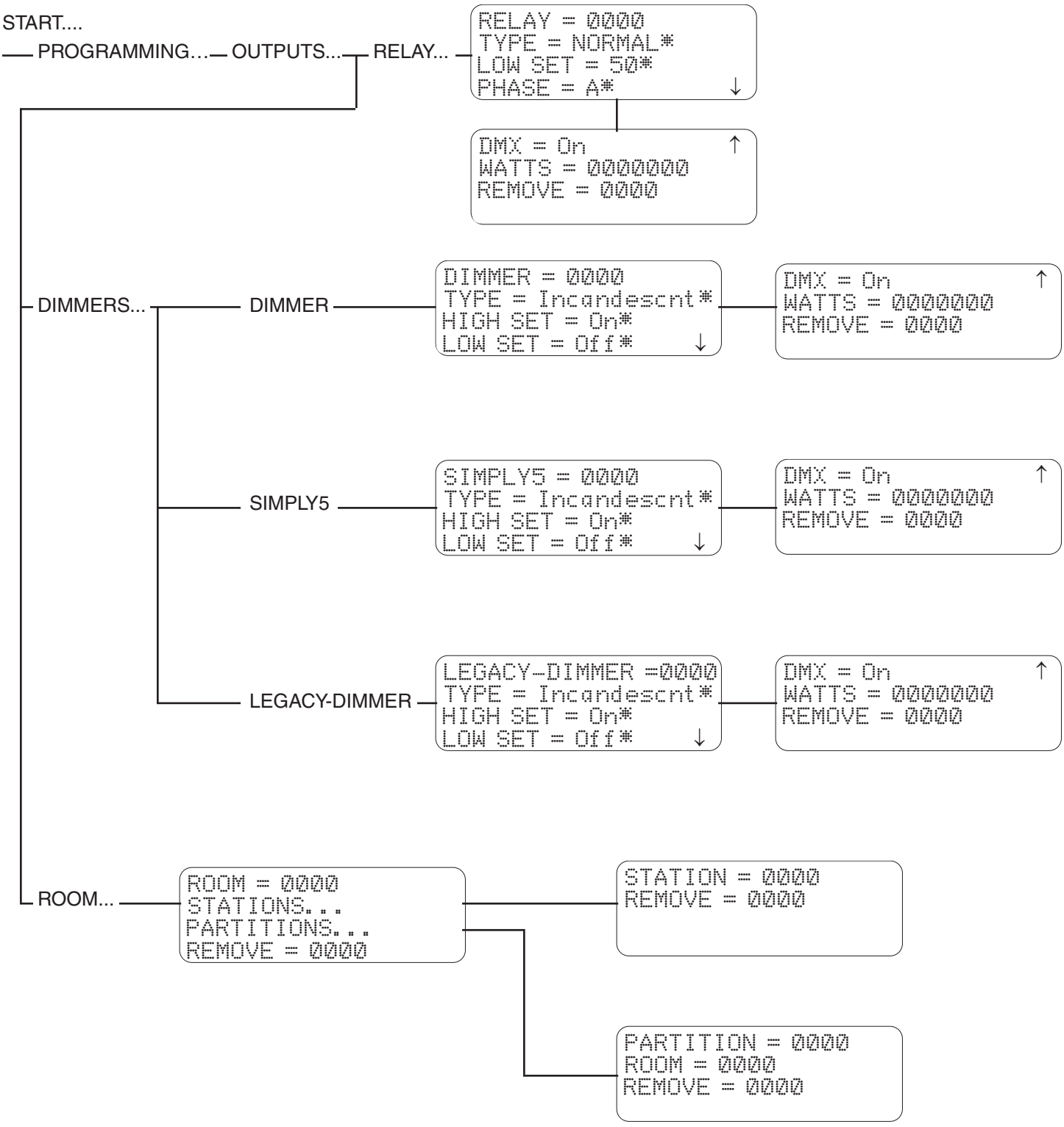
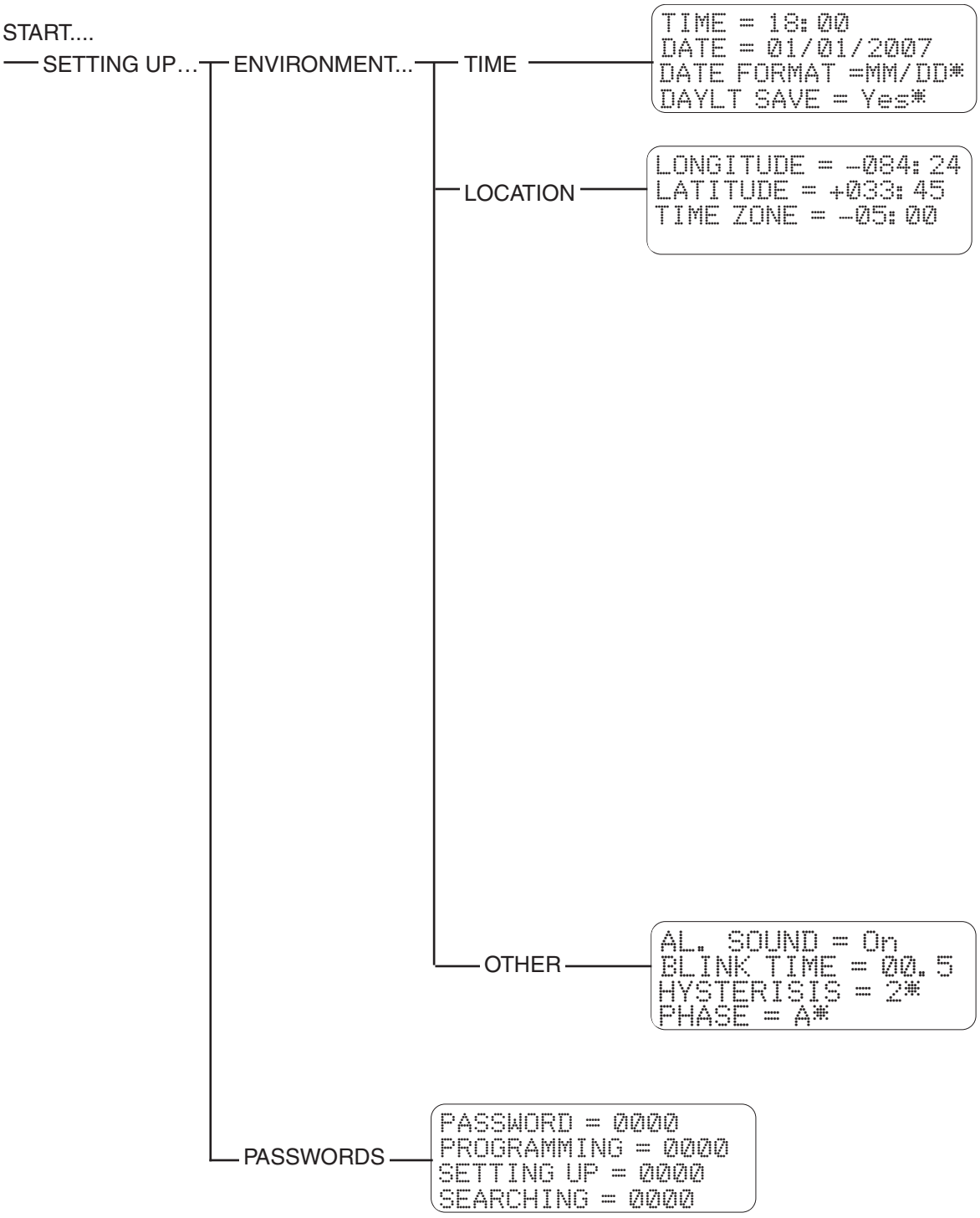

START....
PROGRAMMING...
OUTPUTS...
RELAY...
RELAY = 0000
TYPE = NORMAL*
LOW SET = 50*
PHASE = A*
DMX = On
WATTS = 0000000
REMOVE = 0000
DIMMERS...
DIMMER
DIMMER = 0000
TYPE = Incandescnt*
HIGH SET = On*
LOW SET = Off*
DMX = On
WATTS = 0000000
REMOVE = 0000
SIMPLY5
SIMPLY5 = 0000
TYPE = Incandescnt*
HIGH SET = On*
LOW SET = Off*
DMX = On
WATTS = 0000000
REMOVE = 0000
LEGACY-DIMMER
LEGACY-DIMMER =0000
TYPE = Incandescnt*
HIGH SET = On*
LOW SET = Off*
DMX = On
WATTS = 0000000
REMOVE = 0000
ROOM...
ROOM = 0000
STATIONS...
PARTITIONS...
REMOVE = 0000
STATION = 0000
REMOVE = 0000
PARTITION = 0000
ROOM = 0000
REMOVE = 0000



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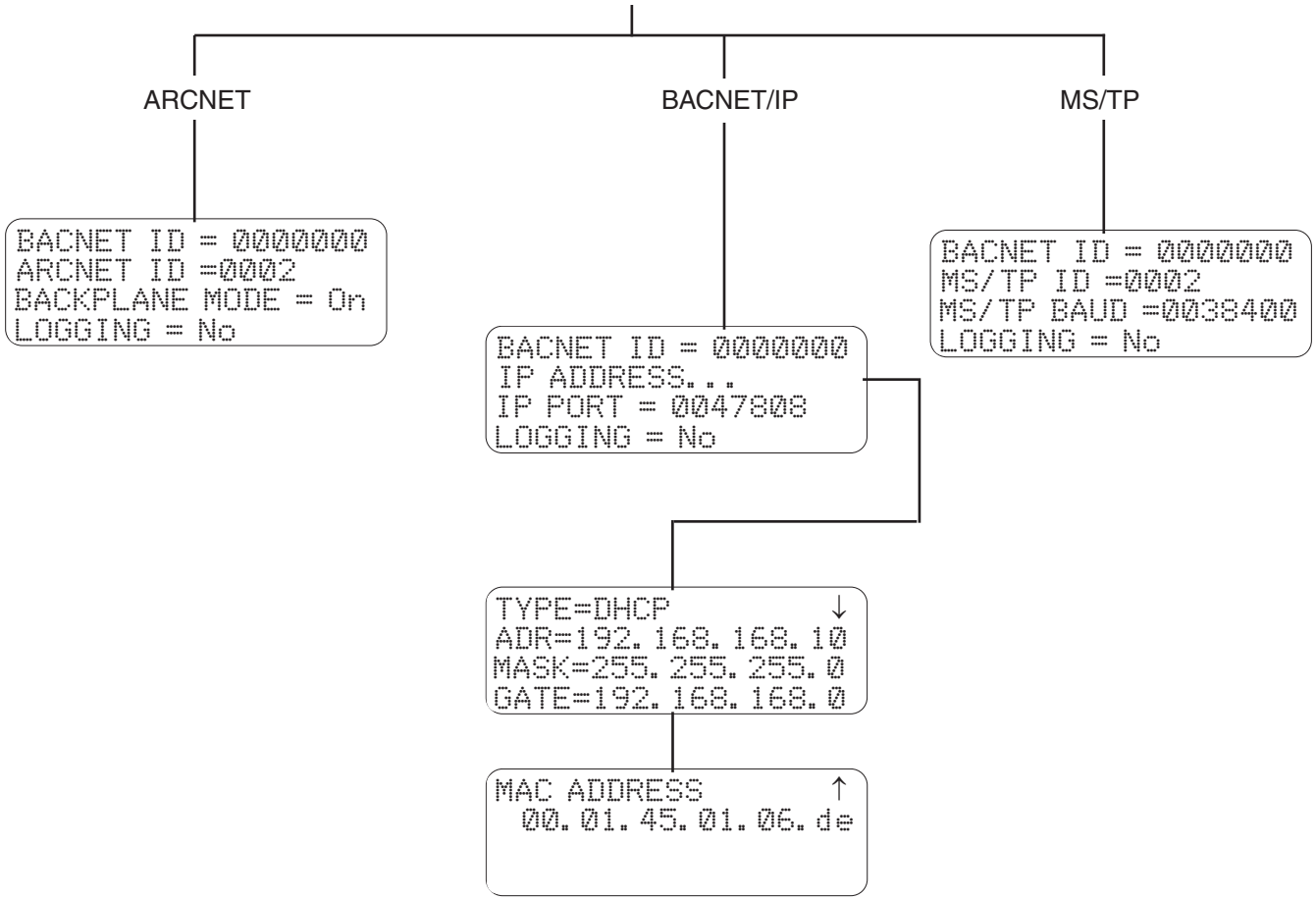
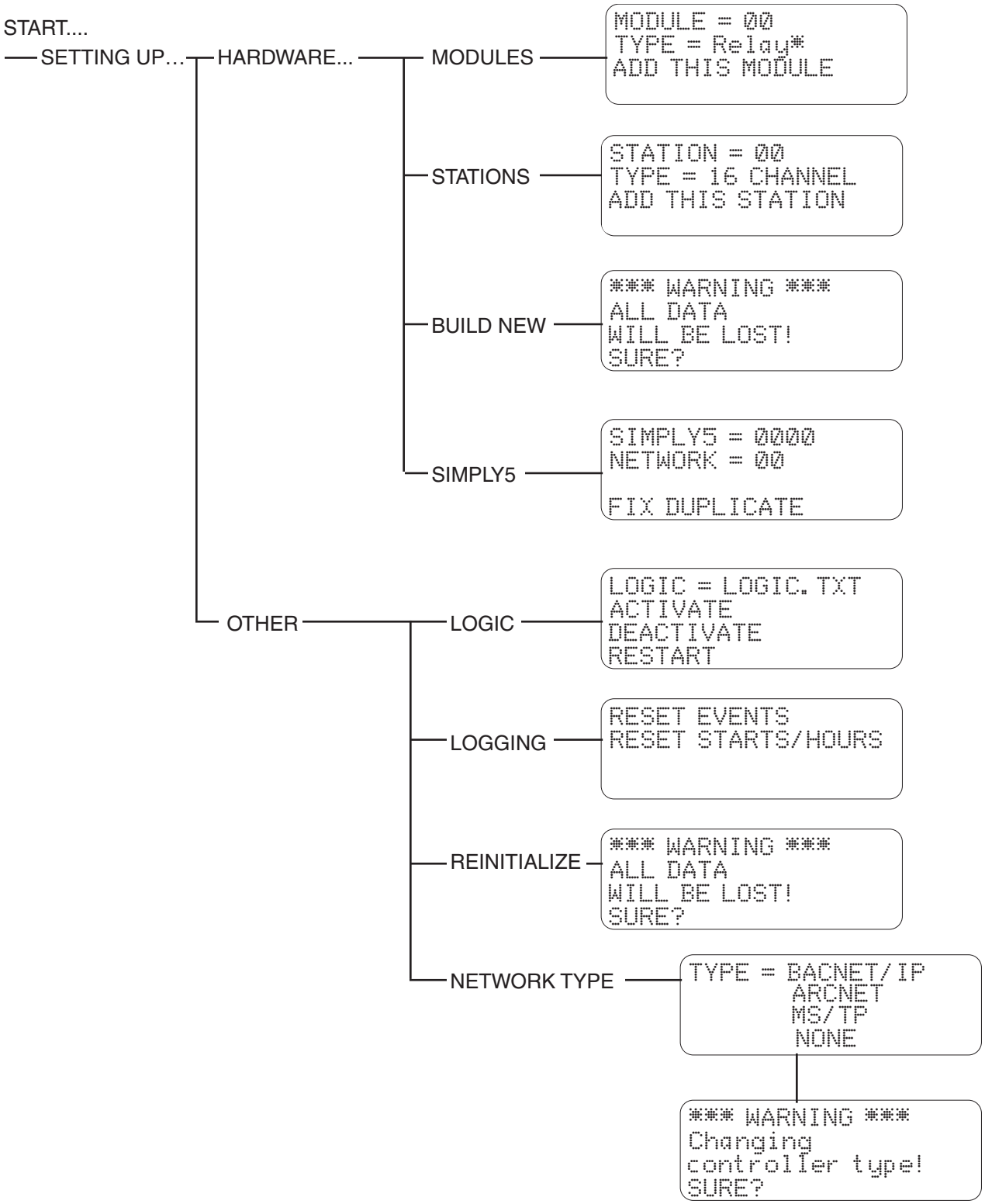
START....

SETTING UP… — ENVIRONMENT... ——— NETWORK



THE NETWORK MENU DISPLAYED IS BASED ON THE NETWORK TYPE CURRENTLY SELECTED



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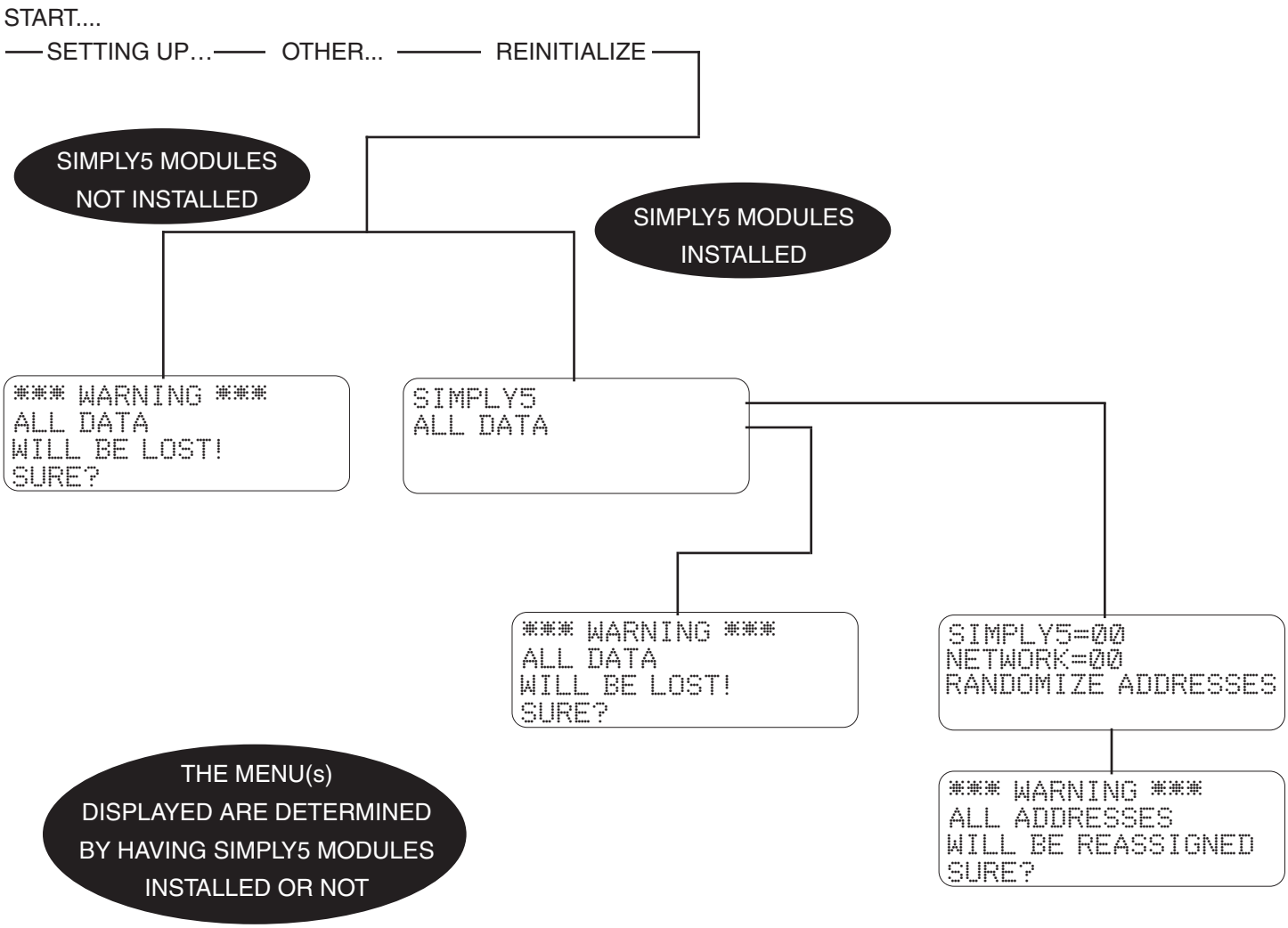
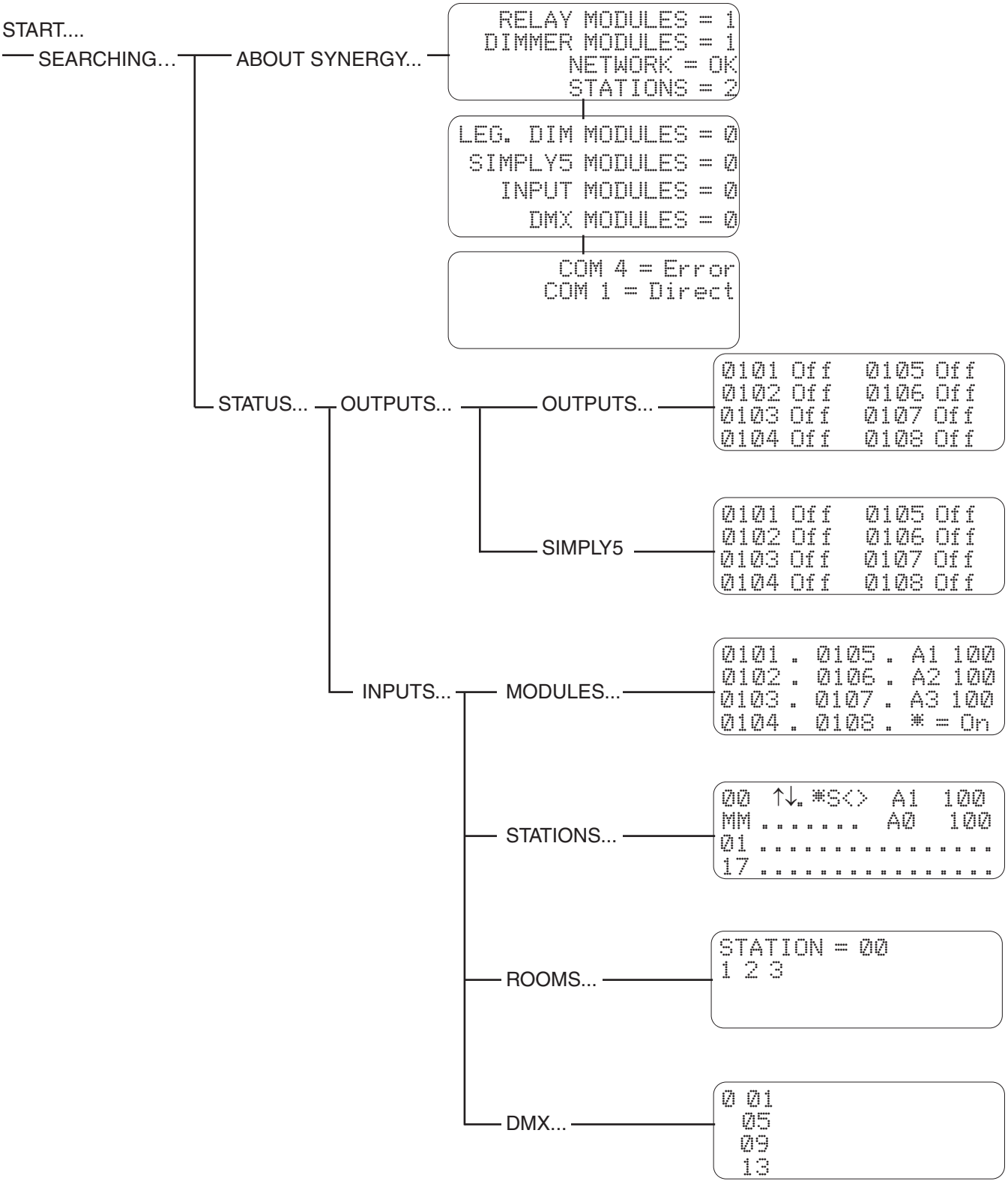

START....
SETTING UP...
OTHER...
REINITIALIZE
SIMPLY5 MODULES NOT INSTALLED
SIMPLY5 MODULES INSTALLED
*** WARNING ***
ALL DATA
WILL BE LOST!
SURE?
SIMPLY5
ALL DATA
*** WARNING ***
ALL DATA
WILL BE LOST!
SURE?
SIMPLY5=00
NETWORK=00
RANDOMIZE ADDRESSES
*** WARNING ***
ALL ADDRESSES
WILL BE REASSIGNED
SURE?
THE MENU(s) DISPLAYED ARE DETERMINED BY HAVING SIMPLY5 MODULES INSTALLED OR NOT



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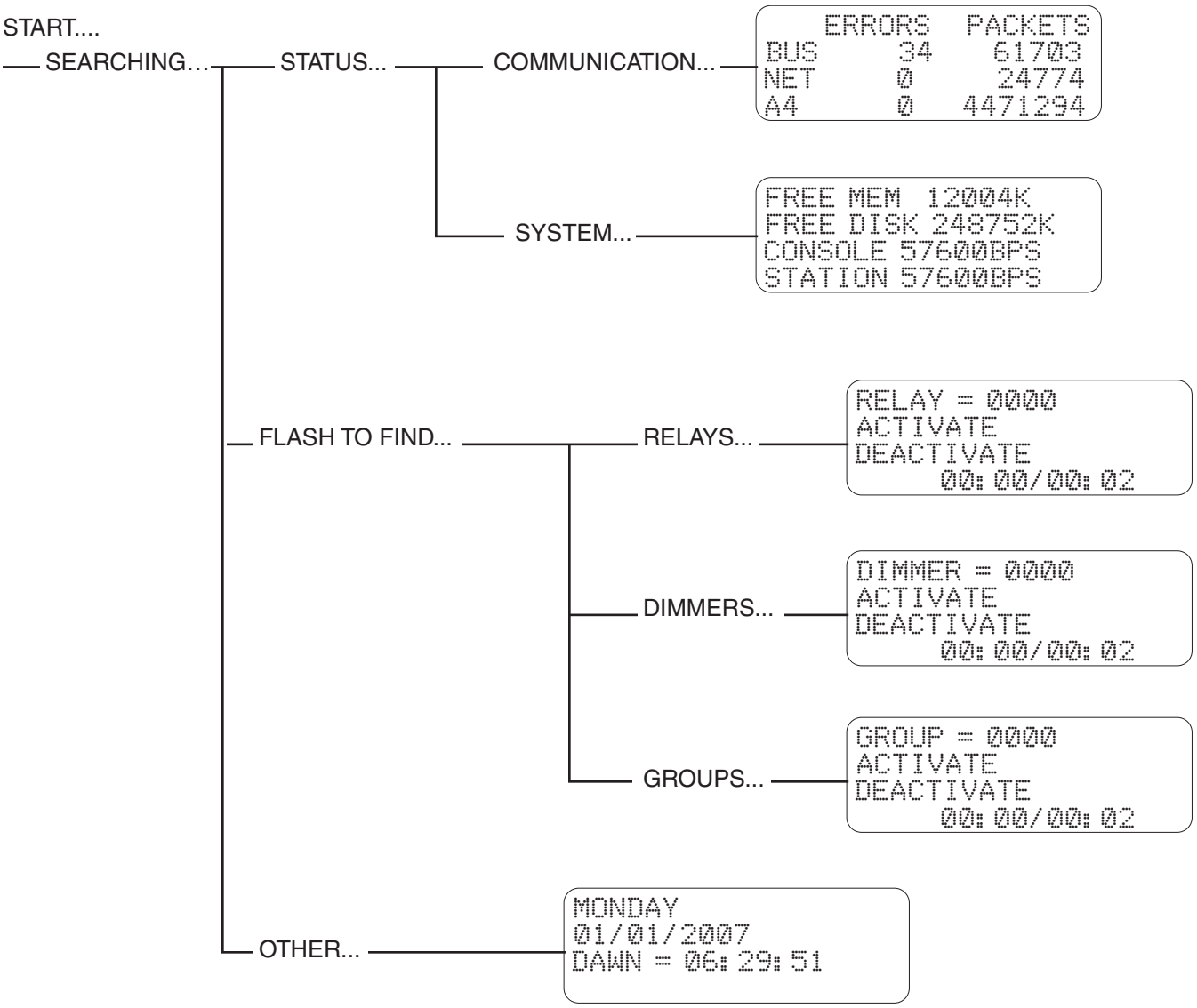
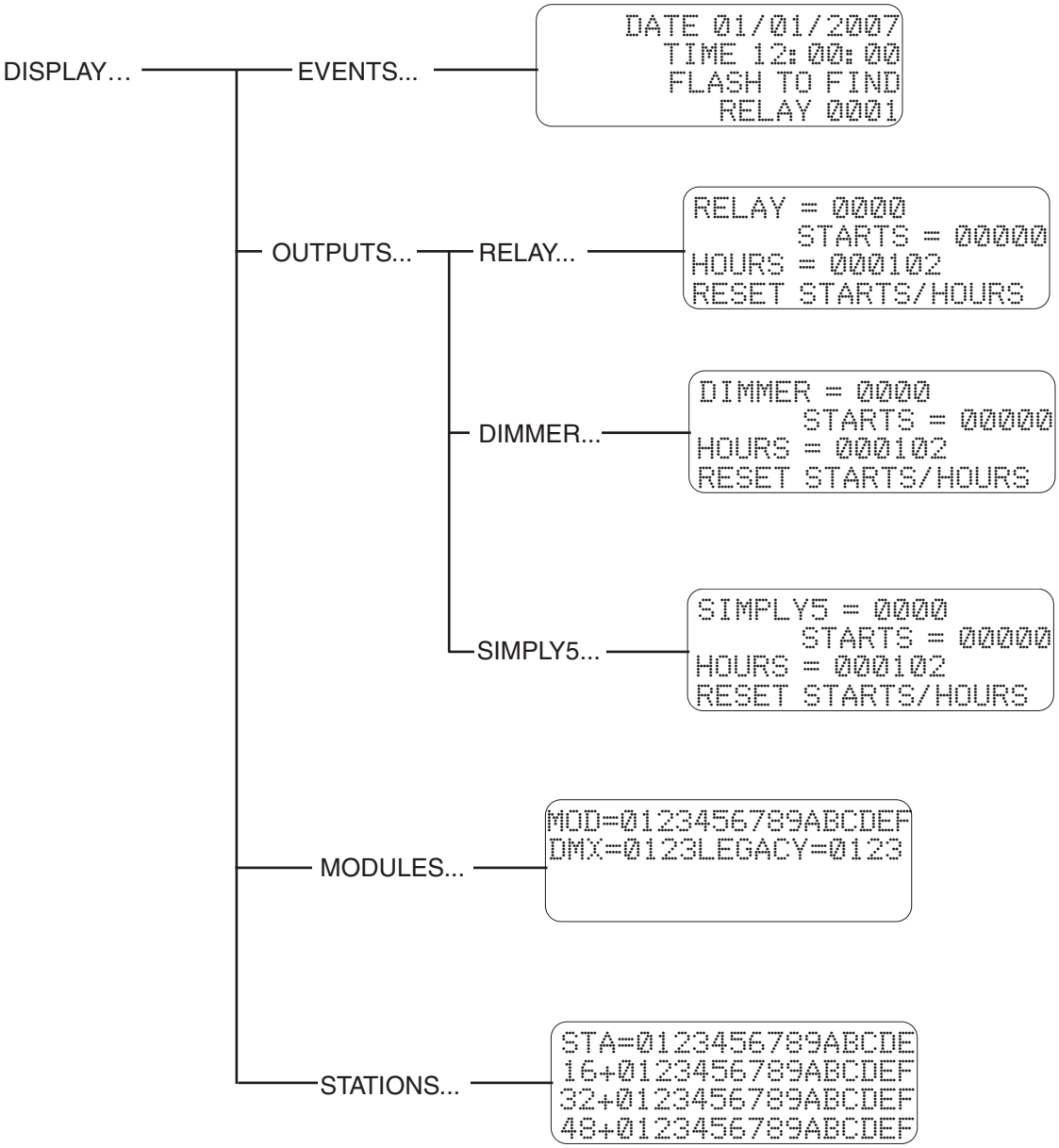

START....
SEARCHING...
STATUS...
COMMUNICATION...
ERRORS PACKETS
BUS 34 61703
NET 0 24774
A4 0 4471294
SYSTEM...
FREE MEM 12004K
FREE DISK 248752K
CONSOLE 57600BPS
STATION 57600BPS
FLASH TO FIND...
RELAYS...
RELAY = 0000
ACTIVATE
DEACTIVATE
00:00/00:02
DIMMERS...
DIMMER = 0000
ACTIVATE
DEACTIVATE
00:00/00:02
GROUPS...
GROUP = 0000
ACTIVATE
DEACTIVATE
00:00/00:02
OTHER...
MONDAY
01/01/2007
DAWN = 06:29:51



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FOR YOUR NOTES:

SYNERGY Revision V2.65 RS-232 COMMAND SET

All commands are expressed as ASCII text. Connect to the Synergy RS-232 port using null modem.
Follow all commands with carriage return + line feed.
Requested values are returned followed by a carriage return <*cr*> and a line feed <*lf*>

Synergy Male 9 Pin D-Sub Connector Pin Description

1 **DCD** (Data Carrier Detect)
2 **RX** (Receive Data)
3 **TX** (Transmit Data)
4 **DTR** (Data Terminal Ready)
5 **GND** (Ground)
6 **DSR** (Data Set Ready)
7 **RTS** (Request to Send)
8 **CTS** (Clear to Send)
9 **RI** (Ring Indicator)

Communication Settings

Bits Per Second = 57,600
Note: Speed is field changeable via the config.ini file in the system controller.
Data Bits = 8
Parity = None
Stop Bits = 1
Flow Control = Hardware

Expressions enclosed in [ ] are only used for network (SYSC MLX) controllers.

Command	Command Syntax	Command Description
Get Time	time	Returns the current local controller time as hh:mm:ss <cr><lf>
Set Time	time <hh:mm:ss>	Sets the time in all controllers
Get Date	date	Returns the controller date as mm/dd/yyyy <cr><lf>
Set Date	date <mm/ dd/ yyyy>	Sets the date in all controllers
Reboot Controller	exit	Restarts the controller
Set Relay Status	[bacnet <id>] relay <#> [val]	Writes a new value to a relay # where <val> is expressed as a percentage, 0 - 100
Get Relay Status	[bacnet <id>] relay <#>	Returns the current value of a relay # expressed as a percentage, 0 - 100, Format; xx<cr><lf>
Set Dimmer Level	[bacnet <id>] dimmer <#> <val>	Writes a new level to a dimmer # where <val> is expressed as a percentage, 0 - 100
Get Dimmer Level	[bacnet <id>] dimmer <#>	Returns the current level of a dimmer # expressed as a percentage, 0 - 100, Format; xx<cr><lf>
Raise Dimmer	[bacnet <id>] dimmer <#> 130	Puts dimmer # in raise level auto-mode
Lower Dimmer	[bacnet <id>] dimmer <#> 129	Puts dimmer # in lower level auto-mode
Stop Raise/Lower	[bacnet <id>] dimmer <#> 128	Stops the above raise or lower actions
Set Group Level	[bacnet <id>] group <#> <val>	Writes a new level to a group # where <val> is expressed as a percentage, 0 - 100
Get Group Level	[bacnet <id>] group <#>	"Returns the current level of a group # expressed as a percentage, 0 - 100, Format; xx<cr><lf>"
Raise Group	[bacnet <id>] group <#> 130	Puts group # in raise level auto-mode
Lower Group	[bacnet <id>] group <#> 129	Puts group # in lower level auto-mode
Stop Raise/Lower	[bacnet <id>] group <#> 128	Stops the above raise or lower actions
Set Switch Status	[bacnet <id>] switch <#> <val>	Writes a new level to a swit ch # where <val> is 0 for off or 1 for on
Get Switch Status	[bacnet <id>] switch <#>	Returns the current status of a switch, Format; x<cr><lf>
Set Analog Level	[bacnet <id>] analog <#> <val>	Writes a new level to a analog # where <val> is expressed as a percentage, 0 - 100
Get Analog Level	[bacnet <id>] analog <#>	Returns the current analog level of the analog input # expressed as a percentage, 0 - 100, Format; xx<cr><lf>
"Set Button Level (adjust station channel)"	[bacnet <id>] button <#> <val>	Writes a new level to the control station channel # (button) where <val> is expressed as a percentage, 0 - 100
Get Button Level	[bacnet <id>] button <#>	Returns the current button level of the control station channel # (button) expressed as a percentage, 0 - 100, Format; xx<cr><lf>
Save Preset	Select <#> <fade> <mask>	Saves a control station preset on button # using the present values for the respective channels (buttons) as set above. Fade is expressed in seconds up to 6500. Mask is used for including and excluding channels from the preset.
Restart Controller		Reboots the controller. This command only works on Synergy devices
ID Network Devices	[bacnet whois]	Returns the properties of all network devices found, 256 vendor devices will be buffered
ID Network Device	[bacnet whois <id>]	Returns the properties of the network device at address id
Display Devices	bacnet dumpall	Displays the properties of network devices returned with the whois command

APPENDIX 2 - US LONGITUDE, LATITUDE AND TIME ZONES

State	City	Longitude	Latitude	Time Zone		State	City	Longitude	Latitude	Time Zone
AL	Birmingham	- 086 : 49	+ 33 : 31	-6		FL	Pensacola	- 087 : 13	+ 30 : 25	-5
AL	Brookley-Mobile	- 088 : 03	+ 30 : 37	-6		FL	Sarasota	- 082 : 33	+ 27 : 24	-5
AL	Mobile	- 088 : 03	+ 30 : 42	-6		FL	St. Petersburg	- 082 : 38	+ 27 : 46	-5
AR	Little Rock	- 092 : 16	+ 34 : 45	-6		FL	Tampa	- 082 : 27	+ 27 : 57	-5
AR	North Little Rock	- 092 : 11	+ 34 : 41	-6		FL	West Palm Beach	- 080 : 03	+ 26 : 43	-5
AZ	Mesa	- 111 : 50	+ 33 : 25	-7		GA	Atlanta	- 084 : 24	+ 33 : 45	-5
AZ	Phoenix	- 111 : 53	+ 33 : 26	-7		GA	Augusta	- 081 : 58	+ 33 : 28	-5
AZ	Tucson	- 110 : 58	+ 32 : 13	-7		GA	Conyers	-084 : 01	+33 : 40	-5
CA	Fresno	- 119 : 46	+ 36 : 44	-8		HI	Honolulu	- 157 : 52	+ 21 : 18	-10
CA	Long Beach	- 118 : 11	+ 33 : 46	-8		IA	Davenport	- 090 : 29	+ 41 : 43	-6
CA	Los Angeles	- 118 : 09	+ 34 : 01	-8		IA	Des Moines	- 093 : 37	+ 41 : 35	-6
CA	Modesto	- 120 : 57	+ 37 : 38	-8		ID	Boise	- 116 : 12	+ 43 : 37	-7
CA	Oakland	- 122 : 13	+ 37 : 44	-8		IL	Chicago	- 087 : 38	+ 41 : 52	-6
CA	Porterville	- 119 : 01	+ 35 : 55	-8		IL	Kankakee	- 087 : 51	+ 41 : 05	-6
CA	Riverside	- 117 : 22	+ 33 : 59	-8		IL	Moline	- 090 : 38	+ 41 : 19	-6
CA	Sacramento	- 121 : 33	+ 38 : 27	-8		IL	Peoria	- 089 : 36	+ 40 : 42	-6
CA	San Bernardino	- 117 : 17	+ 34 : 06	-8		IL	Rockford	- 089 : 06	+ 42 : 16	-6
CA	San Diego	- 117 : 09	+ 32 : 43	-8		IL	St. Louis	- 090 : 09	+ 38 : 37	-6
CA	San Francisco	- 122 : 22	+ 37 : 37	-8		IN	Gary	- 087 : 20	+ 41 : 36	-6
CA	San Jose	- 121 : 56	+ 37 : 22	-8		IN	Indianapolis	- 086 : 22	+ 39 : 49	-5
CA	Santa Barbara	- 119 : 42	+ 34 : 25	-8		KS	Kansas City	- 094 : 38	+ 39 : 07	-6
CA	Santa Rosa	- 122 : 43	+ 38 : 26	-8		KS	Wichita	- 097 : 20	+ 37 : 42	-6
CA	Stockton	- 121 : 10	+ 37 : 50	-8		KY	Lexington	- 084 : 30	+ 38 : 03	-5
CA	Ventura	- 119 : 18	+ 34 : 17	-8		KY	Louisville	- 085 : 46	+ 38 : 15	-5
CA	Visalia	- 119 : 18	+ 36 : 20	-8		LA	Baton Rouge	- 091 : 14	+ 30 : 31	-6
CO	Boulder	- 105 : 17	+ 40 : 01	-7		LA	Lafayette	- 092 : 01	+ 30 : 14	-6
CO	Colorado Springs	- 104 : 49	+ 38 : 50	-7		LA	New Orleans	- 090 : 10	+ 30 : 02	-6
CO	Denver	- 104 : 53	+ 39 : 46	-7		LA	Shreveport	- 093 : 49	+ 32 : 46	-6
CO	Greeley	- 104 : 42	+ 40 : 25	-7		MA	Boston	- 071 : 03	+ 42 : 21	-5
CT	Bridgeport	- 073 : 11	+ 41 : 11	-5		MA	Brockton	- 071 : 01	+ 42 : 05	-5
CT	Hartford	- 072 : 41	+ 41 : 46	-5		MA	Fall River	- 071 : 09	+ 41 : 42	-5
CT	New Haven	- 072 : 56	+ 41 : 18	-5		MA	Lawrence	- 071 : 07	+ 42 : 43	-5
CT	Stamford	- 073 : 32	+ 41 : 03	-5		MA	Lowell	- 071 : 19	+ 42 : 38	-5
CT	Waterbury	- 073 : 03	+ 41 : 33	-5		MA	New Bedford	- 070 : 56	+ 41 : 38	-5
CT	West Hartford	- 072 : 44	+ 41 : 45	-5		MA	Springfield	- 072 : 36	+ 42 : 06	-5
DC	Washington	- 077 : 01	+ 38 : 54	-5		MA	Worcester	- 071 : 48	+ 42 : 16	-5
DE	Newark	- 075 : 45	+ 39 : 41	-5		MD	Baltimore	- 076 : 37	+ 39 : 17	-5
DE	Wilmington	- 075 : 33	+ 39 : 45	-5		MD	Hagerstown	- 077 : 43	+ 39 : 39	-5
FL	Boca Raton	- 080 : 05	+ 26 : 21	-5		MI	Ann Arbor	- 083 : 45	+ 42 : 17	-5
FL	Clearwater	- 082 : 48	+ 27 : 58	-5		MI	Battle Creek	- 085 : 15	+ 42 : 19	-5
FL	Daytona Beach	- 081 : 01	+ 29 : 13	-5		MI	Bay City	- 083 : 53	+ 43 : 36	-5
FL	Fort Lauderdale	- 080 : 08	+ 26 : 07	-5		MI	Detroit	- 083 : 03	+ 42 : 20	-5
FL	Fort Myers	- 081 : 52	+ 26 : 35	-5		MI	East Lansing	- 084 : 29	+ 42 : 44	-5
FL	Jacksonville	- 081 : 31	+ 30 : 20	-5		MI	Flint	- 083 : 41	+ 43 : 01	-5
FL	Lakeland	- 082 : 01	+ 27 : 59	-5		MI	Grand Rapids	- 085 : 40	+ 42 : 58	-5
FL	Melbourne	- 080 : 38	+ 28 : 06	-5		MI	Kalamazoo	- 085 : 35	+ 42 : 17	-5
FL	Miami	- 080 : 28	+ 25 : 58	-5		MI	Lansing	- 084 : 42	+ 42 : 43	-5
FL	Orlando	- 081 : 20	+ 28 : 33	-5		MI	Saginaw	- 084 : 05	+ 43 : 32	-5

State	City	Longitude	Latitude	Time Zone		State	City	Longitude	Latitude	Time Zone
MN	Minneapolis	- 093 : 16	+ 44 : 59	-6		OR	Portland	- 122 : 41	+ 45 : 31	-8
MN	St Paul	- 093 : 06	+ 44 : 57	-6		OR	Salem	- 123 : 01	+ 44 : 56	-8
MO	Kansas City	- 094 : 35	+ 39 : 17	-6		PA	Allentown	- 075 : 28	+ 40 : 36	-5
MO	St. Louis	- 090 : 29	+ 38 : 52	-6		PA	Bethlehem	- 075 : 23	+ 40 : 37	-5
MS	Biloxi	- 088 : 53	+ 30 : 24	-6		PA	Coopersburg	-075 : 23	+40 : 30	-5
MS	Gulfport	- 089 : 06	+ 30 : 22	-6		PA	Harrisburg	- 076 : 53	+ 40 : 16	-5
MS	Jackson	- 090 : 11	+ 32 : 18	-6		PA	Lancaster	- 076 : 18	+ 40 : 02	-5
MS	Pascagoula	- 088 : 33	+ 30 : 21	-6		PA	Philadelphia	- 075 : 09	+ 39 : 57	-5
NC	Chapel Hill	- 079 : 04	+ 35 : 56	-5		PA	Pittsburgh	- 080 : 00	+ 40 : 26	-5
NC	Charlotte	- 080 : 51	+ 35 : 14	-5		PA	Reading	- 075 : 56	+ 40 : 20	-5
NC	Durham	- 078 : 55	+ 36 : 00	-5		PA	Scranton	- 075 : 40	+ 41 : 25	-5
NC	Gastonia	- 081 : 11	+ 35 : 16	-5		PA	York	- 076 : 44	+ 39 : 58	-5
NC	Greensboro	- 079 : 47	+ 36 : 04	-5		RI	Providence	- 071 : 25	+ 41 : 50	-5
NC	High Point	- 080 : 00	+ 35 : 57	-5		RI	Warwick	- 071 : 27	+ 41 : 42	-5
NC	Raleigh	- 078 : 38	+ 35 : 47	-5		SC	Anderson	- 082 : 39	+ 34 : 31	-5
NC	Winston-Salem	- 080 : 15	+ 36 : 06	-5		SC	Charleston	- 079 : 56	+ 32 : 47	-5
NE	Omaha	- 095 : 56	+ 41 : 16	-6		SC	Columbia	- 081 : 03	+ 33 : 51	-5
NH	Manchester	- 071 : 28	+ 42 : 59	-5		SC	Greenville	- 082 : 24	+ 34 : 51	-5
NH	Portsmouth	- 070 : 45	+ 43 : 05	-5		SC	Rock Hill	- 081 : 01	+ 34 : 56	-5
NH	Rochester	- 070 : 58	+ 43 : 18	-5		SC	Spartanburg	- 081 : 56	+ 35 : 02	-5
NJ	Jersey City	- 074 : 04	+ 40 : 44	-5		TN	Bristol	- 082 : 11	+ 36 : 36	-5
NJ	Newark	- 074 : 10	+ 40 : 44	-5		TN	Chattanooga	- 085 : 19	+ 35 : 03	-5
NJ	Trenton	- 074 : 46	+ 40 : 13	-5		TN	Johnson City	- 082 : 21	+ 36 : 19	-5
NM	Albuquerque	- 104 : 52	+ 36 : 30	-7		TN	Kingsport	- 082 : 33	+ 36 : 33	-5
NV	East Las Vegas	- 115 : 03	+ 36 : 06	-8		TN	Knoxville	- 083 : 55	+ 35 : 58	-6
NV	Las Vegas	- 115 : 09	+ 36 : 10	-8		TN	Memphis	- 090 : 03	+ 35 : 09	-6
NV	North Las Vegas	- 115 : 07	+ 36 : 12	-8		TN	Nashville	- 086 : 47	+ 36 : 10	-6
NY	Albany	- 073 : 45	+ 42 : 39	-5		TX	Arlington	- 097 : 07	+ 32 : 44	-6
NY	Buffalo	- 078 : 52	+ 42 : 53	-5		TX	Austin	- 097 : 42	+ 30 : 18	-6
NY	New York	- 073 : 60	+ 40 : 45	-5		TX	Beaumont	- 094 : 01	+ 29 : 57	-6
NY	Niagara Falls	- 079 : 03	+ 43 : 06	-5		TX	Corpus Christi	- 097 : 24	+ 27 : 48	-6
NY	Rochester	- 077 : 36	+ 43 : 10	-5		TX	Dallas	- 096 : 48	+ 32 : 47	-6
NY	Schenectady	- 073 : 56	+ 42 : 49	-5		TX	El Paso	- 106 : 29	+ 31 : 46	-6
NY	Syracuse	- 076 : 09	+ 43 : 03	-5		TX	Fort Worth	- 097 : 20	+ 32 : 45	-6
NY	Troy	- 073 : 41	+ 42 : 44	-5		TX	Galveston	- 094 : 48	+ 29 : 18	-6
OH	Akron	- 081 : 31	+ 41 : 05	-5		TX	Houston	- 095 : 22	+ 29 : 45	-6
OH	Canton	- 081 : 23	+ 40 : 48	-5		TX	McAllen	- 098 : 14	+ 26 : 12	-6
OH	Cincinnati	- 084 : 31	+ 39 : 06	-5		TX	Port Arthur	- 093 : 56	+ 29 : 53	-6
OH	Cleveland	- 081 : 42	+ 41 : 30	-5		TX	San Antonio	- 098 : 29	+ 29 : 26	-6
OH	Columbus	- 083 : 00	+ 39 : 58	-5		UT	Ogden	- 111 : 58	+ 41 : 07	-7
OH	Dayton	- 084 : 24	+ 40 : 01	-5		UT	Salt Lake City	- 111 : 59	+ 40 : 51	-7
OH	Hamilton	- 084 : 34	+ 39 : 24	-5		VA	Newport News	- 076 : 25	+ 36 : 59	-5
OH	Springfield	- 083 : 51	+ 39 : 50	-5		VA	Norfolk	- 076 : 17	+ 36 : 51	-5
OH	Toledo	- 083 : 33	+ 41 : 39	-5		VA	Richmond	- 077 : 26	+ 37 : 32	-5
OH	Warren	- 080 : 48	+ 41 : 14	-5		VA	Virginia Beach	- 075 : 58	+ 36 : 51	-5
OH	Youngstown	- 080 : 41	+ 41 : 20	-5		WA	Olympia	- 122 : 54	+ 46 : 58	-8
OK	Oklahoma City	- 097 : 31	+ 35 : 28	-6		WA	Seattle	- 122 : 20	+ 47 : 37	-8
OK	Tulsa	- 095 : 47	+ 36 : 12	-6		WA	Spokane	- 117 : 38	+ 47 : 34	-8

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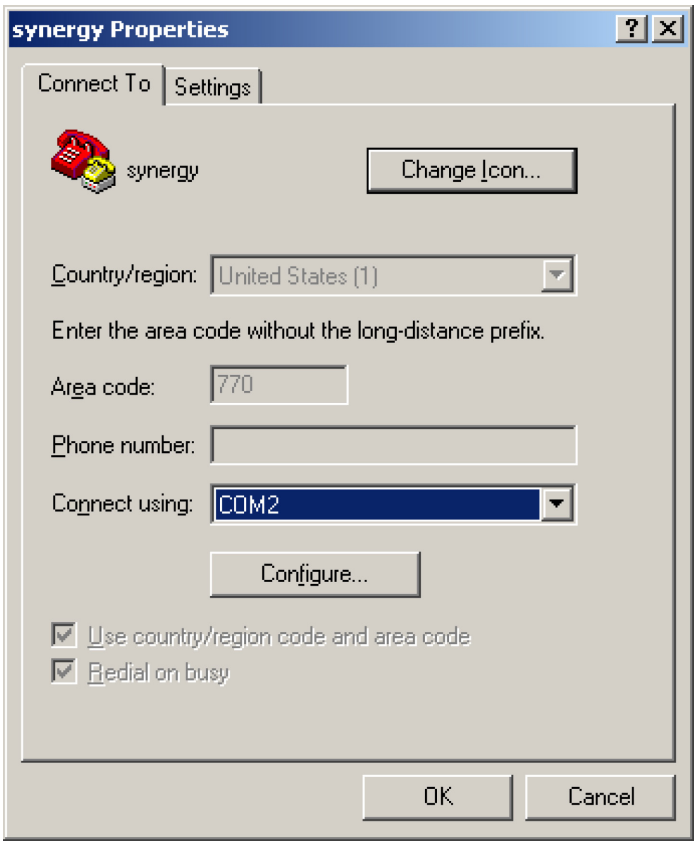
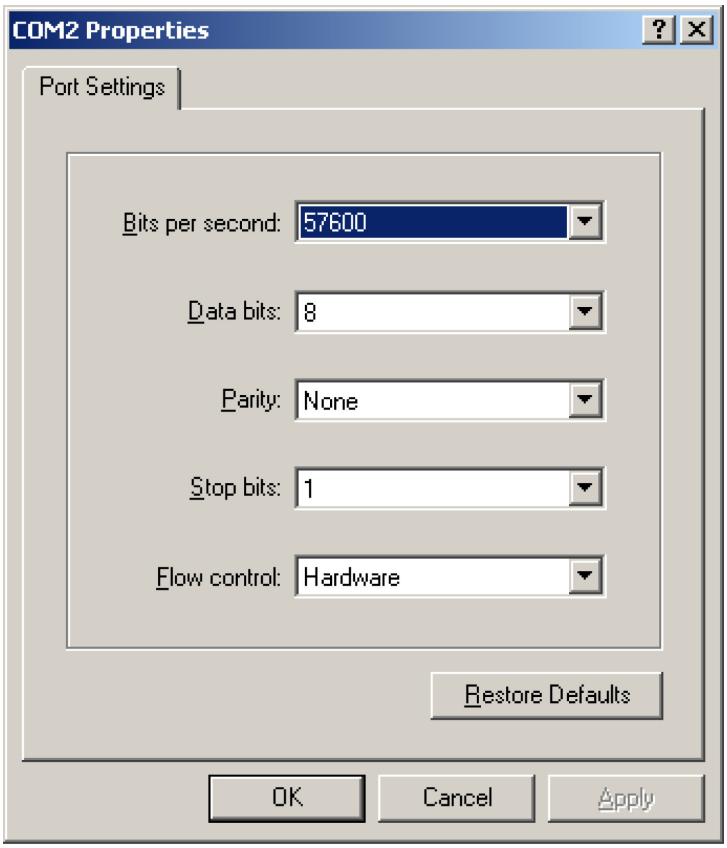
State	City	Longitude	Latitude	Time Zone
WA	Tacoma	- 122 : 26	+ 47 : 15	-8
WA	Vancouver	- 122 : 40	+ 45 : 38	-8
WI	Appleton	- 088 : 25	+ 44 : 16	-6
WI	Kenosha	- 087 : 50	+ 42 : 36	-6
WI	Madison	- 089 : 23	+ 43 : 04	-6
WI	Milwaukee	- 088 : 02	+ 43 : 07	-6
WI	Oshkosh	- 088 : 33	+ 43 : 59	-6
WI	Racine	- 087 : 47	+ 42 : 44	-6

Additional locations can be found at http://geonames.usgs.gov/

APPENDIX 3 - PC CONNECTION TO DB9 PORT

The DB9 port on the front panel of the controller is capable of serial RS-232 communications with a modem or personal computer equipped with a terminal emulation program such as HyperTerminal which is supplied with **Microsoft Windows®** . The connection from the serial port (COM1, COM2) of your PC to the Synergy controller is accomplished with a null modem cable. This cable is available from Synergy as an SYA CABLE, or may be purchased from a computer retailer such as Radio Shack. Set up the terminal emulation program to connect to the correct serial port on your PC and configure it as follows:





1. Start – Programs – Accessories – HyperTerminal – Hypertrm.exe. Name the connection Synergy, and choose an appropriate icon, select the COM port connect ion, and set the COM port properties as shown below:

2. Connect the communication cable between the PC and the controller, and prompted select “Y Modem Connection”. You are now able to send data to and receive data from the controller.

3. Tasks that are available include sending and receiving the text based files that Synergy uses to customize its operation. These are SCRIPT.TXT and LOGIC.TXT. Although these files can be read and edited with simple text editors, the syntax is critical, and Synergy recommends creating these files with the Synergy configuration software (available from Synergy as SYSW CONFIG). In some instances if the message SCRIPT ERROR appears it may be necessary to delete the script file to restart controller operation, and you may want to make a backup disk copy of you script files. This backup can be later sent to the controller to restore original programming.

4. Simple RS-232 commands below can be typed as text into the HyperTerminal program to control the lighting loads and connect to remote cabinets on the Synergy network.

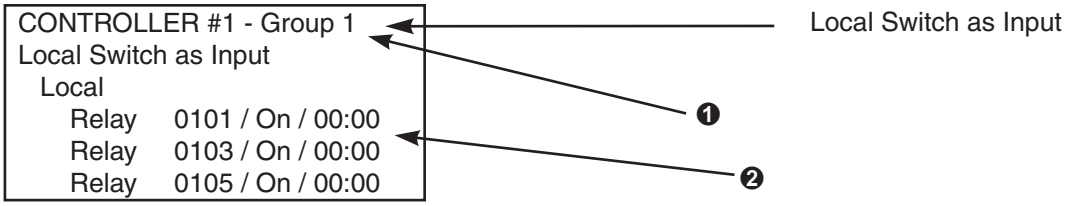
APPENDIX 4 - GROUP PROGRAMMING EXAMPLES

CHANNEL GROUP - Includes Local Relays or Local Dimmers with an On level and no fade time.

Example A: Group 1, controlled by a switch, is to contain 3 relays:

❶ Create a Group (ex. Group 1).

❷ Include Local Outputs (Relays 101,103, and 105 at On levels with no fade time).



In the Basic Group example above, when the Local Switch is activated relays 101, 103 and 105 are instantly sent to an On or Off level.

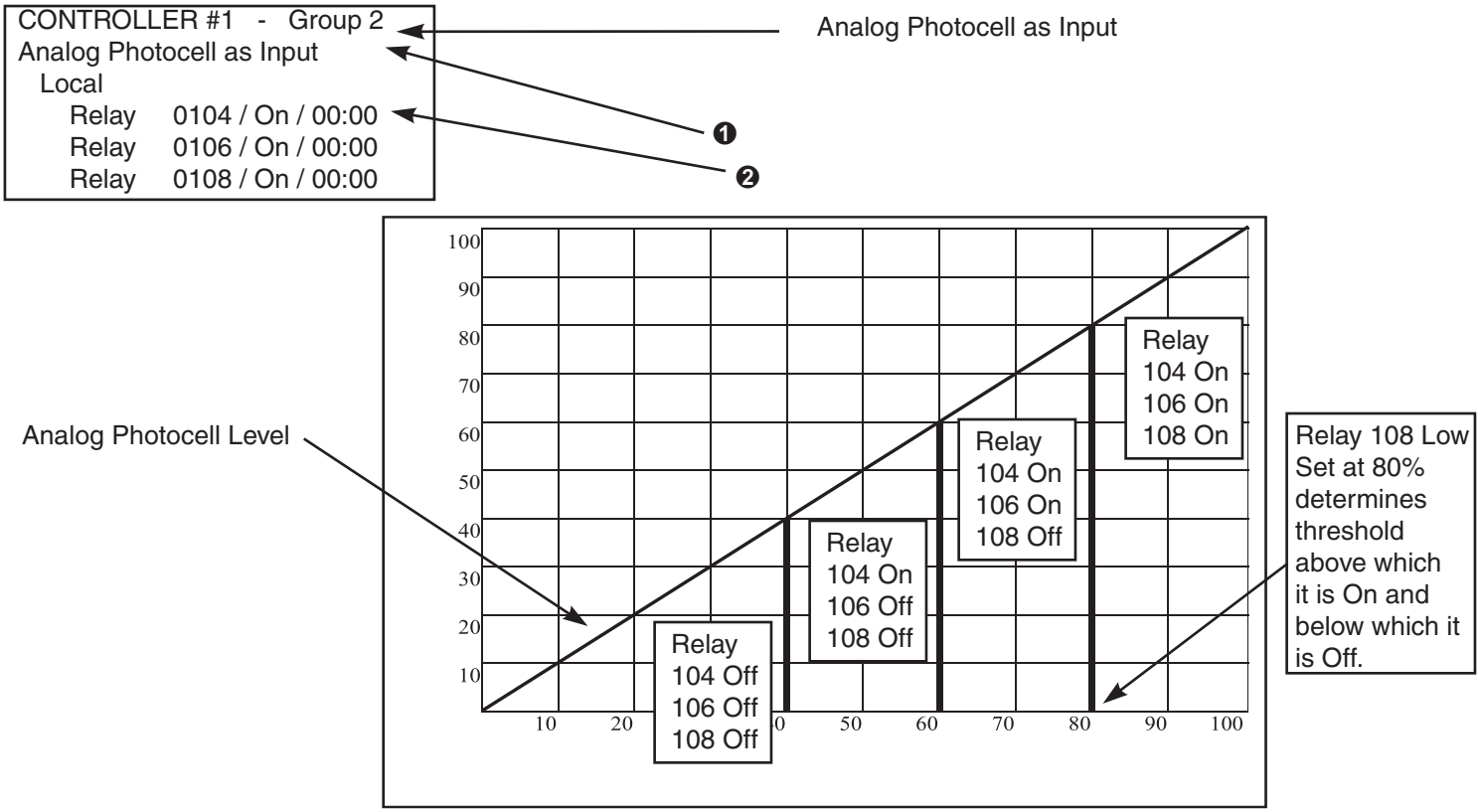
A special case of the Channel Group includes relays with differing Low Sets.

Example B: Group 2, set to track an analog input, is to contain 3 relays:

❶ Create a Group (ex. Group 2).

❷ Include Local Outputs (ex. Relays 104, 106 and 108 at On levels with no fade time)

❸ Modify the Low Set, per page 36, (ex. Relays 104 – 40%, 106 - 60%, 108 – 80%) of these relays based on desired switch point.



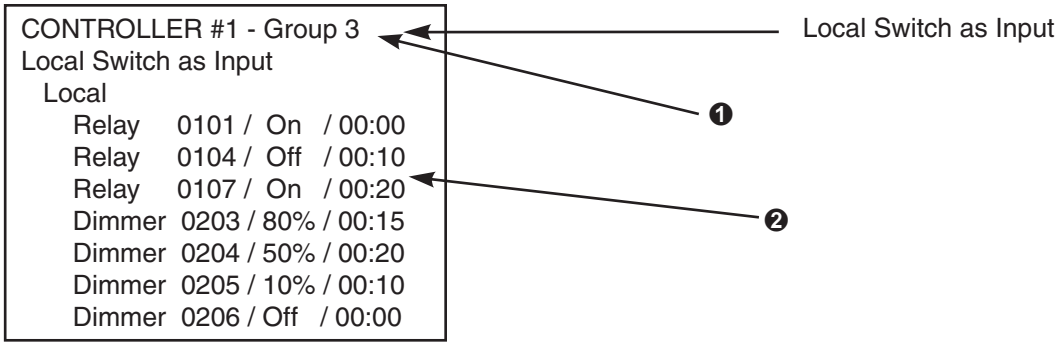
In the example above, as the analog photocell level increases and decreases Relays 104, 106 and 108 will switch On and Off above and below their respective Low Set thresholds.

PATTERN GROUP - Consists of relays in an On and Off pattern, and/or dimmers at individual levels. Pattern groups usually include fade times to allow smooth transitions from one pattern group to another.

Example: Group 3, to be controlled by a switch, contains three relays and four dimmers:

❶ Create a Group (ex. Group 3).

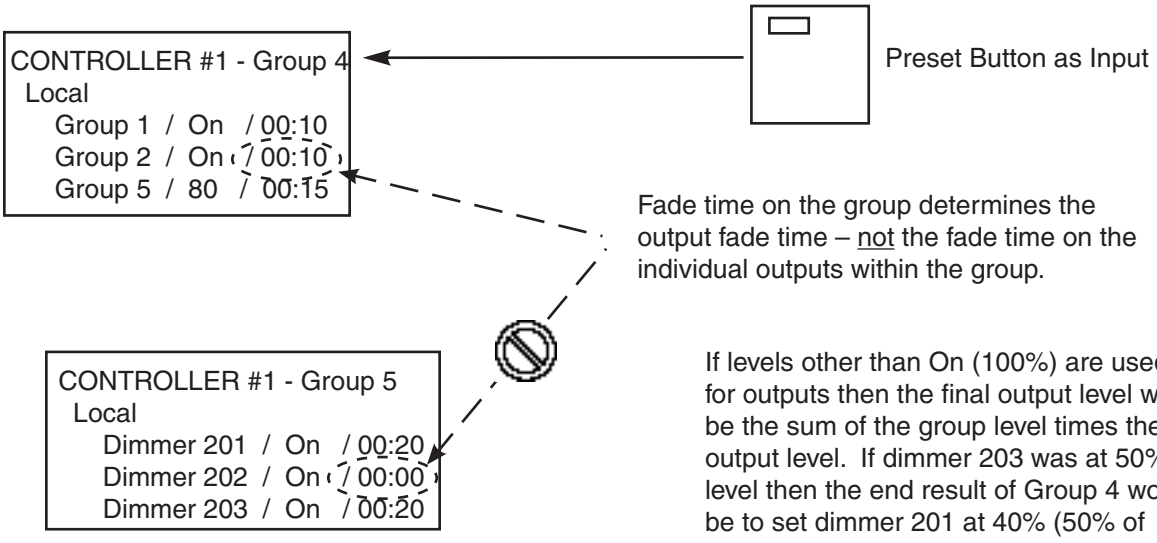
❷ Include Local Outputs (ex. Relays 101, 104 and 107 and Dimmers 203, 204, 205 and 206 at differing levels and fade times.)



In the pattern Group example above, when the Local Switch is activated On the Relays and Dimmers in Group 3 will go to their group levels over the programmed fade time indicated. A relay programmed with a Fade Time will not react instantly to the group level change, and dimmers will smoothly fade between levels. Activating the Local Switch Off will fade the Relays and Dimmers to Off over their respective fade times.

PRESET GROUP – consists of a group of channel groups. Preset Groups are created automatically when saving a preset on a Sequel Control Station.

Example: Group 4, controlled by a Sequel Control Station preset button, is to contain Groups 1 and 2 from the examples above, plus Group 5 a new channel group with dimmers:



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MULTI-CONTROLLER GROUP – When groups are to be made up of a mixture of local and network outputs, set them up to include Local Relays and/or Dimmers along with Network Groups. As shown in Example #1 below, illustrates programming a Multi-Controllers Group (ex. Group 6) in Controller #1:

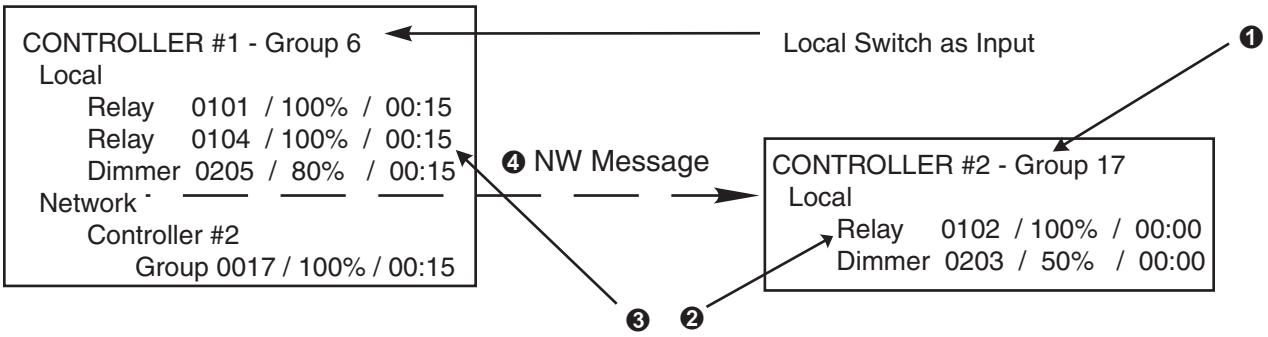
Example:

❶ Create a Group (ex. Group 17) in Controller #2.

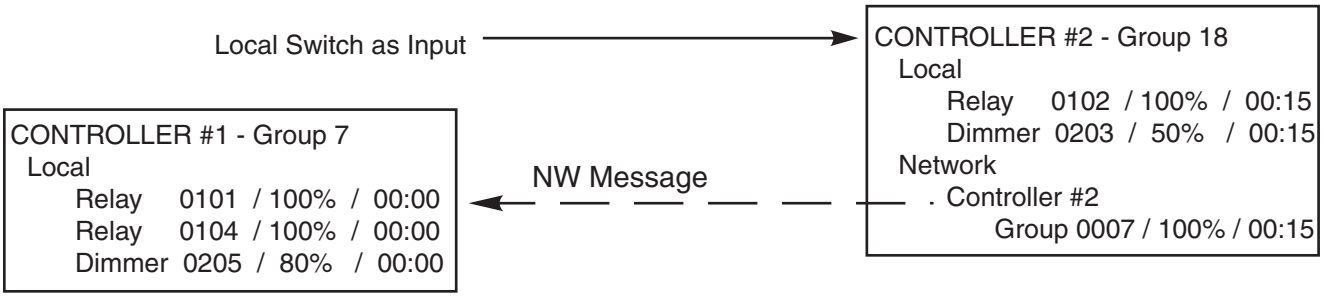
❷ Include Controller #2 local outputs (Relay 102 & Dimmer 203, at desired levels with no fade time) in Group 17.

❸ Create a Group (ex. Group 6) in Controller #1. Include Controller #1 local outputs (Relay 101,104 & Dimmer 205, at esired levels with the desired fade time) and include Controller #2 Group 17 at 100% level with desired fade time as a Network Group.

❹ When the switch connected to Controller #1 is activated, the local outputs in Controller #1 are sent to their levels within the group. In addition, Controller #1 broadcasts a network message to Controller #2 to send network group fade time and local group levels to the relays and dimmers.

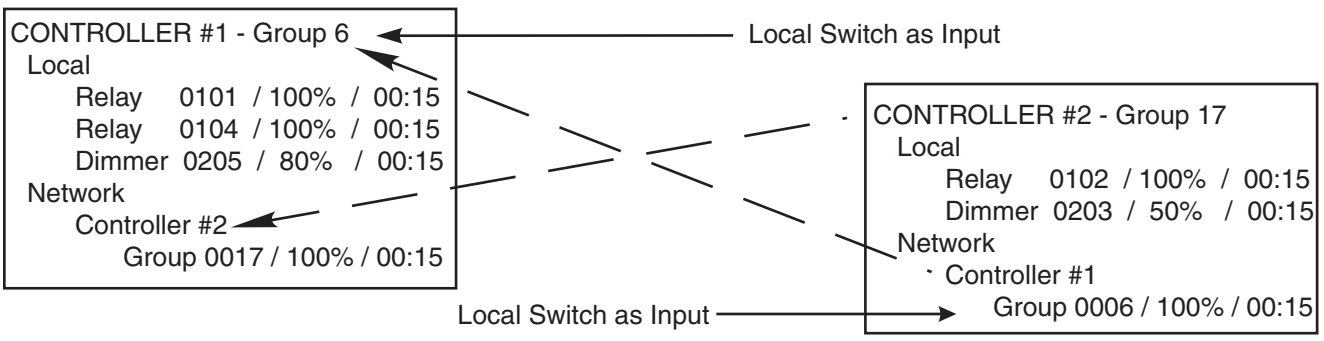


If a local switch with the same functionality as above is to be connected to Controller #2, two new groups **must** be created:



The following method of "inter-locking" Multi-controller groups will result in circular network messages.

WARNING! **DO NOT PROGRAM THIS TYPE OF GROUP:** WARNING!



APPENDIX 5 - STATION PROGRAMMING EXAMPLES

Sequel Control Stations are available in several hardware configurations based on the number of control channels required. When adding stations to the script, the system will create all necessary button inputs based on the hardware configuration selected. A particular button input is identified in the system based on a 4 digit number comprised of the control station address and the physical position of the button on the station. For example, station address 3's preset number 4 would be identified as 0304. The table below lists the input number for each button, where xx is used for the station address:

Button Function	16 Channel Station	12 Channel Station	8 Channel Station	4 Channel Station
Preset 1	xx01	xx01	xx01	xx01
Preset 2	xx02	xx02	xx02	xx02
Preset 3 ❶	xx03	xx03	xx03	xx03
Preset 4	xx04	xx04	xx04	xx04
Preset 5	xx05	xx05	xx05	xx05
Preset 6 ❶	xx06	xx06	xx06	xx06
Preset 7	xx07	xx07	xx07	xx07
Preset 8	xx08	xx08	xx08	xx08
Presets 9 – 16 ❷	xx09 – xx16	xx09 – xx16	xx09 – xx16	xx09 – xx16
Channel 1	xx17	xx17	xx17	**xx18** ❸
Channel 2	xx18	xx18	xx18	**xx20** ❸
Channel 3	xx19	xx19	xx19	**xx22** ❸
Channel 4	xx20	xx20	xx20	**xx24** ❸
Channel 5	xx21	xx21	xx21	
Channel 6	xx22	xx22	xx22	
Channel 7	xx23	xx23	xx23	
Channel 8	xx24	xx24	xx24	
Channel 9	xx25	xx25		
Channel 10	xx26	xx26		
Channel 11	xx27	xx27		
Channel 12	xx28	xx28		
Channel 13	xx29			
Channel 14	xx30			
Channel 15	xx31			
Channel 16	xx32			

IMPORTANT NOTES:

❶ Presets 3 & 6 are optional in place of Master Raise and Lower function.

❷ Presets 9 - 16 are accessible only through remote stations wired to the back of the Sequel station.

❸ Sequel 4 channel stations differ in channel number to button number mapping.

Station buttons for Master Raise and Lower, On, Off, Select and Fade Time are not programmable.

STEPS TO PROGRAM SEQUEL STATIONS

1. Add the hardware configurations present under START SETTING UP HARDWARE on page 19.
2. On the load schedules on pages 12-16, record how the outputs will be grouped and create Channel Groups as detailed in Appendix IV.
3. Assign the Channel Groups from step 2 above to the button input numbers per the above table and instructions on page 39. If two stations are to mimic one another, program only the higher address station and refer to the information on the following page for the lower address station.
4. Preset Group levels are automatically assigned when saving a preset on the Sequel control station. Assigning a non-standard group to a Preset button input will not allow the station to save a group for that button.

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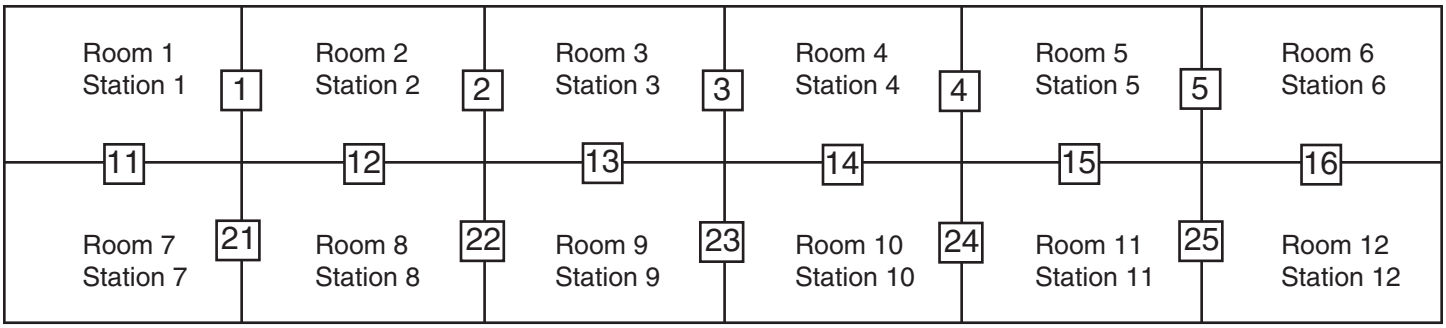
ROOM ASSIGNMENT:
Sequel Control Stations can be assigned to different rooms to:
A. Simplify the set-up for systems with rooms having stationary walls if two or more stations are to perform the same function.
B. Allow room assignment functionality when the system is used to control the lighting in a multi-section ballroom.

SYSTEMS WITH STATIONARY WALLS
If multiple stations are set-up to be in the same room, lower address stations will mimic the programming of the highest number station in that room. This simplifies the system set-up by eliminating the need to program the buttons on the lowest numbered stations in a particular area.
Example: To set-up control station addresses 1, 2 and 4 to be in a single room, first program the highest address station (#4) with the desired group information as detailed on the previous page. Next, add the two lower address stations to Room 1 following the instruction on page 52. Multiple Rooms may be programmed using this procedure, as shown for stations 5 and 7 being set-up in Room 2. Partition information is not important in systems with stationary walls.

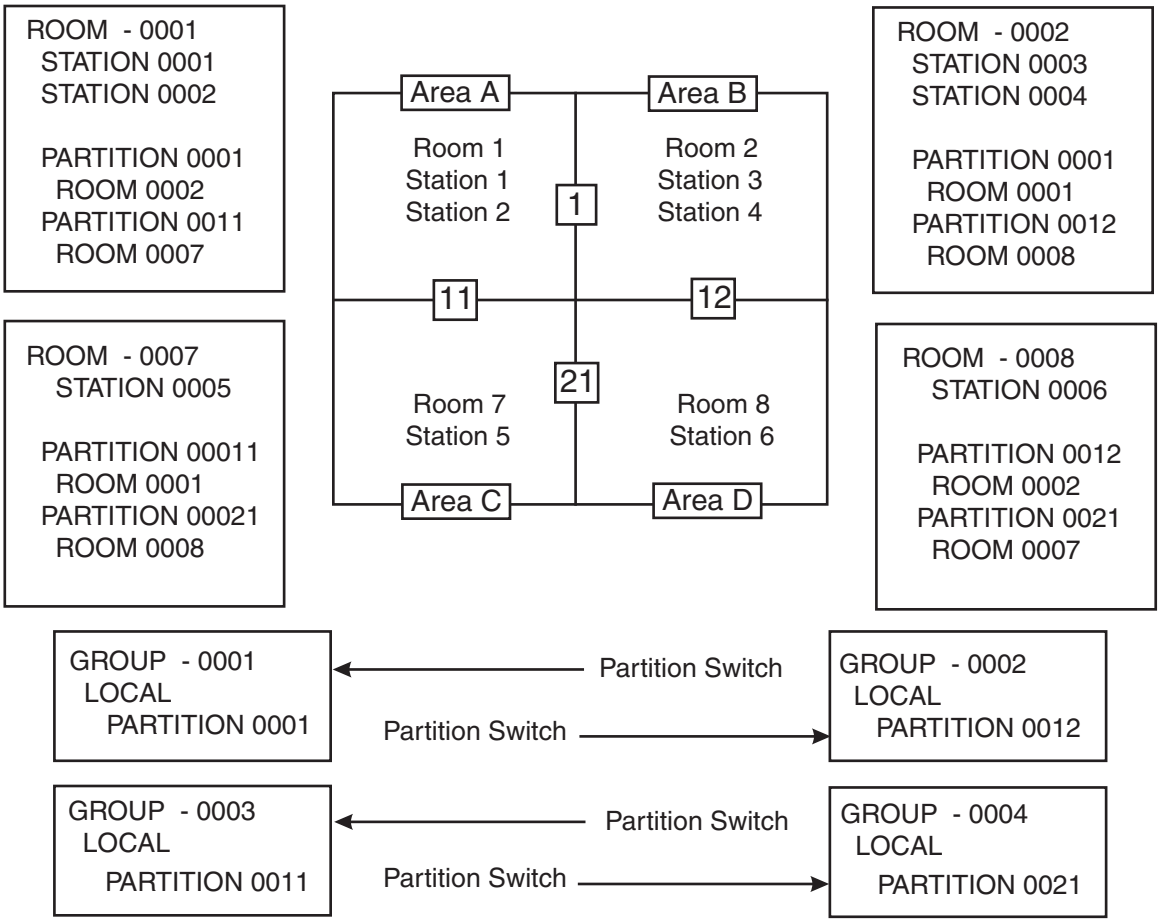
Room 1	Room 2
Station 1	Station 5
Station 2	Station 7
Station 4	

SYSTEMS WITH MOVEABLE PARTITIONS
Systems controlling lighting in rooms with movable partitions have the ability to re-configure the control stations to match partition door configurations. Individual partitions are included in a group, and that group is controlled to be Open or Closed. When partitions are Open, all adjoining control stations will be linked for common control. The highest address station will have priority for preset levels. When all the partitions for a room are Closed, the stations in that room will operate only the lighting in that room.

The default Room Assignment Station and Partition number map for the system is shown below, with partition numbers indicated at the intersection of the walls:



Example: A four room assignment system for Areas A, B, C and D having two stations in Rooms 1 & 2 is pictured below. Four local switches activate groups to Open and Close the Partition Outputs.



P1	P11	P12	P21	Station 1	Station 2	Station 3	Station 4	Station 5	Station 6
●	●	●	●	Area A	Area A	Area B	Area B	Area C	Area D
❍	●	●	●	Areas A & B	Areas A & B	Areas A & B	Areas A & B	Area C	Area D
●	❍	●	●	Areas A & C	Areas A & C	Area B	Area B	Areas A & C	Area D
●	●	❍	●	Area A	Area A	Areas B & D	Areas B & D	Area C	Areas B & D
●	●	●	❍	Area A	Area A	Area B	Area B	Areas C & D	Areas C & D
❍	❍	●	●	Areas A,B & C	Areas A,B & C	Areas A,B & C	Areas A,B & C	Areas A,B & C	Area D
❍	●	❍	●	Areas A,B & D	Areas A,B & D	Areas A,B & D	Areas A,B & D	Area C	Areas A,B & D
❍	●	●	❍	Areas A & B	Areas A & B	Areas A & B	Areas A & B	Areas C & D	Areas C & D
●	❍	❍	●	Areas A & C	Areas A & C	Areas B & D	Areas B & D	Areas A & C	Areas B & D
●	❍	●	❍	Areas A,C & D	Areas A,C & D	Area B	Area B	Areas A,C & D	Areas A,C & D
●	●	❍	❍	Area A	Area A	Areas B,C & D	Areas B,C & D	Areas B,C & D	Areas B,C & D
❍	❍	❍	❍	Areas A,B,C & D	Areas A,B,C & D	Areas A,B,C & D	Areas A,B,C & D	Areas A,B,C & D	Areas A,B,C & D

● = Partition closed ; ❍ = Partition Open

NOTE: Any combination of three partitions open will yield the same result as all four partitions open.

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Synergy Configuration Software
Users Guide

An AcuityBrands Company

Rev B 3/03

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I. Introduction

This document is intended as a guide for using the Synergy SYSW CONFIG software application to program, control and monitor a Synergy lighting control system. This document is not intended as a guide to the functionality of the Synergy system. It is strongly recommended that the user first become familiar with the operation of the Synergy controller by reading the *Operation and Programming Guide* for the controller. It is also assumed that the user is reasonable literate in the use of Microsoft Windows. If you are not a regular user of Windows, you may find it helpful to first review Microsoft Windows using one of the many books available for this purpose.

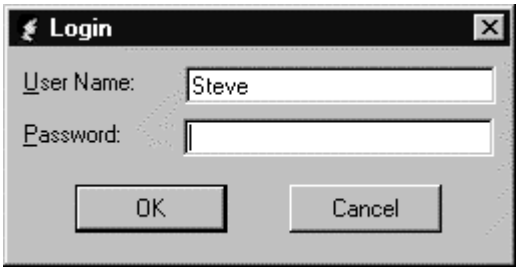
The task of entering data for the user program is performed "off line". That is, the PC on which you are working does not need to be connected to a Synergy system to perform this task. The data you enter into the program is automatically saved to the hard drive on the PC in the form of a data base with the file extension *.mdb*. The process of installing the user program into the Synergy controller(s) is called downloading. It is necessary for the PC to be properly connected to the front of the controller or to the Synergy network for this process to be performed. Once the user program is transferred to the controller(s), it is stored there as a text file called *script.txt*.

The Synergy CONFIG application is comprised of several software modules. The screens for entering and editing the user program off line make up most of the application. CONFIG also contains two online modules that are used to communicate with the controllers. The *Network Services* module is the primary means to download and upload user programs, view the actual status of controlled loads, and manually control loads in real time. The *Terminal Window* is provided for system diagnostics and maintenance. It is intended for use by advanced users. Both the *Network Services* and *Terminal Window* functions require that the PC be connected to the system for operation.

II. Getting Started

Starting the Application

To start the CONFIG application double click the Synergy icon on the desktop or navigate to Synergy.exe and double click the file. The *Login* box will immediately appear prompting you for a *User Name* and a *Password*. Enter the User Name and Password that have been assigned to you and click OK. If no user names have previously been created, this box will be bypassed and the application will launch without first prompting for login information.



The Project Closed Main Menu

Once the application is running, a blank screen titled *Project Closed* will be displayed. The *User Name* of the current operator will be displayed in the lower left corner and the current date and time from the PC will be displayed at the lower right. The main menu will appear at the top left of the screen. The main menu functions are as follows:

File

New – Use this selection to begin a new project. Clicking this selection opens the *New Project* dialog box. Here you will name the project and provide a location where the project will be saved. The default location is the Projects directory in the home directory for the CONFIG application, usually C:\Program Files\Synergy Configuration\

Open – Opens the Projects dialog box. Select a project from the list and click *Open* or double click on your selection to open the project.

Delete – Use this selection to delete a project that is currently saved. Select a project from the list and click *Open* or double click on your selection to open the project. When prompted, confirm the deletion by clicking *Yes* or cancel the deletion by clicking *No*.

Database Utils

Compact Database -- Use this selection to compact the current database making the file smaller. It is good practice to do this prior to exporting.

Repair Database – This tool should be used if you have encountered any database errors while using CONFIG.

Options

Enable Graphics Module, Enable Usage / Trend -- These selections are used to enable the optional Graphics and Usage / Trend modules. If these selections are grayed out, then they are currently enabled on your system. Contact the factory for pricing and information regarding enabling these modules if they have not been already.

Passwords -- See *Setting up CONFIG Passwords* below to establish password protection for you system.

Open Last File – When this option is selected, the CONFIG application will bypass the Project Closed screen and automatically open the last database that was worked on whenever it is launched.

Logon – Opens the password *Logon* box and allows a new user to log on and use CONFIG.

Help

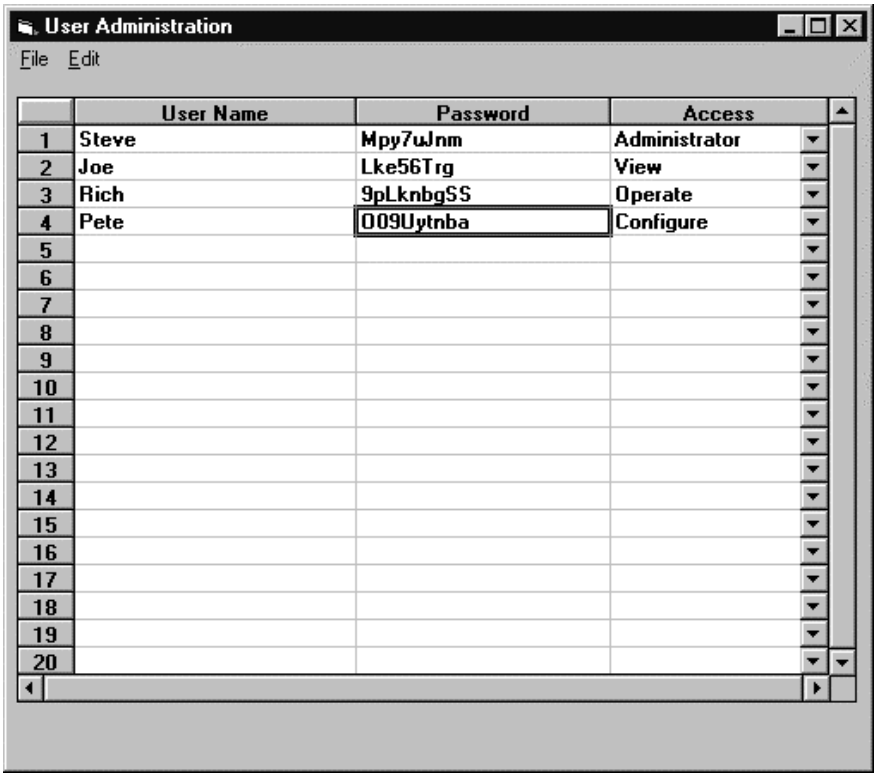
Contents – Displays the *Help* file Table of Contents.

Search for Help On…- Opens the *Help* file search dialog box.

About – Displays information about CONFIG.

Setting up CONFIG Password Protection

From the *File* menu of the Project Closed screen, select *Options*, than *Passwords*. The *User Administration* box will open.



From this box, you can enter a list of users, each with a unique password, and each assigned an access level that will restrict what functions will be available to them. **If you will be using the Password feature, be sure to set up at least one Administrator.**

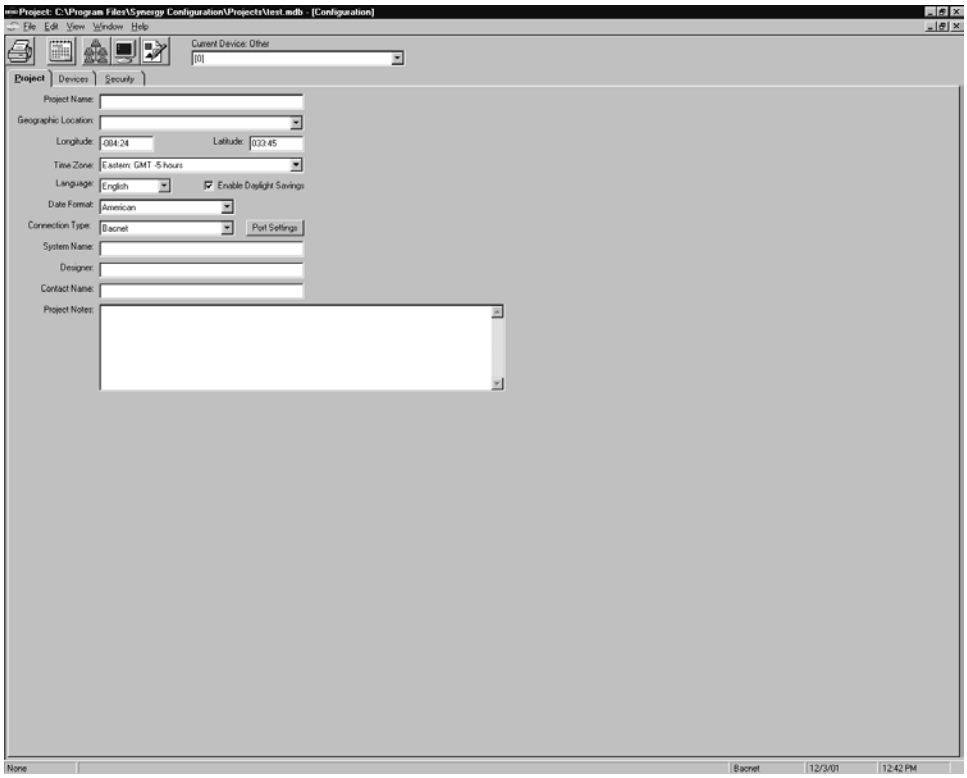
<u>If any users are set up without there first being an Administrator, it will be impossible to open the User Administration box again.</u>

The four available access levels are:

***Administrator* –** no restrictions, can edit User Names, Passwords, and Access levels.
***Configure* –** can perform all functions except edit User Names, Passwords, and Access levels.
***Operate* –** can control and monitor the lighting only, can view but not edit the programming
***View* –** can view the programming and monitor lighting status but affect no changes to the programming or lighting.

Starting a New Project

From the *file* menu, click *New.* The *New* project box will open. Enter a name for the project than click *Open.* Depending on the speed of your PC, a progress indicator box will appear for a few seconds as the data base structure is created. The project will then open with the *Project* tab selected and visible on the screen.



The Project Main Menu

File

Import Script – Use this selection to import a saved script file from a location or drive other than the *Projects* folder.
Export Script – Use this selection to save a script file to a location or drive other than the *Projects* folder.
Network Services – Opens the *Network Services* screen. A *Network Services* shortcut icon is also located on the tool bar line below the main menu.
Graphics - Opens the *Graphics* screen. A *Graphics* shortcut icon is also located on the tool bar line below the main menu.
Terminal – Opens the terminal emulation module. A *Terminal* shortcut icon is also located on the tool bar line below the main menu (see the Appendix for use of the terminal emulation module).

Print – Opens the print dialog box. Select one or more controller to print data from. Check the box next to the data you wish to print for each selected controller. The data can be viewed prior to printing by clicking the *Preview* button.
Settings – Opens the communication port dialog box (see the Appendix for communication port settings).
Close Configuration – Use this selection to close the current *Project* and return to the *Project Closed* screen.

Edit (the *Edit* menu is not used on this screen)

View

Logs

Archive Upload Log – Use this selection to view the *Archive Upload Log* (see the Appendix for using the auto archive features of CONFIG).

Tabs – Displays a list of the CONFIG tabs. A check to the left of a selection indicates that the tab will be displayed. Click on a selection to toggle the check mark on or off. Un-checking a tab selection will hide it from view. Hiding a tab will not affect the data.

Window – Displays the current active screen mode. If the Graphics mode has previously been used, this menu selection can be used to toggle between the normal Configuration screen and Graphics. A check mark indicates the current screen mode.

Help

Contents – Displays the *Help* file Table of Contents.
Search for Help On…- Opens the *Help* file search dialog box.
About – Displays information about CONFIG.

The Project Tab

The text fields on the project tab screen are all optional. Fill these in as appropriate.

Pull down the *Geographic Location* selector and select the location closest to the actual site that the system is installed. Once selected, the *Longitude* and *Latitude* fields will automatically update. This information is used by the clock in the Synergy controller(s) to calculate sunrise and sunset times for scheduling purposes. If a suitable location is not listed, manually enter the longitude and latitude of the installation.

Under *Connection Type*, select *Serial* if your PC is to be connected to the DB-9 connector on the face of a Synergy controller with a serial cable. Select *Bacnet* if the PC will be connected directly to the network wire. Consult the installation instructions for information on *Port Settings* and installing the network drivers necessary for an BACnet connection.

Before you can actually begin entering data, CONFIG must know the hardware (modules) present in your system. This information can be entered manually. However, the most expedient method is to have CONFIG discover your hardware automatically. **In either case, it is necessary for the hardware (Synergy controller addresses and power module types and addresses) to be properly set in each panel before CONFIG can be used.** Consult the installation instructions and optional factory supplied *As Built Documents* for assistance with setting up the hardware.

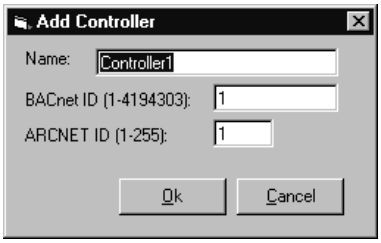
To have CONFIG discover your hardware for the initial set-up:

First, be certain that the PC is properly connected to Synergy, then click the *Network Services* button on the main tool bar or select *Network Services* from the *File* menu. CONFIG will search and display a list of all controllers found in your system. Manually select all controllers or click the *Select All* button. Under *Retrieve Options*, check the *Program* box. Click the *Retrieve* button. Observe the progress on the screen. Dependent upon the size of your system, this process could take several minutes to complete. When the upload is complete, click the *close* button to exit the network services screen.

Click the *Devices* tab. You should now see a complete listing of the controllers in your system and are ready to begin entering data for your project.

To manually enter your hardware configuration:

Click the *Devices* tab. Right click anywhere on the white portion of the screen, or select the *Edit* menu, then select *Add Device* to open the *Add Device* dialog box.



You may give each device a unique name by typing it in the *Name* field, or accept the default name. This name will appear in the LCD display on the user interface panel of the controller. The BACnet ID and ARCNET ID must match the settings in the controller hardware and can only be changed at the controller. Click Ok. Repeat for each device in your system.

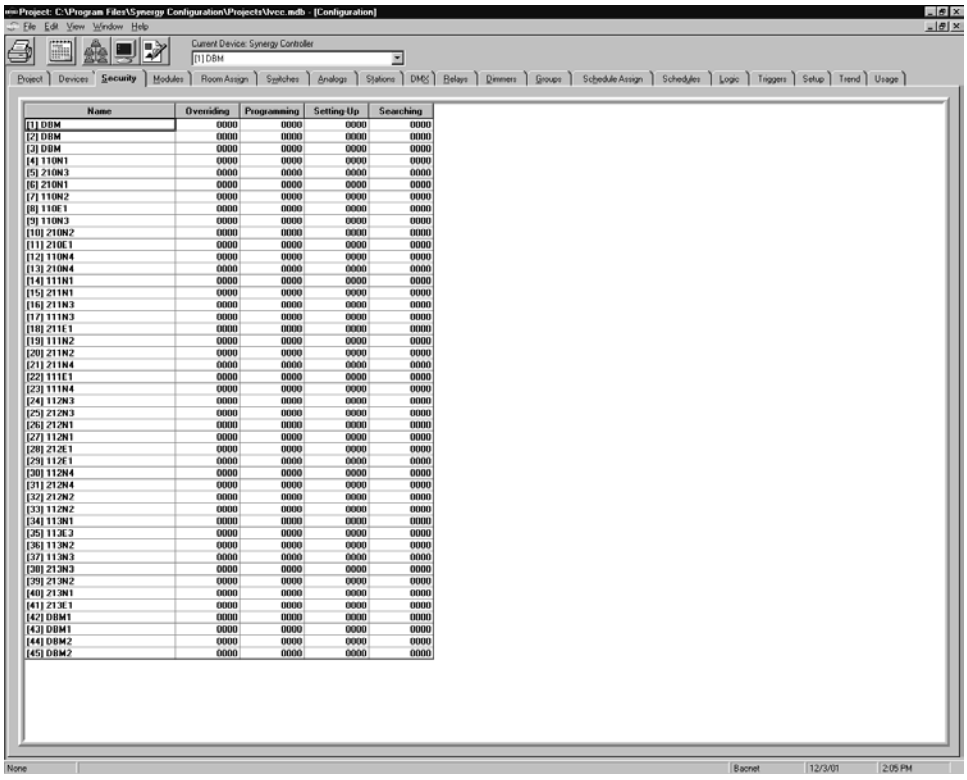
If a device in this system is a SYSC GATEWAY, change the entry in the Type column for that address to the appropriate Gateway type for the third-party legacy system that the Gateway will be controlling.

Note: The SYSC GATEWAY must be initially configured via the keypad on the device. Adding the Gateway in the software allow the Gateway points to be included in Synergy controller groups and allows these points to be directly controlled.

Once all of the controllers have been added to the devices tab, you are ready to begin entering data for your project.

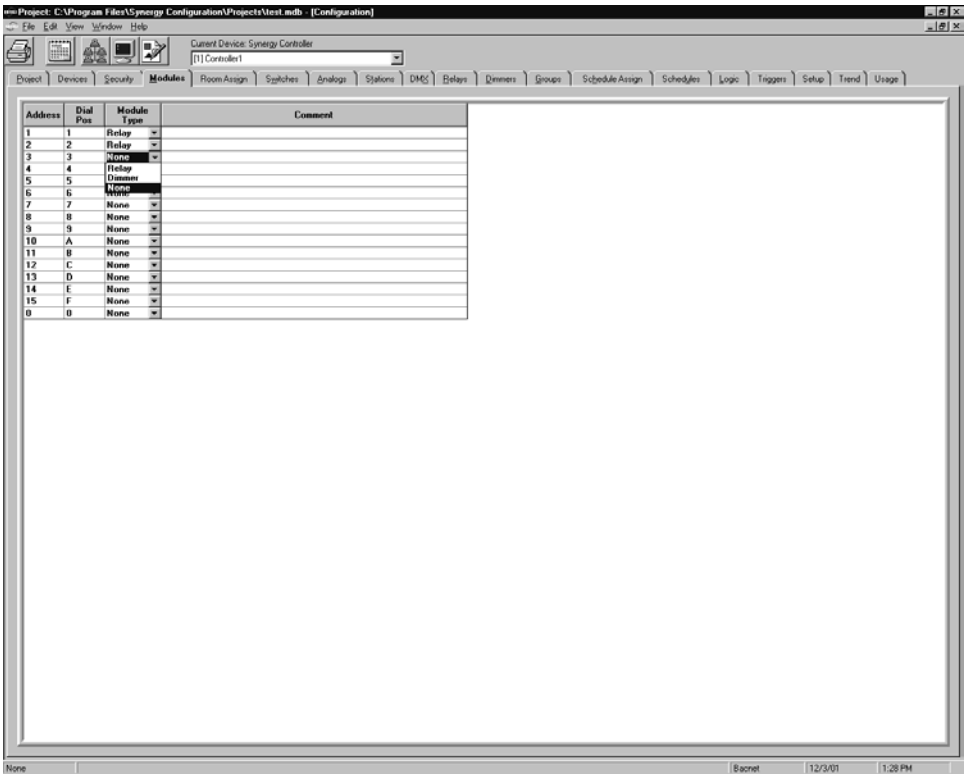
The Security Tab

For each controller, use the pull down menus to set the respective passwords for each access level. These password control access to the functions available via the keypad on the controller and have no effect on system access via the software. For complete information about software access control, refer to the section titled 'Setting Up CONFIG Password Protection' on page 5.



The Modules Tab

For each controller, use the *Module Type* pull down to tell CONFIG what modules are present. Note that the *Dial Pos* for each module must match the settings on the actual hardware. This process will automatically establish the proper quantity of inputs (switches/analog inputs) and outputs (relays/dimmers) that will be available from the respective tabs.



Working With Switches

Naming a Switch

Navigate to the desired switch by selecting the *Switch* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of switches associated with the selected controller will be displayed. Double click in the *Name* field of the desired switch and re-type the name as you wish it to appear.

Setting Switch Input Type

Navigate to the desired switch by selecting the *Switch* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of switches associated with the selected controller will be displayed. Use the *Type* pull down to choose the appropriate type.

Assigning a Switch Input to Control a Group

Navigate to the desired switch by selecting the *Switch* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of switches associated with the selected controller will be displayed. Use the *Group* pull down to scroll through the available groups. Choose the group to be controlled by this switch. Note that a switch can only be assigned to control a single group.

Setting a Switch Input to Timeout

Navigate to the desired switch by selecting the *Switch* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of switches associated with the selected controller will be displayed. Double click in the *Timeout* field for the switch and retype in the desired time.

Setting the Warn (before OFF) Interval for a Switch

Navigate to the desired switch by selecting the *Switch* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of switches associated with the selected controller will be displayed. Double click in the *Warn* field for the switch and retype the desired time or use the increment/decrement buttons to change the value.

Setting the Priority of a Switch Input

Navigate to the desired switch by selecting the *Switch* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of switches associated with the selected controller will be displayed. Use the *Priority* pull down list for the switch to choose the desired priority level.

Working with Analog Inputs

Naming an Analog Input

Navigate to the desired analog input by selecting the *Analog*s tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Double click in the *Name* field of the desired analog input and re-type the name as you wish it to appear.

Setting Analog Input Type

Navigate to the desired analog input by selecting the *Analog*s tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Use the *Type* pull down to choose the appropriate type.

Assigning an Analog Input to Control a Group

Navigate to the desired analog input by selecting the *Analogs* tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Use the *Group* pull down to scroll through the available groups. Choose the group to be controlled by this input. Note that an analog input can only be assigned to control a single group.

Setting an Analog Input to Timeout

Navigate to the desired analog input by selecting the *Analogs* tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Double click in the *Timeout* field for the analog input and retype in the desired time.

Setting the Warn (before OFF) Interval for an Analog Input

Navigate to the desired analog input by selecting the *Analogs* tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Double click in the *Warn* field for the analog input and retype the desired time or use the increment/decrement buttons to change the value.

Setting the High Set Point for an Analog Input

Navigate to the desired analog input by selecting the *Analogs* tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Double click in the *High Set* field for the analog input and retype the desired set point value or use the increment/decrement buttons to change the value.

Setting the Low Set Point for an Analog Input

Navigate to the desired analog input by selecting the *Analogs* tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Double click in the *Low Set* field for the analog input and retype the desired set point value or use the increment/decrement buttons to change the value.

Note: setting both the *High Set* and *Low Set* points to 0 will cause this analog input to operate in the tracking mode. Checking the *Track* box for the analog input will automatically set the high and low set points to 0 and set the tracking mode.

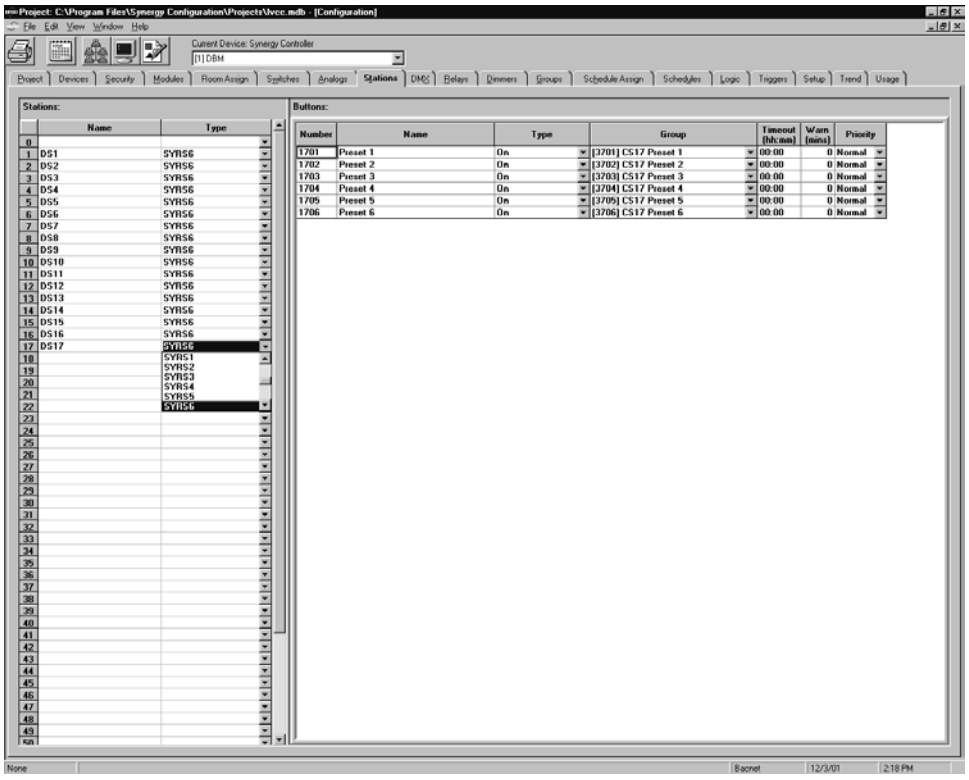
Setting the Priority of an Analog Input

Navigate to the desired analog input by selecting the *Analogs* tab. Choose the controller with which the analog input is associated from the pull down list. A complete list of analog inputs associated with the selected controller will be displayed. Use the *Priority* pull down list for the analog input to choose the desired priority level.

Working with Stations

Adding Stations

Choose the appropriate controller using the pull down list above the tabs, and then use the Type pull down to tell CONFIG what type of station is at each address. Each time a station is added, the appropriate button inputs and relay / dimmer outputs (if applicable) will be added to the appropriate tabs. If may give each station a descriptive name by double-clicking on the cell in the Name column for that station, or you may leave the default name unchanged.



Naming a Button

Navigate to the desired station by selecting it from the list on the left. A complete list of buttons associated with the selected station will be displayed. Double click in the *Name* field of the desired button and re-type the name as you wish it to appear.

Setting Button Type

Navigate to the desired station by selecting it from the list on the left. A complete list of buttons associated with the selected station will be displayed. Use the *Type* pull down to choose the appropriate type.

Assigning a Button Input to Control a Group

Navigate to the desired station by selecting it from the list on the left. A complete list of buttons associated with the selected station will be displayed. Use the *Group* pull down to scroll through the available groups. Choose the group to be controlled by this button. Note that a button can only be assigned to control a single group.

Setting a Button Input to Timeout

Navigate to the desired station by selecting it from the list on the left. A complete list of buttons associated with the selected station will be displayed. Double click in the *Timeout* field for the button and retype in the desired time.

Setting the Warn (before OFF) Interval for a Button

Navigate to the desired station by selecting it from the list on the left. A complete list of buttons associated with the selected station will be displayed. Double click in the *Warn* field for the button and retype the desired time or use the increment/decrement buttons to change the value.

Setting the Priority of a Button

Navigate to the desired station by selecting it from the list on the left. A complete list of buttons associated with the selected station will be displayed. Use the *Priority* pull down list for the button to choose the desired priority level.

Working with Relays

Naming a Relay

Navigate to the desired relay by selecting the *Relays* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of relays associated with the selected controller will be displayed. Double click in the *Name* field of the desired relay and re-type the name as you wish it to appear.

Setting Relay Type

Navigate to the desired relay by selecting the *Relays* tab. Choose the controller with which the relay is associated from the pull down list. A complete list of relays associated with the selected controller will be displayed. Use the *Type* pull down to choose the appropriate type.

Setting the Phase of a Relay

Navigate to the desired relay by selecting the *Relays* tab. Choose the controller with which the relay is associated from the pull down list. A complete list of relays associated with the selected controller will be displayed. Use the *Phase* pull down list for the relay to choose the electrical phase to which this relay is connected.

Setting the Low Set Point for a Relay

Navigate to the desired relay by selecting the *Relays* tab. Choose the controller with which the relay is associated from the pull down list. A complete list of relays associated with the selected controller will be displayed. Double click in the *Low Set* field for the relay and retype the desired set point value or use the increment/decrement buttons to change the value.

Assigning a Connected Load Value to a Relay

Navigate to the desired relay by selecting the *Relays* tab. Choose the controller with which the relay is associated from the pull down list. A complete list of relays associated with the selected controller will be displayed. Double click in the *Load* field for the relay and retype the load in watts or use the increment/decrement buttons to change the value.

Note: *Load* is a user entered value expressed in watts that is used by CONFIG to estimate the kWh usage for the relay since the last reset based on this figure and the accumulated run time.

Relay Strikes/Hours

The Strikes and Hours fields are not user editable. Whenever data is available, CONFIG will display the cumulative hours (run time) for the relay and the number of times it has turned on (strikes) since the last reset.

Resetting Strikes and Hours for a Relay

Navigate to the desired relay by selecting the *Relays* tab. Choose the controller with which the relay is associated from the pull down list. A complete list of relays associated with the selected controller will be displayed. Place a check mark in the *Reset S/H* box for the relay to reset the *Strikes* and *Hours* values back to 0.

Note: The strikes and hours resets will not actually occur until the request has been downloaded and executed by the controller(s).

Working with Dimmers

Naming a Dimmer

Navigate to the desired dimmer by selecting the *Dimmers* tab. Choose the controller with which the switch is associated from the pull down list. A complete list of dimmers associated with the selected controller will be displayed. Double click in the *Name* field of the desired dimmer and re-type the name as you wish it to appear.

Setting Dimmer Curve

Navigate to the desired dimmer by selecting the *Dimmers* tab. Choose the controller with which the dimmer is associated from the pull down list. A complete list of dimmers associated with the selected controller will be displayed. Use the *Curve* pull down to choose the appropriate dimming response curve.

Setting the High Trim for a Dimmer

Navigate to the desired dimmer by selecting the *Dimmers* tab. Choose the controller with which the dimmer is associated from the pull down list. A complete list of dimmers associated with the selected controller will be displayed. Double click in the *High Set* field for the dimmer and retype the desired high trim point value or use the increment/decrement buttons to change the value.

Setting the Low Trim for a Dimmer

Navigate to the desired dimmer by selecting the *Dimmers* tab. Choose the controller with which the dimmer is associated from the pull down list. A complete list of dimmers associated with the selected controller will be displayed. Double click in the *Low Set* field for the dimmer and retype the desired low trim point value or use the increment/decrement buttons to change the value.

Assigning a Connected Load Value to a Dimmer

Navigate to the desired Dimmer by selecting the *Dimmers* tab. Choose the controller with which the Dimmer is associated from the pull down list. A complete list of dimmers associated with the selected controller will be displayed. Double click in the *Load* field for the Dimmer and retype the load in watts or use the increment/decrement buttons to change the value.

Note: *Load* is a user entered value expressed in watts that is used by CONFIG to estimate the kWh usage for the relay since the last reset based on this figure and the accumulated run time.

Dimmer Strikes/Hours

The Strikes and Hours fields are not user editable. Whenever data is available, CONFIG will display the cumulative hours (run time) for the Dimmer and the number of times it has turned on (strikes) since the last reset.

Resetting Strikes and Hours for a Dimmer

Navigate to the desired Dimmer by selecting the *Dimmers* tab. Choose the controller with which the Dimmer is associated from the pull down list. A complete list of Dimmers associated with the selected controller will be displayed. Place a check mark in the *Reset S/H* box for the Dimmer to reset the *Strikes* and *Hours* values back to 0.

Note: The strikes and hours resets will not actually occur until the request has been downloaded and executed by the controller(s).

Working with Groups

Naming a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Select the desired group, then right click on the group or click on the *Edit* menu. Choose *Rename Group* from the menu. Re-type the name as you wish it to appear and click OK.

Adding a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Select the desired group, then right click on the group or click on the *Edit* menu. Choose *Add Group* from the menu. A new group will be added to the group list with a default name equal to it's group number. CONFIG will assign the new group a number equal to the lowest available sequential group number.

Note: In a new data base, the first group added by CONFIG will be given the number (0001) and will be named *Group 1*.

Deleting a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Select the desired group, then right click on the group or click on the *Edit* menu. Choose *Delete Group* from the menu. You will be prompted to confirm the delete. Click *Yes* to delete the group.

Renumbering a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Select the desired group, then right click on the group or click on the *Edit* menu. Choose *Renumber Group* from the menu. Type in the new group number and click OK.

Editing the Members of a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Double click on the desired group or select the group and click the *Edit* menu. Choose *Edit Group Members* from the menu. The *Editing Group* box will open.

The currently selected controller will be displayed in blue text in the *Available Controllers* column. However, all other available controllers in the system will also be listed in black text. All possible group members that are available in the selected (blue) controller, will be listed in columns to the right. Click on the desired members to change them to blue text and include them in the group. To remove members, simply click on the member to return the text to black.

If the group is to contain members associated with other controllers or with a Gateway, select the appropriate controller(s) from the *Available Controllers* list and repeat the above process for each.

Note: It is possible to nest groups. That is, include groups as members of groups. This feature can be very useful at a single level of nesting. The user is cautioned to use this feature sparingly beyond a single level of nesting so as to not overly complicate the database.

Setting The Level of a Group Member

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Click on the desired group. Double click in the *Level* field of the group member and retype the level expressed as a percentage value or use the increment/decrement buttons to change the value.

Setting the Fade Time of a Group Member

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Click on the desired group. Double click in the *Fade Time* field of the group member and retype the level expressed as *minutes:seconds* or use the increment/decrement buttons to change the value.

Copying a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Right click on the group you wish to copy or select the group and click the *Edit* menu. Choose *Copy Group* from the menu. Select the group number that will be the target for the copy. Right click on the target group and choose *Paste*. You will be prompted to confirm the copy. Click *Yes* to replace the members of the selected group with the members of the copied group. If you wish to copy to a new group rather than an existing group, select *Paste New Group* from the menu instead. A new group will be created at the lowest available sequential group number.

Viewing the Members of a Group

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the group is associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Click on the desired group. The members of the selected group will be displayed to the right.

Removing Empty Groups

Navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the groups are associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Right click in the groups field or click on the *Edit* menu. Choose *Remove Empty Groups* from the menu. You will be prompted to confirm this choice. Click *Yes* to remove all groups from this controller that have no members.

Check for Group Loops

A common programming error for large or complex systems is to create groups that indirectly reference themselves through other groups that they contain. For example, if group 0001 contains group 0002, and group 0002 contains group 0001, then a group loop is created, which can cause anomalous system behavior and heavy network traffic. To check for these loops, navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the groups are associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Right click in the groups field or click on the *Edit* menu. Choose *Check for Group Loops* from the menu. A status message will appear at the bottom of the screen that will show the progress of the routine. If the routine completes and no error message is displayed, no group loops are present for this controller.

Removing Group Orphans

A group orphan is created when a group contains outputs from another controller that is then deleted. These group members then appear with the name "Unknown Relay", "Unknown Dimmer", or "Unknown Controller". To remove these orphans, navigate to the desired group by selecting the *Groups* tab. Choose the controller with which the groups are associated from the pull down list. A complete list of groups associated with the selected controller will be displayed at the left of the screen. Right click in the groups field or click on the *Edit* menu. Choose *Remove Orphans* from the menu. You will be prompted to confirm this choice. Click *Yes* to remove all orphans from this controller.

Schedules

Creating a Schedule

Click on the *Schedules* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click anywhere in the *Schedules* column or click *Edit*. Choose *Add Schedule* from the menu. A new schedule will be created at the next available number and added to the *Schedules* list.

Deleting a Schedule

Click on the *Schedules* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click on the desired schedule or click the *Edit* menu. Choose *Delete Schedule* from the menu. You will be prompted to confirm the deletion. Click *Yes* to delete the selected schedule.

Naming a Schedule

Click on the *Schedules* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click on the desired schedule or click on the *Edit* menu. Choose *Rename Schedule* from the menu. Re-type the name as you wish it to appear and click OK.

Adding a Time Event to a Schedule

Click on the *Schedules* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click anywhere in the *Schedules* column or click the *Edit* menu. Choose *Add Time Event* from the menu. Double click on the *Time* field of the event and type in a time or use the increment/decrement buttons to select a time. Double click on the Level field of the event and type in a level for the event (for relays, 100 – ON and 0 – OFF) or use the increment/decrement buttons to select a level. Choose the group to be controlled by the event from the *Group* pull down list. To give this event a name, double click in the *Name* field of the event and type in the desired name. If this is an OFF event, you may wish to warn the occupants. To add a warn time to the event, double click the Warn field of the event and type in a time (before OFF) expressed in minutes or use the increment/decrement buttons to select a value.

Adding a Dusk/Dawn Event to a Schedule

Click on the *Schedules* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click anywhere in the *Schedules* column or click the *Edit* menu. Choose *Add Dusk/Dawn Event* from the menu. Double click on the *Time* field of the event and type in a time or use the increment/decrement buttons to select a time. To add an offset, double click on the *Offset* field and type in an offset expressed in minutes or negative minutes or use the increment/decrement buttons to select an offset. Double click on the *Level* field of the event and type in a level for the event (for relays, 100 – ON and 0 – OFF) or use the increment/decrement buttons to select a level. Choose the group to be controlled by the event from the *Group* pull down list. To give this event a name, double click in the *Name* field of the event and type in the desired name. If this is an OFF event, you may wish to warn the occupants. To add a warn time to the event, double click the Warn field of the event and type in a time (before OFF) expressed in minutes or use the increment/decrement buttons to select a value.

Deleting Events from Schedules

Click on the *Schedules* tab. Choose the controller for which the schedule applies from the pull down list. Right click anywhere in the *Schedules* column or click the *Edit* menu. Choose *Delete Time Event* or *Delete Dusk/Dawn Event* from the menu.

Assigning Schedules to Days of the Week

Click on the *Schedule Assign* tab. Choose the controller for which the schedule is to apply from the pull down list. Select the day for witch you wish to assign a schedule from the list in the *Daily Assignments* column. Choose a schedule for the selected day from the *Schedule* pull down list.

Note: If no schedules appear in the *Schedule* pull down list, none have been created. You must create schedules before you can assign them to days of the week. See *Creating a Schedule*.

Assigning a Holiday Schedule

Click on the *Schedule Assign* tab. Choose the controller for which the schedule is to apply from the pull down list. Click on *Holiday* in the *Daily Assignments* column. Choose a schedule to be used for holidays from the *Schedule* pull down list.

Note: This assignment is actually just a convenience place holder for your "holiday schedule". The actual holiday schedule is simply a schedule (usually given the name Holiday) assigned to a series of dates (holidays). If no schedules appear in the *Schedule* pull down list, none have been created. You must create schedules before you can assign them to days of the week. See *Creating a Schedule*.

Assigning Schedules to Calendar Dates

Click on the *Schedule Assign* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click in the *Date Assignments* column. Select a date from the calendar. Choose a schedule to be run on that date from the *Schedule* pull down list.

Note: If no schedules appear in the *Schedule* pull down list, none have been created. You must create schedules before you can assign them to days of the week. See *Creating a Schedule*.

Assigning Schedules to Reoccurring Calendar Dates

Click on the *Schedule Assign* tab. Choose the controller for which the schedule is to apply from the pull down list. Right click in the *Reoccurring Assignments* column. Select a date from the calendar. Choose a schedule to be run every year on that date from the *Schedule* pull down list.

Note: If no schedules appear in the *Schedule* pull down list, none have been created. You must create schedules before you can assign them to days of the week. See *Creating a Schedule*.

Deleting Dates from Schedules

Click on the *Schedule Assign* tab. Choose the controller for which the schedule applies from the pull down list. Right click in the column where the date appears. Choose *Delete Date* or *Delete Reoccurring*. Your will be prompted to confirm the action. Click *Yes* to delete the date.

.

Global Device Settings

Naming a Device

Click on the Devices tab. Double click in the Name field of the desired controller. Type in the desired name for the controller.

Note: The controller name will appear on the first line of the LCD display on the user interface panel of the controller.

Setting the Analog Resolution for a Controller

Click on the Devices tab. Double click in the *Analog Resolution* field of the desired controller. Type in a new analog resolution value expressed as a percentage value for the controller or use the increment/decrement buttons to increase or decrease the value.

Note: The analog resolution is the percent of change that must occur at an analog input before a value will be sent to the system.

Setting the Duration of the Warn Blink

Click on the Devices tab. Double click in the *Blink* field of the desired controller. Type in a new time value expressed as seconds and tenths of seconds or use the increment/decrement buttons to increase or decrease the value. This setting is global for all inputs set to warn.

Changing the Device Type

Click on the Devices tab. Use the pull down menu in the Type column for the desired device to change the device type. Available types are

Synergy – this should be used for all SYSC MLX controllers on the network

Lutron Gateway – this type should be used for all SYSC GATEWAY devices on the system that are to control Lutron Grafik 6000 systems.

PCI Gateway – this type should be used for all SYSC GATEWAY devices on the system that are to control PCI SwitchKeeper and WatchKeeper systems.

DMX Gateway – this type should be used for all SYSC GATEWAY DMX devices on the system that are to control DMX 512 devices.

Note: Any SYSC Gateway devices must be initially configured at the Gateway itself via the keypad on the front of the unit.

Network Services

Programming the Controller(s)

Click on the *Network Services* button or select *Network Services* from the *File* menu. Highlight the controller(s) to be programmed by the download. Be certain that *Programming* is checked in the *Program Options* box. Also check *Restart After* unless you wish to manually restart the controller(s) at a later time. Click the *Program* button or choose *Program* under the *Services* menu. Observe the progress in the message boxes on the screen.

Note: Programming that is downloaded to a controller does not become effective until after the controller is restarted (rebooted).

Retrieving the Programming from the Controller(s)

Click on the *Network Services* button or select *Network Services* from the *File* menu. Highlight the controller(s) from which programming is to be retrieved. Be certain that *Programming* is checked in the *Retrieve Options* box. Also check *Relay Strike/Hour* only if you are using this function. Click the *Program* button or choose *Program* under the *Services* menu. Observe the progress in the message boxes on the screen.

Restart a Controller

Click on the *Network Services* button or select *Network Services* from the *File* menu. Highlight the controller(s) to be restarted. Click the *Restart Panel* button on the tool bar or choose *Restart* from the *Services* menu.

Synchronize the Time in all Controllers

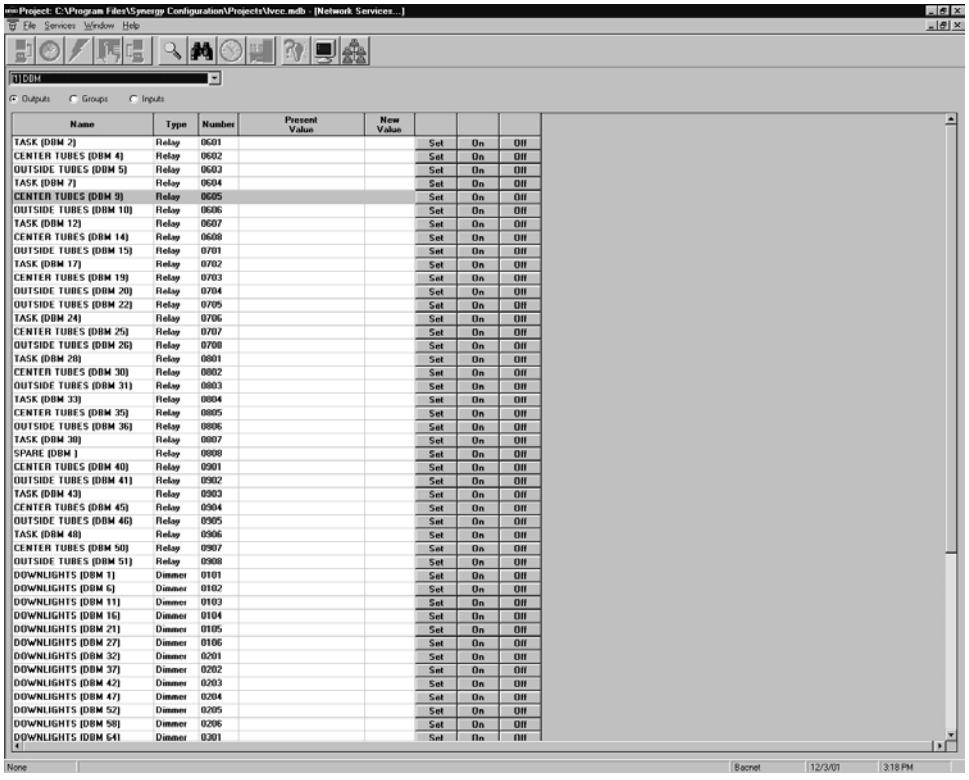
Click on the *Network Services* button or select *Network Services* from the *File* menu. Click the *Global Time Sync* button on the tool bar or choose *Global Time Sync* from the *Services* menu. Observe that the message was successfully sent in the message box at the bottom of the screen. The time in all the controllers will be set to match the current time in the PC.

View the Status of the Outputs

Click on the *Network Services* button or select *Network Services* from the *File* menu. Click the *Output Status* button on the tool bar. Choose the desired controller from the pull down list. Choose to view the status of either individual *Outputs* (relays and dimmers), *Inputs* (Switches, Analogs, and Buttons) or *Groups*. A shaded scan line will indicate that the status is currently being updated. Under certain conditions, NULL may appear in the *Present Value* field of some groups. This indicates that a valid level has not been sent to that group since the last time the controller was restarted.

Manually Control Outputs

Click on the *Network Services* button or select *Network Services* from the *File* menu. Click the *Output Status* button on the tool bar. Choose the desired controller from the pull down list. Choose to control individual *Outputs* (relays and dimmers), *Inputs* (Switches, Analogs, and Buttons) or *Groups*. A shaded scan line will indicate that the status is currently being updated. Click the *On* or *Off* button to immediately switch the output or group full ON or OFF. Double click in the *New Value* field of an output or group and type in the desired level. Click *Set* to send the new level.



Part. No. CDCS000269 Rev B 03/2003

LITHONIA LIGHTING
An AcuityBrands Company

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SWITCHPAK™

BAS *MS/TP Enabled*

OPERATION AND MAINTENANCE

Synergy®
LIGHTING CONTROLS

An AcuityBrands. Company

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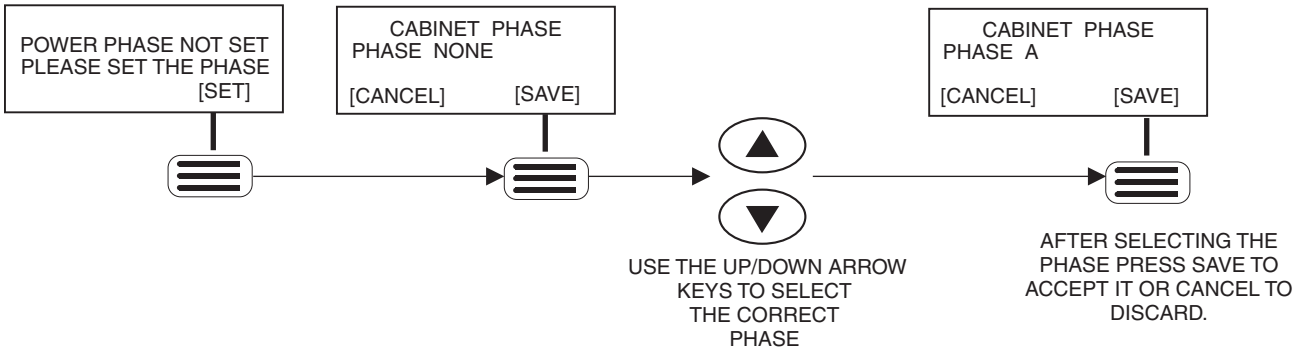
Powering Up For The First Time

When the SwitchPak is initially powered up, you will be prompted to set the PHASE of the circuit feeding the power supply.

The correct phase MUST be set!

If you do not select the correct input phase your product warranty may be void if you experience micro-welding of the relays. Setting the input phase correctly switches the relays only at zero cross, significantly reducing the possibility of micro welding. The initial warning prompt and alert beep experienced at start up WILL NOT end until you select and save the POWER PHASE.

Follow the steps shown in the flow diagram below to set the power supply phase.



Setting MSTP Communication Parameters

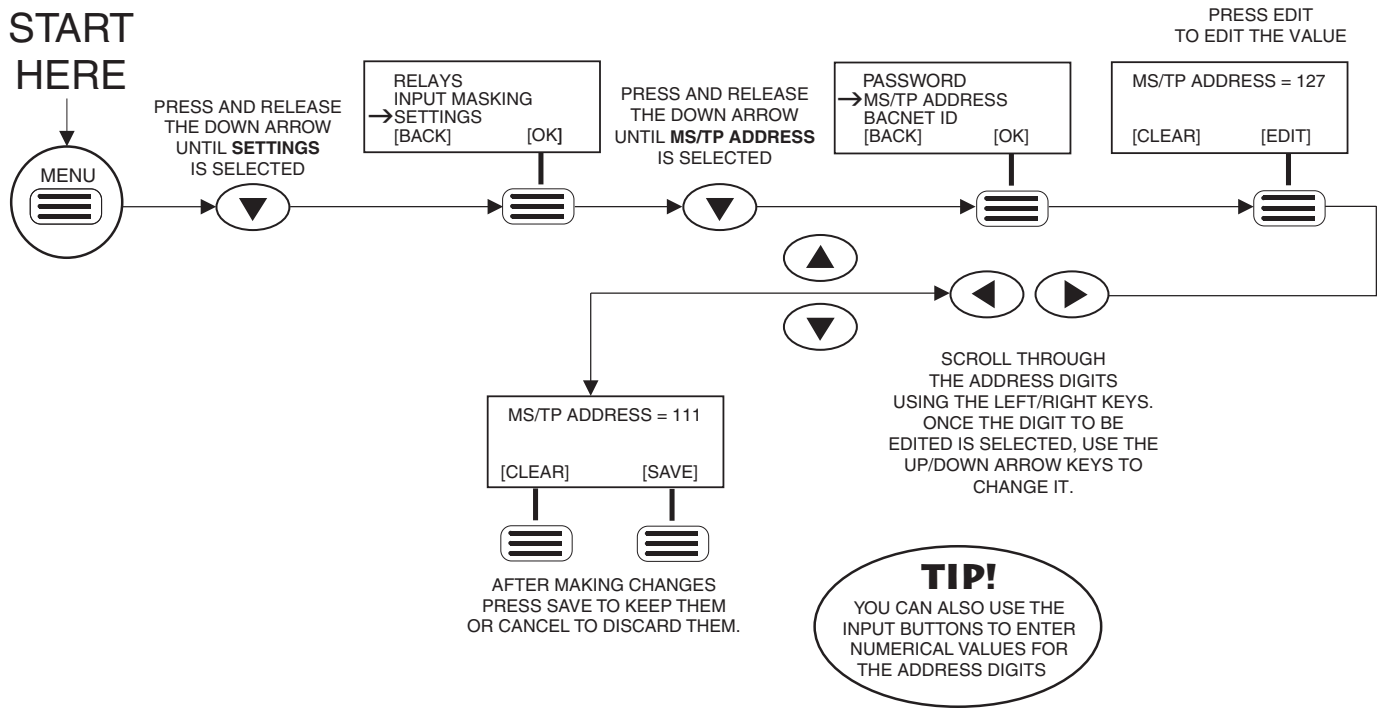
The default MSTP communication settings are:

MSTP address 127
BACnet ID 4194302
MSTP BAUD rate 9600

You must verify these settings will work with your network. If not, follow the next three sections to change them.

Changing the MSTP Address

The default MSTP address for the SPAK BAS is 127. The flow diagram below shows the programming steps to change it.



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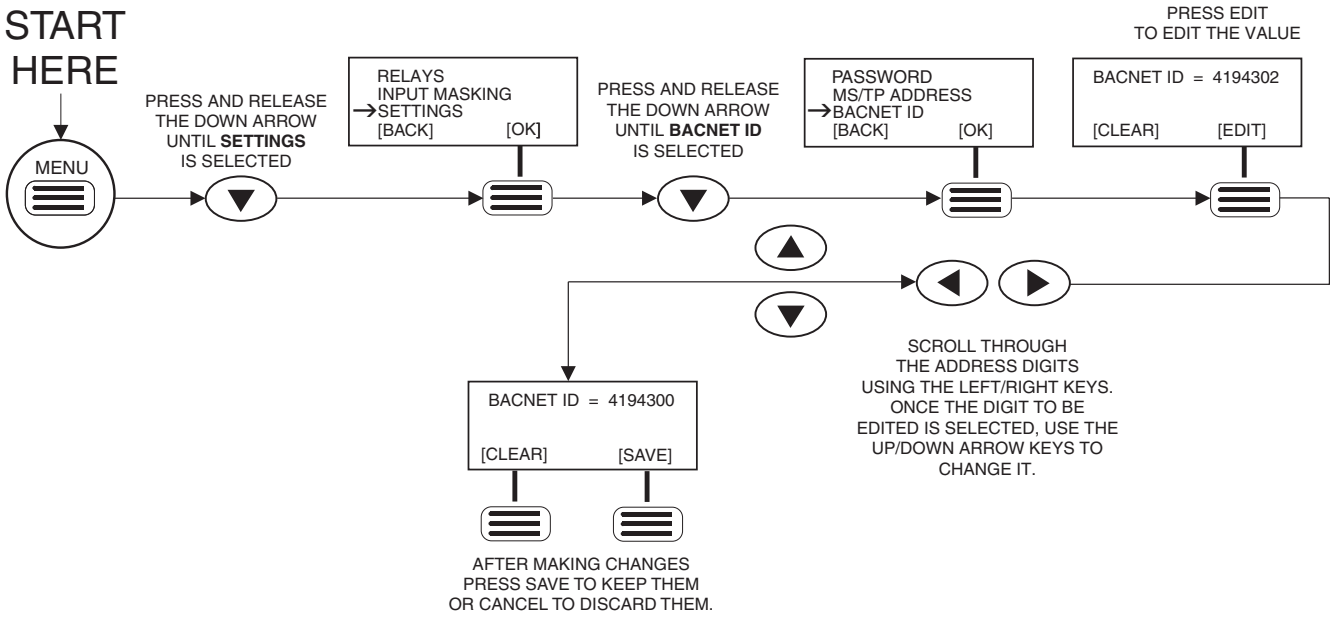
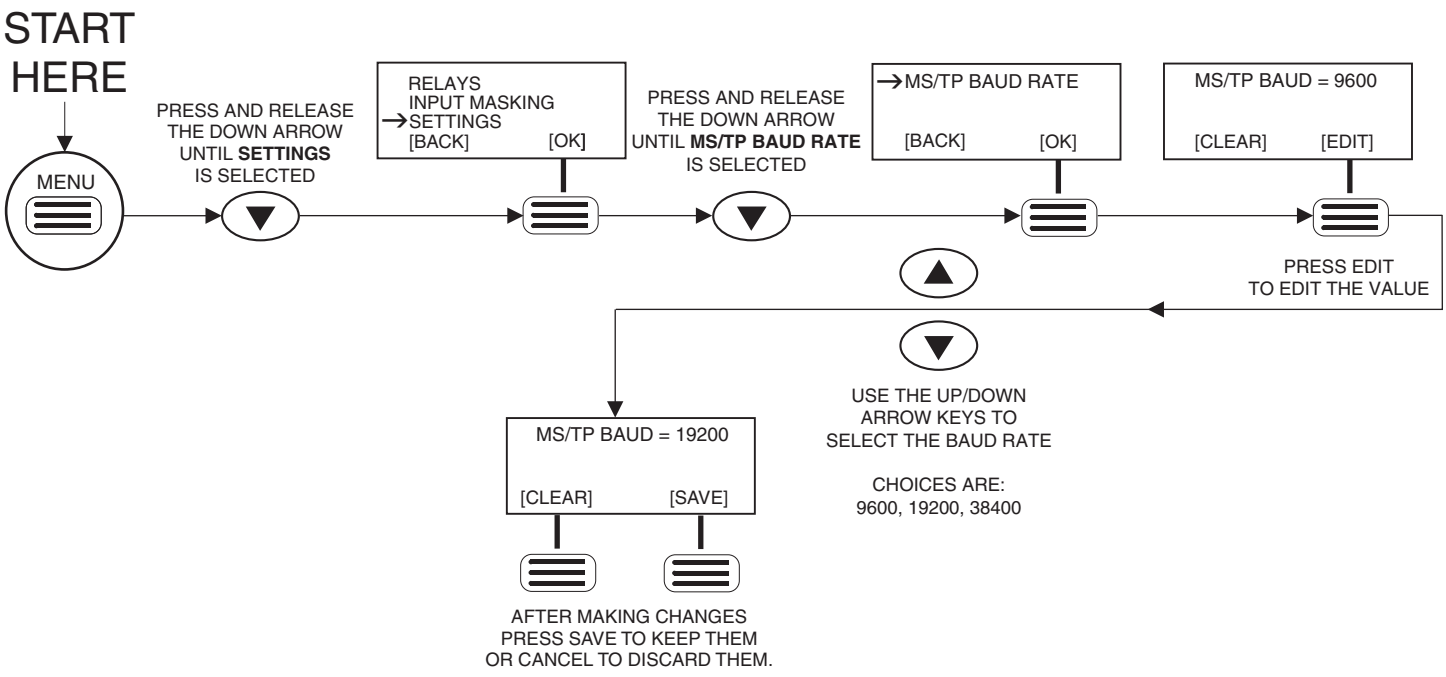
Changing the BACNET ID

The default BACnet ID for the SPAK BAS is 4194302. The flow diagram below shows the programming steps to change it.



Changing the MSTP BAUD rate

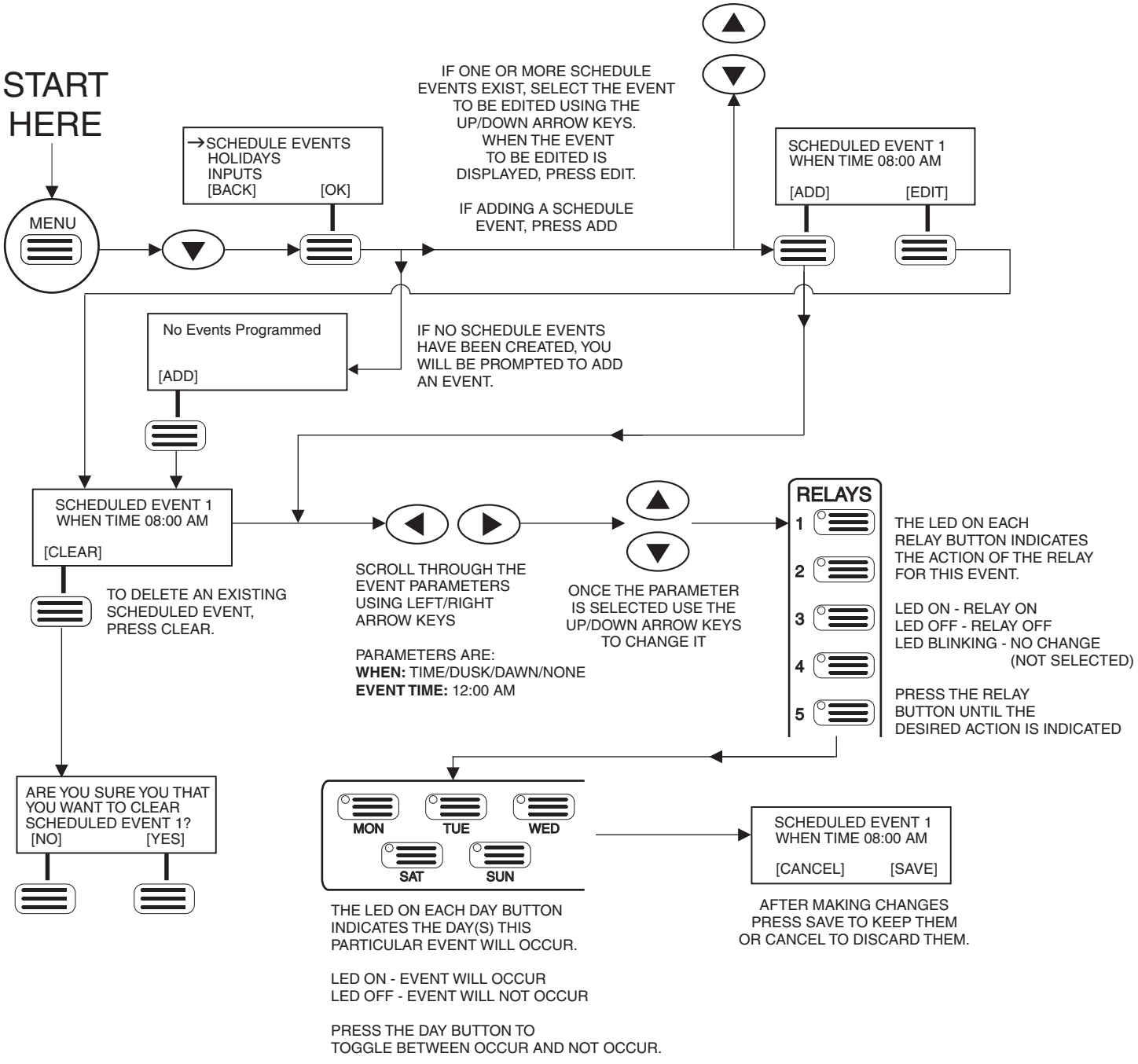
The default MSTP BAUD rate for the SPAK BAS is 9600. The flow diagram below shows the programming steps to change it.



How Do I Program a Time Schedule Event to Control a Circuit?

SwitchPak uses schedule events to control one or more circuits (RELAYS). For each scheduled event, RELAYS can be selected to switch ON, OFF, or NO CHANGE, (not selected for event) eliminating the need to have both ON and OFF events at the same scheduled time. Each schedule event can be assigned to any combination of days.

The flow diagram below shows the programming steps to edit a SCHEDULED EVENT.



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Time Schedule Event Parameters

WHEN: (EVENT PARAMETERS)

TIME – The time the event will occur. The time is displayed as HH:MM with an AM/PM indicator.
Note: The system time must be correct for scheduled events to operate correctly. The system time setting is edited under SETTINGS, TIME/DATE. See the 'HOW DO I SET THE SYSTEM TIME AND DATE' section for more details.

DUSK – The event occurs at dusk based on the internal astronomic time-clock function. A positive or negative offset up to 999 minutes can be set for a DUSK event. A positive offset will set the event to occur the specified number of minutes after DUSK. A negative offset will set the event to occur the specified number of minutes before DUSK.
Note: The system location must be correct for the DUSK/DAWN event to operate correctly. The system location setting is edited under SETTINGS, LOCATION. See the 'HOW DO I SET THE SYSTEM LOCATION' section for more details.

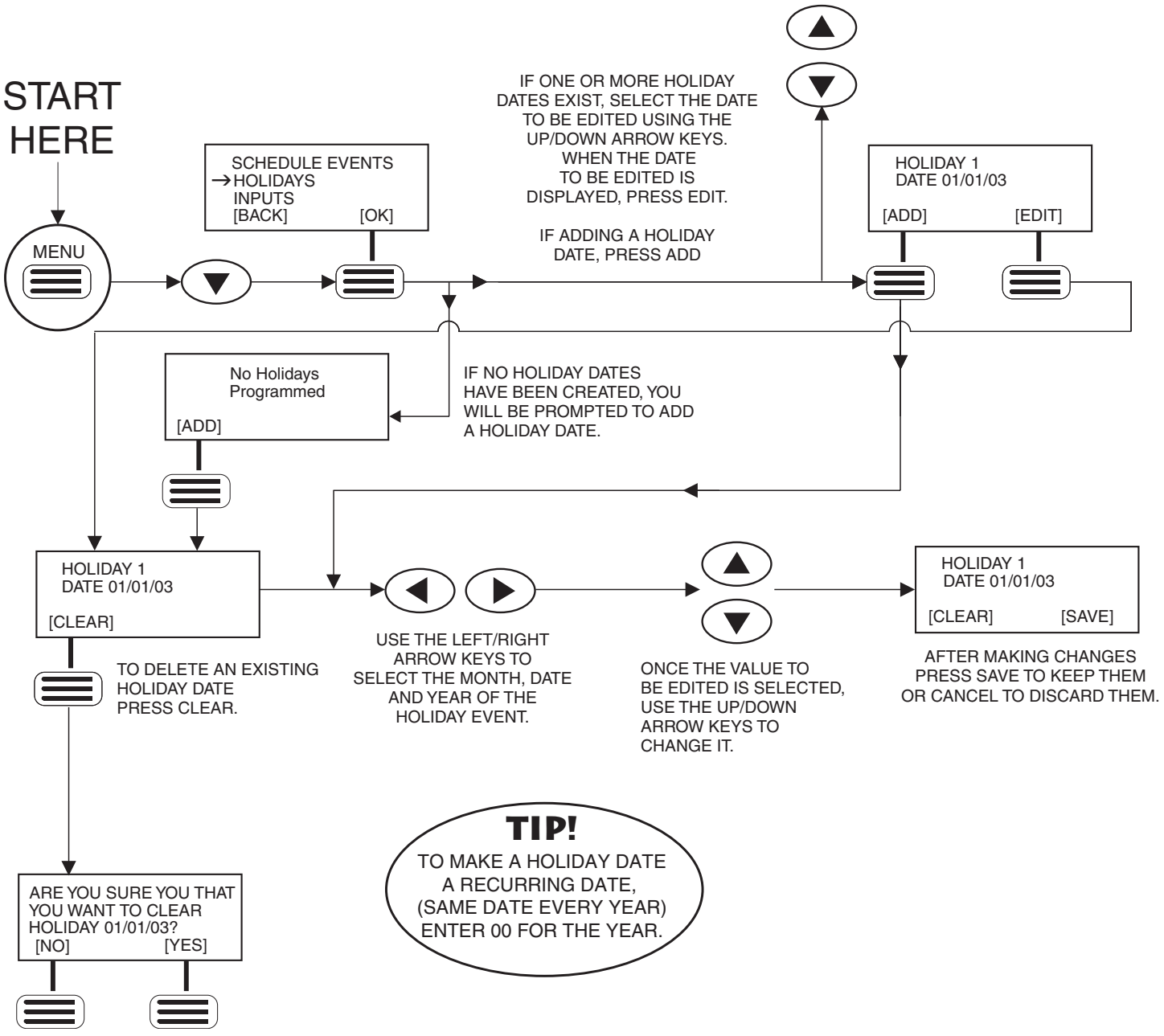
DAWN – The event occurs at dawn based on the internal astronomic time-clock function. A positive or negative offset up to 999 minutes can be set for a DAWN event. A positive offset will set the event to occur the specified number of minutes after DAWN. A negative offset will set the event to occur the specified number of minutes after DAWN.
Note: The system location must be correct for the DUSK/DAWN event to operate correctly. The system location setting is edited under SETTINGS, LOCATION. See the 'HOW DO I SET THE SYSTEM LOCATION' section for more details.

NONE – The event can be permanently REMOVED by setting the TIME field to NONE.

How Do I Enter Holiday Dates to be Used With Time Schedule Events?

SwitchPak contains 32 holiday (calendar) dates for special occasions. Events occurring on holiday dates override any standard schedule events. Holiday dates are entered using the MM/DD/YY format. Once the holiday date(s) are programmed, use the HOLIDAYS button to assign programmed events to the holiday date. See 'HOW DO I PROGRAM A SCHEDULED EVENT TO CONTROL A CIRCUIT' for more event programming information.

The flow diagram below shows the programming steps to create/edit HOLIDAY DATES.



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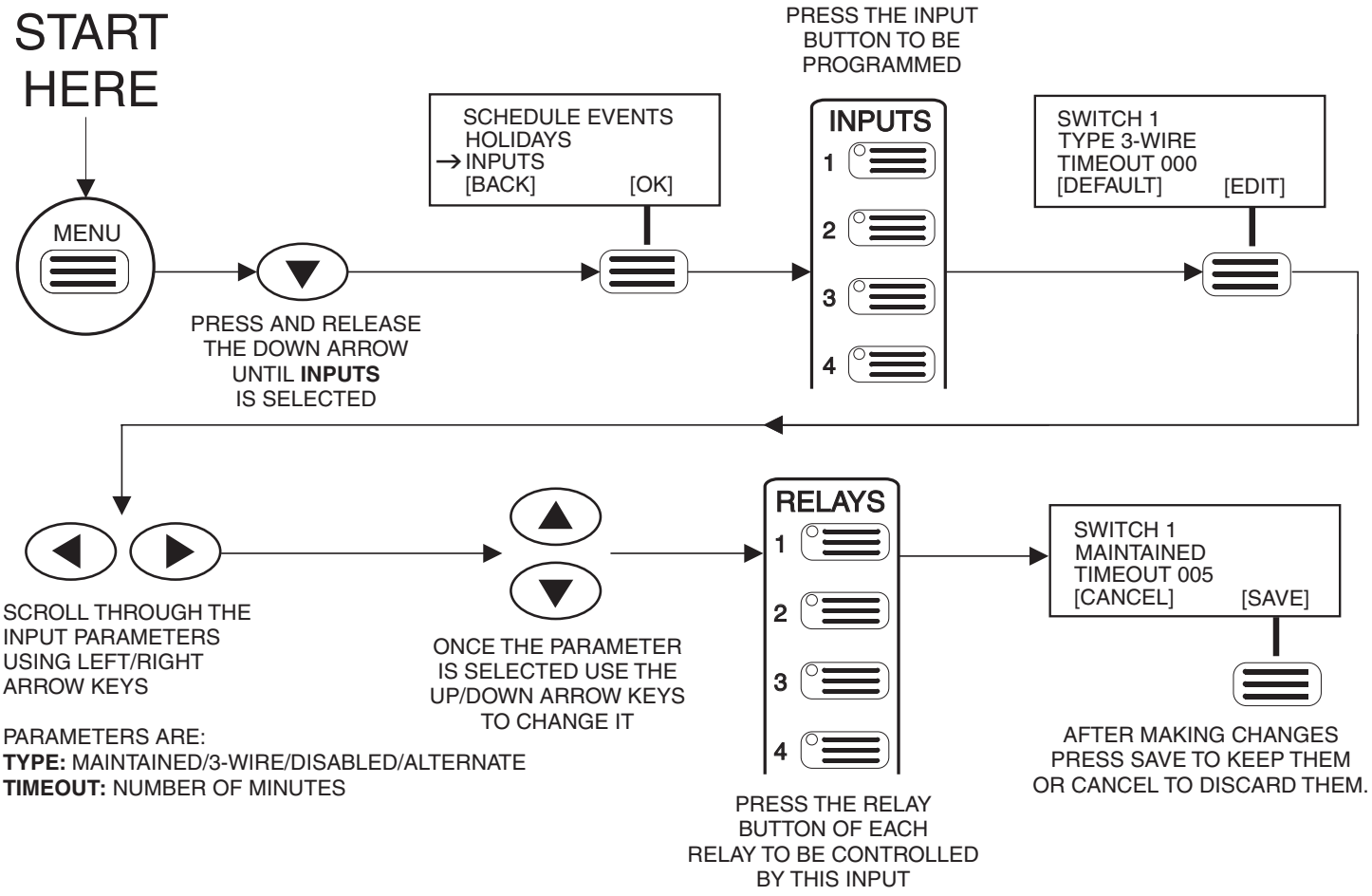
How Do I Assign A Switch To Control A Circuit?

SwitchPak can assign a switch (INPUT) to control one or multiple circuits (RELAYS.) This eliminates the need to rewire switches and loads if your control scheme changes. Switchpak contains eight inputs for switches, sensors or other dry contact closure devices.

The flow diagram below shows the programming steps to configure an input.



Switch Input Parameters

TYPES:

MAINTAINED (2-wire SPST) – Terminated between ON and COM. Typically a standard wallswitch that is used in residential applications. A maintained switch can also be terminated between OFF and COM to provide an inverted output.

ALTERNATE (2-wire momentary SPST) – Terminated between ON and COM. Press once to turn ON. Press again to turn OFF. Example Cat # - LVRS 1G 8BT

3-WIRE MOMENTARY (SPDT) – Terminated between ON, OFF and COM. Typically has an ON and OFF button. Press the ON button to turn the relay(s) on and the OFF button to turn the relay(s) off. Example Catalog # - LVMS IV.

DISABLED – The INPUT is not used. Any switches, photocells, or sensors wired to this input will not function.

Interfacing to other building systems

Others systems such as fire alarm, HVAC and energy management are often required to control a building's lighting. These systems interface to SwitchPak using dry-contact closures via Class 2, low-voltage conductors. Typically these inputs are connected in the "Maintained" INPUT scenario shown above and programmed like any other switch input.

TIMEOUT - A timer can be associated with an INPUT that will turn the lights OFF after a specified time. Some states or local codes require an override switch to keep the lights on for only 2 or 4 hours. Enter the time in minutes the switch should keep the lights ON.

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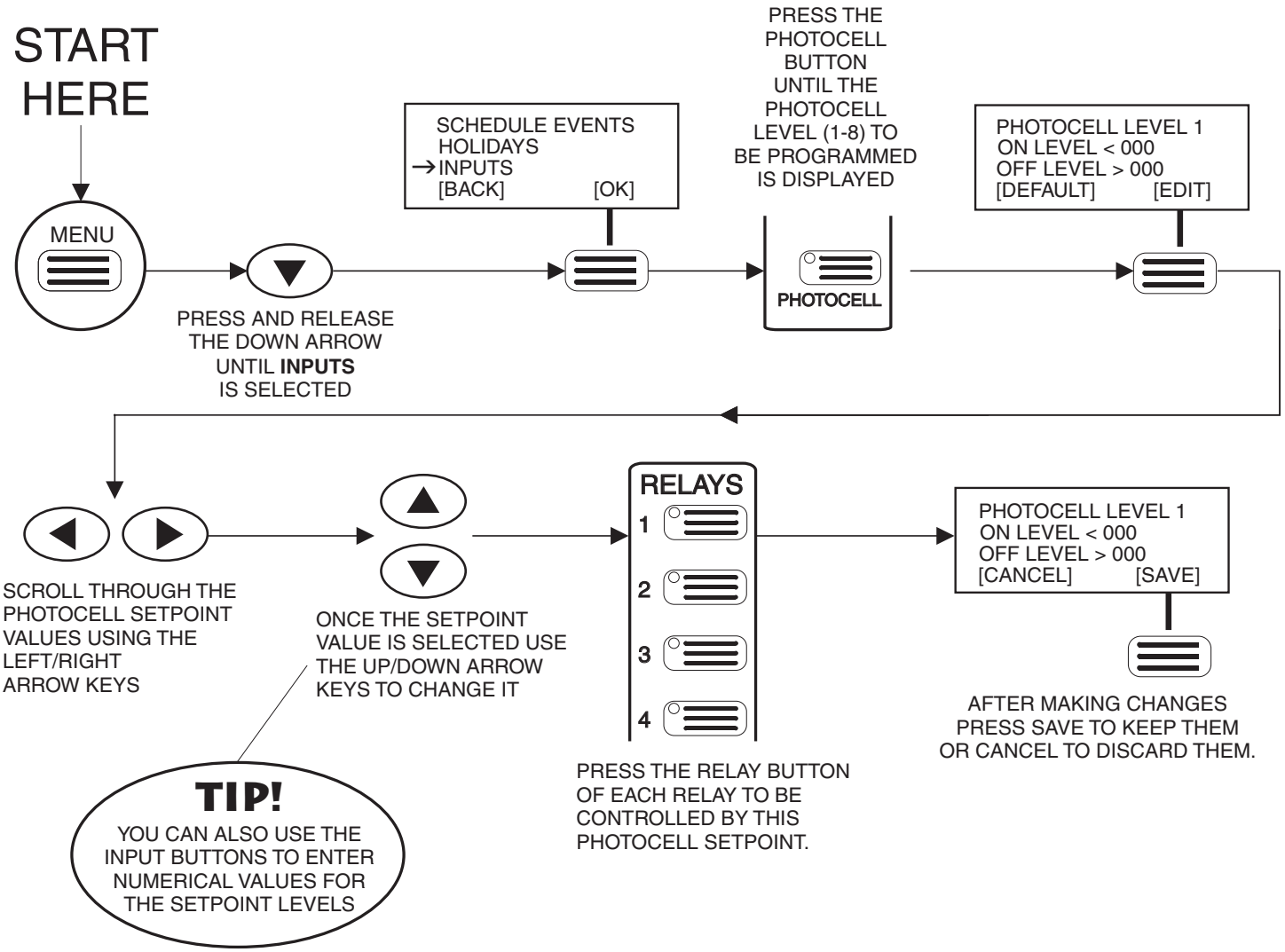
How Do I Assign an Analog Photocell To Control A Circuit?

SwitchPak has one analog photocell input and can assign it to control one or multiple circuits (RELAYS.) SwitchPak can assign up to 8 different levels (set points) of photocell control, each set point being based on the amount of light the photocell is seeing. The analog photocell must be terminated on the ANALOG PHOTOCELL input (AGND, INPUT, +20V.)

The flow diagram below shows the programming steps to program the analog photocell input.



Photocell Parameters

The photocell ON and OFF LEVELS use a 0 to 100 scale. 0 signifies the photocell does not see any light, 100 signifies the photocell is seeing the maximum footcandle amount it's calibrated for.

Synergy Analog Photocell Ratings:	
LSA APS IN (indoor)	**0-100 FC**
LSA APS OL (outdoor)	**0-100 FC**
LSA APS OH (outdoor)	**0-1000 FC**
LSA APS S (skylight)	**0-10,000 FC**
	* FC = Foot-Candle

ON LEVEL - The level the photocell (not FC level) will turn the lights ON.
OFF LEVEL - The level the photocell (not FC level) will turn the lights OFF.

< > - The ON/OFF <> (less than/greater than) levels can be swapped if needed.

ON LEVEL < 000		ON LEVEL > 000
OFF LEVEL > 000	can be swapped to	OFF LEVEL < 00

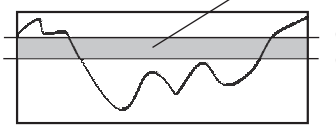
Example: The photocell should turn ON the exterior lighting (RELAY 1) when the light level is less than 55% and turn it OFF when the light level is more than 75%. It should also turn ON the signage (RELAY 2) when the photocell light level is less than 35% and turn if OFF when the light level is more than 85%. A unique PHOTOCELL LEVEL must be used for each setpoint. See the example below:

Using the LSA APS OL, your screen should show the following for the exterior lighting:

```
ON LEVEL < 055
OFF LEVEL > 075
[CANCEL]        [SAVE]
```

Using the LSA APS OL, your screen should show the following for the signage:

```
PHOTOCELL LEVEL 2
ON LEVEL < 035
OFF LEvEL > 085
[CANCEL]        [SAVE]
```



THE RANGE BETWEEN THE ON LEVEL AND OFF LEVEL IS CALLED THE “DEAD BAND”. HAVING A DEAD BAND OF SUFFICIENT RANGE ENSURES THE LOADS WILL NOT “QUICK CYCLE” - SWITCHING ON AND OFF DUE TO SMALL CHANGES IN LIGHT LEVEL.

BE SURE TO SET UP A DEAD BAND OF SUFFICIENT RANGE TO AVOID “QUICK CYCLING”.

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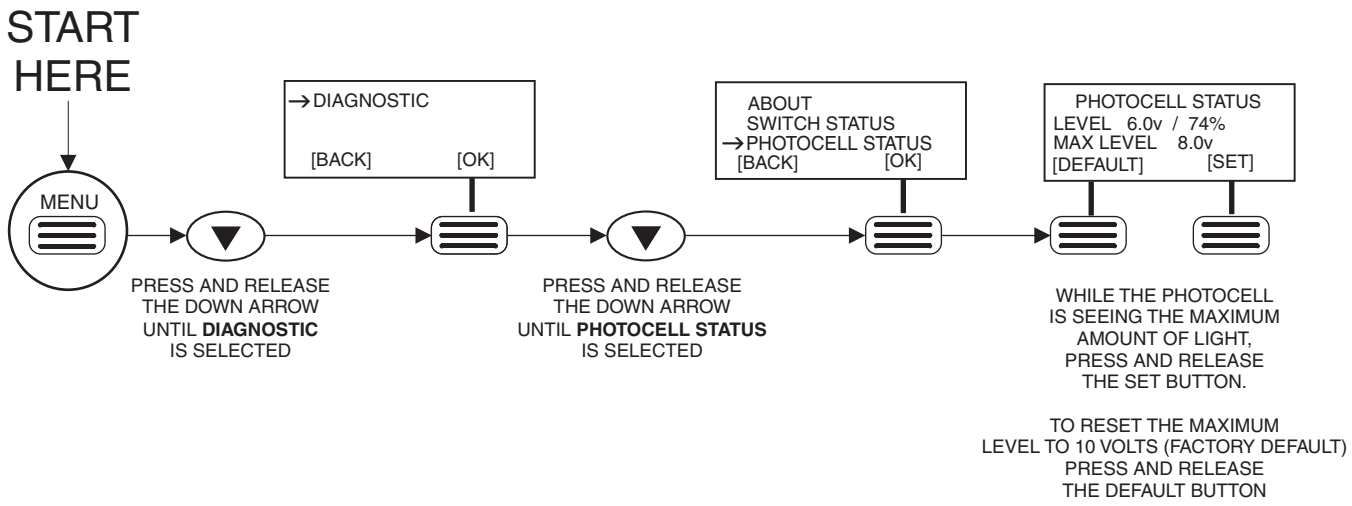
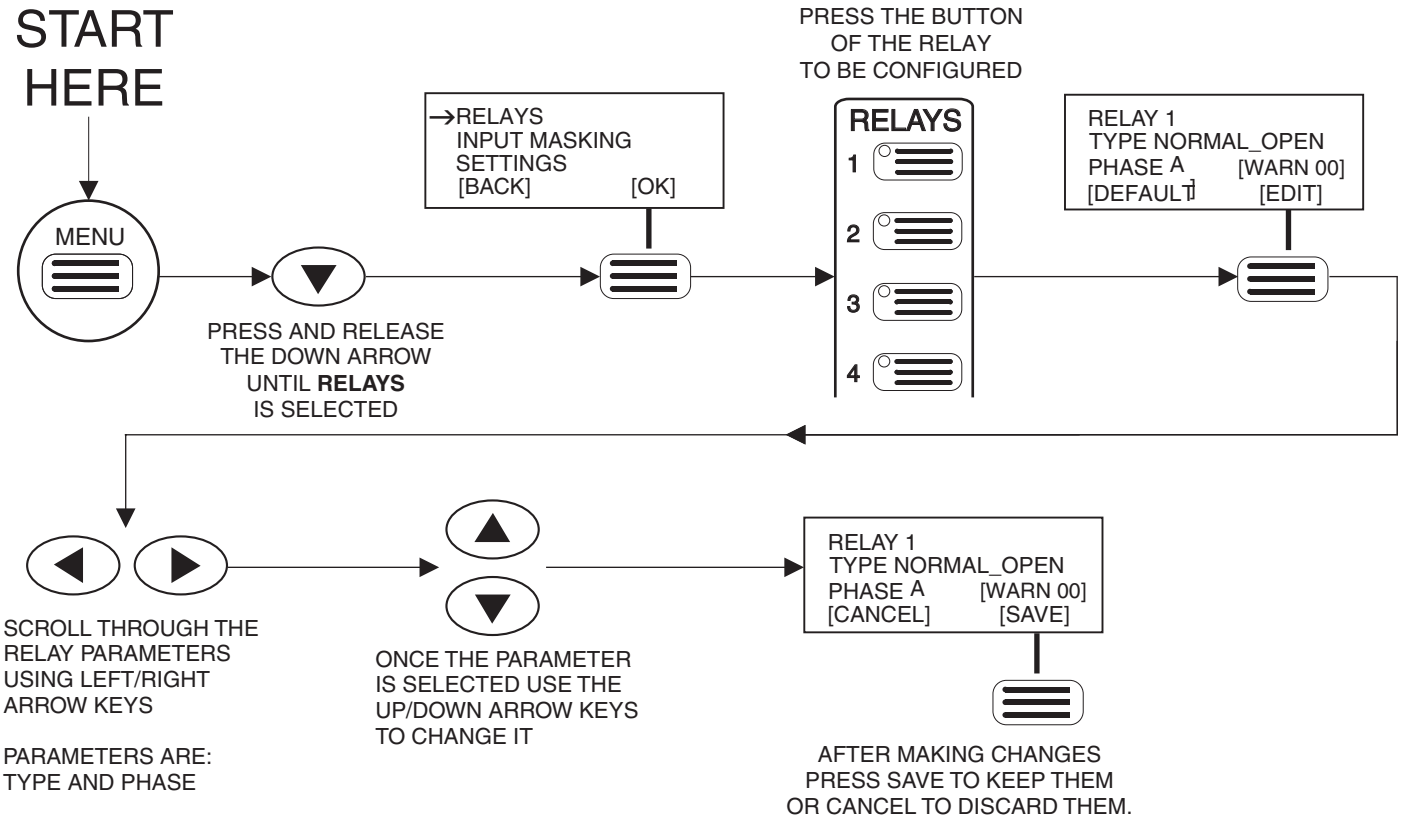
How Do I Calibrate the Photocell?

SwitchPak's analog photocell input is designed to work with a 0 - 10 volt photocell. Whenever the photocell sees the maximum footcandle amount it's rated for, it's output should be at 10 Volts. If the photocell is installed in a location where it does not receive enough light to cause it's output to operate in the entire 0 - 10 volt (0 - 100%) range, any photocell input programming based on a full range will not function correctly. To correct this situation, the photocell input can be calibrated to achieve the full 0 - 100% range at footcandle levels less than the photocell maximum.
To calibrate the photocell, choose a sunny day and time when the photocell is seeing the maximum amount of light possible. Then follow the steps below:



How Do I Set Up A Relay For Different Load Types?

SwitchPak can configure it's RELAYS to control different load types. This eliminates the need to wire additional interfaces between the relay output and load to achieve the desired operation. All output circuits are terminated directly to one of the eight RELAY terminals.
The PHASE of the circuit being controlled by each relay can be set, enabling the zero-cross switching feature of SwitchPak. This feature should be used when switching high inrush lighting loads, such as HID, to minimize the high start-up current of these types of loads. Zero-cross switching can also be used to minimize contact arcing when switching the relay ON or OFF, which can extend the life of the relay.
The flow diagram below shows the programming steps to configure the relay type:



Relay Parameters

TYPES:

NORMAL_OPEN

The relay contacts are open when the relay is in the OFF state and closed when the relay is activated ON as indicated by the LED indicator on the relay button. This is the typical setting for most applications.

NORMAL_CLOSED

The relay function is inverted, which means the contacts are closed when the relay is in the OFF state and open when the relay is activated ON as indicated by the LED indicator on the relay button.

MOMENTARY_ON

The relay creates a momentary ON/OFF pulse when activated by an ON command from either inputs or schedule events. This is used to control loads which require a pulse to turn the load ON. See the example in the MOMENTARY OFF section.

Relay Parameters (Continued)

MOMENTARY_OFF

The relay creates a momentary ON/OFF pulse when activated by an OFF command from either inputs or schedule events. This is used to control loads which require a pulse to turn the load OFF.

Example: Mechanically held relays typically require a separate on and off pulse for operation. To create this operation, configure two relays, one as MOMENTARY ON and the other as MOMENTARY OFF. Then configure an event, or input, to control both relays. One relay will supply the ON pulse, the other the OFF pulse.

SWEEP

This option must be used when a RELAY has Sweep Switches on the circuit for remote switching. In this mode, the relay contacts will CLOSE for the ON event. The OFF event (either from a schedule or switch input) will open the contacts for the specified time required to reset the Sweep Switch, then the relay contacts will close. When the output type is set to SWEEP, all loads connected to the relay **must** be controlled through a Sweep Switch for full ON/OFF control.
Note: With this setup, the user ***can not*** override the OFF command following a WARN signal. The Sweep Switch can be used to turn the lights back on following the OFF command.

INTELISWITCH

This selection must be used when a RELAY has an InteliSwitch® (not available from Synergy) on the circuit for remote switching. In this mode, the relay contacts will CLOSE for the ON event. The OFF event (either from a schedule or switch input) will pulse the output OFF to signal the InteliSwitch an OFF command was activated. When the output type is set to INTELISWITCH, all loads connected to the relay **must** be controlled through an InteliSwitch for full ON/OFF control.
Note: With this setup, the InteliSwitch will flash the lights to provide a WARN-OFF signal. The lights will turn off following time-out of the internal timer in the InteliSwitch (see product instructions for timer settings). The user can override the OFF command at the InteliSwitch following the WARN-OFF signal.

DISABLED

The relay is disabled and will not switch ON or OFF and is disabled in a NORMALLY_OPEN state. This also disables any INPUT mapped to this relay. If the INPUT is mapped to multiple RELAYS, the input will turn the remaining relays ON, but will not turn the relays off. This disabled relay should be removed from the INPUT mapping if control of the remaining relays is required.

WARN

Any relay can be given a WARN value up to 99 minutes. This feature will blink any relay scheduled OFF for a period of 1 second, 1 to 99 minutes before the scheduled off time. This warns the occupants the lights are about to go OFF and gives them time to exit the building, or press a switch to get additional lighting for the space. Relays programmed ON or NO CHANGE will not be affected by the WARN event. Set WARN to 00 if you do not want the WARN function to operate.
Example: If relay 1 is programmed with a 5 min. WARN, and an event has relays 1 and 2 scheduled to switch off, then **only** RELAY 1 will blink OFF, five minutes before the scheduled off event.

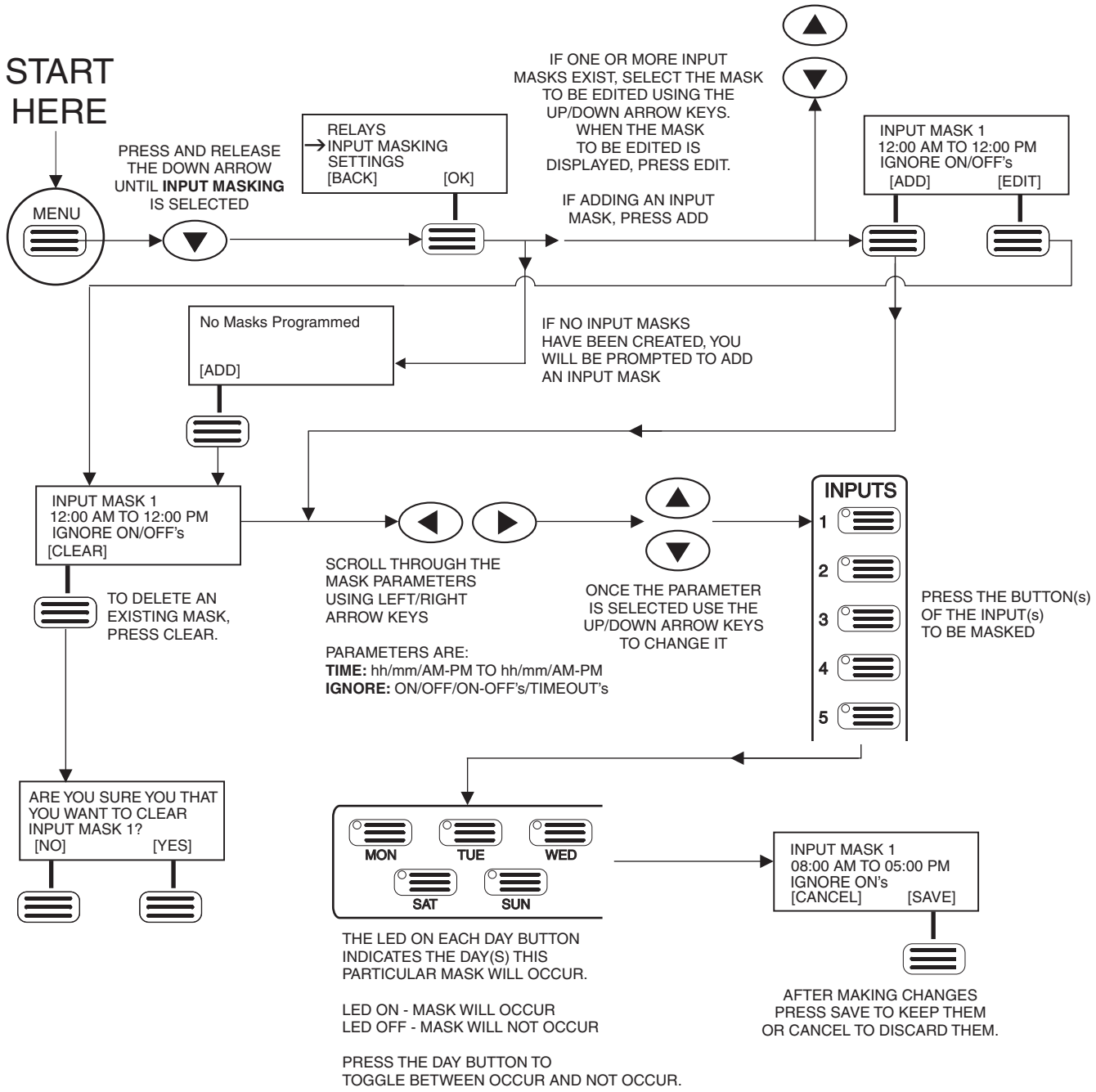
PHASE

The PHASE for each relay can be set to A, B, C or NONE.

How Do I Mask (Ignore) Inputs For Priority Control?

SwitchPak can setup a maximum of 25 INPUT MASKs. INPUT MASKING causes inputs to be ignored during the time period when the MASK is active. Masking is used to setup priority relationships between SCHEDULED EVENTS and INPUTS, or between multiple INPUTS. INPUT MASKS are configured by entering a time range, selecting the DAY(s) it will occur, and choosing the desired IGNORE parameter. Each INPUT MASK can be configured to IGNORE ON's, IGNORE OFF's, IGNORE ON/OFF's, and IGNORE TIMEOUT's. Masking provides a simple and effective method for input or schedule priorities.

The flow diagram below shows the programming steps to configure INPUT MASKING:



Input Masking Parameters

TIMES:

Enter the start and ending time for each INPUT MASK.

IGNORE OPTIONS:

IGNORE ON's

Ignores ON commands from the selected INPUTS during the specified times.

Example: A photocell input's ON event being MASKED (ignored) between 7 AM and 7 PM to prevent cloud cover from turning on the exterior lighting.

IGNORE OFF's

Ignores OFF commands from the selected INPUTS during the specified times. This can be used to insure lighting is not turned off during business hours or critical time periods.

Example: An off button being MASKED (ignored) between 8 AM and 8 PM to prevent the lighting in a space from being accidentally turned off.

IGNORE ON/OFF's

Ignores ON and OFF commands from the selected INPUTS during the specified times. This option totally disables selected INPUTS for times when remote overrides are not wanted.

Example: An override switch being MASKED (ignored) between 9 AM and 5 PM to prevent the lighting in a space from being overridden during normal hours.

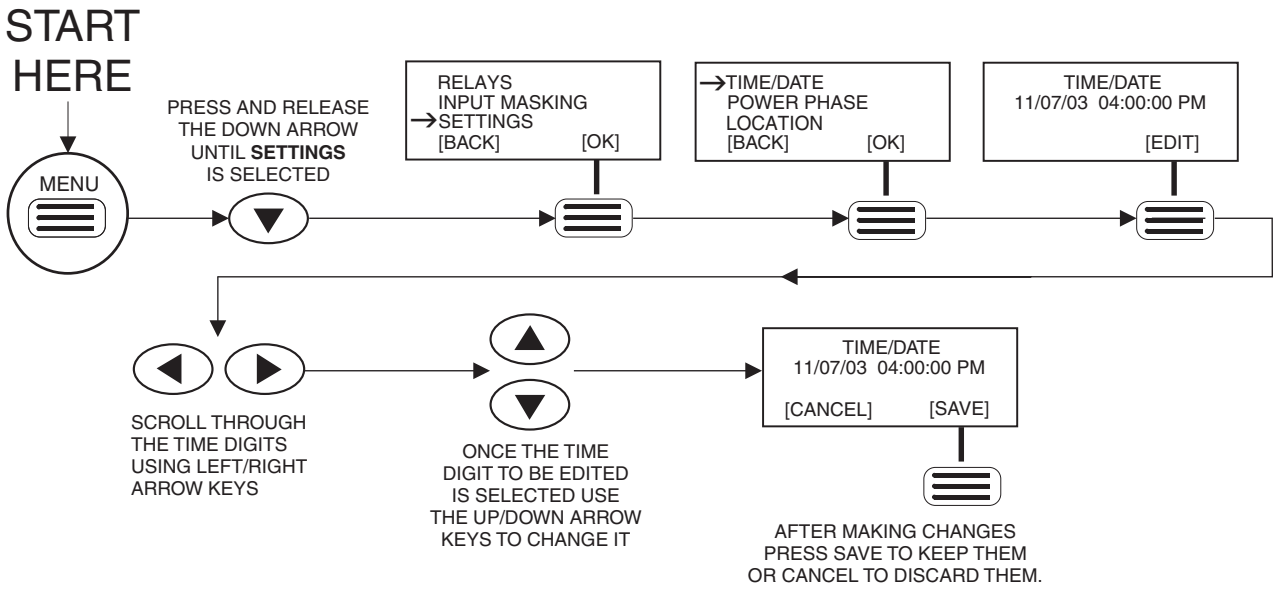
IGNORE TIMEOUT's

Ignores timeouts associated with INPUTS during the specified times. See the "How do I assign a switch to control a circuit?" section for more information on input timeouts. This option allows an INPUT to be used for normal ON/OFF operation during normal business hours, then allow the timeout feature to be activated if the switch is pressed after hours.

Example: A switch used for ON/OFF operation during normal business hours, after normal hours the timeout feature activates to turn the lights off after the specified time period.

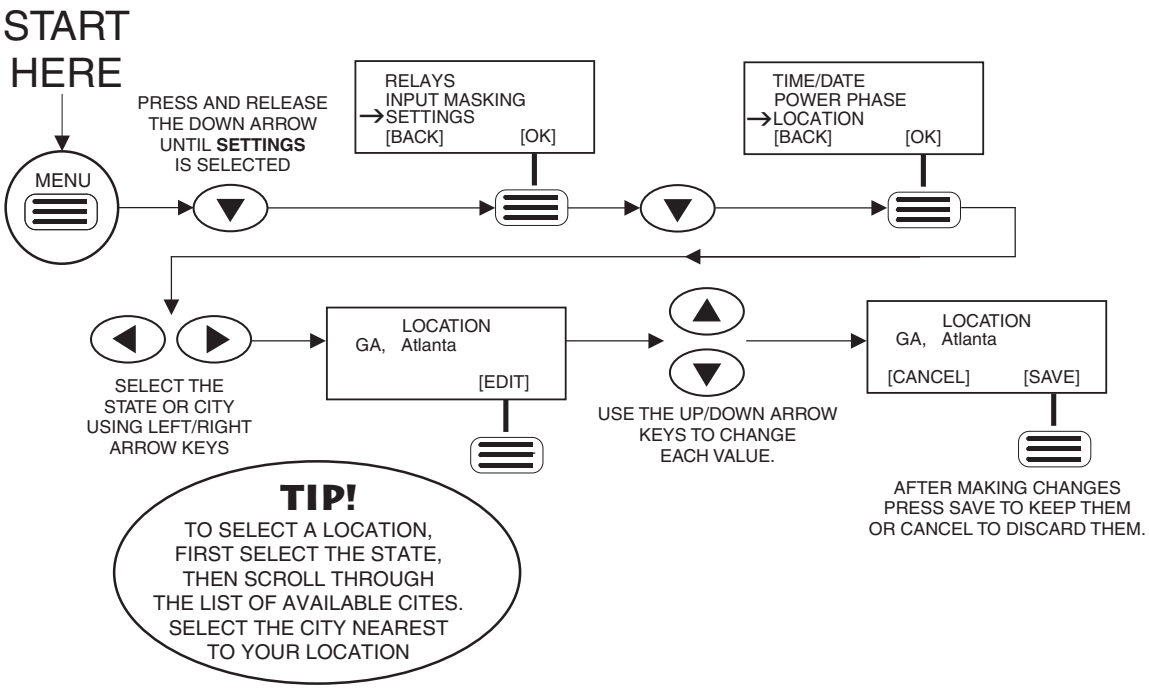
How Do I Set the Time and Date?

The current time and date must be correct for time schedule events to operate correctly.
The flow diagram below shows the programming steps to set the time.



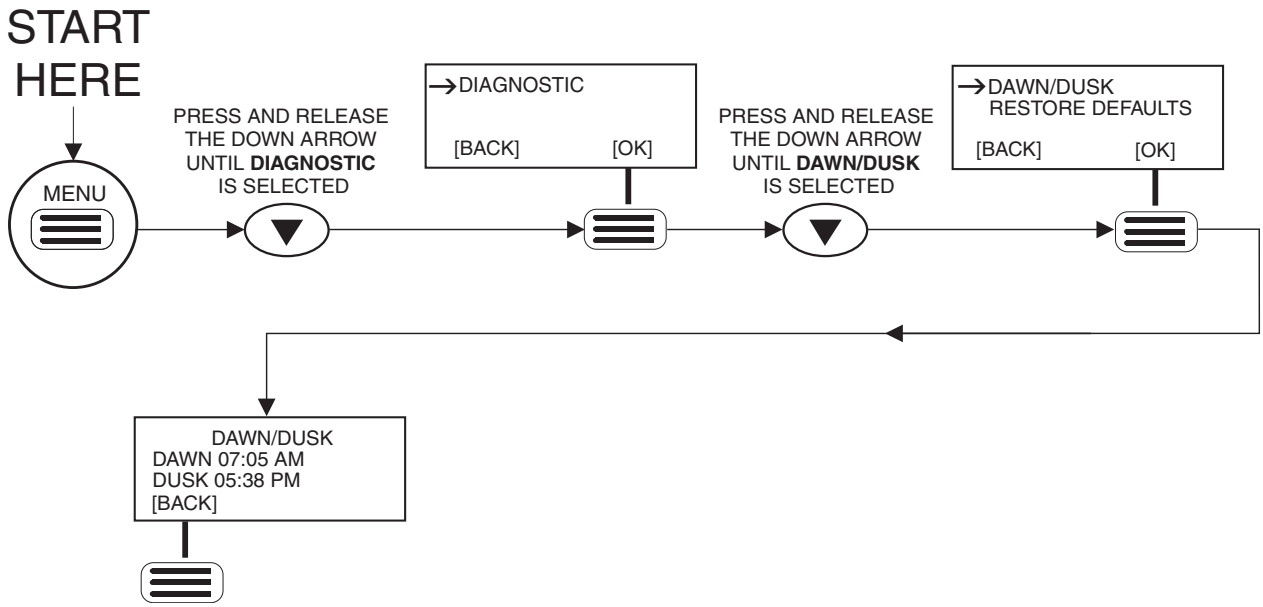
How Do I Set the System Location ?

The current geographical location must be set for the DUSK/DAWN events to work properly. The Astronomical Time Clock calculates the DUSK/DAWN event times.
The flow diagram below shows the programming steps to set the Astronomical Time Clock:



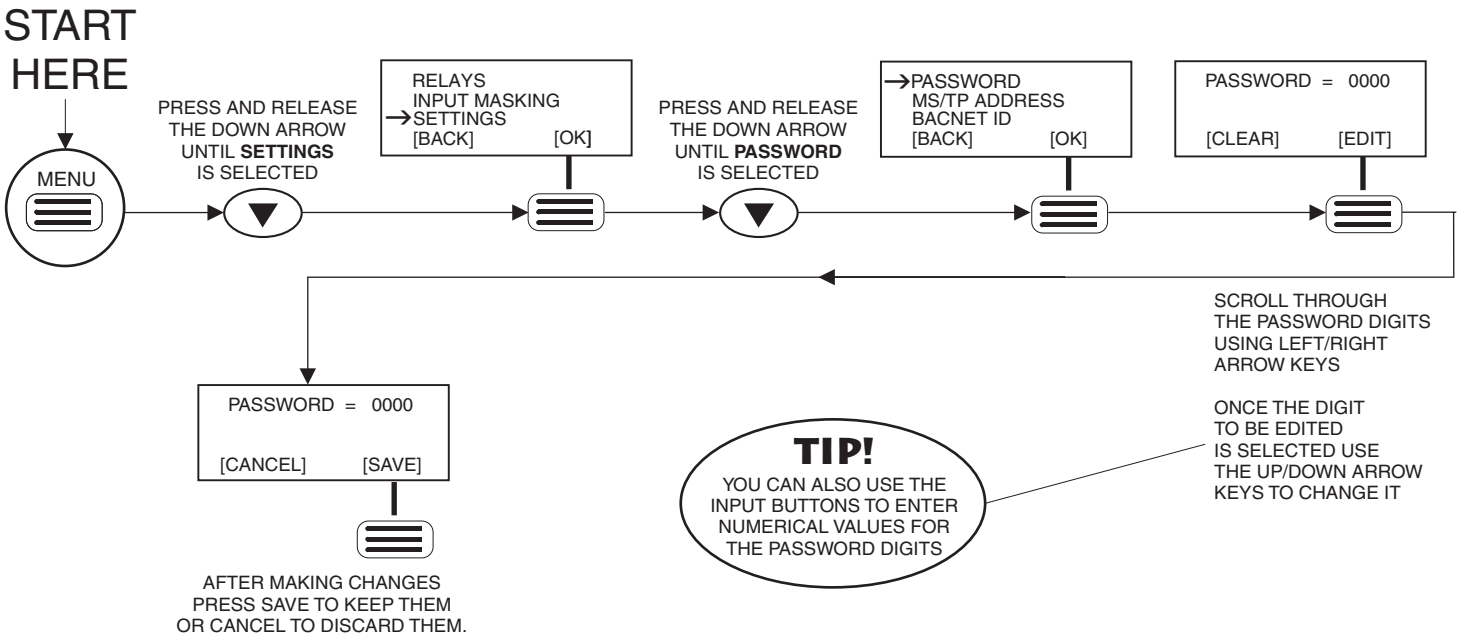
How Do I Check the Calculated Dawn and Dusk Times?

The flow diagram below shows the programming steps to check the DUSK/DAWN TIMES

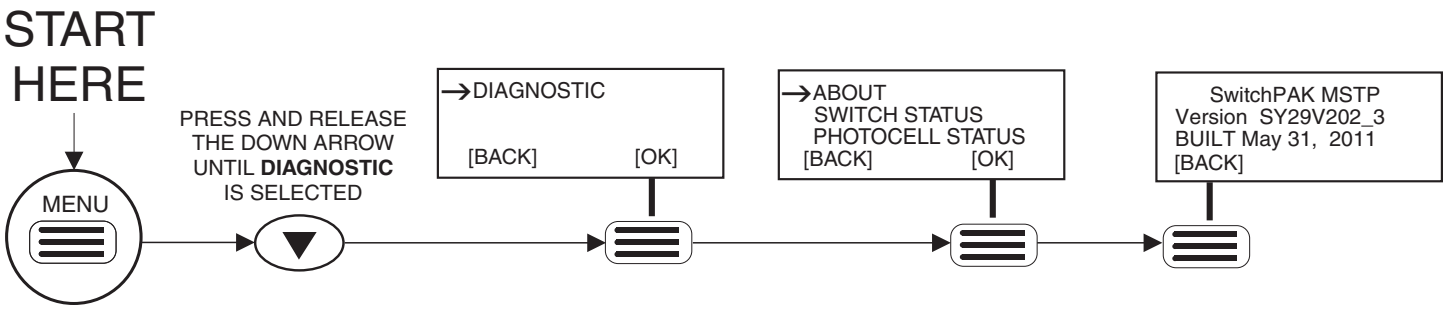


How Do I Set A System Password?

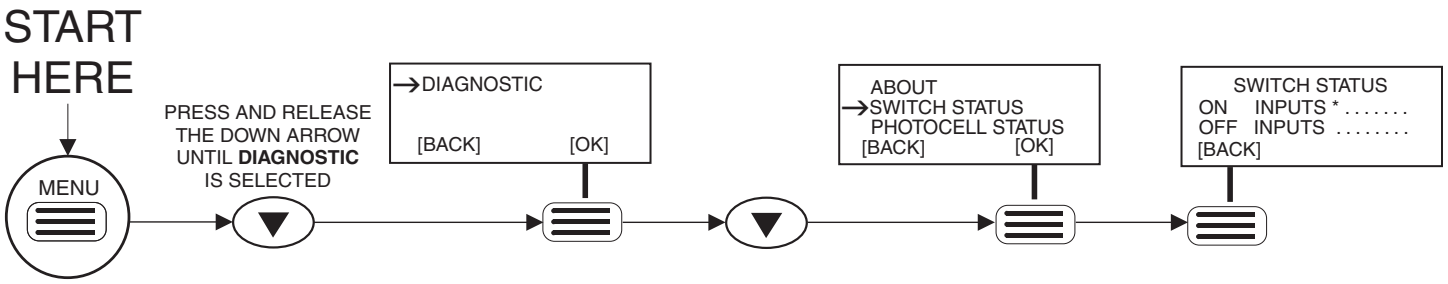
SwitchPak allows the user to configure a system password. Having a system password in effect prevents programming changes from being made by unauthorized individuals. Individual inputs and relays can still be overridden, without knowing the PASSWORD.
The flow diagram below shows the programming steps to set up a PASSWORD:



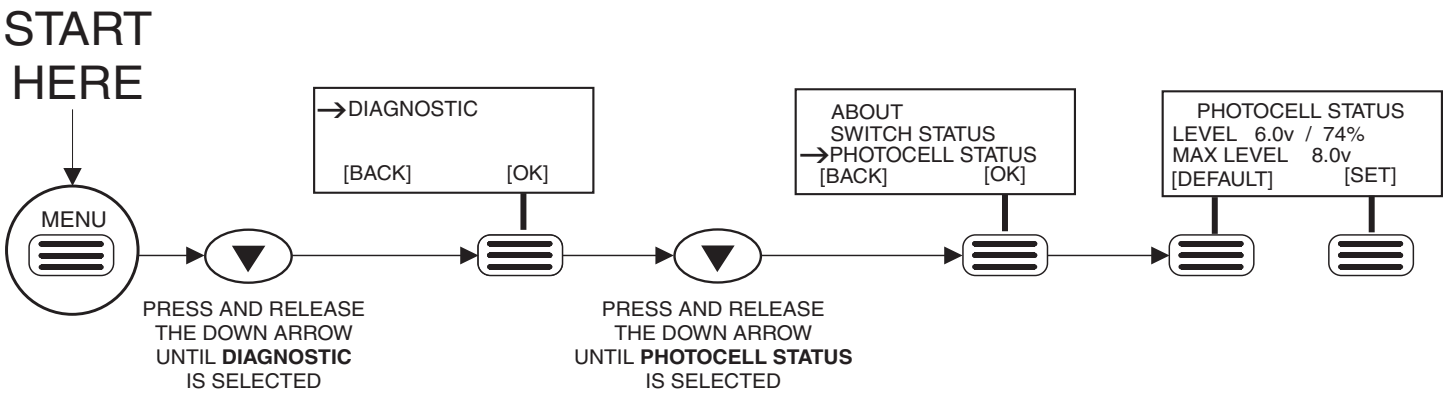
How Do I Check the Firmware Version?



How Do I Check the Actual Status of the Low Voltage Inputs?

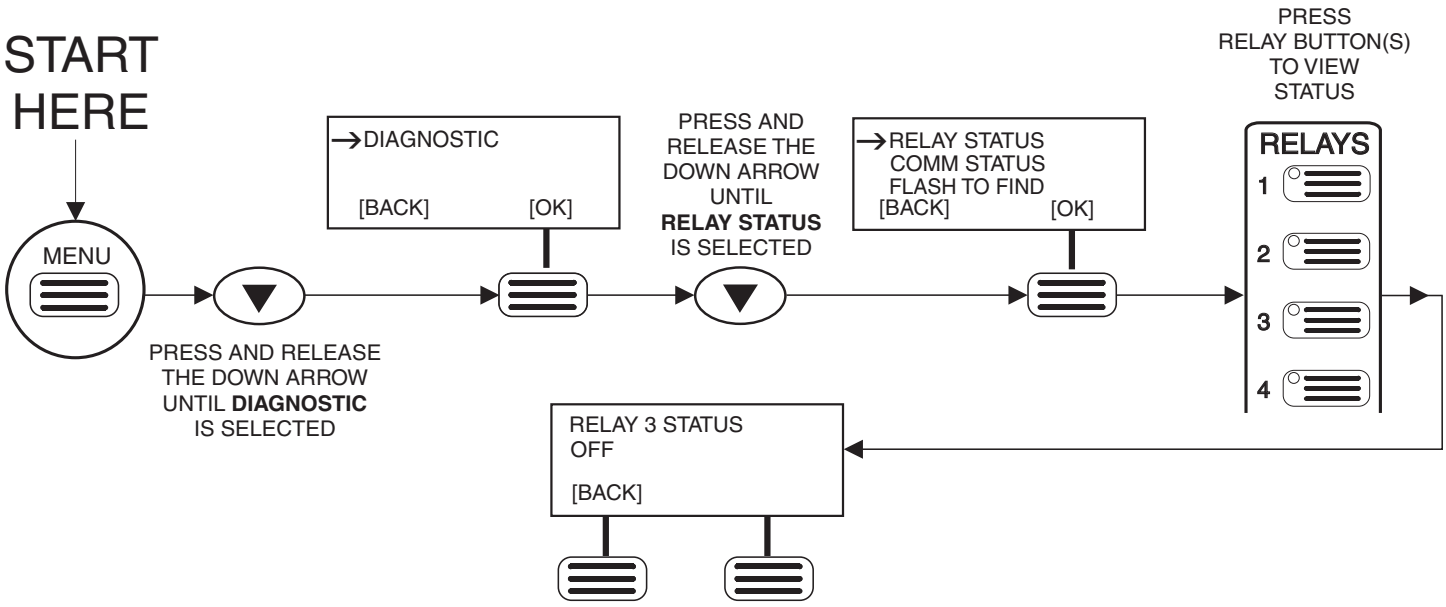


How Do I Check the Photocell Input Level?



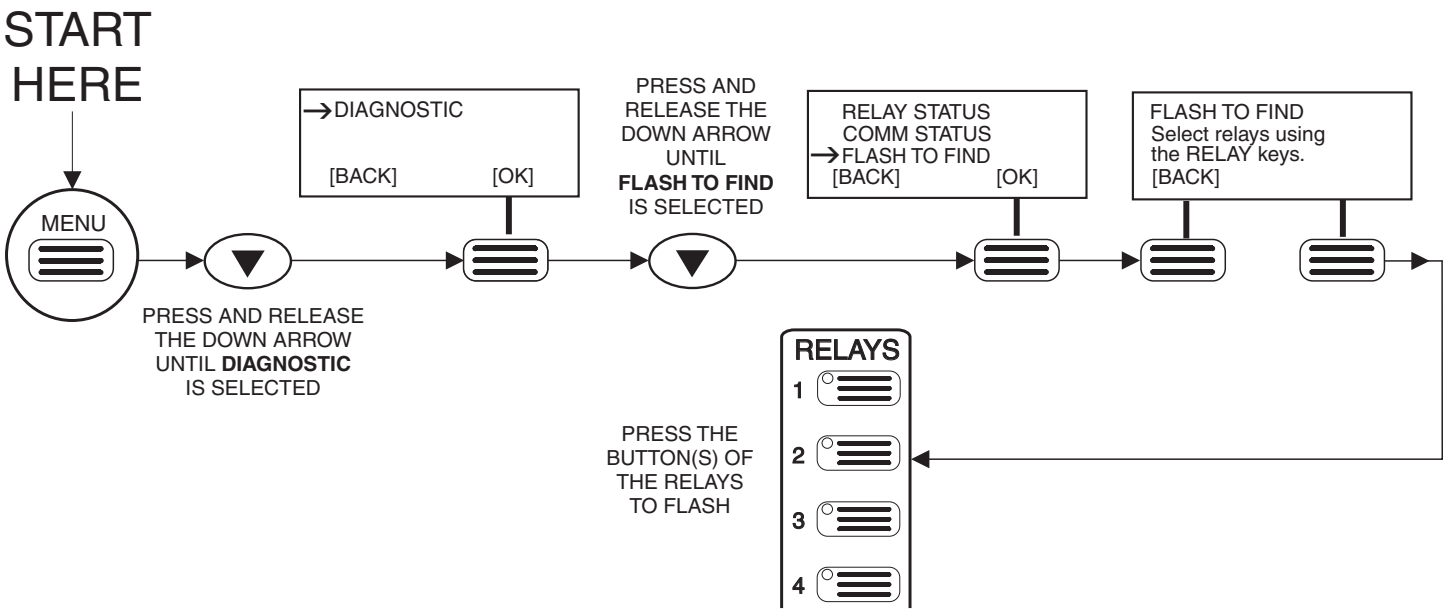
How Do I Check the Relay Status and Timeout Value?

SwitchPak can display each relay's status, ON or OFF, as well as the current timeout value (if there is one in effect) The flow diagram below shows the steps to check relay status.



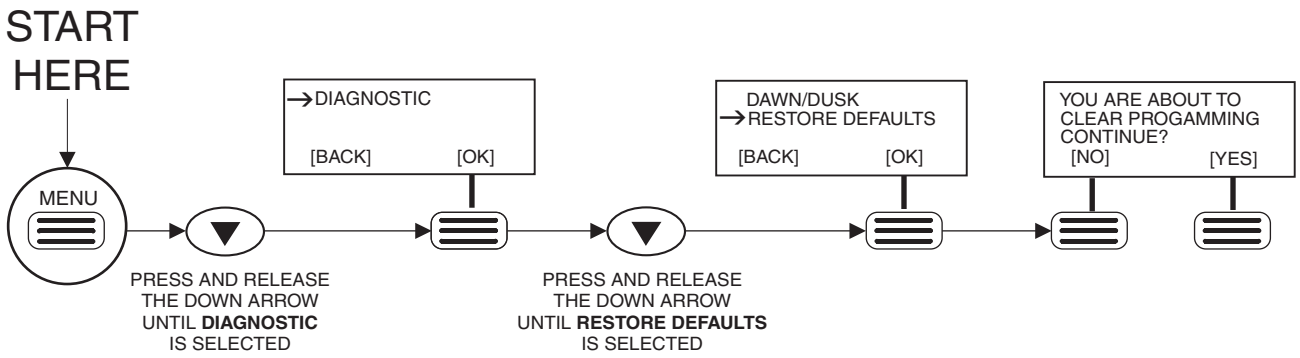
How Do I Use Flash To Find To Locate the Circuit(s) Being Controlled?

Flash To Find turns the selected relay on and off repeatedly, once every 2 seconds (approx), allowing you to move about the areas being controlled and locate the fixtures (loads) controlled by that particular relay.



How Do I Restore the Factory Default Programming?

You can erase all the user programming and return to the factory defaults. SwitchPak will give you a warning prompt to ensure you want to proceed, if you answer the warning prompt by pressing the OK key, all user programming will be lost.



Contact Synergy Lighting Controls Technical Support at 800-533-2719. Synergy Lighting Controls Technical Support is available from 8:00 a.m. to 5:00 p.m. EST Monday through Friday for phone consultation.

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

Warranty

Synergy Lighting Controls warrants SPAK equipment to be free from defects in manufacturing under normal and proper storage, installation and operation for a period of one (3) years. 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.

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

Synergy®
LIGHTING CONTROLS

Synergy SYGS Graphical Control Station Operations Manual

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INTRODUCTION

This manual contains instructions needed to configure your remote, wall-mounted Synergy Graphical Control Station, or SYGS, and to modify initial factory settings.

The SYGS is an architectural lighting-control station that allows you to program and recall various light levels. The available settings will allow your system to meet a wide variety of applications.

The SYGS is operated by menus and buttons displayed on an easy-to-use, touchscreen graphic keypad. Using this keypad, you can control lighting attributes (fade times, levels) of multiple targeted lighting groups (called Presets or Scenes), by adjusting multiple lighting circuits (called Channels or Zones) within each targeted group.

The SYGS Graphical Control Station you have purchased was engineered to provide years of reliable operation for commercial applications. If assistance beyond the scope of this manual is required, contact Synergy Lighting Controls.

NOTE: Operational Requirement
The SYGS is dependent on the Synergy controller to provide preset and channel functions. The SYGS must be programmed through the Synergy controller before it will provide any functionality. Please refer to Synergy Config instructions for station setup instructions.

When the touchscreen is initially powered on, the Logo screen will appear, showing the Synergy Lighting Controls logo (Fig. 1).

Slide your finger firmly across the bottom area of the screen to move to the Home Page of the SYGS Graphical Control Station (Fig. 2).

NOTE: A pen or other stylus-like instrument will also work; the SYGS is not temperature-sensitive.

Fig. 1

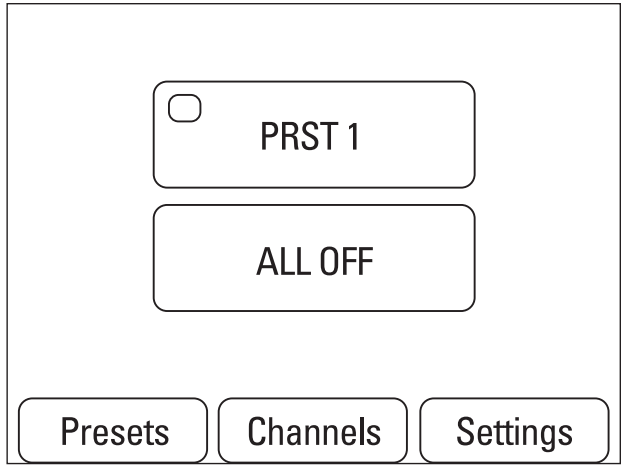
Understanding Presets/Scenes and Channels/Zones

Presets: Also identified as **Scenes**, Presets consist of a set of lighting levels with an associated fade time. PRESET buttons save and activate Preset lighting scenes. To create a Preset (up to 16), set the appropriate intensity for each of its selected Channels (definition follows).

Channels: Also identified as **Zones**, Channels are groups of specific circuits of lights prescribed to each Preset according to common characteristics, such as location or function. Arrow buttons on the Channel screens raise or lower the intensity of the associated lights.

Fade Time: Fade Time indicates how long it takes the lights to adjust to the new intensity levels when each Preset is selected.

Fig. 2

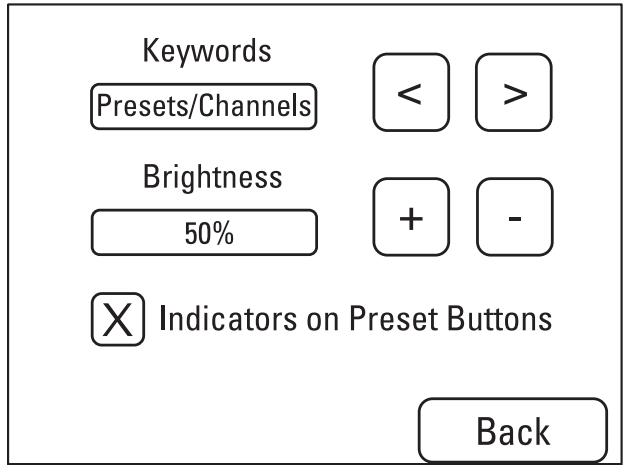


The Home Page is the master control screen for targeted lighting **Presets/Scenes** and their respective **Channels/Zones**, beginning with **Preset 1**. ***IMPORTANT***: For purposes of this manual, the terms Presets and Channels will be used throughout. To modify the terminology:

- Select SETTINGS, then OPTIONS to get to the Options screen (Fig. 3).
- Toggle the KEYWORDS section using the < or > buttons until you get the combination you prefer. The options are:
  Presets/Channels
  Presets/Zones
  Scenes/Channels
  Scenes/Zones

To save your selection, tap the BACK button at the lower right, then tap SAVE. You will be returned to the SYGS Home Page. Tap CANCEL to return to the Home Page without saving the settings (you will be prompted to confirm this action).

Fig. 3



OVERVIEW OF THE SYGS

OVERVIEW OF THE SYGS

Home Page Features

Top Button. This button is Preset button 1. This is typically used as entry lighting.

Bottom Button. This master-control button turns off all lights in all Channels. Note that on a station configured with 0 channels, this button is Preset button 2. If you wish to have it turn off the lights, Preset 2 will need to be set as an off Preset.

Presets. Presets are the preset light levels and fade times stored in the SYGS. The PRESETS button on the SYGS Home Page (Fig. 2) changes the keypad view to the initial Presets control screen (Fig. 5). Each Presets screen provides four Presets at a time, up to 16. Toggle through each set of four by using the NEXT or PREV buttons, or by using the PAGE 1 button to return to the first set of Presets. From Page 1, you can then return to the SYGS Home Page, or by tapping CHANNELS you can move to the Channels screen.

Fig. 2

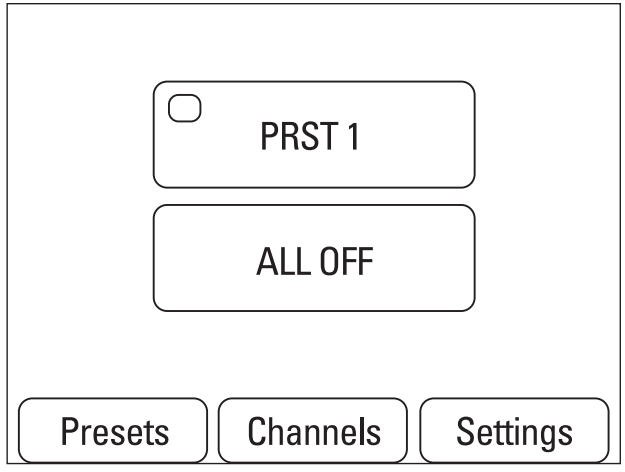
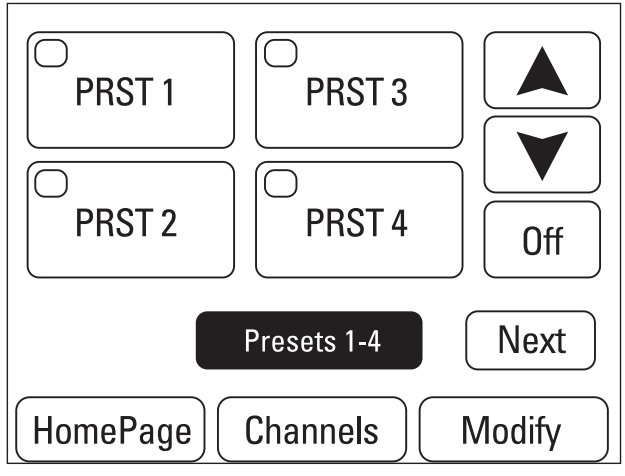


Fig. 5

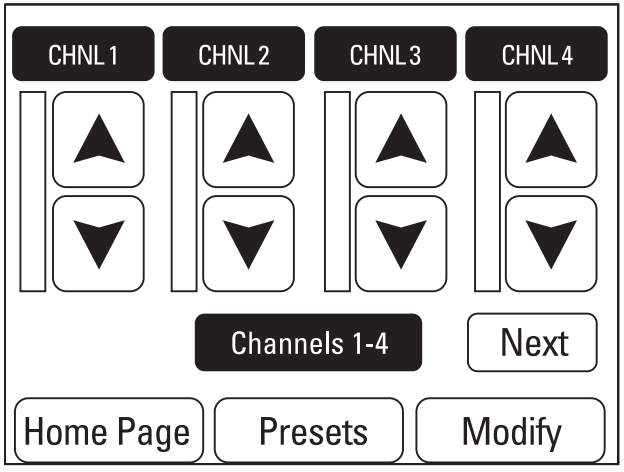


*To **create a Preset,** select one of the 16 available buttons. Select the MODIFY button. From here you can begin selecting and programming levels for multiple channels by selecting the ADJ LEVELS button. When selections have been made, press the "Return" button and then press the SAVE button.*

*To **recall a Preset,** simply press the pre-programmed button for the lighting scene you wish to activate.*

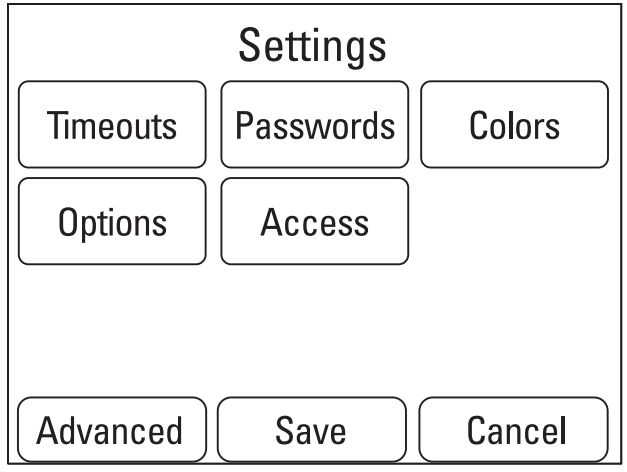
Channels. The CHANNELS button changes the keypad view to the Channels controls screen (Fig. 6). Each Channels screen provides four Channels at a time, up to 32. Page through each set of four by using the NEXT or PREV buttons, or by using the PAGE 1 button to return to the first page of Channels. From Page 1, you can then return to the SYGS Home Page, or by tapping PRESETS you can move to the Presets screen.

Fig. 6



Settings. The SETTINGS button changes the keypad view to the Settings control screen (Fig. 7). From this screen, a wide variety of system preferences can be edited. To save your selections, be sure to tap the BACK button at the lower right and tap SAVE.

Fig. 7



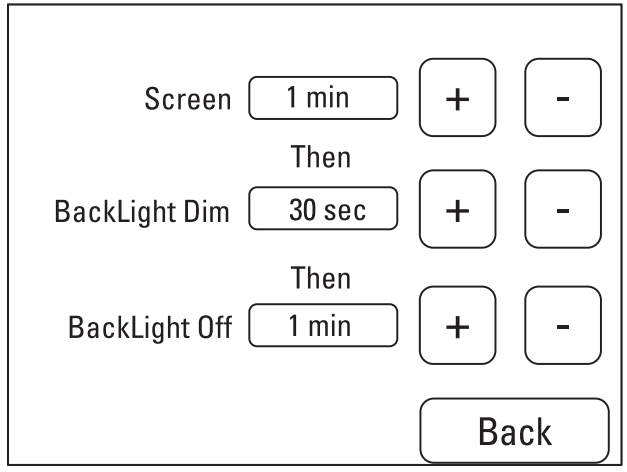
SYGS Settings

NOTE: Features on the Settings screens must be saved to take effect. After selecting your setting preferences, tap the BACK button at the lower right, then tap SAVE. You will be returned to the SYGS Home Page. Tap CANCEL to return to the Home Page without saving the settings (you will be prompted to confirm this action).

Timeouts. NOTE: Timeouts on the SYGS screen are sequential. Using the + or – buttons on the Timeouts screen (Fig. 8), select the amount of time (5 to 45 seconds; 1 to 60 minutes) for the SYGS to perform the following functions ***in order:***

1. Screen: Automatically changes keypad view to Logo Page.
2. Backlight Dim: Automatically dims keypad's backlight once on Logo Page.
3. Backlight Off: Automatically turns off the keypad's backlight once dimmed.

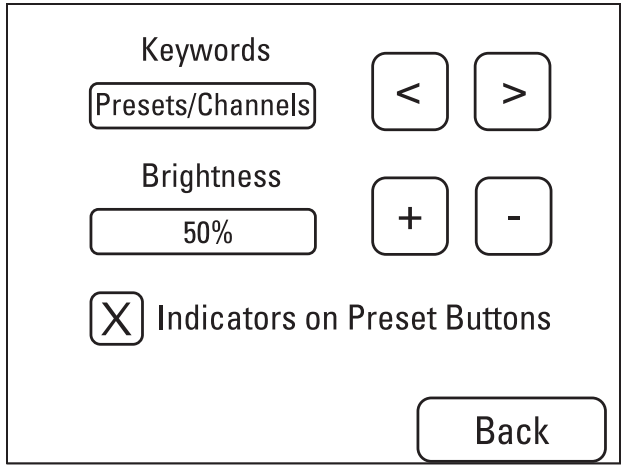
Fig. 8



Options. The Options screen (Fig. 3) allows you to set the terminology for your use of the SYGS unit. See Page 6 for more information. Also, the Options screen gives you the ability to adjust the brightness of the SYGS display (Fig. 3). Using the + or – buttons, adjust the screen brightness level from 20% to 100%.

In addition, the Options screen allows you to place an LED-like indicator on each of the Preset buttons by placing an X in the blue box at the bottom left of the screen. Indicator lights provide visual reference to each Preset status.

Fig. 3



Passwords. This setting gives you options (Fig. 10) to set a 4-digit User Password a 4-digit Setup Password, and a 4-digit Admin Password.

1. To enter passwords for each, tap the password-field buttons to move to a set of touchscreen keyboards, alpha or numeric.
2. Toggle between the alpha and numeric keyboards (Fig. 11) using the lower, right-hand buttons on each screen.
3. After entering your selected passwords, tap the OK button to proceed or the CANCEL button to cancel the action.
4. Tap the *BACK* button and SAVE your selection(s).

NOTE: Carefully record and keep your password in a secure location. Reset of station will not clear user passwords.

Fig. 10

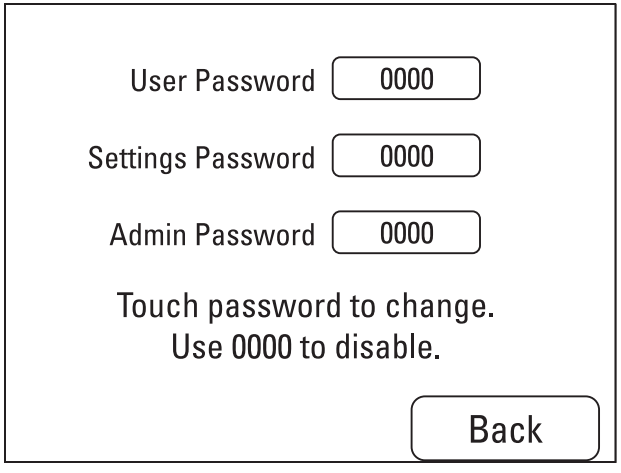
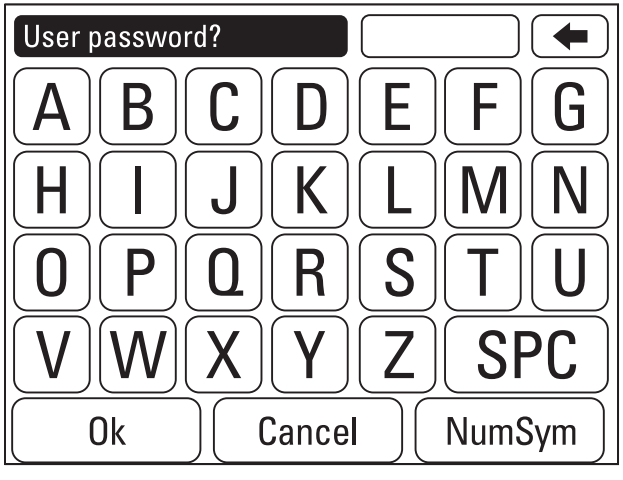


Fig. 11



Important: To initiate the password protections, allow the SYGS to cycle through its Timeouts.
Passwords subsequently will be required to perform tasks specific to each security level. The security levels are as follows:

User Password:

- Locks out all functions (presets, channels, modify presets, settings)

Settings Password:

- Locks out setting screen
- Optional lockout for Preset Modify function

Admin Password:

- Locks out ability to modify station address
- Locks out password screen

Access. The Access screen (Fig. 12) presents five options for managing fundamental operations of the SYGS. Tap the button beside each option to place or remove an X from the buttons. An X appearing indicates the function is active. NOTE: Setting changes must be saved to take effect.

Swipe to Unlock:
Creates a moderate level of security by requiring users to swipe firmly with a finger across the bottom of the Logo screen to activate the SYGS. In off mode, the SYGS is activated by touching anywhere on the screen.

Timeout to Logo Screen:
Resets the SYGS to the Logo screen once the Timeout settings are reached. In off mode, no logo appears.

Home Page is Default:
Sets the Home Page as the screen default after most commands. In off mode, the SYGS defaults to the initial Presets control screen (Fig. 2).

Fig. 12

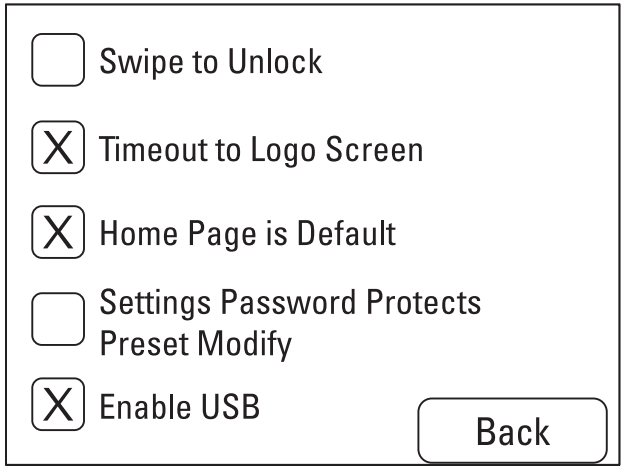
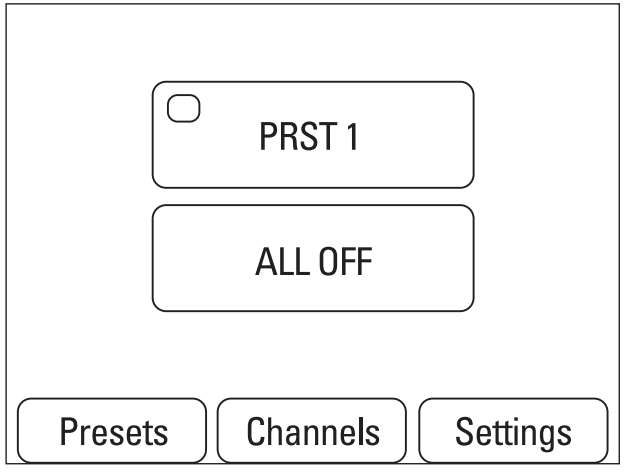


Fig. 2



Settings Password Protects Preset Modify:
Used to prevent unauthorized use of the SYGS for setting Presets and/or Channels. In the on mode, the SYGS requires a Setup Password (see Page 16 about setting Password) to access Presets/Channels. In off mode, the SYGS allows access to Presets and/or Channels while maintaining password protection for Settings.
P: To initiate password protections, allow the SYGS to cycle through its Timeouts.

Enable USB:
The SYGS is fitted with a Micro-B USB port for data access via a connecting cable. This allows you to update the unit's firmware using your computer. For example, you can replace the Synergy Lighting Controls logo with a custom logo (see Page 31). Data corrections also can be made, if necessary.

Steps for updating the firmware:

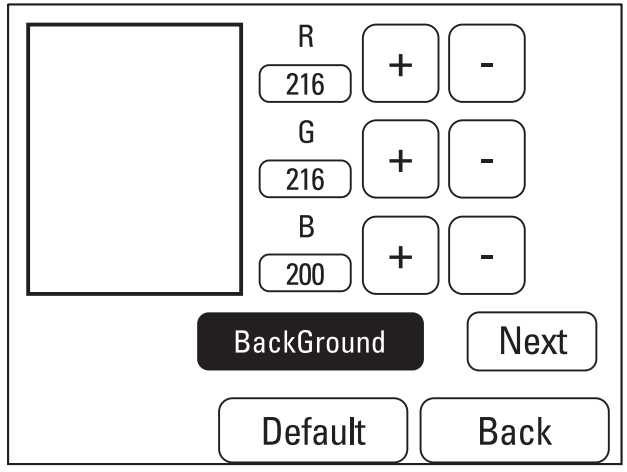
1. Connect the SYGS to a computer using a Micro-B USB cable.
2. After the computer recognizes the connection, edit data file as needed.
3. When updates are completed, drag edited file to the SYGS.
4. Before disconnecting the SYGS from your computer, click "REMOVE HARDWARE FROM COMPUTER" prompt, then disconnect.
5. Unplug the SYGS to remove power.
6. Wait briefly for the data to update.

Colors. This feature (Fig. 13) allows you to customize the colors representing each SYGS display element. Following the RGB color scale, use the + or - buttons to adjust the values of the red, green or blue for the elements shown on the button in the center of the screen. Use the PREV or NEXT buttons to toggle through:

- Background
- Background text
- Preset normal
- Preset press
- Preset LED on
- Preset LED off
- Preset text
- (Channel) Bargraphs
- Button normal
- Button press
- Button text
- Button disabled
- Button disabled text

The DEFAULT button returns the color schemes to the manufacturer's color settings.

Fig. 13



Advanced. The Advanced screen (Fig. 14) adjusts fundamental modes of the SYGS and provides some diagnostic information and tools. *NOTE: You will be asked to confirm the resetting of those items that affect the basic operation of the SYGS.*

About:
This screen (Fig. 15) provides information about the SYGS firmware.

Status:
The Status screen (Fig. 16) provides information about SYGS for up to 60 (0-59) unique Addresses. These listed Addresses refer to the available locations on the Synergy System A4 Network. Use the NEXT or PREV buttons to toggle through the 60 Address locations to find information relevant to each SYGS device, or tap the PAGE 1 button to return to the initial Status screen.

Fig. 14

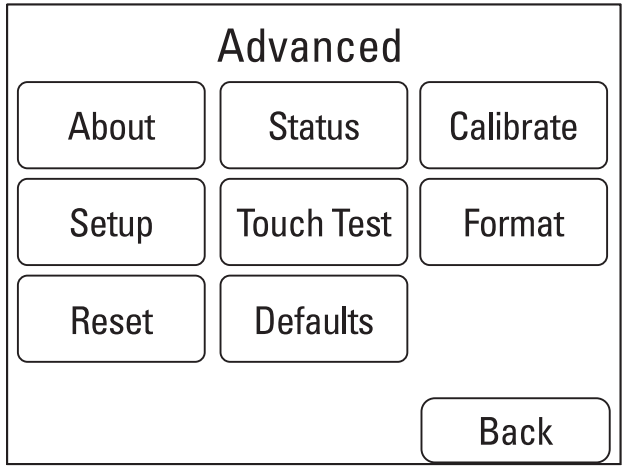
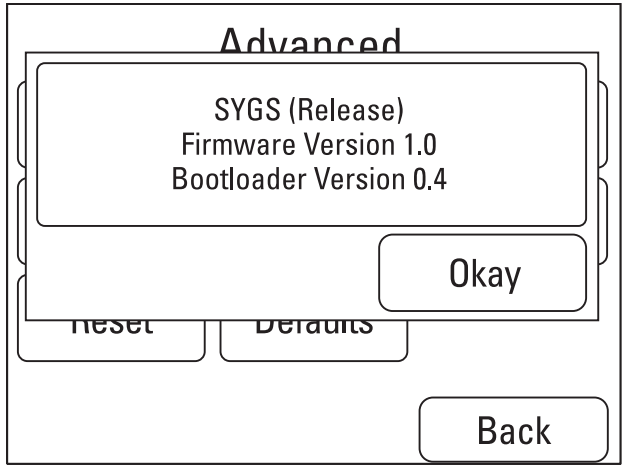


Fig. 15



Calibrate/recalibrate **SYGS touchscreen** (Fig. 17): The calibration process begins with a touch of the initial screen, followed by a sequence of screens requiring you to touch the crosshairs appearing on the screens. Accurate touching of the crosshairs resets the screen calibration accurately. This function does not affect data. Once calibration is completed, the view is returned to the Logo screen.

NOTE: If the calibration is set inaccurately, allow the screen to time out to the Logo screen and/or fade out. Then, press the screen firmly and continuously for 30 to 45 seconds to force a recalibration.

Fig. 16

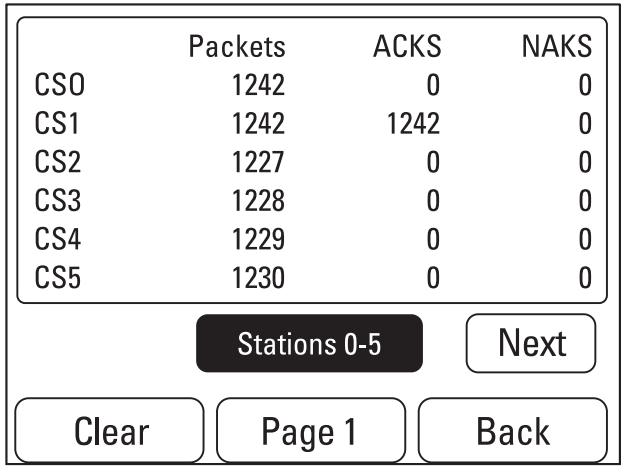
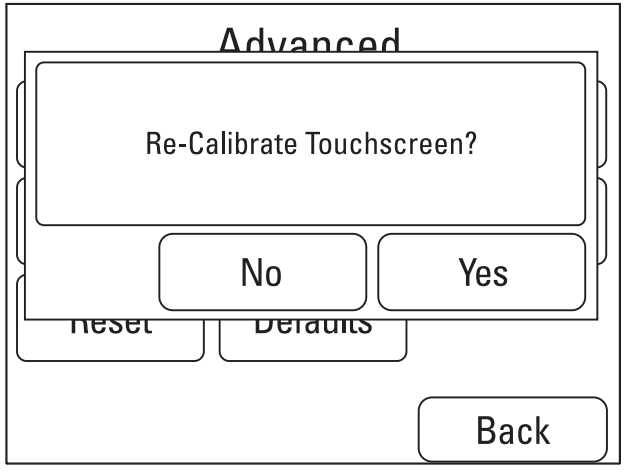


Fig. 17

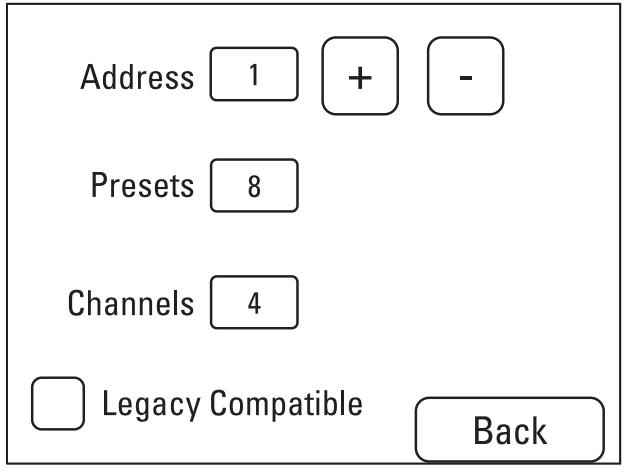


Setup:

The Setup screen (Fig. 9) is the master control for specifying the Address location of the SYGS (up to 60) for use on the A4 Synergy System network. For users with legacy system hardware, it also allows you to specify the number of Presets (up to 16) and Channels (up to 32) to be configured.

NOTE: The Legacy Compatible prompt (blue box) must be marked with an X to allow control of the Presets and Channels for users with Legacy System hardware. Legacy Systems can be defined as a Synergy Lighting Control System running controller firmware 2.65 or earlier. To enable the use of the SYGS with a Legacy System select the Legacy Compatible prompt and choose the number of Presets and Channels configured through your controller.

Fig. 9



Reset the SYGS:
Reset the SYGS in the event the SYGS malfunctions; returns the view to the Logo Screen.
Format/reformat **SYGS eeprom** (memory) **settings** (Fig. 18):
In the event that the eeprom becomes corrupt, this will erase and reformat the eeprom. All current settings will be saved back to the eeprom and any custom logo page will be erased.
Restore factory setting defaults (Fig. 19):
This function restores basic factory settings to the SYGS but does not erase modified Preset/Channel configurations, or passwords.

Fig. 18

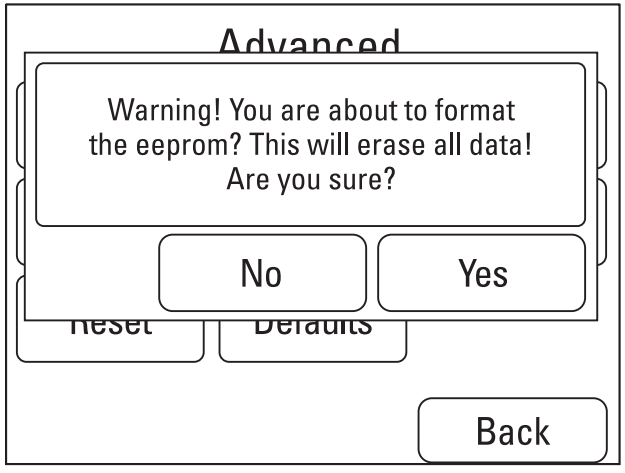
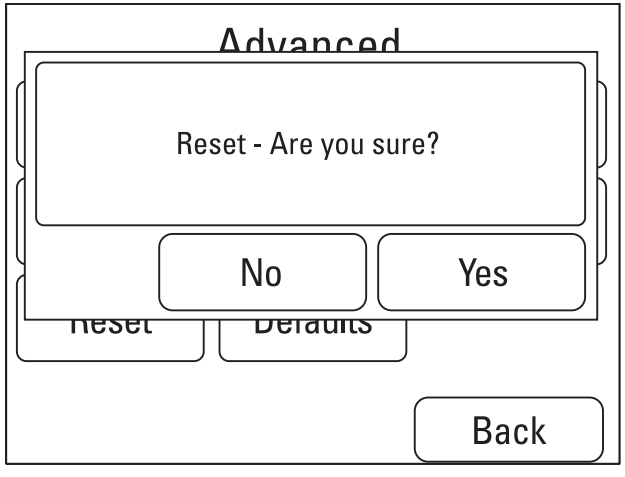


Fig. 19



BASIC OPERATION OF THE SYGS

BASIC OPERATION OF THE SYGS

Once lighting levels have been programmed and saved, they can easily be recalled by pressing the Preset button you wish to activate. An LED in the upper left hand corner indicates which Preset button is currently active (if enabled) or the button color will indicate the active Preset if LEDs are not enabled. If a temporary modification is desired, the ^ or v arrow buttons will adjust the lighting level.

NOTE: The method for modifying all Presets and Channels is the same. Preset- and Channel-setting features must be saved to take effect. After selecting setting preferences, tap the BACK button at the lower right, then tap SAVE. You will be returned to the Presets control screen. Tap CANCEL to return to the Presets control screen without saving the settings (you will not be prompted to confirm this action).

Modifying a Preset

1. Select the Preset you want to set/modify by using the PREV or NEXT commands from the Presets control screen (Fig. 5).
2. Once you have reached the chosen Preset, tap the MODIFY button to view the Modify screen (Fig. 22).
3. Use the + or – buttons to the right of the Pre sets window to toggle to another Preset. Or, adjust the Fade Time setting by using the + or – buttons to the right of the Fade Time window. This feature can be set from 0 seconds to 60 minutes, and serves as a master light-fading command for all Channels within each respective Preset.

IMPORTANT NOTE: For Presets that have not yet been programmed, the SYGS displays the current Channel settings.

Fig. 5

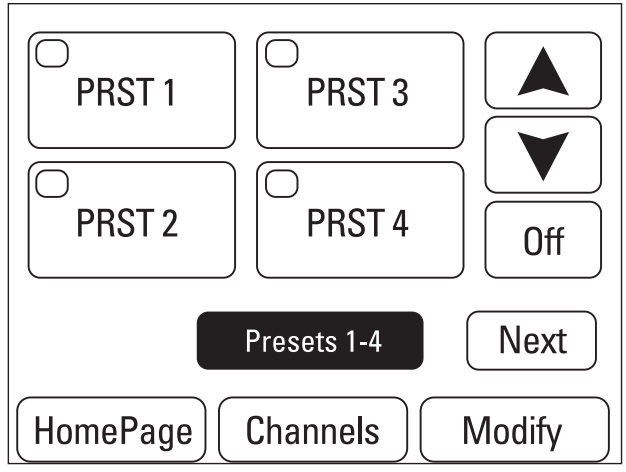
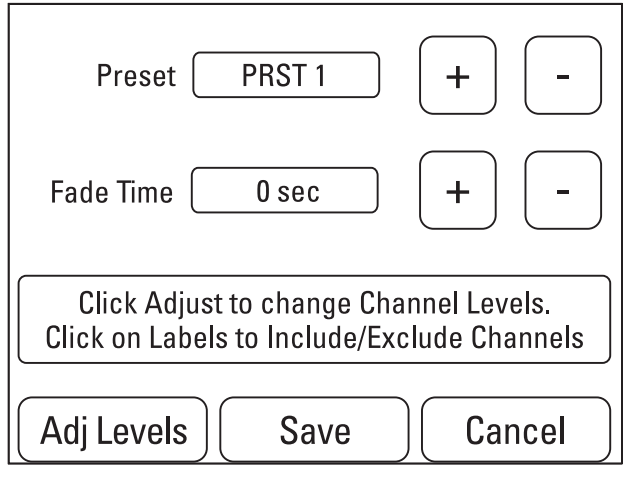


Fig. 22

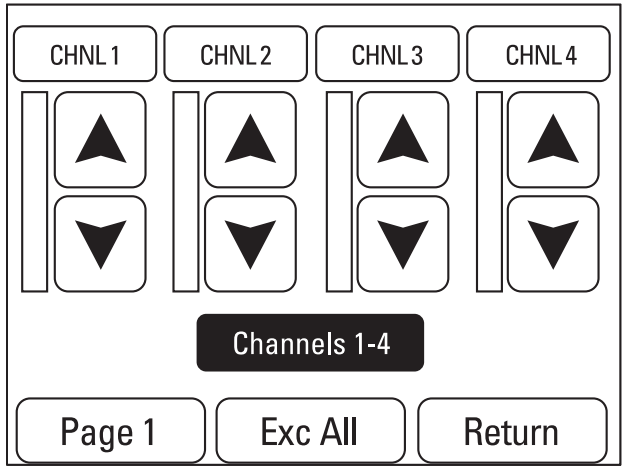


Adjusting and Including/Excluding Channels

Within any selected Preset, use the ADJ. LEVELS button on the Modify screen to view the Adj. Level control screens.

1. Select the Channel you want to set/modify by using the PREV or NEXT commands from the Channels control screen(s) (Fig. 23).
2. Modify the Channels you want to set/modify by pressing the ^ or v arrow buttons to reach the preferred light level.
3. Once the Channels settings have been made, tap the MODIFY button to return to the Presets controls screen, and press SAVE to protect your new settings.
4. To exclude specific Channels from the Preset you are programming, tap the white window containing the name of the Channel so that it turns black with white lettering (in colors-default mode). To exclude all Channels, tap the EXC. ALL button in the middle of the lower part of the Channels control screen. The intensity of Channel(s) excluded remains unchanged when their respective Presets are activated.

Fig. 23



Duplicating Channel Settings

Channel settings may be duplicated for multiple Presets, which then affect the indicators for each Preset of which they are a part. For example, setting Preset 1 and Preset 10 with the same Channel configurations will cause the LED indicators on those Presets to behave similarly on the their Preset control screens.

1. To easily duplicate Channel settings, set the initial Preset to be duplicated.
2. When viewing that Preset's Modify screen, toggle to reach the number of the Preset you want to have the same settings using the + or – buttons.
3. Once you reach the number of the Preset you're programming with the same Channel setting as the initial Preset, hit the SAVE button.
4. Follow this procedure for all Presets you wish to have the same Channels settings as the initial Preset.

CUSTOMIZATION OPTIONS

Adding a custom logo

On the Logo screen of the SYGS unit is the Synergy Lighting Controls logo. To replace this logo with your own logo, you must first connect the SYGS to your computer. Then, use the SYGS Logo Maker application to create the logo file you'll need so that it can be uploaded into the SYGS firmware. The SYGS Logo Maker application is available on the Synergy Lighting Controls Web site *(www.synergylightingcontrols.com)*.

Steps for updating the firmware to add a custom logo:

1. Connect the SYGS to a computer using a Micro-B USB cable.
2. After the computer recognizes the connection to the SYGS, navigate to the Synergy Lighting Controls Web site and click on the SUPPORT tab.
3. From there, click on the "SYGS Logo Maker Setup" wizard and double-click on it to open.
4. Follow the instructions in the wizard for installing the SYGS Logo Maker onto your computer.
5. Use the wizard to replace the Synergy logo with your custom logo.
6. When your update is completed, drag the edited logo file (an .RLL file) to the SYGS connected to the computer.
7. Before disconnecting the SYGS from your computer, click "REMOVE HARDWARE FROM COMPUTER" prompt, then disconnect.
8. Unplug the SYGS to remove power.
9. Wait briefly for the data to update.

HOW DO I...

HOW DO I...

A quick reference guide on the most common SYGS functions

How do I ...

recall preset/saved light levels?

To recall a Preset, simply press one of the PRESET buttons, starting with Page 1 of the Preset control screen (Fig. 21). The first button calls up Preset 1; the second, Preset 2; and so on.

modify preset/saved light levels?

Select the Preset you want to set/modify and tap the MODIFY button (Fig. 22) to view the Modify screen. Adjust the Fade Time setting by using the + or – buttons to the right of the Fade Time window.

adjust light levels?

Move to the channels screen by pressing the Channels button. Select the Channel you want to set/modify by using the PREV or NEXT commands from the Channels control screen(s) (Fig. 23). Modify the Channels you want to set/modify by toggling the ^ or v arrow buttons to reach the preferred light level.

change button labels?

Preset and channel labels can be changed on the Stations tab in the SYSW Config software.

check the firmware version?

The About screen (Fig. 15) provides information about the SYGS firmware. You find this under the Advanced screen (Fig. 14).

determine which Preset is active?

The Preset that is active will be indicated by either an LED in the upper left corner or the color of the button being different.

determine the Channels being controlled?

Each Channels control screen (Fig. 23) shows four Channels that can be controlled from that screen. The text box above each channel indicates it function. The text box below all the channels indicates the actual channel number.

restore factory default programming?

Under Advanced (Fig. 14), use the DEFAULTS button to restore basic factory settings to the SYGS. This does not erase modified Preset/ Channel configurations.

TROUBLESHOOTING

There is no power to the SYGS.

Check and verify all A4 network connections and verify the system controller is functioning properly. Refer to the controller operations manual for proper operating and troubleshooting instructions.

There is power to the SYGS, but it's not showing any activity; there is no communication.

Check and verify all A4 network connections and verify the system controller is functioning properly. Refer to the controller operations manual for proper operating and troubleshooting instructions.

There is no error message, but the lights are not properly responding to my settings.

Each device on the A4 network must have a unique address. DUPLICATE ADDRESSES ARE NOT ALLOWED! Using duplicate addresses will cause poor system performance, erratic operation and network communication errors.
Check the following:

1. Verify the A4 network address for each station.
2. Verify the A4 network is terminated only at each end of the network
3. Verify the A4 network does not have any t-taps.

The SYGS touchscreen is not responding when I touch it.

The screen calibration is not setup. Allow the screen to time out to the Logo screen and/or fade out. Then, press the screen firmly and continuously for 30 to 45 seconds to force a recalibration.

The touch screen is broken.

Please contact Synergy Lighting Controls Technical Service at 800-533-2719 or by e-mail at support@SynergyLightingControls.com.

The USB is not working properly when I connect it.

Do you have the correct adapter for a Micro-B port?
Go to setting screen and then select access screen.
Ensure that the enable USB box is selected.

FOR ADVANCED USERS

SYGS Wiring

A SYGS (up to 60) communicates to the Synergy System through the Synergy A4 network. Each SYGS on the A4 network must have a unique address. DUPLICATE ADDRESSES ARE NOT ALLOWED.

The A4 Network

The A4 network must be properly terminated for network operation. The network device residing at each end of the network must be terminated. The SYSC system controller is normally located at one end of the network and ships from the factory with termination activated. Refer to SYGS installation instructions for termination instructions.

Please read this manual thoroughly before using this device and keep it handy for future reference.

Important Safety Notice

- This document does not cover installation, service, and maintenance situations. For assistance, contact Synergy Lighting Controls. See contact information below.
- Installation and technical 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.
- Service of the equipment must be performed by qualified service personnel.

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

Customer Service

Contact Synergy Lighting Controls Technical Service at 800-533-2719. Synergy Lighting Controls Technical Service is available from 8:00 a.m. to 5:00 p.m. Monday to Friday EST for phone consultation.

Email support:
support@synergylightingcontrols.com

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

Address:
Synergy Lighting Controls
1440 Lester Rd.
Conyers, GA 30012

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 three (3) years. 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.

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