



**SYSTEM  
OPERATION AND MAINTENANCE**



*An **Acuity**Brands Company*



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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 Introduction 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 Lithonia.

### *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, 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.

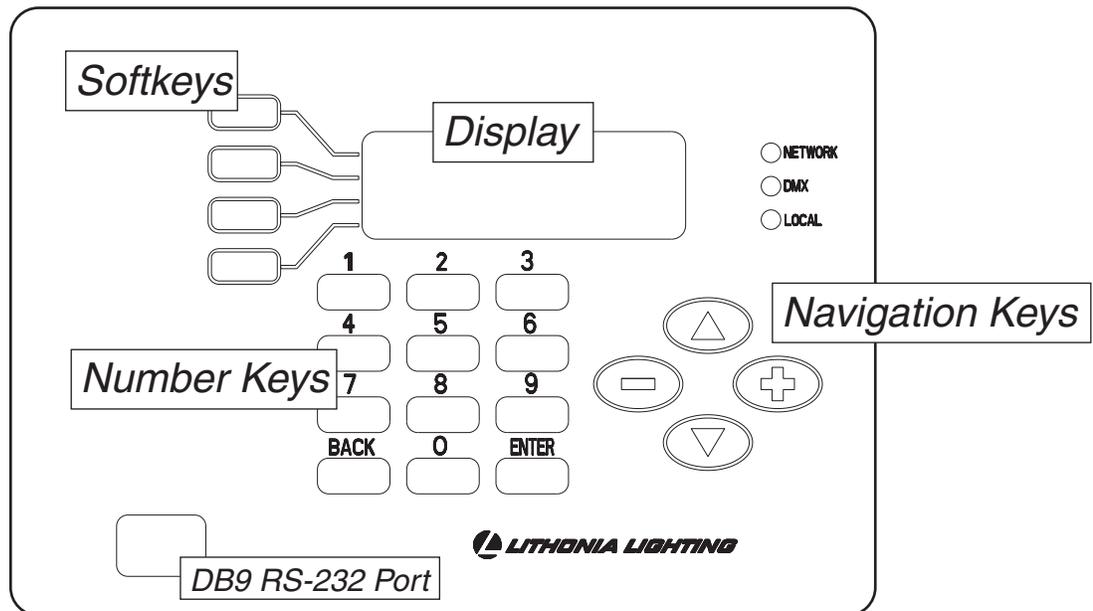
## ***What is the Configuration script?***

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.
- “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, sseconds, 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 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.

## **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 19-23, 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 Lithonia Control Systems Technical Service department at 800-533-2719.

## 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

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

Quick Tips explain additional details or give added information

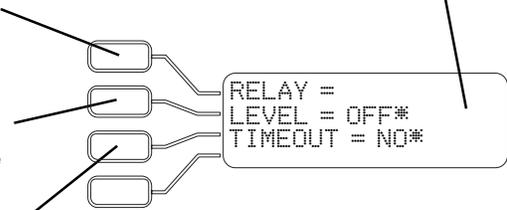
Notes keyed to the text with numbers provide further details about programming or advanced operating functions.

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.

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

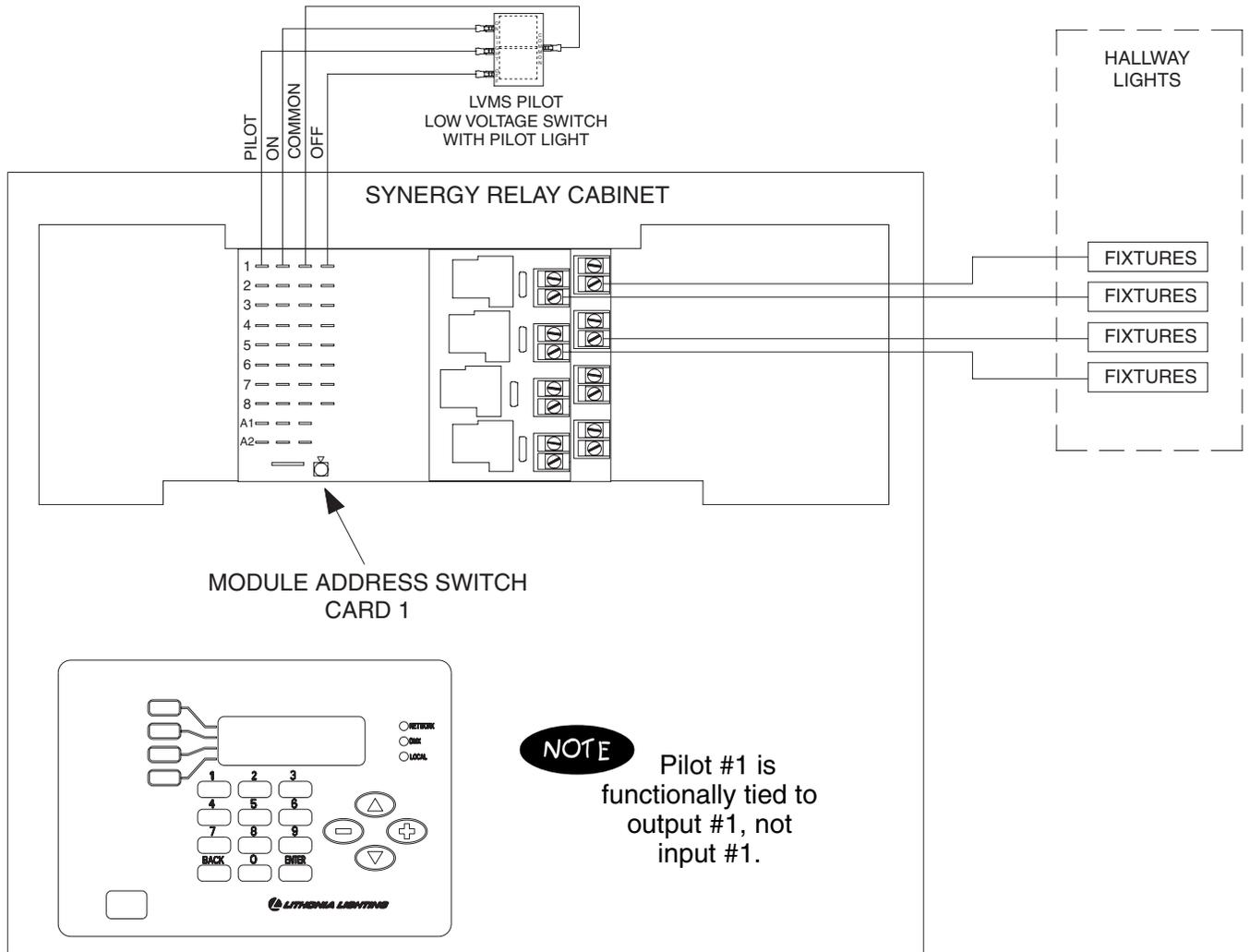
- ❶ Relays not added to the controller's hardware configuration can not be overridden.
- ❷ Relays include outputs from relay modules, ballast modules, and breaker modules.

#### Notes:

- ❶ DIMMERS, LEGACY-DIMMERS, DALI, 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 47) 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	RELAY NUMBER	CIRCUIT DESCRIPTION	CIRCUIT PANEL I.D.	CIRCUIT #	LOAD (W)	PHASE (A,B,C)	CUSTOMER ASSIGNED CONTROL GROUP NUMBER(S)	DEFAULT GROUP NUMBERS
1	0101	<i>Center Hallway</i>	<i>1HA</i>	<i>1</i>	<i>1500</i>	<i>A</i>	<i>1</i>	0101
	0102	<i>Center Hallway</i>	<i>1HA</i>	<i>3</i>	<i>1500</i>	<i>B</i>	<i>1</i>	0102
	0103	<i>West Hallway</i>	<i>1HA</i>	<i>5</i>	<i>1340</i>	<i>C</i>	<i>1</i>	0103
	0104	<i>North Hall</i>	<i>1HA</i>	<i>7</i>	<i>1200</i>	<i>A</i>	<i>1</i>	0104
	0105	<i>Lobby</i>	<i>1HA</i>	<i>9</i>	<i>1500</i>	<i>B</i>	<i>2</i>	0105
	0106	<i>Lobby</i>	<i>1HA</i>	<i>11</i>	<i>1500</i>	<i>C</i>	<i>2</i>	0106
	0107	<i>Open Office</i>	<i>1HA</i>	<i>13</i>	<i>1275</i>	<i>A</i>	<i>3</i>	0107
	0108	<i>Open Office</i>	<i>1HA</i>	<i>15</i>	<i>1275</i>	<i>B</i>	<i>3</i>	0108

INPUT NUMBER	INPUT NAME / LOCATION	INPUT TYPE	GROUP NUMBER	TIMEOUT	WARN	PRIORITY
0101	<i>yeBæLnt Hbr H</i>	<i>1Hæ034</i>	<i>C</i>	<i>72</i>	<i>C9</i>	<i>72Lo H</i>
0102						

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

#### DAILY ASSIGNMENT SCHEDULE (Page 16)

<b>SCHEDULE#</b>	<i>1</i>
EVENT TIME:	<i>7:30</i>
LEVEL-WARN:	<i>On</i>
GROUP:	<i>1</i>
EVENT TIME:	<i>20:15</i>
LEVEL-WARN:	<i>Off</i>
GROUP:	<i>1</i>
EVENT TIME:	<i>22:15</i>
LEVEL-WARN:	<i>Off</i>
GROUP:	<i>1</i>

#### EVENT SCHEDULE (Page 16)



## RELAY CABINET LOAD WIRING SCHEDULE

CONTROL CIRCUIT NUMBER: \_\_\_\_\_  
CONTROL CIRCUIT PHASE: \_\_\_\_\_

SYNERGY CABINET I.D.: \_\_\_\_\_  
CABINET LOCATION: \_\_\_\_\_  
BACNET ADDRESS: \_\_\_\_\_  
ARCNET ADDRESS: \_\_\_\_\_

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
<b>1</b> SYPM 8R	0101							0101
	0102							0102
	0103							0103
	0104							0104
	0104							0104
	0106							0106
	0107							0107
	0108							0108
<b>2</b> SYPM 8R	0201							0201
	0202							0202
	0203							0203
	0204							0204
	0205							0205
	0206							0206
	0207							0207
	0208							0208
<b>3</b> SYPM 8R	0301							0301
	0302							0302
	0303							0303
	0304							0304
	0305							0305
	0306							0306
	0307							0307
	0308							0308
<b>4</b> SYPM 8R	0401							0401
	0402							0402
	0403							0403
	0404							0404
	0405							0405
	0406							0406
	0407							0407
	0408							0408
<b>5</b> SYPM 8R	0501							0501
	0502							0502
	0503							0503
	0504							0504
	0505							0505
	0506							0506
	0507							0507
	0508							0508
<b>6</b> SYPM 8R	0601							0601
	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	
<b>1</b> SYPMB 6DB1	0101							0117	0101
	0102								
	0103							0118	
	0104								0102
	0105								
	0106							0119	
<b>1</b> SYPMB 6DB1	0201							0217	0201
	0202								
	0203							0218	
	0204								0202
	0205								
	0206							0219	
<b>1</b> SYPMB 6DB1	0301							0317	0301
	0302								
	0303							0318	
	0304								0302
	0305								
	0306							0319	
<b>1</b> SYPMB 6DB1	0401							0417	0401
	0402								
	0403							0418	
	0404								0402
	0405								
	0406							0419	
<b>1</b> SYPMB 6DB1	0501							0517	0501
	0502								
	0503							0518	
	0504								0502
	0505								
	0506							0519	

PHASE A TOTAL LOAD: \_\_\_\_\_ 0 \_\_\_\_\_

PHASE B TOTAL LOAD: \_\_\_\_\_ 0 \_\_\_\_\_

PHASE C TOTAL LOAD: \_\_\_\_\_ 0 \_\_\_\_\_



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 <b>1</b>	SWITCH INPUTS	0101							
		0102							
		0103							
		0104							
		0105							
		0106							
		0107							
		0108							
	ANALOG INPUTS	0101							
		0102							
ADDRESS <b>2</b>	SWITCH INPUTS	0201							
		0202							
		0203							
		0204							
		0205							
		0206							
		0207							
		0208							
	ANALOG INPUTS	0201							
		0202							
ADDRESS <b>3</b>	SWITCH INPUTS	0301							
		0302							
		0303							
		0304							
		0305							
		0306							
		0307							
		0308							
	ANALOG INPUTS	0301							
		0302							
ADDRESS <b>4</b>	SWITCH INPUTS	0401							
		0402							
		0403							
		0404							
		0405							
		0406							
		0407							
		0408							
	ANALOG INPUTS	0401							
		0402							
ADDRESS <b>5</b>	SWITCH INPUTS	0501							
		0502							
		0503							
		0504							
		0505							
		0506							
		0507							
		0508							
	ANALOG INPUTS	0501							
		0502							
ADDRESS <b>6</b>	SWITCH INPUTS	0601							
		0602							
		0603							
		0604							
		0605							
		0606							
		0607							
		0608							
	ANALOG INPUTS	0601							
		0602							

# SYNERGY CONTROLLABLE BREAKER PANEL

<b>JOB NAME:</b>		<b>ORDER #:</b>	
<b>LITHONIA CATALOG #:</b>			
<b>CUSTOMER ID:</b>			
<b>VOLTAGE: (120/277/347)</b>			

<b>TYPE:</b> C= Controllable Breaker	
S= Standard Breaker	

CIRCUIT BREAKER #	AMPS	TYPE	POLE	LOAD (VA)			LOAD DESCRIPTION	LOAD DESCRIPTION	#	CIRCUIT BREAKER		
				A	B	C				EX	AMPS	TYPE
EX	20	C	1	3400			UTILITY ROOM		EX	20	S	2
1				0					2			
3					0				4			
5						0			6			
7				0					8			
9					0				10			
11						0			12			
13				0					14			
15					0				16			
17						0			18			
19				0					20			
21					0				22			
23						0			24			
25				0					26			
27					0				28			
29						0			30			
31				0					32			
33					0				34			
35						0			36			
37				0					38			
39					0				40			
41						0			42			
				<b>TOTAL</b>								

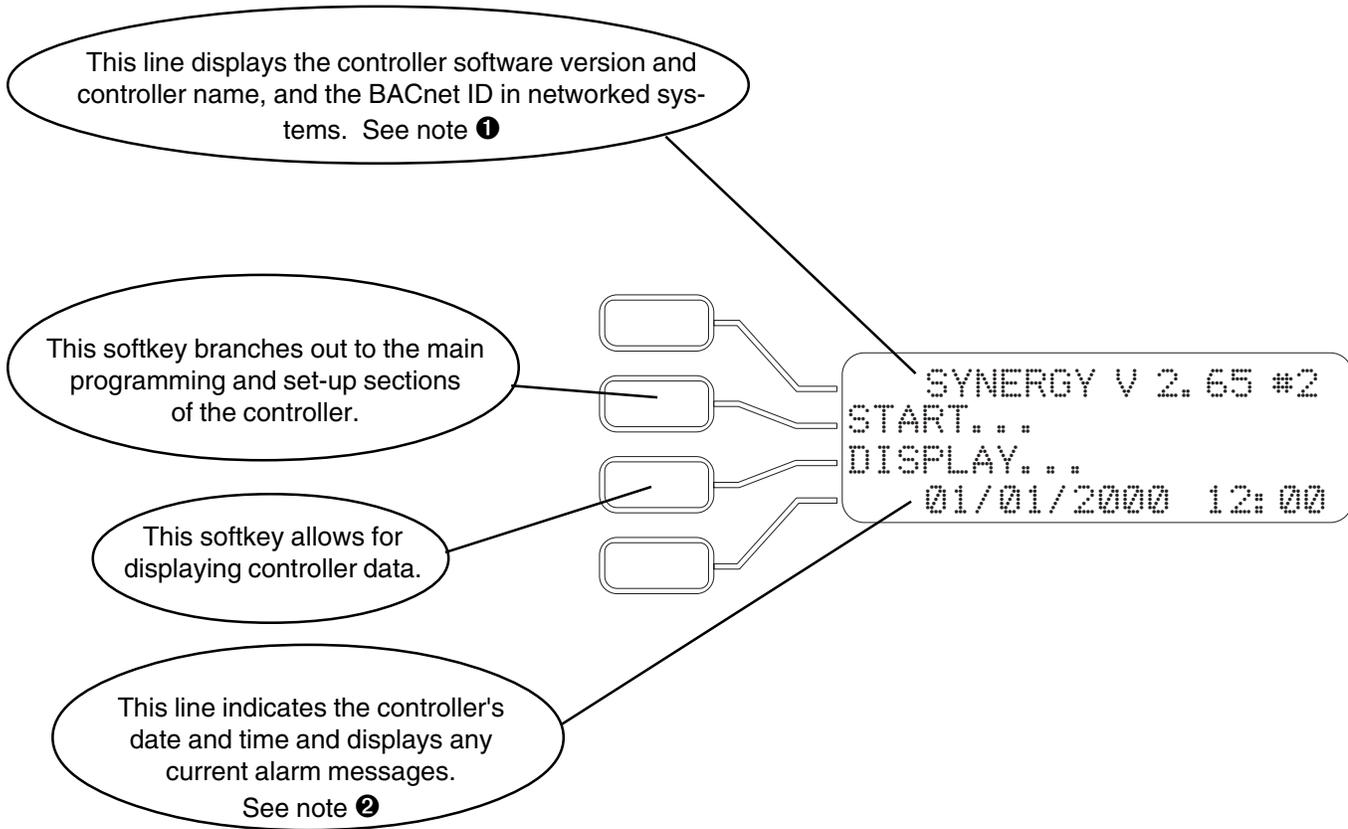


DAILY AND HOLIDAY ASSIGNMENT SCHEDULE

DAY OF WEEK	DATE	SCH#	DATE	SCH#
<b>MONDAY</b>	<b>01/01/2007</b>	<b>1</b>	<b>12/31/2007</b>	<b>2</b>
MONDAY	/ /		/ /	
TUESDAY	/ /		/ /	
WEDNESDAY	/ /		/ /	
THURSDAY	/ /		/ /	
FRIDAY	/ /		/ /	
SATURDAY	/ /		/ /	
SUNDAY	/ /		/ /	
HOLIDAY	/ /		/ /	

SCHEDULE#					
EVENT TIME:					
LEVEL-WARN:					
GROUP:					
EVENT TIME:					
LEVEL-WARN:					
GROUP:					
EVENT TIME:					
LEVEL-WARN:					
GROUP:					
EVENT TIME:					
LEVEL-WARN:					
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LEVEL-WARN:					
GROUP:					

## MAIN MENU DISPLAY



### QUICK TIPS

**TIP** After lack of keypad activity, the controller display will return to the Main Menu.

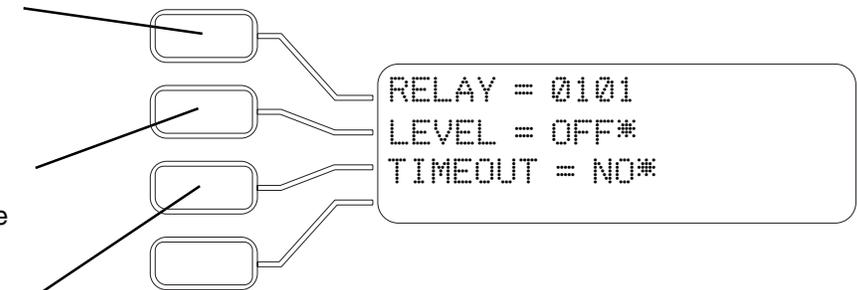
### Notes:

- 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 is an alternate method to the 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.

## 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 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

**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:

**1**

DIMMERS, LEGACY-DIMMERS, DALI, 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.

**2**

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.

**3**

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

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

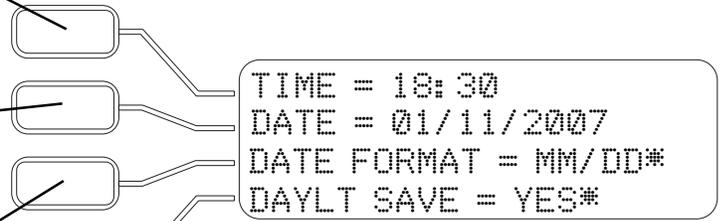
Branching out to the Data Selection windows below sets up important controller information based on it's geographical location. The time and date are necessary for time schedules to operate correctly.

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.

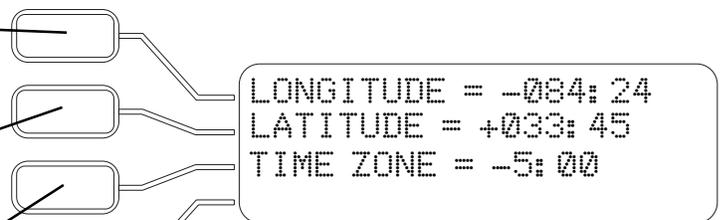


## START... SETTING-UP... ENVIRONMENT... LOCATION...

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.



## START... SETTING-UP... ENVIRONMENT... NETWORK...

Branching out to the Data Selection window below sets up important controller network information based on the type of network interface that is enabled. Accurate network parameters are critical for proper network communication.

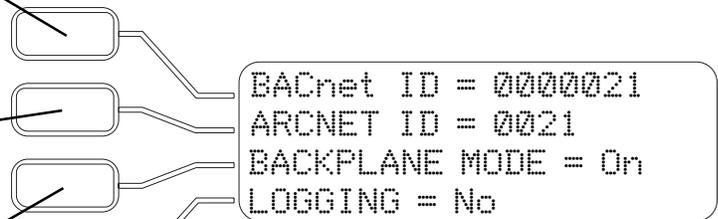
There are three types of BACnet network interfaces available:

**ARCNET, MS/TP, and BACnet/IP.**

Each type has configuration parameters specific to it. The menu options displayed to the user change based on the type of network interface selected.

### 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.
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 Re-Boot.

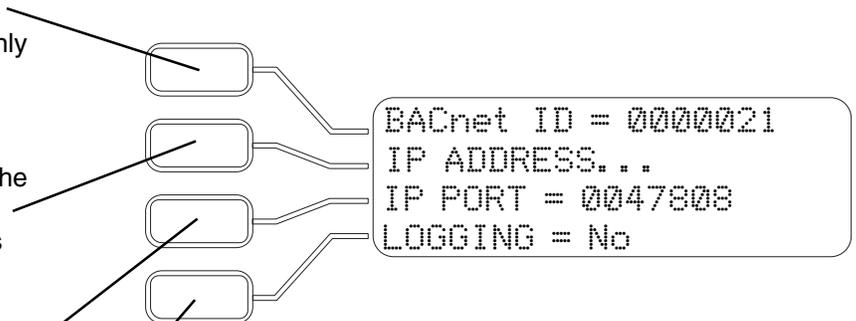
## When BACnet/IP network type is selected: (BACnet/IP Interface menu)

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 based 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.

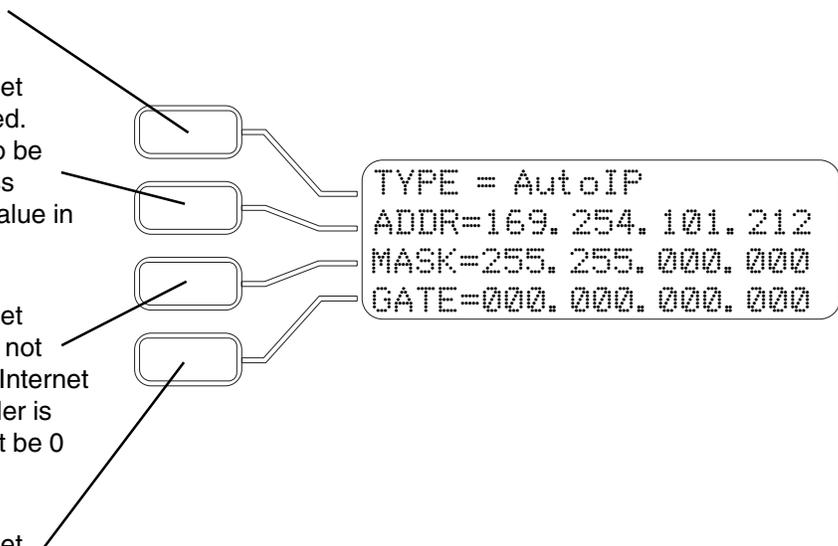


## START... SETTING-UP... ENVIRONMENT... NETWORK...IP ADDRESS

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 Protocol 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



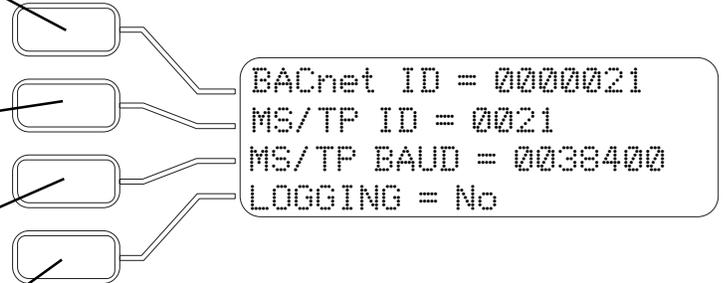
### Notes:

- 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 MS/TP 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 a 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.

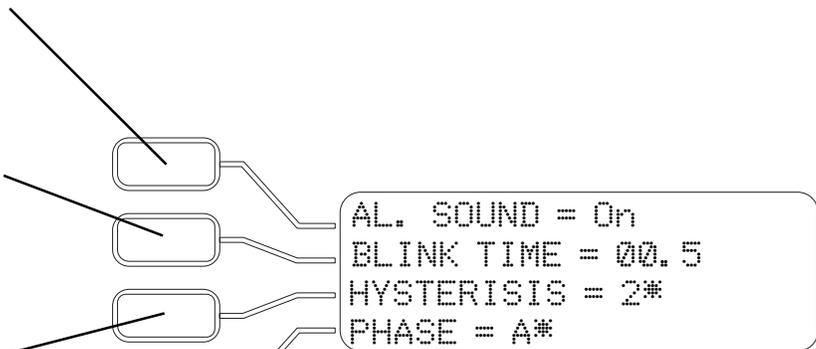


Branching out to the Data Selection windows below sets up important controller parameters.

## 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



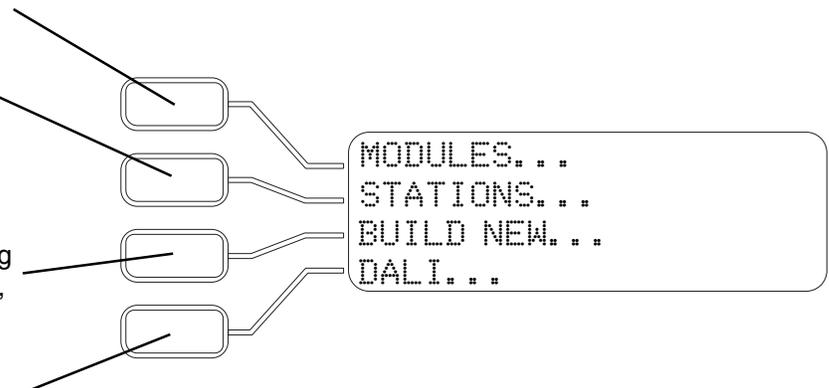
### Notes:

- 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** 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 SE-QUEL 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 **DALI** softkey to configure a DALI module and the DALI ballast addresses. This menu item is only present when a DALI module is plugged into the controller. See note ❷



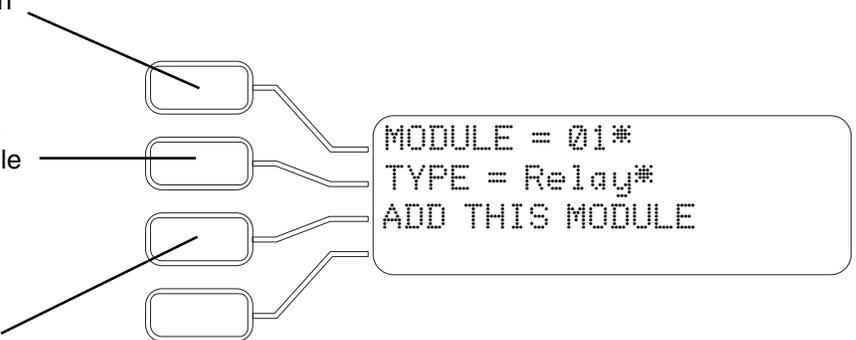
### Notes:

- 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.
- ❷ The **DALI** menu item will be displayed **ONLY** if one or more DALI 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 ① and note ②
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.



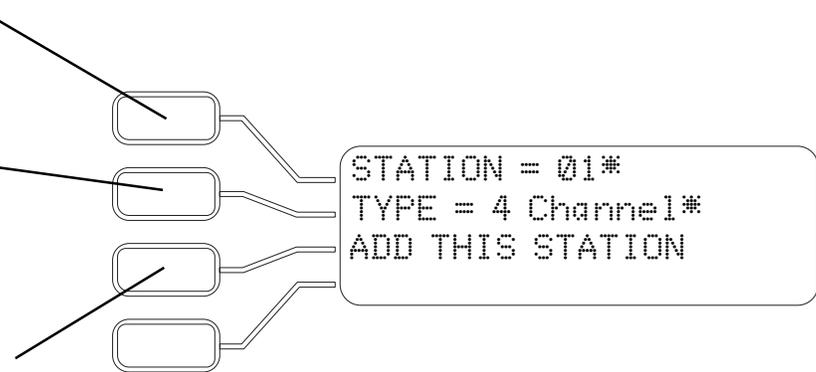
### Notes:

- ① 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 ② below.**
- ② 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.

## 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 1
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

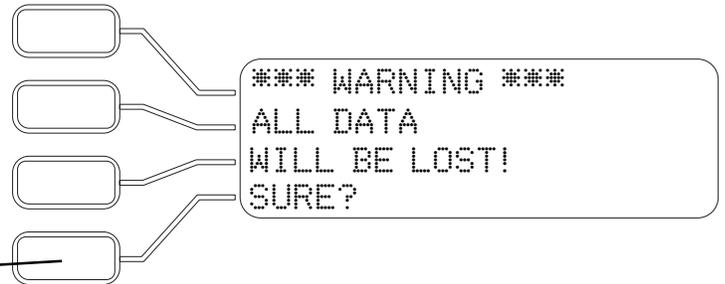
**TIP** *If future stations are planned but not yet installed they can be added by changing the station type for a given address from NOT FOUND to the required type, then added with the ADD THIS STATION softkey.*

### 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 ①



Press the SURE softkey to build a new configuration script.

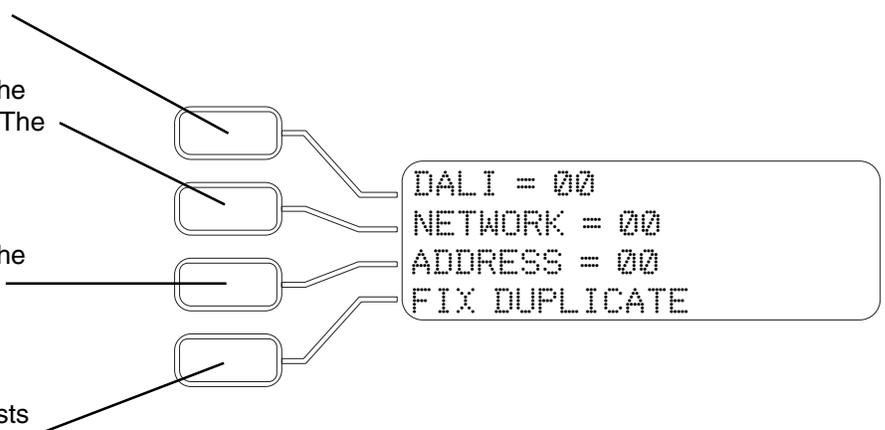
### Notes:

- 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...DALI

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

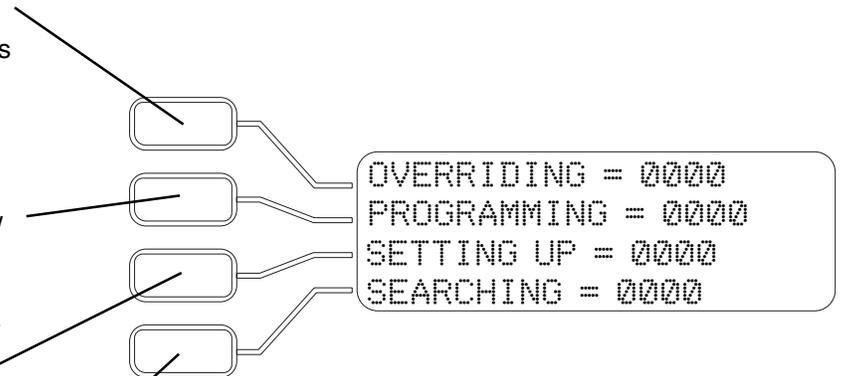
1. Press the **DALI** softkey to increment the current DALI address under maintenance.
2. Press the **NETWORK** softkey to change the DALI network that is under maintenance. The DALI module supports 3 networks of DALI ballasts: 0, 1, and 2.
3. Press the **ADDRESS** softkey to change the ballast from 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 DALI ballasts that have it. The ballast(s) will then be assigned a unique short address by the DALI 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:

- ❶ 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... PROGRAMMING...GROUPS

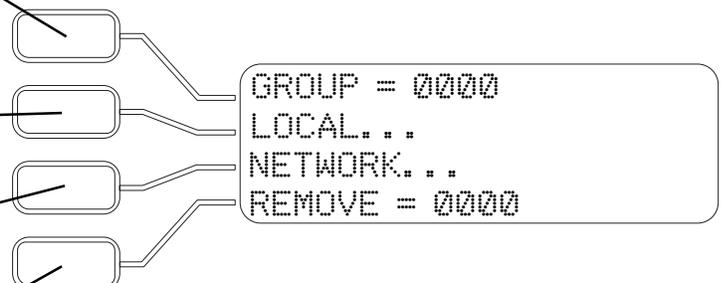
Branching out to the Data Selection window below allows the programming of outputs into groups. See Appendix 4 for Group Programming examples. To be controlled, all outputs must be included in at least one Group. It is helpful to refer to completed load schedule when programming group information, see 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



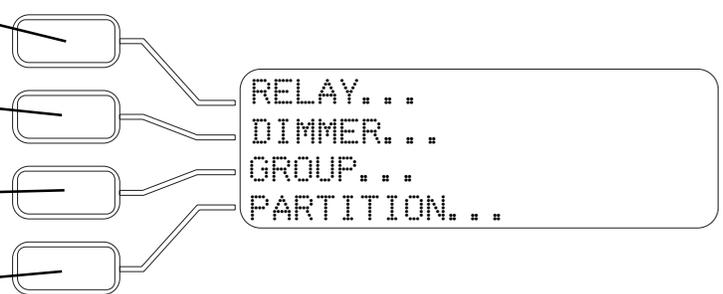
For the **GROUP #** displayed press the **LOCAL...** softkey to program outputs for this cabinet only.

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.



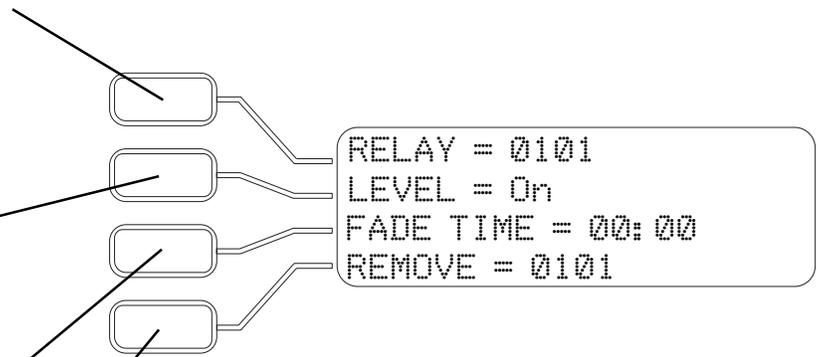
### Notes:

- 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 DALI. . . 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



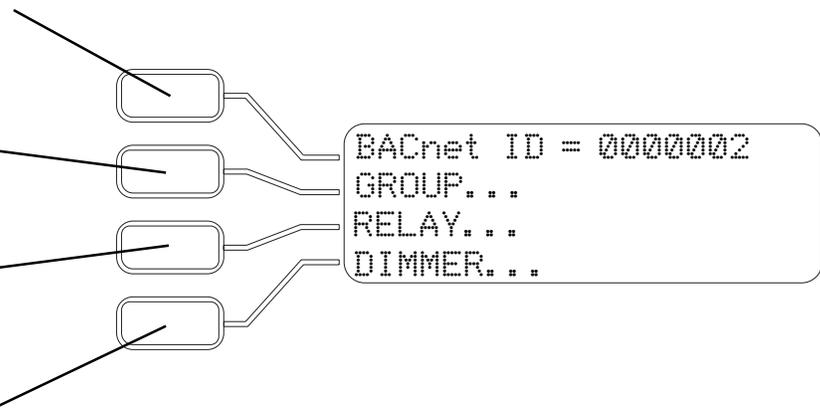
### Notes:

- 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 instantly.

## 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 ①
3. After the BACnet ID is entered, a relay from that remote controller can be added to this local group. See note ②
4. After the BACnet ID is entered, a dimmer from that remote controller can be added to this local group. See note ②



### 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.

## 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.

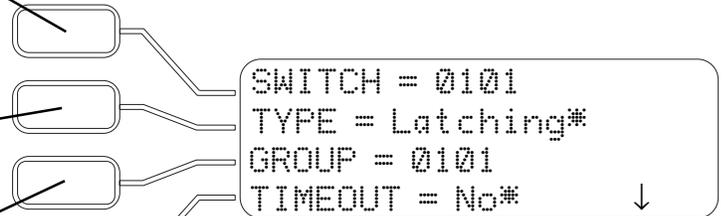
4. Press the TIMEOUT softkey to automatically reverse the On action of an input. A "hh:mm" prompt will appear requesting a time out in hours and minutes, allowing a value of 00:01 through 99:99 to be entered. See note ❸

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.

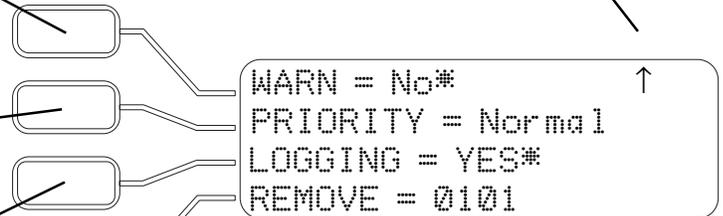
8. Press the REMOVE softkey to remove the SWITCH INPUT that is displayed.



### 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.





**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.

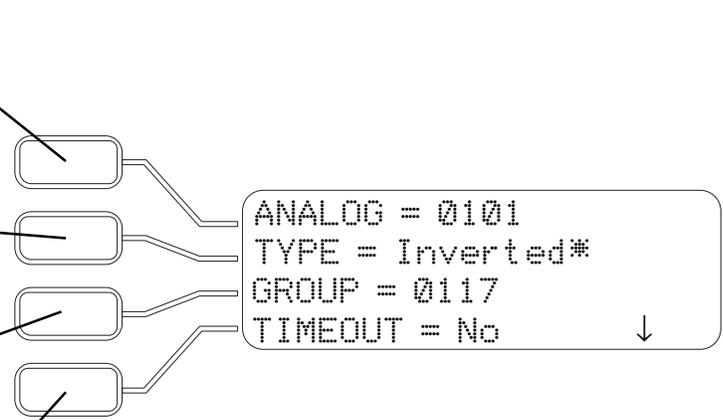
SYNERGY PRIORITY	BACnet Priority	Input Level	Input Source	Output Action	Application and Common Usage
Hardware	1	On/Off	HOA Switch RO Terminals	Outputs set at level	Service override or egress lighting
ON	3	1-100	Synergy Input	Outputs set at level at Priority 3	Panic or security override.
		0	Synergy Input	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 10	
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.

## 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 ①

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 ①

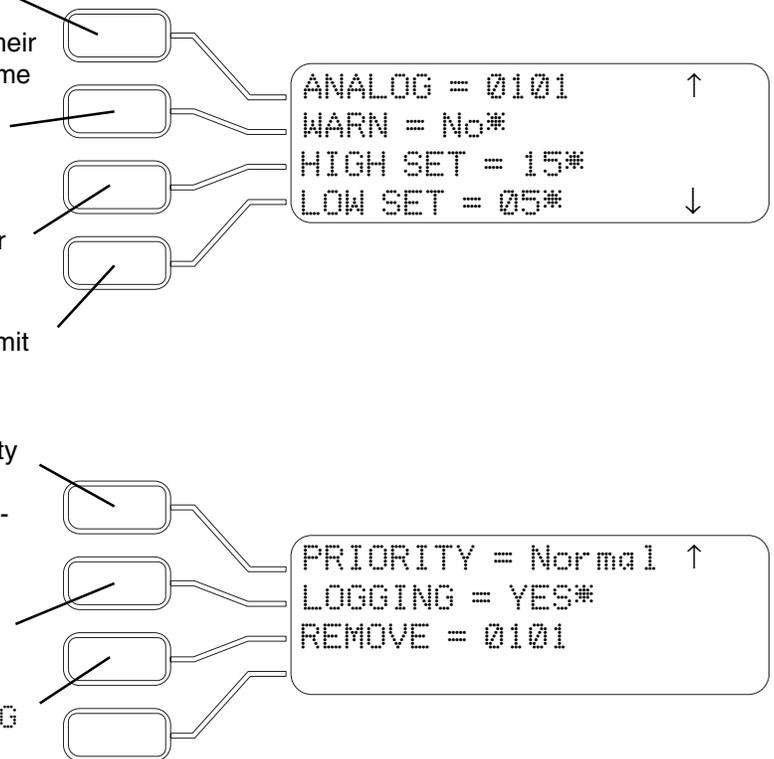
7. Press the **HIGH SET** softkey to change the upper limit of this input. See note ②

8. Press the **LOW SET** softkey to change the lower limit of this input. See note ② and note ③

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 ⑤ 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.



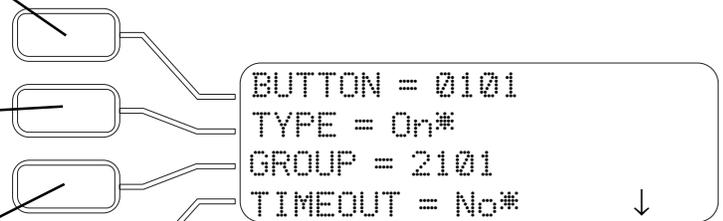
### Notes:

- ① 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\***.
- ② **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.
- ③ 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 **TYPE**s 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.

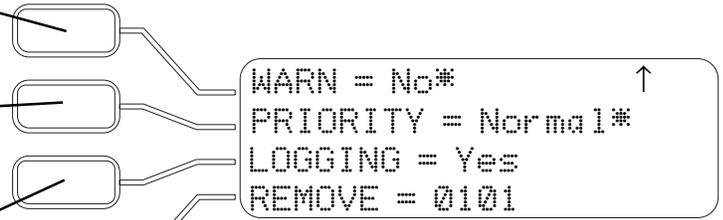
## START... PROGRAMMING...INPUTS...BUTTON...(CONTINUED)

- 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.

- 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 ❶ on page 36 for priority details.

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

- Press the **REMOVE** softkey to remove the **BUTTON** that is displayed.



### Notes:

- The selections available for the **TYPE**s are "On" for preset, "Off" for off only action, "Latching" for Non-dim and "Ramp ing" 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...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 2

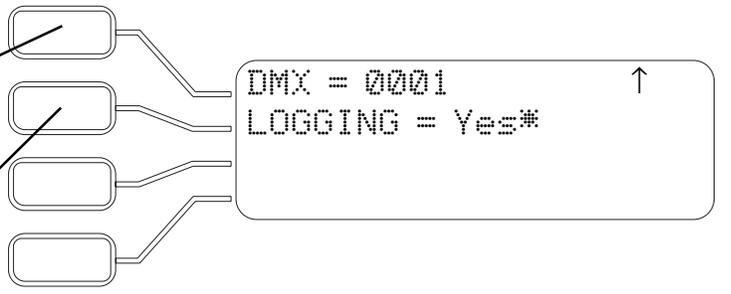
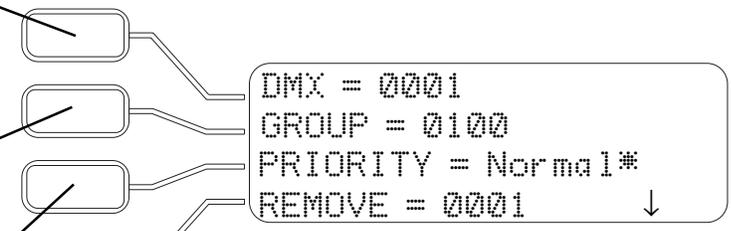
2. To add a new GROUP or replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys. A DMX input can only control a single GROUP.

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 3 below and note 6 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 2

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



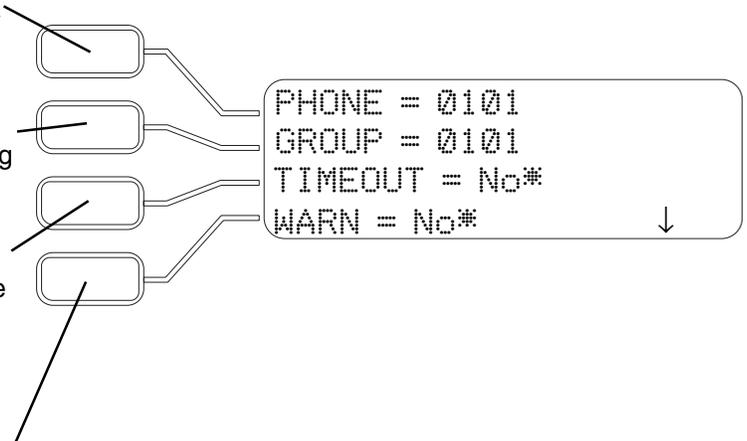
### Notes:

- 1 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.
- 2 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<sup>2</sup>C 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<sup>2</sup>C 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.
- 3 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.

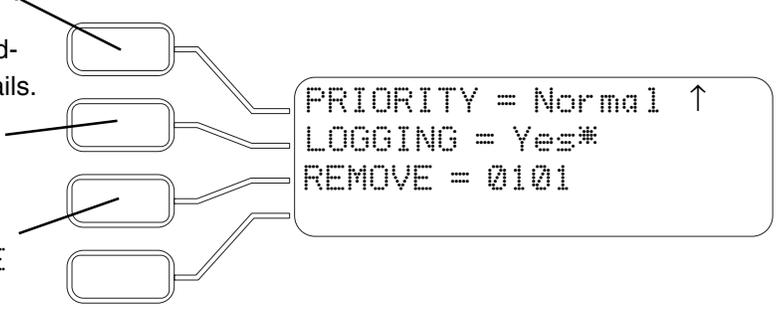
## START... PROGRAMMING...INPUTS...OTHER...PHONE...

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 ❸ 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:

- ❶ 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.
- ❷ 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\*.



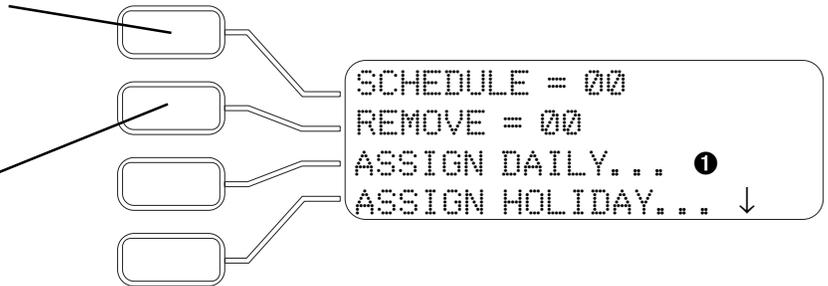
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## START... PROGRAMMING...SCHEDULES...

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.

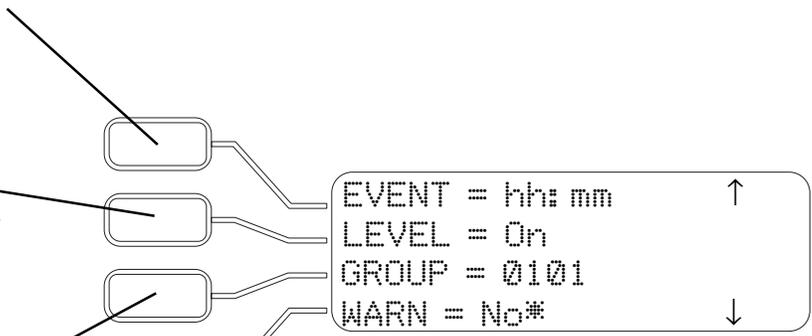


2. Press the REMOVE softkey to remove the SCHEDULE that is displayed.

**When the 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 58 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 2

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 3



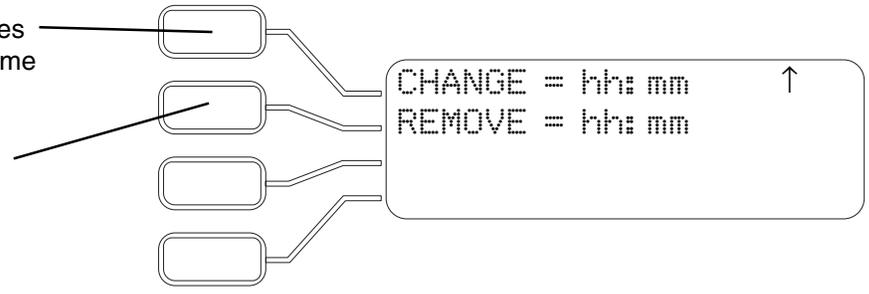
5. To replace the GROUP number displayed, press the GROUP softkey, and enter a new group number using the number keys. An event can only control a single GROUP, but multiple events may occur at the same time.

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 4

## 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.



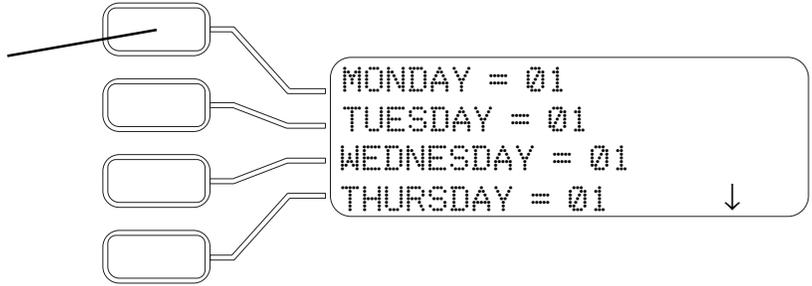
### Notes:

- 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.

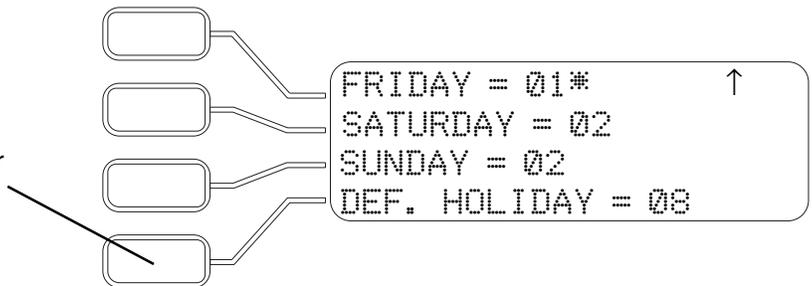
## START... PROGRAMMING...SCHEDULES...ASSIGN DAILY...

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. Pres the DEF. HOLIDAY softkey, and enter a schedule number with the number keys. This schedule will be the default for all s the MONDAY softkey and enter a schedule using the number keys. Repeat for Tuesday through Sunday. See note ①



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 HOLIDAY PROGRAMMING... editing Window. See note ②



### Notes:

- ① 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.
- ② **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.**

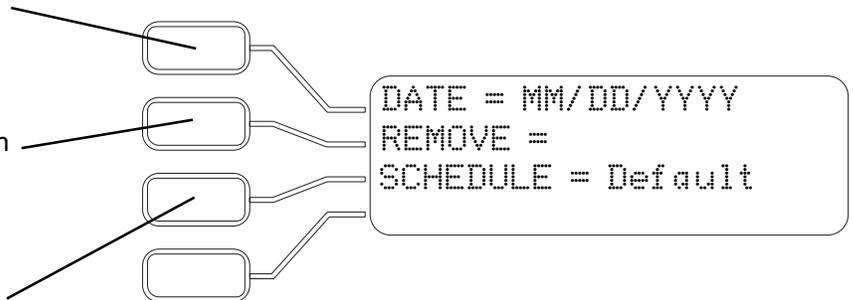
## START... PROGRAMMING...SCHEDULES...ASSIGN HOLIDAY...

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 **SCHEDULE** 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 1<sup>st</sup> 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.

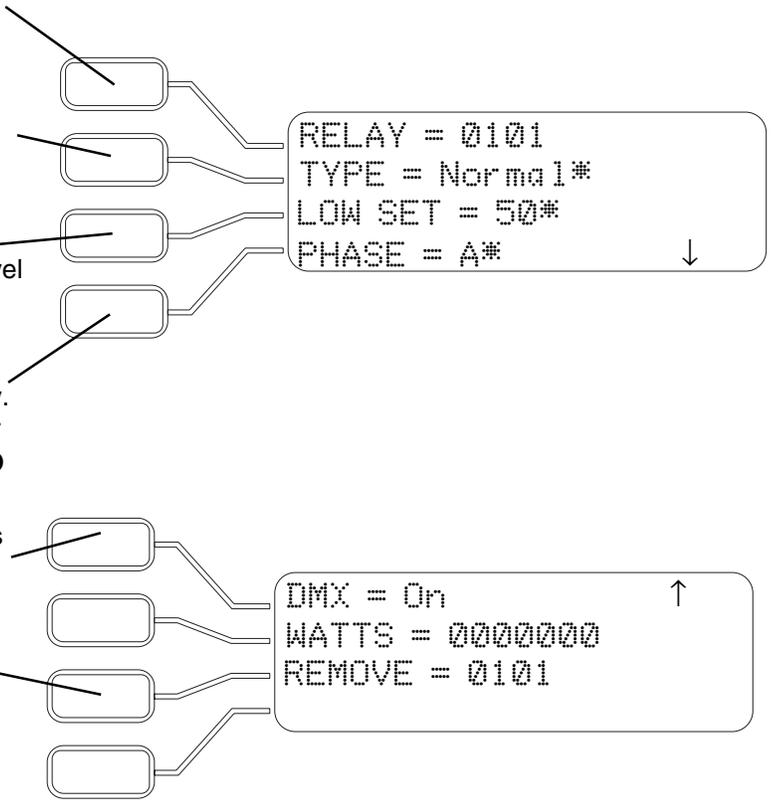
2. Pressing this softkey toggles through the available relay types. Pressing the ENTER key will store the selection that is displayed. See note ❶

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 Open for 7 Seconds, then re-close	Use with SSPL series Sweep Switches
InteliSwitch	No Action	Contacts open for 1 second then re-close	Use with InteliSwitch
Disabled	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.

## 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

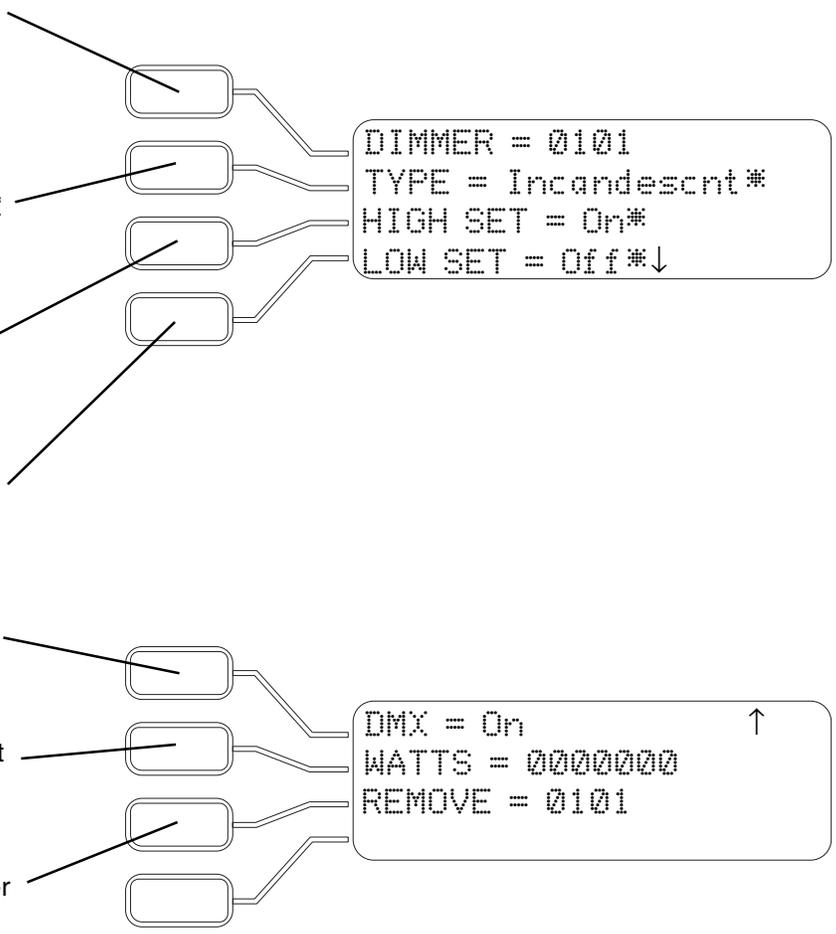
3. Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level. See note ❷.

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 Incandescent , 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 ⑤

2. Pressing this softkey toggles through the available dimmer types. Pressing the ENTER key will store the selection that is displayed. See note ①

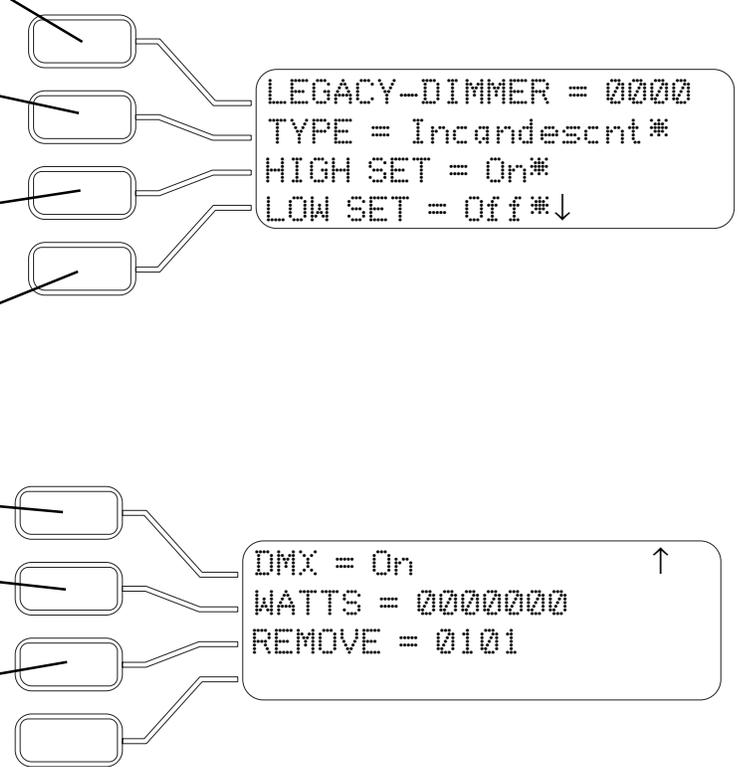
3. Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level. See note ②.

4. Pressing this softkey allows the initial dimmed output to be set at this LOW SET level. See note ③

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 ④



### Notes:

- ① Available TYPES should be matched to the load being controlled. Choices for Incandescent, 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.
- ② Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level.
- ③ Pressing this softkey sets the initial dimmed output to be set at this level. The dimmer will still turn off at 1% level.
- ④ 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.
- ⑤ 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.

## START... PROGRAMMING...OUTPUTS...DIMMERS...DALI

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 ⑤

2. Pressing this softkey toggles through the available dimmer types. Pressing the ENTER key will store the selection that is displayed. See note ①

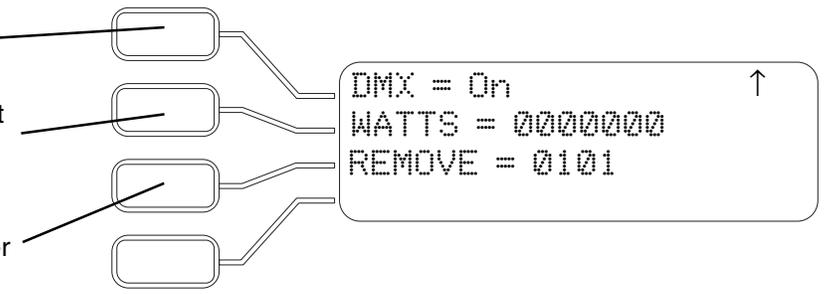
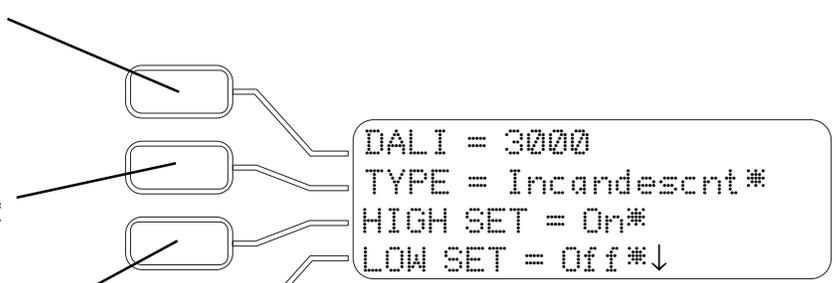
3. Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level. See note ②.

4. Pressing this softkey allows the initial dimmed output to be set at this LOW SET level. See note ③

5. DMX is not used on DALI 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 ④



**Notes:**

- ① Available TYPES should be matched to the load being controlled. Choices for Incandescent , 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.
- ② Pressing this softkey allows the maximum voltage output of this dimmer to be capped at the HIGH SET level.
- ③ Pressing this softkey sets the initial dimmed output to be set at this level. The dimmer will still turn off at 1% level.
- ④ 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.
- ⑤ The first digit of the dimmer number (0000) indicates the Dali card number (0-9), the second number indicates the Dali network number (0-2), and the last 3 digits indicate the Dali 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

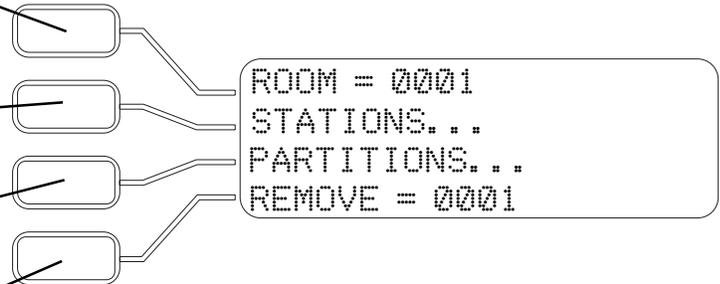
2. Pressing this softkey displays the stations currently associated with this room.

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.

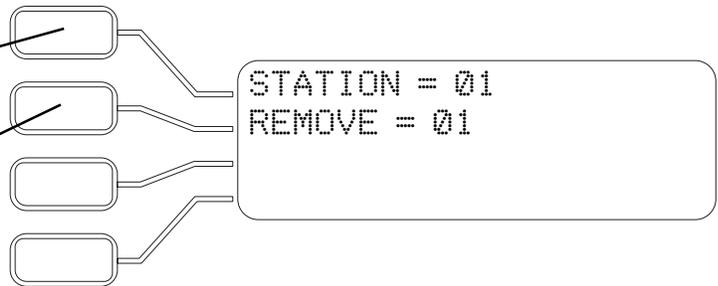
See note ❶



### 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.

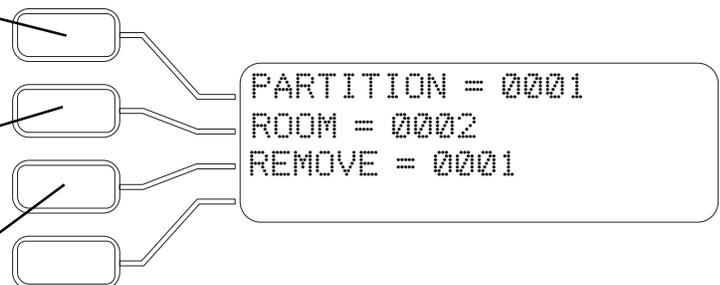


### PARTITIONS...

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 5 for additional application and programming examples related to the programming of rooms and partitions.

## 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.

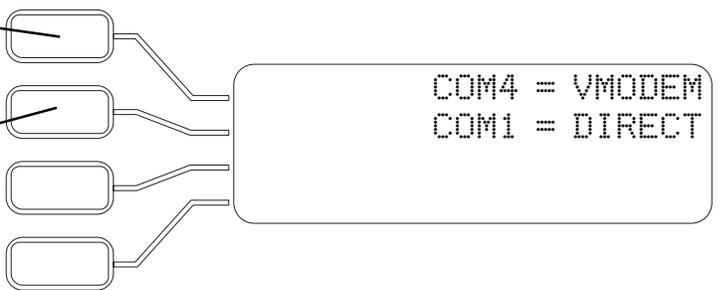
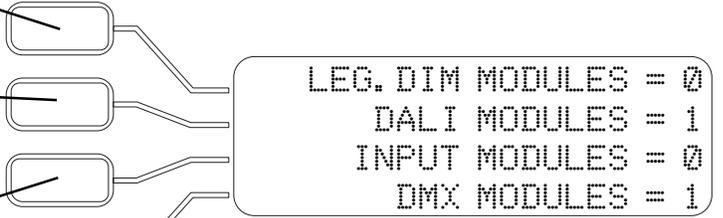
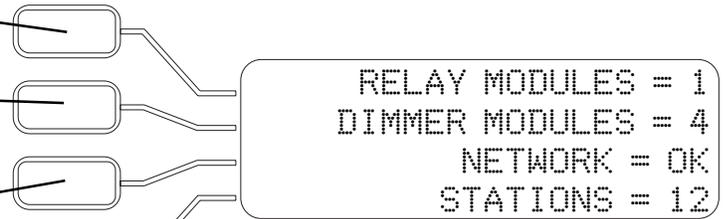
6. Display indicates the number of optional DALI modules currently communicating with the controller

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.

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



### QUICK TIP

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

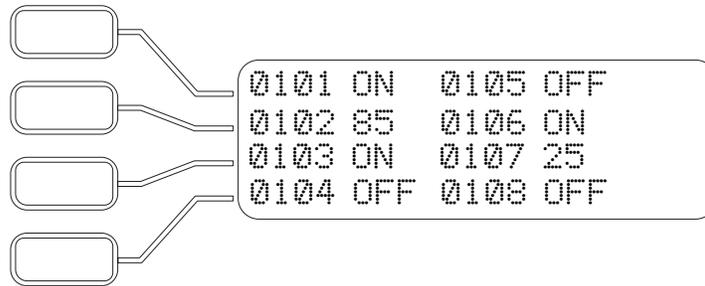
## START... SEARCHING...ABOUT...SYNERGY...(CONTINUED)

### Notes:

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.
- 
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 modem is installed, but a voice file.is not in the correct WAV format.
  8. ????? – Undefined fault for the serial port.

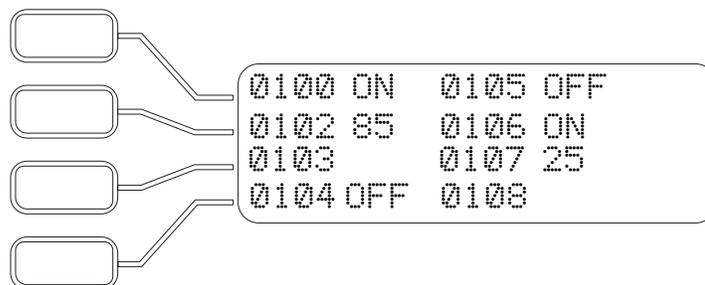
**START... SEARCHING...STATUS...OUTPUTS...OUTPUTS**

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...DALI**

Branching out to the Data Value windows below displays the DALI output levels the controller has found on the system. The display indicates the Dali module address [0101] followed by the Dali network number [0101] followed by the Dali ballast number [0101] 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 Dali outputs. Dali 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.

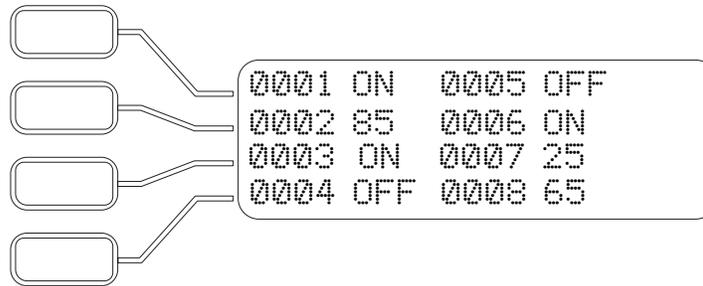


**QUICK TIP**

**TIP** If the status for a particular Dali 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 DALI 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 Dali 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.



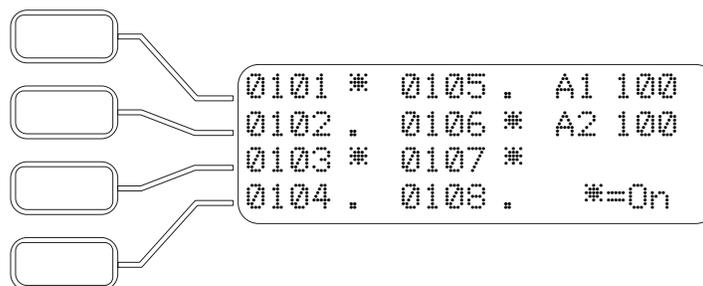
### QUICK TIP

**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. . .

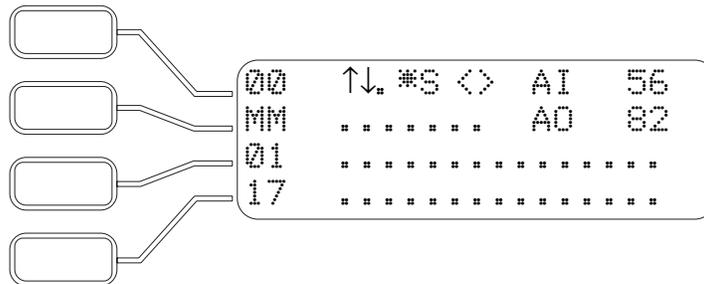
Branching out to the Data Value window below displays the input levels the controller has found on the modules in the system. This screen is especially helpful to determine and correct field wiring errors related to the input wiring connections. Display indicates the module address [ 0102 ] followed 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.



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

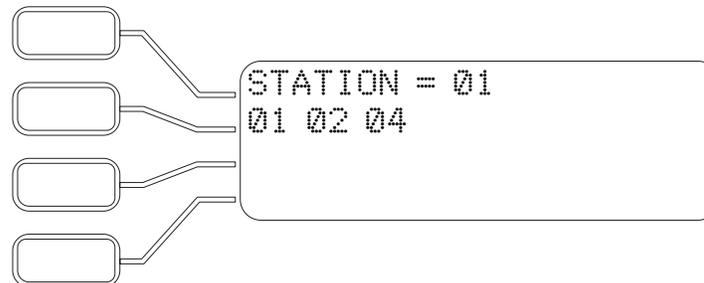
**STATIONS. . .**

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.



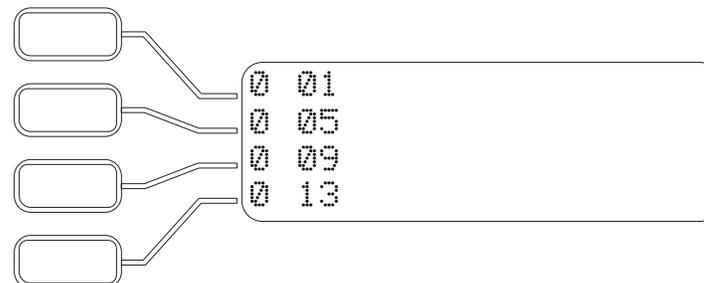
**ROOMS. . .**

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...

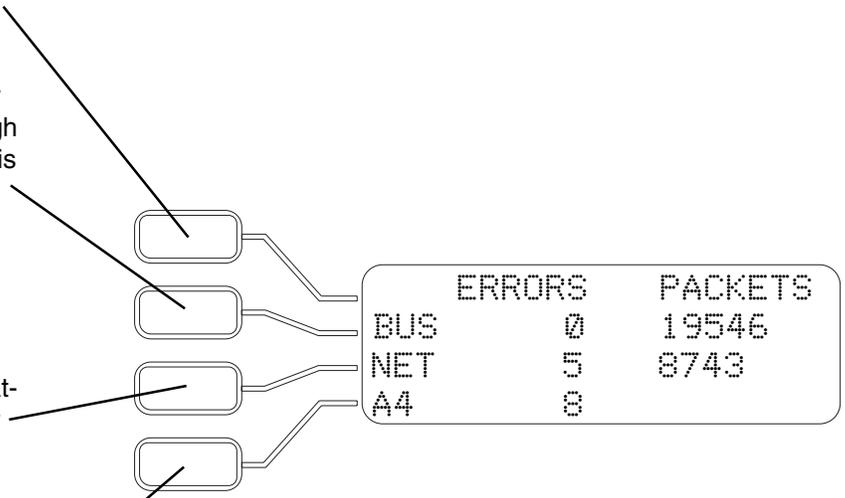
The communication status window displays continuously updated statistics for the total number of packets sent and errors returned on each of the system's digital networks. Pressing the softkey next to any of the network labels will reset the statistics for that network to zero.

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...

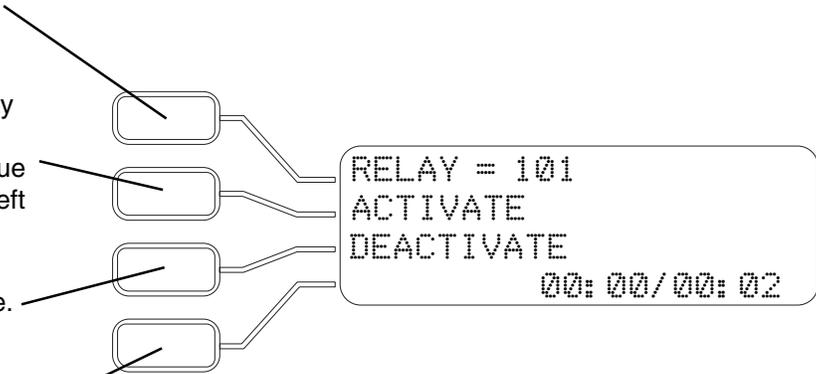
Branching out to the Data Value window below displays the amount of RAM and disk space that is currently available for use. Also shown are the baud rates for the serial console and the control stations or MS/TP network.



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

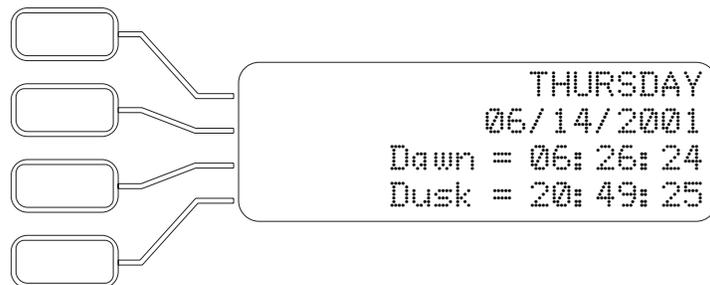
Branching out to the Data Selection windows below will allow you to override lights in a flashing mode. This is most often used to locate which lighting loads are connected to a particular relay or dimmer, or to display the outputs programmed in to a particular group. RELAYS are overridden in the example 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.



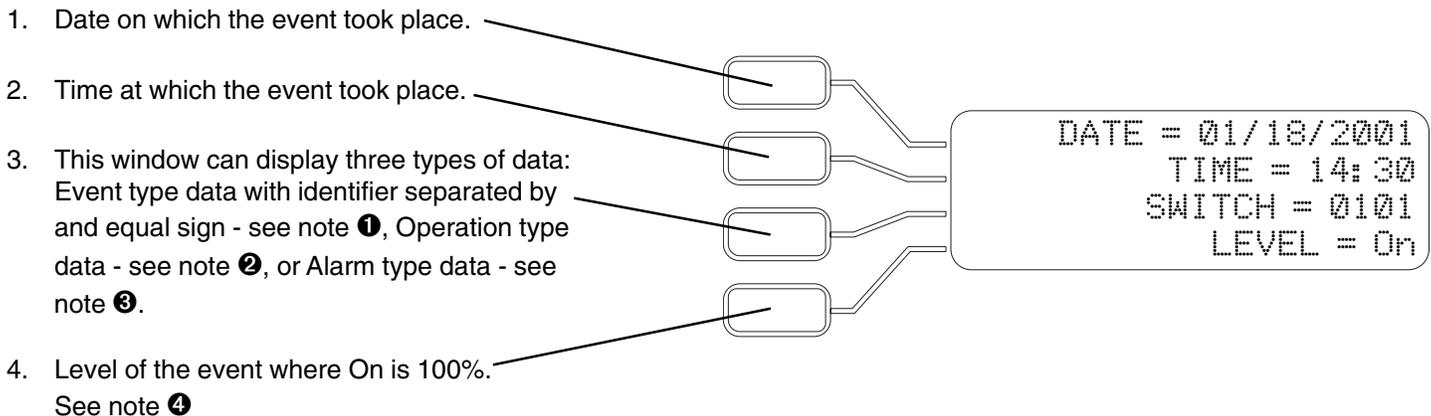
## START... SEARCHING...OTHER...

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.



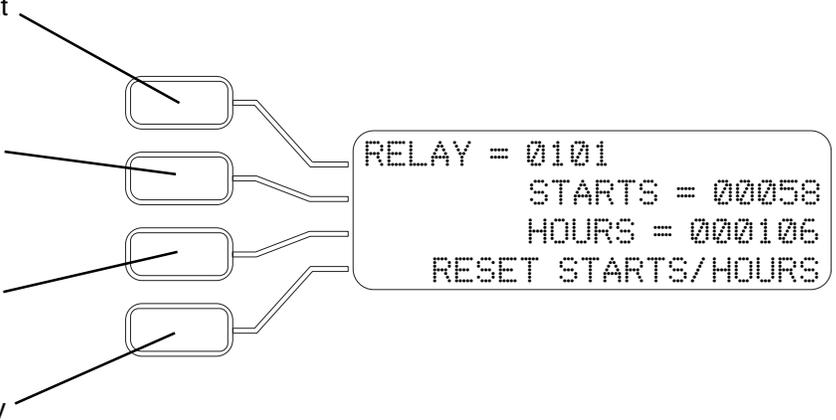
### NOTES:

- 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 DALI)

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.

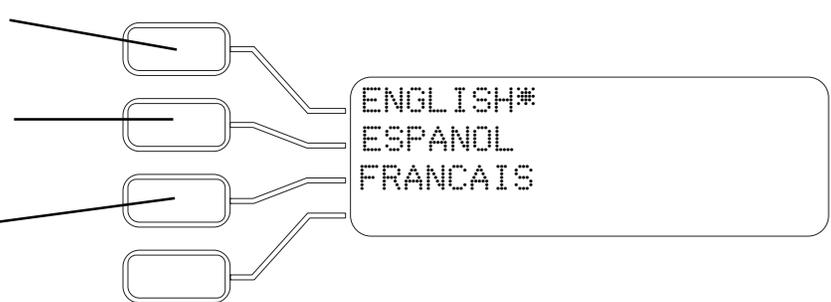


Synergy outputs are referred to by their module number and output number. See the chart below for a description of these ranges.

		Module Number * (I2C Address)	Output Number		Module Number * (I2C Address)	Output Number
<b>RELAY, DIMMER, BALLAST OUTPUTS</b>	START	00	01	to	00	16
			↓			↓
	END	15	01	to	15	16
<b>CONTROLLABLE BREAKER OUTPUTS</b>	START	00	01	to	00	42
			↓			↓
	END	15	01		15	42
<b>LEGACY DIMMER OUTPUTS</b>	START	0	000	to	0	253
			↓			↓
	END	3	000	to	3	253
<b>DALI DIMMER OUTPUTS</b>	START	00	00	to	00	63
			↓			↓
	END	92	00	to	92	63
<b>SYRS EXT OUTPUTS</b>	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.
- 

## ***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.

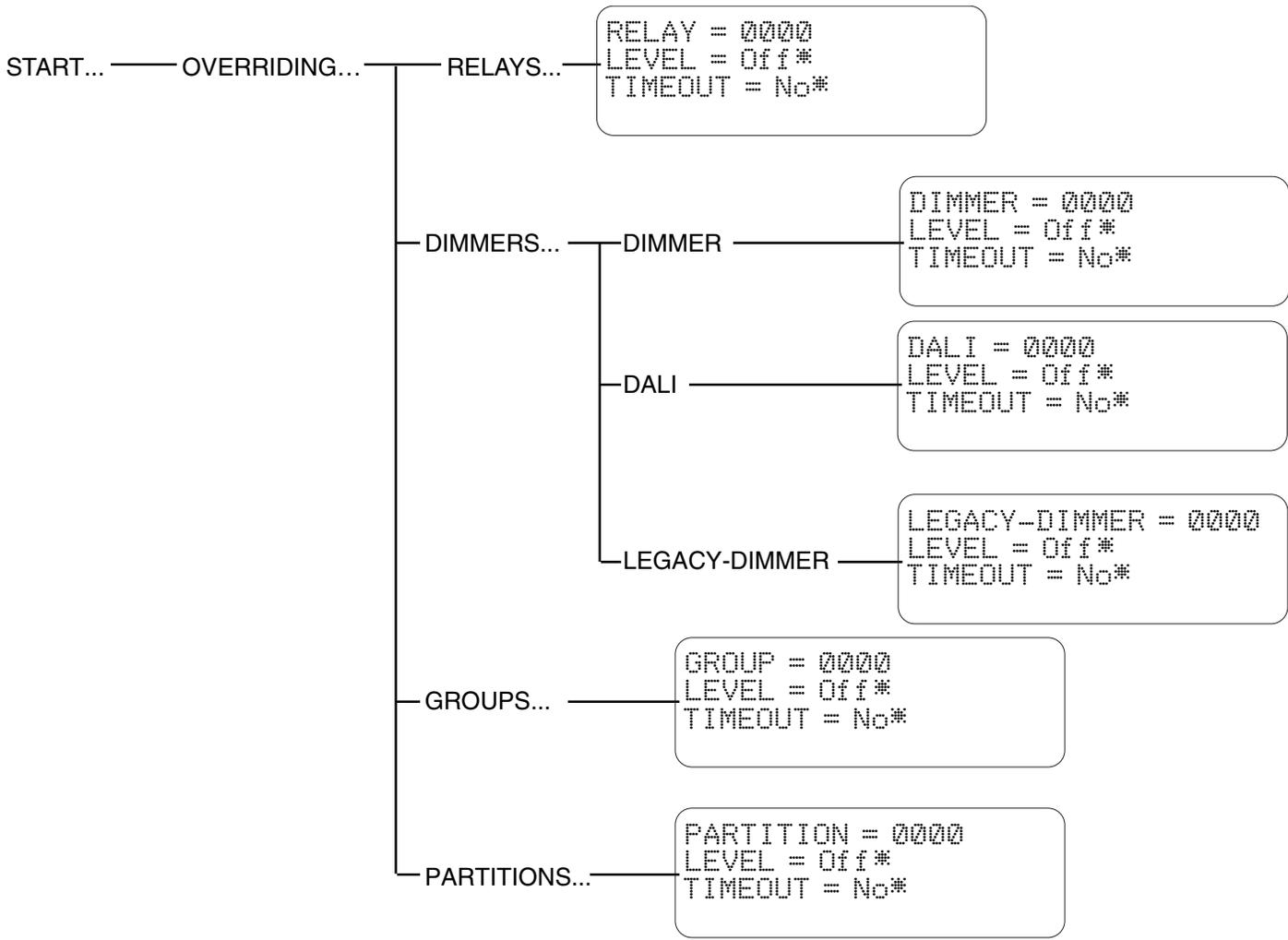
**Outputs** – Relays or dimmers that are attached to lighting loads. Relays are devices that change the ON/OFF state of lighting loads. Dimmers are devices that vary the intensity level of lighting loads.

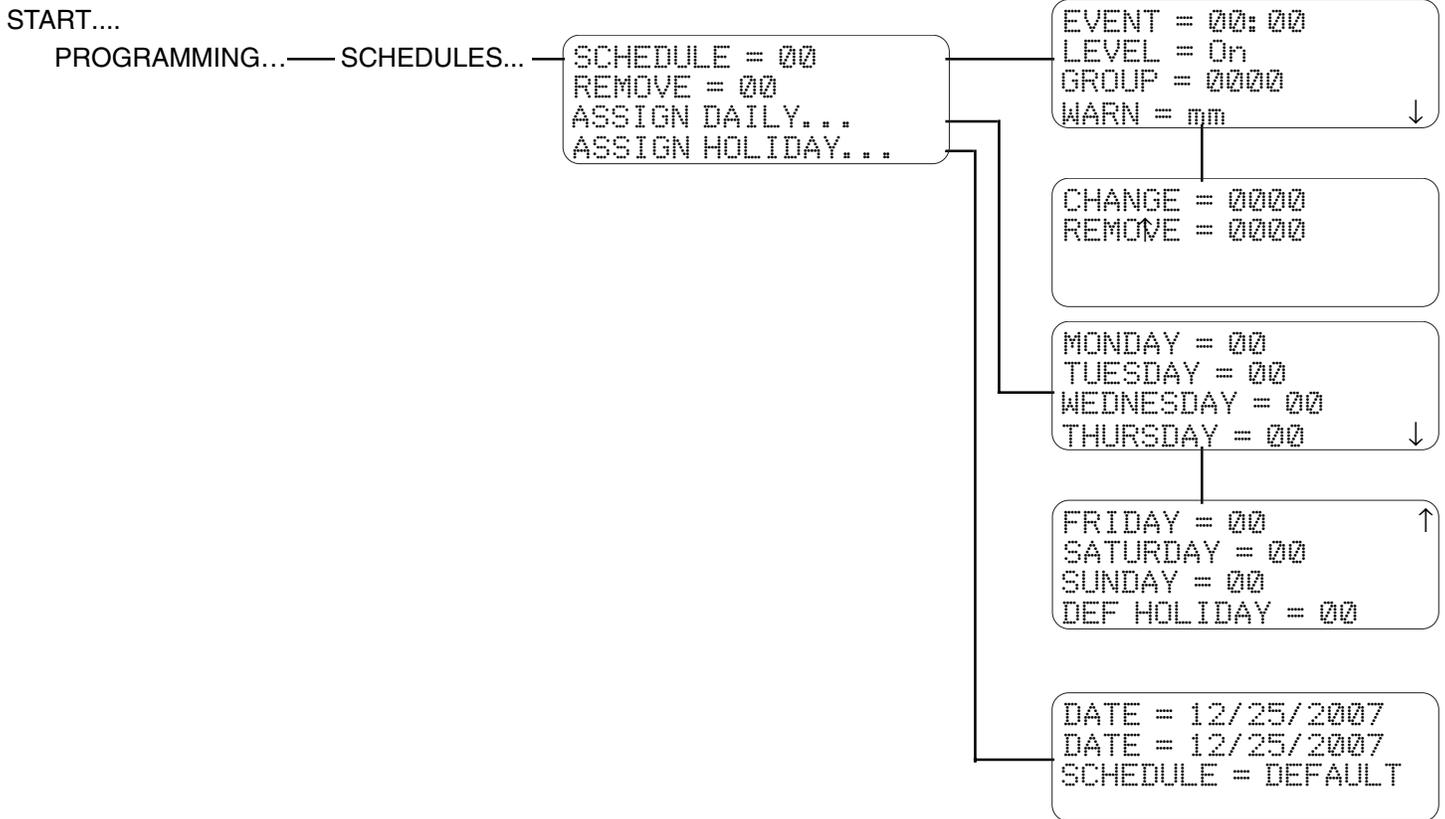
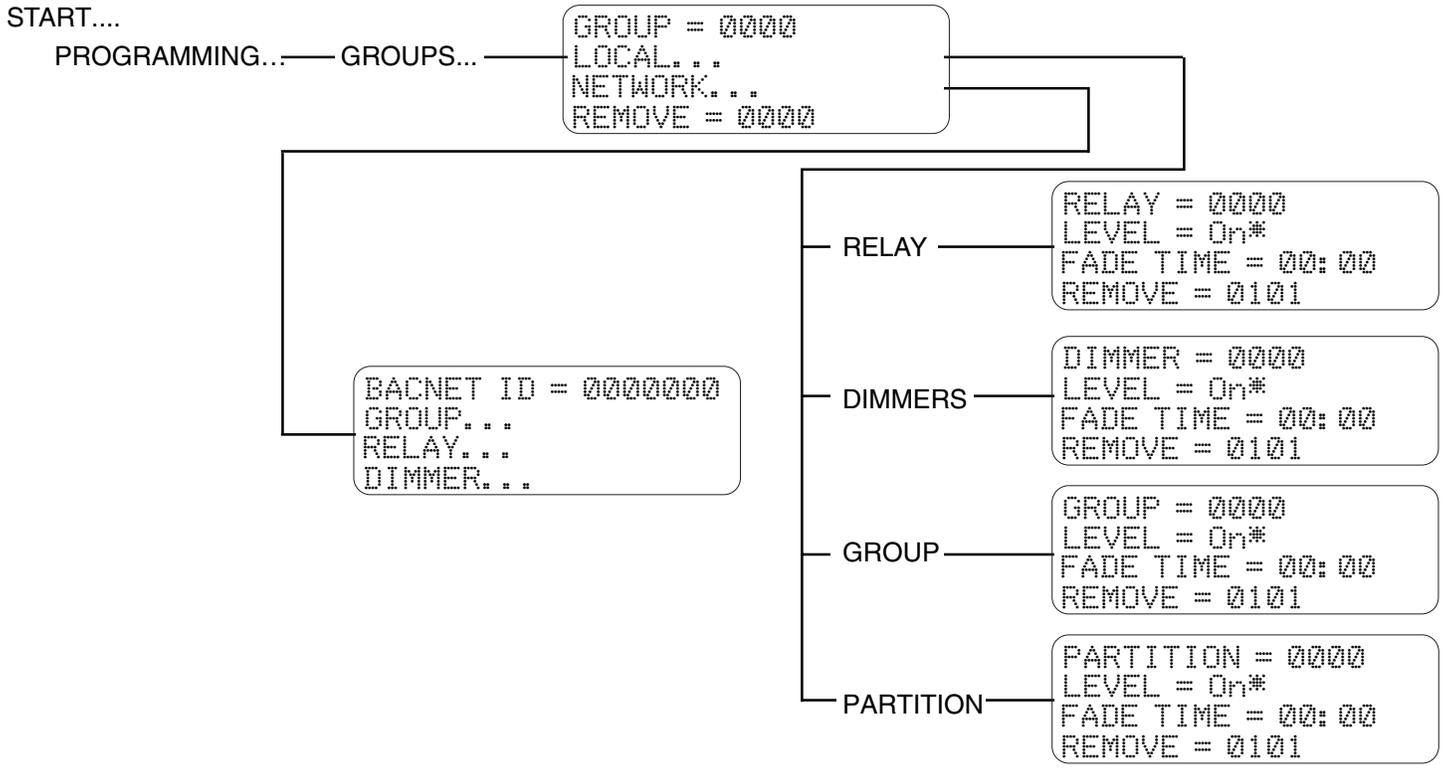
**Reinitialize** – To restore factory default programming to 6 relay modules and clear all user programming.

**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**

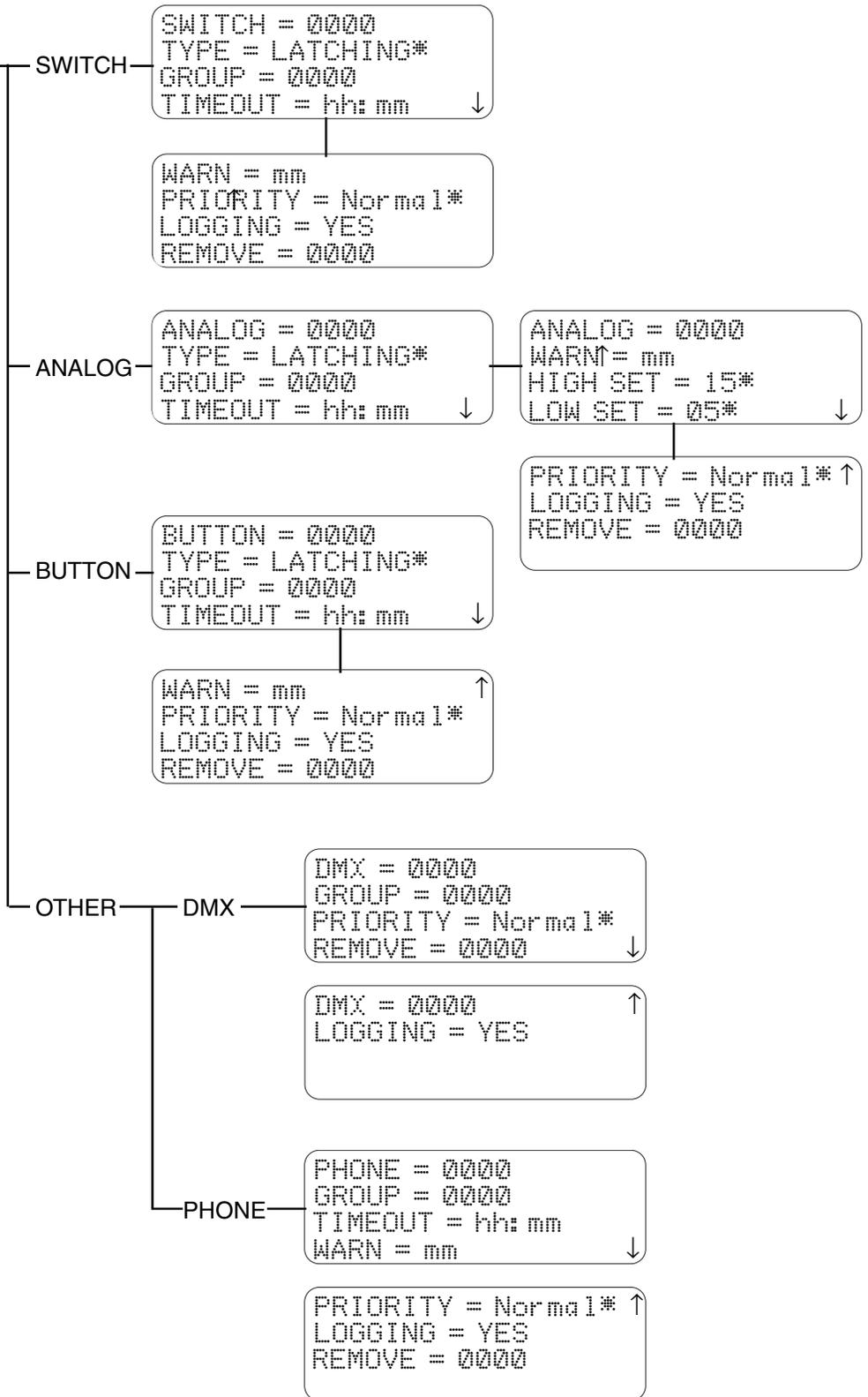


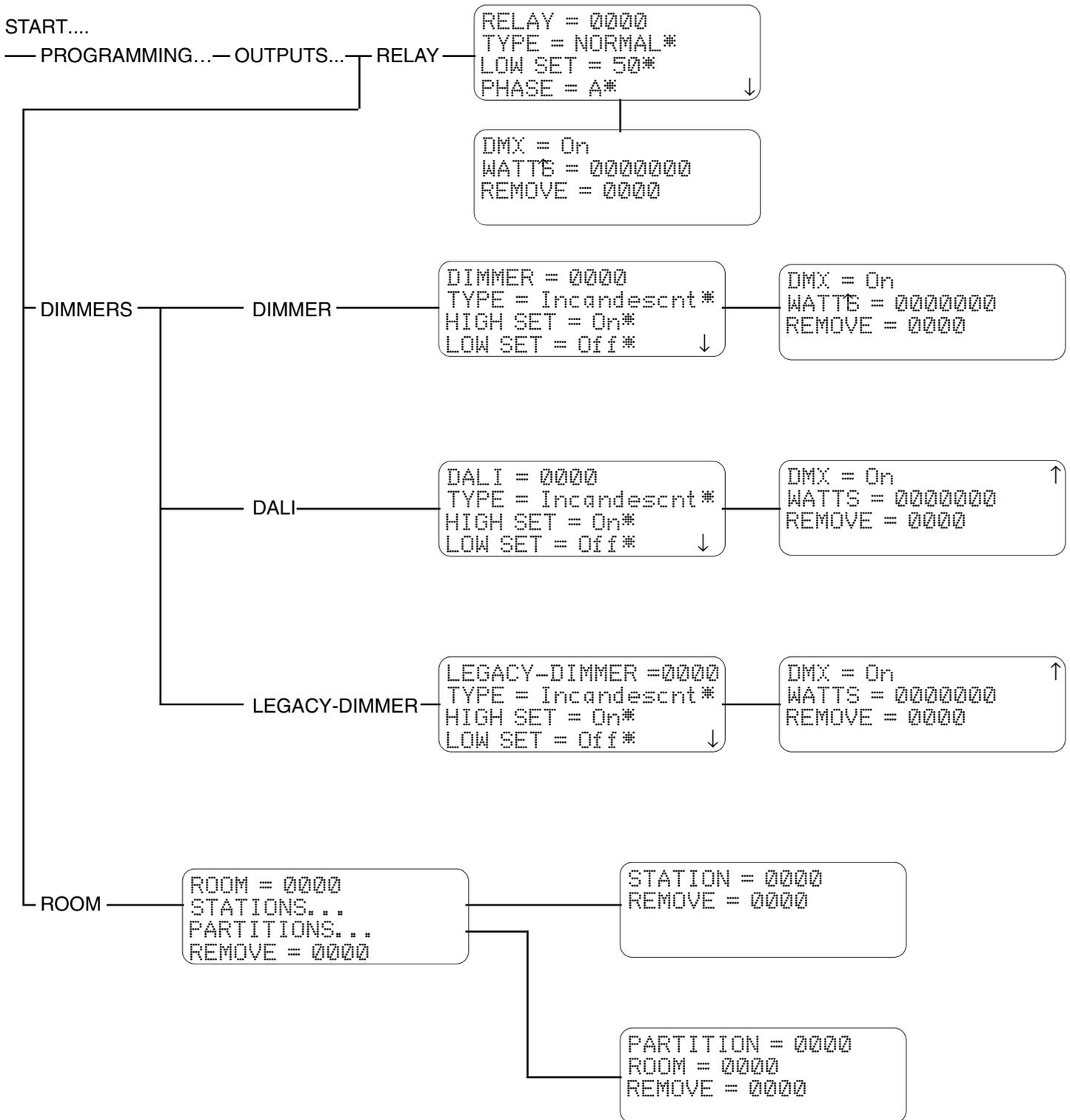




START....

— PROGRAMMING...— INPUTS...







START....

SETTING UP...

ENVIRONMENT...

TIME

TIME = 18:00  
 DATE = 01/01/2007  
 DATE FORMAT = MM/DD\*  
 DAYLT SAVE = Yes\*

LOCATION

LONGITUDE = -084:24  
 LATITUDE = +033:45  
 TIME ZONE = -05:00

NETWORK

ARCNET

BACNET ID = 00000000  
 ARCNET ID = 0002  
 BACKPLANE MODE = On  
 LOGGING = No

BACNET/IP

BACNET ID = 00000000  
 IP ADDRESS...  
 IP PORT = 0047808  
 LOGGING = No

TYPE = DHCP  
 ADDR=192.168.000.108  
 MASK=255.255.000.000  
 GATE=192.168.000.001

MS/TP

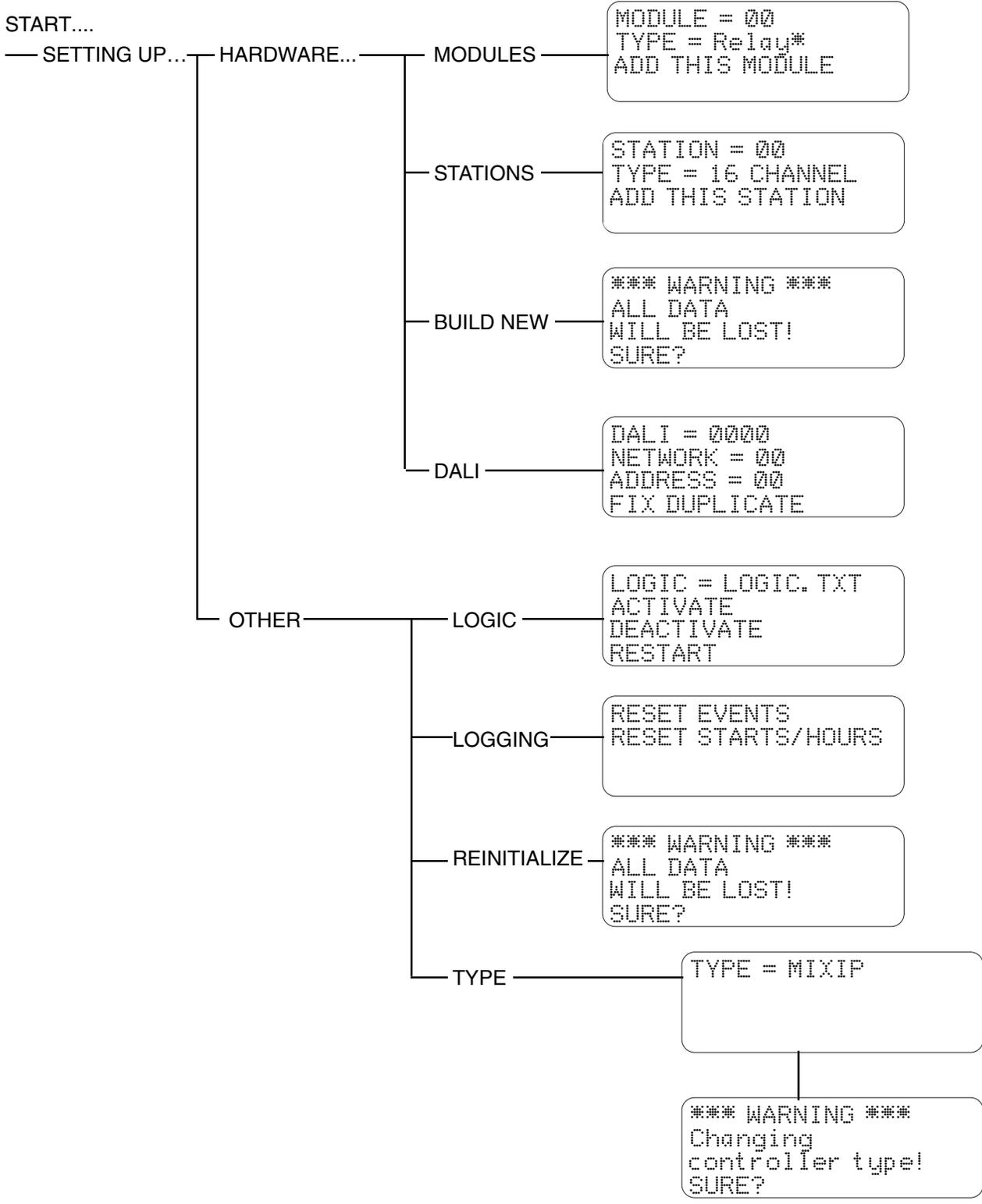
BACNET ID = 00000000  
 MS/TP ID = 0002  
 MS/TP BAUD = 0038400  
 LOGGING = No

OTHER

AL. SOUND = On  
 BLINK TIME = 00.5  
 HYSTERISIS = 2\*  
 PHASE = A\*

PASSWORDS

PASSWORD = 0000  
 PROGRAMMING = 0000  
 SETTING UP = 0000  
 SEARCHING = 0000





START....

SEARCHING... ABOUT...

```
RELAY MODULES = 1
DIMMER MODULES = 1
NETWORK = OK
STATIONS = 2
```

```
LEG. DIM MODULES = 0
DALI MODULES = 0
INPUT MODULES = 0
DMX MODULES = 0
```

```
COM 4 = Error
COM 1 = Direct
```

STATUS

OUTPUTS

OUTPUTS

```
0101 Off  0105 Off
0102 Off  0106 Off
0103 Off  0107 Off
0104 Off  0108 Off
```

DALI

```
0101 Off  0105 Off
0102 Off  0106 Off
0103 Off  0107 Off
0104 Off  0108 Off
```

INPUTS

MODULES

```
0101 . 0105 . A1 100
0102 . 0106 . A2 100
0103 . 0107 . A3 100
0104 . 0108 . * = On
```

STATIONS

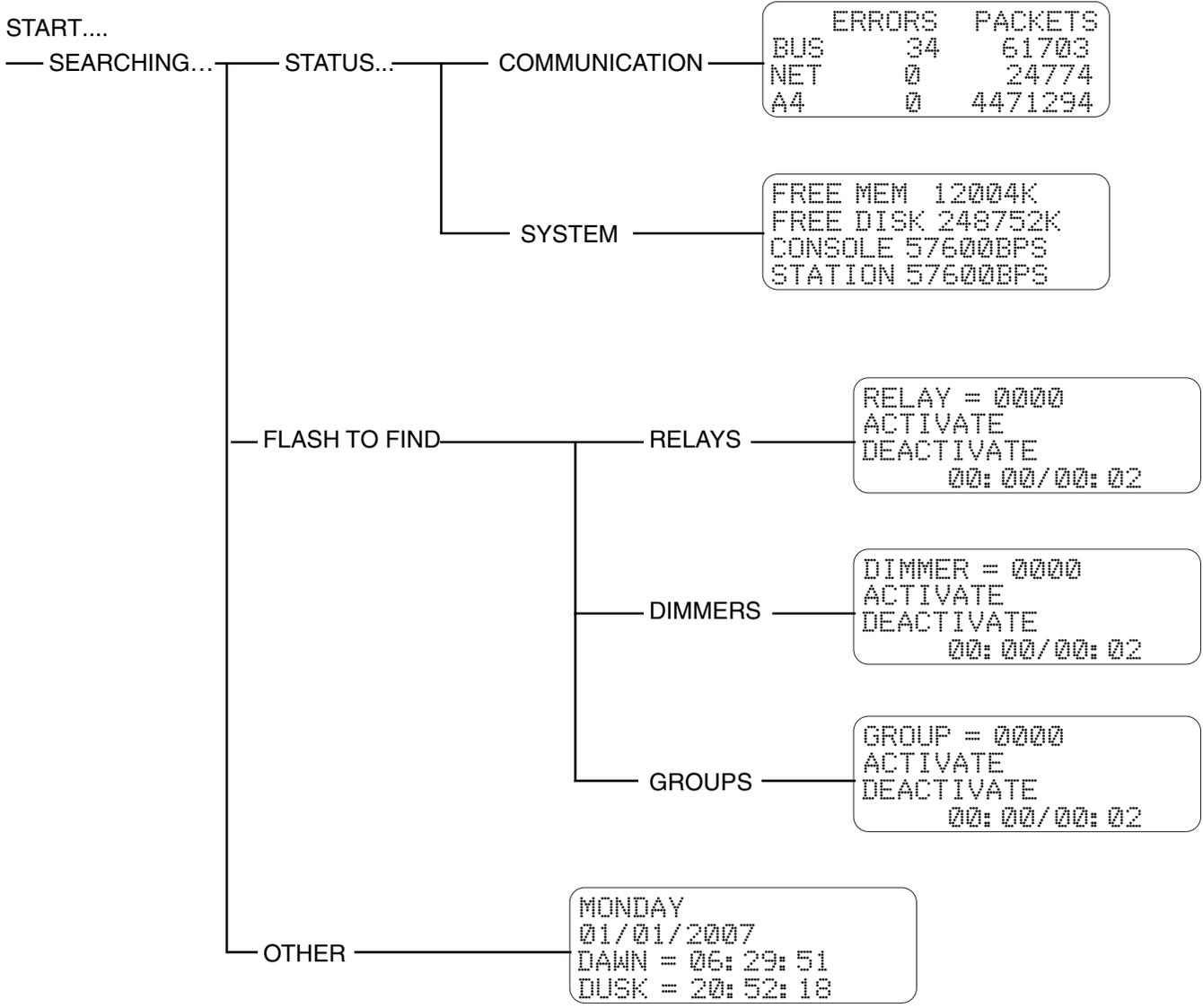
```
00 ↑↓.*S<> A1 100
MM ..... A0 100
01 .....
17 .....
```

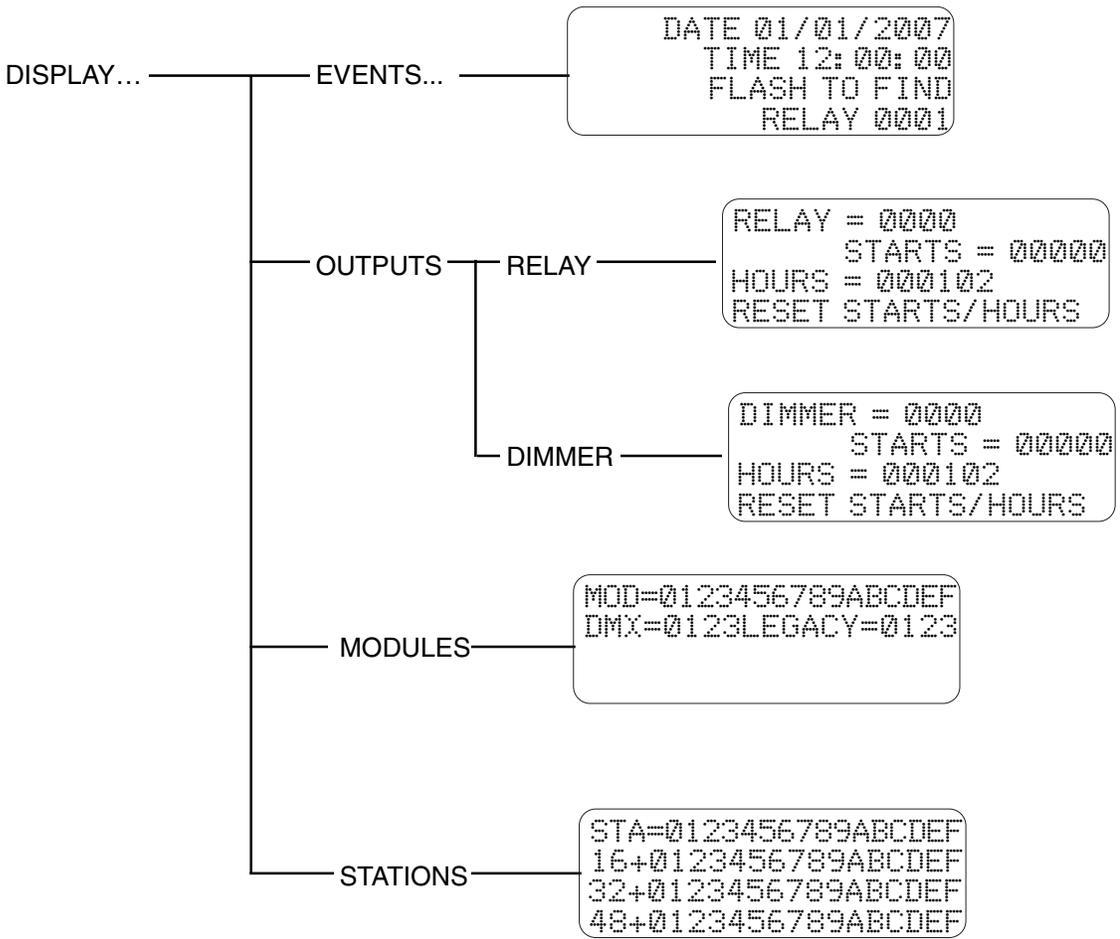
ROOMS

```
STATION = 00
1 2 3
```

DMX

```
0 01
05
09
13
```







FOR YOUR NOTES:

# Synergy Operation Manual

## SYNERGY Revision V2.2 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)
- 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

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
Set Time	time <hh:mm:ss>	Sets the time in all controllers
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
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
Get Switch Status	[bacnet <id>] switch <#>	Returns the current status of a switch, Format; x<cr><lf>
Get Analog Status	[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)	button <#> <val>	Writes a new level to the control station channel # (button) where <val> is expressed as a percentage, 0 - 100
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	[bacnet] reboot [<id>]	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.

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



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



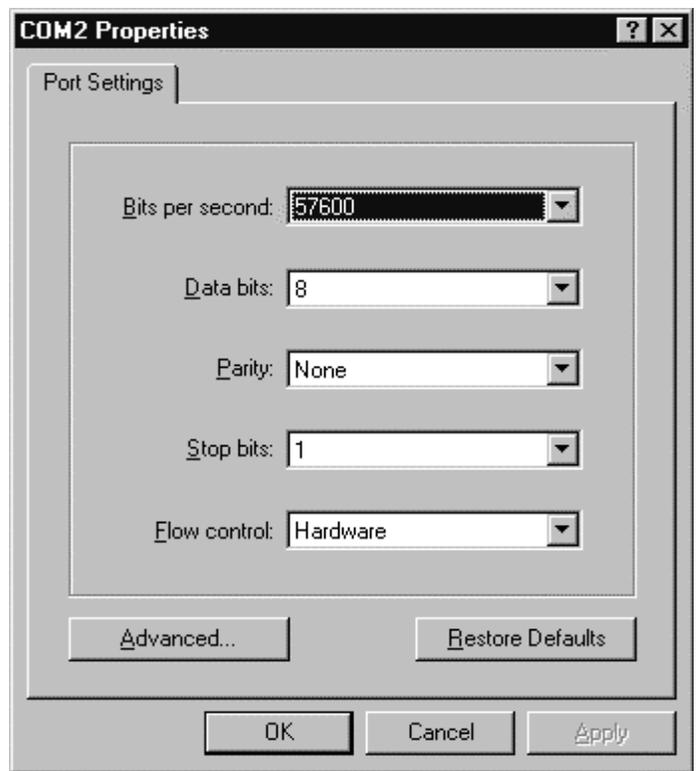
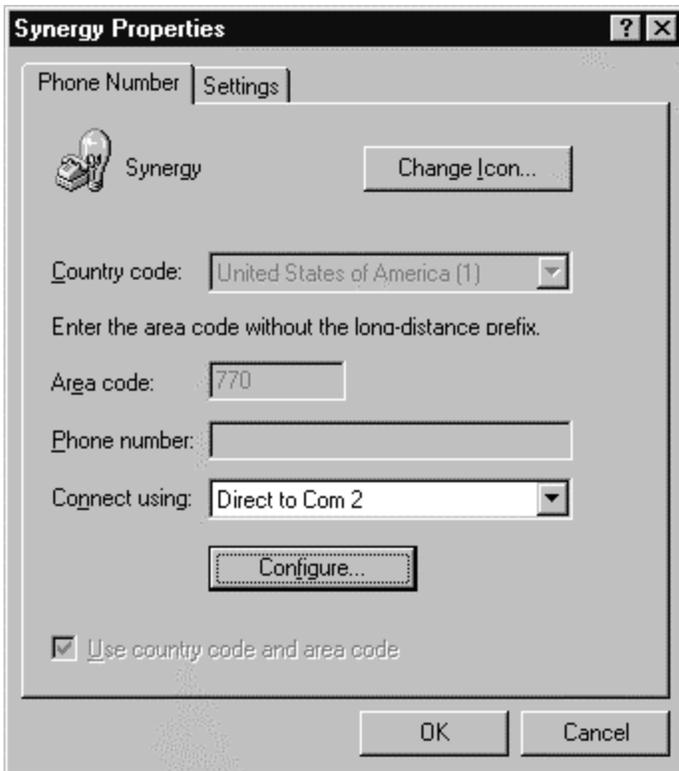
State	City	Longitude	Latitude	Time Zone	State	City	Longitude	Latitude	Time Zone
MI	Bay City	- 083 : 53	+ 43 : 36	-5	OH	Canton	- 081 : 23	+ 40 : 48	-5
MI	Detroit	- 083 : 03	+ 42 : 20	-5	OH	Cincinnati	- 084 : 31	+ 39 : 06	-5
MI	East Lansing	- 084 : 29	+ 42 : 44	-5	OH	Cleveland	- 081 : 42	+ 41 : 30	-5
MI	Flint	- 083 : 41	+ 43 : 01	-5	OH	Columbus	- 083 : 00	+ 39 : 58	-5
MI	Grand Rapids	- 085 : 40	+ 42 : 58	-5	OH	Dayton	- 084 : 24	+ 40 : 01	-5
MI	Kalamazoo	- 085 : 35	+ 42 : 17	-5	OH	Hamilton	- 084 : 34	+ 39 : 24	-5
MI	Lansing	- 084 : 42	+ 42 : 43	-5	OH	Springfield	- 083 : 51	+ 39 : 50	-5
MI	Saginaw	- 084 : 05	+ 43 : 32	-5	OH	Toledo	- 083 : 33	+ 41 : 39	-5
MN	Minneapolis	- 093 : 16	+ 44 : 59	-6	OH	Warren	- 080 : 48	+ 41 : 14	-5
MN	St Paul	- 093 : 06	+ 44 : 57	-6	OH	Youngstown	- 080 : 41	+ 41 : 20	-5
MO	Kansas City	- 094 : 35	+ 39 : 17	-6	OK	Oklahoma City	- 097 : 31	+ 35 : 28	-6
MO	St. Louis	- 090 : 29	+ 38 : 52	-6	OK	Tulsa	- 095 : 47	+ 36 : 12	-6
MS	Biloxi	- 088 : 53	+ 30 : 24	-6	OR	Portland	- 122 : 41	+ 45 : 31	-8
MS	Gulfport	- 089 : 06	+ 30 : 22	-6	OR	Salem	- 123 : 01	+ 44 : 56	-8
MS	Jackson	- 090 : 11	+ 32 : 18	-6	PA	Allentown	- 075 : 28	+ 40 : 36	-5
MS	Pascagoula	- 088 : 33	+ 30 : 21	-6	PA	Bethlehem	- 075 : 23	+ 40 : 37	-5
NC	Chapel Hill	- 079 : 04	+ 35 : 56	-5	PA	Coopersburg	-075 : 23	+40 : 30	-5
NC	Charlotte	- 080 : 51	+ 35 : 14	-5	PA	Harrisburg	- 076 : 53	+ 40 : 16	-5
NC	Durham	- 078 : 55	+ 36 : 00	-5	PA	Lancaster	- 076 : 18	+ 40 : 02	-5
NC	Gastonia	- 081 : 11	+ 35 : 16	-5	PA	Philadelphia	- 075 : 09	+ 39 : 57	-5
NC	Greensboro	- 079 : 47	+ 36 : 04	-5	PA	Pittsburgh	- 080 : 00	+ 40 : 26	-5
NC	High Point	- 080 : 00	+ 35 : 57	-5	PA	Reading	- 075 : 56	+ 40 : 20	-5
NC	Raleigh	- 078 : 38	+ 35 : 47	-5	PA	Scranton	- 075 : 40	+ 41 : 25	-5
NC	Winston-Salem	- 080 : 15	+ 36 : 06	-5	PA	York	- 076 : 44	+ 39 : 58	-5
NE	Omaha	- 095 : 56	+ 41 : 16	-6	RI	Providence	- 071 : 25	+ 41 : 50	-5
NH	Manchester	- 071 : 28	+ 42 : 59	-5	RI	Warwick	- 071 : 27	+ 41 : 42	-5
NH	Portsmouth	- 070 : 45	+ 43 : 05	-5	SC	Anderson	- 082 : 39	+ 34 : 31	-5
NH	Rochester	- 070 : 58	+ 43 : 18	-5	SC	Charleston	- 079 : 56	+ 32 : 47	-5
NJ	Jersey City	- 074 : 04	+ 40 : 44	-5	SC	Columbia	- 081 : 03	+ 33 : 51	-5
NJ	Newark	- 074 : 10	+ 40 : 44	-5	SC	Greenville	- 082 : 24	+ 34 : 51	-5
NJ	Trenton	- 074 : 46	+ 40 : 13	-5	SC	Rock Hill	- 081 : 01	+ 34 : 56	-5
NM	Albuquerque	- 104 : 52	+ 36 : 30	-7	SC	Spartanburg	- 081 : 56	+ 35 : 02	-5
NV	East Las Vegas	- 115 : 03	+ 36 : 06	-8	TN	Bristol	- 082 : 11	+ 36 : 36	-5
NV	Las Vegas	- 115 : 09	+ 36 : 10	-8	TN	Chattanooga	- 085 : 19	+ 35 : 03	-5
NV	North Las Vegas	- 115 : 07	+ 36 : 12	-8	TN	Johnson City	- 082 : 21	+ 36 : 19	-5
NY	Albany	- 073 : 45	+ 42 : 39	-5	TN	Kingsport	- 082 : 33	+ 36 : 33	-5
NY	Buffalo	- 078 : 52	+ 42 : 53	-5	TN	Knoxville	- 083 : 55	+ 35 : 58	-6
NY	New York	- 073 : 60	+ 40 : 45	-5	TN	Memphis	- 090 : 03	+ 35 : 09	-6
NY	Niagara Falls	- 079 : 03	+ 43 : 06	-5	TN	Nashville	- 086 : 47	+ 36 : 10	-6
NY	Rochester	- 077 : 36	+ 43 : 10	-5	TX	Arlington	- 097 : 07	+ 32 : 44	-6
NY	Schenectady	- 073 : 56	+ 42 : 49	-5	TX	Austin	- 097 : 42	+ 30 : 18	-6
NY	Syracuse	- 076 : 09	+ 43 : 03	-5	TX	Beaumont	- 094 : 01	+ 29 : 57	-6
NY	Troy	- 073 : 41	+ 42 : 44	-5	TX	Corpus Christi	- 097 : 24	+ 27 : 48	-6
OH	Akron	- 081 : 31	+ 41 : 05	-5	TX	Dallas	- 096 : 48	+ 32 : 47	-6

State	City	Longitude	Latitude	Time Zone
TX	El Paso	- 106 : 29	+ 31 : 46	-6
TX	Fort Worth	- 097 : 20	+ 32 : 45	-6
TX	Galveston	- 094 : 48	+ 29 : 18	-6
TX	Houston	- 095 : 22	+ 29 : 45	-6
TX	McAllen	- 098 : 14	+ 26 : 12	-6
TX	Port Arthur	- 093 : 56	+ 29 : 53	-6
TX	San Antonio	- 098 : 29	+ 29 : 26	-6
UT	Ogden	- 111 : 58	+ 41 : 07	-7
UT	Salt Lake City	- 111 : 59	+ 40 : 51	-7
VA	Newport News	- 076 : 25	+ 36 : 59	-5
VA	Norfolk	- 076 : 17	+ 36 : 51	-5
VA	Richmond	- 077 : 26	+ 37 : 32	-5
VA	Virginia Beach	- 075 : 58	+ 36 : 51	-5
WA	Olympia	- 122 : 54	+ 46 : 58	-8
WA	Seattle	- 122 : 20	+ 47 : 37	-8
WA	Spokane	- 117 : 38	+ 47 : 34	-8
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 Lithonia 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:



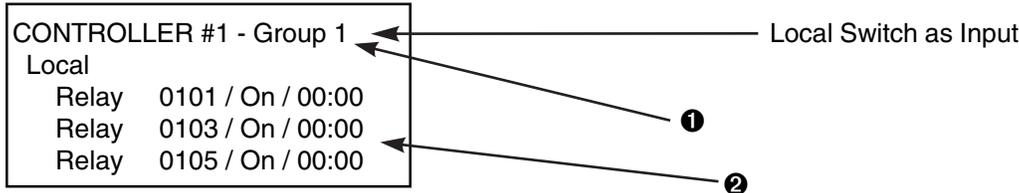
1. Start – Programs – Accessories – HyperTerminal – Hypertrm.exe. Name the connection Synergy, and choose an appropriate icon, select the COM port connect ion, and set the COM port properties as shown below:
2. Connect the communication cable between the PC and the controller, and prompted select “Y 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 Lithonia recommends creating these files with the Synergy configuration software (available from Lithonia 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 onnect 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).

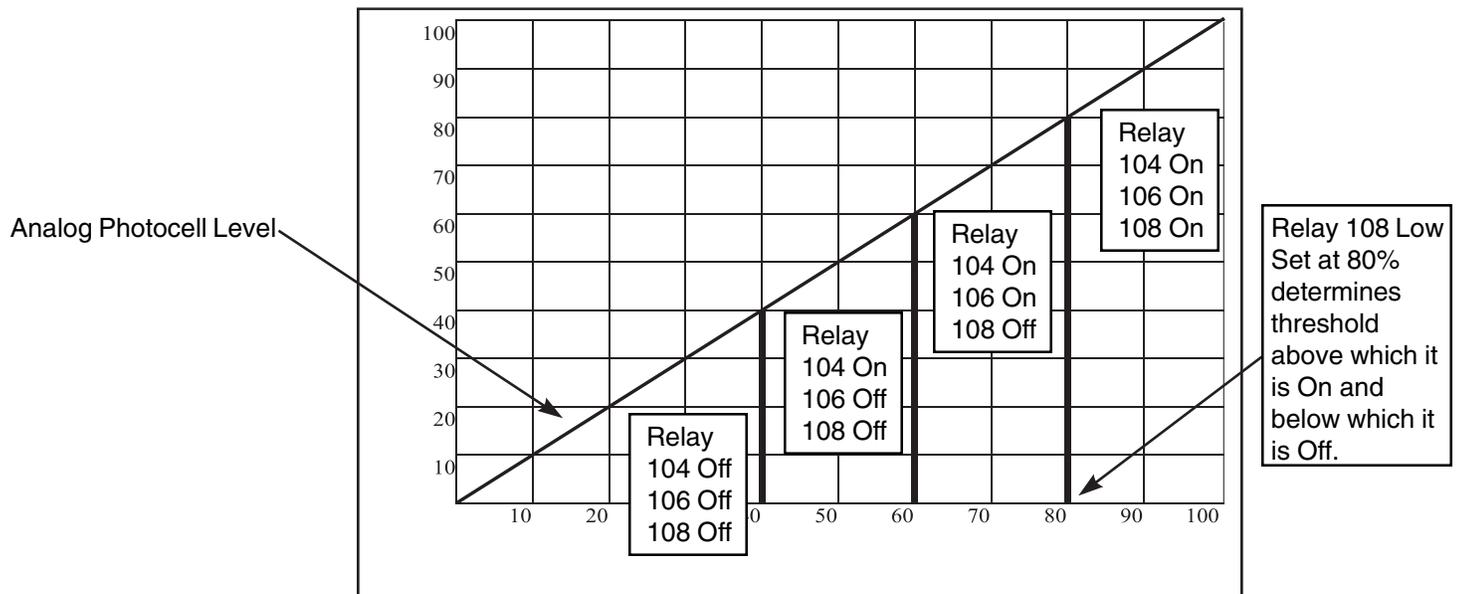
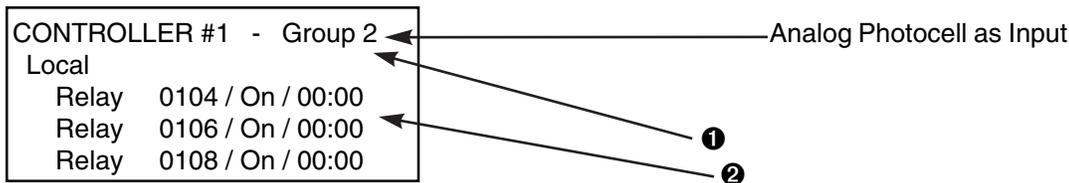


In the Basic Group example above, when the Local Switch is activated relays 101, 103 and 105 are instantly sent to an On or Off level.

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.

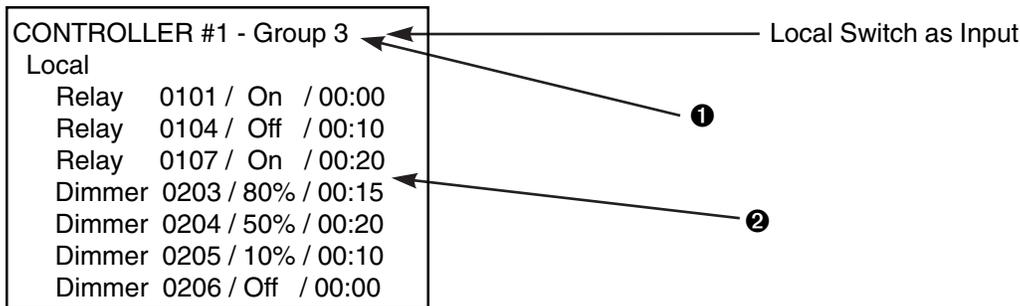


In the example above, as the analog photocell level increases and decreases Relays 104, 106 and 108 will switch On and Off above and below their respective Low Set thresholds.

**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:**

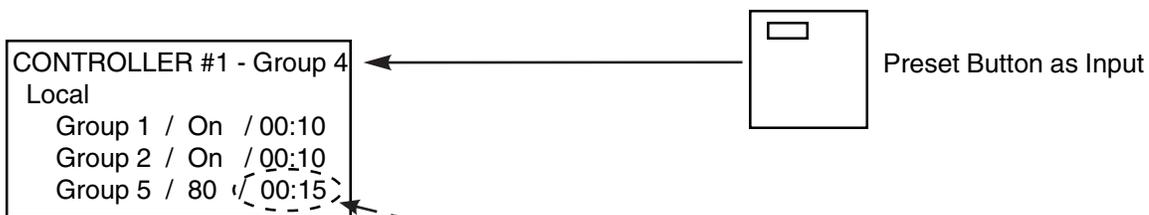
- ❶ Create a Group (ex. Group 3).
- ❷ Include Local Outputs (ex. Relays 0101, 0104 and 0107 and Dimmers 0203, 0204, 0205 and 0206 at differing levels and fade times.)



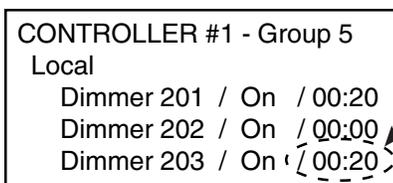
In the pattern Group example above, when the Local Switch is activated On the Relays and Dimmers in Group 3 will go to their group levels over the programmed fade time indicated. A relay programmed with a Fade Time will not react instantly to the group level change, and dimmers will smoothly fade between 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:**



Fade time on the group determines the output fade time – not the fade time on the individual outputs within the group.

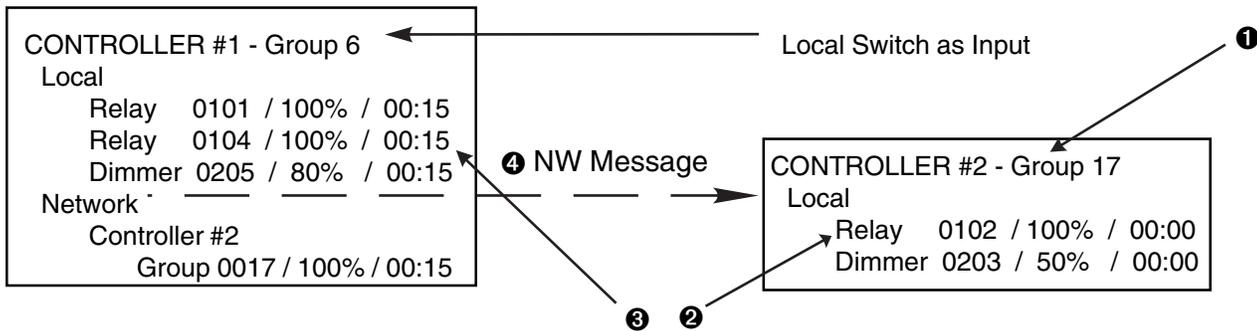


If levels other than On (100%) are used for outputs then the final output level will be the sum of the group level times the output level. If dimmer 203 was at 50% level then the end result of Group 4 would be to set dimmer 201 at 40% (50% of 80%) over 15 seconds.

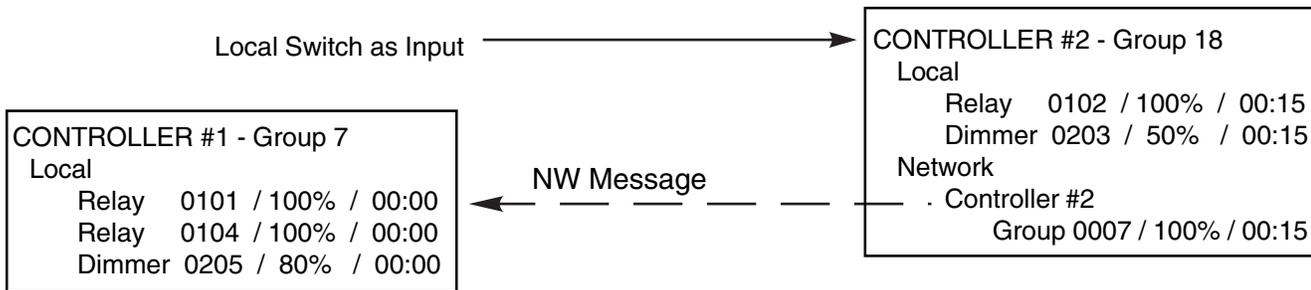
**MULTI-CONTROLLER GROUP** – When groups are to be made up of a mixture of local and network outputs, set them up to include Local Relays and/or Dimmers along with Network Groups. As shown in Example #1 below, illustrates programming a Multi-Controllers Group (ex. Group 6) in Controller #1:

**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:

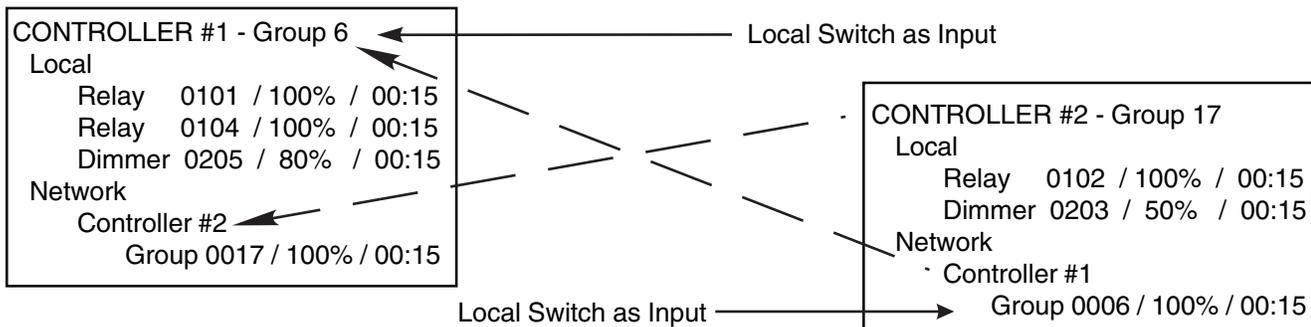


The following method of “inter-locking” Multi-controller groups will result in circular network messages.

**WARNING!**

**DO NOT PROGRAM THIS TYPE OF GROUP.**

**WARNING!**



# Synergy Operation Manual

## 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.



## 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.

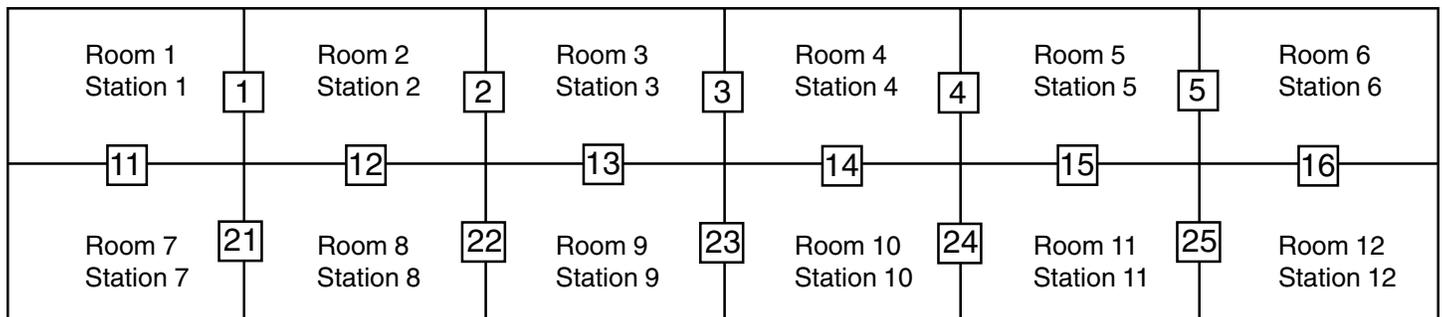
Example: To set-up control station addresses 1, 2 and 4 to be in a single room, first program the highest address station (#4) with the desired group information as detailed on the previous page. Next, add the two lower address stations to Room 1 following the instruction on page 52. Multiple Rooms may 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.



## SYSTEMS WITH MOVEABLE PARTITIONS

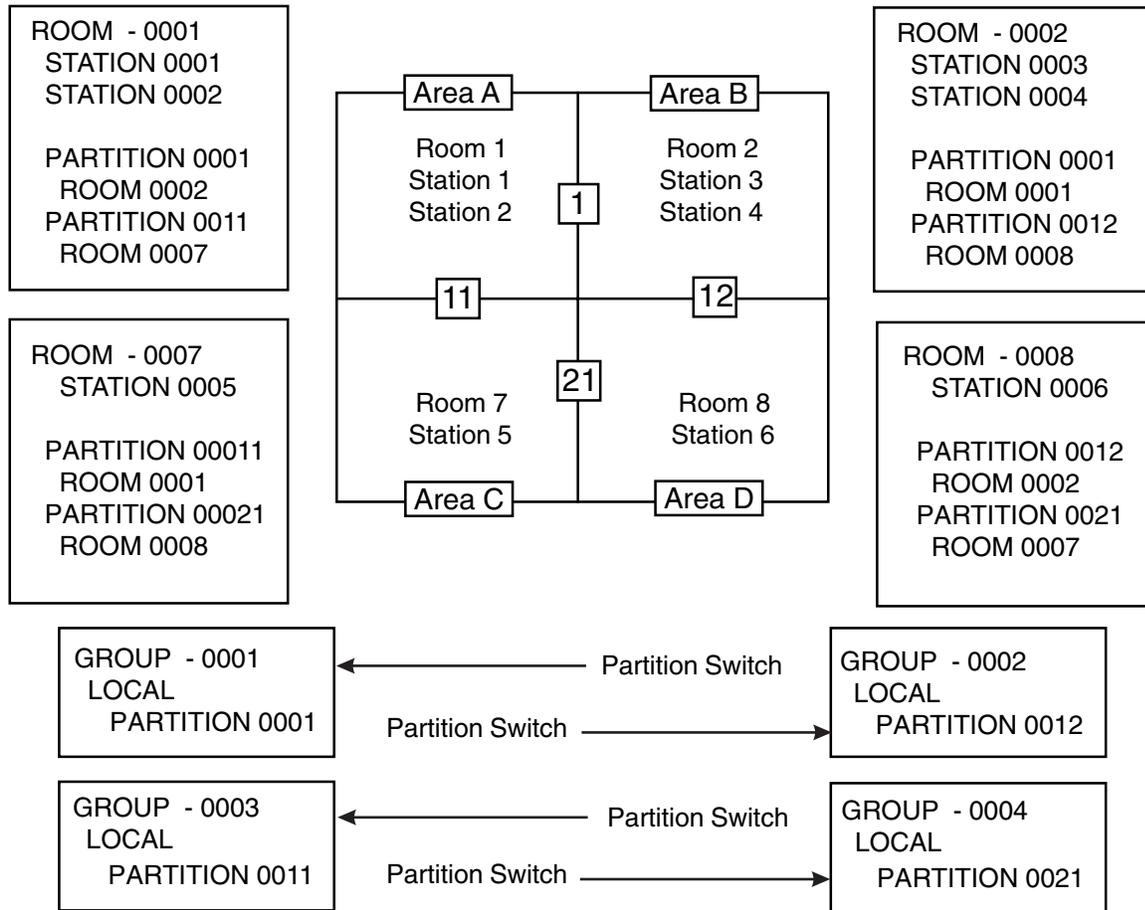
Systems controlling lighting in rooms with moveable partitions have the ability to re-configure the control stations to match partition door configurations. Individual partitions are included in a group, and that group is controlled to be Open or Closed. When partitions are Open, all adjoining control 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	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	Area D				
○	●	○	●	Areas A,B & D	Area C	Areas A,B & D			
○	●	●	○	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 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.

