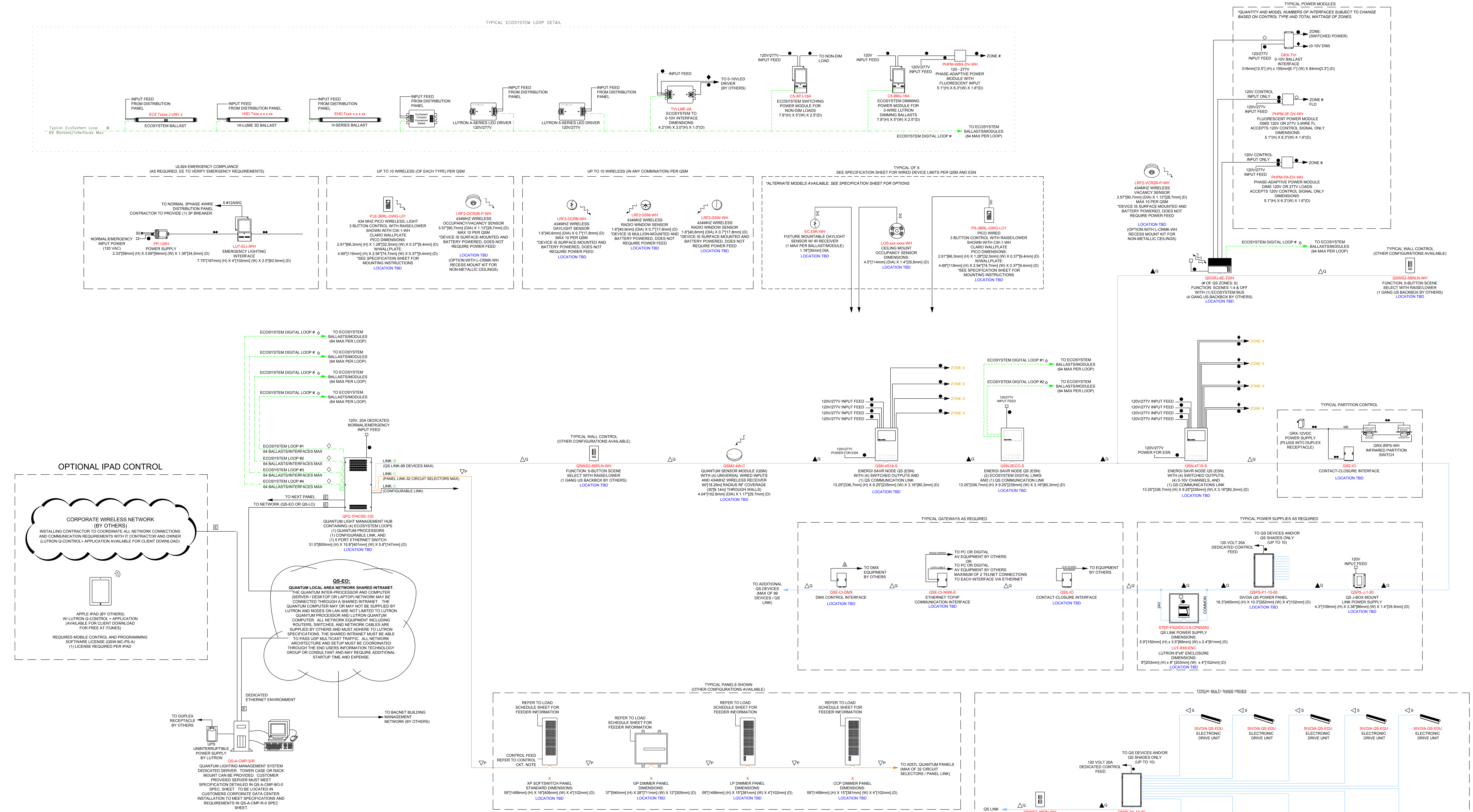
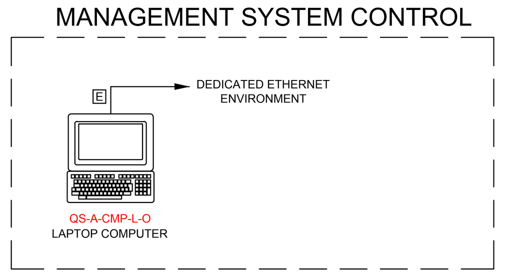
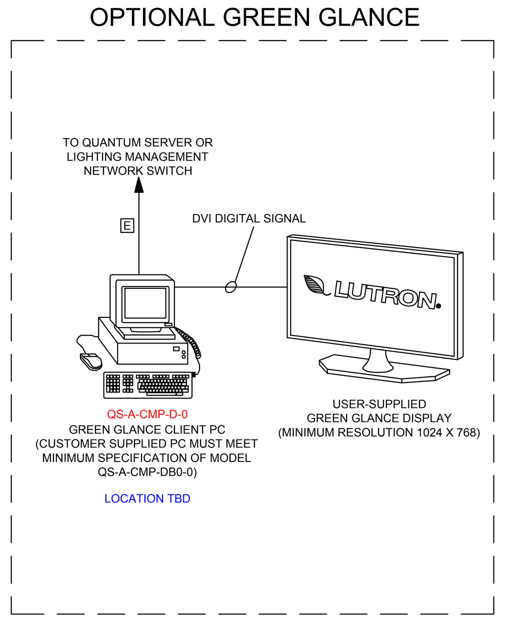


CONTROL CIRCUIT NOTE:
- SUPPLIES POWER FOR INTERNAL OPERATION.
- LUTRON RECOMMENDS A DEDICATED 120V OR 277V, 20A 1 PHASE 2 WIRE FEED TO POWER THE CONTROL CIRCUIT IN THE PANEL.
- IF THE CONTROL CIRCUIT IS TAPPED FROM A CIRCUIT THAT POWERS A RELAY IN THE PANEL, IT DRAWS A MAXIMUM OF 1.5A TOWARD THE TOTAL LOAD FOR THAT CIRCUIT.

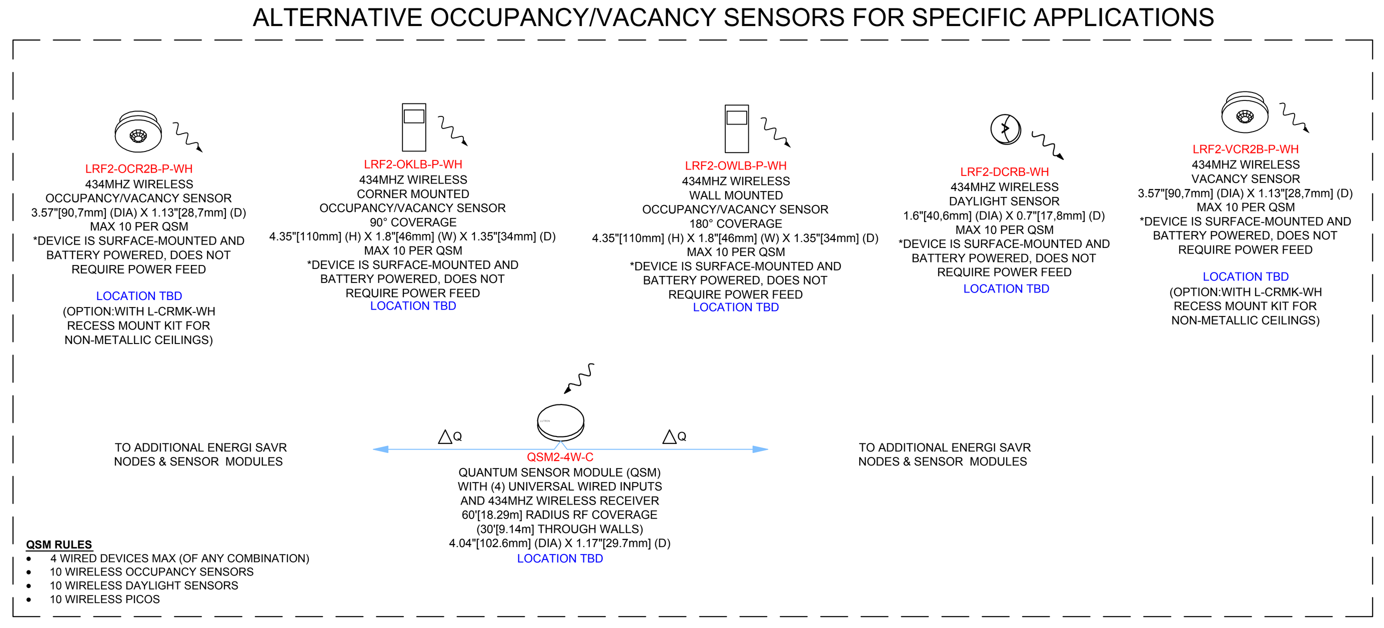
ALTERNATE FOR QUANTUM LIGHTING MANAGEMENT SYSTEM CONTROL



OPTIONAL GREEN GLANCE



ALTERNATIVE OCCUPANCY/VACANCY SENSORS FOR SPECIFIC APPLICATIONS



QSM RULES
- 4 WIRED DEVICES MAX (OF ANY COMBINATION)
- 10 WIRELESS OCCUPANCY SENSORS
- 10 WIRELESS DAYLIGHT SENSORS
- 10 WIRELESS PICOS

WIRING LEGEND:

△Q QS CONTROL LINK (SEE WIRE DESCRIPTION BELOW)
▲Q QS CONTROL LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 3 AND 4. DO NOT CONNECT WIRE # 2)

QS WIRING AS REQUIRED BY CONTROL LINK LENGTH (REFER TO QS SMART PANEL POWER SUPPLY WIRING GUIDE FOR SHADE WIRING NOTES):

TOTAL CONTROL LINK LENGTH	Wire Gauge	AVAILABLE FROM LUTRON IN ONE CABLE:
LESS THAN 500ft (153 m)	POWER (TERMINALS 1&2): 1 PAIR 18 AWG (1.0 mm²)	GRX-CBL-346S OR GRX-PCBL-346S
	DATA (TERMINALS 3&4): 1 PAIR 22 AWG (0.5 mm²), TWISTED AND SHIELDED*	
500ft (153 m) TO 2,000ft (600 m)**	POWER (TERMINALS 1&2): 1 PAIR 12 AWG (4 mm²)	GRX-CBL-46L OR GRX-PCBL-46L
	DATA (TERMINALS 3&4): 1 PAIR 22 AWG (0.5 mm²), TWISTED AND SHIELDED*	

*ALTERNATE DATA-ONLY CABLE: USE APPROVED DATA LINK CABLE (22 AWG [0.5 mm²] TWISTED/SHIELDED) FROM BELDEN (MODEL # 9461).

**TOTAL LENGTH OF THE QS LINK MUST NOT EXCEED 2,000 ft (600 m).

◁S

QS SMART PANEL POWER SUPPLY (QSPS-PX-10-60) SHADE WIRING GUIDE				
MAXIMUM DEVICES PER ONE OUTPUT		MAXIMUM DISTANCE PER ONE OUTPUT BASED ON WIRE GUAGE		
SHADES + CONTROLS		12 AWG (4 mm²) QSH-CBL-L-500 QSH-CBLP-L-500	16 AWG (1.5 mm²) QSH-CBL-M-500 QSH-CBLP-M-500	18 AWG (1.0 mm²) GRX-CBL-346S-500
1 SIVOIA QS SHADE OR DRAPERY	UP TO 1 POWER DRAW UNIT	500 ft (150 m)	200 ft (60 m)	125 ft (35 m)
2 SIVOIA QS ROLLER 64™, ≤ 30 ft² (2.75 m²) EACH		200 ft (60 m)	75 ft (20 m)	50 ft (15 m)
3 SIVOIA QS ROLLER 64™, ≤ 20 ft² (1.8 m²) EACH				
2 SIVOIA QS ROLLER 100™, ≤ 50 ft² (4.6 m²) EACH				
QS INDIVIDUAL POWER SUPPLY (QSPS-PX-1-50 OR QSPS-J-1-50) SHADE WIRING GUIDE				
MAXIMUM DEVICES PER ONE OUTPUT		MAXIMUM DISTANCE PER ONE OUTPUT BASED ON WIRE GUAGE		
SHADES + CONTROLS		12 AWG (4 mm²) QSH-CBL-L-500 QSH-CBLP-L-500	16 AWG (1.5 mm²) QSH-CBL-M-500 QSH-CBLP-M-500	18 AWG (1.0 mm²) GRX-CBL-346S-500
1 SIVOIA QS SHADE OR DRAPERY	UP TO 1 POWER DRAW UNIT	250 ft (75 m)	100 ft (30 m)	50 ft (15 m)

▽P PANEL LINK (SEE WIRE DESCRIPTION BELOW)
▼P PANEL LINK (SEE WIRE DESCRIPTION BELOW) (CONNECT WIRES 1, 2, 3 AND 4. DO NOT CONNECT WIRE # 5)

LUTRON CABLE GRX-CBL-46L (5 CONDUCTOR NON-PLENUM) OR GRX-PCBL-46L (5 CONDUCTOR PLENUM RATED). OTHERWISE USE 2 #12 AWG (4 mm²), 1 BELDEN #9461 AND BETWEEN PANELS ADD 1 #18 AWG (1.0 mm²) FOR EMERGENCY SENSING CABLE BY OTHERS.

□ INPUT POWER (NORMAL)
● 2 #12AWG (4 mm²)
○ 3 #12AWG (4 mm²)
◆ 0-10V SIGNAL: 2 #18AWG (1.0 mm²)
●● 2 #18AWG (1.0 mm²)
∞ 3 #18AWG (1.0 mm²)
⧖ LUTRON SENSOR CABLE C-CBL-522S OTHERWISE USE 3 #18 AWG (1.0 mm²)
⧗ LUTRON SENSOR CABLE C-CBL-522S OTHERWISE USE 4 #18 AWG (1.0 mm²)
E CAT5E OR BETTER CABLE FOR LUTRON NETWORK TERMINATED WITH RJ45 CONNECTORS (TO BE PROVIDED BY OTHERS). 328 ft (100 m) MAXIMUM RUN.
D DMX CONTROL
◇ ECOSYSTEM BUS/LOOP: LUTRON CABLE C-CBL-216-GR-1 (2 #16 CONDUCTOR NON-PLENUM) OR C-PCBL-216-CL-1 (2 #16 CONDUCTOR PLENUM RATED). OTHERWISE USE 2 #16 AWG (1.5 mm²) BY OTHERS.
1-WAY RF COMMUNICATION
2-WAY RF COMMUNICATION

WIRING NOTES:

QS LINK RULES:
THE FOLLOWING LINK RULES MUST BE OBSERVED FOR PROPER OPERATION:

- THIS IS A TOPOLOGY-FREE LINK (T-TAP, HOME-RUN, ETC. IS OK); REFER TO TABLE BELOW FOR WIRE RUN LIMITS.
- IF WIRED DIFFERENTLY THAN WHAT IS SHOWN, POWER DRAW UNIT REQUIREMENTS NEED TO BE CONFIRMED; SEE POWER DRAW UNITS (PDUs) SPECIFICATION SHEET INCLUDED IN THIS SUBMITTAL.
- MAXIMUM OF 512 OUTPUTS (BALLASTS, SHADES, CONTACT CLOSURES, ETC).
- MAXIMUM OF 100 OCCUPANCY SENSORS, 100 DAYLIGHT SENSORS/RADIO SHADOW SENSORS AND 100 KEYPADS.
- MAXIMUM OF 100 QS DEVICES (SUCH AS A GRAFIK EYE® QS, SEETOUCH® QS KEYPAD, SMART PANEL POWER SUPPLY [QSPS-Px-10-60], ESN, OR SIVOIA® QS SHADE / DRAPERY DRIVE UNIT). QUANTUM PROCESSOR COUNTS AS 1 DEVICE PER LINK.
- MAXIMUM OF 100 ZONES - SUCH AS A SIVOIA QS SHADE / DRAPERY DRIVE UNIT, OR A LIGHTING ZONE ON A GRAFIK EYE QS (DOES NOT APPLY TO QUANTUM SYSTEMS).
- THE 10 OUTPUTS ON A QSPS-Px-10-60 CANNOT EXCEED A COMBINED LENGTH OF 2,000 ft (600 m).

ECOSYSTEM BUS/LOOP RULES:
THE FOLLOWING LOOP RULES MUST BE OBSERVED FOR PROPER OPERATION:

- THIS IS TOPOLOGY-FREE AND POLARITY FREE WIRING (T-TAP, HOME-RUN, ETC. IS OK).
- KEEP ALL THE BALLASTS/MODULES IN ONE ROOM ON THE SAME LOOP WHENEVER POSSIBLE.
- WIRE DAYLIGHT SENSORS, OCCUPANCY SENSORS AND PERSONAL CONTROLS TO THE CLOSEST ECOSYSTEM BALLAST/ SENSOR MODULE IN THE SAME ROOM.
- ECOSYSTEM LOOPS ARE SHOWN ON THE LIGHTING PLANS. IF THERE IS A DISCREPANCY, AND ROOMS ARE WIRED TO A DIFFERENT LOOP THAN THE ONE SHOWN, LUTRON NEEDS TO BE NOTIFIED. THIS INFORMATION IS IMPORTANT FOR PROGRAMMING THE SYSTEM.
- UP TO 64 BALLASTS/MODULES PER ECOSYSTEM LOOP
- UP TO 64 IR CONTROLS PER LOOP
- UP TO 16 DAYLIGHT SENSORS PER LOOP
- UP TO 32 OCCUPANT SENSORS PER LOOP

PANEL LINK RULES:
THE FOLLOWING LINK RULES MUST BE OBSERVED FOR PROPER OPERATION:

- PANELS ARE DAISY-CHAINED ON ONE OF THE CONFIGURABLE LINKS PER LUTRON'S DRAWING, HOWEVER THEY DO NOT HAVE TO BE IN THE ORDER SHOWN.
- DO NOT HOME-RUN OR T-TAP THIS WIRING LINK. ALL CIRCUITS NEED TO BE LANDED IN THESE PANELS PER LUTRON'S PANEL SCHEDULES.
- THE MAXIMUM WIRE LENGTH OF A PANEL LINK IS 2,000 ft (600 m). A MX-RPTR IS USED TO EXTEND THE LENGTH OF A LINK ANOTHER 2,000 ft (600 m). A MAXIMUM OF (3) MX-RPTR'S MAY BE USED PER LINK FOR MAXIMUM LENGTH OF 8,000 ft (2,430 m) PER LINK.
- IF A PANEL IS MOVED TO ANOTHER LINK, OR THE LOADS ARE NOT WIRED AS SHOWN IN LUTRON PANEL SCHEDULES, LUTRON MUST BE NOTIFIED. THIS INFORMATION IS IMPORTANT FOR PROGRAMMING THE SYSTEM.
- UP TO 32 CIRCUIT SELECTORS PER LINK
- UP TO 512 SWITCH LEGS OR ZONES PER LINK
- LT-1 LINK TERMINATORS NEEDED ON EACH END OF THE LINK

QUANTUM NETWORK

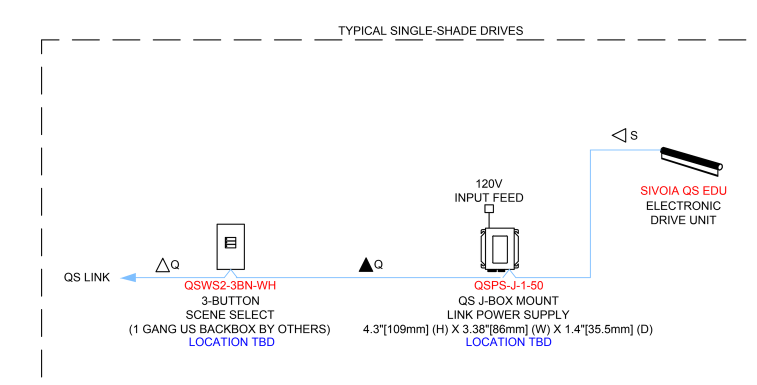
WHEN A LIGHTING MANAGEMENT NETWORK (LMN) IS REQUIRED TO ENABLE COMMUNICATIONS BETWEEN INDIVIDUAL LIGHT MANAGEMENT HUBS (LMH) AND BETWEEN LMH AND THE SYSTEM SERVER/DESKTOP/LAPTOP (Q-MANAGER). THE LMN REQUIRES A DEDICATED LAN OR VLAN. IT IS THE RESPONSIBILITY OF THE NETWORK PROVIDER TO ENSURE THE RELIABILITY AND SECURITY OF THE LMN.

CAT5E OR BETTER ETHERNET CABLE TO BE RUN FOR DEDICATED LMN TERMINATED WITH RJ45 CONNECTORS (PROVIDED BY OTHERS). THE NUMBER OF ETHERNET HOPS/SEGMENTS BETWEEN THE SERVER/DESKTOP/LAPTOP (Q-MANAGER) AND ANY LMN NODE SHALL NOT EXCEED 6. TOTAL LENGTH OF ETHERNET CABLE SHALL NOT EXCEED 328 FT (100M) POINT-TO-POINT.

IF LONGER RUNS ARE REQUIRED, MULTI-MODE FIBER OPTIC CABLE CAN BE USED INSTEAD WITH APPROPRIATE FIBER OPTIC CONNECTORS (PROVIDED BY OTHERS). CONSULT WITH NETWORK PROVIDER FOR STANDARD ETHERNET AND FIBER OPTIC WIRING RULES FOR DISTANCE AND SEPARATION AS WELL AS FOR PLACEMENT OF SWITCHES, ROUTERS, HUBS, ETC.

FOR MORE INFORMATION REGARDING NETWORK EQUIPMENT REQUIREMENTS AND NETWORK CONFIGURATION, PLEASE REFER TO THE QUANTUM LIGHTING MANAGEMENT NETWORK SPECIFICATION SHEET OR CONTACT LUTRON.

TYPICAL SINGLE-SHADE DRIVES



LED DIMMING REQUIRES AN EXACT MATCH BETWEEN THE LED ARRAY, DRIVER AND CONTROL. LUTRON CANNOT GUARANTEE COMPATIBILITY OR PERFORMANCE WITHOUT TESTING THIS COMBINATION.

TO CONFIRM WHAT PRODUCTS LUTRON HAS AVAILABLE OR WHAT INTERFACES MAY BE REQUIRED, CALL 1-877-DIM-LED8 OR CHECK LUTRON'S PRODUCT COMPATIBILITY MATRIX ON-LINE AT WWW.LUTRON.COM/LED.

TO REQUEST THE TESTING OF AN LED PRODUCT BY LUTRON MANUFACTURERS CAN FILL OUT AN LED EVALUATION REQUEST FORM ON-LINE AT WWW.LUTRON.COM/LED OR CONTACT LEDS@LUTRON.COM.

LUTRON CAN GUARANTEE COMPATIBILITY AND PERFORMANCE OF LUTRON HI-LUME A-SERIES LED DRIVERS USED WITH APPROPRIATE LUTRON CONTROLS. THE HI-LUME A-SERIES LED DRIVER CAN BE USED ON PRODUCTS UNDER 40 WATTS WITH SUITABLE MOUNTING LOCATIONS. PLEASE REFER TO THE SPECIFICATION SUBMITTAL SHEET FOR FURTHER INFORMATION.

IF USING UNTESTED, NON-LUTRON LED DRIVERS REQUIRING 0-10V CONTROL, PERFORMANCE AND COMPATIBILITY CANNOT BE GUARANTEED BY LUTRON. PRODUCTS FOLLOWING THE IEC STANDARD 60929 ARE MORE LIKELY TO PROVIDE ACCEPTABLE PERFORMANCE RESULTS. DETERMINATION OF RESULT ACCEPTABILITY IS UP TO THE USER'S DISCRETION.

IF USING UNTESTED, NON-LUTRON LED DRIVERS REQUIRING PHASE CONTROL, PERFORMANCE AND COMPATIBILITY CANNOT BE GUARANTEED BY LUTRON. A-SERIES OR ELV PRODUCTS PROVIDING HIGH END AND LOW END TRIM ADJUSTMENTS ARE MORE LIKELY TO PROVIDE ACCEPTABLE PERFORMANCE RESULTS. DETERMINATION OF RESULT ACCEPTABILITY IS UP TO THE USER'S DISCRETION.

TYPICAL QUANTUM ONE-LINE

CONCEPT DRAWING
NOT FOR CONSTRUCTION

Project Number:	N/A
Drawn By:	MLH
Drawing Revision:	1
Drawing Date:	10.22.14
Sheet:	1 OF 1

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