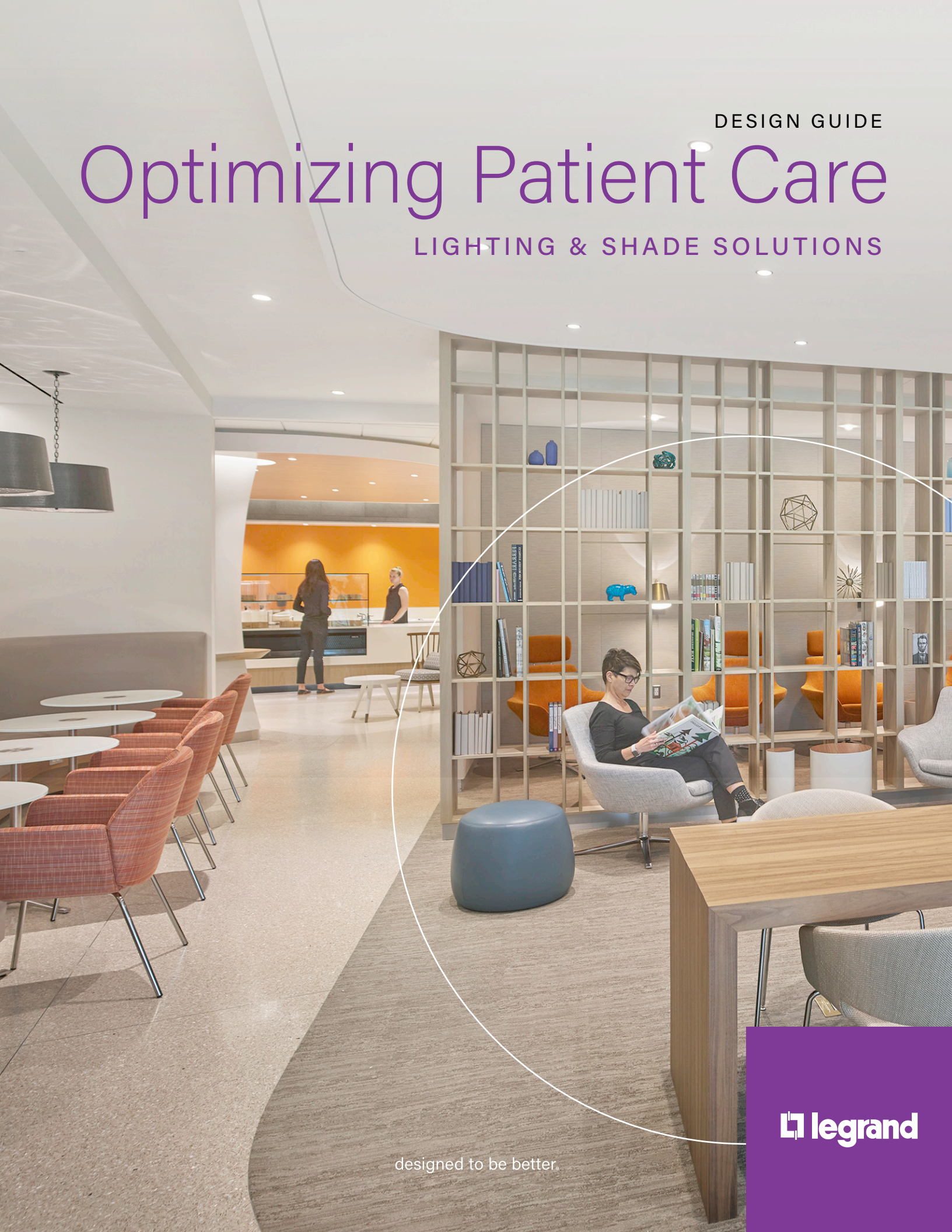


DESIGN GUIDE

# Optimizing Patient Care

LIGHTING & SHADE SOLUTIONS



designed to be better.

legrand



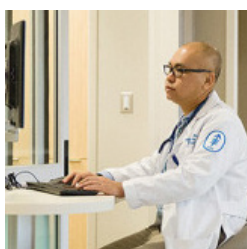
## Designing Spaces to Optimize Patient Care

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### Patient Rooms

Flexible lighting controls and motorized shades provides patients with control over their environment that promotes comfort and healing.



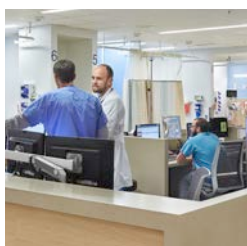
### Nurse Stations

Make nurses a top priority so they can focus on their top priority patients. Clearly marked zoned override switches and an intuitive user interface allow them to focus on what matters.



### Exam Rooms

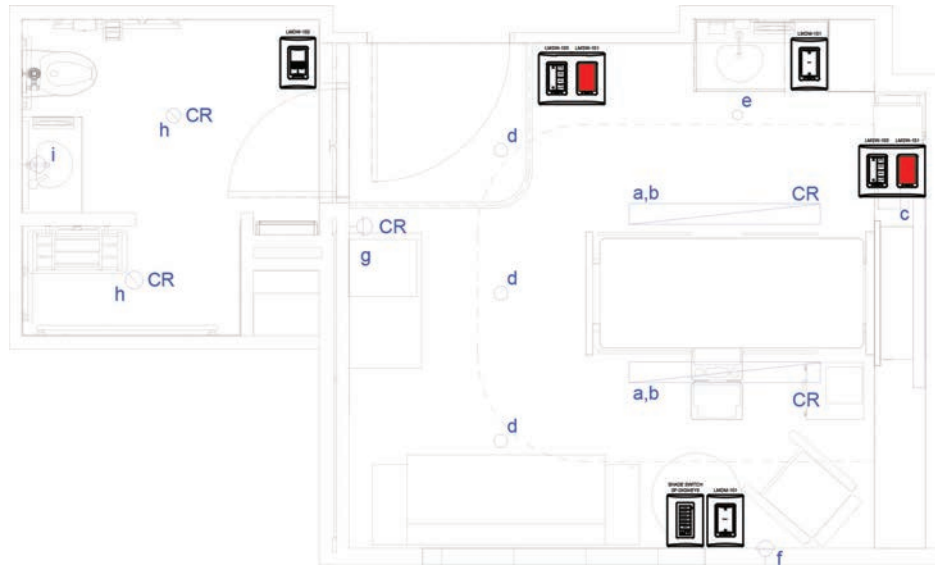
High quality color tuning support staff identify a subtle difference in patient's coloring that allows for quick and accurate diagnosis.



### Post-anesthesia Care Unit (PACU)

Variable lighting levels, achieved via multi-level switching or continuous dimming, allow the flexibility and comfort in post-op rooms while touch-less occupancy sensors help reduce the risk of infection.

# Patient Room Lighting and Shade Design



## Sequence of Operations

### Room

1. Lighting loads (a,b,g,h) are on critical (CR) circuit and will be controllable when normal power fails but will not be forced on to 100%.
2. All loads are 0-10V dimmable.
3. Each load will be manually controlled as shown in the DLM switch control schedule (next page).
4. Pressing the LMSW-101-R (red) nurse override switch will force lights to 100% until the button is depressed which will relinquish controlled loads to previous state.
5. The LMIN-104 for lighting control receives a contact input from the patient pillow speaker to override the current light level to a preset lighting scene.
6. The LMOR-102 shall send a signal to the shade motor to raise or lower the shades based on an input from the pillow speaker.
7. The network bridge reports light level status, occupancy status, and actual current used back to a network controller. The network controller may be used to program and schedule any room devices and monitor the current usage.

### Pillow Speaker

#### Lighting Button #1:

1. Single momentary press shall turn load (b) on.
2. Second press shall turn load (b) off.
3. A sustained press shall dim up or down load (b).

#### Lighting Button #2:

4. A single momentary press shall turn load (c) on.
5. Second press shall turn load (c) off.
6. A sustained press shall dim up or down, load (c)

#### Shade Button:

Successive 'shade' button presses will result in the following:

- 1st press – the shade motor will start moving the shades
  - 2nd press – the shade stops in the current position
  - 3rd press – the shade motor will start moving the shade in the reverse direction from the 1st press.
  - 4th press – the shade stops in the current position
- Any additional presses repeats the process at the 1st press.










# Patient Room Lighting Schedule

DLM Room Controller Load Schedule					
Room Controller	Circuit	Load	Zone	Description	Load Type
LMRC-112	277V critical	1	a	Exam	Dimmed (0-10V)
		2	b	Ambient	Dimmed (0-10V)
LMRC-112	277V critical	1	c	Reading	Dimmed (0-10V)
		2	d	Downlights	Dimmed (0-10V)
LMRC-112	277V critical	1	e	Sink	Dimmed (0-10V)
		2	f	Family Seating	Dimmed (0-10V)
LMRC-112	277V critical	1	g	Nightlight	Switched
		2	h	Toilet	Switched
LMRC-111	277V critical	1	i	Tlt. Mirror	Switched

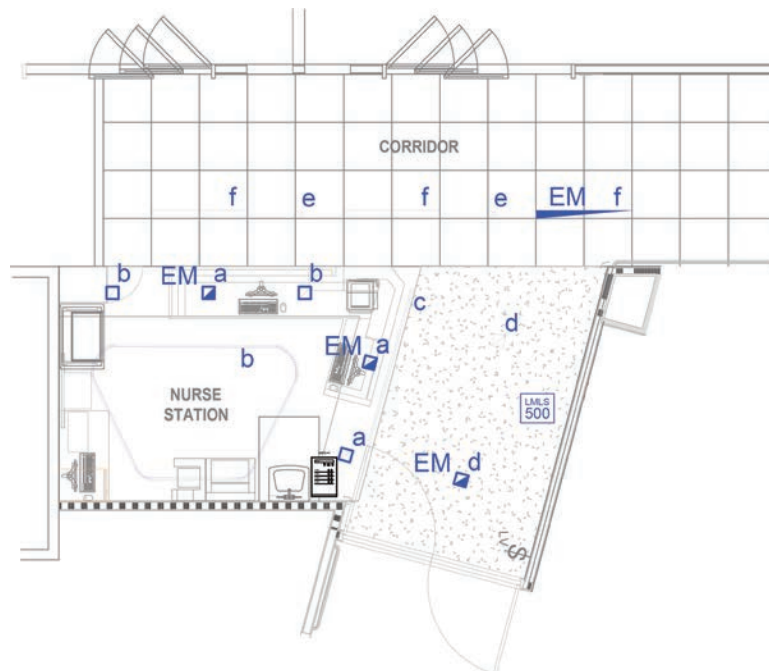
DLM Switch Control Schedule			
Switch	Button	Description	Controlled Loads
LMSW-105 ENTRY	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Toggle	All On	Loads (a,b,c,d,e,f) - On Only
	2: Toggle	Exam	Load (a) - On / Off
	3: Toggle	Nightlight	Load (f) - On / Off
	4: Toggle	All Off	Loads (a,b,c,d,e,f) - Off Only
LMSW-101-R CODE BLUE	Toggle	Force On / Relinquish	Press 1: Loads (a,b,c,d,e) - 100% Press 2: Loads (a,b,c,d,e) - Return to normal operation
LMDM-101	Rocker	Sink	Load (e) - Raise/Lower
LMSW-105 PAT HEADWALL	Rocker	Raise/Lower	Selected Loads - Raise/Lower
	1: Toggle	All On	Loads (a,b,c,d,e,f) - On Only
	2: Toggle	Exam	Load (a) - On / Off
	3: Toggle	Nightlight	Load (f) - On / Off
	4: Toggle	All Off	Loads (a,b,c,d,e,f) - Off Only
LMDM-101	Rocker	Family Seating	Load (f) - Raise/Lower
LMSW-101-R CODE BLUE	Toggle	Force On / Relinquish	Press 1: Loads (a,b,c,d,e) - 100% Press 2: Loads (a,b,c,d,e) - Return to normal operation
LMDW-102	1: Load	Toggle	Load (h) - On/Off
	2: Load	Toggle	Load (i) - On/Off
		Occ. Sensor	Load (h,i) - Auto Off 15 minutes

# Patient Room – Bill of Materials



Product	Name	SKU	Amount
	Wired Network Bridge	LMBC-300	1
	DLM Room Controller, 2 Relay	LMRC-112	4
	DLM Room Controller, 1 Relay	LMRC-111	1
	Low Voltage DLM Input Interface	LMIN-104	1
	Digital Low Voltage Dual Relay Interface	LMOR-102	1
	Digital Dimming Wall Switch, 1 paddle	LMDM-101	2
	Digital Switch, 1-button, Red	LMSW-101-R	2
	Digital Scene Switch, 5-button	LMSW-105	2
	Digital Dual Tech 2 Button Wall Sensor	LMDW-102	1

## Nurse Station Lighting and Shade Design









### Sequence of Operations

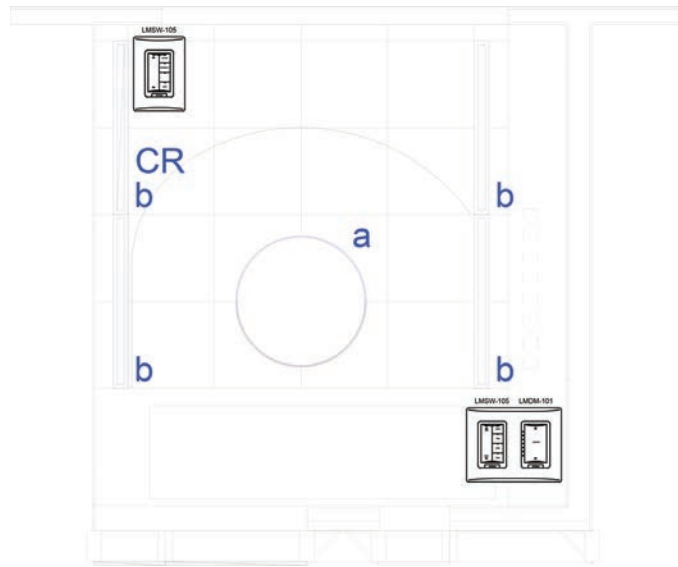
1. Nurse stations and patient corridors shall be scheduled on during normal business hours to a preset illuminance (foot-candle) level.
2. During after hours, the corridors shall be set to a lower preset illuminance level.
3. Normal hours and afterhours time schedule to be determined by the owner.
4. The DLM touchscreen shall override the current scene until a schedule change between normal hours and afterhours or a different scene selection.
5. The LMLS-500 photosensor monitors the daylight contribution from the window and works with the room controller(s) to maintain design light levels. Up to 3 daylight zones with different setpoints may be assigned.
6. The ELCU-200 shall allow emergency (EM) lighting to be switched with normal lighting. When normal power sense feed is lost, the ELCU-200 will force emergency lights to full, regardless of the position of the switch.
7. The network bridge reports light level status and actual current used back to a network controller. The network controller may be used to program and schedule any room device setting based on normal hours/ afterhours and monitor the current usage.

# Nurse Station – Bill of Materials



Product	Name	SKU	Amount
	Wired Network Bridge	LMBC-300	1
	Triple Relay with 0-10V Dimming Room Controller	LMRC-213	2+
	Emergency Lighting Control Unit	ELCU-200	2+
	Open Loop Multiple Zone Photosensor	LMLS-500	1
	DLM Touchscreen Injector	LMTI-100-277	1
	DLM 4.3" Touchscreen	LMEQ-41	1

# Exam Room Lighting and Shade Design



## Sequence of Operations






1. Lighting load b is on a critical (CR) circuit and will be controllable when normal power fails but will not be forced to 100% on.
2. All lighting loads are 0-10V dimmable.
3. Each LMSW-105 digital scene selector switch has 1 rocker and 4 buttons each with a preset lighting scene. Pressing one of the 4 preset scene selection buttons will turn lights on in each zone to the illuminance level for that zone as shown in the DLM Switch Control Schedule (below).
4. The LMDM-101 digital dimmer will manually control the linear fixtures ON/OFF and RAISE/LOWER.
5. The network bridge reports light level status and actual current used back to a network controller. The network controller may be used to program and schedule any room devices and monitor the current usage.

DLM Switch Control Schedule			
Switch	Button	Description	Controlled Loads
LMSW-105 ENTRY	Rocker	Raise/Lower	Selected Load - Raise/Lower
	1: Scene	EXAM	Loads (a,b) - 100%
	2: Scene	CONSULT	Load (a) - 0%; Load (b) - 100%
	3		unassigned
	4: Scene	OFF	Load (a,b) - Off
LMDM-101	Rocker	Linear	Load (b) - On/Off & Raise/Lower
LMSW-105 UNDERCABINET ENTRY	Rocker	Raise/Lower	Selected Load - Raise/Lower
	1: Scene	EXAM	Loads (a,b) - 100%
	2: Scene	CONSULT	Load (a) - 0%; Load (b) - 100%
	3		unassigned
	4: Scene	OFF	Load (a,b) - Off

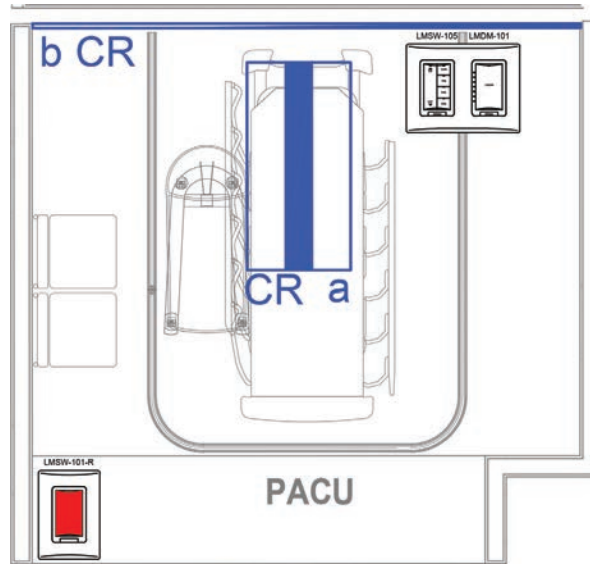


# Exam Room – Bill of Materials



Product	Name	SKU	Amount
	Digital Scene Switch, 5-button	LMSW-105	2
	Digital Low Voltage Switches, 2-button	LMDM-101	1
	DLM Room Controller, 2 Relay	LMRC-112	1
	DLM Room Controller, 1 Relay	LMRC-111	1
	Wired Network Bridge	LMBC-300	1

# Post-anesthesia Care Unit (PACU) Lighting and Shade Design



## Sequence of Operations

1. Lighting loads a,b are on a critical (CR) circuit and will be controllable when normal power fails but will not be forced on to 100%.
2. All lighting loads are 0-10V dimmable.
3. Each load will be manually controlled as shown in the DLM Switch Control Schedule.
4. Pressing the LMSW-101-R (red) nurse override switch will force lighting to 100% until the button is depressed, which will relinquish controlled loads to previous state.
5. The LMIN-104 for lighting control receives a contact input from the patient pillow speaker to override the current light level to a preset lighting scene.
6. The network bridge reports light level status and actual current used back to a network controller. The network controller may be used to program and schedule any room devices and monitor the current usage.

### Pillow Speaker

#### Lighting Button #1:

1. Single Momentary press shall turn load 1 on
2. Second press shall turn load 1 off
3. A sustained press shall dim up or down, load 1

#### Lighting Button #2







4. Single momentary press shall turn load 2 on
5. Second press shall turn load 2 off
6. A sustained press shall dim up or down, load 2

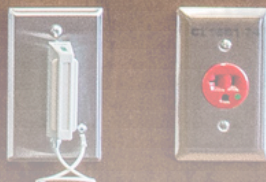
### DLM Switch Control Schedule

Switch	Button	Description	Controlled Loads
LMSW-101-R CODE BLUE	Toggle	Force On / Relinquish	Press 1: Loads (a,b) - 100% Press 2: Loads (a,b) - Return to normal operation
LMSW-105	Rocker	Raise/Lower	Load (a) - On/Off & Raise/Lower
	1: Toggle	100%	Load (a) - 100% Output
	2: Toggle	75%	Load (a) - 75% Output
	3: Toggle	50%	Load (a) - 50% Output
	4: Toggle	25%	Load (a) - 25% Output
LMDM-101	Rocker	Linear	Load (b) - On/Off & Raise/Lower

# Post-anesthesia Care Unit (PACU) – Bill of Materials



Product	Name	SKU	Amount
	Wired Network Bridge	LMBC-300	1
	Double Relay with 0-10V Dimming Room Controller	LMRC-212	1
	Digital Low Voltage Input Interface	LMIN-104	1
	Digital Dimming Wall Switch, 1 paddle	LMDM-101	1
	Digital Scene Switch, 5-button	LMSW-105	1
	Digital Low Voltage Switches, 2-button	LMSW-101	1



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